

**Abstract No.: 39063**

**COMPARISON BETWEEN HIP SPIKA AND PLATING IN TREATMENT OF FRACTURE OF SHAFT OF FEMURE IN CHILDREN**

Boujaylah Aqwuyidir,

11 children presented with fracture of shaft of femur treated by hip spika , Following data collected about them; Sex, age, hospital stay, postoperative period. They are followed for period range from 3 to 12 months, mean follow up is 8 months. 12 boys presented with fracture femur fixed by plate, Following data collected about them; Sex, age, hospital stay, postoperative period. Range of follow up is 4 to 12 months, its mean is 6 months. 8 boys and 3 girls , their age range (2-8) years, its mean 4.5 years.treated by application of hip spika under general anaesthesia. Hospital stay range (3-11) days its mean 4 days. Postoperative period range (1-9) days, its mean 2 days. Only one case admitted after 3 weeks for one day . 12 boys presented with femoral fracture fixed by plate. Their age range (7-14 )years , its mean 11 years. Hospital stay range 6-17 days , its mean 8 days. Postoperative period range 3-8 days, its mean 5 days, No case readmitted to hospital. Both plate and hip spika can lead to good result if case selected properly.

**Abstract No.: 39065**

**DIAGNOSIS AND TREATMENT OF AVASCULAR NECROSIS OF THE FEMORAL HEAD IN CHILDREN WITH EPIPHYSES DYSPLASIA**

Kamola VALIEVA, Achrarbek Djuraev, Guzala Kasimova, Khayrulla Rakhmatullaev, Ruziev Norpulat, Rakhimjon Djabborov, Gulrukh Umarova

Objective of research: To improve the diagnosis and effective treatment of avascular necrosis of the femoral head in children with epiphyses dysplasia. Materials and Methods: 46 patients were examined with epiphyses dysplasia from 2 to 15 years. The criteria for a diagnosis of epiphyses dysplasia is a violation of enchondral ossification of two or more pairs of epiphysis and the absence of signs suggesting other types of nosology. Criteria for the identification of avascular necrosis of the femoral head on the background of the epiphyseal dysplasia is the determination to review radiographs of typical signs of the hip joints of avascular necrosis of the femoral head (condensation, subchondral line of enlightenment, followed by fragmentation of the pineal gland) on the one hand on the background of bilateral dysplastic or structural changes in femoral head. Clinical manifestations of avascular necrosis of the femoral head on the background of the epiphyseal dysplasia were similar to symptoms of typical Perthes' disease. It was required for all the children to maintain with orthopedic regime, including a moderate limitation of motor activity of the child, limitation of weight load on the hip and knee joints with therapeutic measures directing to the improving the microcirculation and metabolism of cartilage. Results: 21 patients from 46 (45.6%) during the epiphyses dysplasia were complicated by progress of avascular necrosis of the femoral head. Conclusions: Thus, multiple epiphyses dysplasia is often complicated by avascular necrosis of the femoral head (often double-sided) and requires prompt treatment.

**Abstract No.: 39076**

**FALSE POSITIVE OR EQUIVOCAL SCAN RESULTS IN EARLY ULTRASOUND SCREENING FOR DDH**

Breanna Winger, Nicholas Green, Philip Henman

Ultrasound screening for DDH in 'at risk' groups is a national programme. In our unit babies are scanned at the next available appointment, which has led to a large range of ages at time of scan. The NIPE guidelines for screening advises scanning at 6-8 weeks for at risk with the age reduced to 2 weeks in babies with any abnormal post natal hip examination findings. It is suggested that a high proportion of very young babies will need a second scan as their hips appear immature at the time of initial scanning. We identified all babies scanned for DDH over 2 years (2012-2013, n=777). Of these, 48 babies required treatment for DDH (eg harness) and 64 (8.2%) were rescanned following an equivocal first ultrasound. Of these 6 were treated. 257 babies were under the age of 4 weeks at the time of their first scan. Of these babies 48 (18.7%) were referred for a further scan compared to 22 (4.2%) of those over 4 weeks(n=520). Of the babies who were rescanned 23 of 64 (35.9%) had a normal alpha angle at the time of initial scan. Babies are perhaps scanned too early leading to false positive or equivocal scans. Delaying ultrasound screening (with the exception of babies with abnormal examination) until 4 weeks may save resources and parental concern. Babies with normal alpha angles at the time of the first scan could be discharged regardless of immaturity however, this is contentious as there are rarely missed diagnoses.

**Abstract No.: 39078**

**PRIMARY TOTAL HIP ARTHROPLASTY WITH A NEW FEMORAL SHORT STEM**

Jaime Morales, Carolina Lopez, Cristian Gordo

**INTRODUCTION:** Conservative stems retain a larger amount of bone and biomechanical effect due to their, they allow higher compression forces on the lateral column of the femur and reduce stress shielding. They retain since metaphyseal bone, short stems allow the use of conventional stems becomes necessary when revision surgery. To show the early results of the study on the conservative stem GTS-Biomet. **MATERIAL:** The 81 cases in 80 patients comprised 55 men and 25 women (1 in both hips) with a mean age of 64.85 years (range 43- 78) at time of surgery. Mean follow-up was 16 months (range 6-24 month). **METHODS:** The clinical results of 81 arthroplasties performed were assessed by one surgeon using the Merle D'Aubigné scale; a radiologic assessment was made and the findings and complications were described. **RESULTS:** We had one calcar fracture, which required a fixation with a screw. No cases of clinical or radiologic loosening were reported. **CONCLUSIONS:** Conservative hip arthroplasty with the GTS-Biomet stem has proven to be an excellent medium for femoral hip replacement, with expectations that it may exceed the durability of other types of implants without harming the femoral diaphysis. This may facilitate stem

**Abstract No.: 39081**

**3D PRINTING IN HIP REPLACEMENT USE OF 3D PRINTED POST IN PLANNING COMPLEX ARTHROPLASTY**

Vaibhav Bagaria, Amit Nemade, Sameer Raghatate, Shalini Jain, Shirish Deshpande

Three Dimensional printing is transforming the way we used to plan complex hip replacement in past. The technology called as additive manufacturing or layered manufacturing involves creating a physical model from the axial cuts derived from the CT scan of the patients. Having a model ensures that the surgeon can plan their surgery on a physical structure, do a thoughtful inventory planning, perform surgical simulation and also use the same as an intraoperative reference. The group of technologies were called as 3D Patient Optimised Surgical Tools (3D POST) and were used in 15 cases of difficult primary hip. The surgeons who used them were asked to fill in a questionnaire evaluating their experience with the technology and if it made a difference to the surgical procedure. The results were analysed to rate the technology. Most surgeons believe that the technology altered their surgical planning, helped reduce intraoperative time and errors and overall did improve the patient outcome. 3D Printing technology derived patient optimised surgical tools ( 3D POST) are likely to have a major impact in surgical practice in coming days. It is likely to become a standard part of pre operative planning. Patient customised jigs and implants would be universally available and used of for the benefits of the patient.

**Abstract No.: 39083**

**MANAGEMENT OF TYPE III AND TYPE V ACROMIO-CLAVICULAR JOINT DISRUPTIONS: LESSONS WE LEARNT FROM OUR EXPERIENCE OF 17 CASES**

Aditya Krishna Mootha, Raghuveer Chander Alluri

**Introduction:** Acromioclavicular joint (A-C Joint) dislocation is a common injury, which accounts for about 9% of all shoulder injuries. Spectrum of management options for type III and V injuries vary depending upon the presentation. Here we present a prospective series of 17 cases of type III or V A-C joint injuries surgically treated at our center. **Material and Methods:** All cases of type III or V A-C joint injuries surgically managed at our centre from 2011 June to 2014 January are prospectively included in the present series. The treatment methods included K-wire fixation, Coraco clavicular screw fixation, dynamic coraco-clavicular stabilisation with Ethibond or coraco-clavicular ligament reconstruction with semitendinosus auto graft in chronic neglected cases. **Results:** Out of 17 cases 8 cases are acute injuries while 9 cases are chronic injuries. 2 of the acute are operated by k wires alone. Coraco clavicular screw fixation is done in 4 acute cases and 2 chronic cases. In 1 acute case and 3 chronic cases dynamic coraco-clavicular stabilisation with Ethibond is done. In 6 chronic cases coraco-clavicular ligament reconstruction with semitendinosus auto graft is done. In 6 of the 9 chronic cases excision of lateral end of clavicle is also performed. Complications included pin tract infection in 1 case, screw back out in 2 cases. Mild subluxation of the joint persisted in 4 cases. **Conclusion:** Dynamic fixation of the A-C joint has far better results in comparison to rigid fixation and in neglected cases biological augmentation is strongly recommended with hamstrings auto graft.

**Abstract No.: 39085**

**BACTERIAL CULTURES OF SUSPECTED INFECTED OPEN TENDO ACHILLES LACERATION WOUNDS**

Abduljabbar Alhammoud, Mohammed Nader Said, Ghalib Ahmed, Mahmood Ali Arbash

Introduction: Open tendon Achilles lacerations were reported to have high incidence in Qatar. In the majority of cases the cause is slippage on bathroom floors. This study aims to audit clinically infected wounds for the bacterial culture. Methods: A retrospective study of open tendon Achilles patients operated and followed up in the orthopedic department in Hamad Medical Corporation. The time period Jan 2011 to Dec 2013. Patient's data and files were revised and investigated for clinical infection. The results of the wounds swabs were and presented. Results: 100 patient's files were revised. All had open Achilles tendon lacerations resulting from bathroom slippage. A standard treatment protocol was applied in all. This included irrigation, Tetanus prophylaxis and initiation of intravenous antibiotics in the emergency room. Wound irrigation and primary wound and tendon repair in the Operating Theater within 24 hours. Patients were kept in the hospital for one to five days post op for IV antibiotics and dressing Change. Eleven cases of clinically suspected wounds infections were identified. Six of them had positive swab cultures. Pseudomonas in three cases, Klebsiella in two patients, one combined with staphylococcus aureus. And enterobacter found in the sixth case. Normal flora was found in four. The remaining wounds swabs had no bacterial growth. Wound debridement in operating theatre for infection was performed in four patients one of them with a normal flora culture. Conclusions: Relative low incidence of major wound infections in the studied group of patients. Primary tendon Achilles open wounds repair is considered safe.

**Abstract No.: 39086**

**UNCOVERING THE DEGENERATION OF INTERVERTEBRAL DISC ALLOGRAFT AFTER  
TRANSPLANTATION VIA THE REESTABLISHMENT OF NUTRIENT PATHWAY**

Yongcan Huang, Jun Xiao, Victor Leung, William Lu, Keith Luk

Fresh-frozen intervertebral disc allograft transplantation has been reported to be a viable treatment option for advanced degenerative disc disease. However, rapid degeneration of the allograft has been found after transplantation and the underlying mechanism is still unclear. Loss of nutrient supply is believed to be the most likely factor because the disc allografts have to endure in an ischaemic environment until the nutrient pathway is re-established. The aim of this study is to determine the role of the nutrient pathway reestablishment process in the degeneration of the transplanted disc allograft. A newly developed goat model for lumbar disc allografting was used, and the degeneration was determined by radiography. Sequentially, healing of the host-graft interfaces, remodelling of the subchondral bone, changes of the bony and cartilaginous endplates, and the revascularisation pattern in the postoperative disc allograft were investigated. Bony healing of the host-graft interfaces started at 1.5 months and completed at 6 months by natural remodelling. The bony endplate was well preserved initially but gradually replaced by trabecular bone afterwards. On the other hand, the cartilaginous endplate became atrophic at 6 months after transplantation. Additionally, host blood vessels were able to reach the bony endplate and outer annulus at 1.5 months, but finally to approach the cartilaginous disc centre. Collectively, bone healing and remodelling ensured the stability of disc allograft; but the gradual loss of endplate integrity and altered revascularisation patterns, changes in the nutrient channels and delayed return of nutrients, probably led to the degeneration of disc allograft after transplantation.



**Abstract No.: 39088**

**EXTENSIVELY DRUG RESISTANT (XDR) TUBERCULOSIS OF LUMBAR SPINE IN A 6 YEAR OLD CHILD: A CASE REPORT**

Siddharth Shah, Arvind Goregaonkar

Introduction: Extensively drug-resistant tuberculosis (XDR-TB) is an emerging health hazard threatening tuberculosis control worldwide, with an incidence of 2%, across 41 countries. We present a case of XDR-TB of lumbar spine in a 6 year child, managed conservatively with Antitubercular chemotherapy. Case: 6yr/male, complained of backpain since 9 months, with lumbar tenderness without neurological deficit. Radiology showed L4 vertebral body collapse. MRI showed tuberculous spondylodiscitis. ESR was raised. First line anti-tubercular chemotherapy (Isoniazid+Rifampicin+Ethambutol+Pyrazinamide) was given empirically for 6 months with hip spica immobilization. Child developed iliopsoas abscess which was drained surgically. Repeat radiological evaluation showed complete L4 body destruction and 10x8cm prevertebral abscess. ESR was raised further. Vertebral biopsy culture showed growth of Mycobacterium TB-complex susceptible to only Capreomycin (=XDR-TB). Second-line & third-line chemotherapy (Moxifloxacin+Clofazimine+Linezolid+INH+Amoxycylav+PAS) with daily Capreomycin injections was initiated with hip spica immobilization. At 3 months, tenderness was absent, ESR decreased & radiology showed consolidation of L3 & L5 body & their interspace. At 6 months, physiotherapy and rehabilitation was started and radiological evaluation showed L4 vertebra plana with intact posterior elements, residual 8 degrees fused kyphosis, with no evidence of spinal instability. The child walks full weight bearing without deformity or neurodeficit. Conclusion: XDR-TB is a serious threat that requires a great index of suspicion & prompt aggressive treatment with second-/third-line antitubercular chemotherapy which may be life-saving. XDR-TB should be suspected if there is clinical and/or radiological progression of TB in spite of chemotherapy and history of previous treatment for tuberculosis. Appropriate sensitivity-based chemotherapy is the key to management of XDR-TB.

**Abstract No.: 39091**

**MASSIVE STRUCTURAL BONE ALLOGRAFT IN REVISION TOTAL HIP ARTHROPLASTY- TEN YEARS RESULTS**

Dariush Savadkoohi, Babak Siavashi, Ehsan Pendar

**Abstract:** Introduction: In revision total hip arthroplasty, beside difficult exposure and previous component removal, the surgeon may experience variable bone defects in femoral side and acetabular side. Managing each bone deficiency has some options. One of them is structural bone graft. Materials and methods: Every case of revision total hip arthroplasty or total hip arthroplasty after acetabulum fracture or periprosthetic fracture which need structural allograft is evaluated. Results : Average follow up was 5.5 years (range one to nine years). 29 patients have the criteria to be evaluated . Three total hip arthroplasty after acetabulum fracture, two periprosthetic fracture B3, five conversion of hemiarthroplasty to total hip arthroplasty, two conversion of fused hip to total hip arthroplasty ,one conversion of girdle stone to total hip arthroplasty and 16 loosening and osteolysis were the underlying cause of bone defect. The majority of cases which need structural allograft were osteolysis case. Post operative scores rise dramatically. Discussion : Structural allograft is a useful way to manage massive bone defect in acetabular side and also in femoral side and it gives good primary support to stem and cup. But it is necessary to maintain the patient non weight or touch weight bearing to increase th longitivity of allograft bone.

**Abstract No.: 39092**

**CONSTRAINED LINER IN TOTAL HIP ARTHROPLASTY- 10 YEARS RESULTS**

Dariush Savadkoohi, Babak Siavashi, Ehsan Pendar

**Abstract:** Introduction: Performing total hip arthroplasty is possible even there is no or weak abductors of hip joint. If a surgeon faced with abductor nonfunction or malfunction, he may have some options. One of them is Dual mobility total hip arthroplasty. The other way is constrained liner or cup .**Materials and Methods:** Every primary or revision total hip arthroplasty which need constrained liner enters the study. Harris Hip Score (pre operative, post operative), Led length discrepancy, cemented or cementless cup, type of stem (standard or long) and approach are considered . **Results:** Harris hip scores were improved significantly (average 54 to average 88 ). One disengagement of head from stem and one dislocation was seen. No loosening or component failure and only one retroacetabular osteolysis were seen. There was one deep infection. **Discussion:** It is anticipated that functional hip scores improve dramatically in post operative period, but it is interesting that there was no loosening or component failure.

**Abstract No.: 39093**

**TOTAL HIP ARTHROPLATY AFTER DYNAMIC HIP SCREW FAILURE- 10 YEARS RESULTS**

Dariush Savadkoohi, Babak Siavashi, Ehsan Pendar

**Abstract:** Introduction: One of implants which is used for fixation of this fracture is Dynamic Hip Screw ( DHS ) . In this study, we try to retrospectively evaluate the results of total hip arthroplasty after DHS failure. Materials and methods: It is a retrospective study in Sina hospital, Tehran, Iran. Each patient with intertrochanteric hip fracture from 2004 to 2014 which fixed with DHS and failed and treated with Total Hip Arthroplasty enters the study. Results: There were 52 patients. Nail cut out is seen in 49 cases (94%) and in three cases (6%) fracture of side plate is the cause of failure. Pre operative harris hip score was 30 to 50 (average 36) and post operative score was between 65 and 90 (average 85). There were 12 cemented cup and 40 cementless cups. 14 standard stem and 38 long stem were used. 12 of 14 standard stems were cemented. Posterior approach were used in 45 cases and direct lateral approach were used in remaining seven cases. Prophylactic wiring were done in 46 cases. Intraoperative penetration of floor of acetabulum were happened in two cases. Constrained liner need in five cases three because of severe osteoporosis of trochanter and insecure fixation of it after fracture and two because of recurrent dislocation. Discussion: Total hip arthroplasty after failure of DHS has some considerations. Use posterior approach, be careful during acetabulum reaming, prophylactic wiring of femur and by passing the holes of screws with long stem are technical points for achieving good results

**Abstract No.: 39097**

**CEMENTLESS REVISION FOR INFECTED HIP ARTHROPLASTY: AN 8.6 YEARS FOLLOW-UP**

Peng Li,

Objective: to investigate cementless revision for postoperative infection after total hip arthroplasty(THA). Methods: From November 1997 to December 2009, 10 patients(10hips;four male,six female) of mean age 58 years(36–73 years) with infection after THA were treated. Six of the 10 hips underwent revision total hip arthroplasty, two only received new acetabular components and two underwent stem revision. One-stage revision was performed in six cases and two-stage revision in four. Consecutive radiographs were compared to evaluate component conditions. Harris hip scores were determined before surgery and at final follow-up. Erythrocyte sedimentation rate and C-reactive protein were assessed. Results: All patients were followed up for a mean duration of 8.6years(6.5–15.6 years). The mean Harris hip score improved from 35(18–63) points preoperatively to 89(60–99) points at final follow-up. No infection occurred. Femoral component loosening was occurred in one asymptomatic patient. Hip joint pain resolved in seven cases; three patients had mild pain when walking long distances. At final follow-up, six patients still had slight limps. Heterotopic ossification developed in two hips. Mean polyethylene liner wear was 0.08mm per year at final follow-up. Deep vein thrombosis and nerve injury did not occur. Conclusion: One- or two-stage revisions using cementless prosthesis can produce satisfactory clinical outcomes in patients with infection after THA. Whether the original prosthesis can be partially retained when attached tightly to the femur or acetabular bone needs further investigation. Keywords: Arthroplasty; Hip; Infection

**Abstract No.: 39099**

**COMPARISON BETWEEN OPERATIVE AND CONSERVATIVE TREATMENT IN MANAGEMENT OF FRACTURE OF BOTH BONE OF FOREARM IN CHILDREN**

Boujaylah Aqwuyidir,

Even though conservative treatment is advised for fracture of both bone of forearm in children, but failure might occur. k-wires pinning, plating, elastic nail are other alternative option. .we will Compare between k-wires pinning and conservative treatment in management of fracture of both bone of forearm in children 33 children operated for fixation of fracture of both bone of forearm, following data collected about them; Age, sex, diagnosis at admission, method of fixation, hospital stay, postoperative duration, follow up duration, second admission occurrence. 22 children presented with fracture of both bone of forearm treated conservatively, and followed for 4 to 12 months (mean 8 months) for second admission occurrence due to failure of conservative treatment. 30 boys and 3 girls , age range 2 to 16 yrs, mean 9 yrs.. They stay in hospital 3 to 11 days, mean 5 days. 21 fixed by k-wires after open reduction, and 11 fixed by k-wires after close reduction. k-wires are two and they are cross to each other. Follow up period 3 to 11 months, mean 6 months. 3 cases readmitted, 2 of them because of refracture and one of them because of reangulation. 19 boys and 3 girls admitted one day and treated conservatively . Followed 4 to 12 months. Mean is 8 months, 2 has been readmitted because of failure of conservative treatment. Conclusion: Failure of treatment can occur in both conservative treatment and k-wires pinning for fracture of both bone forearm.

**Abstract No.: 39107**

**ROLE OF PRE DEBRIDEMENT BACTERIAL CULTURE IN COMPOUND FRACTURES**

Varun Gupta, Gurminder Singh, Pradeep K Singh

Purpose: To assess the incidence of bacterial contamination in compound fractures, to qualitatively analyze the most prevalent bacterial contamination and to determine the sensitivity of the contaminating bacteria. Thus helping in early diagnosis, prevention and management of immediate and late bone infections. Patients & Method: Study included 100 patients with equal number of fresh, untreated compound fractures. Fractures were graded according to Gustilo and Anderson classification (1984) of compound fracture. In grade I to grade IIIC, aerobic culture and sensitivity was done. Results: Out of 100 compound fractures, 61 were contaminated bacteriologically. Grade II and grade III compound fractures showed higher rate of contamination. Industrial accidents, field trauma and road traffic accidents were found more contaminated. Staphylococcus aureus and Klebsiella was the most frequent contaminating bacteria. Most of the bacteria contaminating the compound fracture were sensitive to quinolones, aminoglycoside and cephalosporin. Conclusions: The pre-debridement cultures should be done in every case of compound fractures. Broad spectrum parenteral antibiotics preferably Quinolone, aminoglycoside and cephalosporin should be started at the admission and changed later according to culture results. Early administration of culture sensitive antibiotics in orthopaedic trauma cases can in future lower the incidence of osteomyelitis which is of much concern in rural area trauma.

**Abstract No.: 39110**

**FAST-TRACK SURGERY AFTER TOTAL HIP ARTHROPLASTY.**

Yves Michaud, Denis Jochum

In France also, there has been increased interest in multimodal postoperative recovery programs in order to reduce the postoperative hospital length of stay for total hip arthroplasty (THA). During the last year, we have developed a fast-track surgery for all hip and knee surgery. On the occasion of the first 10 ambulatory THA, we present a well-defined program of enhanced recovery with functional discharge criteria. The technique is not new. The novelty consists in improving the organization and in developing the state of mind of the treatment. We describe the key points of our program: patient information, mini invasive surgery, anesthesia optimization, no wound drains used routinely, short operating diet, immediate mobilization. Then, we discuss about the advantages and the inconveniences of the procedure and specificities according to hip surgery. The purpose is not to go back home as fast as possible but to simplify the postoperative management and to allow an early return in the best possible conditions of comfort and safety according to the health of the patient. In these conditions, the perspective of a short hospitalization is more reassuring and allows to introduce a virtuous circle in which the state of mind and the recovery optimize each other. Therefore, it is a progress relying on very simple and less expensive techniques, available in almost all centers and without additional risk. In conclusion, it is safer and more comfortable for the patient with a great advantage for the cost of the health.



**Abstract No.: 39112**

**PREVALENCE RATE OF KNEE CHONDROCALCINOSIS**

Daisuke Chiba, Eiichi Tsuda, Yuji Yamamoto, Takuya Naraoka, Yuka Kimura, Ippei Takahashi, Shigeyuki Nakaji, Yasuyuki Ishibashi

**Purpose:** To elucidate the prevalence rate and relative factor of knee chondrocalcinosis (CC) in a general Japanese population. **Method:** Subjects were 1156 volunteers (Age:  $54.6 \pm 15.4$ , 438 males, 718 females). Plain radiographs of both knee joints were examined; we diagnosed CC, if we detected clearly visible linear cartilage calcification in the joint space. Also, the severity of knee osteoarthritis (OA) was assessed by Kellgren-Lawrence grade (KLG); we defined the more severe KLG knee as the subject's OA severity. All subjects completed Knee injury and Osteoarthritis Outcome Score (KOOS) to estimate their knee symptom. Matrix metalloproteinase-3 (MMP-3, ng/mL) was evaluated by blood sample. Multiple linear regression analysis was performed with the independent variable as the KOOS Pain scale or MMP-3, and with the dependent variables as age, sex, BMI, CC prevalence, KOOS Pain scale (when MMP-3 was the independent variable), and MMP-3 (vice versa), respectively. **Results:** In the total of 1156 subjects, 26 subjects (2.2%, age:  $71.4 \pm 9.6$ , 11 males and 15 females) had CC. The mean values of MMP-3 in the non-CC and CC populations were  $53.8 \pm 28.2$  and  $71.9 \pm 25.0$  ( $p < 0.01$ , Mann-Whitney U test). Additionally, 18 subjects had Bilateral CC knees. In multiple regression analysis, CC prevalence was not correlated with the mean value of KOOS Pain scale, but directly correlated with MMP-3 ( $B = 11.240$ ,  $p = 0.031$ ). **Conclusion:** The prevalence rate of CC in the Japanese population is comparatively rare. Knee joint CC does not affect the severity of knee pain, but possibly has a catabolic effect on cartilage tissue.

**Abstract No.: 39115**

**PLATE FIXATION OF TIBIOFIBULAR FRACTURES: THE TIBIA FIRST- OR THE FIBULA FIRST?**

Gao You-Shui,

**Objective:** The importance of fibular stabilization and plate fixation for tibiofibular fracture has been well stated. Primary management of fibular fracture prior to the tibial is predominantly recommended in the textbook and literatures. However, priority care of tibial fractures might be beneficial in some circumstances. **Methods:** In this study, we retrospectively reviewed 23 tibiofibular fractures treated with priority care of tibial fractures between January 2009 and December 2012. Sixteen cases had failed open reduction and plate fixation (ORPF) of fibula firstly, and the surgical sequence was switched to priority ORPF of tibial fracture. Seven cases had fracture care of the tibia prior to the fibula. Fracture types, operation time, times of intraoperative fluoroscopy, union time and complications were evaluated. **Results:** For 7 patients who were treated by ORPF of tibial fracture firstly, mean operation time was  $60.7 \pm 17.2$  minutes, with intraoperative fluoroscopy of  $6.4 \pm 1.3$  times. Longer operation time and more intraoperative fluoroscopy were needed in 16 cases who had switched surgical sequence. Two delayed union and 1 nonunion developed in patients with wrong surgical sequence, while the other 13 patients had a union time of  $3.8 \pm 0.5$  months. Seven patients with primary ORPF of tibia got a union time of  $4.0 \pm 0.8$  months. **Conclusions:** Plate fixation of tibial fractures prior to the fibular is beneficial in some circumstances of tibiofibular fractures. Intraoperative switch of surgical sequence results in longer operation time and more radiation exposure, and leads to higher possibility of delayed union and nonunion.

**Abstract No.: 39122**

**IMPORTANCE OF PIRANI'S SCORING AND IT'S ROLE IN PREDICTING THE NUMBER OF CASTS AND NEED OF TENOTOMY IN IDIOPATHIC CLUB FOOT MANAGEMENT BY PONSETI METHOD.**

Ayush Sharma, Tarun Chabra, Surendra Shukla, Vijay Singh

**INTRODUCTION-** Pirani devised a simple score based on six clinical signs which is an integral part of Ponseti method of clubfoot correction. Parents of children having clubfoot on Ponseti casting are likely to enquire about the duration of treatment and need of tenotomy. In our study we have evaluated the Pirani scoring system in predicting the number of casts required and the need of tenotomy in management of club foot by Ponseti method.**MATERIALS& METHODS-** Retrospective analysis of prospectively collected data of 66 children (110feet) who started treatment under one year was done between march 2012 to september 2014. Children's were assessed for severity of deformity by Pirani score during each visit and Ponseti technique of casting was followed. Tenotomy was done in indicated cases. Bracing protocol as advised by Ponseti was followed.**RESULTS -** The initial Pirani score and the number of casts showed a strong positive correlation which was seen both in tenotomy(74feet) and non tenotomy(36feet) groups . There was a statistically significant difference between the mean initial Pirani scores for the tenotomy (5.51) and non tenotomy (4.02) groups. Of the tenotomy group, all 74 feet (100%) had an initial hindfoot score of more then 2.5 compared to 20feet (55.5%) of non tenotomy group. **CONCLUSION –** The initial high Pirani score signifies longer duration of treatment and will require more number of casts. The initial hind foot score of (2.5 -3) signifies higher probable need of tenotomy.

**Abstract No.: 39123**

**A RARE CASE OF ISOLATED CORONOID FRACTURES OF THE ELBOW**

Ayush Sharma, Tarun Chabra, Surendra Shukla, Vijay Singh

INTRODUCTION- Coronoid fractures of the ulna are relatively uncommon, yet critical injuries to recognize. They often occur in association with elbow dislocations and play an important role in elbow instability. CASE REPORT- we report a case of 16 years old male with history of pain and swelling and restricted movements of left elbow following a road traffic accident. Left elbow x ray and CT scan confirmed An ISOLATED TYPE 3 CORONOID FRACTURE (O'Driscoll et al. and Morrey) . Limb was initially immobilized in an above elbow slab followed by open reduction and internal fixation with cortical screws. Slow mobilization of elbow was started after two weeks and 3 month follow up showed complete recovery of range of movement with fracture union. CONCLUSION- Coronoid fractures without elbow dislocations are very rare specially type 3 a fracture but good clinical outcome can be achieved by accurate open reduction and stable internal fixation of fracture with early mobilization. KEYWORDS- Coronoid fracture, Elbow dislocation, terrible triad of the elbow

**Abstract No.: 39127**

**BIOMECHANICAL PROPERTIES COMPARISON OF SPINAL DENIS B FRACTURES TREATED BY SINGLE AND TWO SEGMENTAL FUSION**

Pengcheng Wang,

**Objective** To compare the biomechanical properties of Denis B fractures treated by single and two segmental fusion. **Methods:** Two cases sustained with L1 vertebral Denis B fracture were selected. One was operated through posterior pedicle-screw system plus anterior two-segment fusion and the other through posterior pedicle-screw system plus anterior one-segment fusion, respectively. CT data of the two patients followed up within one year after surgery was collected. The CT data was related to removal and non-removal pedicle screw in patient underwent one-segment fusion and to non-removal pedicle screw in patient underwent two-segment fusion. These three groups were imported into Mimics software to establish T11~L2 three dimensional models. After construction of the models, they were re-imported into ANSYS finite element program. An axial load 260 N and 10 Nm torque were loaded to simulate the motion of the spine, respectively. Meantime, the average displacement of the spine motion and the average Von Mises stress of T11~12 intervertebral disc were recorded on each loading. **Results:** The average displacement of removal pedicle-screw group was significantly higher than two-segment fusion group and one-segment fusion group under all of the above directions of motion. The average Von Mises stress loaded on T11~12 intervertebral disc of removal pedicle-screw group was decreased significantly when compared with one-segment fusion group and two-segment fusion group. **Conclusion:** Under the premise of satisfactory interbody fusion, removal the pedicle screw after one-segment fusion can increase spinal motion, reduce the stress of the adjacent intervertebral disc and be conducive to delay disc degeneration.

**Abstract No.: 39133**

**REAL-TIME SONOELASTOGRAPHY AS A NOVEL DIAGNOSTIC TOOL IN SUBACROMIAL IMPINGEMENT SYNDROME**

Mehmet ERDIL, Figen Kocyigit, Ersin Kuyucu, Ali Kocyigit, Savkin Raziye, Ummuhan Bas Aslan

Background and Objective: Shoulder impingement syndrome (SIS) is a result of compression of the supraspinatus tendon. Prolonged compression may lead to chronic tendinopathy which involves structural changes. Detecting the structural changes will help to comment on healing capacity and tearing tendency of the injured tendon. The objective of our study is to investigate the feasibility of real-time sonoelastography (RTSE) in the assessment of the supraspinatus tendon and to correlate RTSE findings with clinical parameters. Materials and Methods: Sample size was estimated to be 25 for 95% of statistical power with alpha level of 0.05. 25 patients diagnosed as unilateral SIS were enrolled. Healthy shoulders of the patients constituted the control group. After clinical and functional evaluations bilateral RTSE examinations were performed for both shoulder. For the qualitative analysis, a visual grading system according to colors obtained during RTSE was used. For semi-quantitative analysis strain index was calculated. RTSE findings of healthy and affected shoulders were compared. Pearson correlation coefficient (r) was used to compare strain index to functional scores. Results: Of 25 participants 9 were males, 16 were females (mean age was  $45 \pm 15$  years). The strain index was significantly higher in the affected shoulders ( $p=0.000$ ). There was no significant correlation between strain index and VAS for pain, Constant score, ASES score and Quick DASH score. Conclusion: RTSE provided quantitative information about tendon quality in patients with SIS. RTSE showed promise as potential beneficial tool in the diagnosis of early supraspinatus tendinopathy.

**Abstract No.: 39134**

**THE EFFECT OF ULTRASONOGRAPHY GUIDED INTRA-ARTICULAR CORTICOSTEROID INJECTION IN ADVANCED KNEE OSTEOARTHRITIS**

Mehmet Erdil, Figen Kocyigit, Ersin Kuyucu, Ali Kocyigit

**Background and Objective:** Intra-articular corticosteroid injection is a recommended treatment option in patients intolerant or resistant to systemic treatment. However expected and documented duration of action is short when corticosteroids are administered intra-articularly. Moreover the targeting accuracy of blinded knee injections is reported to be low. Our aim in this study is to evaluate effect of ultrasonography (USG) guided intra-articular corticosteroid injection on pain, functional status and quality of life in patients with advanced knee osteoarthritis. **Materials and Methods:** 50 knees of 26 patients who were diagnosed as grade 4 knee osteoarthritis according to Kellgren - Lawrence classification system were treated with USG guided intra-articular injection of 40 mg triamcinolone acetonide. Perceived pain, weekly analgesic consumption, physical examination findings, knee pain threshold, functional status and quality of life were evaluated before and 4 weeks after the injection. Western - Ontario and McMaster Universities' (WOMAC) osteoarthritis index was used to evaluate functional status and Nottingham Health Profile (NHP) was used to evaluate quality of life. **Results:** Mean age of study patients was  $65 \pm 7.5$  years and mean symptom duration was  $74.7 \pm 32.5$  months. Visual analog scale for pain decreased from  $85.3 \pm 14.1$  mm to  $59.6 \pm 21.1$  mm ( $p=0.003$ ) and mean analgesic consumption decreased from  $8 \pm 3$  to  $3 \pm 2$  ( $p=0.000$ ). Total WOMAC score ( $p=0.000$ ) and scores of 4 NHP subdivisions (pain ( $p=0.000$ ); physical mobility ( $p=0.003$ ), social isolation ( $p=0.012$ ); emotional reactions ( $p=0.016$ ) decreased significantly 4 weeks after the injection. **Conclusion:** Injection under USG guidance may improve the beneficial effects of corticosteroids in advanced knee osteoarthritis.

**Abstract No.: 39136**

**MILD COMPONENTS MAL-ALIGNMENT MAY NOT AFFECT THE POST-OPERATIVE RANGE OF MOTION IN POSTERIOR-STABILIZED TOTAL KNEE ARTHROPLASTY**

Chun Hoi Yan, Kwong Yuen Chiu, Fu Yuen Ng, Ping Keung Chan

**Introduction:** The optimal lower limb alignment and component positions in achieving a high flexion angle in posterior-stabilized total knee arthroplasty (TKA) were not well understood. We analyzed pre- and post-operative clinical and radiological parameters in patients received TKA for knee osteoarthritis. **Methods:** 140 TKAs in 122 patients (98 female, 24 male) were recruited. Pre- and post-operative lower limb long radiographs were measured for mechanical axis and individual component positions in coronal and sagittal planes. **Results:** The mean age of the patients was  $68.4 \pm 8$  years. All patients completed 1-year follow-up. The range of motion (ROM) increased from  $93.8^\circ \pm 20.5^\circ$  to  $107.9^\circ \pm 14.4^\circ$  ( $p < 0.0001$ ). The mechanical axis improved from  $13.3^\circ \pm 6.7^\circ$  to  $1.9^\circ \pm 3.8^\circ$  varus ( $p < 0.0001$ ). Linear regression analyses showed the pre-operative ROM is a predicting factor of post-operative ROM ( $p < 0.0001$ ,  $y = 0.4x + 70.65$ ,  $r^2 = 0.32$ ). If we classify the post-operative ROM into poor ( $< 100^\circ$ ), average ( $100-120^\circ$ ) and good ( $> 120^\circ$ ), significant differences were found in tibial component coronal position and lower limb mechanical axis ( $p = 0.037$  and  $0.017$  respectively). Other radiological parameters were not significant. **Conclusion:** Our data suggest that recreation of neutral lower limb mechanical axis and tibial coronal alignment appears to improve ROM after posterior stabilized TKA. The most significant predicting factor is still pre-operative ROM.



**Abstract No.: 39140**

**SEVERE SOFT TISSUE INFECTION DIFFICULT TO DISTINGUISH FROM NECROTIC FASCIITIS**

Tomofumi Ogoshi,

We report two cases of patients with severe soft tissue infection which is difficult to distinguish from necrotic fasciitis (NF). Patient 1: A 65-year-old male with a background of hypertension and hyperuricemia, had redness on his leg for two days. The next day it spread quickly and pain became severe. He has been introduced our hospital from previous doctor. His leg was mostly red, warm and swelling. His laboratory data showed he had severe infection without disseminated intravascular coagulation (DIC). We don't think NF with finger test, echo and Quick inspection and treat with not fasciotomy but antibiotics. He operated his foot with small skin graft. After two months, he was discharged. Patient 2: An 85-year-old male with a background of hypertension and diabetes had influenza 5 days prior. He was treated with oseltamivir. It made his temperature cool down but it made him weaker and his consciousness got worse so he was carried into my hospital. His upper arm was extremely red, warm and had blisters. We don't think NF with finger test, echo and Quick inspection. But Computerized tomography (CT) showed his fascia was thick, muscle was low density, multiple infarction and pneumonia appeared and his laboratory data was severe. A test incision was performed on his upper arm. His fascia was not necrotic. We treat with only antibiotics. Unfortunately, he had hemiparesis but he was discharged after 3 months. Conclusion: Quick inspection, echo, finger test were useful to diagnose between severe soft tissue infection and NF.

**Abstract No.: 39146**

**A COMPARATIVE STUDY BETWEEN MULTIPLE CANNULATED SCREW AND DYNAMIC HIP SCREW FOR FIXATION OF FEMORAL NECK FRACTURE IN ADULTS**

Dariush Savadkoobi, Babak Siavashi, Ehsan Pendar

**Introduction:** In younger adults with fracture of femoral neck, anatomic reduction is necessary and is foundation of treatment , but, maintaining reduction is as important as reduction itself. Both cannulated screw and dynamic hip screw ( DHS) have the capacity of compression in fracture site but their strength for maintaining reduction is not the same. The aim of this study is to compare the results of fixation of fracture of neck of femur with cannulated screw and dynamic hip screw.

**Materials and Methods:** It is a randomized clinical trial study on 58 cases with minimum one year follow up. leg length discrepancy , Harris Hip Score, infection , avascular necrosis of femoral head , union of fracture site were evaluated.

**Results:** There were two reduction and fixation failure in the first three months in cannulated screw group and three more fixation and reduction failure in the second and third three months in this group. In Dynamic hip screw group , there was no reduction and fixation failure in follow up period. There was no fixation failure ( 0%) in Group B ( DHS ) but there were five fixation failure (18%) in Group A ( screw) and there is meaningful difference (p value <0.001). Rate of avascular necrosis was the same in both groups.

**Discussion:** It is obvious that fixation of fracture of neck of femur with DHS is more reliable than fixation with multiple cannulated screws .

**Abstract No.: 39160**

**SURGICAL DEBRIDEMENT WITH PROSTHESES RETENTION FOR THE TREATMENT OF ACUTE PERIPROSTHETIC INFECTIONS FOLLOWING TOTAL KNEE ARTHROPLASTY**

Chaofan Zhang, Chunhoi Yan, Pingkeung Chan, Fuyuen Ng, Kwongyuen Chiu

**Purpose:** The success rate of surgical debridement with prostheses retention for acute periprosthetic joint infection (PJI) following total knee arthroplasty (TKA) is doubtful. We aim to report our experience in managing such patients. **Methods:** A review of all patients diagnosed with acute PJI after TKA and managed with surgical debridement and prostheses retention in our prospective joint replacement register from 1998 to 2013 was performed. **Results:** A total of 34 patients with 35 TKAs were included. 12 were early post-operative infection and 23 were late acute haematogenous infection. During a mean follow-up time of  $45.9 \pm 44.2$  months, 12 were successful while 23 were failure, including 15 required re-operations and 8 needed lifelong antibiotic suppression. The success rate of debridement was 34.2%. Statistical analyses showed no significant differences between the two groups on patients' age, time interval between TKA and symptoms, time lag from symptoms onset to debridement, pre-operative CRP, ESR, WBC, lymphocyte, haemoglobin, albumin, fasting glucose, random glucose and synovial fluid total cell count. Patients' primary diagnosis, previous revision surgeries, history of diabetes or staphylococcal infections had no significant impacts on the surgical outcome, either. Debridement with polyethylene insert exchange, however, had a significantly higher success rate than debridement alone. **Conclusion:** Debridement with prosthesis retention has a low success rate for acute periprosthetic infection in TKA. No significant prognostic factors could be identified, except that debridement with polyethylene insert exchange has higher success rate than debridement alone.

**Abstract No.: 39165**

**SURGICAL REPAIR OF PECTUS EXCAVATUM IN CHILDREN BY THE ACCOUNTING OF THE STERNOCOSTAL COMPLEX ELASTICITY CRITERIA**

Khodjanov Iskandar, Khakimov Sherali, Khujanazarov Ilkhom, Kasymov Khatam

**Introduction** Currently, the majority authors purpose the D. Nuss technique for PE repair. By literature data, many authors emphasize, that the highly unsatisfactory results rate after application D.Nuss method, reaches 21%. In our opinion, it may be associated with the application of D. Nuss technique without taking into account of the SCC elasticity in children. **Materials and methods** The report presents the operative correction results of PE in 54 children aged from 5 to 15 y. In relation of the SCC elasticity degree there was performed PE repair by D. Nuss method in modification with application of new own construction metal plate. All patients were divided into three groups in relation of the SCC elasticity degree (patent No.DGU02466) including the following parameters: the T AC, difference of CE in inspiration and expiration, the SR degree and the ADRS. **Results and discussions** At SCC normal elasticity in 27 (50.0%) patients good results were in 26 (96.3%) and satisfactory in 1 (3.7%) patient. At SCC moderate elasticity degree in 15 (27.8%) patients good results were in 13 (86.7%) patients, satisfactory - in 2 (13.3%). At SCC hypoplastic elasticity the good results were in 9 (75%), satisfactory in 1 (8.3%) and unsatisfactory in 2 (16.7%). Thus, the less SCC elasticity and older children the operation techniques are more traumatic and worse long-term results. The PE repair method should be performed with taking into account elasticity of the SCC that contributes to easy performance of the correction and provides good cosmetic and functional results.

**Abstract No.: 39166**

**ABDUCTION CONTRACTURE OF THE HIP SECONDARY TO FIBROSIS OF THE GLUTEAS MAXIMUS MUSCLE**

Mohammed Ali F. Al Bayati, Baker Krady

Abduction contracture of the hip secondary to fibrosis of the gluteal maximus muscle Five children presented with limitation of flexion of the hip in the usual sagittal plane, but can only be flexed in abduction of the hip like frog position. Two had bilateral affection of hips. All had this difficulty in squatting early in life, none had clear history. Abduction contracture of the hip secondary to fibrosis of the gluteal maximus muscle of repeated injections in the gluteal region. Investigation by different imaging was normal. The treatment was surgical release of severe thick abnormal fibrosis at the insertion of the glutei maximus muscle to the greater trochanter and the ischia with tight ilio tibial tract and short hamstrings. Release of the fibrotic bands relieved most of the deformity immediately and children improved dramatically after months of physiotherapy. Photos and videos demonstrate the pathology and operative findings.

**Abstract No.: 39169**

**A SYSTEMATIC REVIEW OF UNILATERAL VERSUS BILATERAL PVP/PKP FOR OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURES**

Shengping Yang, Changxian Chen, Hanlong Wang, Zhiqiang Wu, Lianqun Liu

**Purpose:** To identify the differences between the unilateral and bilateral approaches in treating osteoporotic vertebral compression fractures. **Methods:** Based on the principles and methods of the Cochrane systematic reviews, The Cochrane Library, PubMed, Web of Science, Chinese Bio-medicine database, China Journal Full-text Database, VIP database, and Wanfang database were searched by using a similar search strategy. All databases were searched until October 2014. Randomized controlled trials of unilateral and bilateral approaches to percutaneous vertebroplasty/percutaneous kyphoplasty for osteoporotic vertebral compression fractures were included. The risk of bias of included trials was assessed based on the Cochrane Handbook for Systematic Reviews of Interventions Version. The RevMan Software 5.0 was used for meta-analysis. **Results:** Fifteen randomized controlled trials with a total of 850 patients were included. Risk of bias in the included studies was inevitable. There was no statistically significant difference in visual analogue scale, vertebral height, kyphotic angular, and quality of life. The main operative complications were bone cement leakage and adjacent vertebral fracture, without difference between the two groups. **Conclusions:** In view of the current evidence, there is insufficient evidence to show if there are any difference between the unilateral and bilateral approaches in both the PVP and PKP treatment of osteoporotic vertebral compression fractures.

**Abstract No.: 39179**

**A DYNAMIC WOUND CLOSURE USING PLASTIC BANDS FOR CLOSURE OF FASCIOTOMY AND OPEN FRACTURES**

Abigail Garcia, Leo Daniel Caro, Carl Ryan Taguba

Background: The care of compartment syndrome fasciotomy & open fracture II, IIIA & IIIB wounds begin with preoperative planning. The ultimate goal is to prevent infection & facilitate healing. This study explores the use of plastic bands in closing fasciotomy wounds & Open fracture. Methods: The time to definite closure, complications, need for additional intervention, length of hospital stay and daily treatment cost in 15 patients were evaluated. Six patients with fasciotomy wounds & nine patients with open fractures treated with plastic bands for wound closure were evaluated. Result: All fasciotomy wounds & open fracture wounds in 15 patients closed successfully within 5 – 10 days. Only one patient developed minimal complication. A significant reduction in hospital stay, faster wound closure and lower daily treatment cost was observed. Conclusion: This observational study demonstrated that the plastic band method used is cost effective, reliable and effective method in closure of fasciotomy wounds & open fracture in comparison to similar techniques using the same device.

**Abstract No.: 39195**

**FUNCTIONAL OUTCOMES IN SURGICALLY FIXED EXTRA CAPSULAR HIP FRACTURES ? IS SEVERITY OF FRACTURE A DETERMINANT?**

Arul Murugan Palanisamy, Hitendra K Doshi, Dahshaini Selvaraj, Ganesan Naidu Rajamoney Naidu, Rani Ramason

Introduction: Purpose of this study was to analyse the influence of severity of extra capsular hip fractures on functional outcomes, incidence of complications and length of hospital stay - post surgical fixation. Methods: In this prospective study over one year period, patients with extra capsular hip fractures were divided into two groups based on severity of fracture and mode of fixation –less severe Evan’s 1,2 types that were fixed with sliding hip screw (Group A) and more severe Evan’s 3,4,5 fracture types that underwent nailing (Group B). Demographic variables, time to surgery, Modified Barthel Index (MBI) score – pre operative, at time of discharge, 3,6 and 12 months post surgery, complications and length of stay were recorded. Results: Of total n=187 patients considered ( Group A:94, Group B:93) there was no significant difference in age (A:82,B:80.4) ,time to surgery (A:84,B:86 hours) and Barthel Scores – Pre operative (A:88.7,B:89) and one year post surgery (A:83.7,B:82.7). In these auto matched cohort populations, incidence of complications were higher in patients who had nailing (pressure ulcer:1,urinary tract infection:7.Total:8) than patients with screw fixation (Urinary tract infection:2,wound infection:1.Total:3) contributing to increased mean length of inpatient hospital stay (A:14.2,B:15.4) and possibly also to discrepancy in Barthel scores at time of discharge (A:60.7,B:59.3). Conclusions: We conclude that severity of extra capsular hip fractures may not be a factor in functional recovery at one year post fixation though incidence of complications and length of inpatient stay were higher in comminuted fractures that underwent femoral nailing.



**Abstract No.: 39197**

**LCP FOR TIBIA FRACTURE**

Mohamed buajela RASHED, Ihab Ghallab, Yousif Gharrouda

Open reduction and internal fixation in upper tibial fractures jeopardizes fracture fragment vascularity and often results in soft tissue complications. Minimally invasive osteosynthesis, if possible, offers the best possible option as it permits adequate fixation in a biological manner. Seventy-nine consecutive adult patients with upper tibial fractures, including one patient with a bilateral fracture of the tibia, treated with locking plates, were retrospectively reviewed. The 4.5-mm limited-contact locking compression plate (LC-LCP) was used in 24 fractures.

**Abstract No.: 39198**

**TBW FOR OLECRANON FRACTURE**

Mohamed RASHED, Mohamed Dougdug, Mohamed Bashagha, Salah Kelani

The tension band wiring (TBW) technique is a common treatment for the fixation of olecranon fractures . The TBW always available, as an uncomplicated, and convenient operation producing excellent results. The purpose of this study was to assess the efficacy of TBW and to determine whether it is a good procedure provides good fixation for olecranon fracture. Olecranon fractures are common injuries of the proximal ulna which constitute about 10% of all upper extremity lesions. It is known that only undisplaced fractures (5% of total) are treated conservatively while displaced fractures (95% of total) are submitted to operative treatment This study reviewed 49 TBW cases in patients with olecranon fractures treated in Orthopaedic Dept Hadba Khadra Hospital /Tripoli. During Jan-Dcs.2013. Males34 and 15 females average age 47years( 23-65years). All had General anesthesia, tourniquet, under image intensifier they were treated by intramedullary two K-wires parallel, directed radially and TBW of figure-of-eight configuration. Drain was inserted and supported by POP above elbow. Average surgery time was 45 minutes. Duration of stay in the hospital averaged 4 days, encouraged to move fingers and shoulder. Follow up after two weeks and then every month. POP was removed after one month and start exercises of elbow.

**Abstract No.: 39199**

**BILATERAL ANTERIOR DISLOCATION OF THE SHOULDERS WITH FRACTURES OF BOTH GREATER TUBEROSITIES**

Mohamed Rashed, Hakim Toumia, Moaiz Darweesh, Hamza H, Turkiya El-Rouk

Bilateral anterior dislocation of the shoulders with fractures of both greater tuberosities is very rare. A 38-year-old man sustained a bilateral anterior dislocation of his shoulders with fractures of the greater tuberosity on both sides after a first time convulsion fit he was not epileptic. His arms were abducted and externally rotated. Radiological examination revealed the bilateral anterior dislocation and also the bilateral fractures of the greater tuberosity. Prompt closed reduction followed by a week later open reduction and internal fixation of both greater tuberosities and subsequent rehabilitation allows a good outcome. Results at six months follow-up were satisfactory with normal range of motion and no redislocations occurring; this is the first reported case of bilateral anterior shoulder dislocation associated with fractures of both greater tuberosities we encountered in our practice.

**Abstract No.: 39207**

**INTEREST OF ANATOMICALLY PRESHAPED LOCKING SCREW PLATE FOR THE TREATMENT OF COMPLEX PROXIMAL ULNA FRACTURES**

Matthieu Ehlinger, Lucas Niglis, Michel Rahme, Philippe Adam, Francois Bonnomet

Introduction : Complex fractures of upper ulna extremity are rare. Treatment is surgical. We relate our experience of osteosynthesis of this complex fractures with an anatomic locking plate. Material and methods : From september 2009 to december 2011, 28 patients presenting a complex fractures have been treated with anatomic LCP® plate(Synthes). 6 have been outcast because of an incomplete data. So study included 22 patients with an average age of 56 years. In 11 cases, the dominant arm was affected. These fractures were associated with 9 radial head fractures, 6 coronoid process fractures and 3 dislocations. The function recovery was assessed by the Broberg-Morrey score and the Mayo Elbow Performance Score (MEPS). Radiographic assessed reduction quality, consolidation, ectopic ossification or arthrosis. Results : the follow-up was 20 months. The average flexion was 131° and extension deficit was 10°. The average Broberg-Morrey score was 97 and the MEPS score was 97. All fractures healed in 11 weeks. We observed 6 cases of arthrosis, 3 ectopic ossifications and 1 synostosis. The hardware removal was performed for 6 patients : 5 for pain and 1 for eschar in front of the plate. Discussion/conclusion : Our radio-clinics results are encouraging. They are comparable with literature data. The critical point is the hardware clinical tolerance, which lead to 27% of hardware removal. We can recommend utilisation of anatomically preshaped LCP plate for the treatment of complex proximal ulna fractures. However, a special attention should be wearing to the posterior conflict of the plate.

**Abstract No.: 39208**

**CLINICAL AND RADIOLOGICAL OUTCOME OF REDUCED AND SUTURE FIXATION FOR DISPLACED ACUTE TIBIAL SPINE FRACTURE USING MINI-OPEN TECHNIQUE**

Matthieu Ehlinger, Michel Besse, Michel Rahme, Philippe Adam, Francois Bonnomet

Introduction : Tibial spine fracture are uncommon, especially in adults. In the literature, displaced fractures are considered as an indication of surgery. The purpose of this study is to evaluate a mini-open technique in acute fracture of the tibial eminence, with absorbable suture fixation and by compensating the plastic strain of the ACL with overcorrection of the fracture. Methods : Between May 2006 and October 2010, 9 patients were treated with this surgical technique. Postoperatively, full range of motion and total weight-bearing with the brace was allowed. The patient assessment included range of motion, Lachmann test, anterior drawer test, Lysholm knee score, IKDC score and radiographic evaluation. Results : The average follow-up was 16 months (range 3-48 months). All patients were able to return to preinjury activities and sport level. At final follow-up, all patients had full range of motion, negative Lachman test and no pivot-shift phenomenon. The average Lysholm score was 94,3 (range 91-100). The global IKDC score was normal (A) in all 8 patients. All fracture showed good union. Conclusion : This mini-open technique with absorbable suture fixation has achieved satisfactory results. This technique is simple with no damage of the ACL insertion. We suggest the use of this technique for treating avulsion fracture of tibial spine.

**Abstract No.: 39224**

**RELIABILITY ANALYSIS OF TROCHLEAR MORPHOMETRIC PARAMETERS FOR THE CLINICAL EVALUATION OF THE DYSPLASTIC CONDITION**

Alfonso Manzotti, Pietro Cerveri, Norberto Confalonieri

**Purpose :** The purpose of this study is to investigate whether traditional morphometric parameters of the femur trochlear surface are dependable to classify the severity of the trochlear dysplasia.

**Methods:** An automatic method to process the distal femur surface is proposed to determine anatomical landmarks and compute morphometric parameters, namely the trochlear depth(TD), the trochlear sulcus angle(SA), the lateral trochlear facet inclination(LFTI), the trochlear facet asymmetry ratio(TFAR) and the ratio between the two (lateral and medial) maximum antero-posterior sizes(CAR) routinely used to quantify trochlear dysplasia. Tests on 11 cadavers and 43 patients, affected by aspecific anterior knee pain, elucidate the role of the parameter cut-off values traditionally used in clinical practice. **Results:** Clinical cut-off values lead to incoherent classifications in between the parameters along with some inconsistency with expert-based classifications. The classification based on TD cut-off is in agreement with the clinical evaluation whereas the SA classification provided a falsepositive rate of about 55%. Patients dataset analysis shows that the classifications based on TD and SA cut-off were prone to high rate of false positive (55%) and false negative (39%), respectively. LFTI, TFAR and CAR did not comply with TD and SA parameters. A positive correlation between TD decrease and dysplastic condition severity was however found whereas SA was found little correlated. **Conclusion:** The classification of trochlear dysplastic condition drawn by morphometric parameters exhibited notable uncertainty. More sophisticated morphologic analysis of the trochlear region for instance on three-dimensional surface modeling techniques might increase the reliability of the classification

**Abstract No.: 39237**

**TOTAL HIP ARTHROPLASTY (THA) AFTER ILIOFEMORAL DISTRACTION AS TREATMENT OPTION FOR SEQUELAE OF TRAUMATIC FRACTURE-DISLOCATION OF THE HIP**

Stanislav Bondarenko, Volodymir Filipenko, Mandus Akonjom, Sergey Khmyzov

Background: THA following iliofemoral distraction as a treatment option for traumatic fracture-dislocation of the hip is technically challenging. Aim: To retrospectively evaluate the clinical outcome of THA following iliofemoral distraction in sequelae of traumatic fracture-dislocations of the hip. Material and methods: 5 patients (5 hips) with sequelae following fracture-dislocation of the hip were our index cases. Average age 35,8 (22-54) years, 2 males, 3 females. 2 patients had pseudoarthrosis of the femoral neck with high dislocation (>6cm) of the proximal femur; 2 patients had acetabular fracture with migration of the femoral head into the pelvis; and 1 patient had post traumatic arthrodesis at the false acetabulum. Ilioferoral distraction using monolateral and bilateral external fixator was being done in all cases for an average duration of 10 (8-12) weeks. The average length gained was 5,8 (2,5-9,5) cm. One cemented and 4 uncemented THA with acetabular reconstruction using autografts in 3 cases was done. Results: The average duration of follow up was 5.1 (3-11) years. The Harris Hip Score improved from 32 to 80. There was one case of pin tract infection and pin breakage during distraction. There were no instances of component migration. There was one case of deep infection with implant revision. Conclusion: This study shows that two staged procedure following iliofemoral distraction prior to THA is a treatment option for sequelae of traumatic fracture-dislocation of the hip. Ilioferoral distraction is indicated to restore limb length without nerve palsy and to reduce the technical difficulties associated with intraoperative adhesions and scarring.

**Abstract No.: 39240**

**EFFECT OF THYMOSIN  $\beta$ 4 ON THE SURVIVAL OF RANDOM SKIN FLAPS IN RATS**

Yuting Lin, Bin Lin, Lin Dingsheng

Introduction: Random skin flaps can be used throughout the hands and fingers. Thymosin  $\beta$ 4 can increase blood flow and reduce ischemia-reperfusion injury, the study was undertaken to investigate the effect of thymosin  $\beta$ 4 on the survival of random skin flaps. Methods: Forty-five male Sprague–Dawley rats were used and subjected to a random-pattern skin flaps operation. Rats were randomly divided into three groups: a control group (group A: intraperitoneal injection of saline, 5 mg/kg/day) and two treatment groups (group B: intraperitoneal injection of thymosin  $\beta$ 4, a single 5 mg/kg dose per day) and (group C: intraperitoneal injection of thymosin  $\beta$ 4, 5 mg/kg dose twice per day). The flap surviving area was measured after 7 days, and tissue samples were stained with hematoxylin and eosin. Vascular endothelial growth factor (VEGF) expression was determined using immunohistochemical methods. Superoxide dismutase (SOD) activity and malondialdehyde (MDA) content were examined with kits. Results: Thymosin  $\beta$ 4 significantly reduced the necrotic area in the treatment groups after 7 days compared to that in the control group, and the rats receiving thymosin  $\beta$ 4 5 mg/kg twice per day had the highest survival rate. VEGF expression and SOD activity markedly increased in the treatment groups compared to those in the control group, whereas MDA levels were lower in the treatment groups than in the control group. Conclusion: Thymosin  $\beta$ 4 may have a dose-dependent effect to promote the survival of random skin flaps.



**Abstract No.: 39242**

**VACUUM SEALING DRAINAGE THERAPY IN THE PRESENCE OF AN EXTERNAL FIXATION**

Baochang Qi, Weina Ju, Dahui Sun, Chengxue Wang, Yi Zhao

While vacuum sealing drainage (VSD) is widely utilized for treating traumatic wounds, it is particularly difficult and time consuming to use in combination with an external fixator. This is because the hardware or pins used for fixation interfere with maintaining a seal, resulting in poor adhesion and subsequent air leakage. To resolve this problem, we have devised a new method for sealing the wound dressing, while maintaining the required vacuum. When using this technique, a rubber strip is wrapped around each pin in 3 circles outside the plastic drape, and then tightly tied. We employed this technique to treat a cohort of patients in our department over a period of two years, and obtained good healing of soft tissue without air leakage, as well as good clinical outcomes.

**Abstract No.: 39246**

**EFFICACY OF RADIOLOGICAL INDICES IN DETERMINATION OF SKELETAL MATURITY IN THE WESTERN INDIAN PEDIATRIC POPULATION -A COMPARISON OF TWO RADIOLOGICAL METHODS**

Akash Saraogi, Swapnil Keny

**Aim:**Can western standards be applied to Indian children in determination of skeletal age?

**Objectives:**Retrospective analysis based on Hand x rays of children To Determine which of the two

methods,The Greulich Pyle(GP) or the Mackays(M) method is better **Methods:**Left and right hand

radiographs of 106 children Age 1- 15 years **Results:**Girls (GP)Mean age difference 8 Months 25% Cr

age = Sk Age (M)Mean Age Difference 17 Months 16% Cr Age=Sk Age Boys (GP)Mean Age Difference

10 months 44% Cr Age = Sk Age (M)Mean Age difference 20 Months 10 % Sk age = Cr Age 1-3 yrs

(GP)52% had Sk age within 6 months of cr age (M)41% had Sk age within 6 months of cr age 3-6

yrs(GP)35% had Sk age within 6 months of Cr age (M)10% had Sk age within 6 months of Cr Age 6 -9

years (GP)50 % had Sk age within 6 months of Cr age (M)19 % had Sk age within 6 months of Cr Age

9-12 yrs(GP)65% had Sk age within 6 months of chronological age (M)18% had Sk age within 6

months of Cr age 12 -15 yrs(GP)27 % had Sk age within 6 months of Cr age (M)13 % had Sk age

within 6 months of Cr Age (GP)Mean Pearsons Correlation coefficient between Cr Age and Sk age

was 0.9353 -strong correlation (M)Coefficient 0.6290 -intermediate correlation **Conclusion:** Greulich

Pyle Method appeared to be accurate in determination of skeletal age in the western Indian population

**Abstract No.: 39249**

**WEAR PARTICLES PROMOTE REACTIVE OXYGEN SPECIES-MEDIATED INFLAMMATION VIA THE NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE OXIDASE PATHWAY IN MACROPHAGES SURROUNDING LOOSENED IMPLANTS**

Weishen Chen, Puyi Sheng, Ziqing Li, Yangchun Zhang, Guotian Luo, Xing Yang, Weiming Liao

**Introduction:** Prosthesis loosening is closely associated with chronic inflammatory cytokine secretion by macrophages, which are activated by wear particles or inflammatory stimulants such as lipopolysaccharide (LPS). Reactive oxygen species (ROS) are critical regulators of inflammation, but their enzymatic sources in response to wear particles and their effects on peri-implant LPS-tolerance remain unclear. **Methods:** Three ROS-related enzymes—nicotinamide adenine dinucleotide phosphate oxidase (NOX)-1 and -2 and catalase—were investigated in interface membrane tissues and in titanium (Ti) particle-stimulated macrophages in vitro. The generation of ROS and downstream inflammatory effects were measured with or without pre-incubation with apocynin, an NOX inhibitor. **Results:** Pre-exposure to Ti particles attenuated NF- $\kappa$ B activation in LPS-stimulated macrophages, indicating that wear particles suppress immune response, which may lead to chronic inflammation. NOX-1 and -2 were highly expressed in aseptically loosened interface membranes and in macrophages stimulated with Ti particles; the particles induced a moderate amount of ROS generation, NF- $\kappa$ B activation, and TNF- $\alpha$  secretion in macrophages, and these effects were suppressed by apocynin. **Conclusion:** Wear particles induce ROS generation through the NOX signaling pathway, resulting in persistent inflammation and delayed loosening. Thus, the suppression of NOX activity may be a useful strategy for preventing prosthesis loosening.

**Abstract No.: 39255**

**EFFECT OF ELECTROACUPUNCTURE AT ZUSANLI(ST36) ON DORSAL RANDOM-PATTERN SKIN FLAP SURVIVAL IN A RAT MODEL**

Liren Wang, Dingsheng Lin

Electroacupuncture at Zusanli(ST36) could accelerate angiogenesis by up-regulating HIF-1 protein, and enhancing skin microcirculation blood perfusion. The paper aims to study the effects of electroacupuncture at Zuansanli(ST36) on random-pattern flap survival rate in a rat model. Thirty female Sprague-Dawley rats were randomly divided into three groups: (1) control group (no postoperative electro- acupuncture); (2) study A group (postoperative electroacupuncture at non-acupoint areas, 10 Hz for 30 min per day) and (3) study B group (postoperative electroacupuncture at Zusanli, 10 Hz for 30 min per day). The 'McFarlane flap' rat models were established on each rat dorsum. After 7days' electroacupuncture, the flap survival area ratio was measured. The tissue samples were taken for histological analysis. The vascular endothelial growth factor (VEGF), malondialdehyde (MDA) and Superoxide dismutase (SOD) expression were detected by immunohistochemistry. 7 days after operation, the flap necrotic areas ratio in control group ( $66.65 \pm 2.81$ ) % and in study A ( $64.65 \pm 2.42$ ) % were significantly larger compared with that of the study B ( $48.81 \pm 2.33$ ) % ( $P < 0.01$ ). Histological analysis demonstrated angiogenesis with mean vessel density per mm<sup>2</sup> be lower in control group ( $15.4 \pm 4.4$ ) and in study A ( $17.4 \pm 4.3$ ) than in study B group ( $27.2 \pm 4.1$ ) ( $P < 0.05$ ). VEGF expression and SOD contents were significantly increased in study B Group compared with study A Group and control group ( $p < 0.01$ ), whereas MDA level was reduced ( $p < 0.05$ ). Electroacupuncture at Zuansanli may increase the expression of VEGF and prevent ischemia reperfusion injury. Thus we draw the conclusion Electroacupuncture at Zusanli(ST36) can improve random flap survival rate effectively.

**Abstract No.: 39257**

**OPEN REDUCTION AND INTERNAL FIXATION OF MALUNITED ANKLE FRACTURES**

Hongfei SHI, Jin Xiong, Yixin Chen

It was not rare, in less developed areas of China, that acute ankle fractures were not treated properly after injury. Some of them became malunited after inappropriate casting or surgery, which led to subsequent pain and dysfunction. Instead of ankle arthrodesis or arthroplasty, we investigated the outcome of open reduction and internal fixation (ORIF) of malunited ankle fractures. In this retrospective study (between January 2010 and December 2013), patients with malunited ankle fractures were included who fell into the following criteria: with malunited lateral, medial, or posterior malleolus, without significant degenerative changes in ankle joints, without infection, and was followed up for at least 12 months after surgery. All the patients received well-planned osteotomy and fracture reduction, followed by internal fixation with plates and screws. Bone grafting and soft tissue revision were also performed when indicated. Totally 22 cases were included. The average time between fracture and the surgery was 5.4 months (3 to 10 months). Anatomical reduction was achieved in all of the cases. At an average follow-up of 18.3 months (12-24 months), all the fracture healed successfully without implant failure or infection. Good or excellent outcome (AOFAS score) was achieved in 16 cases (72.7%). The management of ankle malunion was controversial. Following open reduction and internal fixation, good or excellent outcome could be achieved in patient with less osteoarthritic changes before surgery.

**Abstract No.: 39259**

**MANAGEMENT OF NON-UNITED EXTRA-ARTICULAR PROXIMAL TIBIAL FRACTURES BY INTRAMEDULLARY NAIL WITH MINIMAL PLATTING.**

Khaled Emara, Ramy Diab

**Introduction:** Nonunion of the proximal tibia is a relatively rare clinical entity. The clinical series that exist in the literature concerning extra-articular proximal tibia fractures mostly document nonunion rates less than 3 %. Management with intramedullary devices alone often led to malalignment and nonunions. When laterally-based plates are used alone, the potential for varus deformity and collapse, especially with the use of non-locked implants or medial comminution exists. The purpose of this study was to assess the results of combined intramedullary nailing & minimal proximal tibial plating for non-united extra-articular proximal tibial metaphysis fractures. **Methods:** Seventeen non-united fractures of the extra-articular proximal tibial metaphysis were operated on using combined intramedullary & locked minimal plate fixation between 2006 and 2010. Radiological evaluation every 3 weeks until solid fracture union and at final follow-up visits. Clinical outcomes were evaluated using Knee Society clinical rating scores, where excellent means 85-100; good, 70-84; fair, 60-69; and poor < 60. **Results:** Functionally, the Mean Knee Society score at final follow-up was 87.41 (range 80 to 94). Scores were excellent in 12 (70.6%) patients and good in 5 (29.4%). Radiologically, all fractures united at a mean of five months postoperatively. One patient had a 4 degree valgus malreduction compared to the normal side. **Conclusion:** The use of combined plating over nailing of non-united fractures of the proximal tibial metaphysis allow good stability, early weight bearing and rapid union. Our good clinical results are encouraging using this technique in these types of fractures. It is technically simple & satisfactory outcomes.

**Abstract No.: 39263**

**MOTION PRESERVATION IN TYPE II ODONTOID FRACTURES USING TEMPORARY PEDICLE SCREW FIXATION**

Bin Han, Fang-Cai Li, Qixin Chen

**Purpose:** To assess the feasibility of temporary pedicle screw fixation for motion preservation of type II odontoid fractures unsuitable for anterior screw. **Methods:** Between 2012 and 2013, temporary pedicle screw fixation was performed in 13 patients with type II odontoid fractures unsuitable for anterior screw. The patients were 10 men and 3 women with an average age of 40. The implant was removed after fracture union. Dynamic CT was performed at least 1 month after implant removal to evaluate atlantoaxial rotation and axial neck rotation. Literature data on axial neck rotation were obtained as a historical control. **Results:** Fifty-two pedicle screws were placed successfully with satisfactory fracture reduction achieved in all patients. The average follow-up period was 14.2 months. At a mean of 9 months after the initial operation, fracture union was confirmed and implants were removed. The average total axial neck rotation was  $116.5^{\circ} \pm 25.8^{\circ}$  ( $78.2\% \pm 14.8\%$  of the historical controls). The average total atlantoaxial rotation was  $34.2^{\circ} \pm 22.0^{\circ}$  ( $27.3\% \pm 13.8\%$  of total axial neck rotation). **Conclusions:** Temporary pedicle screw fixation is a feasible technique for motion preservation of type II odontoid fractures unsuitable for anterior screw.

**Abstract No.: 39264**

**TOTAL KNEE ARTHROPLASTY COMBINED WITH MEDIAL PATELLOFEMORAL LIGAMENT RECONSTRUCTION FOR POSTTRAUMATIC OSTEOARTHRITIC KNEE WITH PERMANENT PATELLAR DISLOCATION**

Bin Han, Xue-Song Dai

Permanent posttraumatic patellar dislocation is extremely rare and associated secondary changes often require surgical reconstruction. We present a case report of a 61-year-old man with permanent posttraumatic patellar dislocation and secondary osteoarthritis who underwent total knee arthroplasty (TKA) using an unconstrained prosthesis with normal rotational alignment and medial patellofemoral ligament (MPFL) reconstruction. At the 3-year follow-up, satisfactory recovery of knee function was observed with no loosening of the components or patella malposition. This case suggests that an unconstrained prosthesis with normal rotational alignment and MPFL reconstruction may provide a valid surgical option for TKA in patients with permanent posttraumatic patellar dislocation without congenital abnormalities.



**Abstract No.: 39278**

**INNOVATION IN GROWING ROD TECHNIQUE FOR EARLY ONSET SCOLIOSIS: AN EXPERIMENTAL STUDY BASED ON A PORCINE SCOLIOSIS MODEL**

Xin Zheng,

**Objective:** To evaluate the efficacy of a growth-guidance growing rod in a porcine scoliosis model.

**Methods:** After considerable scoliosis was induced, the pigs were randomly assigned to an experiment group (EG) and a sham group (SG). In EG, the growing rod was implanted and the pigs were euthanized 8 weeks postoperatively; while in SG, the whole instrumentations were only removed. X-rays were taken before and immediately after the growing rod implanting surgery, and at 4-week intervals to assess the Cobb angle correction. The continued spinal growth and the rod sliding were also assessed. **Results:** Of the 16 pigs, one pig encountered infection. The remaining 15 pigs developed structural scoliosis and were randomized into EG (N=10) and SG(N=5). Two pigs in EG encountered infection and were excluded. Of the remaining 8 pigs in EG, the Cobb angle before the growing rod implanted was  $52.1 \pm 15.8^\circ$  and it decreased to  $25.4 \pm 15.2^\circ$  postoperatively. After 8-week, the Cobb angle was  $20.2 \pm 11.4^\circ$ . In SG, the Cobb angle after 8-week tethering was  $55.2 \pm 15.7^\circ$  and the curvature remained stable ( $51.2^\circ$ ) during the subsequent 8 weeks. During the 8-16 week, the spinal height increased 14.2cm and radiographic analysis revealed an average rod distraction of 39.9 mm in EG; while in SG, the increased spinal height was 14.9cm. The difference of the increased spinal height between EG and SG was not significant. **Conclusions:** The growing rod can provide the Cobb angle correction, moreover, it allowed for continued spinal growth without significant growing disturbance.

**Abstract No.: 39279**

**THE HISTOMORPHOLOGICAL CHANGE OF THE GROWTH PLATE UNDER ASYMMETRICAL LOADING  
IN PORCINE SCOLIOSIS MODEL**

Xin Zheng,

Objective: To investigate the histological changes of the vertebral growth plates under asymmetrical loading in the porcine scoliosis model (PSM). Methods: In PSM group, 8 pigs were instrumented and tethered. After 8 weeks, the posterior instrumentations were removed and the pigs were observed with an additional 8-week period. In the control group, the spine of pigs were implanted but not tethered. Then, all the pigs were euthanized for histologic study. Results: In PSM group, the average scoliosis was 55.2° on average 8 weeks after removal of the tethering. No scoliosis was observed in the control group. In PSM group, the number of chondrocytes of hypertrophic zones in the concave side was less than that of the convex side and the thickness of the hypertrophic zone was different between the concave and convex side ( $P < 0.05$ ). Of the convex side, the average area of cell-nest and the average number of cells in cell-nest were larger than those of the concave side in PSM group ( $P < 0.05$ ). However, no difference was observed between the concave and convex side of the number of proliferative chondrocytes ( $P > 0.05$ ). In the control group, there was no difference between the left and right side in terms of the average area of cell-nest, the average number of cells in cell-nest and the number of proliferative chondrocytes ( $P > 0.05$ ). Conclusions: In porcine scoliosis model, it is asymmetrical loading that contributes to unbalanced growth pattern, resulting in vertebral wedging. Growth activity on the growth plate on the concave side is highly inhibited.

**Abstract No.: 39280**

**VALIDITY OF THE FILIPINO VERSION OF THE PATIENT-RATED WRIST EVALUATION (PRWE)**

Melvin Valera, Lauro Bonifacio

One-sixth of adult fractures are distal radius fractures, resulting to pain and disability to patients. Most assessment tools focus on the physical impairment and not the functional disability experienced by patients. The PRWE measures pain and function of the affected wrist. This study aims to translate the PRWE to Filipino and assess its validity and reliability. The PRWE was translated and back-translated by language experts. A panel of multidisciplinary members evaluated the PRWE-Fil for understandability and relevance. Panel member ratings were represented by mode index and the consistency quantified by percentage of agreement. Correlation studies tested the PRWE-Fil against other measurements such as range of motion, grip strength, Jebsen Hand Function Test and Visual Analog Scale. The Pearson correlation coefficient was used in construct validation. Paired t-test was used to compare differences in the two assessments for responsiveness. Cronbach's alpha was used to test the internal consistency of each subscale. The PRWE-Fil items have a 73% rating for understandability and relevance. Construct validity of the PRWE-Fil was supported by the positive correlation of the "Pain" subsets with VAS scores. For the "Function" subset, only the measurement of supination is moderately correlated, and the rest has weak to insignificant correlation. The PRWE-Fil was found to have good responsiveness. The internal consistency evaluation proved it to be a reliable measuring tool. As a measuring tool for distal radius injuries, the PRWE-Fil proved to be valid and reliable in terms of correlation with objective measurements and internal consistency, respectively.

**Abstract No.: 39315**

**TWO-SITE OSTEOTOMY BONE TRANSPORT FOR LARGE SEGMENTAL DEFECTS OF TIBIA AND SOFT TISSUE**

Yongqing Xu,

**【Abstract】** Objective To do two-site osteotomy of tibial bone transport of for large defects of the tibia and sort tissue and evaluate its role in accelerating the bone union and soft tissue healing. Methods From May 2009 to May 2011, 6 cases of large tibial and soft tissue defects were treated in our institute. The cases were all open fractures of Gustilo IIIB, with an average of 34.5y. The causes include 5 cases of accidental trauma, 1 case of machine crashing. The size of soft tissue of the anterior leg ranged from 8cm×4cm to 24cm×11cm, and the defect length of the tibia defect was from 8~18cm. After debridement, the half-ring external fixator were used to fix the tibia. Two osteotomy were made on the proximal and distal metaphysis of the tibia, and the bone transport were made at a speed of 1mm/d for each osteotomy site. Results The follow up ranged from 10~36 months (averaging 16 months). All the soft tissue of the legs healed while all the tibia defects were reconstructed. The discrepancy of the two legs were within 2 cm. Conclusions Two-site osteotomy of bone transport is effective and will accelerate the healing of large defects of the tibia and soft tissue.

**Abstract No.: 39316**

**FREE VASCULARIZED LEG PERFORATOR FLAP FOR THE WOUNDS OF THE EXTREMITIES**

Yongqing Xu,

Introduction: To evaluate the locating effects of a portable ultrasound for leg perforator flaps, and the clinical effects of leg perforator flaps for the wounds of the extremities. Methods : Since December 2009 to March 2014, 67 cases of soft tissue defects of the extremities were treated with free vascularized leg perforator flaps in our center. A portable ultrasound were used for the locating of the perforator arteries of the leg before the operations. These flaps include 34cases of the fibular artery perforator flaps (4 with simultaneous fibula transfer), 12 cases of the posterior tibia artery perforator flap, 11 cases of the medial gastrocnemius artery perforator flap, and 10 cases of the lateral gastrocnemius artery perforator flap. The flap size ranged from 15×8cm to 1×1.5cm. The caliber diameter of the perforator artery ranged from 0.2mm to 1.8mm. The wounds included 42 cases of the hand, 11 cases of the forearm, and 14 cases of the leg. Results : The coincidence rate intraoperatively of the portable ultrasound was 96.8 %. All the flaps survived and the wounds healed uneventfully. The donor site of the flaps were either closed directly or closed with partial split-thickness skin graft.

**Abstract No.: 39319**

**ARTHROSCOPIC ASSISTENTION OF OSTEOSINTHESIS OF IMPRESSION FRACTURES OF TIBIAL PLATEAU**

Nurlan Batpenov, Yerik Raimagambetov

For osteosynthesis of fractures of the tibial condyles type B2 we have proposed low-impact way of osteosynthesis with the exception of manipulations on the side of injury, and the rejection of extramedullary location clamps. Under arthroscopic control via the tibial guide to impressions under arthroscopic control and X-entered the guide spoke. Spoke on using cannulated punch elevation performed impression site tibial plateau. Thereafter, the channel through which the elevation performed by directing a spoke inserted interferren screw. Postoperative immobilization of the knee performed by brace with side stabilizers. Passive motion of the joint begin with the first day after surgery. The proposed method with good results, we operated 12 patients. The average age of the patients was 58 years. Male to female ratio of 1:1. The proposed method of osteosynthesis low energy fractures of the tibial condyles reduces trauma intervention, combine periods of fracture consolidation and rehabilitation, reduce the number of complications, refuse prolonged immobilization of the joint.

**Abstract No.: 39320**

**FOUR-CORNER ARTHRODESIS CONCENTRATOR OF NI-TI MEMORY ALLOY FOR CARPAL COLLAPSE: A REPORT ON 18 CASES**

Yongqing Xu,

**Purpose** To evaluate the treatment of carpal collapse using a four-corner arthrodesis concentrator of nickel-titanium memory alloy. **Methods** From August 2006 to August 2010, 18 patients with carpal collapse had scaphoid excision and four-corner (capitate, lunate, triquetrum, and hamate) rthrodesis using a nickel-titanium memory alloy four-corner arthrodesis concentrator. The mean follow-up time was 30 months (range, 12–48). Various wrist parameters, including grip strength, wrist motion, and degree of pain were recorded and compared before and after surgery. **Results** The average fusion time was 2.3 months (range, 2–4). Neither nonunion nor wound infection was found in any of the patients. At one year follow-up, the grip strength had reached 80% of that of the healthy side, whereas the range of motion was greater than 50% of the contralateral side. After the surgery, the mean pain scores were improved. **Conclusions** Four-corner rthrodesis using a nickel-titanium memory alloy four-corner arthrodesis concentrator effectively treated carpal collapse and preserved most wrist function

**Abstract No.: 39336**

**MINIMALLY INVASIVE TREATMENT OF TIBIA PLATEAU FRACTURES**

Sherif Abdelgaid,

Tibial plateau fractures are complex injuries usually associated with concomitant intra-articular derangement and compromised soft tissue covering. They need urgent anatomical reduction and early regain of good range of motion to maintain the joint cartilage metabolism to decrease the risk of osteoarthritis. Although, open reduction and internal fixation can restore the joint anatomy, it usually associated with extensive soft tissue dissection with increased risk of soft tissue complications like infection, wound dehiscence, and may interfere with early postoperative knee mobilization increasing the risk of osteoarthritis. This prompted recommendations for alternative methods of reduction and stabilization. In the last decade, various minimally invasive approaches have been proposed for the treatment of these fractures and the results seem to be improving on the reported literature. The most commonly used Schatzker classification is limited to morphological assessment in sagittal plane and cannot be applied in coronal fractures of posterior condyles. The more important to know is the fracture deformity in order to plan the reduction techniques. Tibial plateau fractures are characterized by presence of one or more of four types of deformities including; 1) displacement of split condyle or large fragment, 2) condylar widening in coronal plane, 3) step off or articular depression and 4) malalignment. The aim of this article is, first, to describe minimally invasive reduction techniques for each type of fracture deformity including the displaced the posteromedial and posterolateral fragments and second, to give in brief its clinical and radiological results.



**Abstract No.: 39339**

**MINIMALLY INVASIVE TREATMENT IN FOOT TRAUMA**

Sherif Abdelgaid,

The management of foot fractures has several objectives, based on the complex structure and function of the foot. These objectives include preservation of neurovascular status, preservation of adequate soft tissue cover, prevention of infection; avoid devascularization of fracture fragments, and early mobilization of the patient especially in elderly people. Open reduction internal fixation is the standard surgical management method for most of foot fractures. Because of the potential for soft tissues and osseous complications with open reduction, less invasive procedures for osseous stabilization, such as percutaneous fixation, have been described. Using this technique minimizes potential damage to the vascular supply and reduces the incidence of osseous infection. Review of literature revealed that the major disadvantages of percutaneous fixation techniques are the potential for less than optimal reduction due to the lack of direct visualization of the osseous injury and their technically demanding nature. However, in experienced hands, percutaneous fixation for foot fractures is a safe and satisfactory method of osseous stabilization without increased physical strain on the patient. The aim of this study is to provide an overview of the different minimally invasive techniques in the most challenging foot fractures, specifically the intra-articular fracture calcaneus, neck talus fracture, metatarsal fractures and Lisfranc joint injuries. The second aim is to compare short- and long-term outcomes in these patients.

**Abstract No.: 39348**

**LATERAL COLLATERAL LIGAMENT INJURY IN ANKLE FRACTURE**

Ting Li, Shaoliang Li, Xu Sun, Xieyuan Jiang, Manyi Wang

Introduction: Deltoid ligament injuries in ankle fracture was very well known and very interested by orthopaedic surgeons. However, there are very few reports on lateral collateral ligament injuries in ankle fracture. Usually, in an ankle fracture, after fracture of lateral malleolus, the lateral collateral ligaments should remain intact. So we report such kind of ankle injury to discuss the diagnosis, treatment, and prognosis. Method: A continuous series of 5 cases of lateral collateral ligament injuries in ankle fracture were treated by the authors. Lateral collateral ligament injuries in all these 5 patients were confirmed with direct intro-operative findings. After anatomical reduction and osteosynthesis of lateral and medial malleolus, we checked again with varus view and drawer test under direct vision. The ruptured lateral collateral ligaments were repaired in all the 5 patients. The ankles were immobilized for 3 weeks postoperatively. All these 5 patients were followed up for average 9.6 months (8- 12 months). The outcomes were evaluated with Philips and Schwartz clinical scoring system of ankle and AOFAS Ankle-Hindfoot Scale. Results: All fractures were healed without pain. No instability was complained. The mean degree of plantar flexion and dorsiflexion was 50.0° and 16.5°. The mean Philips and Schwartz score was 93.5(80-100). AOFAS score was 94. Conclusion: Lateral collateral ligament injury can be combined with ankle fracture, in which the lateral malleolus is fractured. Stress view and MRI are useful in early diagnosis. Repairing the injured lateral collateral ligament will lead to a good result, and is highly recommended.

**Abstract No.: 39351**

**MULTIPLE-LEVEL LUMBAR SPONDYLOLYSIS AND SPONDYLOLISTHESIS**

Xinyu Liu,

**Objective.** We report 13 cases of multiple-level lumbar spondylolysis with spondylolisthesis.

**Methods.** Thirteen patients (10 males and 3 females) were diagnosed with multiple-level spondylolysis associated with spondylolisthesis in our hospital. The mean age was  $43.5 \pm 14.6$ . The duration of low back pain (LBP) was  $11.7 \pm 5.1$  months. Spondylolysis was observed at L2 in 2 cases, L3 in 1 cases, L4 in all cases, and L5 in 5 cases. Three patients had three-level and ten cases had two-level spondylolysis. All cases were associated with 1- or 2-level spondylolisthesis. JOA scores and Visual Analog Score (VAS) were used to evaluate pre- and post-operative neurological functions and LBP. All cases underwent pedicle screw fixation and interbody fusion or direct pars repair. **Results.** The VAS of low back pain and JOA scores were significantly improved after surgery ( $P < 0.05$ ). Postoperative radiographs or CTs showed satisfied interbody fusion or pars healing. No breakage, dislodging or loosening of the pedicle screws were observed in all cases. **Conclusion.** Multiple-level lumbar spondylolysis and spondylolisthesis occurred more often in males. Most cases of multiple-level lumbar spondylolysis were double-level and related to sports, trauma, or heavy labor. Multiple-level lumbar spondylolysis mainly appeared at L3-L5 levels, while associated spondylolisthesis usually occurred in L4 and L5 levels, especially in L4 level. The treatment principle was the same as that of single level spondylolisthesis.

**Abstract No.: 39354**

**THE ANATOMIC AND RADIOGRAPHIC MEASUREMENT OF C2 LAMINA IN CHINESE POPULATION**

Xinyu Liu,

**Objective:** We performed anatomic and computed tomography measurements of C2 lamina in Chinese people in order to verify the clinical applicability of trans-lamina screws to this population.

**Methods:** The anatomic and radiographic measurement was conducted on two separate groups. In group A, a total of 96 human adult cadaver spines were included. The minimal height (H1), thickness (T), length (L1) of C2 lamina, height of the root of lamina (H2), distance from the entry point to the lateral rim of lamina (L2) and to the lateral rim of lateral mass (L3) were bilaterally measured using high precision calipers. The spino-laminar angles (angle A) were also included. In group B, a total of 112 volunteers were enrolled. Angle A, H1, T, L1, H2, L2 and L3 were bilaterally measured.

**Results:** There was no significant difference in the values of bilateral laminae between group A and B. The thickness of 45% specimens was less than 6 mm. The length of lamina in all specimens was less than 2.5 cm, while only 5% of the specimens had a length of 3 cm from the entry point to the rim of lamina. The length from the entry point to the lateral rim of lateral mass was between 2.5 and 4.6 cm. The length of only 5% specimens was longer than 4 cm. **Conclusions** The preoperative radiographic evaluation is very important to determine the suitable size of screws. It is safe to use screws with a length of 2.5–3.0 cm for Chinese people.

**Abstract No.: 39362**

**THE KUROKAWA'S DOUBLE-DOOR LAMINOPLASTY: A LONG TERM EXPERIENCE IN MANAGING 158 PATIENTS SUSTAINED CERVICAL SPONDYLOTIC MYELOPATHY**

Le WANG, Shaoyu Liu, Fuxin Wei, Yong Wan, Shangbin Cui, Yangliang Huang

Introduction: Axial symptoms noted in patients who had undergone the Kurokawa's double-door laminoplasty for CSM can be troublesome. Although the exact causes of AS remain unclear, preserving the semispinaliscervicis insertion in the spinous process of C2 could be useful in minimizing the consequences. Maintaining that, modified Kurokawa laminoplasty was thought to be effective in minimizing the AS incidence. However, true efficacy of this technical modification has not been established. Methods: A total of 158 patients with CSM were enrolled in the study. Classic Kurokawa operation (CKO) was used in 67 individuals while modified Kurokawa operation (MKO) was 91. The incidence of AS were recorded in both groups. Results: While there was no significant difference in the improvement in neurological impediments between CKO and MKO groups ( $P>0.05$ ). There were 20.43% incidence of axial symptoms at 3 months and a year after the surgery for the MKO patients whereas the incidence was 39.16% for the CKO group ( $P<0.05$ ). However, that the difference becomes less apparent and would disappear in 3 years. Both the recovery of neck disability index and visual analog scale were good in both groups ( $P<0.05$ ) and had no significant difference ( $P>0.05$ ). Conclusion: Modified Kurokawa's technique reduces the incidence of postoperative AS in patients at 3 month and 1 year after the operation. Examination at 3-year follow-up, the difference was not significant. It is conceivable that other factors may be responsible for the pathogenesis of axial symptomatology such as preservation of the C7 spinous process instead of the C2.

**Abstract No.: 39363**

**INFLAMMATORY MARKERS AND CYTOKINES IN THE SERA OF PATIENTS WITH GONARTHROSIS AND CHONDROMALASIA**

Hasan Bombaci, Gulbu Isitmangil, Serhat Yanik

**Introduction:** The aim of this study is to compare inflammatory markers and IL-1 $\alpha$ , IL-6, IL-10 cytokines between arthritic knee (grade IV) and the knee with less severe chondromalasia (grade I to III). **Methods:** In this prospective study, thirty-four patients aged 19-81 (mean age, 59) were operated for knee complaint. Twenty out of 34 patients have been underwent a total knee arthroplasty (grade IV, Outerbridge classification) and the other 14 patients have been performed arthroscopy for meniscus tear which was associated with chondromalasia (grade I to III, Outerbridge classification). Blood samples were collected from patients just before the induction of anesthesia. White blood cell (WBC) count, erythrocyte sedimentation rate (ESR), C - reactive protein (CRP) and IgG, IgM, IgA was biochemically determined and levels of IL-1 $\alpha$ , IL-6, IL-10 have been evaluated with ELISA technique. The results were analyzed with unpaired t-test statistically. **Results:** The value of ESR at 0,5 and 1 hours and sera concentrations of IL-6 were significantly higher in patients with advanced gonarthrosis compared to other individuals with less serious chondromalasia ( $p < 0.05$ ). **Conclusions:** These results suggest that the value of ESR and serum levels of IL-6 might change depending upon the level of lesion in the cartilage. These limited data also indicate that IL-6 is the most produced cytokine in patients with gonarthrosis as in the knee with inflammatory arthritis. This might be depending upon the common pathways of inflammatory and primary osteoarthritis.

**Abstract No.: 39368**

**FRACTURE REDUCTION WITH POSITIVE MEDIAL CORTICAL SUPPORT: A KEY ELEMENT IN STABILITY RECONSTRUCTION FOR THE UNSTABLE PERTROCHANTERIC HIP FRACTURES**

Shi-min CHANG, Ying-Qi Zhang

**Introduction:** To introduce the concept of fracture reduction with positive medial cortical support and its clinical and radiological correlation in geriatric unstable pertrochanteric fractures. **Methods:** A retrospective analysis of 127 patients (32 men and 95 women, with mean age 78.7 years) with AO/OTA 31A2.2 and 2.3 hip fractures treated with cephalomedullary nail (PFNA-II or Gamma-3) between July 2010 and June 2013 was performed. They were classified into three groups according the grade of medial cortical support in post-operative fracture reduction (positive, neutral, or negative). The positive cortex support was defined that the medial cortex of the head-neck fragment is displaced and located a little bit superomedially to the medial cortex of the shaft. If the neck cortex locates laterally to the shaft, it is negative with no cortical buttress, and if the two cortices contact smoothly, it is in neutral position. The demographic baseline, postoperative radiographic femoral neck-shaft angle and neck length, rehabilitation progress and functional recovery scores of each group were recorded and compared. **Results:** There were 89 cases (70%) in positive, 26 in neutral, and 12 in negative support. Patients in positive medial cortical support reduction group had the least loss in neck-shaft angle and neck length, and got ground-walking much earlier than negative reduction group, with good functional outcomes and less hip-thigh pain presence. **Conclusion:** Fracture reduction with non-anatomic positive medial cortical support, allows limited sliding of the head-neck fragment to contact with the femur shaft and achieve secondary stability, providing a good mechanical environment for fracture healing.

**Abstract No.: 39373**

**BICONDYLAR FOUR-QUADRANT TIBIAL PLATEAU FRACTURES: A NEW SURGICAL PROTOCOL OF DUAL-INCISION AND MULTI-PLATE FIXATION**

Shi-Min Chang,

Introduction: Bicondylar tibial plateau fractures involving four articular quadrants are severe and complex injuries. We introduce a new treatment protocol with dual-incision and multi-plate fixation in the floating supine patient position and report the preliminary clinical results. Methods: Sixteen consecutive patients with bicondylar four-quadrant tibial plateau fractures (Schatzker type VI, OTA/AO 41C2/3) were treated with posteromedial inverted L-shaped and anterolateral incisions. With the posteromedial approach, three quadrants (posteromedial, anteromedial and posterolateral) can be exposed, reduced and fixed with multiple small antilide plates and short screws in an enclosure pattern. With the anterolateral approach, after articular elevation and bone substitute grafting, a strong locking plate with long screws to the medial cortex is used to raft-buttress the reduced lateral plateau fracture, hold the entire reconstructed tibial condyles together, and contact the condyles with the tibial shaft. Results: Three cases used 5 plates, 9 cases used 4 plates, and 4 cases used 3 plates. All patients were followed for a mean of  $28.7 \pm 6.1$  months (range 26-38). At the 2-year follow up, the average knee range of motion (ROM )was  $98 \pm 13.7$  (range 88-125) degrees, with a Hospital for Special Surgery (HSS) knee score of  $87.7 \pm 10.3$  (range 75-95), and SMFA score of  $21.3 \pm 8.6$  (range 12-33). Conclusion: For bicondylar four-quadrant tibial plateau fractures, the treatment protocol of multiple medial-posterior small plates combined with a lateral strong locking plate through dual incisions can provide stable fracture fixation to allow for early stage rehabilitation. Good clinical outcomes can be anticipated.



**Abstract No.: 39375**

**SCHATZKER TYPE IV MEDIAL TIBIAL PLATEAU FRACTURES: A CT BASED MORPHOLOGICAL SUBCLASSIFICATION**

Shi-Min Chang,

Introduction: Schatzker type IV medial tibial plateau fractures is defined as AO/OTA 41 type B fractures (partial articular), with partial or total medial plateau involvement, leaving at least the anterolateral quadrant intact. It has an unfavorable prognosis, likely due to the mechanism of injury (fracture-dislocation/subluxation type) and the involvement of the posterolateral plateau, which is different from previously thought. Methods: we propose a new subclassification of Schatzker type IV fracture patterns based on 2-D and 3-D CT images. Results: The images of 42 fractures (42 patients) were evaluated. The fractures were further anatomically divided into 2 groups: Group 1 were classic medial unicondylar fractures and Group 2 were more complicated variants involving both condyles, characterized by medial condyle fractures with lateral plateau extension, usually with articular impaction of the centroposterior lateral plateau. Twelve (29%) cases involved only the medial condyle, and 30 (71%) involved both the medial and lateral condyles. Twenty-nine (69%) cases demonstrated posterior coronal fractures. The most common patterns were bicondylar posteromedial plateau fractures with posterolateral quadrant depression (bicondylar posterior fractures: 14 cases, 33%) and total/subtotal medial condyle fractures with posterolateral quadrant depression (13 cases, 31%). The isolated unicondylar posteromedial split fracture was uncommon (2 cases, 5%). Conclusion: In Schatzker type IV medial tibial plateau fractures, the involvement of posterolateral quadrants is common.

**Abstract No.: 39378**

**A CASE REPORT OF CHRONIC RECURRENT MULTIFOCAL OSTEOMYELITIS IN AN ADULT PATIENT WITH POLYMYOSITIS**

Hiroki Hirabayashi, Gaku Yasuda, Masanobu Yazawa

**Introduction:** Chronic recurrent multifocal osteomyelitis (CRMO), also known as chronic nonbacterial osteomyelitis, is an orphan disease whose prevalence is estimated at 1-2 / 1million. CRMO is now considered the pediatric equivalent of SAPHO syndrome, and CRMO should be classified among the autoinflammatory diseases. We report a case of CRMO in an adult patient with polymyositis (PM).

**Case Report:** A 63-year-old-woman whose PM has been treated with prednisolone, methotrexate, and tacrolimus for 13 years, suffered from right ankle pain, left knee pain, and right ankle swelling without any injury. Although plain X-ray was normal, MRI revealed bone edema and signal change resembling a fracture line in the right distal tibia and left distal femur. CT scan did not show a definite fracture. Bone biopsy specimen from the right distal tibia showed osteomyelitis with aseptic necrosis. She did not have laboratory evidence of systemic inflammation. We diagnosed the patient with CRMO based on MR imaging and histology of biopsy specimen. She was treated with joint aspiration as well as hyaluronate sodium injection, and her symptoms showed gradual improvement. Follow-up MRI revealed residual edema and partial collapse of the right distal tibia.

**Discussion:** Concomitant skeletal symptoms with PM includes multiple joint pain and/or polyarthritis without bone destruction. CRMO in an adult patient with PM is very rare. Conservative management was effective in this patient.

**Abstract No.: 39379**

**A NOVEL BONE TARGETING DELIVERY SYSTEM CARRYING BONE-FORMING AND ANTI- BONE RESORPTION PHYTOMOLECULE ICARITIN FOR PREVENTION OF STEROID-ASSOCIATED OSTEONECROSIS IN RAT MODEL**

Shihui Chen, Xinluan Wang, Lizhen Zheng, Nan Wang, Jiayong Zhang, Ling Qin

**Introduction:** The treatment strategy of steroid-associated osteonecrosis (SAON) is to promote bone formation and inhibit bone resorption in early stages. We found a semisynthesized small phytomolecule namely icaritin that presented the properties of osteogenesis and anti-bone resorption. The current study will develop the novel bone-targeting injectable Asp8-liposome-icaritin (ASP-LP-ICT). As coupling of osteoblasts and osteoclasts play key roles in bone turnover, this study aims to the histological and cytological evaluation of ASP-LP-ICT developed for SAON prevention. **Methods:** SAON model was established in male SD rats by lipopolysaccharide injection once and 3 methylprednisolone injections. Two weeks later, SAON rats were divided into four groups: SAON control (ONC) and treatment groups (ASP-LP-ICT, LP-ICT and ASP-LP). Paraffin sections of femoral head were prepared for Tartrate-resistant acid phosphatase (TRAP) staining. The region of interest (ROI) in trabecular bone was defined for quantification. The parameters were bone surface (BS), osteoblasts surface (Ob.S), osteoclasts number (N.Oc), thrombus area (Thr.Ar) and fat cells area (Fc.Ar). **Results:** The staining results presented the difference between ONC and treatment groups. There were significant differences in Ob. S/BS, N.Oc/BS, Thr.Ar and Fc.Ar between ONC and ASP-LP-ICT groups ( $p < 0.05$ ). However, except there was significant reduction in N.Oc and Thr.Ar in LP-ICT group, and significantly decreasing N.Oc and increasing Thr.Ar in ASP-LP group ( $p < 0.05$ ), other results in LP-ICT and ASP-LP groups showed no significant difference compared to ONC group ( $p > 0.05$ ). **Conclusion:** In SAON prevention, the innovative injectable Asp8-liposome-icaritin system was effective not only in bone-forming enhancement, but also in bone resorption and adipogenesis suppression.

**Abstract No.: 39396**

**THE EFFECT OF HEAD SIZE ON LIMB LENGTHENING AFTER TOTAL HIP ARTHROPLASTY**

Haytham Abdelazim,

Background: Typical pathologic features of degenerative joint disease of the hip are progressive loss of cartilage and superior migration of the femoral head, which result in limb length discrepancy (LLD). One of the intraoperative challenges in a total hip arthroplasty (THA) is correcting a LLD without compromising hip stability. A common complication of THA is postoperative limb lengthening, which may be required to provide adequate stability. The aim of this study is to assess the effect of head size on limb lengthening after total hip arthroplasty. Patients and Methods: Forty patients were included in this study. All of them had unilateral degenerative joint disease of the hip with a mean LLD of 15 mm. All patients had cementless metal on polyethylene THA. Patients were divided into two groups: Group 1: 20 patients, where 28 mm femoral heads were used and Group 2: 20 patients, where 36 mm femoral heads were used. Pre and post-operative LLD were measured radiologically using plain X-ray. Results: At the end of the study all patients were available for evaluation. The mean limb lengthening for group 1 was 21.2 mm and that for group 2 was 16.1 mm. Conclusion: Using large heads in THA provides better stability with less soft tissue tension and decreases postoperative limb lengthening.

**Abstract No.: 39398**

**ANTIBIOTIC LOADED SPACER AS A FIRST STAGE MANAGEMENT OF INFECTED HIP ARTHROPLASTY**

Alaa El Tahan, Atef Morsy, Nehad El Maboub

Periprosthetic infection after hip arthroplasty is a catastrophic complication which presents an enormous challenge to the orthopaedic community. Treatment options for chronic hip joint infections after hip arthroplasty have evolved from a single-stage direct exchange to two-stage and more recently multi-stage revision arthroplasty in several centers. The use of antibiotic loaded cement in the form of spacers during the interval period to deliver antibiotics locally has become popular as it has increased rates of infection control achieving up to 95% in several studies.

**MATERIALS AND METHODS** In the period between October 2009 and October 2014, a prospective study was conducted involving 22 cases of infected hip arthroplasty in Beni Suef university hospital and El Helal Hospital in Cairo who underwent Antibiotic loaded spacer. All hips were assessed clinically and radiologically at 6 weeks. Serial laboratory and radiological assessment of infection parameters were done using ESR, CRP. Gallium bone scan was used to assess the subsidence of infection. **RESULTS:** Infection was improved in 17 cases, revision hip arthroplasty could be done, 2 patients needed more than one setting of debridement, 3 patients show no improvement of the infection after multiple trials of debridement. **CONCLUSION:** From the current study we can conclude that the use of antibiotic loaded spacer is a very effective method to control the joint infections after hip arthroplasty.

**Abstract No.: 39403**

**POST-TRAUMATIC MEDIAL MENISCAL CYST IN YOUNG: A CASE REPORT**

Vishal Mandlewala, Prafulla Herode, Abhijeet Shroff

Meniscal cysts are rare, Cyst of lateral meniscus 3 times to 10 times more common than cyst of medial meniscus. Etiology of meniscal cysts includes trauma which results in contusion and haemorrhage within the substance of meniscus leading to mucoid degeneration, degeneration with age which results in local necrosis and mucoid degeneration into a cyst, developmental inclusion of synovial cells within the substance of the meniscus and often are a result of extrusion of synovial fluid through a tear of the meniscus, resulting in a one-way valve effect of the tear. Arthroscopic partial menisectomy followed by cyst decompression is currently recommended for treatment of a meniscal cyst. We present a case of 18yr old female c/o pain and swelling in rt knee had h/o trauma 3 yrs back. O/e swelling 1x2 cm on medial tibial condyle, firm in consistency fixed to bone. Mri suggests grade 3 horizontal tear in posterior horn of medial meniscus and parameniscal cyst adjacent to medial meniscus. In this report, medial parameniscal cyst was resected using an arthroscopic posterior trans-septal approach. There have been no recurrences to date, and patient returned to their previous level of activity.

**Abstract No.: 39406**

**THE CALCULATION OF RESIDUAL BONE STRENGTH AFTER SECTORAL RESECTION I.SHPILEUSKI-  
A.SAKALOUSKI- S.BOSIAKOV**

Pavel Volotovski, Aleh Sakalouski, Igar Shpileuski, Sergey Bosiakov, Darya Sakalouskaya

One of the main methods of operative treatment of benign bone neoplasms is sectoral resection. This type of resection decreases bone strength, and a fracture in this site may be caused. There are three methods of bone strength compensation - limited weight bearing, splints or "preventive" osteosynthesis (bone reinforcement). The indications for all these methods are subjective and mostly depend on the surgeon's opinion. So the aim of our investigation was to objectify these indications. We performed computing experiment using methods of finite element analysis based on virtual 3-D models of human bones of upper and lower extremities. As a result we obtained the mathematical formulas for residual bone strength calculation depends on size and localization of post-resection defect. On the base of these formulas we created special PC program and performed retrospective calculations of 59 patients (60 resections), that were operated in our clinic in 2000-2012. In 19 cases (A) the weight unloading regime was used, in 27 (B) - external immobilization, and in 14 (C) - bone reinforcement. In 11 cases (D) at patients from groups A and B we had complications - bone fractures in the site of resection. The middle value of residual bone strength in group A was  $70,8 \pm 7,2\%$ ; in B -  $53,1 \pm 5,5\%$ ; in C -  $22,3 \pm 2,1\%$ ; in D -  $37,5 \pm 3,9\%$  ( $p < 0,02$  in all groups). Since 2013 we use this PC program in planning of operative tactic in patients with benign bone tumors, and have no any complications related with value of residual bone strength.

**Abstract No.: 39407**

**DOUBLE PLATING FIXATION IN ADULT POLYTRAUMATIZED PATIENTS WITH FEMORAL SHAFT FRACTURES**

Tao Cheng, Ronggang Xia, Congfeng Luo

Background: Though the management of femoral shaft fractures using intramedullary nailing is a popular method, which may be not indicated in patients with compromised pulmonary function. The purpose of this study was to evaluate the clinical outcomes after double-plating fixation for traumatic femoral shaft fractures in multiple-trauma patients with severe thoracic injuries. Methods: In a retrospective study, fifteen patients with a femoral shaft fracture were included between November 1996 and October 2010. The mean follow-up duration was 16.8 months (range 12–31 months). Radiographic assessments were obtained at postoperative weeks 6, 12, and 24 and computed tomography scans at months 6. Functional outcome scores included Short Musculoskeletal Functional Assessment (SMFA), Harris Hip Score (HHS) and the Lysholm knee function scoring scale) at latest follow-up. The Visual Analogue Scale (VAS) was used to determine pain complaints of the lower limb. The range of motion (ROM) of the hip and knee joints was comparable between the injured and uninjured leg. Results: Fourteen (93%) of 15 femoral shaft fractures achieved bony union. One incompliant patient with postoperative tobacco use showed delay union, which was healed uneventfully with subsequent quitting smoking. The mean time to union was 6.1 months (range 4–16 months). Conclusions: Our findings suggest that double-plating fixation is an alternative technique to locked intramedullary nailing for femoral diaphyseal fractures with injured chest. However, due to the nature of this retrospective study, more high-quality comparative studies are still needed to assess the clinical efficiency of the double-plating technique.



**Abstract No.: 39409**

**CHANGES OF GAIT PARAMETERS AFTER FEMORAL DEROTATIONAL OSTEOTOMY FOR THE CEREBRAL PALSY PATIENTS WITH MEDIAL FEMORAL TORSION**

Ha Yong Kim, Won Sik Choy, Kwang Won Lee, Hwan Jeong Kim, Jae Yong Byun, Yong Han Cha

**Introduction:** The purpose of study was to analyze the changes of gait parameters after femoral derotational osteotomy (FDO) in CP patients with medial femoral torsion. **Materials & Methods:** Study group was 19 young CP patients (28 limbs, 13.2 years) with symptomatic medial femoral torsion, treated with FDO. Study group was divided into two groups; unilateral group (UG) and Bilateral group (BG). After FDO, distal fragment was derotated 24.6°. Staheli's rotational profile and the kinematic data were assessed using paired t-test and Pearson correlation. **Results:** IR and ER of Staheli's rotational profile were changed in proportion to the amount of FDO. FPA was changed by 12.7° ( $P < 0.05$ ). Hip rotation was changed ( $P < 0.05$ ) 14.8° externally in the UG and 6.7° in the BG. Foot rotation angle showed no significant changes. However, knee Rotation angle was changed after surgery 2.6° in the UG ( $P > 0.05$ ) and 9.6° in the BG ( $P < 0.05$ ). Compensatory Pelvic rotation angle changed postoperatively in the children with preoperative pelvic rotation  $> 50^\circ$  ( $P < 0.05$ ). It also showed tendency of change in younger age group (UG;  $P = 0.069$ , BG;  $P = 0.034$ ). Ranges of pelvic rotation showed significant changes (5.8 degrees, ( $P < 0.05$ )) after surgery in the hemiplegia group. **Conclusion:** In-toeing gait due to medial femoral torsion improved significantly with distal FDO in CP patients. FPA and Hip rotation during gait improved half degree of FDO. Compensatory pelvic rotation showed changes after FDO especially in the younger aged patients and the patient with preoperative rotation more than 5°.

**Abstract No.: 39410**

**MELATONIN ENHANCES CHONDROGENIC DIFFERENTIATION OF HUMAN MESENCHYMAL STEM CELLS**

Wenjie Gao,

Intramembranous ossification and endochondral ossification are two ways through which bone formation and fracture healing occur. Accumulating amounts of evidence suggests that melatonin affects osteoblast differentiation, but little is known about the effects of melatonin on the process of chondrogenic differentiation. In this study, the effects of melatonin on human mesenchymal stem cells (MSCs) undergoing chondrogenic differentiation were investigated. Cells were induced along chondrogenic differentiation via high density micromass culture in chondrogenic medium containing vehicle or 50 nM melatonin. Histological study and quantitative analysis of glycosaminoglycan (GAG) showed induced cartilage tissues to be larger and richer in GAG, collagen type II and collagen type X in the melatonin group than in the untreated controls. Real-time RT-PCR analysis demonstrated that melatonin treatment significantly up-regulated the expression of the genes involved in chondrogenic differentiation, including aggrecan (ACAN), collagen type II (COL2A1), collagen type X (COL10A1), SRY (sex-determining region Y)-box 9 (SOX9), runt-related transcription factor 2 (RUNX2) and the potent inducer of chondrogenic differentiation, bone morphogenetic protein 2 (BMP2). And the expression of melatonin membrane receptors (MT) MT1 and MT2 were detected in the chondrogenic-induced-MSCs by immunofluorescence staining. Luzindole, a melatonin receptor antagonist, was found to partially block the ability of melatonin to increase the size and GAG synthesis of the induced cartilage tissues, as well as to completely reverse the effect of melatonin on the gene expression of ACAN, COL2A1, COL10A1, SOX9 and BMP2 after 7 days of differentiation. These findings demonstrate that melatonin enhances chondrogenic differentiation of human MSCs at least partially through melatonin receptors.

**Abstract No.: 39416**

**THE STRATEGY UNDER THE COMBINED MODALITY THERAPY WITH ENDOVASCULAR TREATMENT TO SALVAGE THE CRITICAL LIMB ISCHEMIA**

Deokcheol Lee, Ryuma Mitsuhashi, Tetsuya Umezaki, Haruki Mori, Etsuo Chosa

**Objectives:** To assess the outcome of the wound treatment with Endovascular treatment (EVT) for critical limb ischemia (CLI) to prevent the major amputation. **Methods:** 60 CLI patients of Rutherford 5 or 6 from January 2012 to September 2013 were retrospectively analyzed. The rates of patients of hemodialysis and diabetics were 40.0% and 53.3%, respectively. The EVT targets were aorta-iliac artery (17.7%), femoral-popliteal artery (62.9%), below popliteal artery (61.3%). Surgical managements such as minor amputation were done for 46.7% of patients before or after EVT. 13 patients who received major amputation without EVT during the same time were added to the 60 patients noted above, Limb Salvage (LS) group and Major Amputation (MA) group were compared. **Results:** The rates after EVT of LS, WH, Amputation Free Survival (AFS) were 86.7%, 63.3% and 51.7%, respectively. There is no significant difference in 1 year survival rate between MA group and LS group (52.4% vs 51.7%), the rate of WH group was 81.6% and 89.3% of WH group could recover to walk. In sub-analytical comparison, non-infectious group showed good prognosis rather than infectious group (AFS rate : 34.8% vs 62.2% ( $p<0.05$ ), WH rate : 47.8% vs 73.3% ( $p<0.05$ )). AFS and WH rate of Rutherford 6 were 42.6% and 35.7%, respectively. **Discussion:** Wound healing group showed good survival rate and functional prognosis, and there were salvageable limbs in Rutherford 6 and about half of infectious group. On the other hand this study shows multidisciplinary treatment with several department before CLI gets severe is important.

**Abstract No.: 39422**

**TREATMENT FOR SALVAGE OF FAILED TREATMENT OF INTERTROCHANTERIC HIP FRACTURES IN ELDERLY PATIENTS.**

Jun Li, Zhenning Liu, Hong-Zhang Lu, Tian-Yue Zhu

**Subjective:** The purpose of the present study was to evaluate the results and complications of hip arthroplasty performed as a salvage procedure after the failed treatment of an intertrochanteric hip fracture in elderly patients. **Methods:** Thirteen old patients were treated with hip arthroplasty after the failed treatment of an intertrochanteric fracture. The mean time from initial treatment to failure and salvage by an endoprosthesis was 36.2 months. The reason for second procedure includes avascular necrosis in 5 cases, cephalic implant cut-out in 4 cases, nonunion in 3 cases, and malunion associated with osteoarthritis in 1 case. **Results:** Six patients had a total hip arthroplasty with a cemented cup (three patients) or an uncemented cup (three patients), seven had a bipolar hemiarthroplasty. The average duration of follow-up was 1-7 years. The mean Harris hip score increased from 37 preoperatively to 85 postoperatively. A long-stem implant was used in 7 of the 10 hips. The functional results were satisfactory. One 84-year-old patient with the implant intact died 2 years postoperatively from a brain hemorrhage. **Conclusions:** Hip arthroplasty is an effective salvage procedure after the failed treatment of an intertrochanteric fracture in an older patient. Most patients have good pain relief and functional improvements in spite of technical difficulties than primary arthroplasty. Salvage treatment with hip arthroplasty may be considered for selected older patients with poor bone quality, bone loss, or articular cartilage damage.

**Abstract No.: 39429**

**RESULTS IN CULTURES TAKEN OF REUSABLE STERILE ASPIRATION CANNULES IN TOTAL KNEE ARTHROPLASTY- TOTAL HIP REPLACEMENT AND HEMIARTHROPLASTY**

Adrian Lopez Vazquez,

Introduction: Arthroplasty infection risk factors are well known, also are rules and behavior in the operation room, but using of sterile material like operating instruments is not well defined.

Objective: Determine the safe of reusable sterile aspiration cannules, by presenting results of cultures taken in operating room. Material: One hundred patients (THA, 50 Taperlock Microplasty and/or Mallory-Head Ring Lock®; and 50 Trilock and/or Pinnacle®) from march 2012- July 2013, with diagnosis of coxarthrosis (Kellgren-Lawrence GIV); or Transcervical hip Fracture (Garden III, Pawels II) underwent THR or HA; took all prophylactic measures to avoid infections: preoperative antibiotic, asepsis and antisepsis of the operative limb, discarded active infection, controlled cronical diseases: Arthritis, diabetes. Disposable vesting packs, surgical instrumental sterilized by 2hr steam. Culture samples of sterile aspiration cannules were taken at 1hr of initiating surgery, and all samples were followed by 15 days to develop any microorganism. Result: To fifteen days 19 cultures resulted positive for bacteria, most common were gram (+): staff epidermidis (6), and staff hominis (3), we also found multiresistant Gram (-) like acinetobacter and enterobacter. Mean surgery time was 2hr 30 min (SD0.032), mean bleeding 600cc (SD3.68). Three months following 2 patients developed periprosthetic infection and underwent surgical lavage, change of polyethylene, and antibiotics for 6 weeks, to control infection. We started using disposable cannules after culture results with no bacteria development. Conclusion: Sterile cannules have high rate of bacteria, we strongly recommend using disposable ones, with also other measures to ensure a lower rate of infection.

**Abstract No.: 39438**

**IN VITRO SYNERGISTIC ANTITUMOR EFFECTS OF PLUMBAGIN AND ZOLEDRONIC ACID WITH NOTCH-1-BCL2 REGULATION OF BREAST CANCER CELL**

Han Qiao, Tingyu Wang, Tingting Tang

**Aim:** To investigate the vitro combinative antitumor effects of plumbagin and zoledronic acid on human breast cancer cell with underlying mechanisms. **Methods:** Human breast cancer MDA-MB-231SArfp cell, which exhibited a malignant metastasis tendency with fluorescent imaging and represented a highly aggressive mammary cancer type, was deployed. Cell Counting Kit-8 (CKK-8) assays, flow cytometry analysis, transwell assays, real-time PCR and western blotting were performed. Synergism was evaluated with Compusyn software, and the combination index (CI) and drug reduction index (DRI) values were determined. **Results:** The combination treatment of plumbagin and zoledronate suppressed proliferation, induced apoptosis and inhibited migration in a synergistic manner (CI=0.26). Real-time PCR and western blotting revealed that in the combination group, the expression of Notch-1, cleaved poly (ADP-ribose) polymerase (PARP), B-cell lymphoma 2 (Bcl-2), and Bcl-xl decreased, whereas the expression of cleaved caspase-3, cyclin-dependent kinase inhibitor 1A (CDKN1A), and ID1 increased. In addition, the combination treatment followed by specific siRNA silencing against Notch-1 resulted in a significant increase in the level of the anti-apoptotic protein Bcl-2, indicating that the mechanism of synergistic apoptosis may include Notch-1 to Bcl-2 regulation in MDA-MB-231SArfp cells. **Conclusion:** These results demonstrated that synergistic antitumor efficacy could be achieved via combined administration of plumbagin and zoledronic acid through Notch-1-Bcl2 regulation and provide an intriguing novel potential strategy for the treatment of breast cancer cell.

**Abstract No.: 39441**

**PRIMARY TOTAL KNEE ARTHROPLASTY WITH METAL WEDGE AUGMENTATION**

Kwong Yin Chung, Kin Wing Cheung, Kwok Hing Chiu

Introduction: Medial tibial plateau bone defect is not uncommon in primary total knee arthroplasty (TKA). Various methods exist in managing the defect. We aim to study the results of primary TKA with metal wedge augmentation for treatment of medial tibial bone defect. Materials and Methods: From Jun 2000 to Jul 2006, 90 primary TKAs with metal wedge augmentation were performed in 74 patients. All patients had medial tibial plateau bone defect. The range of knee motion, Knee Society knee score and function score, radiological outcome and complications were assessed. Results: Nineteen male and 71 female patients were included in the study. The mean age at operation was 67.7 years (range 49–82 years). The mean follow up was 10.8 years (range 2.8-14.6 years). The mean pre-operative varus deformity was  $17.2^{\circ}$  (range  $10^{\circ}$  - $35^{\circ}$ ). The mean knee flexion were  $88.2^{\circ}$  and  $104^{\circ}$  pre-operatively and at latest assessment respectively. The mean Knee Society knee score improved from 21.7 to 94.5 and the mean function score improved from 39.5 to 62.17. Thirty knees (33.3%) had radiolucent line under the wedge. One knee had late infection required 2-stage revision total knee arthroplasty. No knee required revision for aseptic loosening. Discussion and Conclusion: Metal wedge augmentation is a good option for treatment of medial tibial plateau bone defect in primary TKA with good long term results.

**Abstract No.: 39443**

**PRE-OPERATIVE ASSESSMENT CLINIC MINIMIZED OPERATION DAY CANCELLATION IN ELECTIVE ARTHROPLASTY SURGERY**

Kwong Yin Chung, Yan Yan Kwok, Kin Wing Cheung, Po Tong Chui, Kwok Hing Chiu, Ki Wai Kevin Ho

Introduction: Patients undergoing elective total knee and total hip arthroplasties are usually elderly with unavoidable co-morbidities. Early identification and optimization of medical condition before elective arthroplasty are vital to its success. Joint effort of orthopaedic surgeons and anaesthetists in the pre-operative assessment clinic help to achieve this aim. Operation day cancellation can be minimized and resources can be better utilized. Method: From Jan 2011 to Dec 2013, patients attended the pre-operative assessment clinic for elective knee and hip arthroplasties were included. The rate of cancellation, timing of cancellation and reason of cancellation of the operation were reviewed. Results: 467 patients attended the pre-operative assessment clinic. The mean age was 65.2 years. 386 patients were scheduled for total knee arthroplasty and 81 patients were scheduled for total hip arthroplasty. 32 (6.8%) patients required rescheduling or cancellation of the operation after assessment, with 27 (5.8%) after the pre-operative assessment clinic and five (1%) on the day of operation. The major reason for rescheduling or cancellation was suboptimal cardiovascular condition. Discussion and conclusion: Pre-operative assessment clinic allows early identification of patients with suboptimal condition to undergo elective total knee and total hip arthroplasties and minimize cancellation on day of operation.



**Abstract No.: 39446**

**THE PARENTS' PERSPECTIVE DURING DIFFERENT PHASES OF BRACE WEARING AFTER INITIAL CORRECTION BY PONSSETI METHOD**

Dahang Zhao, Li Zhao

Background: Ponsseti method is accepted as the best choice for treatment of clubfoot. The purpose of this study was to investigate what appeals and challenges of brace wearing during different phases from parents' perspective. Methods: 64 consecutive patients with 96 idiopathic clubfeet without previous treatment, who received the Ponsseti treatment, were studied at a minimum two years follow-up. The type of brace was recorded while the questionnaire survey was conducted to investigate the phase during which the parents mostly concerned about brace wearing at the age under 1 year and between 1 to 2 years old. We also tried to find out which was the most difficult challenge during bracing phase. Results: 46 patients used plastic brace, 9 Markell and 9 Mitchell-Ponsseti at the age younger than 1 year old. 12 patients used Plastic brace, 22 Markell and 30 Mitchell-Ponsseti at the age between 1 and 2 years old. Meanwhile, a light brace was the most important issue on 61% parents' perspective when a child was at the age younger than 1 year old. Instead, a comfortable brace was mostly expected in 53% parents when a child was of age between 1 and 2 years old. 66% parents considered the brace protocol as the most difficult challenge. Conclusion: Parents may have various perspectives in term of brace quality and protocol during different phases of brace wearing. It is of significant value for the orthopaedic practitioners to take these issues into consideration for improving the compliance of brace wearing.

**Abstract No.: 39452**

**COMPARISON OF 28-MM AND LARGER DIAMETER FEMORAL HEAD IN CERAMIC-ON-CERAMIC CEMENTLESS TOTAL HIP ARTHROPLASTY**

Yonghan Cha, Wonsik Choy, Hayong Kim, Sunho Jang

**Introduction:** patients who underwent ceramic-on-ceramic cementless total hip arthroplasty were divided into 28-mm femoral head and 32–36-mm femoral head groups to compare their clinical and radiological outcomes. **Methods:** group I included 142 patients who underwent 28-mm femoral head ceramic-on-ceramic cementless total hip arthroplasty between may 2001 and december 2005 and group II included 98 patients who underwent 32–36-mm femoral head ceramic-on-ceramic cementless total hip arthroplasty between august 2005 and december 2008. The average age was 58.9 years and the average follow-up period was 90.8 months. a comparative analysis was conducted using clinical assessment consisting of harris hip score, inguinal and/or thigh pain, and the presence of a squeaking sound; and radiological indices, including radiolucent line or endosteal new bone formation. **Results:** mean harris hip score increased from 58.3 points to 92.5 points in group I and from 50.6 points to 92.7 points in group II. There were two cases of dislocation of the hip joint in group I, which was treated non-surgically, and no cases of dislocation in group II. In the follow-up radiological images, there were two cases of acetabular cup aseptic loosening and one case of ceramic head fracture in group I, and revision arthroplasty was performed for all. in group II, acetabular loosening was not observed and stability was maintained in all cases, and no ceramic fractures were observed. **Conclusion:** ceramic-on-ceramic cementless total hip arthroplasty using a 32–36-mm femoral head in diameter compared to a 28-mm femoral head in diameter achieved more satisfactory clinical outcomes with fewer complications.

**Abstract No.: 39455**

**CARPAL TUNNEL REVEALED A TUMOR**

Anissa Benaïda, Meriem Ait Saadi, Mourad Hamidani

Our work aims to reveal rare causes the origin of carpal tunnel syndrome. Materials and methods Case N 1 71ans old patient consulted for a swelling of the left thenar houses appeared for 6 years and causing paresthesia of the thumb and the adjacent index. The ill-defined clinical examination swelling, firm and painless, not inflammatory. Limitation of the opposition of the thumb. Radio appearance of a tissue image of the soft parts of the thenar lodge. MRI intramuscular lipoma embedded in thenar muscles. 2nd case. 35years old patient consultant for clinical symptoms for a carpal right channel lasting for 5 months. Radio bone erosion interesting the big bone, trapezoid and trapezium EMG: prolonged latency in the sensory area of the median MRI: tumor tissue processes of the outer palm side of the wrist coming up to the thenar eminence of the right hand responsible a discharge tendons and median nerve compression DISCUSSION villonodular tenosynovitis is considered the second tumor found at the hand after the synovial cyst; unlike the lipoma which remains a very rare tumor. Ultrasound can suggest the diagnosis and MRI is a valuable tool for the diagnosis; surgical planning and post operative care Conclusion The carpal tunnel syndrome is the most common entrapment syndromes, etiopathologie is often idiopathic, looking for patterns of behavior must be systematic even if it is rarely successful

**Abstract No.: 39456**

**THE MANAGEMENT OF FLOATING ELBOW: ABOUT THREE CASES**

Nadhir Meraghni, Riad Benkaidali, Mohamed Kihal, Mhamed Nouar

introduction: the floating elbow represents an uncommon combination of lesions in traumatology. we describe 3 cases of this lesion in adults. methods: three men, aged 40, 54 and 42 years who had sustained a floating elbow between 2013 and 2014 were treated in our department. only one injury was in the dominant arm. for all of them, it was a closed fractures, without vascular or nerve injury. the variety of fractures was the same for the three patients: ipsilateral diaphyseal humeral fracture and diaphyseal ulna and radius fractures, with a comminuted humeral fracture for the third case. all the fractures were treated with open reduction and internal fixation using a plate. results: no infection or skin disorders were observed in our patients. fracture healing was observed between 12 and 14 weeks postoperatively in the two first cases. for the last patient, with a 6 months follow up, there was a nonunion of the radial fracture. he benefited of bone graft with new internal fixation. discussion: floating elbow fractures in adults are rare and represent high-energy trauma. good functional result requires adequate management with internal fixation followed by early rehabilitation. There was no associated injuries or complications for our 3 patients except a nonunion of the radial fracture in one case, treated by bone graft and new internal fixation. conclusion: floating elbow fractures in adults are rare and complex injuries with unpredictable outcomes. an adequate management with reduction of the fractures and internal fixation followed by early rehabilitation is recommended.

**Abstract No.: 39459**

**SURGICAL TREATMENT FOR ACUTE TRAUMATIC CENTRAL CORD SYNDROME WITH MULTILEVEL CERVICAL SPONDYLOTIC MYELOPATHY**

Jinhao MIAO, Yong Kuang, Lei Fang

**Objective:** To analyze the efficacy and safety of multilevel anterior cervical discectomy and fusion (ACDF) with plate cage Benezech (PCB) or posterior hybrid technique in the treatment for acute traumatic central cord syndrome (ATCCS) with multilevel cervical spondylotic myelopathy (CSM). **Methods:** Sixteen patients of ATCCS with multilevel CSM were enrolled. Nine patients treated by ACDF with PCB and seven patients were treated by posterior hybrid technique. The clinical outcomes were evaluated using the JOA and VAS score. A cervical Cobb angle was measured as the acute angle constructed by lines going along the back of C2 and C7 vertebral body. Complications of the surgery were recorded. **Results:** The mean follow-up time was 32.7 months. In the follow-up, the JOA scores significantly increased and the VAS overall pain scores decreased compared with preoperational measurements in both groups. The cervical Cobb angle had a significant correction when compared with that before operation in the ACDF group, while the Cobb angle in both group maintain well. After operation, there are three patients suffered from dysphagia and one patient experienced hoarse voice in the anterior group, while one patient had wound infection in the posterior group. There was one case had axial pain in both groups. **Conclusions:** Both multilevel ACDF with PCB and posterior hybrid technique appears to be effective therapy for the patients of ATCCS with multilevel CSM. As compared with posterior hybrid technique, multilevel ACDF with PCB system had significant correction of cervical lordosis, but had more complications related to the surgical approach.

**Abstract No.: 39461**

**DIFFERENTIATION OF HUMAN BONE MARROW PRECURSOR CELLS INTO NEURONAL-LIKE CELLS  
AFTER TRANSPLANTATION INTO CANINE SPINAL CORD ORGANOTYPIC SLICE CULTURES**

Zhiqiang Fei,

introduction: This study is to determine the possibility of differentiating human bone marrow precursor cells into cells of the neuronal lineage by transplanting into canine spinal cord organotypic slice cultures. Methods: Bone marrow aspirates were obtained from posterior superior iliac spine (PSIS) of patients that had undergone spinal fusion due to a degenerative spinal disorder. For cell imaging, mesenchymal precursor cells (MPCs) were pre-stained with PKH-26 just before transplantation to canine spinal cord slices. Canine spinal cord tissues were obtained from three adult beagle dogs. Spinal cords were cut into transverse slices of 1 mm using tissue chopper. Two slices were transferred into 6-well plate containing 3 ml DMEM with antibiotics. Prepared MPCs (1X10<sup>4</sup>) were transplanted into spinal cord slices. On days 0, 3, 7, 14, MPCs were observed for morphological changes and expression of neuronal markers through immunofluorescence and reverse transcription-polymerase chain reaction (RT-PCR). Results: Human bone marrow mesenchymal precursor cells (hMPCs) have the potential to differentiate into the neuronal like cells in this canine spinal cord organotypic slice culture model. Conclusions: these findings suggest the possibility that these cells can be utilized to treat patients with spinal cord injuries.

**Abstract No.: 39462**

**CORRELATION BETWEEN SEVERITY OF ADOLESCENT IDIOPATHIC SCOLIOSIS AND PULMONARY ARTERIAL PRESSURE: A CROSS-SECTIONAL STUDY OF 338 PATIENTS**

Xingye Li, Zheng Li, Fan Feng, Youxi Lin, Haiwei Guo, Jianxiong Shen

Background. The relationship between scoliosis and pulmonary arterial pressure was not well established. The objective of this study is to examine the correlation between pulmonary arterial pressure and severity of idiopathic scoliosis. Methods. A total of 338 patients with idiopathic scoliosis aged 14-20 year old were included. Their preoperative radiographical records were reviewed to measure their coronary Cobb angle of each curvature as well as location and direction of apex. Doppler echocardiography was performed preoperatively to measure tricuspid regurgitation velocity (TRV) and diameter of inferior vena cava (IVC). Pulmonary artery systolic pressure (sPAP) can further be calculated by modified Bernoulli equation. Statistical analyses were used to identify correlation between sPAP and feature of scoliosis. Results. The average age was 15.6 years, of them 82.8% were female. 305 patients bore thoracic curves, 265 patients bore thoracolumbar/lumbar curves. Among 305 thoracic curves, 276 (90.5%) were right curves. sPAP calculated from TRV varied from 5.0 mmHg to 37.6 mmHg. 1 patient met criteria of cannot exclude pulmonary hypertension. A mild correlation (Spearman test, correlation coefficient = 0.187,  $p = 0.001$ ) between sPAP and coronary Cobb angle of main thoracic curves was found. Correlations between sPAP and degree of other curves were not significant. Patients with higher sPAP ( $>20\text{mmHg}$ ) also bore larger angle of thoracic curve (mean MT  $42.16^\circ$  vs.  $52.45^\circ$ , U-test,  $p=0.002$ ). Level of sPAP was of no difference between right and left thoracic curves. Conclusion. There was a mild correlation between sPAP and coronary Cobb angle of main thoracic curves.

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**Abstract No.: 39464**

**ORIGINAL TECHNIQUE OF THE TREATMENT(PROCESSING) OF THE BILATERAL CONGENITAL HALLUX VARUS AT THE ADULT.**

Fatima Zohra Messabis,

The hallux varus is a deformation of the front foot which consists of a medial deflection of the first joint metatarsophalangiennne. The congenital form is rare and meets in certain circumstances malformatives or syndromiques. We bring back the observation of an old patient of 24ans who presents a bilateral congenital hallux varus neglected since the birth with an esthetic and functional damage with impossibility of chaussage. His surgical coverage consisted in a double medial and side access with taking of the tendon of the abductor muscle of the hallux in proximal and left inserted there distal at the level of the first phalanx .Après capsulotomie side the tendon is played on a loop through two phalangeal and metatarsal tunnels realizing a ligamentoplastie of correction of the varus. Concerning the deformation(distortion) adductus, she(it) was corrected by an ostéotomie of the metatarsal collar(pass) according to the technique of Green-Watermann. The aspect of the big toe was very satisfactory at the end of intervention. The association of a ligamentoplastie and a corrective ostéotomie of the congenital hallux varus is a sensible technique giving very good functional and esthetic results(profits) in the treatment(processing) of this rare pathology.

**Abstract No.: 39475**

**OSTEOSYNTHESIS WITH K-WIRES AND WIRES OF FRACTURES OF THE ANKLE AND DAMAGED TIBIOFIBULAR SYNDESMOSIS**

Nurlan Batpenov, Shalgynbay Baimagambetov, Nycolay Orlovsky, Nagmet Mursalov

Relevance. Closed ankle fractures range from 13.9 to 26.1% of all skeletal injuries. Materials and methods. From May 2012 to October 2014 RITO has conducted osteosynthesis of ankles and tibiofibular syndesmosis by K-wire's and wire for 138 patients, including 82 males, and 56 females. Patients age ranged from 22 to 73 years; it should be noted that the most of the victims were young people of working age. All fractures were unilateral and closed. The fixation of fragments of the medial malleolus was held using 2 K-wire's, of the lateral malleolus - with using 1 K-wire's and of the tibiofibular syndesmosis – with wire. Control X-ray was performed in the 1st day, 4th and 12nd weeks after surgery. Clinical evaluation of treatment outcomes was conducted by ankle-hindfoot score. Results and discussion. The average surgery time has made 30-85 minutes. The length of hospital stay was 3-10 days. The immobilization was carried out with posterior plaster splint for 3 weeks. In evaluation of clinical results of treatment after 3 months on the ankle-hindfoot score, the average score was 87. Conclusions. Using K-wires and wires for osteosynthesis of ankle fractures and tibiofibular syndesmosis injury allows to fix the fragments and obtain an excellent functional outcome.

**Abstract No.: 39479**

**TREATMENT OF PAINFUL MEDIAL COMPARTMENT KNEE OSTEOARTHRITIS BY ARTHROSCOPIC CARTILAGE REGENERATION FACILITATING PROCEDURE**

Lin min YANG, Shaw-Ruey Lyu

Background: More and more studies revealed that painful medial compartment knee osteoarthritis (MCKOA) is a consequence of mechanical irritation and inflammation reaction rather than a chronic degeneration caused by repetitive wear. It is initiated by medial plica abrasion and then accelerated by infra-patellar fat pad (IFPF) synovitis, both of which caused the joint cartilage wear and tear subsequently. No matter what the treatment is, it always ends up in total knee arthroplasty. In 2008, Lyu et al proposed an innovative concept of arthroscopic procedure directed towards treating painful MCKOA. After eradication of medial plica, release of tight medial joint capsule, removal of IFPF synovitis and percutaneous lateral release, the medial knee pain improved significantly. It was named as arthroscopic cartilage regeneration facilitating procedure (ACRFP) with the hypothesis that it could offer a favorable environment for regeneration of damaged cartilage in cases of painful MCKOA. Method: One hundred and one knees in 86 patients (22 male and 64 female) received ACRFP by a single surgeon due to MCKOA from Jan 2012 to Dec 2012. Patients were clinically evaluated during follow-up. Visual Analogue Scale (VAS) was used for subjective outcome study. Results: The mean age was 51 years. The mean follow-up period was 28 months. The VAS improved statistically. (from ave. 6.2 to ave. 2.6,  $p < 0.05$ ) Conclusions: ACRFP is safe and effective in treating MCKOA.

**Abstract No.: 39481**

**MODEL-BASED AND MARKER-BASED RSA PHANTOM EXPERIMENTS WITH A FULL CERAMIC KNEE IMPLANT COMPARED TO AN IDENTICAL METAL IMPLANT**

Yutong Hong, Frank Schlemmer, Lisa Schmidt, Silke Rottmann, Raimund Forst, Stefan Sesselmann

In a model-based radiostereometric analysis (RSA) phantom study we compared the full ceramic total knee arthroplasty (TKA) BPK-S ceramic® (Peter Brehm GmbH, Weisendorf, Germany) to CoCrMo implants of identical construction. Furthermore we fixed markers on the surface of the ceramic implants to be able to conduct marker-based RSA in comparison to our model-based results. Our data show that model-based RSA can also be conducted with a less radio-opaque ceramic implant compared to an identical metal implant. We also evaluated the femoral component which is usually not assessed in RSA studies as loosening of femoral metal TKA components is of minor clinical relevance. Caused by the femoral shield of the implant, bone marker occlusions might occur in the commonly used a.p. projection. Thus we also compared results derived from a.p. x-rays with results derived from x-rays with a medio-lateral view, assuming the latter projection is able to reduce marker occlusion problems. Our results suggest that the medio-lateral x-ray projection is an appropriate alternative to a.p. projected RSA-pictures and can solve problems caused by marker occlusions due to the femoral shield.

**Abstract No.: 39483**

**PREDICTING THE NEED FOR BLOOD TRANSFUSIONS IN ELDERLY PATIENTS WITH  
INTERTROCHANTERIC FEMORAL FRACTURES**

Guojin Hou, Fang Zhou, Zhishan Zhang

**Objective :** Our study aim is to discuss an algorithm to predict the need for perioperative allogeneic blood transfusion (ABT) in old patients with intertrochanteric femoral fractures. **Methods:** We retrospectively analysed the data from 220 elderly patients with intertrochanteric femoral fractures with regard to the probability of receiving an ABT within 72 hours after surgery. The patients were divided into ABT and non-ABT groups. A univariate analysis was used to compare between-group differences with regard to 13 variables. A logistic regression analysis and a probability algorithm to predict the need for an ABT based on independent predictors were used. **Results:** The non-ABT group included 131 patients (55 males and 76 females), with an average age of  $77.2 \pm 6.8$  years; the ABT group included 89 patients (29 males and 60 females), with an average age of  $79.7 \pm 6.6$  years. The total and actual average volume of transfused blood was 276 Units and 3.1 Units. A logistic regression analysis revealed that patients with intertrochanteric femoral fractures who were elderly ( $> 81$  years), had lower Hb levels at admission ( $\leq 124$  g/L), longer duration of operations ( $t > 85$  min), underwent intramedullary fixation (Gamma3 and PFNA) and had more intra-operative blood loss were more likely to need an ABT. This regression model predicted 74.1% of the transfused cases. **Conclusions:** An algorithm was devised to predict and manage the need for an ABT after surgery in patients with intertrochanteric femoral fractures. Reasonable transfusion programs might reduce the complications caused by anaemia and effectively avoid the risks associated with ABTs.

**Abstract No.: 39484**

**HISTOLOGICAL AND MOLECULAR CHARACTERIZATION OF THE FEMORAL ATTACHMENT OF THE HUMAN LIGAMENTUM CAPITIS FEMORIS**

Yasushi Shinohara, Tsukasa Kumai, Ichiro Higashiyama, Tomohiro Matsui, Yasuhito Tanaka

The ligamentum capitis femoris (LCF) has increased in clinical significance through the development of hip arthroscopy. However, we have not yet fully understood even the function not only the pathogenesis of the LCF. The histopathologies and molecular composition of the femoral attachment of the LCF and the degeneration caused by LCF disruption were investigated in the human hip joint. Twenty-four LCFs were retrieved at surgery (age range: 63–87 years). We analyzed by histology (staining with toluidine blue, haematoxylin & eosin and Masson's trichrome), morphology and immunohistochemistry (collagens, glycosaminoglycans, proteoglycans and single-stranded DNA). In the "intact" (i.e. intact throughout its length, n=12) group, the attachment consisted of rich fibrocartilage. Fibrocartilage cells were present in the midsubstance. In contrast, the construction of the attachment in the "disrupted" (i.e. ligament no longer attached to the femoral head, n=12) group had disappeared. The attachment in the disrupted group was not labeled for type II collagen or aggrecan, while that in the intact group was labeled for types I, II and III collagen, chondroitin 4-sulfate, chondroitin 6-sulfate, aggrecan and versican. The percentage of single-stranded DNA-positive chondrocytes was significantly higher in the disrupted group than in the intact group. We conclude that the attachment of the LCF has a characteristic fibrocartilaginous structure that is likely to adjust to the mechanical load and suggest that this ligament may function as a stabilizer. The finding provides us with missing basic knowledge that could help in the future understanding of clinical pathologies in the hip joint.

**Abstract No.: 39485**

**REPAIR OF FINGERTIP DEFECT WITH A HOMODIGITAL ANTEROGRADE PEDICLE ?AP BASED ON THE DORSAL PERFORATOR IN THE MIDDLE PHALANX**

Peng Wei,

Introduction: To introduce the surgical procedure and long-term follow-up of using anterograde pedicle flap based on the dorsal branches of proper digital neurovascular bundles from the dorsum of the middle phalanx for the fingertip defect. Methods: From February 2011 to December 2012, 31 patients with 31 fingertips defect were reconstructed with the flap. Survival size of the flap, the two-point discrimination, was recorded. Results :31 flap fully survival. Follow-up observations were conducted for 3 to 9 months, and the appearance of the flaps was satisfactory, the sensation recovered excellent, two point discrimination was  $4.96 \pm 1.47\text{mm}$ , the activity of the interphalangeal joint recovery good. Conclusion, The anterograde island flap based on the dorsal branches of proper digital neurovascular bundles is an ideal method for fingertip defect. The surgery is simple, avoiding sacrificing the digital artery and nerve, The donor site damage is minor, reliable blood supply and sensation can be achieved without affect the interphalangeal joint activity.

**Abstract No.: 39486**

**TREATING MODERATE TO SEVERE OA VARUS KNEE BY UNLOAD-I BRACE**

Qi Li,

Objectives: to evaluate the clinical efficacy of Treating moderate to severe OA varus knee by unload-I brace. Methods: 15 patients diagnosed as moderate to severe OA varus knee were treated with the brace. The age ranges from 53 to 72 years old ( $58 \pm 8$  in average). Among them 6 were male; the other 9 were female. According to K&L classification, grade III: 7 cases; grade IV: 8 cases; The knee varus angle of standing position X-ray should be less than  $15^\circ$ . During follow-up, X-ray was taken; VAS was applied for symptom and JOA for knee function. Results: after wearing the brace, the immediate knee varus angle was improved significantly by X-ray. The follow-up period was above 2 years. VAS was improved from  $8.4 \pm 1.5$  (pretreatment) to  $3.6 \pm 2.1$  (post-treatment); JOA score was improved from  $35 \pm 12$  (pretreatment) to  $64 \pm 16$  (post-treatment) ( $P < 0.05$ ). There is no deterioration in degeneration and deformity. Conclusions: unload-I knee brace can relieve the symptom of patient with moderate to severe OA varus knee. It can greatly improve the knee function and life quality. It is especially suitable for those patients intolerance to arthroplasty.



**Abstract No.: 39487**

**MIS THR USING ANTEROLATERAL APPROACH- BUILDING A SHIP INSIDE A BOTTLE**

Sanjeev Patnaik, Biswaranjan Nayak

Minimally invasive surgery has become a trend in the last decade in all aspects of Orthopaedic surgery, including Total Hip Replacement. The debates and the interest generated in MIS THR is considerable and several approaches have been advocated. The potential benefits include lower surgical morbidity, less pain and peri-operative blood loss, quicker rehabilitation, shorter in-patient stay and improved cosmesis. On the other hand, deficient peer-reviewed literature, a steep learning curve, increased rate of complications due to inadequate visualization, component mal-position, neurovascular injuries, dislocation and intra-operative fractures have drawn criticism. We are presenting our experiences of MIS - THR through Antero-lateral approach, using fluoroscopy, in 50 patients with an average follow-up of 2 years. The surgical technique, results and complications in our series and in available literature is discussed. We had no major complications in the form of mortality, fatal Pulmonary embolism, temporary femoral nerve neuropraxia in 1 case, proximal femur hairline fracture in 1 case, component mal-position in 3 cases and superficial infection in 1 case. Functional assessment by Harris Hip Score, pain assessment by VAS score, Radiological assay for Cup abduction angle, ante-version angle, presence of radiolucencies, stem alignment and Fit , fill and subsidence. The MIS anterolateral approach allows good exposure for component placement, with less peri-operative blood loss (avg.600ml) and pain in immediate post-op period , earlier return to function and good patient satisfaction .

**Abstract No.: 39509**

**USE OF PEDICLE ENDOSCOPY FOR PERCUTANEOUS PEDICLE SCREW PLACEMENT IN LUMBAR SPINE:  
A PRELIMINARY STUDY**

Er-Xing He, Jing Guo, Zhi-Xun Yin, Zhi-Yong Guo, Lian-Jin Guo, Ju-Zhou Gao

**Introduction:** Conventional techniques for percutaneous pedicle screw (PPS) placement lack direct visualization of anatomical landmarks and rely heavily on intraoperative fluoroscopy. We introduce a new minimally invasive endoscopic technique (pedicle endoscopy) for percutaneously placing pedicle screws in the lumbar spine. **Methods:** The new endoscopy system uses a rigid operating sheath which contains 2 channels, one for placement of a micro-endoscope and the other for endoscopically assisted screw insertion. From Nov 2013 to May 2014, 9 patients with degenerative lumbar diseases were recruited. During surgery, pedicle endoscopy was applied for percutaneously placing lumbar screws. Screw insertion time, blood loss, fluoroscopy times and screw adjustment times were recorded. Postoperative computed tomography (CT) scans were obtained for assessment of screw accuracy. **Results:** The pedicle endoscope can clearly visualize the entry point for pedicle screw insertion. A total of 46 screws were placed endoscopically. For each screw, the average insertion time was  $9.4 \pm 6.2$  min, and the average blood loss was  $9.8 \pm 7.1$  ml. The average fluoroscopy times and adjustment times for each screw were  $2.3 \pm 1.7$  and  $1.5 \pm 1.4$ , respectively. 42 screws (91.3%) were within the cortical walls of the pedicle; 4 screws (8.7%) had mild penetration of the medial pedicle wall, but without neurological compromise. Only 2 screws (4.3%) had low-grade facet joint violation. **Conclusion:** PPS placement with assistance of pedicle endoscopy is a safe and feasible technique for minimally invasive spine instrumentation. This new technique enables real-time endoscopic view of screw insertion procedure, and offers comparable screw accuracy with respect to conventional techniques.

**Abstract No.: 39510**

**FIXATION OF DISTAL HUMERAL FRACTURE NON-UNION WITH SEGMENTAL BONE LOSS WITH LOCKED PLATES WITH OR WITHOUT NON-VASCULARISED FIBULA STRUT GRAFT**

Ajibola Oladiran, Israel Akinmokun, Elkanah Orimolade, Chidozie Mbada

**Abstract:** Humeral shaft fractures occur commonly in the young, active population. In developing countries, such fractures often present with complications following failed treatment by traditional bone setters. **Objective:** The purpose of this study is to demonstrate that the use of locked plates and morcellized iliac crest cancellous bone graft with or without free, non-vascularised fibula cortical strut graft gives satisfactory results in patients presenting with distal humeral fracture non-union following mismanagement by traditional bone setters. **Materials and Methods:** Two male patients presenting with distal humeral fracture non-union were treated in our centre within a period of 3 months. One had a 7cm bone gap while the other had a 3cm bone gap. Both had ORIF with locked plates and morcellized iliac crest cancellous bone graft while the first had a non-vascularised fibular strut graft to manage the bone gap and the second patient had acute shortening. **Results:** Both had good fracture union demonstrable both clinically and radiologically and were able to regain independent use of their limbs with full hopes of returning to their jobs. Both patients expressed immense satisfaction with the clinical outcome. **Conclusion:** Even in resource poor settings where the facilities for micro-vascular surgery make the use of free vascularised strut graft unavailable, the use of non-vascularised cortical strut graft or acute shortening can be used with satisfactory results

**Abstract No.: 39532**

**THE RELATIONSHIP BETWEEN THE DEGREE OF LUMBAR INTERVERTEBRAL DISC DEGENERATION AND THE DEGREE OF LUMBAR SPINAL STENOSIS BY MRI**

Xiang Liu, Lunchao Li, Qingan Zhu, Jixing Wang

**Objective:** To explore the relationship between the degree of lumbar intervertebral disc degeneration (IDD) and the degree of lumbar spinal stenosis(LSS) in patients with LSS by MRI.

**Methods:** 123 patients with LSS diagnosed in our hospital during January 2013 to January 2015 were randomly selected and divided into two groups by age of <60 and  $\geq 60$ . IDD and LSS on T2-weighted images respectively were classified into five grades and four grades according to the method proposed by Pfirrmann and the method proposed by Schizas. **Results:** There was no relationship between age and the degree of LSS, either was the degree of IDD. For those age of <60 , r value between the degree of IDD and LSS were 0.727(P=0.000), 0.602(P=0.000), 0.655(P=0.000) respectively at L1/2, L2/3, L3/4. For those age of  $\geq 60$ , r value between the degree of IDD and LSS were 0.400(P=0.005), 0.282(P=0.025), 0.423(P=0.001) respectively at L1/2, L2/3, L3/4. There was no significant relationship between the degree of IDD and LSS at L4/5 and L5/S1. The percentage of L4/5 absolutely stenosis were 55.70% and 59.68% respectively in both groups. **Conclusions:** There was no relationship between age and the degree of LSS, either was the degree of IDD. IDD and LSS is positively correlated at L1/2,L2/3,L3/4, but more significantly for those age of < 60. There is no significant correlation between the degree of IDD and the degree of LSS at L4/5 and L5/S1. The absolutely stenosis was observed most commonly at L4/5 .

**Abstract No.: 39535**

**MINIMALLY INVASIVE PERCUTANEOUS PLATE OSTEOSYNTHESIS (MIPPO) TECHNIQUE APPLIED IN THE TREATMENT OF THE HUMERAL SHAFT DISTAL FRACTURES THROUGH TWO DIFFERENT APPROACHES**

Da Ke Tong, Fang Ji, Qian Yun He, Hao Zhang, Guang Chao Wang

Background : Minimally Invasive Percutaneous Plate Osteosynthesis (MIPPO) technique through the lateral approach has been successfully used in the treatment of humeral shaft fractures and gained satisfactory clinical outcomes. Methods : An anatomical study and a preliminary clinic report were performed to evaluate the feasibility of applying MIPPO technique in the treatment of the humeral shaft distal fractures through two different approaches: the anterior approach and the lateral approach. Results : This study was done on thirty arms from fifteen fresh cadavers. The results of this study showed that they can both be used to treat humeral shaft distal fractures by using MIPPO technique. The results of using the MIPPO technique through the two different approaches in the treatment of humeral shaft fractures in 41 patients were also reviewed. Conclusions : The two different approaches described in this paper are feasible, safe and efficient, since there were no obvious damage, nor major complications.

**Abstract No.: 39536**

**OUTCOME COMPARISON OF LISFRANC INJURIES TREATED THROUGH DORSAL PLATE FIXATION VERSUS SCREW FIXATION**

Sunjun Hu, Shimin Chang, Xiaohua Li, Guangrong Yu

**Objective:** The objective of this prospective study was to test whether the treatment of Lisfranc injuries with open reduction and dorsal plate fixation would have the same or better functional outcomes as treatment with standard trans-articular screw fixation. **Methods:** Sixty-seven patients with primarily isolated Lisfranc joint injury were treated by open reduction and dorsal plate fixation or standard screw fixation. The patients were followed on average for 31 months. Evaluation was performed with patients' chief complaint, clinical examination, radiography, and AOFAS Midfoot Scale. **Results:** Thirty two patients were treated with open reduction and dorsal plate fixation, and twenty eight patients were treated with open reduction and screw fixation. After two years follow-up, the mean AOFAS Midfoot score was 83.1 points in the dorsal plate fixation group and 78.5 points in the screw fixation group ( $p < 0.01$ ). Of the dorsal plate fixation group, radiographic analysis revealed anatomic reduction in twenty-nine patients (90.6%, 29/32) and nonanatomic reduction in three patients. Of the screw fixation group, radiographic analysis revealed anatomic reduction in twenty-three patients and nonanatomic reduction in five patients (82.1%, 23/28). **Conclusions:** Open reduction and dorsal plate fixation for a dislocated Lisfranc injury do have better short and median term outcome and a lower reoperation rate than standard screw ORIF. In our experience, we recommend using dorsal plate in ORIF on dislocated Lisfranc injuries.

**Abstract No.: 39540**

**ONE NEW METHOD TO TREAT THE NONUNION OF METAPHYSIC: THE OSTEO-PERIOSTEAL FLAP WITH FASCIA PEDICEL TRANSPLAT**

Da Ke Tong, Fang Ji, Qian Yun He, Chen Ding, Kang Liu, Wen Bin Ding

Object: To investigate a feasible and effective method to promote bone union in the treatment of metaphysic nonunion occurring in the long bones. Method: An appropriate osteo-periosteal flap with fascia pedicel having the ample blood supply near the proximal and distal of the nonunion line was created, which had the similar procedure with that of the fascia pedicle skin flap. After 2/3 to 3/4 of the circumference of the nonunion line was covered well by the osteo-periosteal flap, the flap was sewed and fixed to the distal remaining periosteum and fascia. The cuff derived periosteum flap or the crossing flap with two short periosteum flaps near the nonunion line could be used if the periosteum flap could not formed. Result: we treated 29 patients of metaphysis nonunion with this method and achieved good results. All patients were followed up from 1 year to 20 years. All nonunions healed. The average healing time was 12 weeks ranged from 8 weeks to 24 weeks. Conclusion: the osteo-periosteal flap with fascia pedicel transplant is therefore an effective method for the treatment of metaphysic nonunion.

**Abstract No.: 39541**

**EARLY CLINICAL OUTCOME OF FULL-ENDOSCOPIC L5/S1 DISCECTOMY THROUGH INTERLAMINAR APPROACH**

Zhenzhou Li,

**Objective:** This report focuses and reviews the surgical strategy, safety and clinical short-term outcome of full-endoscopic discectomy through interlaminar approach in the case of L5/S1 intervertebral disc excision. **Method:** From April 2011 to December 2011, 72 cases of intracanalicular non-contained disc herniations at the L5/S1 level were treated with full-endoscopic discectomy through interlaminar approach. MRI was reexamined 1 day and 3 months after operation to evaluate the resection completeness of prolapsed disc material. Visual analogue scales (VAS) of low back pain and sciatica, Oswestry Disability Index (ODI) of preoperative, 3 months postoperative, 6 months postoperative and 12 months postoperative were recorded and compared. MacNab scores were evaluated at the 12-month follow-up. **Results:** All operations were completed without conversion to other surgical techniques. Average operation time was 55 min (30-90min). Only 1 case of reoccurrence was revised with microendoscopic discectomy. 1 case experienced transversing nerve root injury aggravation. No infection was complicated. Postoperative ODI and VAS of low back pain and sciatica were significantly decreased in each time point compared with that of preoperative ( $P < 0.05$ ). MacNab scores of 12-month follow-up include 33 excellent, 25 good, 1 fair and 2 poor. **Conclusion:** With proper selection between axilla approach and shoulder approach according to the sites of prolapsed or sequestered disc materials, full-endoscopic L5/S1 discectomy through interlaminar approach is a safe, rational and effective minimally invasive spine surgery technique with excellent clinical short-term outcomes.



**Abstract No.: 39544**

**BIPLANE DOUBLE-SUPPORTED SCREW FIXATION EXTREMELY REDUCES THE RISK OF FIXATION FAILURE IN FEMORAL NECK FRACTURES. CLINICAL OUTCOMES IN 207 PATIENTS.**

Boyko Gueorguiev, Orlin Filipov

Osteosynthesis of femoral neck fractures is related to 20–46% poor results. The recently introduced Filipov's method for biplane double-supported screw fixation (BDSF) offers better stability, buttressing two out of three medially diverging cannulated screws on the inferior cortex with additional support on the posterior neck cortex. The two calcar-buttressed screws are with different coronal inclinations to provide constant fixation strength during various physical activities. The aim of this retrospective study is to evaluate outcomes from the first 5-year period of BDSF clinical application. Outcomes in 207 patients (76.3±9.8 years-old, males 75.7±10.3, females 76.4±9.8) with displaced Garden III–IV fractures were analyzed in 29.6±16.8-month follow-up. Patients' age with fracture consolidation (76.1±9.9) or with Garden III fractures (73.9±9.5) was lower compared to patients with fixation failure (82.2±7.3) or with Garden IV (76.4±9.9), respectively,  $p \geq 0.21$ . Bone union occurred in 96.6% of the cases (males 97.6%, females 96.4%,  $p=1.00$ ). Rate of nonunion was 3.4%, including fixation failure (2.4%), pseudoarthrosis (0.5%) and nonunion with avascular necrosis (AVN, 0.5%). Rate of AVN was 12.1% (males 4.8%, females 13.9%,  $p=0.12$ ). Harris hip score (HS) was significantly higher after Garden III (94.0±9.1) versus Garden IV fractures (85.6±19.4),  $p=0.04$ . HS was higher for males (89.3±18.1) versus females (85.4±19.1),  $p=0.07$ . Age of patients declaring good mobility (75.4±10.2) or easy shoe handling (75.1±10.1) or with less than 1 comorbidity (55.8±3.4) was significantly lower compared to patients with poor mobility (80.8±5.9) or difficult shoe handling (81.3±6.7) or with more than 2 comorbidities (76.7±9.5), respectively,  $p < 0.01$ .

**Abstract No.: 39545**

**BONE MARROW ASPIRATE CONCENTRATE(MESENCHYMAL STEM CELLS) IN NON UNION DISTAL FOURTH BOTH BONES LEG- A CASE REPORT**

Avinash Mahender, Mahender Babu

**AIM:**To determine the therapeutic efficacy of adult mesenchymal stem cells in a hostile environment such as non union with poor soft tissue cover in which bone grafting is not a viable option.**MATERIALS AND METHODS:**A case of compound grade 3b fracture distal fourth both bones leg was treated initially with fibula plating and tibial external fixation. The wound was left open to allow for secondary healing. 6 months later the external fixator was removed and cast conversion was done. 9months later there were still no signs of callus formation. Further the patients skin condition was not healthy enough to permit an open reduction and internal fixation with bone grafting. Hence a percutaneous plating of the tibia was done after which the bone marrow aspirate concentrate obtained from the ipsilateral iliac crest of the same patient via the HARVEST method(10-15ml) was directly injected into the fracture site under c-arm guidance. Patient was followed up serially with Xrays.**RESULTS:**Signs of union appeared by the third month and complete union occurred at the end of five months. At the end of one year of follow up the patient was painfree and walking without any difficulty.**CONCLUSION:**Thus in situations where open bone grafting is not a viable option, this innovative modality of treatment may be considered as an alternative.

**Abstract No.: 39546**

**SHORT TERM OUTCOME ANALYSIS OF OPEN ACROMIOPLASTY AND ROTATOR CUFF REPAIR IN IMPINGEMENT SYNDROME**

Avinash Mahender, Mahender Babu

**AIM:** An outcome analysis of open acromioplasty and rotator cuff repair in patients with features of stage 3 impingement syndrome as described by Neer . Using an abbreviated constant and murley shoulder score. **MATERIALS AND METHODS:** This study was conducted on patients operated between 2010 and 2012. A total of 12 patients of whom 2 patients were lost to follow up. 8 were male and 2 were female aged between 45 and 65 years(average age 53). Only patients with pure clinical features of impingement syndrome were selected and the diagnosis was confirmed with MRIs or ultrasound scan. Post traumatic cases were excluded. Open acromioplasty and rotator cuff repair with suture anchors was performed in these patients. All patients were followed up serially and were assessed using an abbreviated constant murley shoulder score. **RESULTS:**Pre op mean score was 25.2/75 and post op mean score was 58.6 /75 . **Discussion:**). 8 out of the 10 patients showed a significantly improved score and were immensely satisfied with the procedure whereas 2 patients showed minimal improvement(due to poor compliance for rehab in one and suture anchor pulling out in the second patient . These results conformed with the various other studies. **CONCLUSION:**From the results thus seen open acromioplasty and rotator cuff repair may prove to be an excellent option in carefully selected patients.

**Abstract No.: 39547**

**COMPARISON BETWEEN PLATE OSTEOSYNTHESIS AND NONOPERATIVE TREATMENT IN THE MANAGEMENT OF DISPLACED MIDSHAFT CLAVICULAR FRACTURES: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS**

Longxiang Shen, Chi Zhang, Zhiquan An, Congfeng Luo, Biao Zhong

**Introduction:** There is a growing trend that orthopedic surgeons prefer primary surgical stabilization with plate fixation in the management of displaced midshaft clavicular fractures. Although reports indicated that surgical treatment is safety and effective, in clinical practice, there is no consensus amongst trauma and orthopaedic surgeons. In order to conduct a precise estimation, we performed a meta-analysis to compare plate osteosynthesis and nonoperative treatment in the management of displaced midshaft clavicular fractures. **Methods:** a literature search was performed without language restrictions and all randomized controlled studies regarding the effects of plate osteosynthesis and nonoperative treatment on the outcomes of displaced midshaft clavicular fractures were included. The weighted mean difference (WMD) or the relative risk (RR) were calculated for continuous or dichotomous data respectively. **Results:** six studies were eligible for data extraction. The meta analyses showed that, compared with nonoperative treatment, plate osteosynthesis resulted in better Disabilities of the Arm, Shoulder, and Hand (DASH) scores. Further, plate osteosynthesis led to significantly lower incidences of nonunion. A number-needed-to-treat analysis revealed that more than 6 patients would have to undergo plate osteosynthesis to prevent one nonunion. **Conclusion:** in the management of mid-shaft clavicular fractures, plate osteosynthesis is superior to nonoperative treatment regarding function score. Plate osteosynthesis results in lower incidences of nonunion compared to nonoperation. However, the current study does not provide evidence supporting the routine use of plate osteosynthesis for all displaced midshaft clavicular fractures.

**Abstract No.: 39549**

**MODIFIED STOPPA APPROACH FOR SURGICAL TREATMENT OF ACETABULAR FRACTURE**

Yonghan Cha, Hayong Kim, Sunho Jang

Background: we analyzed the extent of the comminution in the acetabular weight-bearing area, the clinical and radiographic results and the complications after minimum 2-years follow-up of the modified stoppa approach for the treatment of acetabular fracture, and tried to evaluate efficacy of the operative technique. Materials: all of the 31 patients who needed anterior approach among the patients treated for acetabular fracture at our hospital from november 2007 to november 2011 were subjected to surgical procedure using the modified stoppa approach. fracture pattern, operative time, blood loss during operation, quality of reduction, number of bony fragments in the acetabular weight-bearing area and postoperative complication, etc. were examined by retrospectively analyzing the medical records and the radiographic examinations. the results after the operation were analyzed based on the criteria of matta. Results: the clinical results were excellent in 6 cases, good in 16 cases, and poor in 6 cases, while the radiographic results were excellent in 8 cases, good in 16 cases, and poor in 4 cases. although the quality of reduction ( $p=0.03$ ) and the clinical results ( $p=0.04$ ) were better with lower number of bony fragment (extent of comminution), there was not statistical significance with the radiographic results ( $p= 0.74$ ). Conclusion: most of the cases treated using the modified stoppa approach displayed results that were clinically and radiographically good or better. therefore, in this study, we may conclude that modified stoppa approach is an operative technique alternative to the classic ilioinguinal approach.

**Abstract No.: 39552**

**RISK FACTORS FOR UNSUCCESSFUL ACETABULAR PRESS-FIT FIXATION AT PRIMARY TOTAL HIP ARTHROPLASTY**

Vane Antolic, Ladislav Simnic, Urban Brulc, Blaz Mavcic

**INTRODUCTION:** Acetabular press-fit fixation at primary hip arthroplasty (THA) is sometimes not achievable and other fixation types have to be used instead. Our aim was to analyze risk factors for unsuccessful acetabular press-fit fixation at primary THA. **PATIENTS-METHODS:** Data on primary THA at our institution were collected prospectively in the period 2008-2014. Implant brands that offer press-fit acetabulum and operating surgeons with >20 cases were included in the study. Acetabular press-fit fixation was considered unsuccessful if the operating surgeon did not use press-fit acetabulum of the same implant brand as the femoral component. Binary logistic regression model for unsuccessful acetabular press-fit fixation used input variables: operation date (= surgeons' learning curve), patients' age and gender, operated side (right/left), femoral implant brand and operating surgeon. **RESULTS:** Inclusion criteria were met by 1676 THA cases (mean age at operation 65.2 years, 886 females, 918 right hips, 733 anterolateral approach) with 5 different implant brands implanted by 13 surgeons. Acetabular press-fit fixation was unsuccessful in 234 (14.0 %) cases. In the binary logistic regression model (Nagelkerke  $R^2 = 0.22$ ;  $p < 0.01$ ), statistically significant risk factors for unsuccessful fixation included female gender (odds ratio 2.91), left side (odds ratio 1.47) and 3 particular operating surgeons. The impact of patient's age, learning curve and implant brand was not statistically significant. **CONCLUSIONS:** Success of press-fit fixation at THA depends mostly on patients' and surgeons' characteristics and not on the implant brand. Patient-specific preoperative planning and implant-specific operative technique may improve results of press-fit fixation.

**Abstract No.: 39553**

**WELL-BALANCED POSTERIOR-STABILIZED TOTAL KNEE ARTHROPLASTY RESTORES  
CONSTITUTIONAL CORONAL ALIGNMENT IN BOTH EXTENSION AND FLEXION**

Hitoshi Nochi, Satomi Abe, Hiroshi Ito

This study investigated the effect of a balanced gap technique on flexion coronal alignment in posterior-stabilized total knee arthroplasty (PS-TKA), as compared with constitutional alignment by radiographic examination. Group N included 53 knees of 43 women with no osteoarthritis (Grade I or lower classification according to the Kellgren-Lawrence Grading Scale), while Group TKA included 52 knees of 39 women who suffered from medial osteoarthritis and underwent PS-TKA with the balanced gap technique. Using newly developed axial radiographs, the flexion coronal alignment of the lower extremity in sitting position, angle  $\theta$  between the clinical epicondylar axis and tibial mechanical axis, and the condylar twist angle (CTA) and joint lift-off angle (LOA) were evaluated. Additionally, the extension coronal alignment (mechanical femorotibial angle [mFTA]), was evaluated using full-length weight-bearing plain radiographs. In Group TKA, 47 knees (90.4%) had good flexion balance, with an LOA of  $1 \pm 3^\circ$ . The mean angle  $\theta$ , CTA, LOA, and mFTA were  $89.9 \pm 2.5^\circ$ ,  $0.9 \pm 2.0^\circ$ ,  $1.0 \pm 2.0^\circ$ , and  $177.0 \pm 3.5^\circ$ , respectively. The angle  $\theta$  significantly correlated with the LOA ( $r = -0.33$ ,  $p = 0.016$ ) and mFTA ( $r = 0.39$ ,  $p = 0.004$ ). In Group N, the mean angle  $\theta$  and mFTA were  $89.3 \pm 2.6^\circ$  and  $177.8 \pm 3.1^\circ$ , respectively, and no significant differences were observed between the 2 groups ( $p = 0.71$  and  $0.09$ , respectively), indicating that the balanced gap technique restored the constitutional coronal alignment of the lower extremity in both extension and flexion in PS-TKA.

**Abstract No.: 39554**

**DEGENERATIVE CHANGES OF CORONAL ALIGNMENT IN EXTENSION AND FLEXION OF THE LOWER EXTREMITY**

Hitoshi Nochi, Satomi Abe, Hiroshi Ito

This study investigated the flexion coronal alignment of the lower extremity and its degenerative changes by radiographic examinations in Japanese women. Using newly developed axial radiographs, the flexion coronal alignment of the lower extremity in sitting position, the angle  $\theta$  between the clinical epicondylar axis and tibial mechanical axis, and the mechanical proximal tibial angle (mMPTA) and condylar twist angle (CTA) were evaluated. In addition, the mechanical femorotibial angle (mFTA) was evaluated using full-length weight-bearing plain radiographs. Fifty-three knees of 43 women, which were classified as Grade I or lower according to the Kellgren-Lawrence Grading Scale for osteoarthritis classification, were classified as the No-osteoarthritis group (Group N). Moreover, 63 knees of 48 women, which were Grade III or more, were classified as the osteoarthritis group (Group O). In group N, the average mFTA was  $177.8 \pm 3.1^\circ$ , and 24.5% had constitutional varus knees with a natural mechanical alignment of  $3^\circ$  varus or more. The average angle  $\theta$  was  $89.3 \pm 2.3^\circ$ , and significantly correlated with the mMPTA ( $r=-0.56$ ,  $p<0.0001$ ). As for the degenerative alignment changes of the lower extremity, the angle  $\theta$  significantly correlated with the mFTA ( $r=0.67$ ,  $p<0.0001$ ) and the mMPTA ( $r=-0.72$ ,  $p<0.0001$ ). In comparing group N with group O, the mFTA ( $p<0.0001$ ), angle  $\theta$  ( $p<0.0001$ ), and mMPTA ( $p<0.0001$ ) showed significant differences; however, interestingly, the CTA ( $p=0.24$ ) did not. Taken together, these results indicate that coronal alignment of the lower extremity changes to varus deformity in parallel with degenerative changes in extension and flexion.



**Abstract No.: 39555**

**EVALATION OF THE TREATMENT OF DEVELOPMENTAL DYSPLASIA OF THE HIP BY DEGA OSTEOTOMY.**

Ahmed Gaber Mostafa, Atef Morsy, Emad Elbana

**Background:**The Dega osteotomy is a versatile procedure that is widely used to treat neuromuscular hip dysplasia. There is a paucity of the English language literature on its use in acetabular dysplasia seen in developmental dysplasia of the hip (DDH). In 1969 Dega described a transiliac osteotomy to treat residual acetabular dysplasia secondary to congenital hip dysplasia or dislocation. **Methods:**The study included 32 patients (34 hips), they had been treated by open reduction, Dega osteotomy with or without femoral (shortening, derotation and varus) osteotomy. The age at the time of the operation ranged from 18 to 72 months. **Results:**The patients were followed both clinically and radiologically for mean duration of 20 months (range, 6–48 months). The overall final clinical results were excellent in 17 patients (50%), good in 12 (35%), fair in 3 (9%) and poor in 2 patients (6%), satisfactory (excellent and good) in 29 patients (85%) and unsatisfactory (fair and poor) in 5 patients (15%). The radiological end result was Class I (excellent) in 12 patients (35%), Class II (good) in 16 (47%), Class III (fair) in three (9%) and Class IV (poor) in three patients (9%). The results were satisfactory in 28 (82%) patients and unsatisfactory in six (18%) patients. **Conclusion:**We concluded that operative treatment of neglected DDH after the walking age with Dega osteotomy gives satisfactory results. **Keywords:** Developmental dysplasia of the hip, Dega, Pelvic osteotomy

**Abstract No.: 39559**

**THE 50 MOST CITED ARTICLES IN ORTHOPAEDIC SURGERY FROM MIANLAND CHINA**

Dike Ruan, Zhiwei Jia, Fan Ding, Yaohong Wu, Qing He

Introduction: Mainland China, as a rapidly developing territory with the largest population including over 50000 orthopaedic surgeons, has an increasing importance in orthopaedics. However, influential Chinese orthopaedic articles has not been investigated. Citation analysis has been widely used to evaluate the impact of articles in medical specialties. This study aimed to identify the 50 most cited orthopaedic articles from mainland China and analyzed the characteristics that made them citable. Methods: Science Citation Index Expanded was searched for citations of articles published in seventy selected journals. The 50 most cited articles originated in mainland China were identified. Basic information including title, authors, year of publications, article type, journal, city, institution, number of citations was recorded. Results: The 50 most cited articles were published between 1981 and 2010. The 2000s was the most productive decade. All articles were written in English and published in sixteen journals. Spine was the journal with the largest number of articles, while Lancet was the highest impact factor in the list. The top 50 articles originated mainly from Beijing and Shanghai. Basic research was the majority, with the remaining of clinical studies. Bone was the most investigated topic in basic research while spine was in clinical studies. Conclusions: This top 50 list shows the most influential Chinese articles for global orthopaedic community. Identification of these articles presents insight into historical contributions of Chinese researchers to international orthopaedics, and summary of characteristics helps to recognize advantages and disadvantages in Chinese orthopaedics and to promote more impact studies.

**Abstract No.: 39560**

**HYBRID SURGERY FOR MULTILEVEL CERVICAL DEGENERATIVE DISC DISEASES: A SYSTEMATIC REVIEW OF BIOMECHANICAL AND CLINICAL EVIDENCE**

Dike Ruan, Zhiwei Jia, Fan Ding, Qing He

**Introduction:** The optimal surgical technique for multilevel cervical degenerative disc diseases (DDD) remains controversial. Hybrid surgery (HS) incorporating anterior cervical discectomy and fusion (ACDF) and cervical disc replacement (CDR) is increasingly performed for cervical DDD. This study aims to evaluate the biomechanical and clinical evidence available for HS and to provide a systematic review of current understanding of HS. **Methods:** This systematic review was undertaken by following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Statement. Multiple databases and online registers of clinical trials were searched up to February 2014. The biomechanical and clinical studies on HS for cervical DDD written in English were included. Two authors independently assessed methodological quality and extracted data. **Results:** Fifteen studies including eight biomechanical studies and seven clinical studies were indentified. The biomechanical studies showed that HS was benefit to motion preservation of the operative levels and revealed less adverse effect on adjacent segments. All clinical studies demonstrated improvement in validated functional scores after HS. Segment motion and immobilization were achieved at the arthroplasty level and arthrodesis level, respectively. Postoperative assessments and complication rate were similar or in favor of HS when comparing with ACDF or CDR. However, the overall quality of evidence for HS was low to very low. **Conclusions:** There is a paucity of high quality evidence for HS. HS may be a safe and efficacious technique to benefit a select group of multilevel cervical DDD, which is needed to be confirmed by further prospective, randomized controlled trials.

**Abstract No.: 39561**

**MODIFIED SURGICAL TECHNIQUES OF FREE VASCULARIZED FIBULAR GRAFTING FOR THE TREATMENT OF OSTEONECROSIS OF THE FEMORAL HEAD**

Zhang Chang-Qing, Gao You-Shui

**Purpose:** To introduce modified surgical technique of free vascularized fibular grafting (FVFG) for osteonecrosis of the femoral head (ONFH). **Subject and Methods:** Two hundred fifty-nine patients with 342 hips of ONFH were included in this report. The patients' average age was 35.6 years old (ranging 19-55 years). The disease was staged from II to V among these patients based on the Steinberg classification system. By the modified procedures, the vascularized fibular graft was harvested via a lateral incision with fibular osteotomy prior to the exposure of the vascular pedicle, and the removal of necrotic tissue and implantation of graft were performed through an anterior approach. The operative time averaged 87 minutes for unilateral ONFH (ranging 75-112 min) and 196 minutes for simultaneous treatment of bilateral ONFH (ranging 160-230 min). The average length of follow-up was 6.5 years (ranging 3-10 years). The complications included one infection in one case, temporary loss of sensation of the thigh in five cases, and restricted motion of the great toe in five cases. The Harris hip score improved from 66.0 to 88.1 on average of patients. Radiographic evaluation showed no changes in 200 hips (58.5%), improvement in 113 hips (33.0%) and necrosis progression in 29 hips (8.5%). Only five patients had total hip arthroplasty during the period. **Conclusions:** These results show that the modified technique of the use of FVFG for treatment of ONFH yields similar postoperative results in comparison to the traditional method.

**Abstract No.: 39564**

**URSOLIC ACID INHIBITS OSTEOCLAST FORMATION AND FUNCTION VIA THE INHIBITION OF NF- $\kappa$ B AND JNK SIGNALING**

Chuan Jiang, Jinwu Wang

Ursolic acid (UA) is a triterpenoid with various biological and pharmacological activities. However, its effect and mechanism of action on osteoclasts and related diseases remain to be further studied. In this study, we investigated the effects of UA on osteoclast differentiation and bone resorption in vitro, and explored its potential molecular mechanism. By establishing the titanium (Ti) particle-induced mouse calvarial osteolysis model, the effects of UA on osteoclasts in vivo were measured. The in vitro results showed that 1.25, 2.5 and 5 $\mu$ M UA could significantly inhibit receptor activator of nuclear factor- $\kappa$ B ligand (RANKL)-induced osteoclast formation in a concentration-dependent manner. 1.25 and 5 $\mu$ M UA could also inhibit the F-actin ring formation of osteoclasts and bone resorption. In the mRNA levels, it was shown that UA could downregulate the expression of NFATc1 and c-Fos as well as NFATc1-regulated osteoclast marker genes (cathepsin K, calcitonin receptor etc.). Additionally, it was further found that UA could inhibit the activation of RANKL-induced NF- $\kappa$ B signaling, and delay the activation of JNK signaling. In vivo, UA had a protective effect on Ti particle-induced mouse calvarial osteolysis in a dose-dependent manner, which was related to the decrease of osteoclasts in bone tissues. Taken together, these results indicated that UA could inhibit osteoclast differentiation and bone resorption function, and also ameliorate osteoclast-related osteolysis, the molecular mechanism of which was related to the inhibition of NF- $\kappa$ B and JNK signaling in osteoclasts.

**Abstract No.: 39567**

**A RETROSPECTIVE FUNCTIONAL OUTCOME AND X-RAY ANALYSIS OF PATIENTS WITH SYMPHYSIS DISRUPTION IN ASSOCIATION WITH POSTERIOR PELVIC RING INJURY.**

Maris Zambrans, Igors Terjajevs, Rolands Gibners

Introduction: Anterior and posterior pelvic ring injury is a high energy trauma that sometimes can be treated in a different surgical manner. Materials and methods: 88 patients with different types of pelvic injuries were included. The criteria for inclusion in the study were symphysis pubis disruption and posterior pelvic ring disruptions (Young – Burgess classification) receiving surgical treatment as standard of care symphysis pubis ORIF only or extra posterior pelvic ring fixation. 20 patients matching criteria were selected for study. The clinical examination of all patients was performed after surgery. Clinical evaluation including the ability to bear weight and absence of pain was carried out. Pre-op and post-op radiographs were used to determine location of injury, to carry out Young - Burgess classification of the injuries and document healing progress in the selected patients. Results: The clinical examination has shown significantly better early functional outcome in 7 patients. During 6 month post-op evaluation 8 patients reported about regular pain in SI joint during bearing weight on ipsilateral side. X-ray analysis has shown no secondary dislocation of symphysis or sacroiliacal joint in both groups. Conclusion: Outcome depends on exact reposition and surgeon experience. The best early functional and midterm radiographic results were observed in patients with symphysis pubis osteosynthesis and lumbopelvic fixation. Symphysis pubis osteosynthesis in combination with lumbopelvic fixation allow for more early weight bearing. Lumbopelvic fixation should become a standard operation in cases when pelvic injury is classified as APCII or APCIII (Young – Burgess)

**Abstract No.: 39573**

**SIMULTANEOUS- SEQUENTIAL KNEE REPLACEMENTS AT STAVANGER UNIVERSITY HOSPITAL (SUS)-  
NORWAY**

Elin Haarr, Knut Harboe

In Norway and Sweden the tradition for simultaneous sequential prostheses surgery is quite rare. In other countries in Europe and in the USA bilateral sequential surgeries, is more common. For the patient and the society there are numerous advantages of operating both knees within the same procedure, if done in a safe manner. Previous research reports good results with few complications related to simultaneous, sequential replacements, but also a few reporting on an increased risk compared to two separate surgeries. At our hospital (SUS) I did the first simultaneous sequential knee replacement in 2013. We put these procedures into a FAST TRACK system and increased the numbers of patients gradually. Until now we have 16 patients included, 14 performed by me. The list includes one unicondylar bilateral procedure. Our experiences are very satisfactory, the patients are happy, the hospital stay is short and the complication rate is low.

**Abstract No.: 39577**

**BILATERAL LISFRANC INJURY: A CASE REPORT**

Merwen Mitchel Musni, Jovito Paz

Introduction: Lisfranc injury involving the tarsometatarsal joints occurs in 0.2% of all fractures. Dislocation of such joints is suspected in patients who complain of pain on the dorsum of the foot after an axial load is applied on plantarflexed position. Objective: This study aims to present a rare case of bilateral Lisfranc injury, its mechanism, clinical presentation, diagnosis, management and outcome. Case Presentation: This is a case of D.G., a 43 year-old male who complained of pain on dorsum of bilateral feet after a vehicular accident. His right plantarflexed foot was on top of the dashboard and his left foot was resting on the floor mat, when their truck collided head-on with another truck. Radiographic imaging and CT scan confirmed the diagnosis of Lisfranc fracture-dislocation of the right and Lisfranc injury of the left. Patient initially had closed reduction and percutaneous pinning of the right foot; however, anatomic reduction was not achieved. Patient then underwent open reduction internal fixation of both feet using screws and kirschner wires. At 6 months post-surgery, patient is ambulatory with full weight bearing on both feet. The American Orthopedic Foot and Ankle Society Midfoot Score is 100 points. Discussion: There are only two other reported cases of bilateral Lisfranc injury, which were both treated with closed reduction internal fixation to achieve anatomic reduction. The low incidence is attributed to 20% missed diagnosis. History-taking and physical examination as well as radiographic parameters are important to aid the orthopedic surgeon to arrive at the correct diagnosis.



**Abstract No.: 39579**

**MULTIPLE PATHOLOGICAL FRACTURES SECONDARY TO ENDOCRINOPATHY FROM THALASSEMIA: A FORM OF PSEUDO OSTEOPENIA IMPERFECTA**

Jegathesan T, Sean Ho, Ernest Kwek

Osseous complications may occur in patients with transfusion dependent thalassemia. Such patients are predisposed to complications from both the ineffective erythropoiesis as well as the multiple transfusions received. The ineffective erythropoiesis results in a widening of the medullary canal with thinning of the cortices. Multiple transfusions can lead to iron overload, resulting in various forms of endocrinopathy. Endocrinopathy such as hypogonadism, can worsen underlying osteoporosis and increase the risk of fractures. As such, patients should be counseled about the increased risk of fracture should they develop endocrinopathy after multiple transfusions. Activity modification should be implemented. Surgical treatment of such fractures should consist of intra-medullary nailing or locking plates where possible, in view of the poor bone quality and consequent risk of implant failure. Whilst there is literature documenting the prevalence and lifetime risk of fractures in thalassemia patients, there are few reports on multiple fragility fractures in the same patient. In our case, we describe a case of multiple pathological fractures in a patient with transfusion dependent thalassemia complicated by endocrinopathy from iron overload. This patient suffered 13 fractures in total, with majority occurring after the development of endocrinopathy. Treatment was challenging in view of the occurrence of multiple fractures in the same bone after trivial trauma. This report serves to highlight the clinical features of the disease and its distinct similarity to osteopenia imperfecta.

**Abstract No.: 39583**

**ACCURACY OF CONSENTING IN TOTAL KNEE REPLACEMENT IN A UNIVERSITY HOSPITAL**

Mathias Nagy, Brigitte Scammell

Introduction: Informed consent is a patient's confirmation for a healthcare specialist to provide treatment, it has fundamental ethical and legal implications and therefore accurate consenting is essential. Different consent forms are used in the UK; many hospitals use blank consent forms where procedure, risk, benefits and complications are hand written and entered for each patient individually. Methods: we conducted a retrospective review of 100 consent forms, used in 100 consecutive primary TKR in a university hospital. We evaluated accuracy of our consenting practice including risks, benefits and complications. Results: consenting surgeon 99% a middle grade or senior doctors, mean age of patients was 68 years (range 36-89), consent form was present in the clinical notes in 99%, all with correct patient's details, correctly signed and dated by surgeons in 99% and patients in 92%. Responsible health professional was entered in 49%. A copy of the consent form was given to the patient in 80% of the cases. Common complications entered on the consent form included infection in 77%, pain in 15%, bleeding in 23%, thromboembolism in 75%, stiffness in 54% and wear in 12%. Less common complications included nerve injury in 42%, vascular injury in 35%, fracture in 1%, dislocation in 1%, death in 34% and leg length problems in 1%. Conclusion: The use of blank consent forms is not recommended, it can lead to inadequate consenting with missing of important risk and complications. The use of pre-printed procedure specific consent forms should be considered.

**Abstract No.: 39586**

**MANAGEMENT OF PAEDIATRIC FEMORAL SHAFT FRACTURES IN A DISTRICT GENERAL HOSPITAL**

Mathias Nagy, Gautam Reddy, Derek Pegg

Introduction: Paediatric femoral shaft fractures are common and the most common fracture in children requiring hospital admission. There are several treatment options, some with extended hospital stay. Methods: We conducted a retrospective review of all consecutive patients younger than 10 years presenting with femoral shaft fractures in the past 8 years. Results: We identified 40 patients (13 girls, 27 boys), average age was 4.2 years (0.2-10.6 years). All patients sustained closed injury and needed admission to hospital. Mechanism of injury included trips and slips (13), fall from height (10), sport related (8), unwitnessed (3), non-accidental (1), metabolic causes (2), other (3). Analysis of the radiographs showed midshaft fracture in 28, proximal third in 9 and distal third in 3 cases. Fracture management was conservative in 37 cases and included Thomas splint (28), gallows traction (7) and cast (2). Three patients underwent ORIF or flexible nailing. Complications included four cases of mild skin problems related to traction and Thomas splint. Average length of hospitalization was 25 days (range, 3-73 days). Three patients were transferred for management to a tertiary center. Outpatient follow up was required in all cases until fracture union was evident on radiographs, three patients underwent removal of metalwork as a day case procedure. All fractures united and all patients regained normal function and mobility. Conclusion: majority of paediatric femoral shaft fractures can be managed conservatively with a very low complication rate, however long hospitalization is required.

**Abstract No.: 39587**

**EARLY RESULTS OF COLLAGENASE INJECTION FOR DUPUYTREN'S CONTRACTURE**

Mathias Nagy, Antonella Conti, Graham Cheung, Daniel Brown

Introduction: Dupuytren's disease is a fibroproliferative condition of the palmar and digital fascia leading to formation of cords and flexion contractures. A new promising treatment option has been introduced recently; injection of collagenase, produced by *Clostridium histolyticum*, which breaks down collagen in the diseased tissue. Our aim was to assess our early results using this new non-operative treatment. Methods: All consecutive collagenase injections for Dupuytren's contracture were retrospectively reviewed. Two hand surgeons performed all injections in the last 18 months. Patients underwent manipulation under local anaesthesia one day following collagenase injection and had formal hand therapy. Patients were assessed clinically and with two questionnaires. Results: 90 consecutive collagenase injections (43 left, 47 right) were performed on 79 patients (20 female, 59 male) with no patients lost to follow up. Average age was 65.2 years (29.2-90.4). Affected digit was little (51%), ring (35%), middle finger (12%) and thumb (2%). Fixed flexion deformity (FFD) was present at a single MCP joint in 39%, single PIP joint in 20% and multiple joints were affected in 41% of the cases. Full correction of the deformity was achieved in 82% of the cases. In 12% of the cases a FFD of 5-10 degrees and in 6% a FFD of 20-40 degrees remained. Complications included 13 cases of small and 6 cases of moderate skin tear, all healed without any additional treatment. We recorded one case of early recurrence. Conclusion: Our results demonstrate excellent early results of collagenase injection for Dupuytren's contracture.

**Abstract No.: 39588**

**FREE VASCULARIZED FIBULAR GRAFTING FOR THE TREATMENT OF NECK NONUNION AND OLD FEMORAL NECK FRACTURES**

Zhang Chang-Qing,

Purpose: To evaluate the efficacy of free vascularized fibular grafting for the treatment of neck nonunion and old femoral neck fractures. Methods: In the current study, we retrospectively reviewed 24 cases with old femoral neck fractures and 59 cases of femoral neck nonunion treated between May 2005 and November 2013. One case of nonunion was concomitant with osteonecrosis of the femoral head (ONFH). Limb shortening more than 3 cm was found in 2 cases, and shortening of 2 cm was found in 4 cases. The duration of nonunion ranged 6 months to 4 years. Free vascularized fibular grafting (FVFG), in combination with cannulated screws or reversed LISS for contralateral distal femur, was used as the protocol to preserve the autologous hip. All patients had postoperative follow-up of more than 1 year. Fracture healing, hip function and complications were evaluated. Results: With a follow-up of 2.5 years (range, 1-7 years), all patients had fracture healing within 5.8 months on average. The hip function was graded as good-to-excellent in 76 cases, fair in 5 and poor in 2 according to Harris Hip Score system in the last follow-up. Hip dislocation developed in 1 case 3 months postoperatively. ONFH was found in 1 patient 2 years postoperatively. There was no other complication and artificial joint replacement. Conclusions: FVFG, in combination with appropriate internal fixation, was an effective and reliable protocol for the treatment of neck nonunion and old femoral neck fractures.

**Abstract No.: 39596**

**TWO YEAR RESULTS OF A NEW TROCHANTER SPARING SHORT STEM SYSTEM**

Manuel Ribas, Caromagno Cardenas, Vittorio Bellotti, Emanuele Astarita, Esther Moya, Federico De Meo

**Introduction:** In the last decade short stems have appeared, but not all short stems are equal in terms of design, femoral cut level, biomechanical properties. **Method:** A case series of 62 hips in 59 patients were included with a mean follow up of 21,4 months ( range : 18 - 37 months ) . In all patients a new cementless titanium alloy trochanter sparing short stem with multi-modular neck according to preoperative planning was implanted and posterior mini open approach was used. **Selection criteria** for implanting this stem was a femoral T-score value above -1, Dorr femur type A and B, age under 75 years and BMI < 30. Patients were followed up at 2,4,6, 12 and 24 months. WOMAC, Merle D'Aubigne, Harris Hip Scores were registered preoperative and postoperative on clinical records. **Results:** Mean age was mean 58,7 years ( range: 32 to 71 years ). BioloX delta ceramic on ceramic bearing couple was used in all hips. To date neither neck fractures nor stem subsidence were reported. Mean WOMAC score improved from 42,2 points (range 29 – 51) to 96,7 (range: 66 – 100,  $p < 0,001$ ) , Merle D'Aubigne from 11,8 (range 10 -14) – 17,1 (range: 16 -18 ,  $p < 0,01$ ), Harris Hip Score from 37,4 points (range 26 – 66) to 93,8 (range: 61 – 100,  $p < 0,001$ ) . To date no stem needed to be exchanged. **Conclusion:** Preliminary assessment provides promising results in terms of clinical results and radiological observations at the latest follow up.

**Abstract No.: 39603**

**INTEGRATION OF LABRUM ALLOGRAFT AT EIGHT WEEKS AFTER IMPLANTATION . A CASE REPORT.**

Manuel RIBAS, Carlomagno Cardenas, Vittorio Bellotti, Emanuele Astarita, Esther Moya, Federico De Meo

Introduction: Labral tears lead to increased instability, fluid pressure and lubrication drop resulting in cartilage wear. Clinical studies emphasize the need to reconstruct the labrum. Several authors have reported that irreparable damage of the labrum (those not suturable) can be reconstructed by grafting procedures. These reconstructions provide similar function to the native labrums, restoring its function of absorption, articular sealing and contribution to joint stability. Methods: a 54 Year old woman diagnosed of femoroacetabular impingement with marked coxa anteversa profunda and calcification of the posterior labrum on the plain x ray. In MRI arthrography there were signs of chondrolabral delamination, joint space narrowing and posterior labrum calcification. Mindful that the patient refused any joint replacement, a femoroacetabular osteoplasty with labral resection by save hip dislocation and fully labral reconstruction with peroneus brevis allograft tendon was performed. At 8 weeks , the patient attended our emergency department for 1 week acute constant pain accompanied by functional limitation . Clinical exams revealed a femoral head collapse, so that total hip replacement was performed. During the operation whole labrum allograft with its attachments were sent to histological study. Results: Cross sectional of the allograft stained with hematoxylin- eosin (40x ) for the specimen show a similar tissue made by mature connective tissue with fibroblasts and presence of vascularization represented by varied caliber vessels. Conclusions: To date there is not any published hystological study in humans on labral allograft behaviour after reconstruction. This case report shows new revascularization ingrowth into a labral allograft.

**Abstract No.: 39604**

**INHIBITORY EFFECTS OF LANTHANUM CHLORIDE ON OSTEOCLASTS AND TI PARTICLE-INDUCED OSTEOLYSIS VIA THE INHIBITION OF NF- $\kappa$ B SIGNALING**

Chuan Jiang, Jinwu Wang

**Objective :** To explore the effects of lanthanum chloride (LaCl<sub>3</sub>) on osteoclast differentiation, function, and its potential molecular mechanism, and observe the effects of LaCl<sub>3</sub> on osteoclast-related titanium (Ti) particle-induced mouse calvarial osteolysis. **Methods:** Tartrate-resistant acid phosphatase (TRAP) staining, F-actin ring formation and bone resorption assay were used in vitro to observe osteoclast formation and function. PCR, western blot, luciferase assay and immunofluorescence staining were employed to explore the molecular mechanism. The specimens of Ti particle-induced mouse calvarial osteolysis model were scanned and analysed by micro-CT. The histological changes were observed using HE staining, and TRAP staining was used to observe the effects of LaCl<sub>3</sub> on osteoclasts in bone tissues. **Results:** It was found that non-cytotoxic concentrations of LaCl<sub>3</sub> (50, 100, 200  $\mu$ M) could inhibit RANKL-induced osteoclast formation, and the inhibition to osteoclastogenesis increased with the increase of LaCl<sub>3</sub> concentration. LaCl<sub>3</sub> could also inhibit F-actin ring formation and bone resorption function of osteoclasts. In the molecular levels, LaCl<sub>3</sub> could downregulate the osteoclast marker gene expression, and inhibit receptor activator of nuclear factor- $\kappa$ B ligand (RANKL)-mediated NF- $\kappa$ B signaling in osteoclasts. In vivo, it was shown that LaCl<sub>3</sub> could ameliorate Ti particle-induced mouse calvarial osteolysis, and reduce the osteoclast number in bone tissues. **Conclusion:** LaCl<sub>3</sub> could inhibit osteoclastogenesis, bone resorption, and osteoclast-specific gene expression in a concentration-dependent manner. LaCl<sub>3</sub> also played a protective role in osteoclast-related osteolysis. The molecular mechanism of LaCl<sub>3</sub> might be related to the inhibition of NF- $\kappa$ B signaling in osteoclasts.



**Abstract No.: 39605**

**PFNA-II PROXIMAL END PROTRUSION OVER THE GREATER TROCHANTER IN THE ASIAN POPULATION: A POSTOPERATIVE RADIOGRAPHIC STUDY**

Sunjun Hu, Shimin Chang, Yingqi Chang, Mengwei Yao

**Purpose** The proximal femoral nail antirotation (PFNA-II; Asian version) is commonly used for geriatric per-/inter-trochanteric fractures. The aim of this study was to determine whether the current PFNA-II proximal segment length is suitable for the greater trochanter height, as assessed by postoperative radiograph measurements. **Materials** From July 2012 to December 2012, 51 consecutive patients with per-/inter-trochanteric fractures were treated with the PFNA-II and were included in this study. The nail protrusion height over the lateral greater trochanter and the Parker ratio of the helical blade tip in the femoral head were measured and compared using pelvic digital anteroposterior (AP) radiographs taken within 2 weeks postoperatively. **Results** Overall, nail protrusion over the greater trochanter occurred in 87.8% of cases. In 60.8% of the cases, protrusion height was greater than 5 mm. The average protrusion height was  $6.25 \pm 4.27$  mm (male average  $4.84 \pm 4.38$  mm, and female average  $7.09 \pm 4.70$  mm). The average Parker ratio of all cases was  $51.0 \pm 6.9\%$  (male average  $49.8 \pm 7.5\%$ , and female average  $51.7 \pm 6.5\%$ ). Protrusion height was positively correlated ( $r=0.394$ ,  $p=0.004$ ) with the helical blade position in the femoral head (Parker ratio). **Conclusions** There was a morphologic mismatch between the proximal segment length of the PFNA-II and the greater trochanter in the Asian population, which may be the cause of postoperative lateral trochanter pain. A modification to shorten the proximal part of the nail is proposed to avoid protrusion over the greater trochanter.

**Abstract No.: 39609**

**COMPARISON OF DIFFERENT SPINAL LOADING CONDITIONS**

Rui Zhu, Zhi-Li Zeng, Yan Yu, Yang-Chun Wu, Wei Xu, Xiao Hu, Zhou-Rui Wu, Wei Zuo, Yong-Wei Jia, Li-Ming Cheng

**Introduction:** Muscles stabilize the spine and influence spinal loads. However, in most finite element studies muscle forces are neglected, and simplified loads are mostly used instead. The aim of this study is to estimate the differences of spinal loads when loading a finite element model of the spino-pelvic complex with muscle forces and with simplified loads for standing and flexion. **Method:** A nonlinear finite element model of the spino-pelvic complex was extended additionally with 233 muscle fascicles. An inverse static musculoskeletal model was utilised to determine these muscle forces for standing and flexion of the upper body which were subsequently transferred to the finite element model. The same postures were then simulated in the finite element model by applying a follower load and an additional moment, and the results for the intradiscal pressure in the L4-L5 disc were then compared. **Results:** The calculated intradiscal pressure for loading with muscle forces and with a follower load and an additional moment were within the in vivo range observed in the literature. **Conclusions:** Similar with muscle forces, a follower load and an additional pure moment is a feasible means to simulate simplified postures.

**Abstract No.: 39613**

**TOTAL HIP REPLACEMENT IN A RESOURCE LIMITED ENVIRONMENT. REFLECTIONS FROM THE OTHER SIDE: ANAESTHESIA**

Lieven Dossche, Jan Noyez, Bert Quaghebeur, Windemi Ouedraogo, Eustache Kalmogho

Performing total hip replacement (THR) in a developing country can be challenging given multiple surgical resource limitations like equipment, implants and experience. Anaesthetic capacity may also be an important limiting factor not to be overlooked. Surgical problems or delays may influence anaesthesia or vice versa. In December 2014, 38 hip interventions were performed in a district hospital in Ouagadougou, Burkina Faso. These consisted of 32 THRs, 4 revision THRs, one THR removal and one resection arthroplasty. Data on anaesthetic procedures and problems were recorded. Average BMI was 23,44. Single shot spinal anaesthesia with isobaric levobupivacain was used as a standard. In 32 interventions this was used without alterations; in two cases sedation was added and in two cases a conversion to general anaesthesia was performed. In two extensive revision cases a combined spinal-epidural technique (CSE) was performed, out of concern of insufficient spinal block duration, but use of the epidural component was never needed. Average time from spinal to intervention-start was 29,74 minutes; average operation time was 118,47 minutes resulting in an average spinal to end of intervention time of 148,21 minutes. Sensory block at the end of intervention was insufficient in one case. Postoperative nausea and vomiting was noted in 11 patients, associated with spinal co-administration of opioids. There were no cases of post-dural puncture headache. We conclude that spinal anaesthesia seems an adequate and safe technique for THR in a resource limited environment. Further problem analysis and solutions aimed at a resource limited environment will be discussed.

**Abstract No.: 39627**

**TELESCOPING VASCULARIZED FIBULAR GRAFT: A NEW METHOD**

Mohamed Kotb,

Vascularized fibular grafts have proved reliable in the treatment of congenital pseudarthrosis of the tibia with a high success rate. However, severe shortening cannot be primarily corrected by this technique and requires a second-stage lengthening procedure. Ilizarov's method allows correction of shortening and axial malalignment together with the non-union. However, in the dysplastic type with severe shortening, corticotomy of the affected bone may result in delayed consolidation or recurrence of disease. In addition, the large distraction distance (equal to the amount of shortening plus the resulting defect after excision of the pseudarthrosis site) requires prolonged frame application, which may not be tolerated by the patient. We present a new technique combining vascularized fibular graft and Ilizarov distraction that allows simultaneous correction of shortening while treating the non-union in a single-stage operation. This method avoids corticotomy in the congenitally affected bone and markedly shortens the time of frame application.

**Abstract No.: 39628**

**TREATMENT OF ENCHONDROMAS OF THE HAND**

Nadhir Meraghni, Riad Benkaidali, Mohamed Kihal, Mhamed Nouar

Introduction : enchondroma is the most common bone tumour of the hand. the risk for malignant transformation to chondrosarcoma is extremely low in the hand. the purpose of this work is to present the results after treatment of benign enchondromas in the hand of 20 patients treated between 2006 and 2013. Methods : between 2006 and 2013 we treated 20 patients for enchondroma of the hand. the mean age was 35 years. the diagnosis was based on clinical examination and X ray. the proximal phalanges were the most often affected. the treatment has been by curettage and filling the resultant bone cavity with bone graft. Results : eighteen of them were re-examined between 1 and 8 years after operation. there were no post-operative fractures, infections. there was 2 cases of finger stiffness. 15 cases healed completely in the X ray. Three patients had persisting bone defects a few millimeters across. Discussion : enchondroma is the most common bone tumour of the hand and has predilection for the ulnar rays and the proximal phalanges. many methods of treatment are described. we opted for conventional treatment by curettage and filling the resultant bone cavity with bone graft. the purpose of this procedure is to prevent future pathological fractures and to avoid recurrence of the tumour. this treatment provides a good clinical and radiological results. Conclusion :enchondroma is the most common bone tumour of the hand. the treatment by curettage and filling the resultant bone cavity with bone graft gives good results.

**Abstract No.: 39632**

**TREATMENT OF SEVERE SEQUALAE OF INFANTILE HIP SEPSIS: FREE VASCULARIZED EPIPHYSEAL TRANSFER**

Mohamed Kotb,

**Introduction:** The catastrophic sequelae of delayed diagnosis of septic arthritis of the hip are a consequence of destruction of the articular hyaline cartilage and irreversible damage to the epiphysis, physis and metaphysis of the proximal femur and occasionally the tridiate cartilage of the acetabulum ending with hip dislocation, should be preliminarily managed by open reduction and acetabuloplasty followed by a procedure to maintain proximal femoral growth. Recently vascularized proximal fibular epiphyseal transfer was described for reconstruction of long bone epiphyseal defects. **Objectives:** The aim of this study is to evaluate the results vascularized epiphyseal transfer in for late sequelae septic epiphysitis hip **Methods:** We report preliminary results of the newly prescribed technique of vascularized epiphyseal transfer for late presented cases of septic epiphysitis of the femoral head with avascular necrosis. **Results:** Clinical results including pain, range of motion, gait, limping, stability and limb length discrepancy (Mckay's criteria) and radiological results (Severin's classification) including the shape of the head, reduction of femoral head, epiphyseal appearance of the head and tridiate cartilage, neck shaft angle, coxarthrosis, and limb length discrepancy. **Conclusions:** The technique have pros and cons. In spite of being a procedure, and previous studies have shown some satisfactory results after subtrochantric osteotomy and transposition of the apophysis of the greater trochanter into the acetabulum, a double goal of restoring joint function and growth potential cannot be achieved except by means of free vascularized epiphyseal transfer.

**Abstract No.: 39635**

**THE BOSWORTH PROCEDURE IN NEGLECTED RUPTURES OF ACHILLES TENDON**

Nadhir Meraghni, Redouane Si Larbi, Nassim Soal, Riad Benkaidali, Abderahmane Benbouzid, Mohamed Kihal, Mhamed Nouar

Introduction: the bosworth procedure is one of the techniques described for the management of neglected ruptures of the achilles tendon. the aim of our study is to assess the results of this technique on tendon healing and resumption of sporting activity. Methods: between 2007 and 2014 we treated 23 men and 3 women for a neglected rupture of achilles tendon. the average age of patients was 35 years. all patients were athletes (13 competitive athletes). the time for surgical treatment was more than 45 days. the surgical approach used was the posteo-medial para achillean approach. all patients benefited from a plasty using the bosworth technique. Results: patients were assessed on post-operative evolution, the resumption of sporting activity and on AOFAS score. 18 patients returned to sports, including 12 who have resumed their original sports. the resumption of sport has been effective in the ninth month on average. the mean AOFAS post-operative score was 91. one case of large necrosis, 2 cases of superficial sepsis and 2 cases of skin disorders were found in our series. Discussion : functional results were comparable to literature reports. tendon healing was achieved in all patients at the cost of some skin complications. 70% of patients returned to sports. even if it is difficult to determine achilles length, the bosworth technique gives good results. Conclusion : bosworth procedure is an excellent technique for treating neglected ruptures of the achilles tendon. It guarantee healing of the tendon allowing the patient to resume all his activities.

**Abstract No.: 39640**

**NOVEL CIRCULATING MICRORNA SIGNATURE AS A POTENTIAL NON-INVASIVE TEST IN LDH PATIENTS: A COHORT STUDY**

Xiaoya Zhou, Lili Chen, Shishu Huang, Sibylle Grad, Mauro Alini, Songlin Peng

Introduction: MicroRNAs (miRNAs) have been reported to be associated with disc degeneration, the profile of miRNAs in the Lumbar disc herniation (LDH) patients with indication for laminectomy remains unknown. Material methods: There are four groups in this study, LDH-young group (n=8, average age is 31), LDH-old group (n=8, average age is 56), healthy control-young group (n=4, average age is 20), healthy control-old group (n=6, average age is 58). The analysis of microRNA profiling was performed on plasma samples in all groups and further validated by qRT-PCR. Results: The miRNAs with p-values<0.05 and fold change values  $\geq 2$  or  $\leq 0.5$  compared to healthy control were regarded as dysregulated miRNAs. 61 miRNAs were upregulated and 302 were downregulated in LDH-young group compared to healthy control-young group. In addition, there are 46 upregulated miRNAs and 115 downregulated in LDH-old group compared to healthy control-old group. In particular, 12 upregulated and 71 downregulated miRNAs expressed significant differences both in the LDH-young group vs healthy control-young group and the LDH-old group vs healthy control-old group. Among them, miR-224 was upregulated 4.04-, 16.99-fold in LDH-young and LDH-old groups compared to healthy control-young and healthy control-old groups, respectively ( $p<0.01$  for both). Besides, relative to old groups, miR-130b and miR-147b were downregulated significantly in young groups, both of which were reported to be associated with disc degeneration. Conclusion: Further research for the understanding of the functionality and pathological mechanism of the miRNAs in LDH is important and would shed new light on LDH.



**Abstract No.: 39650**

**VALIDITY OF GREULICH AND PYLE ATLAS IN ASSESSING SKELETAL AGE IN SOUTH ASIAN CHILDREN**

Amruth Kollegal Huchaiah, Vinodh Kolandhavelu, David Rajan

The use of Greulich and Pyle atlas in the estimation of skeletal age of children is well known. However its use in Indian population is debatable. The atlas was primarily based upon the x rays and the age determinants of children in the United States. The genetic and racial diversity in Indian children compared to western children is well known. The aim of our study is to determine whether or not the greulich and Pyle atlas can be used to determine the skeletal age for South Asian children. The anteroposterior X rays of 100 children of the left hand was obtained and compared with the plates given in the Greulich and Pyle atlas. Around 61 percentage of children exhibited their chronological age not correlating with the skeletal age described in the greulich and Pyle atlas. Among the 100 children, 39 percent had their chronological age matching their skeletal age, but still 39 percent had their chronological age one year more than their skeletal age and the rest 22 percent less than one year or more or less than two years. Estimation of skeletal age using Greulich and Pyle atlas is very useful in Orthopedics, forensic anthropology, endocrinology and reproductive medicine. But according to our study, in a significant number of children (61 percentage) the chronological age differs from the skeletal age. In a majority of these the skeletal age lags behind by one year to chronological age.

**Abstract No.: 39655**

**FEATURES REPLACEMENT OF HAND JOINTS AFTER THERMAL INJURY.**

Sergey Yakovlev,

Introduction: With deep burns brush damaged joints. This leads to the development of contractures and ankylosis of joints. To restore the function of the joints must be installed implants. But it is difficult to make because of skin burns, tendons and bones. Methods: To determine the features of post-burn of hand joints arthroplasty. Materials and Methods: from 2009 to 2015 we treated 67 patients (42 men and 25 women aged 20 to 57 years) who underwent total joint replacement of fingers. Patients implanted with 98 silicone implants SBI, including 31 arthroplasty metacarpophalangeal - phalangeal joint and 67 - proximal interphalangeal joints. In 27 patients were performed only total joint replacement. In 11 patient along with replacement arthroplasty performed extensor tendon reconstruction fingertip. 9 of them - by the original method. In 29 patients the operation was performed an original method (patent of RU 2388422): the simultaneous scar removal, hip replacement joints of fingers, closing the wounds with a skin graft preservation of blood supply and installation of transosseous distraction device (patent of RU 81889). Results: are regarded as good - removed the deformation of the fingers, restored range of motion in joints, pain subsided. Conclusions: Joint replacement fingers at postburns deformation brush possible. But for the full restoration of function, it is necessary to combine with the plastic surgery of the skin, restoring extensor tendons finger, as well as combined with transosseous distraction device, which is the best way to eliminate the existing strain and prevent its recurrence.

**Abstract No.: 39658**

**UNIFIED COMPUTER TEST SEVERITY OF THE INJURY AND THE EFFECTIVENESS OF TREATMENT OF PATIENTS WITH BURNS BRUSH.**

Sergey Yakovlev,

Introduction: In patients with burns brush is difficult to determine the degree of damage, then the effectiveness of treatment. The most famous tests - DASH, HISS, SF-36. However, these tests are large, complicated to processing and do not indicate the outcome of treatment. Methods: From 2010 to 2015 studied 106 patients in 7 major standardized criteria: pain, position the brush segments, skin, bone damage, the condition of the tendons and nerves, breach of motion in the joints, violation of self-service and labor. For comparison - the 220 patients examined previously known tests. Results: Comparative evaluation of the survey results showed no difference in terms of our simple and well-known complex tests. On this basis, was created a computer program "Express-examination of patients with pathology of the brush" (RF patent number 2010611112) - a test of injury and the effectiveness of treatment of patients with burns brush. The program is easy to use, compatible with Windows XP / 7/8 Program objectively assesses and records documents the severity of existing pathology brush before and after treatment. The program reflects the effectiveness of treatment. Do not need a long time to perform the test and a long time to process the result. Conclusions: Using computerized test simplified assessment of patients can effectively choose the tactics of treatment, to objectively assess the condition of patients before and after therapy. The test helps to monitor the quality of care for patients with burns, trauma, and brush their consequences.

**Abstract No.: 39679**

**A COMPARISON OF HYBRID EXTERNAL FIXATOR AND PLATE-SCREWS FIXATION FOR PROXIMAL DIAPHYSIS FRACTURE OF TIBIA**

Xiao Chang, Baozhong Zhang, Wanli Zhang, Jia Zhang, Peng Gao, Xiongfei Zou

Introduction: Open reduction and internal fixation techniques have been performed successfully in treatment of the proximal tibial fractures; but complications such as soft tissue infection and necrosis of the incisions are not uncommon, especially in high energy traumatic cases. We have performed minimally invasive fixation with hybrid external fixator for the fractures in some cases. Then we performed the retrospective clinical trial to compare ORIF with plates with percutaneous and/or limited open reduction and fixation with hybrid external fixator for these fractures. Methods: From Jan. 2007 to Dec. 2011, 16 cases whose data was complete were incorporated in the study. 7 cases underwent percutaneous and/or limited open reduction and fixation with hybrid external fixator, and 9 cases underwent standard ORIF with plates. Follow-up consisted of physical examination, radiographs of fracture healing; completion of the lower extremity function score of Iowa Form; recording the ROM of injured knee joints; and recording of complication. Results: Patients in the hybrid external fixator group had less injury-surgery time, less operative time and less intraoperative blood loss than those in the open reduction and internal fixation group and spent less time in the hospital. There was a trend for patients in the external fixation group to have superior early outcome in terms of Iowa scores at 1 month, but the scores were not significantly different at 6 months and 12 months. Conclusion: The hybrid external fixation has advantages of minimal invasive, faster return to function and lower cost.

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**Abstract No.: 39695**

**VASCULARIZED FIBULAR STRUT BONE GRAFT FOR THREE CONTIGUOUS SEGMENTS SPINAL TUBERCULOSIS: A CASE REPORT FOLLOWED UP FOR 16 YEARS**

Lin-min YANG, Ching-Yueh Wei

Tuberculosis(TB) was once common in Taiwan several decades before, but gradually under control. It is an uncommon disease in the well-developed countries. Extra-pulmonary TB might involve any organ systems including the spines, which two or more contiguous vertebrae could be infected. Nonvascular strut bone graft was often recommended in surgical cases with neurological compromise or spinal instability, even in cases with three or more contiguous vertebral involvement. So far, vascularized strut bone graft had never been introduced for the treatment of three or more contiguous spinal TB due to high demand of sophisticated technique. We report a 65-years-old female patient with three contiguous segments spinal TB, treated with anterior debridement and vascularized fibular strut bone graft, followed by posterior instrumentation. The vascularized fibular strut bone graft was proved to be viable both by MRI in 3rd month and bone scan in 6th month. The patient gradually and fully recovered in 6th months and reported a totally back-pain free period as long as 16 years.

**Abstract No.: 39700**

**KNEE LAXITY VARIATIONS IN THE MENSTRUAL CYCLE IN WOMEN ATHLETES**

Daneshpoor Seyed Mohamad Mehdi, Shafiei Seyed Esmaeel, Peyvandi Sepideh, Aghajantabar Zeinab

**Background:** Anterior cruciate ligament (ACL) tear is the biggest concern for orthopedic surgeons, so most of ACL reconstruction surgeries are sports related. ACL injuries in female athletes are 2-8 times more common than male. Several factors are involved in this difference, of which one is increased ligament laxity in female compared to male athletes. The aim of this study was to compare knee laxity changes in the menstrual cycle in women athletes referred to the orthopedic clinic. **Methods:** The present study was conducted on 40 women athletes that referred to the orthopedic clinic. Knee laxity was evaluated by a knee surgeon with Lachman test and Anterior drawer test, in a specific period of time ovulation time and mid of luteal phase. Hormone levels, estrogen and progesterone were assessed by one laboratory in 3 above mentioned period of time. The time of ovulation can be specified based on urinary LH kits. The descriptive statistics were calculated as indices of central distribution of bonds ( $\bar{x} \pm sd$ ) and relative frequency distribution was used for qualitative variables. **Results:** The results of the current study showed that there is no significant difference in ACL laxity in female athletes in 3 phases of menstrual cycle namely period time, ovulation time and mid of luteal phase. **Conclusion:** Despite numerous studies in the field of knee laxity, many researchers do not agree about the effect of female hormones on knee laxity. The current study also reported no significant relationship between female hormones and knee laxity.

**Abstract No.: 39705**

**REPAIR OF FRESH PATELLAR TENDON RUPTURE: TENSION REGULATION WITH EXTERNAL PATELLOTIBIAL TRANSFIXATION**

Xiao Chang, Baozhong Zhang, Xiongfei Zou, Huang Tang

**Introduction:** To report the efficacy of the tension regulation with external patellotibial transfixation for repair of fresh patellar tendon rupture. **Methods:** Between January 2010 to June 2014, 7 patients with fresh patellar tendon rupture, with an average age of 37.5 years, were included in the study. Five cases were close rupture and 2 were open. All patients underwent emergency operation. The external patellotibial transfixation was performed firstly to regulate the tension of repaired tendon. No circle wiring during the surgery or postoperative plaster casting was required. After the surgery, the patients could perform function exercise of knee joint and walking bearing weight immediately. The operation time, blood loss, hospital stay, time of fixator removal and the complications were recorded. The function of involved knee joint was evaluated according to the Lysholm knee scale. **Results:** Mean follow-up was 12.5 months (8-22). Mean operative time, blood loss, hospital stay was  $76\pm 15$  min,  $59\pm 22$ ml,  $5\pm 1.7$  days, respectively. The mean time of external fixation was  $7\pm 1$  weeks; At the last followed-up, every patient Lysholm scale was 96. Only one case with open rupture complicated with wound superficial infection, and was cured through drainage and dressing changing. There was no case of pin tract infection. **Conclusion:** External patellotibial transfixation could provide reliable tension regulation for sutured patellar tendon while ensuring function exercise with no immobilization of knee joint. It also avoided the reoperation to remove the internal devices such as patellotibial cerclage wire.



**Abstract No.: 39706**

**THE TREATMENT OF CAVUS FOOT WITH METATARSAL OSTEOTOMY IN CHILDREN**

Ziming Zhang,

Cavus foot is a deformity that defined as a high longitudinal arch of the foot. Most patients have a neurologic problem that results in a cavovarus deformity. In our present series, totally 6 patients who suffered from pes cavus were treated with osteotomy in the first metatarsal bone. Meary's and Hibbs' angles were noted on a standing lateral radiograph of the foot before and after operation. MRI and electrodiagnostic studies were performed before surgeries to explore the etiology of the cavus foot. After operations, Meary's and Hibbs' angles in all six patients were improved in comparison of those of before operation. Complaints of pain and callosities were relieved obviously, whereas clawing of the toes, especially the first toe, remained. Metatarsal osteotomy could correct the abnormal structure of the longitudinal arch of the foot in children with cavus deformity. Rehabilitation exercise should be emphasized after the operation to assist in relaxing the tight foot due to neurologic problem.

**Abstract No.: 39713**

**RELIABILITY OF MEASUREMENT BY THE SOFTWARE "ACX DYNAMICS" IN RADIOGRAPHIC PARAMETERS OF THE HIP JOINT.**

Hiroshi Nakamura, Hiroshi Koyama, Mitsuru Hanada, Hiroki Furuhashi, Hironobu Hoshino, Yukihiro Matsuyama

**Introduction:** We have developed new software "ACX dynamics" to evaluate the three-dimensional acetabular coverage using a plain radiograph of pelvis. This software also allows us to measure previous two-dimensional radiographic parameters of the hip. The purpose of this study was to investigate the intraobserver reproducibility and interobserver reliability of measurement by ACX dynamics. **Methods:** Fifty hips (50 patients) were randomly selected from 289 hips of 194 patients with dysplastic hip or osteonecrosis of the femoral head. Hips with osteoarthritic change and/or collapse of the femoral head were excluded. Utilizing their plain antero-posterior radiographs, the parameters (CE angle, AC angle, Sharp's angle, p/a ratio, crossover sign (COS), posterior wall sign (PWS)) were measured by ACX dynamics. To examine the intraobserver reproducibility, one resident measured three times with an interval of 3 weeks. For interobserver reliability examination, one resident and two hip surgeons measured. The reproducibility and reliability were evaluated by the intraclass correlation coefficient (ICC) or kappa coefficient. **Results:** The ICC/kappa value of the intraobserver reproducibility was 0.97 for CE angle, 0.84 for AC angle, 0.96 for Sharp's angle, 0.85 for p/a, 0.67 for COS, and 0.84 for PWS. The ICC/kappa value of the interobserver reliability was 0.96 for CE angle, 0.93 for AC angle, 0.95 for Sharp's angle, 0.73 for p/a, 0.35 for COS, and 0.84 for PWS. **Conclusions:** Excellent intraobserver reproducibility and interobserver reliability were observed in the measurements of the radiographic parameters of the hip by ACX dynamics, except for the parameters related anterior and posterior acetabular wall.

**Abstract No.: 39714**

**PRELIMINARY CLINICAL APPLICATION OF THE NEW GROWING RODS OF SLIDING PEDICLE SCREW SYSTEM IN EARLY ONSET SCOLIOSIS**

Wenjun Wang,

Introduction : To evaluate the primary clinical outcome in the treatment of the early onset scoliosis by the new growing rods of sliding pedicle screw system. Methods : Between January 2009 and July 2013, 34 patients with early onset scoliosis underwent posterior growing- rod of sliding pedicle screw system. There were 12 males and 22 females with the age at time of surgery ranging from 4 to 12 years. Risser sign was 0 in all patients. 14 congenital scoliosis and 20 adolescent idiopathic scoliosis. 14 had single thoracic curve and 20 had either single thoracolumbar or single lumbar curve. the average Cobb's angle of scoliosis was 66.8°, and the average Cobb's angle of kyphosis was 45.5°. Result : the Cobb's angles of scoliosis had corrected to 28°(range, from 17°to 39°) and Kyphosis had corrected to 31° (range, from 25°to 39°). All patients were followed up for a mean of 26.5 months (range 12- 44months) . At final followed up, 3 cases occurred skin infections in the end of the rods. 1 case had shoulder imbalance after operation. There were no broken screw, broken rods and other internal fixation-related complications. Conclusion : The new growing rods of sliding pedicle screw system for treatment of early onset scoliosis is one of effective method, The primary clinical application had confirmed The feasibility of the technique.

**Abstract No.: 39720**

**INVASIVE SYNOVIAL DISEASE OF THE HIP : IS ONE-STAGE OF THA NECESSARY**

Feiyan Chen, Jun Xia

**Objective:** To report a group of cases suffered from invasive synovial disease of hip (PVNS, SC), and discuss whether one-stage of THA is necessary. **Materials and methods:** During 2009-2014, 8 cases of invasive synovial disease of hip were admitted and treated in our department, in which 5 cases of male, and 3 cases of female, the average age was 29.6 years-old (19-61), with 4 cases of PVNS, and 4 cases of SC, 4 cases of left hip, and 4 cases of right hip. The treatment option was synovectomy or synovectomy combined with THA. All of the cases were routinely follow-up with X-ray and Harris score. **Results:** All of patients underwent resection of the lesion, in which 2 cases of patients received synovectomy combined with THA (case No. 3 and No. 8), the ratio of one-stage of THA was 25% (2/8). After a mean follow-up period of 24.3 (9-48) months, the average Harris score was 91 (88-93), and no evidence of clinical or imaging recurrence was found. **Conclusion:** Invasive synovial disease of hip tends to occur in the young adults, which can damage the articular cartilage and eventually destroy the hip. Some authors suggest that one-stage of THA should be considered for this kind of disease. In the current group, most of the patients underwent synovectomy without THA, except for two cases. Factors of age, nature of the lesions, and the joint destruction extent must be carefully considered before the decision of whether one-stage of THA should be performed or not.

**Abstract No.: 39721**

**INTRAMUSCULAR VENOUS THROMBOSIS AFTER ARTHROPLASTY: HARM AND COUNTERMEASURES**

Feiyan Chen, Jun Xia

Objective: To discuss the harm and countermeasures to lower limb intramuscular venous thrombosis after hip and knee arthroplasty. Materials and methods: The incidence and disposal of intramuscular venous thrombosis after hip and knee replacement were retrospectively analyzed. From January 2012 to December 2013, 510 cases who received hip or knee arthroplasty were included in this study, in which 245 cases of male and 265 cases of female, the average age was 71 years-old (58-99). There were 250 cases of THA, 50 cases of HHA, and 210 cases of TKA. Preoperative VTE risk evaluation was performed. The intraoperative measures including specification use of tourniquet, avoid the injury of important vessels and nerves, and to shorten the operation time as far as possible; post-operative treatment with medicine according to the Guidance(ACCP9).Post-operative B-type ultrasound was routinely used. Results:No DVT happened in all of the patients (0/510),muscular venous thrombosis occurred in 12 cases (2.35%, 12/510). Countermeasures was used for anticoagulation. There were no further DVT formation in the 10 cases, swelling was relieved, and good function was achieved at the time of final follow-up. Conclusion: Intramuscular venous thrombosis will still occur in part of patients even with formal anticoagulation after arthroplasty, which will cause the limb swelling, pain, exudation of wound, and other issues, influent the wound healing and postoperative function training. Once the intramuscular venous thrombosis appears, countermeasures such as lifting of the affected limb, application of vascular tension drug, and use of warfarin should be considered.

**Abstract No.: 39723**

**DOUBLE-LEVEL OSTEOTOMY AND ONE-STAGE RECONSTRUCTION WITH LONG INTRAMEDULLARY FEMORAL NAIL TO CORRECT A SEVERE PROXIMAL AND DIAPHYSEAL FEMUR DEFORMITY IN PATIENTS WITH POLYOSTOTIC FIBROUS DYSPLASIA: 2 CASES REPORT AND LITERATURES REVIEW**

Feiyan Chen, Yibing Wei, Jun Xia

**Objective:** To report 2 cases using double-level osteotomy and one-stage reconstruction with intramedullary nail in a patient with painful proximal femur and diaphysis varus deformity. The related literatures were also reviewed. **Methods:** Proximal femur is often involved with varus and retroversion deformity in polyostotic fibrous dysplasia (PFD). Multiple corrective osteotomies with intramedullary nails in two stages is recommended procedure as some authors described. We report 2 case using double-level osteotomy and one-stage reconstruction with intramedullary nail in a patient with painful proximal femur and diaphysis varus deformity. **Results:** The neck-shaft angle was corrected from 95° pre-operatively to 125° post-operatively in Case 1. And the diaphysis deformity were corrected in both of the two cases, both of the patients was free of pain and no evidence of recurrence at the 12-36months follow-up. The operative design and method were described, and a review of related literatures about the treatment alteration for PFD and relevant operative selection were also performed. **Conclusion:** Double-level osteotomy and one-stage reconstruction with IMN was an suitable option to correct severe femur deformity in cases of PFD.

**Abstract No.: 39724**

**SYNOVIAL OSTEOCHONDROMATOSIS OF THE HIP TREATED THROUGH OPEN SURGICAL APPROACH:  
DISLOCATION VS NON-DISLOCATION**

Feiyan Chen, Siqun Wang, Jun Xia

Objective: To investigate the results and efficacy of treatment for hip joint synovial chondromatosis (SCH) through lateral approach, with or without dislocation. Method: From 2007-2014, 5 cases of SCH were admitted, the initial diagnosis was based on clinical presentation and pre-operative imaging data, followed with sub-total resection of the synovium, debridement of "loose free bodies" through lateral approach (modified Hardinge approach). Patients in Group 1 received operation without dislocation, and those in group 2 with dislocation of the hip. Results: Post-operative follow-up X-rays show no intra-articular loose body residues in these 2 groups, pathology reports support the diagnosis of hip joint synovial chondromatosis. Group 1 restored normal weight-bearing walking 3 weeks after surgery, and group 2 for normal weight-bearing walking 6 weeks post-operatively. At 18-24 months follow-up, X films showed no recurrence of the disease, and no sign of femoral head osteonecrosis, no hip pain on the operative side, the gait and joint ROM were good. Conclusions: The advantages of lateral approach are good exposure and complete removal of loose bodies and synovectomy, at the same time, the procedure of osteotomy and fixation could be avoided. The advantage of "non-dislocation" is that quick recovery can be obtained, but the relatively inadequate exposure. The advantage of "dislocation" is fine exposure, with which a thorough debridement of intra-articular lesions could be performed. The author's preliminary experience suggests that the lateral approach with "dislocation" is an effective and safe option for the treatment of SCH.

**Abstract No.: 39726**

**EPIDEMIOLOGY OF FEMORAL FRACTURES AFTER OSTEOSYNTHESIS.**

Matthieu Ehlinger, David Bahlau, Michel Rahme, Philippe Adam, Francois Bonnomet

Introduction : it is common knowledge that femoral fractures on implants are increasing. We wanted to have an update on the characteristics of femoral fractures after osteosynthesis. Material and method : all the femoral fractures after osteosynthesis were collected on an 18 months period. Usual epidemiologic factors, autonomy (Parker, Devane), way of life and dependance (Katz) were evaluated. The type of implant, the fracture, the time between osteosynthesis and fracture, and the fixation of implants were also noted. Results : there were 30 patients (27F,3M) mean age 80.4 years old (42-98) 20 lived at home . Average Parker was 3.7, average Devane score was 1.8 and average Katz was 3.8. There were: 21 nails, 3 femoral neck pinnings, 3 femoral plates, 3 dynamic hip screws. 3 times it concerned a TKA (1 pinning, 1 femoral plate, 1 dynamic hip screw). The older patients (88.6 yo) were the ones with a dynamic hip screw and the younger ones (74 yo) those with a femoral plate. The shortest delay was seen for pinnings (0.7 years) and the longest for dynamic hip screws (8 years). The fracture site was located in the distal third 17 times (56%) and there were 11 spiroid fractures (37%). 23 times (77%) it was around the implant. Discussion - conclusion : The typical patient with a femoral fracture after osteosynthesis is a 80 yo female, with a distal spiroid fracture of the femur, distant from the nail, living at home , partialy dependant and moderatly active



**Abstract No.: 39727**

**RHEUMATIC INFLAMMATORY DISEASE DUE TO METAL-ON-METAL BEARING ?**

Matthieu Ehlinger, Philippe Adam, Michel Rahme, Francois Bonnomet

Introduction : Metal on metal(MoM) bearings are well known and have proven their efficiency, but specific complications have appeared. We report the case of a patient who developed a pseudo-tumor but also a rheumatic inflammatory disease (ankylosing spondylitis). The cause to effect relation is difficult to prove but doubt is permitted Case report: 46 year old patient presented in the ER with an undisplaced femoral neck fracture. Evolution was unfavorable with a nonunion and avascular necrosis requiring a total hip replacement 9 months after the fracture. Implants were uncemented with a MoM bearing (32mm head). She presented 8 months later with poly arthralgia and groin pain as well as vertigo and canitia. An MRI showed a trochanteric bursitis and an anterior effusion. Aspiration was sterile but impregnated with cobalt. Blood levels of chromium and cobalt were elevated. Due to the persisting symptoms and the elevated metal ions, a revision to change the bearing was performed 18 months after the initial surgery. Pathology confirmed the chronic synovitis with minimal inflammation. Evolution was favorable with regression of the pain. General symptoms weren't modified, with persistant polyarthralgia which was managed by the rheumatology department. Evolution was slowly favorable after treatment Discussion/conclusion : To our knowledge, no such case has been described. General symptoms due to elevated cobalt levels have been observed. In our case the onset of the rheumatic disease was after the implantation of a MoM total hip replacement. If the relation between the two cannot be asserted, doubt exists

**Abstract No.: 39728**

**INTRAMEDULLARY NAILING VERSUS PLATING OF CALCANEAL FRACTURES ? THE BIOMECHANICAL STUDY**

Martin Pompach, Martin Carda, Lubos Zilka, Hans Zwipp, Michael Amlang

The authors compare the results within the axial stress by nailing of the calcaneal fractures with the C-NAIL and plating of the calcaneal fractures. In their presentation the authors describe the process of this test and explain the results in detail. Pursuant to this results the authors describe the advantages and indication for the minimal-invasive operation and explain in detail the surgical procedure using calcaneal nail (C-NAIL). Calcaneal nail (C-NAIL) allows for a minimal-invasive approach and high stability with low risk of infection. The calcaneal plate is necessary to introduce by a long Seattle approach, which is relative risk of infection.

**Abstract No.: 39729**

### **HOW TO INVESTIGATE LESIONS OF THE CLAVICLE**

Shakir Hussain, Zeeshan Khan, Naved Akhtar, Robert Grimer

**Background;** The clavicle is a rare site for the presentation of tumours. Because it is subcutaneous, swelling of the clavicle is often detected early and will cause concern for possible malignancy. We evaluated all clavicular lesions and the incidence of malignant lesions in the clavicle. **Methods;** We have evaluated the clinical features and diagnosis of 410 patients referred to our unit with clavicular lesions in the last 36 years. We have collected clinical and investigation results for all these patients to identify a possible algorithm leading to early diagnosis. **Results;** Of the 410 patients, 88 (21%) were found to have a malignant lesion in the clavicle, of which 17 (4%) were primary sarcomas, 44 (11%) metastases and the remainder haematological malignancy. 322 (79%) lesions were benign including 159 (39%) due to osteomyelitis, 59 (14%) benign tumors and 104 (25%) from other miscellaneous disorders. Infection is commonest below age 20 whilst malignancy and degenerative changes are common in older patients. **Conclusions;** Factors associated with the various diagnosis include age, location in the clavicle, radiological appearance and blood test results. Clavicular lesions in younger patients are mostly benign and incidence of malignancy increases with increasing age. ESR and CRP has low specificity, sensitivity and positive predictive value in cases of clavicular infection. MRI is found to be the most sensitive diagnostic tool to identify abnormality and possible diagnosis. Biopsy is found to be the gold standard for diagnosis in cases of worrying clinical and radiological features.

**Abstract No.: 39730**

**MINIMALLY INVASIVE DISTAL RADIUS OSTEOSYNTHESIS WITH LOCKED SCREWS AND PLATE**

Damian Mifsut Miedes, Juan Moreno Rivelles, Francisco Gomar Sancho

We performed a prospective longitudinal study of a series of 30 patients that underwent MIPO after intra-articular distal radius fracture. In addition to the variables: age, sex, side and mechanism of injury, etc., functional outcomes, pain, range of motion and strength, through Mayo Wrist Score scale were assessed. Fractures were classified using the AO guidelines, radiological results and complications were assessed. We conducted the description of surgical approach with surgical images. We analyzed a total of 30 patients, 19 women and 11 men with a mean age of 63 years. The most affected side was the left with 17 cases. According to the Mayo Wrist Score, functional outcome was 87.1, considered good. A mean loss in strength, measured with a dynamometer of 7.45 kg was observed when compared to the contralateral side. In terms of mobility, loss in range of flexion and extension was 18 ° on average. Radiographically no intraarticular collapse or loss of reduction were observed. Consolidation was obtained in 100% of the cases. One case of complex regional pain syndrome was observed and only one case required the removal of material because of dorsal protrusion of a screw. Minimally invasive distal radius osteosynthesis with locked screws and plate (Medartis), presents good results, similar to those reported by other authors, with the advantage of a smaller scar and less damage to soft tissue. In return, requires greater radiation exposure during surgery.

**Abstract No.: 39731**

**SEMI-EXTENDED EXTRA-SYNOVIAL TECHNIQUE FOR TIBIAL NAILING**

Shakir Hussain, Ravichandran Karthikeyan, Julian Cooper

Background; Tibial shaft fractures are the most common long bone injury. Intramedullary nailing is widely accepted technique for the stabilization and fixation of tibial shaft fractures. However, it's difficult to control the position of the fracture fragments with the conventional methods when the fracture is either in the distal or proximal meta-diaphyseal area. Semi-extended technique has been described in the literature but not widely used. Keeping the leg in a semi-extended position makes it a lot easier to reduce and hold the fracture. An extra-synovial approach is utilized to avoid damage to the articular surface. Method and Results; A total of 80 patients identified on our database from Dec 2012 to March 2014 who had tibial fracture fixed with IM nailing. 10 patients were identified whom had their fracture tibia fixed with semi-extended extra-synovial technique (SEES). All of the patients had major multiple trauma apart from one football injury. 6 patients had open and 4 had close injuries. Average follow up of 23 weeks. All fractures united apart from 1 delayed union of one side in a patient with bilateral open tibial fractures. Conclusion; Semi-Extended Extra-synovial Tibial nailing technique is useful for all types of tibial fracture but in particular for the proximal meta-diaphyseal fractures and in patients with ipsilateral hip or pelvic fractures where hip flexion is contraindicated. Keeping the effected leg in a semi-extended position certainly optimizes fracture reduction and maintenance of reduction. It also simplifies intra-operative fluoroscopic image intensifier use, intra-medullary nail insertion and distal locking.

**Abstract No.: 39732**

**INCIDENCE AND MORTALITY AFTER HIP FRACTURES IN NONAGENARIANS. STUDY IN TWO HEALTH DISTRICT OF VALENCIA- SPAIN (2009-13).**

Damian Mifsut Miedes, Juan Moreno Rivelles, Francisco Gomar Sancho, José Luís Rodrigo Pérez

**INTRODUCTION:** Nonagenarians with hip fractures represent a special group of people because of their advanced age and co-morbidities. **OBJECTIVE:** This study is aimed at estimating hip fracture incidence and mortality in nonagenarians in two Health District in the Autonomous Community of Valencia (696.054 inhabitants), throughout a five-year period (2009-2013). **METHODS:** Descriptive study of the cases of Hip Fracture in nonagenarians. Incidence, Trend and Mortality (In hospital and at one year). Fracture type, co-morbidities, type of surgery performed. **RESULTS:** A total of 3080 hip fractures were treated over the 5 years, of which 642 were nonagenarians. (20.8%). The overall incidence was 18.28 cases per 100,000 inhabitants per year. The mean age was 92.95 years (90-102), with a significant predominance in women (83.35%) than men (14.65%). No increase in the number of fractures in recent years nonagenarians was observed, whereas the total number of hip fractures if it increased in the last year. Regarding the type of fracture, extracapsular predominated (65.42%). In hospital mortality was 11,2%, and the mortality rate at one year was 43,4% in man, and 18,3% in women. **CONCLUSIONS:** The outcomes in nonagenarians with hip fractures is poor due to the high rates of mortality, especially in man, but findings of low perioperative mortality and acceptable morbidity support the view that surgery followed by rehabilitation is indicated in selected nonagenarian patients.

**Abstract No.: 39736**

**DIFFERENTIAL EXPRESSION OF LONG NONCODING RNA DURING OSTEOGENIC DIFFERENTIATION OF HUMAN BONE MARROW MESENCHYMAL STEM CELLS**

Yipeng Wang, Liang Wang, Bin Yu, Zhengyao Li, Ziquan Li

**PURPOSE:** The purpose of this study was to investigate the differential expression and putative function of long noncoding RNAs (lncRNAs) during the osteogenic differentiation of human bone marrow mesenchymal stem cells (MSCs). **METHODS:** The differential lncRNAs expression profiles of undifferentiated and differentiated cells during osteogenic differentiation were established by lncRNA microarray. Microarray data were validated using quantitative reverse transcription-polymerase chain reaction (qRT-PCR). Bioinformatic analyses were applied for further study of these differentially expressed lncRNAs. **RESULTS:** A total of 1,206 differentially expressed lncRNAs were identified during the process of osteogenic differentiation. Among these lncRNAs, 687 were up-regulated and 519 were down-regulated more than two-fold. Bioinformatic analyses were applied for further study of these differentially expressed lncRNAs. The dynamic expression trends H19 and uc022axw.1 were then observed using qRT-PCR. The results showed that the two up-regulated lncRNAs are likely to play important roles in osteogenic differentiation process. **CONCLUSIONS:** Taken together, our study first revealed the expression profiles of lncRNAs in osteogenic differentiation of human bone marrow MSCs. It provides an experimental basis for further research on lncRNAs functions during osteogenic differentiation of human bone marrow MSCs.

**Abstract No.: 39741**

**CARTILAGE OLIGOMERIC MATRIX PROTEIN ANG-1 PROVIDES BENEFITS DURING NERVE REGENERATION IN VIVO AND IN VITRO**

Bo HE, Longhai Qiu, Jun Hu, Zhaowei Zhu, Longhai Qiu

Human acellular nerve graft (ANG) is an alternative to autogenous nerves whose safety and efficacy were still being tested in 2011 by our group. Methods: To improve the efficacy of ANG, we used COMP-Ang-1 combined with ANG in a rat sciatic nerve injury model to observe the outcomes via angiography, morphology and functional analysis. Endothelial cells/DRG cells coculture was also used to further characterize the relationship between neovascularization and nerve regeneration. The results showed significant improvements in early neovascularization, nerve regeneration and functional outcomes in vivo in the COMP-Ang-1 group. In vitro, the neurite length and density, as well as the expression of NF-68 and phosphorylated Tie-2 (p-Tie-2), were significantly increased in the test group compared to the control group. It can be concluded that COMP-Ang-1 promotes early neovascularization followed by brisk nerve regeneration, and the mechanism of the former might involve modulation between phosphorylated Tie-2 and Tie-2 receptors in endothelial cells. These findings demonstrate the possibility of modifying ANG using COMP-Ang-1 to improve the efficacy of ANG for repairing peripheral nerve defects in clinical trials.



**Abstract No.: 39743**

**ENHANCED CELL ATTACHMENT- PROLIFERATION AND DIFFERENTIATION THROUGH SYNTHETIC BONE MINERAL(SBM) COATED THREE DIMENSIONAL PPF SCAFFOLDS**

Fan Zhang,

Calcium phosphate-based ceramics is an promising potential implant biomaterials for bone tissue engineering with excellent bioactive and biocompatible properties. In this study, we tried to evaluate the cell response to synthetic bone mineral(SBM), which was one of the few materials combining carbonate-containing biphasic calcium phosphates (BCPs) with some specific ions, like Zinc, Magnesium and Fluoride, known to be beneficial for bone regeneration in preferred concentration, as a material for surface coating on 3D PPF scaffolds made by using stereolithography. Scanning electron microscope (SEM) , Energy Dispersive X Ray Analysis(EDXA) and Thermal Gravity Analysis(TGA) were used for evaluating coating status and then MC3T3-E1 cells were dynamically seeded into both coated and uncoated scaffolds. Live/dead assay, DNA quantity, alkaline phosphatase activity and real-time PCR were employed for detecting cell attachment, proliferation, differentiation at day 1,7,14 and 21 in both uncoated and coated groups. The results showed that there was a uniform SBM layer covering the surface of each coated scaffold and the cells could attach, grow and differentiate well in all the scaffolds. In coated group, cell morphology was better at day 1, more DNA was detected at day 7 and 14, elevated ALP activity was observed at day 14. Moreover, the phenotype expression of c Alkaline Phosphatase (ALP), Collagen I (Col-I), Osteocalcin (OCN), Runt-related transcription factor 2 (Runx 2) and Bone sialoprotein(BSP) were higher at certain time points compared to uncoated group. Those results demonstrated that SBM is a promising material for coating which can facilitate cell response in 3D scaffold

**Abstract No.: 39749**

**NEURAL TISSUE ENGINEERING**

Teng MA, Jinghui Huang, Yafeng Yang, Liangliang Huang, Zhongyang Liu, Zhuojing Luo

Schwann cell (SC), which plays a key role in peripheral nerve regeneration, is one of the most classic supportive cells in neural tissue engineering. However, the biological activity of SCs seeded in nerve scaffolds decays subsequently due to local hypoxia induced by ischemia. Thus, we aimed to investigate whether a synthetic oxygen carrier-enriched fibrin gel would provide a sustained oxygen release to cultured SCs in vitro for overcoming a temporary (48 h) oxygen deprivation. In this study, perfluorotributylamine (PFTBA)-based oxygen carrying fibrin gel was prepared to provide oxygen for SCs under normoxic or hypoxic conditions. SCs were cultured in the presence or absence of PFTBA-enriched fibrin gel under normoxic or hypoxic conditions. The tolerance of SCs to hypoxia was examined by a cell apoptosis assay. The migration of cells was examined using a Transwell chamber. The mRNA of brain-derived neurotrophic factor (BDNF), nerve growth factor (NGF), glial cell derived neurotrophic factor (GDNF), neural cell adhesion molecule (N-CAM) and vascular endothelial growth factor (VEGF) in SCs were assayed by RT-PCR. In addition, SCs cultured in 3D PFTBA-enriched hydrogel were characterized by Live/Dead staining. The results showed that the PFTBA-enriched fibrin hydrogel was able to promote cell adhesion, migration, and proliferation under hypoxic conditions. Interestingly, PFTBA applied through the fibrin hydrogel dramatically enhanced the mRNA of BDNF, NGF, GDNF, N-CAM and VEGF under hypoxic condition. These findings highlight the possibility of enhancing nerve regeneration in cellular nerve grafts through PFTBA increased neurotropic secretion in SCs.

**Abstract No.: 39754**

**ACTIVATION OF SCHWANN CELLS IN VITRO BY MAGNETIC NANOCOMPOSITES VIA APPLIED MAGNETIC FIELD**

Zhongyang Liu, Liangliang Huang, Liang Liu, Beier Luo

Schwann cells (SCs) are attractive seed cells in neural-tissue engineering, but their application is limited by attenuated biological activities and impaired functions with aging. Therefore, it is important to explore an approach to enhance the biological properties of SCs. In this study, a magnetic nanocomposite made of magnetic nanoparticles (MNPs) and a biodegradable chitosan polymer were prepared and characterized. It was further explored whether such magnetically-responsive nanocomposites would regulate SC biological activities. The magnetization and compositional characterization of the nanocomposite were measured by a vibrating sample magnetometer, Fourier-transform infrared and X-ray diffraction, respectively. The tolerance of SCs under magnetic fields was tested by flow-cytometry assay. The proliferation of cells was examined by an EdU assay, a PrestoBlue assay, and a Live/Dead assay. The gene expression and protein secretion of BDNF, GDNF, NT-3, and VEGF in SCs were assayed by qRT-PCR and ELISA, respectively. It was found that magnetic nanocomposites containing 10% MNPs showed a cross-section diameter of  $32.33 \pm 1.81 \mu\text{m}$ , porosity of  $80.41\% \pm 0.72\%$ , and magnetization of  $5.691 \text{ emu/g}$  at  $8 \text{ kOe}$ . The 10% MNP magnetic nanocomposites were able to support cell adhesion and spreading and further promote proliferation of SCs under magnetic field exposure. Interestingly, the 10% MNP magnetically-responsive scaffold significantly increased the gene expression and protein secretion of BDNF, GDNF, NT-3, and VEGF. This work is the first stage in our understanding of how to precisely regulate the biological properties of SCs in tissue-engineering grafts, which combined with molecular factors may lead to the development of new nerve grafts.

**Abstract No.: 39758**

**PARTICULARITIES OF TOTAL KNEE JOINT REPLACEMENTS IN PATIENTS WITH LOW BONE MINERAL DENSITY**

Razvan Ene, Zsombor Panti, Patricia Ene, Mihai Nica, Monica Cirstoiu, Catalin Cirstoiu

Introduction: Total Knee Arthroplasty (TKA) is one of the most applied treatments in knee joint osteoarthritis. The increase of primary TKA increases complications and the number of revision surgery. Primary TKA in osteoporotic conditions has a major risk of implant loosening or periprosthetic fracture. In these conditions special preoperative management and preventive treatment are needed. Purpose: Our aim was the review of the literature and to study the relationship between the incidence of failure in TKA in osteoporotic and normal bone mineral density (BMD) patients. Method: 24 patients with knee osteoarthritis were treated with TKA, with Genesis II knee joint prosthesis. The patients BMD was determined with Dual Energy X-ray Absorptiometry, using T-score. The measured BMD, was correlated with implant failure or periprosthetic fracture. Results: Periprosthetic fracture occurred in 3 cases, in 1 case during surgery. In these cases the BMD showed the lowest values, with a T-score above -2.5. In 14 cases, patients had bisphosphonates therapy before TKA, with favorable postoperative evolution in short and midterm follows up. Conclusion: Patients with low BMD values has a higher risk of implant failure, either during surgery or short and midterm follow up. Treatment of osteoporosis before and after surgery improves prognosis. The increasing number of elderly people, with osteoporosis, increases the number of TKAs which may require special cemented implants in order to improve the biomechanics and biointegration in these conditions.

**Abstract No.: 39760**

**OSTEOPOROSIS (BMD) AND THE INCIDENCE OF PERIPROSTHETIC FEMORAL FRACTURES AFTER UNCEMENTED PRIMARY TOTAL HIP ARTHROPLASTY**

Razvan Ene, Mihai Nica, Zsombor Panti, Patricia Ene, Monica Cirstoiu, Catalin Cirstoiu

**Introduction:** Periprosthetic femoral fractures are rare but complex complications after total hip arthroplasty that require subsequent technically challenging surgery associated with a considerable increase in morbidity and mortality. As the elderly population increases in size, it is expected that osteoporosis will become a common problem faced by surgeons performing primary hip arthroplasty or managing the associated complications. **Purpose:** The purpose of this study was to determine whether there is a relationship between the incidence of periprosthetic femoral fractures and preoperative systemic bone mineral density. **Methods:** A number of 32 patients with hip osteoarthritis were treated with cementless total hip arthroplasty with tapered high-grade porous titanium coated femoral stems and ceramic-ceramic bearing surfaces. Of the 32 patients between the ages of 62 and 78 years, 13 had normal systemic bone mineral density and 19 had osteopenia or osteoporosis. The incidence of periprosthetic femoral fractures was compared with the bone mineral density T-scores, assessed by Dual Energy X-ray Absorptiometry and the BMI of the patients. **Results:** Patients with low systemic bone mineral density showed a higher incidence of periprosthetic femoral fractures during the first 2 years after surgery than did those with normal bone mineral density. **Conclusions:** The positive correlation between low systemic bone mineral density and a higher incidence of periprosthetic femoral fractures might be a good indicator that those with lower bone mineral density are more at risk of this complication after this type of surgery and open the discussion for measures that can modify this risk factor.

**Abstract No.: 39763**

**THE MANAGEMENT OF PELVIC RING FRACTURES**

Markus Engelhardt, Reinhard Schnettler

Pelvic ring fractures (PRF) are a rare entity but show a very high mortality rate. The implementation of a standardized classification that characterizes the severity and stability and the steadily improving surgical techniques resulted in a significantly decreased number of fatalities. In the emergency situation these fractures require a sufficient trauma management to prevent the patient from a life-threatening impairment of his condition. An appropriate algorithm must be kept on hand to avoid delays in the patient's treatment. In the talk current therapeutic concepts are demonstrated on the basis of clinical cases. How the patient is to be treated from the emergency situation to the secondary, definitive osteosynthesis. The indication for surgical approaches and techniques as well as their advantages and disadvantages will be discussed.

**Abstract No.: 39764**

**RESEARCH TRENDS ARTHROSCOPIC ACL RECONSTRUCTION POST-OPERATIVE PAIN IN PATIENTS**

Xin Wang,

Introduction: To explore post-operative pain trends of ACL reconstruction and provide reference for post-operative pain management. Methods: NRS pain assessment method for January 2014-June at a Beijing hospitals of arthroscopic ACL reconstruction surgery performed including 100 patients a few hours after the first dose, hours the second drug, medication and postoperative pain scores at 6,12,24,48 hours of pain, and to analyze trends arthroscopic ACL reconstruction postoperative pain. Results: The pain trends of post-operative arthroscopic ACL reconstruction has a certain temporal regularity. Conclusion: to give health care interventions under pain of law, to help reduce pain and promote early postoperative rehabilitation.

**Abstract No.: 39765**

**IMPORTANCE OF COMPLIANCE TO SUPERVISED REHABILITATION ON FUNCTIONAL OUTCOME AND RETURN TO SPORT AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION**

Fucai Han,

**Introduction:** Return to sport is an important outcome measure following ACL reconstruction and a reason supporting patients' decision to elect surgery. Rehabilitation programs supervised by physiotherapists are routinely prescribed after ACL reconstruction surgery. However, the specific benefits of supervised rehabilitation after ACL reconstruction are unclear. Most previous studies have investigated the association of compliance to physiotherapy with quality of life and functional outcomes, but none have looked at its effect on return to sport. Our objective was to assess the association of compliance to supervised post-ACL reconstruction rehabilitation with return to sport.

**Methods:** We analysed 93 consecutive cases of isolated ACL reconstruction. Patients were prescribed with a standardised program of 20 physiotherapy appointments over 38 weeks. Subjects were evaluated 12 months after surgery using Lysholm, KOOS and SF-36 scores. Ability to return to sport was also documented through patients' self report. The attendance at physiotherapy by each patient was obtained by examining database records. **Results:** Participants who were more compliant to physiotherapy reported better overall outcome scores as compared to those who were less compliant. Our results were significant in terms of return to sport after being compliant to physiotherapy. Patients in the fully compliant cohort had significantly greater odds of returning to sport as compared to the non-compliant cohort. **Conclusions:** Our study suggests that a supervised rehabilitation program is of benefit to patients undergoing primary ACL reconstruction. The benefits include improved functional scores and a greater likelihood of return to sport.



**Abstract No.: 39779**

**ENHANCEMENT OF VEGF ON AXIAL VASCULARIZATION OF NANO-HA/COLLAGEN/PLA COMPOSITES: A HISTOMORPHOMETRIC STUDY IN VIVO**

Xiao Chang, Hai Wang, Zhihong Wu, Baozhong Zhang, Xiaojie Lian, Fuzhai Cui, Xisheng Weng, Bo Yang, Guixing Qiu

Introduction: The nanohydroxyapatite/collagen/poly(L-lactic acid) (nHAC/PLA) composite is a promising scaffold for tissue engineering bone. The aim of this study was to investigate whether the nHAC/PLA composite is suitable to be compounded with VEGF to enhance the axial vascularization in vivo. Methods: Thirty rabbits were divided into 2 groups of 15 animals each. In control group, a nHAC/PLA scaffold slice was vascularized axially by an inserted ligated femoral arteriovenous (AV) bundle in the animal. In experimental group, a slice compounded with VEGF gel was applied. The rabbits were sacrificed at 2 weeks, 6 weeks, and 10 weeks after surgery; the specimens of scaffold slices underwent histomorphometric examination; analysis of the microvessel density (MVD) of both groups was done. Results: The combination with VEGF (Group B) did not enhance the vascularization in early phase (2 and 6 weeks,  $P > 0.05$ ) but worked in later phase (10 weeks,  $P < 0.05$ ). Conclusion: The data of the experiment demonstrated the suitability of the nHAC/PLA composite as carrier for the growth factor VEGF, enabling its sustained release in bioactive form with enough binding efficacy.

**Abstract No.: 39788**

**OSTEOCHONDROMAS OF PROXIMAL FEMUR (OPF) CAUSES HIP DISORDER AFTER EPIPHYSEAL LINE ATRESIA.**

Yoji Shido, Hironobu Hoshino, Yukihiro Matsuyama

Introduction: Osteochondroma is a bone tumor with a comparatively high incidence. The EXT gene is pointed out as a pathogenesis of osteochondroma. The malignant transformation is rare and surgical resection is usually not needed. Surgical resection is needed when functional impairment arises especially around knee and ankle during growth spurt due to pain or growth disturbance. The aim of this study was to evaluate hip deformity after epiphyseal line atresia. Materials and methods: The sixteen hips of nine patients who were diagnosed as osteochondroma at proximal femur (OPF) during 1992 to 2010 were included in the study. The patients consisted of four males and five female with a mean age of 25.3 years old (range 16-52) at last follow up. Two cases were monostotic osteochondroma and seven cases were polyostotic osteochondroma. We retrospectively reviewed sharp angle, CE angle, AHI, femoral neck angle as a radiological assessment and surgical treatment performed against hip deformity. Result: Average sharp angle was 43 degree (range 34-49), average CE angle was 22 degree (range 0-39), average AHI was 74% (55-89) suggesting that eight hips (50%) had acetabular dysplasia. Average femoral neck angle was 151 degree (range 140-170) suggesting that 15 hips (94%) had valgus hip deformity. Surgical treatments (RAO, arthroscopic acetabular labrum resection, osteochondroma resection) were performed. Discussion: OPF may cause not only femoral neck deformity but also acetabular dysplasia. Due to these deformities, functional disorder may be occurred even after the tumor stabilization. Long-term follow up and screening of the proximal femur should be needed.

**Abstract No.: 39793**

**PRELIMINARY REPORT OF LAPAROSCOPIC LUMBAR DISCECTOMY AND ARTIFICIAL DISC REPLACEMENT**

Wenjun Wang,

Introduction : A prospective observational study about 32 patients who were diagnosed with lumbar disc herniation (LDH) cured by use artificial disc replacement (ADR) with laparoscopic technique. Methods : 32 patients were diagnosed as lumbar disc herniation (LDH), 20 were L4-5 and 12 cases in L5-S1. All the patients were ineffective after at least half a year' conservation treatments and they were all known this operation at preoperation and can accepte it. We finished the three dimensional computed tomographic angiography (3D-CTA) of the iliac great blood vessels before the surgery. During operation, firstly, we exposed target interspace and removed the degeneration discs, then implanted the artificial discs (Aesculap, Tuttlingen, made in Germany). All surgical procedures were finished with laparoscope. Results : All the operations were completed successfully. The average operation time were 120min (range 110~150min) and the average hemorrhage were 120ml (range 80~360ml). Cases were taken the actinogram X in three days, four weeks, six weeks postoperative and the outcome showed that except one with prosthesis cacothesis there were no mobilize, displacement and subsidence. After 6-44 weeks follow-up, the mean Visual Analogue Scale (VAS) score was decreased from 6.8 at preoperation to 1.8 at postoperation. The mean improvement rate of VAS score was 73.5%. Conclusion : The lumbar artificial disc replacement with laparoscope maybe a new way in treating severe lumbar discogenic pain but the long-term efficacy needed to be further clinical observation.

**Abstract No.: 39794**

**POST-OPERATIVE PAIN AND SUBJECTIVE SHOULDER VALUE TRENDS AFTER ROTATOR CUFF REPAIR BY TEAR SIZE**

Uma SRIKUMARAN, Catherine Hannan

**Introduction:** Rotator cuff repair involves a lengthy recovery period. Patient-reported outcomes, such as visual analog pain (VAS) and Subjective Shoulder Value (SSV), are crucial to the evaluation of the success of surgical procedures, value analysis, and patient counseling for rotator cuff repairs. The SSV is single scale question regarding the patient's subjective evaluation of their shoulder (0-100, 100 being completely normal). This study describes the time course of improvement (pain/SSV) in patients who have undergone arthroscopic rotator cuff repairs of small to massive tears. **Methods:** We conducted a retrospective analysis of 165 arthroscopic rotator cuff repairs performed by a single surgeon. Patients were divided into three groups based on rotator cuff tear size: small/medium ( $\leq 1$  tendon), large (1-2 tendons), and massive ( $> 2$  tendons). VAS and SSV were collected at 1.5 weeks, 6 weeks, 2 months, 4 months, 6 months, and 12 months after surgery. **Results:** There was no significant difference in patient-reported outcomes for small, medium, large, or massive tears. There was significant postoperative improvement in SSV between all data points ( $p < 0.001$ ). Pain decreased at each data point, with a significant decrease between 1.5 and 6 weeks postoperatively ( $p = 0.036$ ). At 12 months, patients had an average SSV of 83%. Preliminary data shows patients continue to improve from 12 months to 18 months. **Conclusion:** Patient-reported outcomes after arthroscopic rotator cuff repair follow a similar trajectory of clinical improvement regardless of tear size in terms of pain and SSV. SSV increases steadily up to 1 year after surgery and beyond.

**Abstract No.: 39795**

**A PRELIMINARY COMPARATIVE CLINICAL STUDY OF VERTEBROPLASTY WITH MULTINEEDLE OR SINGLE-NEEDLE INTERSTITIAL IMPLANTATION OF 125I SEEDS IN THE TREATMENT OF OSTEOLYTIC METASTATIC VERTEBRAL TUMORS**

Tao Li,

**Object:** Percutaneous vertebroplasty (PVP) combined with brachytherapy using the interstitial implantation of 125I seeds has previously yielded encouraging clinical results in the treatment of metastatic vertebral tumors. However, the bone cement injection volume is very small due to the osteolytic damage to the metastatic vertebrae, and the ideal spatial distribution of the 125I seeds is difficult to achieve. **Methods:** Twenty-nine patients with metastatic vertebral tumors were divided into 2 groups and were treated with either PVP combined with multineedle interstitial implantation of 125I seeds, or PVP combined with single-needle interstitial implantation of 125I seeds. Clinical efficacy was evaluated with VAS, KPS, and Response Evaluation Criteria In Solid Tumors (RECIST). **Results:** Back pain was significantly alleviated after surgery. VAS scores were significantly decreased in both groups at 1 week and 3 months postoperatively ( $p < 0.05$ ), but there were no significant differences ( $p > 0.05$ ). The KPS scores increased significantly compared with the preoperative scores ( $p < 0.05$ ), and the postoperative KPS scores were significantly different between the 2 groups ( $p < 0.05$ ). No intergroup differences were observed in pain alleviation, but the bone cement injection volume was significantly greater in the multineedle group than in the single-needle group ( $p < 0.05$ ). The clinical benefit rate and disease control rate at 3 months after the operation were both significantly better for the multineedle group ( $p < 0.05$ ). **Conclusions:** The outcomes of PVP combined with multineedle interstitial implantation of 125I seeds in patients with osteolytic metastatic vertebral tumors appeared to be better than the outcomes of PVP combined with single-needle interstitial implantation of 125I seeds.

**Abstract No.: 39796**

**DISPLACED FEMORAL SHAFT FRACTURES TREATED BY ANTEGRADE NAILING WITH THE ASSISTANCE OF AN INTRAMEDULLARY REDUCTION DEVICE**

Yingze Zhang, Wei Chen, Tao Zhang, Juan Wang

Closed reduction and intramedullary (IM) nail fixation is a treatment of choice for adult femoral shaft fractures. It is often necessary to insert a guide wire into the distal medullary cavity from the proximal cavity via the fracture site prior to implanting the IM nail. We invented an IM reduction device, which consists of a reduction tube, a reduction head, a rotary knob, a guide wire tube, a fixed handle, and a guide wire-feeding handle. 22 displaced femoral shaft fractures were treated with the assistance of the IM reduction device. This device can facilitate the insertion of the guide wire into the distal femoral medullary cavity in a closed and controllable manner and be used as a “joystick” to align the femoral shaft fractures. This technique can help us gaining better control of the guide wire and place the guide wire in an appropriate position and desired depth in the femoral medullary cavity, which subsequently make IM nail inserted in a proper position with less risk of postoperative complications. This technique is easy to perform with less operative time and fluoroscopic exposure.

**Abstract No.: 39797**

**THE TREATMENT OF FEMORAL NECK FRACTURES OF CHILDREN AND ITS PREVENTION OF COMPLICATION**

Yaokai Gan, Yifu Zhuang

Objective: To explore the optimum surgical treatment and prevent the relevant complications of femoral neck fracture of children. Method and material: Between 2005 and 2013, twelve kids with a mean age of 10.6 years old, range from 6 to 15 years old with femoral neck fractures were identified and treated in our department. Each patient was followed up at least 1 year. Based on Delbet's classification, there were 2 type I, 7 type II, 2 type III and 1 type IV fractures, including 2 multiple injuries. All patients were treated by close reduction internal fixation. Results: A satisfactory outcome was obtained in 11(91.7%) patients. One non-union was healed after adding hip spica cast. There was no other complications except one avascular necrosis (AVN). Conclusion: Early treatment and anatomical reduction are key factors to ensure a good outcome. 2-3 Kirschner wires ( $\phi 1.5\text{mm}$ ) plus 1-2 screws ( $\phi 4.5\text{mm}$ ) are recommended. Early closure of epiphysis could be prevented, even 2 wires ( $\phi 1.5\text{mm}$ ) pass through epiphysis, but not screws.

**Abstract No.: 39798**

**MID- TO LONG-TERM CLINICAL OUTCOME OF BERNESE PERIACETABULAR OSTEOTOMY IN ADOLESCENTS AND YOUNG ADULTS WITH DEVELOPMENTAL DYSPLASIA OF THE HIP**

Dianzhong Luo,

To discuss the mid- to long-term results and possible prognostic factors of PAO for adolescents and young adults with developmental dysplasia of the hip. Bernese PAO was performed on 162 pts (171 hips) with hip dysplasia from August 1997 to July 2009. Followup data was acquirable completely in 123 pts (137 hips), including 30 males and 93 females. Age of surgery was 12- 48 years (average 27.1 years). The X-ray radiographs and Harris scores were recorded preoperatively and at the last followup. The lateral center-edge angle (LCE), acetabular incline angle (AI), continuity of Shenton's line were also recorded. The grades of the hip osteoarthritis were classified by Tönnis classification. Insufficient corrections of osteotomy, excessive corrections of osteotomy, nonunion of the pubis, nerve injuries, and vascular injuries were recorded as complications. All the contactable cases was followed up again in June and July in 2014. Follow-up duration was 5-17 years (mean, 8.1 years). The LCE angle improved from  $7.13^{\circ} \pm 8.86^{\circ}$  preoperatively to  $30.17^{\circ} \pm 14.98^{\circ}$ . The LCE angle decreased from  $27.84^{\circ} \pm 12.85^{\circ}$  preoperatively to  $7.06^{\circ} \pm 10.58^{\circ}$ . HHS improved from  $83.34 \pm 9.82$  preoperative ly to  $92.79 \pm 7.05$  at the last follow-up. There was significant correlation between preoperative HHS and HHS at the last follow-up. Early complications were observed in 15 hips, along with 17 hips of progressions of hip osteoarthritis. Survival rate of the hip at the last follow-up was 97.8%. Bernese PAO can significantly improve bone coverage and joint function of hip dysplasia patients with low rate of short-term complications.



**Abstract No.: 39800**

**APPLIED ANATOMY OF ANTERIOR CRUCIATE LIGAMENT WITH DIRECT TIBIAL ARC-SHAPED INSERTION SITE**

Wen-Tao Zhang, Tian You, Xin-Tao Zhang

**Objective:** This study was performed to investigate the anatomic formation of tibial insertion site of anterior cruciate ligament (ACL) in Chinese adults and to offer theoretical guidances to ACL reconstruction and meniscus transplantation. **Methods:** 15 adult cadaveric knees were dissected. Then, the ACL midsubstance and the tibial ACL insertion were generally observed and were anatomical measured. **Results:** In all specimens, the midsubstance of the ACL was flat with a mean width of 10.7 mm, thickness of 3.4 mm and cross-sectional area of 31.9 mm<sup>2</sup>. The “direct” arc-shaped tibial insertion runs from along the medial tibial spine to the anterior aspect of the lateral meniscus. The anterior horn of lateral meniscus is surrounded by the arc in the middle. The mean length of the arc was 11.2 mm, its thickness 3.0 mm and area 28.8 mm<sup>2</sup>. 13 of 15 ACLs could be separated into anteromedial bundle and posterolateral bundle, however, no obvious bundles were found in other two knees. **Conclusions:** The tibial ACL midsubstance are flat and tibial arc-shaped insertion besiege the bony insertion of the anterior root of the lateral meniscus. Anatomical ACL reconstruction may therefore require a arc-shaped tibial footprint. There are overlap covering relationship between the attachment location of anterior horn of the lateral meniscus and tibial insertion of ACL. It should pay more attention to protecting tibial insertion of ACL in lateral meniscus transplantation.

**Abstract No.: 39801**

**EFFECT OF LENTIVIRAL-MEDIATED SURVIVIN TRANSFECTION ON MORPHOLOGY AND APOPTOSIS IN HUMAN DEGENERATIVE NUCLEUS PULPOSUS IN VITRO**

Lin Yazhou,

Excessive apoptosis of disc cells serves an important function in IVD degeneration, specially in nucleus pulposus . Thus, anti-apoptosis gene therapy to slow or reverse the degenerative process within the NP are being developed. Survivin is a unique inhibitor of apoptosis and has been extensively studied in tumor cell. However little is known about the effect of survivin transfection on the degenerated NP cells. This study aims to investigate the effect of the lentiviral-mediated survivin transfection on the morphology and apoptosis of human degenerative NP in vitro. In the present study, NP cells were transfected by using the LV-mediated survivin, then cell morphology was observed and survivin expression in mRNA levels were measured using quantitative real time polymerase chain reaction . Apoptosis was analyzed by flow cytometry and caspase-3 activity. The results showed that cell morphology of human degenerative NP cells transfected with LV-mediated survivin significantly changed in terms of cytomorphosis, cytoplasm reduction, and the cell shrink. After transfection, gene expression of survivin significantly increased in transfected generation and subsequent generation and no significant difference in the cell apoptosis rate and caspase-3 activity was observed. Thus, we found that survivin gene transfected into NP cells maintained stable expression and induced a drastic change in cell morphology. Furthermore, no significant effect in anti-apoptosis after transfection. Comprehensive studies on the feasibility of survivin use to decelerate the degeneration of NP should be conducted. Further studies on the mechanism of the cell morphology change and the change in cell function are necessary.

**Abstract No.: 39802**

**EARLY RESULTS OF MODIFIED COLONNA CAPSULAR ARTHROPLASTY FOR YOUNG PATIENTS WITH UNILATERAL HIP DISLOCATION**

Dianzhong Luo,

To discuss the early clinical results of modified Colonna capsular arthroplasty for young patients with unilateral hip dislocation. From July 2012 to February 2013, 25 cases (25hips) of modified Colonna capsular arthroplasty for unilateral hip dislocation in our hospital was collected, including 7 Males, 18 Females; aged 9.7 - 25.8 yrs(mean 17.8yrs). Clinical indexes including: ROM of the hip, HHS, WOMAC, VAS of pain score, before and after surgery; along with the satisfaction score of the surgery, Severin grades, and Tönnis osteoarthritis grades at last follow up. Paired t-test was applied for the indexes before and after surgery, variances components analysis was applied for the satisfaction score and the function scores at last follow up compared in 2 groups, 16yr old younger(15 cases) or older (10 cases). Results All cases were followed up for 12~18 months, mean 13.4 months. Indexes decreased comparing 9 months follow up to pre-surgery, HHS( $78 \pm 9$  VS  $84 \pm 15$ ,  $t=2.107$ ,  $P=0.046$ ), WOMAC function score( $14.8$  VS  $8.6 \pm 9.6$ ,  $t=-2.657$ ,  $P=0.014$ ) appeared statistically difference. VAS and the satisfaction score is much better in patients <16yrs group compared with  $\geq 16$ yrs group at last follow up. VAS is  $1.1 \pm 0.8$  compared with  $2.8 \pm 1.4$  ( $F=12.810$ ,  $P=0.002$ ), whereas the satisfaction score is  $88.8 \pm 17.0$  compared with  $65.7 \pm 22.5$  ( $F=7.535$ ,  $P=0.012$ ). Conclusions In this early follow up, clinical results showed that the majority of patients who underwent modified Colonna capsular arthroplasty would obtained satisfactory results, but with long term recovery, and the younger group with better clinical results.

**Abstract No.: 39819**

**NOVEL BIOMECHANICAL PLATFORM FOR EVALUATION OF SCOLIOSIS SURGICAL PROCEDURES:  
UTILITY IN HUMAN AND SHEEP MODELS**

Wenjun Wang,

**Introduction:** This study introduces a novel testing platform built around a robotic/UFS testing system and custom designed fixtures that enable multi degree of freedom testing of the full thoracic spine. **Methods:** A total of N=12 fresh-frozen full thoracic human specimen (T2-T10) and N=12 fresh-frozen full thoracic sheep specimen were procured for use in this study. Both the human and the sheep specimen were randomized into two groups posterior release (n=6) and anterior release (n=6). The distal-most segments (T2 and T10) and mid-segments (T6) were instrumented with clinical pedicle screws for fixation and manipulation with the robot/UFS testing system. The testing system consists of a robotic manipulator (Staubli RX90), with an on-board six-axis load cell (JR3 Inc.). The robot is controlled via MATLAB (Mathworks Inc.) and operates under adaptive displacement control to a pure moment target of 5.0Nm for Axial Rotation (AR) and a force target of 50N for anterior/coronal translation and 25N for posterior translation. **Results:** The novel testing platform enable successful testing of anterior and posterior surgical release procedures on both the human and sheep models. In general, the human and sheep models exhibited very similar trends, however the surgical releases in the sheep tended to result in larger destabilization. **Conclusion:** This study was able to confirm the utility of a novel testing platform for future investigation of scoliosis surgical procedures in both a human and sheep model. Across the board the two models had similar trends supporting the use of the sheep model for future investigations of scoliosis.

**Abstract No.: 39845**

**5-10 YEARS SURVIVAL OF CEMENTED TOTAL KNEE ARTHROPLASTY IN CHINESE RHEUMATOID ARTHRITIS PATIENTS AGED LESS THAN 60 YEARS**

Yu Fan, Xisheng Weng, Jin Lin, Jin Jin, Wenwei Qian

**Background :**Total knee arthroplasty (TKA) for younger patients under 60 years old with rheumatoid arthritis (RA) is rare but is nonetheless indicated for many patients with this disease. Few reports exist on the results of TKA in Chinese RA patients younger than 60 years.**Purposes:** It was sought to determine survivorship and functional outcomes of TKAs in RA patients younger than 60 years in China. **Methods:**A total of fifty two patients (68 cemented TKAs) were identified and contacted to survey their outcomes at a minimum followup of 5 years (mean, 8.3 years; range, 2-33 years). The average age at surgery was 50.3 years (range, 16-60 years). Clinical and radiological data on were collected. **Results:**All patients had significantly improved HSS score and range of motion. At latest followup, two patients suffered from complications including postoperative infection and common peroneal nerve palsy. **Conclusions:**TKA achieved favourable outcome for RA patients with age younger than 60 years.

**Abstract No.: 39849**

**THE EFFECT OF SAGITTAL PLANE DEFORMITIES AFTER TIBIAL PLATEAU FRACTURES TO FUNCTIONS AND INSTABILITY OF KNEE JOINT**

Mehmet ERDIL, Murat Bulbul, Kuyucu Ersin, Ferhat Say, Adnan Kara

Fractures of proximal tibia affect function and stability of knee joint. The objective of this study is to evaluate the effect of posterior tibial slope after fracture healing on antero-posterior knee laxity, functional outcome and patient satisfaction. We performed 32 patients. Mean age of the study patients were 50 and mean follow-up duration was 34.1 months (ranged between 12-58 months). Mean IKDC and Tegner scores were  $67.83 \pm 19.98$  and  $87.22 \pm 14.48$  respectively. Mean posterior tibial slope after the treatment was  $6.91 \pm 5.11$  and there was no significant difference when compared to the uninvolved side  $6.42 \pm 4.21$  ( $p=0.794$ ). Mean posterior tibial slope was significantly higher in patients with higher posterior tibial slope on the uninvolved side ( $p=0.001$ ). Posterior tibial slope after the treatment and posterior tibial slope difference did not affect functional scores (IKDC score  $p=0.903$ , Tegner score  $p=0.523$ , Range of motion  $p=0.994$ ). Knee laxity in anterior-posterior plane was  $6.14 \pm 2.11$  and  $5.95 \pm 2.25$  respectively on healthy and injured side. The difference of mean laxity in anterior posterior plane between two sides was statistically significant ( $1.89 \pm 1.53$ ,  $p=0.036$ ). There was no correlation between laxity and age, fracture type, range of motion, functional knee scores, posterior tibial slope. However Tegner scores were significantly lower in patients with higher difference between laxity of two knees ( $p=0.03$ ). In this study we found no difference in laxity between the injured and healthy knees. However Tegner score decreased significantly in patients who had greater laxity difference between the knees. Despite absence of correlation between laxity and posterior tibial slope, minimization of instability via anatomical reposition of posterior tibial slope is necessary for a functional knee.

**Abstract No.: 39851**

**SHORT SEGMENT FUSION FOR IDIOPATHIC SCOLIOSIS WITH LENKE 5 CURVES: SINGLE ROD SYSTEM COMPARED WITH DUAL ROD SYSTEM (MEAN 7.6 YEARS FOLLOW-UP)**

Keyi Yu, Jianxiong Shen, Gaines Robert

**Objective.** To evaluate the long term outcomes of anterior scoliosis surgery with a single rod system compared with a dual rod system for major thoracolumbar and lumbar curves. **Methods.** Twenty one patients with Lenke 5C idiopathic scoliosis were operated in two institutions between 1996 and 2007, which include 13 patients in Group A using single rod; 8 patients in Group B using dual rod. The mean age was 16 years, all were females, and the mean follow-up was 92 months (range 48–195 months). Coronal and sagittal plane measurements of the spinal curves were evaluated pre, postoperatively and at the final follow-up. **Results.** A mean of 4 vertebrae and 3.6 vertebrae were fused in Group A and B. The preoperative thoracolumbar curve corrected from 42.1 ° to 9.1 ° and 50.0 ° to 17.1 ° respectively. The pre-op tilt angle of lowest instrumented vertebra improved from 19.5 ° to 3.1° and 28 ° to 8.9° respectively. The Cobb angle of instrumented vertebrae is 36.2° and 39.4° in Group A and B, which is corrected to 5.2° and 6.1° respectively. The fusion levels of Group A and B saved 2 and 2.4 vertebrae respectively compared to posterior technique. One rod breakage occurred in Group A, there were no complications in other patients. **Conclusion.** Anterior correction and fusion for Lenke 5C curve can reduce the number of fused vertebra compared to posterior techniques. Dual rod system using bone-on-bone technique could save more motion segments with less correction rate compared with single rod system using over correction technique.

**Abstract No.: 39852**

**HYBRID EXTERNAL FIXATION APPLICATION BY JOYSTICK METHOD IN BICONDYLAR TIBIAL PLATEAU FRACTURES**

Mehmet Erdil, Murat Bulbul, Ersin Kuyucu, Ferhat Say, Adnan Kara

In this report we aimed to present clinical and radiological outcome of patients with tibia plateau fractures who were treated with hybrid external fixators. Schanz screws were applied synchronously and used as joystick for fracture reduction. The study included 72 patients (49 male and 23 female) with bicondylar tibial plateau fractures classified as type 41-C2 according to the AO classification. The median age of the patients was 39 (21-67) years, and the median follow-up time was 21 (12-35) months. The etiologies of the fractures were traffic accidents for 45 patients (62.5%), falls from heights for 17 patients (23.6%) and falls for 10 patients (13.8%). The median operation duration was 47 (25-68) minutes. Blood transfusions were not needed for any of the patients during the postoperative period. Mean knee flexion and extension were 105° (80°-125°) and 0° (5°-70°), respectively. Mean varus laxity and valgus laxity were 4.30° (2°-7°) and 3.10° (2°-5°), respectively. Four patients experienced leg shortness from 0.4-1.1 cm (mean=0.72 cm). After confirming full radiological fracture healing, the external fixators were removed between 8 and 16 weeks (mean=8 weeks) postoperatively. The KSS scores at the end of one year were "excellent" for 48 patients, "good" for 29 patients, and "inadequate" for 5 patients. With the applied technique, we obtained stable reductions over a short period using synchronously applied Schanz screws under fluoroscopic guidance. None of the patients experienced major complications, which enabled early weight bearing and a return to daily living activities.



**Abstract No.: 39854**

**HYBRID EXTERNAL FIXATION VIA A MINIMALLY INVASIVE METHOD FOR TIBIAL PILON FRACTURES  
TECHNICAL NOTE**

Mehmet ERDIL, Murat Bulbul, Ersin Kuyucu, Ferhat Say, Adnan Kara

We aimed to present the clinical and radiological outcomes of patients with tibial pilon fractures who were treated with hybrid external fixators. The study group included 42 patients with tibial pilon fractures that were classified as 43 C. Prior to the reduction of the tibial pilon fracture, open reduction and internal fixation through a longitudinal incision over the lateral malleolus were applied in patients with concomitant lateral malleolus fractures. Schanz screws were positioned into the major fracture fragments as determined on axial computerized tomography sections in the anteroposterior plane and perpendicular to the medial and lateral fracture fragments. After confirming optimal anatomical reduction with fluoroscopy, Schanz screws fixated to two separate motors were synchronously passed through the fracture fragments. The mean age of the population was 37.7 years old. Fracture healing was observed in all patients, and the mean fracture healing time was 17 weeks. The mean lateral distal tibial angle was 89 degrees. Joint surface irregularity was not observed in any patient. All of the patients had 0-15 degrees of ankle dorsiflexion. None of the patients had restricted ankle plantar flexion. According to the AOFAS scoring system, the clinical evaluation was excellent in 26 patients, good in 14 patients and fair in 2 patients. Nonunion and malunion were not observed in any of the patients, and good alignment was achieved. Permanent hybrid external fixator applied using Schanz screws via a mini open technique is a fast, easily applied alternative with low morbidity and satisfying results.

**Abstract No.: 39855**

**MEDIUM-TERM RESULTS OF PARTIAL FASCIECTOMY FOR SURGICAL TREATMENT OF DUPUYTREN'S CONTRACTURE**

Mehmet ERDIL, Harun Mutlu, Serhat Mutlu, Kuyucu Ersin, Mehmet Emin Çetin, Abdulkadir Polat

The aim of this study is to investigate the hand functions and medium-term results of patients treated surgically for Dupuytren's contracture with partial fasciectomy and to research the effect of the Tubiana classification system on prognosis. Our study retrospectively evaluated 28 patients (male:21, female:7) with open partial fasciectomy performed. Surgical indications were patients at stage 1 or above according to Tubiana classification system. The average age of the 28 patients (male:21, female:7) (M/F=3) treated and followed up was 60.8 years (41-76). The patients were monitored for an average of 60 months (36-98 months). In 23 cases (82.1%) there was accompanying hypertension, while 13 cases (46.5%) had accompanying diabetes mellitus. In 18 cases (64.3%) the right hand was affected while in 10 cases (37.7%) the left hand was affected. The most frequently affected finger was the 4th finger (10 cases 35.7%). Seventeen cases (60.7%) were at Tubiana stage-1. Partial fasciectomy is accepted even though not all diseased fascia are removed as it provides good functional results, low recurrence rates and low complication rates and is a frequently applied surgical choice. For these reasons all our cases underwent partial fasciectomy. We consider the Tubiana classification system to be an effective classification system to indicate both prognosis and the time for surgical treatment. To the best of our knowledge there is no study in the literature emphasizing this characteristic of the Tubiana classification system. In this context we especially recommend surgical treatment for Dupuytren disease, even in the early stage.

**Abstract No.: 39870**

**EFFECT OF DELAY IN SURGERY ON THE TEMPORAL EXPRESSION OF GROWTH FACTORS AFTER INTRAMEDULLARY NAILING OF THE FEMORAL SHAFT FRACTURES**

Vivek Trikha, Budhadev Chowdhury, Arulselvi Subramanian, Venencia Albert

**Introduction:** Growth factors are considered to play an important role in the process of bone healing. This study assessed the serum levels of TGF-  $\beta$  1 and VEGF over a period of six months in patients undergoing intramedullary nailing for isolated fracture shaft of femur operated at various time periods after injury. **Methodology:** TGF-  $\beta$  1 and VEGF levels were evaluated, for 60 patients undergoing nailing and 15 patients of femoral plating, before the procedure and on postoperative 3rd day, 14th day, six weeks, 12 weeks and 24 weeks. The time lag between injury and surgery and the expression of the growth factors was also evaluated. **Results:** Out of the 60 patients, 30 patients were operated within the first 48 hours while the rest were operated after 48 hours. There was a steady increase in the expression of VEGF with peak values in the first 10 days after surgery. This returned to near normal levels by the end of six months. TGF-  $\beta$  1 level also showed increasing trend after surgery but the levels reached high peaks after 2 weeks and continued to remain high till the end of six months. **Conclusion:** There is a definite and specific trend of serum levels of growth factors in the fracture healing process. There is no effect of delay in surgery on the serum levels of growth factors essential for fracture callus formation. The changes in the levels of these factors may be a pointer to the status of the bone healing.

**Abstract No.: 39873**

**OSSEOINTEGRATION OF THE IMPLANT AFTER TOTAL HIP ARTHROPLASTY FOR COXARTHROSIS  
STAGE III-IV OF ADOLESCENTS.**

Vasily Zorya, Alexey Smirnov

Hip joint diseases are one of the most important problems of medicine. In order to better bone ingrowth into the pores of the surface of the implant components, their design is improved and the new ways are being searched for ensuring of the biological stability of the implant. Osseointegration occurs by the bone ingrowth into the implant surface. It depends on the quality of the receiving bone bed, the surface coating of the implantable endoprosthesis components, the implant bioinertness, its design (shape), early loading and primary stability (press-fit). Different ways of heightening of the prosthesis lattice structures on the endoprosthesis surface, covering the prosthesis bioactive materials are used in order to improve the quality of the surface of the implantable endoprosthesis components and ensure its long-term stability. However, any kind of coating on the metal surface of the prosthesis does not have a long durability and the bone adjacents to a welded lattice structure, but does not grow into. The immune-boosting drugs, calcined-polypeptides, regulators of calcium-phosphorus metabolism, bisphosphonates are used in the area of implant to stimulate early osseointegration. We operated 22 patients of 15-18 years old with coxarthrosis of III-IV stages in the clinic of Traumatology and Orthopedics. All operated patients in long-term period of 5 years reported good functional outcome. There was not any cases of the critical violation of prosthesis-bone contact; the results of roentgenometer 7 Gruen zones on a long-term period showed excellent integration of the implant, the minimum area of contrast around the implant.

**Abstract No.: 39878**

**INTRA-ARTICULAR NITROGLYCERINE INJECTIONS IN GONARTHROSIS THERAPY**

Vasily Zorya,

We investigated the clinical efficacy of intra-articular nitroglycerine injections in patient with the idiopathic gonarthrosis of II-III grade during the period from 2009 to 2014. We treated patients of both sexes aged from 31 to 87 years with unilateral and bilateral disease. The concentrate of nitroglycerine for infusions (1 mg/ml; - 2 ml) was injected into the superior recess in the supine position. In case of bilateral gonarthrosis we made injections in both knees simultaneously. After the injection the patients stayed in supine position for 1 hour under the blood pressure monitoring. The therapy course included 5 intra-articular injections every 48 hours. The clinical efficacy was assessed during 12-day stay in hospital and after 2, 3, 6 months after the end of therapy. The advantage of the local nitroglycerine therapy is the release of the active molecule of nitric dioxide in the muscular wall of vessels, which leads to the pre-capillary relaxation and intensive vasotropic and metabolic improvement of the whole knee joint. The proposed intra-articular therapy can be use as the basic method of idiopathic gonarthrosis treatment or as the additional method, which allows to decrease the pain-reliefs dosage and improve the patients' life quality, especially in the elderly patients. We noted the positive dynamics in the visual-analogue scale values during the treatment: the mean values before the treatment were 72.3 mm, 60 days after 53.8 mm, and 90 days after – 40.2 mm; these findings significantly prove the high efficacy of the therapy.

**Abstract No.: 39879**

**RARE PERILUNATE INJURY AS A RESULT OF CHRONIC TRAUMA IN 3-YEAR OLD GIRL**

Ryszard Tomaszewski, Karol Pethe

Background and purpose; Perilunate dislocations are rare injuries of the wrist caused by imposing of big force which are most common in transportation injuries. Medical literature describes dorsal perilunate dislocations as well as sprains connected with fractures of the scaphoid and the distal radius in adults. Patients and methods ;The child was reported to have suffered, approximately 18 months before, a repetitive wrist injury by means of frequent pulling and bending of the hand by the father who may have physically abused the child for about 2 months. The mother did not indicate a specific major trauma which could lead to a conclusion that the child may have sustained the injury when the girl was 18 months old. Results and Interpretation;Due to the extremely rare type of the trauma and its being chronic in nature, the administered treatment and the result can be considered as good. The child and her mother were satisfied with the results of the treatment. Despite the fact that the diagnosis in our case was delayed due to the constant and repeated damage to the bone, the bone was not damaged in such a way as to prevent a return to the full wrist fitness.

**Abstract No.: 39880**

**TOTAL HIP ARTHROPLASTY IN ADVANCED AGE**

Vasily Zorya, Sergey Gnetetskiy, Ivan Chemyanov

Introduction. Femoral neck fractures resulting from osteoporosis are the most common trauma in older adults. Methods. The surgical management of osteoporosis-related femoral neck fracture in elderly patients with coxarthrosis deformans is aimed at restoring mobility and bearing function of lower extremity and movement pattern, and at relieving pain. It must return to the individuals their ability to self-care. Since 1996 up to the present day in Traumatology, Orthopedics and Field Surgery Clinic of MSUMD 520 patients aged 75 to 91 with coxarthrosis deformans and fractures of the neck of the femur have been operated. Total hip joint replacement was performed in all patients.

Assessment of the hip joint condition was evaluated by clinical, anthropometric and radiological methods. Results. Our observation shows that total hip joint replacement at osteoporotic femoral neck fractures and at the third -fourth stage of coxarthrosis in elderly patients bring about favourable results for most individuals. The essential conditions of that were sound detecting of the indications for surgery, strict keeping measures for prevention of inflammatory complications, proper technique of joint replacement and adequate rehabilitation treatment. Positive results of hip joint replacement were achieved in 91,9% cases.

**Abstract No.: 39881**

**COLLAGEN MATERIAL IN TREATING HUGE DEFECTS AFTER SURGERY BENIGN BONE TUMORS.**

Vasily Zorya, Alexandr Krasilnikov

Introduction: the most common problem is huge postoperative defects restoration. Results of treatment of patients with benign tumors and tumor-like diseases were studied in 94 operated patients. In our long-term study had shown good results - 70%; satisfactory - 20% and poor - 10%. The study of long-term results of surgical treatment using the proposed methods has shown that as the time elapsed after surgery, the number of good results increases. Materials and methods: in some case after radical surgery we got huge bone defect. For plastic we used allografts – frozen cortical bone, and the collagen material - collost. The collagen material Collost has been used by us, for the first time in clinic. It's 100% collagen 1type and a stimulator of osteogenesis. Collost advantages are: 1) fills all space, both between allografts, and between them and the mother's bed. 2) increases the proliferation of osteoblasts. 3) the considerable reduction of a pain, the wounds inflammations and the liquid losses. 4) increases the dynamics of restoration of bone structure and anatomical characteristics of the bone. 5) increases the dynamics of restoration of allograft. Results: The Collost application creates optimum conditions for the bone regeneration: there is an effective restoration of bone structure, processes of formation and maturing bone trabecular become more active. The Collost possesses the expressed osteogenic properties, allowing to fill effectively post-op defects. The application of Collost increases restore the morphological structure bone, reduces terms of functional treatment and rehabilitation of patients with a bone pathology.



**Abstract No.: 39883**

**CONSERVATIVE TRAITEMENT FOR TWO PELVIS MALIGNANT TUMOR**

Abdelhalim Ould Rouis, Mourad Hamidani

introduction: it's two cases for conservative treatment for pelvis tumor, the first one it's chondrosarcoma grade 1 and the second it's the ewing sarcoma. Methods: the first is the man 33 years, present a pelvis chondrosarcoma needed the conservative surgery, the second are 16 cases for the pelvis ewing sarcoma needed the chemotherapy and surgery

**Abstract No.: 39888**

**TERRIBLE TRIAD INJURY OF THE ELBOW: A SUBCLASSIFICATION WITH SPECIAL REFERENCE TO THE ANTERIOR MEDIAL COLLATERAL LIGAMENT**

Shi-Min Chang, Ying-Qi Zhang

Introduction: Besides radial head and coronoid fractures, terrible triad injury of the elbow involves a wide range of soft-tissue ruptures. This paper proposes a subclassification of the terrible triad injury with special reference to the status of anterior bundle medial collateral ligament (AMCL). Methods: From 2004 to 2012, twelve patients with terrible triad injury were treated consecutively. There were 3 in type I (AMCL-intact) managed conservatively and 9 in type II (AMCL-ruptured) managed surgically. The operation involved lateral and medial double approaches. The fractures were plate/screw, cannulated screw or suture fixed. The lateral collateral ligament (LCL) was repaired by sutures through drilled holes or bone anchors. If the elbow was not concentric reduced during intraoperative forearm weight test, and then the MCL was further repaired. Results: All 12 patients were followed up for 1-4 years (average 2 years), with healed fracture, stable elbow and no pain movement. The average range of motion was 120 degrees in flexion-extension, 100 degrees in pronation-supination. The functional outcome was excellent in 8 and good in 4 according to Mayo Elbow Performance Score. Conclusion: Terrible triad injury with AMCL-intact was related with minor radial head and coronoid fractures and displacement and may be managed conservatively, while with AMCL-ruptured, relevant to major fractures and displacement, and should be treated surgically. Further MCL repair enhances the stability greatly in terrible triad of the elbow.

**Abstract No.: 39895**

**THE TOXICOLOGICAL INFLUENCE OF CHITOZAN AND MODIFIED CHITOZAN ON DIGESTIVE TRACT AT EXPERIMENTAL OSTEOPOROSIS**

Saodat Asilova, Albert Yugay, Bekzod Ubaydullaev

Background. Osteoporosis is a widespread disease, which requires timely using recent methods of prevention, diagnostics and treatment, which able to avoid significant osteoporotic fractures rate and their complications. The morphologic data gives a reason to believe that significance of stimulating effect of Chitosan enhances in strengthening of cells proliferation and differentiation of low differentiated cells, and maturing osteoblast formation and activation of their functions. Materials and methods. Experiment was performed at CRI, based on TMA. For research work had used 25 adult rabbits "Chinchilla" race, weighted 2500-3000 grs. By operation was performed osteotomy of right femur, purposed to development osteoporosis. Operated limb immobilized. Results. There were defined, that Chitosan don't have resorption and irritant effects to skin and eye mucous membrane, and not cause organism sensibility in animals. The preparation haven't cumulative effect. Established, that at chronic exposure during 3 months on doses 1000 mg/kg, preparation do not call a pathological changes in experimental animals organism. According angioradiograph data and after confirmation of osteoporosis, animals had divided on 3 groups: control, receiving Chitosan, receiving Chitosan + Active Calcium in the ratio 1:1. Conclusions. 1 It was established, that there no significant differences in internal organs between experimental and control animals, i.e. Modified Chitosan do not cause any dystrophic, necrobiotic and inflammatory changes in animals. It was established, that there no significant differences in internal organs between experimental and control animals, i.e. Modified Chitosan do not cause any dystrophic, necrobiotic and inflammatory changes in animals. It was established, that there no significant differences in internal organs between experimental and control animals, i.e. Modified Chitosan do not cause any dystrophic, necrobiotic and inflammatory changes in animals. 2 The morphologic investigation data are confirmed by dynamics of biochemical indexes, taking a part in different stages of ostiogenesis, which can reflected not only their changes in bones, and in native blood.

**Abstract No.: 39916**

**CLINICAL CONSECUTIVE OBSERVATION OF CUTANEOUS NERVE INJURY OF FOOT AND ANKLE SURGERY: ONE-YEAR FOLLOWED-UP**

Lu Bai,

**Purpose:** It is to conduct consecutive observation of the natural history of clinical recovery after cutaneous nerve injury around the ankle. **Method:** Retrospective analysis from August 2012 to August 2013, 279 cases of patients were included, among whom 23 revealed cutaneous nerve injury and 17 cases have obtained the continuous follow-up (13 males and 4 females) with the average age of 33.6y (25-61y). There are 7 cases of sural nerve injury, 5 superficial peroneal-nerve injury, and 5 medial plantar nerve injury. The abnormal feeling in the innervation zone is taken as the diagnostic criterion. Vitamin B12 and methylcobalamin were used routinely. BMRC nerve sensory function scale is adopted for consecutive follow-up to the patients immediately, 6 weeks, 3 months, 6 months, 9 months and 1 year after surgery. **Results:** In all cases, sensation function would heal by time. However, little difference was shown in 9 months BMRC and 1 year ( $Z=-0.919$ ,  $P=0.358$ ). No statistical significance was shown in different nerve injury group. ( $\chi^2 = 1.123$ ,  $P = 0.571$ ). Kaplan-Meier curve of functional recovery of nerve injury, nerve function can gradually recover over time, and 3 months after surgery is a major node of time. Additionally, there are 4 cases showing painful neuromas and need surgically treated. **Conclusion:** The postoperative recovery of sensory nerve function of injured cutaneous nerve injury of foot and ankle generally requires about 6 months. Painful neuroma is likely to happen after sural nerve injury. Such complications should take into consideration during surgery.

**Abstract No.: 39919**

**LONG TERM RESULTS AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION IN CHILDREN AND ADOLESCENTS**

Vojtech HAVLAS, Theodoros Philippou, Jakub Kautzner, Eduard Stastny, Vit Hladky, Tomas Trc

**PURPOSE OF THE STUDY:** Treatment of the anterior cruciate ligament (ACL) rupture in pediatric patients has been a long discussed issue, mainly due to the complexity of the treatment and the potential risk of iatrogenic growth disturbance due to physeal damage. The aim of our study is to determine the optimal treatment plan for an ACL tear, based on retrospective clinical review study in our department. **MATERIAL AND METHODS:** In the study, 78 patients (mean age 15.4) with unilateral ACL tear indicated for reconstruction were evaluated and treated in years 2003-2013. The clinical assessment of the effectiveness of each surgical procedure included Tegner–Lysholm (TL) and IKDC score. Functional evaluation outcome was measured using Lachman’s test (LT) and range of motion. In 4 children were chosen a trans-epiphyseal graft fixation technique. The rest were treated with a standard technique of fixation through growth plate in various stages of development (extinction). **RESULTS:** The average value of the IKDC/TL score was 48/54 points preoperatively and 91/86 points one year after the surgery. LT was positive for all patients before the operation and one year after surgery was negative in 96%. Only 11% of the patients did not achieve full range of motion. **CONCLUSIONS:** Based on TL, IKDC score assessment and LT measuring it can be concluded that patients with ACL injuries near skeletal maturity can be treated with transphyseal techniques. For skeletally immature patients, transepiphyseal reconstructions seem to be a safer and more reliable option without significant growth plate damage.

**Abstract No.: 39927**

**EXPLORATIONS TO THE EARLY MANAGING STRATEGIES OF MULTIPLE INJURIES**

Hongkai Lian, Jincheng Huang

Introduction: To explore the early managing strategies of multiple injuries. Methods: In a retrospective study, we studied 406 patients presented with multiple injuries. They were divided into two groups according to the time they entered into our hospital. 189 patients who entered into our hospital between January 2010 to April 2012 was defined Group A, the others was defined Group B. Record time between reception and entering SICU or operating room, mortality rate 3 days after injuries between patients from the two group. Results: Time between reception and entering SICU or operating room was  $108.23 \pm 6.72$  min and  $45.67 \pm 7.96$  min in group A and B respectively, difference are significant ( $P=0.001 < 0.05$ ). Mortality rate 3 days after injuries was 13.89% and 5.53% in group A and B respectively ( $P=0.005 < 0.05$ ). Conclusions Shortening the time between injury and treatment and reasonable utilization of intracranial pressure monitoring, limited fluid resuscitation, damage control theory can reduce the early mortality rate in multiple injury patients.

**Abstract No.: 39929**

**MANAGEMENT OF MOREL LAVALLEE LESION ASSOCIATED WITH PELVI ACETABULAR FRACTURES  
IN A DEVELOPING COUNTRY? A RETROSPECTIVE STUDY**

Vivek Trikha, Buddhadev Chowdhury

**INTRODUCTION:** Morel-Lavallee (ML) lesion is a common but uncommonly diagnosed soft tissue injury associated with pelvic and acetabular fractures. This study was undertaken to analyse the outcome of ML lesions associated with pelvi acetabular fractures managed by a protocol based intervention in a level one trauma centre of a developing country. **Material and methods:** All patients with pelvi-acetabular fractures from Jan 2010-Dec 2013 were evaluated for soft tissue condition on arrival. On the diagnosis of ML lesion irrespective of the time lag from the injury, the lesions were treated initially by the same protocol of percutaneous drainage and suction drainage followed by evaluation of the skin and soft tissue damage. Cases developing skin necrosis or areas of eschar formation due to the high severity of the soft tissue injury were taken up for formal debridement and removal of the eschar and the debridement of the involved area. **Results:** Out of the total 35 patients, 14 patients had acetabular fracture while 17 patients had pelvic fracture. Four patients had both acetabular and pelvic injury. Surgical intervention for pelvi acetabular fractures was undertaken in 29 patients whereas 6 patients were managed conservatively. **Conclusions:** Management of ML lesions presents a challenging situation especially so in countries with limited resources. We recommend that all cases should undergo percutaneous drainage irrespective of the duration of injury. Only exceptions are cases with deep soft tissue abrasion on presentation.

**Abstract No.: 39934**

**PULMONARY FUNCTION TEST IN MARFAN SYNDROME AND MARFANOID SCOLIOSIS PATIENTS-A COMPARISON WITH ADOLESCENT IDIOPATHIC SCOLIOSIS**

Zhengyao Li, Bin Yu, Yipeng Wang, Guixing Qiu

**Aim:** To investigate the difference of the pulmonary function test between the Marfan syndrome and Marfanoid scoliosis(MMS) patients and adolescent idiopathic scoliosis(AIS) patients. **Methods:** In this retrospective study, 40 MMS patients who received posterior correction matched 80 AIS patients were included. The preoperative pulmonary function tests of the two groups were investigated, and the influencing factors were analyzed. **Results:** The proportion of patients with severe damage in MMS group (11/40) was significantly higher than that of AIS group (5/80) ( $P < 0.05$ ). MMS patients had smaller values of forced expiratory volume in one second(FEV1%), forced vital capacity (FVC%) and the maximum peak expiratory flow (PEF%) than those of AIS patients (all  $P < 0.05$ ). In Group MMS, the Cobb angle of thoracic curve was negatively correlated with the percentage of predicted pulmonary volumes (FEV1% and FVC%)( $r = -0.444$ 、 $-0.524$ ,  $P < 0.05$ ); The age of patients was positively correlated with the percentage of predicted pulmonary volumes (FEV1%, FVC% and PEF%)( $r = 0.363$ ,  $0.326$ ,  $0.348$ ,  $P < 0.05$ ); The flexibility of the thoracic curve was positively correlated with the percentage of predicted FVC%(  $r = 0.321$ ,  $P < 0.05$ ); FEV1% and FVC% are not related with thoracic kyphosis. **Conclusion:** The damage of pulmonary function was more severe in MMS patients than that in AIS patients, and influencing factors that lead to the difference including the age and the Cobb angle of thoracic curve of the patients.



**Abstract No.: 39944**

**LONG TERM TREATMENT RESULTS OF PATELLAR DISLOCATION IN CHILDREN**

Vojtech HAVLAS, Vit Hladky, Tomas Trc

**INTRODUCTION:** Acute (traumatic) and chronic (recurrent) patellar dislocation present majority amount all kinds of patellar dislocations. Up to 1/6 of cases after acute dislocation develops recurrences. The treatment is mainly conservative, but we are nevertheless forced in some cases to apply the surgery. But not all of them may be used due to the specifics of the pediatric skeleton. The main goal of this study is to develop method of treating pediatric patients with patellar dislocation.

**METHODS:** We evaluated a group numbering 166 patients, or 182 knee joints. There were comprised patients younger than 18 years and treated between 2003 and 2012 with the diagnosis of patellar dislocation. We assess age, gender, mechanism of injury and the risk of redislocation depending on the type of treatment.

**RESULTS:** There were 71 boys and 95 girls in the study. Traumatic dislocation was recorded in 159 cases, whereas subsequent redislocation occurred in 38 cases. Risk of redislocation after the first dislocation episode was 23.9%. Already known recurrent patellar dislocation was observed in 23 knee joints. After the first redislocation a previous conservative treatment failed in 23.68%. Surgical treatment failed in 28.57%. In the case of second redislocation conservative treatment failed in 26.32% and surgical in 10.53%.

**CONCLUSION:** The risk of recurrence compared to the literature is slightly higher- about 1/5. In the case of second redislocation the results of the surgical treatment were better compared to conservative treatment. After the first redislocation was the finding quite the reverse.

**Abstract No.: 39945**

**ARTHROSCOPIC PROCEDURE BY THE ELDERLY SPORTSMEN: DOES IT HELP?**

Vojtech Havlas, Pavel Neckar

The purpose of the study was to evaluate the functional outcome, subjective outcome and duration of the expected benefits in football players, who underwent arthroscopic cartilage surgery with/without microfracture. Methods: Between 2012-2013, 31 patients underwent arthroscopic surgery including joint insufflation, adhesions debridement, anterior interval release, cartilage defects contouring, shaping of meniscus tears, synovectomy, removal of loose bodies, and removal of osteophytes. We compare patients with and without additional microfracture. Inclusion criteria: sportsmen with moderate or severe osteoarthritis, a minimum 1,5 year follow-up. Exclusion criteria: severe joint axial deviation. All patients underwent identical postoperative rehabilitation. Results: The average patient age was 48 (32 – 62), all men, patients had on average 2 previous surgeries (0- 5). The average preoperative Lysholm score was 52 (39- 68), VAS score was 7 (6- 9). 14 patients (45%) underwent microfracture during the arthroscopic procedure. Average follow-up time 18 months after surgery, Lysholm score 81 (58- 95), VAS score was 4 (2- 9). We didn't find statistical differences between groups with and without microfracture procedure in Lysholm and VAS scores. Conclusions: The arthroscopic treatment can improve function and activity levels in football players with osteoarthritis at least over 1,5 year after the surgery. Microfracture procedure doesn't bring more benefits for the elderly athletic patients. We found, that the major predictor factor on results is the weight bearing axis of the knee and preoperative Lysholm score.

**Abstract No.: 39946**

**LEARNING CURVE IN HIP ARTHROSCOPY FOR FAI**

Vojtech HAVLAS, Jakub Kautzner, Petr Chladek, Tomas Trc

**Introduction:** Hip arthroscopy is becoming a method of choice for treatment of femoroacetabular impingement of the hip (FAI). It is however a demanding procedure, that needs special skills and experience. We decided to evaluate a learning curve for hip arthroscopy in our department.

**Methods:** In our patient cohort 190 patients that underwent a hip arthroscopy during the period of 2011-2014 were evaluated. Arthroscopy was performed by two surgeons trained in hip arthroscopy. Surgical time was recorded, patients NAHS score at 6 months postoperatively and the type of procedure performed was recorded. **Results:** In first 30 cases the mean surgical time was 94min (58-129min), the NAHS score mean was 81 postoperatively at 6 months, the main type of procedure was femoral neck osteoplasty 29 patients (97%), followed by labral debridement in 13 patients (39%) and labral repair in 5 patients (15%). between 50-100 cases the results were comparable as in first series of cases but surgical time dropped to mean of 75min (45-115min). Between cases 140-190 the surgical time stabilised at mean of 85min (57-120min), but the procedures ratio changed, osteoplasty of the neck was performed in 45 of 50 cases (90%), labral repair in 37 of 50 cases (74%) and acetabular trimming in 20 of 50 cases (40%). The mean NAHS changed to 87. **Conclusion:** Hip arthroscopy has a long learning curve, surgical time stabilises after approx 140 procedures, the patient selection changes with the skill of the surgeon and the outcome after the surgery is also influenced.

**Abstract No.: 39949**

**CORRELATION OF THE BONE MINERAL DENSITY OF PROXIMAL FEMUR WITH SPINOPELVIC SAGITTAL AND LOWER EXTREMITY BALANCES**

Dongsik Chae, Woo-Suk Lee, Ick-Hwan Yang

**Purpose:** The purpose of this study was to measure spinopelvic index and lower extremity alignment and evaluate their correlations with BMD of the proximal femur in elderly patients. **Methods:** The study involved 106 patients. The patients after spinal or hip surgery and with hip dysplasia were excluded. Lumbar lordosis, pelvic incidence, pelvic tilt and sacral slope were measured on lateral view of standing spinal X-ray and acetabular inclination, the mechanical axis of femur and tibia and the angle of femoral shaft were measured on standing scannogram of lower extremity. Femoral anteversion and tibial torsion were measured on lower extremity anteversion CT. The BMDs of the proximal femur were measured and compared. **Results:** The mean BMDs of the proximal femur were  $0.624 \pm 0.120$  g/cm<sup>2</sup> of neck and  $0.769 \pm 0.120$  g/cm<sup>2</sup> of total. The mean lumbar lordosis, pelvic incidence, pelvic tilt and sacral slope were  $38.4 \pm 15.4^\circ$ ,  $49.5 \pm 10.5^\circ$ ,  $22.5 \pm 8.2^\circ$  and  $27.8 \pm 6.4^\circ$ , respectively. Mechanical axis of femur and tibia and angle of femoral shaft were varus  $2.2 \pm 2.4^\circ$ , varus  $3.0 \pm 2.9^\circ$  and valgus  $4.1 \pm 3.5^\circ$ , respectively. Lumbar lordosis correlated with BMD positively ( $r=0.276$ ,  $p=0.003$ ). Pelvic tilt ( $r= -0.397$ ,  $p<0.001$ ), the angle of femoral shaft ( $r= -0.239$ ,  $p=0.007$ ) and acetabular inclination ( $r= -0.354$ ,  $p<0.001$ ) did negatively. **Conclusions:** The elderly patients with lumbar kyphosis or spinopelvic imbalance or deviation of alignment of lower extremity were tend to lose their BMD and need to prevent osteoporotic fractures around hip.

**Abstract No.: 39951**

**ACCURACY AND POSTOPERATIVE ASSESSMENT OF PEDICLE SCREW PLACEMENT IN SCOLIOSIS SURGERY WITH COMPUTER-ASSISTED NAVIGATION: A META-ANALYSIS**

Wei Tian, Cheng Zeng, Yan An, Chao Wang, Yajun Liu, Yanwei Lv

Background: Accurate insertion of pedicle screws in scoliosis patients is a great challenge for surgeon due to the severe deformity of thoracic and lumbar spine. Meanwhile, malposition of pedicle screw in scoliosis patients could lead to severe complications. Computer-assisted navigation technique may help improving the accuracy of screw placement and reducing complications. Thus, this meta-analysis of the published researches was conducted concentrating on accuracy of pedicle screw placement and postoperative assessment in scoliosis patients using computer-assisted navigation technique. Methods: PubMed, Cochrane and Web of Science databases search was executed. In vivo comparative studies that assessed accuracy and postoperative evaluation of pedicle screw placement in scoliosis patients with or without navigation techniques were involved and analyzed. Results: One published randomized controlled trial (RCT) and seven retrospective comparative studies met the inclusion criteria. These studies included 321 patients with 3821 pedicle screws inserted. Accuracy of pedicle screw insertion was significantly increased with using of navigation system, while average surgery time was not significantly different with non-navigated surgery. And Correction rate for scoliosis in navigated surgery was not significantly different with non-navigated surgery. Conclusions: Navigation technique does indeed improve the accuracy of pedicle screw placement in scoliosis surgery, without prolong the surgery time or decrease the deformity correction effect.

**Abstract No.: 39952**

**COMPARATIVE RESEARCH OF BONE MARROW- AND SYNOVIUM- DERIVED MESENCHYMAL STEM CELLS FROM HUMAN WITH OSTEOARTHRITIS OR RHEUMATOID ARTHRITIS**

Li Jiang, Anlun Ma, Huifang Chen, Yonglin Yu, Jianyuan Jiang

Cartilage formation is driven by mesenchymal stem cells (MSCs) that can proliferate, condense and differentiate into chondrocytes. This objective comparative evaluated synovium-derived MSCs (S-MSCs) and bone marrow derived-MSCs (BM-MSCs) from the patients with rheumatoid arthritis (RA) and osteoarthritis (OA) in cell yield, proliferation capacity, phenotypes and growth in acellular dermal matrix (ADM). Chondrogenic differentiation was studied using micromass culture and analyzed by histology, immunohistochemistry and electron-microscopy. This study showed that BM-MSCs and S-MSCs could be differentiated into the chondrogenic lineage under the stimulation of suitable chondrogenic factors. MSC growth kinetics and colony number were higher in S-MSCs than those in BM-MSCs. They expressed mesenchymal markers, and lack the expression of hematopoietic markers. Chondrogenesis study showed that both MSCs to be larger and more cartilage matrix stained, particularly, S-MSCs showed greater ability for chondrogenesis. Both MSCs from RA or OA shared characteristics with those from healthy donor. In vitro studies showed that MSCs inhibit collagen-II-induced cell proliferation in a dose-dependent manner, up-regulate T regulatory cells and secretion of collagen, IL-10 and sICAM, but not pro-inflammatory cytokine IFN- $\gamma$ . When MSCs were seed to ADM with transforming growth factor-beta and insulin-like growth factor, S-MSC-ADM constructs showed higher cell numbers and up-regulated expression of collagen proteins compared with that of BM-MSC-ADM constructs, but both numbers were significantly higher than those of initially seeded. In conclusion, these results proved feasibility of MSC therapy, either S-MSCs or BM-MSCs; from either RA or OA, for various degenerative joint diseases including RA, OA and cartilage defect in humans.

**Abstract No.: 39969**

**TRAUMATIC INJURIES OF THE COCCYX: CONSERVATIVE AND SURGICAL TREATMENT**

Zinaida Yahorava, Andrei Babkin, Mikalai Chumak, Oleg Dulub

Introduction: Conservative and operative methods of treatment for coccygodynia in patients with traumatic injuries of the coccyx were observed. The standard protocol of conservative treatment was offered. The original methods of closing of a postoperative wound after coccygectomy were applied. Materials: Since 1999 till 2012 we treated 30 patients with traumatic injuries of the coccyx. Conservative therapy according to our protocol was performed on 27 patients. Three patients underwent surgery early after injury on emergency indications. There were fracture-dislocation in two cases and luxation in the other one, which complicated by stenosis of the rectum. Results: Results of conservative treatment of traumatic injuries of the coccyx were studied in 25 patients during the period from 2 to 40 months after the treatment. In 19 patients out of 25 respondents were positive results of conservative treatment of traumatic injuries of the coccyx. There were 6 patients in whom conservative therapy was not effective. One of them was routinely operated. We used the “inturn” muscular suture for close the residual recto-coccygeal cavity after coccygectomy in this case. 12 months later after the operation a great outcome was observed. Results of surgical treatment of patients who underwent coccygectomy by emergency indications were studied in all three patients in the period from 27 to 179 months after surgery. Two excellent and one good outcome was received.

**Abstract No.: 39981**

**COMPARATIONBETWEEN TRANSFORAMINAL LUMBAR INTERBODY FUSION AND POSTERIOR LUMBAR INTERBODY FUSION IN TREATMENT OF DEGENERATIVE LUMBAR DISEASE**

Weifeng Han, Baoge Liu

**Objective:**To compare clinical effect between transforaminal lumbar interbody fusion and posterior lumbar interbody fusion in treatment of degenerative lumbar disease. **Methods:** All patients had evidence of degenerative disc disease with interbody height loss or evidence of instability. This is a retrospective review of 41 patients with degenerative lumbar disease from December 2012 to June 2013. 20 cases were treated with transforaminal lumbar interbody fusion (TLIF group), 21 cases were treated with posterior lumbar interbody fusion (PLIF group). The operating time, blood loss, post-operative drainage, post-operative hospital stay and complications of all cases were recorded. The function of lumbar was evaluated by Oswestry Disability Index (ODI) and Visual Analogue Scale (VAS). The operating time, blood loss and post-operative drainage between TLIF and PLIF group were compared. ODI and VAS were compared between in the TLIF group and PLIF group pre- and post-operatively. **Results:** All of patients were followed up, the mean follow-up time was 12 months (range 6 to 24 months). The operating time, blood loss and post-operative drainage in the TLIF group were significantly less than those in the group of PLIF ( $P < 0.05$ ). ODI and VAS of the final follow-up were significantly better than pre-operative in both groups ( $P < 0.01$ ). Between groups, however, there were no significant differences neither at preoperative or final follow-up ( $P > 0.05$ ). At the final follow-up, the fusion rate of TLIF group is 95%, for PLIF group is 90.48%, had no significant differences ( $P > 0.05$ ). **Conclusion:** The techniques of TLIF and PLIF are effective in treating degenerative lumbar disease, which have satisfactory clinical efficacy in short term. The operating time, blood loss, post-operative drainage and complication using TLIF are less than that using PLIF.



**Abstract No.: 39998**

**RESECTION RECONSTRUCTION OF PROXIMAL TIBIA MALIGNANT TUMOURS**

Mourad Hamidani, Reda Harrar, Amine Touhami, Anissa Benaïda, Meriem Ait Saadi, Mourad Oubira

In the past, several surgical and technical problems made it impossible to perform limb-sparing surgery for tumors at this site. These problems included are difficult surgical approach, inadequate soft-tissue coverage, vascular complications, and the need to reconstruct the patellar/extensor mechanism . Materials and methods between 2008 and 2014 We have treated 43 proximal tibia tumors average of age was 23 years There was 24 women and 19 men Preoperative evaluation of tumor extent required CT scan 100% (MRI) 100%, and angio scan 20% (09 cases) We count 28 malignant tumors and 15 aggressive GCT . The mean of the resection was 14 cm The surgical options for reconstruction are primary arthrodesis, and prosthetic replacement, with the use of a gastrocnemius muscle transfer to obtain reliable soft-tissue coverage in our all cases The results are: complications : Skin necrosis 02 cases recovery after revision Infections 02 cases with healing after revision Fibular nerve palsy 01 case Stiffness of the knee 01 case Breakage of Patellar tendon 03 cases repaired and good evolution Now we use a wire to fix the patellar tendon to the prosthesis and on the medial gastrocnemius Oncological results : patients : alive 32 recurrence 7 amputations 5 Functional Assessment that will be exposed according to the GUEP AR quotation conclusion the tumors of upper extremity of tibia is posing the technical operative problems of proximity of vessels and of reconstruction of extensor device

**Abstract No.: 40003**

**CLINICAL USE OF AUGMENTED REALITY COMPUTER ASSISTED SPINE SURGERY (ARCASS) SYSTEM IN OSTEOPOROTIC COMPRESSION FRACTURE**

Minghsien Hu, Pei-Yuan Lee, Ming-Liang Wang

Introduction: Augmented Reality (AR) for preoperative diagnostics and planning, intra operative navigation and postoperative follow-up examination had been a topic of intensive research over the last two decades. In this paper, we propose an advanced augmented reality-based system (ARCASS) for spinal surgery, and apply it to vertebroplasty. Methods: Two groups of patients were studied. There were 9 patients with 11 thoracic-lumbar fractures in the group A, who underwent vertebroplasty via Augmented Reality Computer Assisted Spine Surgery (ARCASS) system. In the group B, there were 9 patients with 10 thoracic-lumbar fractures, who underwent traditional vertebroplasty. Data included the pre- and post-operative visual analog scale (VAS), Oswestry disability index (ODI), surgical time, the frequency of radiation, and complications such as extravasation of cement, nerve injury, and infection were recorded. We also compared the accuracy of trocar insertion between two groups. Results: In the group A, the average surgical time of 1st, 2nd, and 3rd stage was 83.37 seconds, 194.82 seconds, and 222.27 seconds, respectively. The frequency of radiation (times of C-arm taken) of 1st, 2nd, and 3rd stage was 6.82, 11.91, 19.73 respectively. In the group B, the average surgical time of three stages was 200.4, 214.1, and 219.3 seconds, and the average frequency of radiation was 17.2, 13.2, and 20.3 respectively. There was significant difference in both surgical time and frequency of radiation between two groups. Furthermore, the accuracy of entry point registration in group A was much higher than in group B.

**Abstract No.: 40005**

**A REQUIREMENT FOR TGIF IN CANONICAL WNT SIGNALING-INDUCED BONE FORMATION**

Mingzhu Zhang, Roland Baron, Azeddine Atfi, Guangrong Yu

The homeodomain protein TGIF is phosphorylated in numerous cell systems, yet the identity of kinases executing this event remains enigmatic. To address this issue, we interrogated the Eukaryotic Linear Motif (ELM) database, and found TGIF possesses a potential GSK3 $\beta$  phosphorylation (T235 and T239). We validated this observation by showing GSK3 $\beta$  can phosphorylate TGIF. We demonstrate mutation of T235/T239 resulted in decreased TGIF turnover, providing an initial hint that phosphorylation by GSK3 $\beta$  might hinder TGIF stability. As GSK3 $\beta$  is a kinase in Wnt signaling, we investigate whether TGIF could fulfill any roles in this pathway. Remarkably, expression of TGIF enhanced Wnt-induced gene expression, whereas TGIF deficiency elicited the opposite effects. Mechanistically, TGIF appeared to promote  $\beta$ -Catenin accumulation, presumably owing to its ability to interfere with the assembly of  $\beta$ -Catenin destruction complex. Finally, we saw that activation of Wnt signaling induced expression of TGIF in many cell lines, revealing an ability of TGIF to govern a feed-forward loop that sustains Wnt signaling. A wealth of data documents Wnt signaling promotes bone formation. We found expressing TGIF caused increased osteoblast differentiation in the pre-osteoblastic-like cell lines. TGIF depletion was sufficient to blunt Wnt3a-induced osteoblast differentiation in these cell systems. In vivo, TGIF $^{-/-}$  mice display decreased osteoblast differentiation and low bone mass. More crucially, TGIF knockout normalized the high bone phenotype typically seen in mice harboring heterozygote deletion of Wnt signaling inhibitor DKK1, underscoring a requirement of TGIF for Wnt-induced osteoblast differentiation and bone formation.

**Abstract No.: 40007**

**PERCUTANEOUS PEDICLE SCREW REDUCTION AND AXIAL LUMBAR INTERBODY FUSION FOR LUMBOSACRAL SPONDYLOLISTHESIS**

Wenjun Wang,

**Introduction:** To evaluate the clinical outcomes of percutaneous pedicle screws plus axial lumbar interbody fusion(AxialLIF) for lumbosacral spondylolisthesis. **Methods:** From June 2010 to June 2013, 18 cases suffering from lumbar spondylolisthesis undergoing percutaneous pedicle screws plus axial lumbar interbody fusion were reviewed retrospectively. There were 8 males and 10 females with the age at time of surgery ranging from 33 to 58 years(mean, 43.7years). There were 6 degenerative spondylolisthesis, 11 spondylolysis spondylolisthesis and 1 traumatic lumbar spondylolisthesis. All cases were less than degree II spondylolisthesis. The operation time, blood loss and complications were recorded. Radiography assessment included the Taillard index, slipping angle, intervertebral disc height and fusion rate. Visual analogue scale(VAS) was used for clinical assessment. **Results:** The average operation time was 140(range, 110-190) minutes and average intraoperative blood loss was 70(range, 60-150)ml. All case were followed up for 9 to 27 months(average, 14.5months). There were statistical differences with respect to the Taillard index, slipping angle and intervertebral disc height between preoperation and 1 week postoperatively( $P<0.05$ ), while no statistical difference between 1 week postoperatively and final follow-up( $P>0.05$ ). Solid bony fusion was achieved under thin-section helical computed tomography (CT) scanning at 6 months follow-up. The VAS score of low back pain at preoperation and final follow-up was  $7.34\pm1.56$  and  $0.73\pm0.68$  respectively. **Conclusions:** Percutaneous pedicle screw reduction and axial lumbar interbody fusion is effective for lumbosacral spondylolisthesis due to its less invasive to the posterior structure,less intraoperative blood loss.

**Abstract No.: 40016**

**COMPARISON BETWEEN NORMAL ANATOMIC PLATE WITH BONE GRAFT AND LOCKING PLATE TO TREAT THE SANDERS??? CALCANEAL FRACTURES**

Xiaodong Qin,

**Objective** To evaluate the differences of curative effect and complications between surgical treatments for Sanders II and III calcaneal fractures with ordinary calcaneal plate accompany with autologous iliac crest graft or with the calcaneal locking plate. **Method** From August 2010 to December 2013, 68 cases of calcaneal fractures treated with the above two methods which meet the criterion were recruited, including 36 with the ordinary calcaneal plate accompany with autologous iliac crest graft, and the other 32 cases with the calcaneal locking plate. A comparative analysis was performed in age, gender and time windows of treatment. We evaluated the union of fracture with X-ray, the foot function in a 12-months follow-up according to Maryland score system, complication, hospital days and costs. **Results** Statistical analysis indicates that: 1. There was no difference between the two groups in age, gender and the time windows of surgery ( $p>0.05$ ); 2. There were Statistical differences between the two groups in the time of operation, bleeding during operation, hospital days ( $P<0.05$ ), but no differences in hospitalization costs, complications with postoperative pain, impingement syndrome, disruption of wound, Bohler's angle, Gissane's angle, calcaneal width/length, heel distance height and its difference value, the postoperative foot function according to Maryland score system, postoperative good rate. **Conclusion** The results of this study suggest that there is no obvious difference between the above two methods in fracture reduction and good rate of the treatment.

**Abstract No.: 40019**

**THE EFFECT OF CROSS LINKS ON THE ROTATIONAL STIFFNESS OF SCOLIOSIS CONSTRUCTS**

Richard Pilling, El-Nasri Ahmed

The “gold standard” for scoliosis correction is posterior instrumentation using pedicle screws and longitudinal rods connecting the screws. However the ideal location, orientation and number of cross links is not known and current opinion is varied. The purpose of this study is to investigate what effect cross links have on scoliosis constructs and whether cross links may be used instead of pedicle screws at the apex of the deformity. Methods: The rotational stiffness of six different construct designs from T3-L5 was investigated on scoliotic sawbone models with zero, one or two cross links. In three constructs the screws at the apex were removed. Results: The stiffness in axial rotation of all constructs increased with the number of cross links, however the difference was not statistically significant. In constructs with apical screws the stiffness increased by 3.01% and 12.9% for one and two cross links respectively. In constructs without apical screws the increase was 1.64% and 14.3% for one and two cross links respectively. The total stiffness of the construct increased with the addition of apical screws by 20%, 21.7% and 18.8% for zero, one and two cross links respectively. This increase was statistically significant using a paired t-test ( $p = 0.01142$ ).

Conclusions: On the basis of these results we conclude that the use of cross links in scoliosis correction surgery is not necessary. Pedicle screws positioned at the apex of the scoliosis curve statistically increase the stiffness in axial rotation and are therefore necessary to promote an environment suitable for bony fusion.

**Abstract No.: 40034**

**OUR EXPERIENCE AND COMPLICATIONS WITH PROXIMAL FEMORAL NAIL ANTIROTATION (PFNA)**

Fabijan Cukelj, Arsen Pavic, Josip Knezevic, Ante Bandalovic, Vladimir Boschi, Bruno Luksic, Kanito Bilan, Matko Rošin, Zlatko Parac, Josip Bekavac, Luka Roguljic

**Patients and Methods:** Between April 2007 and June 2014 we treated 1025 patients with unstable trochanteric fracture using PFNA. Follow up time was at least 6 months. We recorded time from admission to surgery, hospital stay, in hospital mortality, length of operation, operative blood loss, intraoperative complications and time for fracture healing. **Results:** Postoperative complications concerned 7 nail breakage, 14 cut-outs and 6 distal locking errors. We had 11 infections. 6 non-unions were treated by nail extraction, and new osteosynthesis. We noted 2 great trochanteric fractures treated conservatively and 2 cases of lateral blade sliding treated with blade extraction and new blade implantation if there were no fracture union. Other fractures healed within 18 weeks. **Conclusions:** Treating trochanteric fractures with PFNA we achieved good anatomical reduction and stable fixation followed by early mobilization and weight bearing. We recorded shortening of operative procedure and minimal intraoperative blood loss. Good results were achieved in patients with pathological fractures and severe osteoporosis. We didn't notice new complications. PFNA as a method had fewer complications in comparison with other techniques used for treatment of femoral trochanteric fractures in our institution. Number of complications in our practice is similar in comparison with other sources in literature.

**Abstract No.: 40039**

**MANAGEMENT OF LISFRANC FRACTURE-DISLOCATION**

Nadhir Meraghni, Riad Benkaidali, Mohamed Kihal, Mhamed Nouar

Introduction : lisfranc fracture-dislocations are rare and their correct diagnosis is important. the purpose of this work is to analyze the results after surgical treatment of 42 patients treated between 2008 and 2013. Methods : between 2008 and 2013 we treated 42 patients with lisfranc joint dislocation. the mean age was 39 years. the most common cause was a crush injury. the initial injuries were classified radiographically according to the classification of quenu. all patients were treated by emergency surgery by reduction and fixation with Kirschner wires. Results : results were evaluated according to radiological and functional criteria. we obtained 70% of good results. the wires were removed at 45 days after surgery at mean. about complications, 3 infections and 4 skin necrosis were observed in our patients. 3 cases of complex crush injury developed into to ischemia of the foot and needed an amputation. Discussion : dislocations of the lisfranc joint are consecutive to high energy accidents. indirect dislocation is more common. the clinical diagnose of lisfranc dislocation is difficult, misdiagnosis is common (one case in our series). the goals of treatment are reduction of dislocation and protection against complications. most authors advise closed or open reduction and stabilization with Kirschner wires or cancellous screws. Conclusion : fracture-dislocations of the lisfranc joint are a relatively rare injury, but their long-term consequences can be devastating for the patient. misdiagnosis is common and can lead to grave chronic disability.



**Abstract No.: 40040**

**A SHORT HOSPITAL STAY AND ACCELERATED RECOVERY IN TOTAL HIP AND KNEE ARTHROPLASTIES USING A RADIOFREQUENCY BIPOLAR SEALER**

Procyk Procyk,

To obtain a safe surgical procedure, hemostasis is a requirement. Nowadays use of electrocautery is commonness, but at the detriment of local tissue damage due to the thermal injury and charring. The transcollation using a bipolar sealer associated with a saline irrigation provide a radiofrequency energy to the tissues, it obtains a superior hemostasis through a denaturation of the collagen and elastin contained in the vessel's wall and sealing them by contraction. The much lower temperature (100°C versus 300°C for the electrocautery) reduce charring, decrease the tissue necrosis, decrease blood loss with no toxic smoke production. A prospective study including 60 cases of minimal invasive total hip and knee arthroplasties. The results show less risk of blood transfusion, an accelerated functional recovery due to the tissue preservation. For the global (age 71, range 53 to 90) population, the length of stay was three days shorter, no complication was noticed, no readmission.

**Abstract No.: 40042**

**FLOATING FOREARM-A CASE REPORT AND RVUE OF THE LITERATURE**

Islam Tolba, Abdeladim Mahgoun, Samir Tebani, Amel Djerbal, Ahcene Said Ouamer, Yousria Akloul-Hamdaoui, El Yazid Kalem, Ahmed Fawzi Nadjahi

Bipolar dislocation of the forearm or floating forearm is a rare injury. It combines concomitant elbow and wrist dislocation. Only 10 cases have been reported in the literature in 7 publications. The diagnosis of wrist dislocation may initially be missed and therefore the prognosis will be worse. we report a case of a bipolar dislocation with a posterior dislocation of the elbow and a perilunate dislocation of the wrist.

**Abstract No.: 40046**

**RESPONSIVENESS OF THE PIRANI SCORE IN NEGLECTED CLUBFEET**

Permana Yudhadibrata, Iman Dwi Winanto, Otman Siregar, Huub J.L Van Der Heide

Background: A Neglected clubfoot is a clubfoot that didn't get early treatment at all or inadequate early treatment and is a major problem in low and middle income countries. About 80% of children with clubfeet are born in these countries and most of the children don't have access to good health care. The Pirani score reflects the severity of clubfeet but little is known about the responsiveness of this scoring system in neglected cases. Method: 25 patients with neglected clubfeet were assessed before and after treatment. Pre-and postoperative scores were analyzed with correlation coefficients and linear regression. Result: The mean age at presentation was 66,1 month (6–192). The mean Total Pirani score before operation was  $4,66 \pm 1,13$  (2-6). After the operation it was  $1,88 \pm 0,88$  (0-4) and the mean difference between pre and postop was  $-2,78 \pm 0,63$  (-4 to -2)  $p < 0,001$ . As expected the Pirani score is higher in older children both before ( $\rho = 0,67$ ) and after treatment ( $\rho = 0,85$ ). The change in score is not related to age but only to the preoperative Pirani score using both uni- and multivariate linear regression. Conclusion: The Pirani score decreased after treatment of neglected clubfeet in all cases between 2 and 4 points (mean -2.78 points) and seems to be also valuable in neglected clubfeet.

**Abstract No.: 40047**

**DIAGNOSIS AND TREATMENT OF PLEURAL EFFUSION AFTER SPINAL DEFORMITY CORRECTION SURGERY**

Weiqliang Liangh, Bin Yu, Yipeng Wang, Guixing Qiu, Jianxiong Shen, Jianguo Zhang

**Objectives:** To analyze the occurrence, risk factors, treatment and prognosis of postoperative pleural effusion after spinal deformity correction surgery. **Methods:** The clinical and radiographic data of 3546 patients undergoing spinal deformity correction were collected from the database of our hospital. Analyze the 29 patients who had postoperative pleural effusion, and the potential perioperative risk factors were identified using logistic regression. **Results:** In the 29 cases of postoperative pleural effusion, 25 patients(86.2%) were hemothorax , 3 patients (10.3%) were chylothorax, and 1 patient (3.4%) was subarachnoid-pleural fistula. Twenty patients(68.9%) occurred in the convex side, 4 cases (13.8%) occurred in the concave side, 4 cases (13.8%) occurred bilaterally, another patient was diagnosed with Kyphosis. Five patients underwent observation, and 24 patients were treated with closed thoracic drainage. And all the patients got good recovery. Congenital scoliosis, osteotomy, anterior thoracic approach, thoracoplasty and VCR osteotomy were identified as independent risk factors for postoperative pleural effusion of spinal deformity correction surgery. **Conclusions:** The incidence of postoperative pleural effusion in spinal deformity correction surgery is about 0.82% (29/3546) and most pleural effusion was hemothorax. All the patients can be treated with conservative treatment or by closed thoracic drainage. The patients with congenital scoliosis, osteotomy, anterior thoracic approach, thoracoplasty or VCR osteotomy had more risk to suffer from postoperative pleural effusion.

**Abstract No.: 40050**

**ARE THE RADIOGRAPHIC INDICES OF PELVIC ROTATION INFLUENCED BY ACETABULAR DYSPLASIA?**

Hiroshi Koyama, Mitsuru Hanada, Daisuke Suzuki, Hiroki Furuhashi, Hiroshi Nakamura, Hironobu Hoshino, Yukihiro Matsuyama

**Introduction:** The purpose of this study was to investigate whether the radiographic indices of pelvic rotation were influenced by acetabular dysplasia. **Methods:** DICOM data was acquired from CT images to establish a virtual three-dimensional bone model. Total 720 digitally reconstructed radiographs (DRR) were established using the bone models in 80 patients (40 males and 40 females) with 9 different rotation angles (every three degrees from  $-12^{\circ}$  to  $12^{\circ}$ ). The pelvic rotational angles were calculated by Index A (the ratio which was represented the distance between pubic symphysis and the midpoint of inter-teardrop distance divided by inter-teardrop distance) and Index B (the logarithm for the ratio of transverse diameters of bilateral obturator foramina) using these DRR images. We divided the patients into two groups (with and without acetabular dysplasia (CE angle  $<20^{\circ}$ )), and the pelvic rotational angles by these indices were compared between both groups. **Results:** When the pelvic rotation was calculated by Index A, the average difference between true angle and calculated angle in the patients with dysplasia was significantly greater than those without dysplasia (with dysplasia  $1.2^{\circ}$  vs without dysplasia  $0.3^{\circ}$ ,  $p < 0.01$ ). In Index B, the average difference of the patients with dysplasia was also significantly greater than those without dysplasia (with dysplasia  $2.0^{\circ}$  vs without dysplasia  $1.1^{\circ}$ ,  $p < 0.01$ ). **Conclusions:** The pelvic rotational angles calculated by these indices were influenced by acetabular dysplasia presumably due to specific anatomic features of pelvis.

**Abstract No.: 40052**

**TRANSOSSEUS ACETABULAR LABRAL REPAIR AS AN ALTERNATIVE TO ANCHORS. TECHNICAL NOTE.**

Sarthak Patnaik,

Labral tears are the most common pathology in patients undergoing hip arthroscopy and the most common cause of mechanical hip symptoms. Labral repair techniques have been described in the literature using suture anchors placed as close as possible to the acetabular rim without penetrating the articular surface. Optimal surgical technique for labral repair is very important and inappropriate entry point and guide angulation may lead to intra-articular penetration of the anchor, chondral damage, anchor loosening, or inadequate fixation. A shallow dysplastic hip, the drilling trajectory, the narrow width of the acetabular rim, or some specific anatomic variations may generate difficulty during anchor placement. Suture anchors themselves have been associated with several significant complications, including rim fracture, osteolysis, enlargement of drill holes and infection. The treatment of labral lesions with a trans-osseous suture is an alternative to the anchor usage to avoid anchors and to treat the complications determined by them. This technique helps in versatility to the surgeons and is more cost effective for the patients and health services. We aim to describe the indications and technique for transosseous labral repair without anchors.

**Abstract No.: 40056**

**MIDTERM OUTCOME OF PAPINEAU TECHNIQUE WITH VACUUM ASSISTED CLOSURE FOR OPEN TIBIA FRACTURE WITH SEGMENTAL BONE LOSS**

Shijun Wei, Tongzhu Bao, Aixi Yu

Background: Despite advances in surgical technique and antibiotic treatments, severe open fracture of the tibia continues to be one of the most challenging problems for trauma orthopaedics surgeons. Method: We recruited 19 patients with open tibia fracture. Debridement, fixation of bone fracture, open bone graft with vacuum assisted closure and dermatoplasty were performed. Postoperative management and follow-up assessment were carried out to evaluate the bone union and overall condition of the patients. Results: After an average follow-up of 54 months, 17 patients demonstrated good outcome. The average time for the last debridement to bone graft was 6.8 days, range 5-7 days; time for fully coverage of granulation tissue was 14-21 days (average 15days); the average time for wound healing was 7.61 weeks, range from 6 weeks to 11 weeks; the average healing time for bone defect was 33.38 weeks, range 23-53 weeks; average time for hospitalization was 11.04 weeks, range 7-18 weeks; average debridement for each person was 2 times, range 2-4 times. Conclusion: Midterm follow-up of this investigation demonstrated a satisfactory outcome of our cases, indicating that a combination of open bone graft and VAC as a good choice for open tibia fracture with segmental bone defect.

**Abstract No.: 40065**

**ENGINEERED POLYCAPROLACTONE-MAGNESIUM BASED BIO-SCAFFOLD FOR SEGMENTAL BONE DEFECT IMPLANTATION**

Jie Shen, Hoi Man Wong, Frankie K L Leung, Kenneth M C Cheung, Kelvin W K Yeung

Bone tissue scaffolds are used to help regenerate bony tissues in the patients suffering with segmental bone defect in which the successfulness depends on the osteogenicity, mechanical properties and the ability of revascularization of scaffolds. Our previous work demonstrated that appropriate amount of magnesium ions released (i.e. 50-100ppm) could significantly stimulate in vivo bone formation locally. In this study, an engineered bone scaffold comprising of biodegradable polymer named polycaprolactone (PCL) and magnesium oxide (MgO) nano-particles had been developed in order to facilitate sustainable release of magnesium ions at effective dosage. The scaffold was prepared by incorporating 29% in wt% of MgO nano-particles into PCL via solution blending method. The magnesium ions release rate, in-vitro cytocompatibility and cytotoxicity of the newly developed scaffold were investigated. The hybrid bio-scaffolds demonstrated the release of magnesium ion at 60 ppm/day in simulated body fluids over 30 days. When cultured with mouse osteoblasts, the cells exhibited higher spreading ratio and almost 100% of confluence on new hybrid scaffold after 3 days. The cell viability was also found about 90% higher on the hybrid throughout the whole period of culturing as compared with pure PCL control ( $p < 0.05$ ). Our results have proposed that these economical and easily fabricated bio-scaffolds may potentially apply in segmental bone defect fixation when the release of magnesium ions is properly designed.



**Abstract No.: 40073**

**POSTERIOR SELECTIVE THORACOLUMBAR OR LUMBAR FUSION FOR ADOLESCENT IDIOPATHIC SCOLIOSIS**

Jianguo Zhang, Yanbin Zhang

Objective: To evaluate the clinical outcomes of the posterior selective thoracolumbar/lumbar (TL/L) fusion (PSTLF) with pedicle screw constructs for adolescent idiopathic scoliosis (AIS). Methods: 45 consecutive cases of AIS treated with PSTLF were retrospectively investigated. Radiographs were reviewed pre-operatively, post-operatively and at the final follow-up. Measurements of scoliosis curves on radiographies were analyzed. Results: The average follow-up was 36 months (range 24-105 months). The coronal TL/L Cobb angle averaged 43.7° preoperatively and was corrected to 6.4° postoperatively with a correction rate of 84.8%. At the final follow-up it was 9.1° with a correction loss of 2.7°. The thoracic curve was 25.7° preoperatively, corrected to 13.2° immediate postoperatively with a spontaneous correction of 48.5%. At the final follow-up it was 14° with a correction loss of 1°. The lowest instrumented vertebra(LIV) tilt was significantly improved after surgery and well maintained at the final follow-up. Trunk shift was 21.3 mm preoperatively, 19.5mm postoperatively and 10.9mm at the final follow-up. Sagittal contours were well-maintained, thoracic kyphosis improved better. Thoracic decompensation was found in 1 case which had received revision surgery. There were no neurological complications. Conclusion: PSTLF with pedicle screw constructs allows for spontaneous thoracic correction and maintains coronal and sagittal balance after surgery. Maximal correction instead of undercorrection in selective thoracic fusion was recommended. Touched Vertebra is a reasonable option for Lower Instrumented Vertebra. No significant aggravation was noted in coronal UIVA and LIVA at the final follow-up.

**Abstract No.: 40100**

**RISK FACTORS FOR EARLY MORTALITY AFTER ACUTE TRAUMATIC CERVICAL SPINAL CORD INJURY**

Yang Xie, Xiao-Fei Sun

Introduction: A retrospective case-control study of spinal cord injury patients to identify risk factors of early mortality after acute traumatic cervical spinal cord injury. Methods: Data from 157 patients with acute traumatic cervical spinal cord injury who were treated in our hospital between January 2000 and December 2012 were analyzed. Comparisons of clinical variables were assessed between individuals who died within 30 days of hospital admission and those survived. Comparative analyses and logistic regression was used to examine the effect of age, sex, cause of injury, severity of injury, segmental level of injury, need for surgical treatment, mechanical ventilation, and time between injury and admission on early mortality. Results: The early mortality of the patients with acute traumatic cervical spinal cord injury was 7.6% (12/157). Multiple organ dysfunction syndrome was the cause of death in five patients (41.7%) and respiratory failure was the cause in three patients (25.0%). Univariate analysis showed that ASIA grade, presence of fracture or dislocation, the need for surgery and mechanical ventilation use were significant predictors of early mortality ( $P<0.05$ ). Multivariate logistic regression analysis demonstrated that ASIA grades and the need for mechanical ventilation were independent risk factors. Conclusion: Multiple factors may lead to early mortality after acute cervical spinal cord injury. Consistent with previous reports, the severity of the spinal cord injury and the use of mechanical ventilation were independent risk factors for early death in a population of patients with cervical spinal cord injury without concomitant severe injuries.

**Abstract No.: 40121**

**COMBINED RADIOFREQUENCY ABLATION AND PERCUTANEOUS BONE CEMENT AUGMENTATION  
OSTEOPLASTY TO TREAT BONE METASTASES TUMOR**

Zi Xiong Lei, Haomiao Li, Ming Lu, Shuang Wu Dai

**Objective:** To Summary the clinical results of percutaneous radiofrequency ablation combined with perfusion of bone cement augmentation for bone metastases. **Methods:** We follow studied the patient who received percutaneous radiofrequency ablation combined with perfusion of bone cement augmentation of the spine, limbs, pelvis, sacrum bone metastases from October 2012 to December 2014, including 20 cases of spinal lesion, 3 cases of femur, 2 cases of sacrum, 1 cases of humerus, 1 cases of pelvis, 1 cases of sternal. The primary tumor of these patients were including 9 cases of breast cancer, 6 cases of lung cancer, 6 cases of renal cell carcinoma, 3 cases of liver cancer, 2 cases of pheochromocytoma, 1 cases of colorectal cancer, 1 cases of clear cell carcinoma of unknown origin. **Results:** 26 cases were followed up after operation. The follow-up time is from 3 to 14 months (average 8.08 months). 18 patients died during follow-up. The follow-up results: locally advanced / recurrent rate was 11.54% (3/26). Follow-up compared with preoperative pain relief rate was 96.15% (31/32), postoperative VAS score by 7.32 points down to 2.62 points preoperative. **Conclusion:** Percutaneous radiofrequency ablation combined with perfusion of bone cement augmentation surgery is a minimally invasive operation method in the treatment of bone metastases. This method has some advantages including minimal trauma, fewer complications, short-term local pain control. And the key to achieve better curative effect is to choose the right and reasonable indication.

**Abstract No.: 40123**

**MEDICAL AND SURGICAL TREATMENT FOR GENU VARUM OR GENU VALGUS IN SCHOOL CHILDREN WITH HEREDITARY HYPOPHOSPHATEMIC RICKETS**

Shuangwu Dai, Haomiao Li, Zixiong Lei, Ming Lu, Dadi Jin

Objective : To explore the efficacy of medical and surgical treatment for genu varum or genu valgus in school children with hereditary hypophosphatemic rickets. Methods: Between July 2012 and September 2014, a cohort of 5 patients(1 male and 4 females, aged 4 to 12, mean age 9.2 years, 6 genu varum and 3 genu valgus) with hereditary hypophosphatemic rickets were given the treatment of “8” shaped plate hemiepiphysiodesis or osteotomy combined with external fixator. After operations they were also given phosphate and calcitriol. Three patients had family history while the other two were sporadic. Results: Follow-up of 8 to 30 months, with an average time of 16.8 months, all of the bones healed successfully without complaining pain. Deformities were successfully corrected. The distance between the force line of the lower extremity and knee central line was 0.1-0.32cm, with an average distance of 0.12cm. The femoro-tibial angle was 2-10°, with an average angle of 5.6°. The motion of knee-joint was good. One of the patients had bilateral renal calculi and relieved after timely treatment. No other complication occurred. Conclusion: “8” shaped plate hemiepiphysiodesis or osteotomy combined with external fixator, as well as taking phosphate and calcitriol after operations, were effective in treating genu varum or genu valgus in school children with hereditary hypophosphatemic rickets.

**Abstract No.: 40125**

**EFFECT OF AXIAL-SPINE VIBRATION ON DEGENERATION OF INTERVERTEBRAL DISC IN MODIFIED BIPEDAL RATS**

Hao Liu, Jun Lin, Bin Meng, Yang Huilin

Chronic disc-related low back pain is a significant health problem in modern society. With the popularity of vehicle, the concern about the potential increased risk of disc-related back pain associated with exposure to axial-spine vibration is increased. Various studies have suggested widely varying effects of whole-body vibration in the intervertebral discs (IVDs), ranging from harmful (increased risk of degeneration) to beneficial (increased analgesia) to neutral (no effect). However, the relationship between axial-spine vibration and degeneration of IVD is still unclear. This paper suggests a novel axial-spine vibration animal model----bipedal rats model created by BPR (Brachial Plexus Rhizotomy) approach to imitate standing-up human spine. BPR approach not only simplified operation procedures, but also achieved even more upright time and higher probability of survival than classical forelimb and tail amputation approach. The axial-spine vibration with predefined frequency and amplitude on lumbar intervertebral discs of mature bipedal rats are performed in vitro and vivo. Expression of messenger ribonucleic acid for relevant genes would be assayed by RT-qPCR, and ratio of apoptosis was surveyed via flow cytometry. The effect of respective axial-spine vibration on degeneration of IVDs is projected to improve the IVDs homeostasis at gene and cellular level. Further, this hypothesis exemplifies to enhance the efficacy of axial-spine vibration in a novel way of alleviate intervertebral disc degeneration treatment.

**Abstract No.: 40136**

**BIOMECHANIC STUDY OF ANKLE FRACTURE INVOLVING POSTERIOR MALLEOLAR TREATED WITH DIFFERENT STYLE OF FIXATION.**

Qi Li, Bingfang Zeng, Congfeng Luo

Objectives: to deplore effect of different fixation style of posterior malleolar on ankle stability

Methods: first of all, posterior malleolar fracture model was made by posterior lip of distal tibia osteotomy. The fragment should occupies 25% of the articular surface. Fix the fracture with different way which including: 1 anterior-posterior screw; 2 posterior-anterior screw; 3 posterior buttress plate; 4 posterior-anterior screw and syndesmosis screw; finally, we test the displacement of above models under vertical and torsional stress by biomechanical way and compare their stability. Results: the posterior-anterior fixation way either screw or plate has higher stability than anterior-posterior way. Conclusions: for ankle fracture involving posterior lip fragment, posterior fixation method has higher stability, which conforms to biomechanical principle. Therefore early functional rehabilitation is possible

**Abstract No.: 40149**

**ACETABULAR REVISION WITH A NEW CONCEPT SHELL: A PRELIMINARY STUDY ON 34 CONSECUTIVE CASES**

Francesco Falez, Marco Ceretti

The increasing duration of life with total hip arthroplasties and trend toward indication for surgery at younger ages, will increase the amount and complexity of revision surgery. Cementless acetabular components have shown improved long term survival over cemented components. Sometimes RIM and acetabular wall integrity aren't enough preserved to guarantee a new implant good stability. Usually treatment options for III A and III B Paprosky defects are: cage implant with cemented polyethylene liner, cementless implants with augmentation using, big revision shell implant with biological/metal augmentation or stemmed cup implant. Lima revision system born to make possible the combination between cage benefit with all the primary implant shell advantages; it gives the same stability of a cage and more options than a primary cup to restore hip rotation centre without cement using. We analyze a consecutive 34 THR executed on 31 patients (average age 69 years) with Delta revision TT shell between 2009-2013. The average follow-up was 38 months. All the patients were treated with the same cup: Group A (19 patients) Delta Revision TT, Grafton A-Flex or stem marrow and bone chips obtained from the femoral head of the bank; Group B (15 patients) Delta Revision TT and the only chips of morcellised bone. The complications found were: 2 cases of morcellized bone grafts resorption; 1 case of spacer decoupling due to its insufficient typing; 1 case of postoperatively patient death independently from surgery. Patients Harris Hip Score preoperatively evaluated in an average score of 21.52 pts was increased to 78.82 pts postoperatively (Group A: 79.63; Group B: 77.93).

**Abstract No.: 40151**

**THE EFFECT OF INFLAMMATORY ENVIRONMENT ON BONE FRACTURE HEALING FROM BONE MARROW STROMAL STEM CELLS LEVEL**

Ye Yue, Wengxiang Cheng, Yiping Hu, Peng Zhang

**Objective:** This study aimed to investigate the effect of inflammatory environment on bone fracture healing from bone marrow stromal stem cells(BMSCs) level via analyzing their proliferative ,osteogenic and chondrogenic capability. **Methods:** BMSCs of fracture rat models were isolated and identified by flow cytometry. Then the BMSCs were cultured and induced in osteogenic and chondrogenic medium. These BMSCs are divided into tow group, with or without TNF- $\alpha$ /IL-1 $\beta$  stimulation. The Cell Counting Kit-8 (CCK-8) assay was performed to detect the proliferative activity. The osteogenic and chondrogenic properties of BMSCs in different group are analyzed by alizarin red staining, alcian blue staning, alkaline phosphatase activity, osteocalcin secretion and gene expression of osteocalcin, collagen II, collagen I and aggrecan by qRT-PCR. **Results:** The BMSCs were CD90-CD45+ cell population. Comparing with the BMSCs without stimulation, the proliferation of cells with TNF- $\alpha$ /IL-1 $\beta$  stimulation are slower, and alizarin red staining after osteogenesis induction and alcian blue staining after chondrogenic induction showed coloring shallow. Alkaline phosphatase activity and secretion level of osteocalcin showed that the BMSCs with inflammatory stimulus group were much weaker. So were the gene expression of collagen II, collagen I and aggrecan of BMSCs in TNF- $\alpha$ /IL-1 $\beta$  stimulation group by qRT-PCR. **Disscusion:** The proliferative ,osteogenic and chondrogenic capability of BMSCs in inflammatory environment decreased significantly, which revealed that the relative poor bone fracture healing of patients with chronic inflammatory disease like RA or bone tumor is closely related to the negative effects of inflammatory enviroment on BMSCs.



**Abstract No.: 40165**

**A GENOME WIDE ANALYSIS OF ALTERNATIVE SPLICING EVENTS DURING THE OSTEOGENIC DIFFERENTIATION OF HUMAN CARTILAGE ENDPLATE-DERIVED STEM CELLS**

Jin Shang, Huan Liu, Yue Zhou

Low back pain is a prevalent disease which leads to quantities of people's sufferings and disabilities. Degenerative disc diseases are usually underlying the causes of low back pain. However, the pathogenesis of degenerative disc diseases is very complex and difficult to determine. Current therapies for degenerative disc diseases are various. Particularly, cell-based therapies have proven to be effective and promising. Our research group has isolated and identified the cartilage endplate-derived stem cells. In addition, alternative splicing is a sophisticated regulatory process which greatly increases cellular complexity and phenotypic diversity of eukaryotic organisms. In this paper, we continued to investigate alternative splicing events in osteogenic differentiation of cartilage endplate-derived stem cells. We adopted Affymetrix Human Transcriptome Array 2.0 to detect splicing changes between the control and differentiated samples. Besides, molecular function and pathway analysis were also done. After rigorous bioinformatics analysis of data, we detected 3802 alternatively spliced genes, and 10 of them were selected for validation by RT-PCR. GO and KEGG pathway analysis also revealed many enriched GO terms and signaling pathways. To our knowledge, our study is the first one to investigate alternative splicing mechanisms in osteogenic differentiation of stem cells in a genome-wide scale. The illumination of molecular mechanisms of stem cell osteogenic differentiation may help develop novel bioengineered methods to treat degenerative disc diseases.

**Abstract No.: 40176**

**MINIMALLY INVASIVE PEDICLE SCREW FIXATION COMBINED WITH PERCUTANEOUS VERTEBROPLASTY FOR PREVENTING SECONDARY FRACTURE AFTER VERTEBROPLASTY**

Yutong Gu, Jian Dong, Xiaoxing Jiang, Feng Zhang, Robot Mcguire

**Introduction:** The purpose of this study was to compare minimally invasive pedicle screw fixation (MIPS) and percutaneous vertebroplasty (PVP) with PVP to evaluate its feasibility and safety for treating acute thoracolumbar osteoporotic vertebral compression fractures (VCF) and preventing the secondary VCF after PVP. **Methods:** Sixty-eight patients, who sustained thoracic or lumbar fresh osteoporotic VCFs without neurologic deficits underwent the procedure of PVP (group 1, n=37) or MIPS combined with PVP (group 2, n=31). VAS were recorded and Cobb angles, central and anterior vertebral body height were measured on the lateral radiographs before surgery and immediately, 1 month, 2 months, 3 months, 6 months, 1 year and 2 years after surgery. **Results:** The patients were followed for an average of 27 months ( ranging 24–32 months). The VAS significantly decreased after surgery in both groups ( $P < 0.005$ ). The central and anterior vertebral body height significantly increased ( $P < 0.005$ ) and the Cobb angle significantly decreased ( $P < 0.05$ ) immediately after surgery in both groups. No significant changes in both the Cobb angle correction and the vertebral body height gains obtained were observed at the end of the follow-up period in group 2. But there were 5 patients with new fracture of operated vertebrae and 9 cases with fracture of adjacent vertebrae in group 1. **Conclusions:** MIPS combined with PVP is a good choice for the treatment of acute thoracolumbar osteoporotic VCF, which can prevent secondary VCF after PVP.

**Abstract No.: 40183**

**MINIMALLY INVASIVE PEDICLE SCREW FIXATION PLUS PVP WITH CALCIUM PHOSPHATE FOR THE SURGICAL TREATMENT OF THORACOLUMBAR BURST FRACTURE**

Yutong Gu, Jian Dong, Xiaoxing Jiang, Feng Zhang, Robot Mcguire

Introduction: we designed minimally invasive pedicle screw fixation (MIPS, noncannulated pedicle screw insertion under direct vision through minimal-access in a paraspinal sacrospinalis muscle-splitting approach and rod placed over the pedicle screws through subcutaneous soft tissues and muscles) plus percutaneous vertebroplasty (PVP) with calcium phosphate for treating acute thoracolumbar burst fracture to reduce the trauma, blood loss and failure rate. The aim of this study was to evaluate the feasibility, safety and efficacy of this method. Methods: Twenty-three patients, who sustained thoracic or lumbar fresh burst fracture without neurologic deficits underwent the procedure of MIPS plus PVP with calcium phosphate. VAS were recorded, and Cobb angles and anterior vertebral body height were measured on the lateral radiographs preoperatively and postoperatively. Results: The mean duration of the operation was 92 minutes . The mean blood loss was 52 ml. The mean stay in the hospital was 5.6 days. The patients were followed for an average of 26 months. The VAS significantly decreased from  $8.8\pm1.2$  before surgery to  $1.8\pm0.6$  immediately after surgery and  $0.4\pm0.5$  ( $P<0.001$ ) 2 years after surgery. The Cobb angle before surgery was  $22.6\pm1.8^\circ$  and  $3.2\pm1.7^\circ$  ( $P<0.001$ ) immediately after surgery. The compression rate of vertebral body height decreased from  $50.4\pm7.2\%$  before surgery to  $6.2\pm1.5\%$  ( $P<0.001$ ) immediately after surgery. There was no patient with the failure of instruments during the follow-up. Conclusions: MIPS plus PVP with calcium phosphate is a good choice for the treatment of acute thoracolumbar burst fracture.

**Abstract No.: 40189**

**THE INFLUENCE FACTORS OF DISLOCATION AFTER BIPOLAR PROSTHETIC REPLACEMENT.**

Xisheng WENG, Yulong Li

**Objective:**To discuss the influence factors of dislocation after bipolar prosthetic replacement.

**Methods:**Patients who preformed bipolar prosthetic replacement in our hospital from October 2001 to May 2014 were retrospectively studied, summarize the clinic data of patients dislocation after operation to analysis the reasons. **Results:**Dislocation happened in 11 patients among all the 331 patients who preformed bipolar prosthetic replacement, 9 cases were preformed manual relocation, 2 for open relocation. Most of the 11 cases accompanied by neurological and psychiatric disorders just like Alzheimer's disease, Parkinson's disease, sequelae of cerebral infarction and so on, some factors like improper body position caused by these complications is the main factors of dislocation.

**Conclusion:**Accompanied by neurological and psychiatric disorders is the important influence factor of dislocation after bipolar prosthetic replacement.

**Abstract No.: 40203**

**THE COMPARISON BETWEEN MI-TLIF AND CONVENTIONAL OPEN TLIF-AN UPDATE OF META-ANALYSIS**

Yu Liang, Lei Xie, Wenjian Wu

Objective: To conduct an update of the meta-analysis to compare clinical outcomes when using open transforaminal lumbar interbody fusion (Open-TLIF) versus minimally invasive TLIF (MI-TLIF) for degenerative lumbar diseases. Methods: Prospective and retrospective controlled studies comparing Open-TLIF and MI-TLIF were collected by searching MEDLINE, EMBASE, Web of Science databases. 19 papers were finally collected for the meta-analysis. Pooled risk ratios (RR) and mean differences (MD) and with 95% confidence intervals were calculated for the clinical outcomes and peri-operative data. Results: Nineteen studies (n=1555 patients) were included (n=702, Open-TLIF, n=853, MI-TLIF). MIS-TLIF was associated with significant relief VAS-BP score (WMD = -0.55; 95% CI: -0.95 to -0.14; P = 0.008), ODI improvement (WMD = -2.65; 95% CI: -4.57 to -0.73; P = 0.007), early ambulation (WMD = -1.62; 95% CI: -2.25 to -0.71; P = 0.0005), less blood loss (WMD = -287.62; 95% CI: -395.97 to -179.26; P < 0.00001) and shorter hospital stay (WMD = -1.80; 95% CI: -2.78 to -0.82; P = 0.0003). However, there were no significant difference on fusion rate (RR = 0.99; 95% CI 0.97 to 1.02; P = 0.49), VAS-LP (WMD = -0.08 95% CI: -0.28 to 0.12; P = 0.45), complication rate (RR = 0.81; 95% CI 0.55 to 1.19; P = 0.29), surgery time (WMD = -23.38; 95% CI: -83.76 to 37.01; P = 0.45) and reoperation rate (RR = 0.73; 95% CI 0.39 to 1.35; P = 0.32). Conclusion: MI-TLIF could obtain similar fusion rate with better functional outcomes with less blood loss, shorter ambulation and hospital time, and decreased complication and reoperation rate based on current evidence.

**Abstract No.: 40210**

**SECONDARY DEVELOPMENTAL IRREDUCIBLE PATELLAR DISLOCATION**

Amit Sharma, Lalit Maini

**INTRODUCTION:** There are two types of congenital dislocated patella, one with fixed dislocation at birth, and other in whom the patella is normally located at birth, but progressively dislocates. Our case demonstrated a developmental irreducible dislocated patella secondary to Osteochondroma.

**CASE PRESENTATION:** Our case is a 9 years old male child presented with c/o inability to walk properly due to flexion deformity of Rt. Knee and a dislocated patella for last 1 year. No h/o trauma or any constitutional symptoms. On examination patient was having dislocated rt. Patella which was irreducible along with fixed flexion deformity of knee of about 80 degrees. There was another bony swelling palpable adjacent and proximal to patella under which finger can be insinuated. There was no evidence of genu valgum, arthrogryposis multiplexa, developmental dysplasia of hip, muscular hypotonia or any other congenital syndromic associations. Radiological examination revealed lateral dislocation of patella with Osteochondroma arising from distal femur. CT scan and MRI were done to understand the exact etiology. After detailed study, patient was operated, followed by above knee cast for 2 months followed by brace application and physiotherapy for 6 months. After 6 months of treatment, patient achieved full knee range of motion with stable patella in trochlear groove. Patient was followed up for 1 year with no deformity of knee and normally located patella.

**CONCLUSION:** One should always keep in mind of such a rare association of Osteochondroma causing patellar dislocation. Developmental dislocation of patella is entirely a different entity than congenital dislocation.

**Abstract No.: 40215**

**SYNOVIAL CHONDROMATOSIS FROM ACL- AN ATYPICAL CAUSE OF FLEXION DEFORMITY**

Amit Sharma, Lalit Maini

Introduction: Synovial chondromatosis is a synovial proliferative disease in which osteocartilaginous metaplasia occurs within the synovial membrane of joints, bursae or tendon sheaths. Case presentation: A 25 year old female presented with pain in right knee and flexion deformity. On examination, small nodular tender swelling was palpable just below patellar tendon of size about 3cm and 4cm. There was no joint line tenderness. There was a fixed flexion deformity of knee of 40 degree. Test for instability of knee were all negative. X – Ray revealed stippled calcification in joint with loose bodies on AP and lateral view. MRI findings revealed lobulated mass showing low intensity on T1WI and T2WI images appearing isointense to articular cartilage with hyperintense signal on STIR images and heterogenous post contrast enhancement. Multiple hypointense foci within mass s/o calcified osteochondral fragments. Patient was planned for surgical excision of the mass arthroscopically. On arthroscopy, mass was appeared to be originating from synovium surrounding the ACL TIBIAL FOOTPRINT. Gross examination after excising the mass showed conglomerated tissue of size 3cm and 2cm, constituting numerous nodules of white-gray, translucent hyaline cartilage. Histopathological examination was suggestive of synovial chondromatosis. Patient was followed for 1 year, completely asymptomatic, with full range of motion of knee joint, with no evidence of recurrence. Conclusion: Synovial chondromatosis arising from ACL synovium is rare occurrence with only few cases reported in literature. it should be kept in mind while treating patient with flexion deformity knee. It can be managed by open/arthroscopic resection.

**Abstract No.: 40217**

**ANATOMIC STUDY AND CLINICAL APPLICATION OF LUMBAR TRANSFORAMINAL FENESTRATION  
APPROACH FOR FAR LATERAL DISC HERNIATION**

Baoshan Xu,

Objective: To investigate the feasibility of TFF approach for lumbar disease involved intervertebral foramina Method: Thirty specimens of adult cadaveric lumbar spine were used, and TFF approach was performed from L1 to S1 at both sides. The scope of resection was measured manually. Clinically, 30 patients of lumbar FLDH were treated with microendoscopic discectomy through TFF approach. Results: On cadaveric study, the isthmus and facet joint extend laterally from L1 to S1, with the transverse process moving downward, and the distance from lateral edge of dura sac to lateral edge of isthmus and facet joint gradually increased. TFF approach provided sufficient exposure for the posterolateral aspect of disc and exiting nerve root at all segments, while preserved the continuity of lamina and inferior articular process. At segments from L4 to S1, a relative large part of isthmus and facet joint were resected, so a luniform fenestration was needed to preserve continuity of isthmus. The 30 patients were successfully treated with microendoscopic discectomy through TFF approach. Excellent result was obtained in 24 patients, and good result in 6 patients, without instability. Conclusion: TFF approach can provide sufficient exposure for lumbar intervertebral foramina with the preservation of stability; and it can be used effectively in microendoscopic discectomy for lumbar FLDH.



**Abstract No.: 40221**

**BONY METABOLISM DISORDER IN CHILDREN AND FACTORS OF THEIR RISK**

Shuxrat Usmanov, Kamola Valieva, Umida Rustamova, Khayrulla Rakhmatullaev, Mukharram Ismatullaeva, Achrarbek Djuraev, Murodhoja Zakirhodzhaev

The aim of study: to establish the effect of risk factors on bony metabolism and body stability in children with different types of its decrease. Materials and methods: 74 children with determined osteopenic syndrome, on the background of orthopedic diseases (congenital hip dislocation, X-O-shaped deformity of lower limbs, systemic osteogenesis were examined). Anthropometric data, mineral density, using percentile tables and regression scales, levels of cytokines as markers of bony tissue remodeling, were researched. Results and discussion: It is known that half healthy school children and those at risk groups in reduction of bony mineral density, use insufficient amounts of food calcium, and, they have low physical activity, that determines the way of planning for primary and secondary prevention of osteoporosis. Analysis of data revealed allowed to determine that the high prevalence of modified risk factors, reduction of bony mineral density (low physical activity, calcium intake discrepancy by age norms, presence of bad habits) are provocative in osteopenia development. Disorganization of bony remodeling at initial reduction of bony stability are characterized by low functional activity of osteoblasts and deficiency of organic component for bony matrix (elevated C - terminal telopeptides). At decrease of bony stability on the background of main disease it is observed the inhibition of functional activity for major cellular components, that is clinically manifested during the initial decrease in bony stability, being characterized by complaints on back pain (39%) in the extremities (51%), paresthesia (44%), bearing disorder (53%), dental caries (88%).

**Abstract No.: 40227**

**COMPARISON BETWEEN EXTERNAL FIXATOR AND SLIDING HIP SCREW (DHS) IN TREATMENT OF INTERTROCHANTERIC FRACTURE OF FEMUR**

Mohamed Eldeeb,

Introduction: fractures of hip is a leading cause of death and disability in elderly. treatment goals for these patients include early rehabilitation, restoration of anatomical alignment and maintenance of fracture reduction. in this study we compare effectiveness of two method of treatment of intertrochanter fracture of femur by external fixator and the other modality by DHS . the comparison include less operative trauma, speed and postoperative recovery efficacy with cost and length of hospital stay. Methods: 32 patients were studied in JNH hospital, KSA from year 2007 -2012 with average age 35-80 years. The two groups had intertrochanteric fracture type 1 stable and unstable , Type 2 (evans classification) , a group were 16 patients treated by external fixator with different moralties (ilizarov,Hoffeman,Orthofix) other group treated by DHS average follow up period was 24 months (range 12-40months) Results: interval between injury and operation, the amount of blood loss, length of hospital stay and cost of treatment were significantly Higher in sliding Hip screw ( $p < 0.05$ ). The time to union, range of movement were comparable at six months. Discussion& Conclusion: the external fixator is superior to sliding hip screw for treatment of intertrochanteric fracture of femur because it can be done under local Anastasia, less operative time , less invasive method less blood loose, less hospital stay, early mobilization reduces coast, less complication rate and hight union rate

**Abstract No.: 40231**

**XIAPEX- A COLLAGENASE TO TREAT DUPUYTREN'S DISEASE : EARLY OUTCOMES**

Paul Ross Middleton,

Intro: Xiapex is a recently developed collagenase which is licenced for the treatment of Dupuytren's disease in the hand. It is effective against collagen types 1 and 3, preserving the basement membrane which consists of type 4 collagen. Treatment involves an injection into the diseased area and then manipulation of the affected joint after 24-72 hours. If successful the patient has avoided the need for a fasciectomy and the risks that go with this procedure. We observed the early clinical outcomes and complications for patients treated with Xiapex injections. Methods: All patients at our institute who were treated with Xiapex injections for Dupuytren's Disease in the hand were included. Immediate deformity correction and complications were recorded. Patients were reviewed at 6 weeks and further recordings of deformity correction were made. Results: 23 patients were included in the study.. On manipulation 60% of joint contractures became fully straight. A further 20% had less than a 20 degree deformity. 6 patients suffered a small skin tear on manipulation. At 6 weeks the results were as at immediate post manipulation. Of those patients whose fingers were not straightened to a sufficient degree, 3 had needle fasciotomy and 1 had further Xiapex injections. We recorded no major complications. Conclusion: Xiapex seems to give a good correction of the contracture in the majority of cases at early follow up. Complications are rare and success with Xiapex avoids the need for extensive fasciectomy surgery. The cost of Xiapex is considerably lower than operative treatment.

**Abstract No.: 40241**

**PREVALENCE OF VITAMIN D DEFICIENCY AND SECONDARY HYPERPARATHYROIDISM IN FRAGILITY HIP FRACTURES**

Balaji Saibaba, Ankit Dadra, Sameer Aggarwal, Mandeep Singh Dhillon, Sanjay Bhadada, Niranjana Khandelwal

**Aim:** To assess the prevalence of osteoporosis, vitamin D deficiency [VDD] and secondary hyperparathyroidism in Indian patients with fragility hip fractures. **Methodology:** Our prospective study included all those patients with isolated fragility hip fractures between Jan-Dec 2013. Serum 25-hydroxy vitamin D, intact parathormone [iPTH] and bone mineral density [BMD] by dual energy X-ray absorptiometry [DEXA] were measured. **Results:** 66 patients [29 male + 37 female] were analyzed. The mean age of the study population was  $67.6 \pm 13.1$  years [male:  $64.1 \pm 13.8$ , female:  $70.3 \pm 12.1$ ], range: 50 to 100. 49 out of 66 patients [74.2%] sustained the fracture at home. Fracture location was inter-trochanteric in 53%, femoral neck in 37.9% and sub-trochanteric in 9.1%. History of adequate sun exposure was obtained in 41 % cases. The mean serum 25(OH)D level was  $9.87 \pm 9.2$  ng/ml. 49 out of 66 patients [74.2%] had VDD, 37/66 [56.06%] had vitamin D levels < 10ng/ml and 12/66 [18.18%] had levels between 10-20 ng/ml. 27 out of 49 patients with VDD [55.1%] had secondary hyperparathyroidism; The mean BMD, T score and Z score of hip was  $0.622 \pm 0.1$  g/cm<sup>2</sup>,  $-3.5 \pm 1.2$  and  $-1.9 \pm 1.2$  respectively. 80.3% had severe osteoporosis, 15.2 % had osteopenia and 4.5 % had normal BMD. History of diabetes, hypertension, smoking and alcohol consumption did not have any significant effect on the prevalence of VDD and secondary hyperparathyroidism in fragility hip fractures. **Conclusion:** The prevalence of VDD [74.2 %] and associated secondary hyperparathyroidism [55.1%] is very high in Indian patients with fragility hip fracture.

**Abstract No.: 40242**

**SIGNIFICANT INCIDENCE OF EXTRA-ARTICULAR TIBIA VARA AFFECTS POST-TKA RADIOLOGICAL OUTCOME**

Balaji Saibaba, Mandeep Singh Dhillon, Devendra Kumar Chouhan, Rajendra Kanojia

**Purpose:** To identify and quantify the presence of extra-articular tibia vara which might influence the post-TKA mechanical axis alignment. **Methodology:** 48 TKAs were prospectively evaluated in 30 osteoarthritic Indian patients. The hip knee ankle angle [HKA], joint line convergence angle, varus at femur and varus at tibia were measured from the pre-operative and post-operative standing hip to ankle radiographs. Four different methods were used to measure the varus at tibia – metaphyseo-diaphyseal angle [MDA], angle between anatomical axis and mechanical axis of tibia, angle between the proximal third and distal third of tibia and angle between the proximal half and distal half of tibia. **Results:** Extra-articular tibia vara quantified using metaphyseo-diaphyseal angle [MDA] had the best positive correlation. Receiver Operating Characteristic [ROC] plotting showed that  $MDA > 4^\circ$  predicts abnormal post-operative HKA. 28 out of 48 knees had  $MDA > 4^\circ$ . 78.6% of these had post-op HKA under-correction and 21.4% had less than ideal tibial component position. **Conclusion:** A significant inherent extra-articular varus [best measured using MDA] exists in the proximal tibia in osteoarthritic Indian patients undergoing TKA.  $MDA > 4^\circ$  is associated with an abnormal post-operative HKA, and ideal correction may be achieved by computer navigation. **Keywords:** knee, osteoarthritis, arthroplasty, extra-articular tibia vara, Indian patients, hip knee ankle angle

**Abstract No.: 40248**

**ADHERENCE TO ANTIBIOTIC PROPHYLAXIS IN ORTHOPAEDIC SURGERY**

Vanessa Cubas, Das Pillay

Background: Antibiotics are effective at reducing both surgical wound site and systemic infections. Specifically, antibioprophylaxis has been shown to reduce use of beta-lactam antibiotics post-operatively and MRSA isolation rates. This study aimed to assess adherence to local antibiotic guidelines in different types of orthopaedic surgery. Methods: A prospective study involving 100 patients was performed, investigating compliance with local antibiotic prophylaxis protocol. Results: 66 patients underwent implant surgery, 18 hemiarthroplasty, and 16 non-implant surgery. For implant cases 44% adhered fully to the protocol, 89% and 44% respectively received appropriate preoperative and postoperative antibiotics. 3 cases received no prophylaxis at all. For hemiarthroplasty, 100% patients received antibiotics at induction, but only 50% were fully compliant, with 22% receiving added therapy and 28% receiving the wrong antibiotics. Overall, 25% of cases received more antibiotics than necessary, 20% received less and 3% received the wrong regime. Conclusion: Adherence to antibiotic prophylaxis protocol is variable, with poor documentation explaining deviation from protocol. Meta-analyses have failed to demonstrate superiority of multidose regimes over single-dose prophylaxis. Single-dose preoperative antibiotic prophylaxis may be a reasonable choice for most orthopaedic procedures, supported by the poor compliance of current regimes in our study.

**Abstract No.: 40249**

**COMPARISON OF PLATING TO INTRAMEDULLARY NAILING IN TREATMENT OF DIAPHYSEAL FRACTURES OF THE FOREARM IN ADULTS.{A REPORT OF 45 CASES}**

Yuvraj Hira, Rahul Salunkhe

Introduction: Fractures of both radius and ulna are one of the commonest fractures in adults in upper extremity. In this era of active life, rapid industrialization, increasing road traffic accidents, competitive sports, the incidence of the fractures of forearm bones are increasing in frequency. It is difficult to reduce two bones simultaneously in presence of pronating and supinating muscles which exert angular as well as rotatory forces, which frequently displace the fracture after a satisfactory reduction leading to mal-union and cross union. Aim and Objectives:1:To study fracture pattern.;2:Decision of modalities of surgical management.;3:Observe the period of fracture healing clinically, radiologically and rehabilitation of the patient. Materials and Methods: We present our experience of treating both bone forearm diaphyseal fractures in adults performed in Dr.D.Y.Patil medical college, Pune during April 2013 to September 2014. A total of 45 patients with mean age of 33.4 years had treated either by open reduction,internal fixation with plating(DCP, semitubular plates) or closed reduction, internal fixation with intramedullary nailing(Talwarkar square nails) and evaluated radiologically, clinically by using Anderson's criteria. Results: There were 20 patients in group A and 25 patients in group B. In group A patients who were treated by plating we observed 100% radiological union. In group B, patients were treated by nailing, we observed 86% radiological union.Conclusion: We conclude open reduction and internal fixation with compression plates is the gold standard method of treatment in both bones forearm fractures with excellent results than closed reduction, internal fixation with nailing.

**Abstract No.: 40250**

**PRIMARY ARTHROPLASTY IN SEVERE DEFORMITIES OF THE KNEE**

Viorel Vetrila,

**INTRODUCTION.** Knee osteoarthritis is a leading cause of disability in the population and this is caused by aging and overweight population. Pain is the most important symptom of OA and is often chronic, leading to significant morbidity and decreased quality of life. Addressing to the specialist out of time lead to an exacerbation of pathological process in the knee, resulting in severe misalignment of the axis of the lower limb and appearance of excessive joint valgus or valgus, and to the settlement of surfaces between tibia and femur. Osteoarthrosic knee usually requires arthroplasty which substantially reduces algic symptoms, correct limb axis and improves the quality of life.

**MATERIALS AND METHODS.** The study includes the treatment of 74 patients, performed 85 interventions in the period 2004-2014. Mean age of patients was 62.6 years. There were 75 patients with varus deformity, valgus in 10 patients. 79 patients were implanted primary prostheses, in 6 patients has been used prosthetic revision, the major bone defects were replaced with auguments.

**RESULTS.** The results were evaluated in 65 patients starting from 12 months till 7 years. The results were evaluated according to KSS score. During the preoperative period average KSS score was 34 points. The postoperative functional state of the patients improved and the score results was 89 points.

**CONCLUSIONS.** Total knee replacement ensure correction of joint deformity, removing algic syndrome, improving joint mobility, relative quick resumption of the functions in the postoperative period and improves the quality of life.



**Abstract No.: 40252**

**INJECTION FOR FOOT AND ANKLE CONDITIONS ? ARE THEY EFFECTIVE? RESULTS OF A PROSPECTIVE STUDY.**

Mohammed Ali, Mbah Chibuogwu, Sundaramoorthy D

Purpose: Foot and ankle injections are routinely done for conservative management of foot and ankle conditions; however there is no evidence in the literature about the effectiveness of foot and ankle injections. The aim of our study was to assess the effectiveness of the foot and ankle injections. Methods: We prospectively reviewed the results of the 25 foot and ankle injections done over a period of 6 months from July 2013 to December 2013. The most common indication for injection was arthritis of the joint involved. 0.5% bupivacaine and 40 mg of kenolog was used for the injection. A visual analogue score was used to determine the efficacy of the injection. Results: The mean follow up was 5 months (2- 9 months). 21/25 (84%) patients had significant pain relief following the foot and ankle injection. 4 patients went on to have further procedure. Of the four failed injections three were ankle injection and one was a tarsometatarsal injection. Of the three failed ankle injections, one went on to have further injection; one patient was listed for fusion and the other had an ankle arthroscopy. The failed tarsometatarsal injection had a fusion and had good result following the fusion. The ones who had good symptom relief were either discharged or given an open appointment. Conclusions: Our study has shown that mid foot and forefoot injections provide good symptom relief than the ankle injections, which are more likely to fail requiring further procedures.

**Abstract No.: 40254**

**THE FIFTY MOST CITED AFRICAN ARTICLES IN THE ORTHOPAEDIC LITERATURE**

Mohamed a. HEMIDA, Khaled Emara, Ahmed El Sokkary, Abdalla Gharib

**Background:** The higher citation number of an article, the higher its impact on medical specialty. Africa is the second-largest continent in the world. **Purpose:** To analyze the characteristics of the 50 most frequently cited articles from African countries in orthopedics, its representation to orthopedics literature and which African regions were more productive in orthopedic research. **Methods:** we had searched the articles published in any of the 67 journals in the category "Orthopedics" and its sub-specialties originated from African countries using Web of Science™, to make list of the 50 most frequently cited African articles, ranked by citation number and density. **Results:** 1155 articles originated from African countries, representing 0.58% of orthopedic literature. The top 50 most cited African articles were cited between 32 to 624 time, published in 14 journals, 7 general orthopedic and 7 sub-specialty journals. The majority of articles were Clinical articles (n= 47), spine and sports medicine were (n= 12), (24%) for each one, only 28 countries from Africa have publications, 468 of 1155 from South Africa and 331 from Egypt, 43 articles of the top 50 from south Africa, and 3 from Egypt, the first most cited African article had 624 citations which is considered the 28th most cited article in all orthopedic literature. **Conclusions:** This article gives a review & analysis of top-cited articles published in Orthopedic from African Countries, which provide information about areas of high-impact research activities, to put our hands on the facts may help this area to improve the research quality.

**Abstract No.: 40257**

**PONSETI METHOD IN COMPLEX FEET**

Michelle Cardoso, Monica Nogueira

**Introduction:** The complex clubfoot offer a challenge to treatment by the Ponseti method. They have recently been described in the literature, and consist of short feet, with a deep medial crease, medial to lateral, short and hyperextended hallux, skin changes such as edema and erythema, resembling a reflex sympathetic dystrophy. Its etiology is undefined, but most cases occur after manipulation and application of plaster inappropriately, with pronation of the forefoot. The approach by the Ponseti method in such cases was described, with modifications that include different positioning of the hands to correct the deep crease, less abduction and a very careful molding. **Methods:** This retrospective study is to review of 434 patients (653 feet) with clubfoot treated from 2001 to 2014, identifying the complex feet, and studying the differences in relation to conventional treatment. **Results:** We identified 30 (7%) patients with complex feet. 20 feet (4,6%) of patients had already undergone previous treatment and needed 3 casts for correction. In 10 atypical feet (newborn) with no treatment the average number of casts was 5. No patient with complex foot in our series underwent posterior medial release. **Conclusions:** The complex feet are a challenge to treatment by the Ponseti method, and the modification of the method as elevation of the first ray, the less abduction and careful molding, followed by a careful bracing protocol lead to good results and can avoid extensive surgery in these difficult feet.

**Abstract No.: 40259**

**PREVALENCE AND RISK FACTORS OF KNEE PRIMARY OSTEOARTHRITIS IN THE ELDERLY AGED 50 YEARS AND OVER IN GAOYOU DISTRICT**

Jun Hu,

**Objective** To investigate the prevalence and risk factors of knee osteoarthritis (OA) in the elderly in a rural area of Jiangsu Province. **Methods** The 2257 people aged 50 years and over living in Gaoyou area for a long time were investigated from December 2009 to May 2010. A questionnaire survey, physical examination and laboratory tests were conducted among all the people. Prevalence of knee OA was calculated and analysed. Univariate and multivariate logistic regression model were used to identify associated risk factors. **Results** A total of 2257 residents took part in the survey, which consists of 1221 males and 1036 females. Four hundred and fifty nine knee OA patients were detected with questionnaire survey and X-ray examination methods. The prevalence of knee OA was increased with aging in males and in females. The age, waist circumference, total cholesterol and low density lipoprotein cholesterol were significantly higher than those in the group without knee OA. The prevalence of knee OA also were significantly higher in overweight, central obesity, high low density lipoprotein (HDL) and hypertension group than those in the group without knee OA. Multivariate logistic regression analysis demonstrated that the prevalence of knee OA was positively correlated to age (OR 1.03, 95% CI 1.01-1.04,  $P<0.01$ ), central obesity (OR 1.39, 95% CI 1.12-1.73,  $P<0.01$ ) and HDL (OR 1.47, 95% CI 1.02-2.10,  $P<0.05$ ). **Conclusions** Increased age, obesity and metabolic disorders were risk factors of knee OA, but the mechanism need to be further elucidated.

**Abstract No.: 40261**

**LESSONS LEARNED FROM THE TENSION-BURST MEDIAL WOUND IN OPEN CALCANEAL FRACTURES**

Shi-Min Chang, Xiao-Hua Li, Ze-Lu Li

Introduction: Open calcaneal fractures account about 10%, and most the wounds are located in the medial side. These wounds are caused by high energy violence from inside-out, usually by (1) fracture fragments protrusion, or (2) tension-burst laceration. Thus, the Gustilo classification may not applicable to this medial wound calcaneal fractures. Methods: From 2005 to 20012, 11 cases medial wound open calcaneal fractures were encountered in our department. There were 6 simple wounds caused by fragment-tears ( 3 in Gustilo type I, 3 in type II), and 5 complicated wounds caused by tension-burst (type II). All the wounds are transverse run and less than 10cm. After acute debridement and irrigation, the fractures were reduced in length and alignment, and percutaneously K-wire fixed. The wounds were closed primarily. Results: All the 5 tension-burst wounds were larger than 5cm. They were primarily closed with tension-free. However, the wounds corrupted in 3-5 days due to marginal necrosis, mostly corresponding to the initial trauma and ischemic zone. Further surgical procedures were carried out, including vacuum-sealing-drainage, turnover adipofascial flap and skin graft. From the treatment point of view, primary closure of these medial tension-burst wounds (type II, can be directly closed) converted it to more complicated type IIIB (needs a flap to cover). Conclusions: Medial tension-burst wounds in open calcaneal fractures should not be closed primarily. Staged management is recommended.

**Abstract No.: 40262**

**RISK FACTORS ASSOCIATED WITH MECHANICAL COMPLICATIONS INCLUDING PROXIMAL JUNCTIONAL FAILURE AFTER OSTEOTOMY FOR ADULT SPINAL DEFORMITY.**

Cameron Barton, Andriy Noshchenko, Vikas Patel, Christopher Cain, Christopher Kleck, Evalina Burger

Introduction: Osteotomies including pedicle subtraction (PSO) and Smith-Peterson (SPO) are used in the correction of adult spinal deformity (ASD). The purpose of this study is to determine incidence and risk factors (RFs) for mechanical complications (MCs) after osteotomy for ASD. Methods: Retrospective review of ASD database yielded 83 consecutive ASD patients (55 female, avg. age 58) meeting strict inclusion/exclusion criteria and follow-up of at least 1 year. Operations were divided into groups based on MC (e.g. proximal junctional failure (PJF) vs. non-PJF) and odds ratios were calculated for gathered variables to assess RFs for specific MCs. Results: Incidence of MC was 41% following osteotomy and trended higher in PSO 49% (24/49) vs. SPO 32% (13/41) ( $p=.13$ ). RFs meeting statistical significance for entire MC group was postop lumbar lordosis (LL)  $<49$  degrees (OR=2.53,  $p=.04$ ). Statistically significant RFs for MCs: loose screws had RF of fusion crossing lumbosacral junction (OR=7.66,  $p=.05$ ); PJF RFs were ever smoker (OR=8.76,  $p=.04$ ) and presence of 2 or more cross-links (OR=3.87,  $p=.04$ ); subsequent decompression surgery RF was fusion stopping above sacrum (OR=13.92,  $p=.02$ ). Conclusions: Incidence of MC was 41% following osteotomy and trends higher in PSO vs. SPO. Postop LL  $<49$  degrees was found to be a RF for all MCs. Fusion across the lumbosacral junction was found to be a RF for loose screws. Ever smoking and presence of 2 or more cross-links were found to be RFs for PJF. Fusion stopping above the sacrum was found to be a RF for subsequent decompression surgery.

**Abstract No.: 40265**

**BILATERAL PATELLAR TENDON RUPTURE ASSOCIATED WITH STATIN USE**

Marie Kearns, Susan Wallace, Vinay Singh

Introduction: Bilateral patellar tendon rupture is an uncommon clinical presentation with 52 cases reported in the literature. It occurs most frequently in patients with predisposing factors such as corticosteroid use or systemic diseases including rheumatoid arthritis, systemic lupus erythematosus and chronic renal failure. It may happen spontaneously or secondary to minor trauma. Case report: We present the case of a 56 year old male on long term statin therapy who sustained this injury following a fall on ice. He had no other risk factors for tendon rupture. Surgical treatment involved tendon repair using Krakow suture via bony tunnels in the patella. We provide photographic illustrations of the surgical findings and technique. Discussion: Statins have previously been associated with tendon ruptures at other sites but there have been no published cases of bilateral patellar tendon rupture linked to statin use. We review the literature regarding the association between statins and tendon rupture.

**Abstract No.: 40268**

**INTRATENDINOUS SLIDING MOTION AND SHEAR FORCE IN ACHILLES TENDON**

Yu-Long Sun,

Achilles tendon is one of the most commonly injured tendons. Mechanical force is regarded as a major causative factor. However, the biomechanics of Achilles tendon and mechanical mechanism of the injuries are unclear. Lubricin expresses in regions exposed to sliding motion and shear force in a number of tissues. This study investigated the distribution and concentration of lubricin in human Achilles tendons for better understanding the biomechanics of Achilles tendon. Achilles tendons were harvested from nine cadavers. Lubricin was extracted from various locations proximal to the calcaneal insertion and quantified with ELISA. The distribution of lubricin was investigated with immunohistochemistry. Lubricin was mainly identified at the interfaces of tendon fascicles, especially in the mid-portion of the tendon. The concentration of lubricin in Achilles tendons varied among individuals and with distance from its calcaneal insertion. The distal portion of the tendon had a higher concentration of lubricin than the proximal regions of the tendon. This study suggests the presence of intratendinous sliding motion of fascicles and shear force at interfaces of fascicles in human Achilles tendon. Lubricin could facilitate the fascicle sliding in Achilles tendon. Shear force could be an important mechanical factor for the development of Achilles tendinopathy and rupture.



**Abstract No.: 40275**

**DISTRACTION FAILURE IN MAGNETICALLY-CONTROLLED GROWING RODS: PREVALENCE AND RISK FACTORS**

Dino SAMARTZIS, Boon-Beng Tan, Cora Bow, Jason Pui Yin Cheung, Kenneth Man-Chee Cheung

**INTRODUCTION:** Recently, the use of "magnetically" controlled growing rods (MCGR) has advanced the surgical treatment of early onset scoliosis (EOS), providing non-invasive distractions. Occasionally the rod may fail to distract due to slippage of the internal mechanism. This study assessed the occurrence and potential determinants associated with slippage of the MCGR during distraction. **METHODS:** We prospectively assessed 4 EOS patients with implantation of dual MCGR. Each underwent monthly outpatient distractions. Rod slippage was noted if a "clunking" noise occurred during distraction. Radiographic parameters and demographics were analysed. **RESULTS:** The mean time period from operation to the first slippage was 11 months. Overall, in 168 distraction episodes, slippage was noted in 25%. Offset rod (35%) had more slippage compared to the standard rod (17%). Early slippage (within one year of surgery) occurred in 50% of the patients. Based on the sample size, demographics, number of vertebral levels involved, distance between magnets, and curve alignment/flexibility parameters were not distinctively involved in rod slippage. Despite this slippage, there was overall gain in the implant and the spine. Throughout follow-up, all patients had no pain, had good functional outcome, and were satisfied with the procedure. **CONCLUSION:** In MCGR patients, rod slippage can occur within the first year since implantation and may continue thereafter. This is the first study to identify this observation. Larger studies are needed to further validate our findings and determine if such an event is a potential complication or a naturally occurring, physiological fail-safe mechanism that benefits the patient.

**Abstract No.: 40280**

**EARLY MOBILISATION OF 4TH AND 5TH METACARPAL FRACTURES**

Mohammed Ali, John Harrison

**Objectives:** Fractures of the shaft of the little and ring finger metacarpals are relatively common injuries and mainly occur in younger males following significant trauma to the hand. Because an anatomic reduction is unnecessary for an excellent functional result, most extra-articular metacarpal fractures have traditionally been treated non-operatively. We have conducted this study to compare between two of the conservative management modalities which are Ulnar gutter splint and Futuro splint, considering the healing outcome, stiffness and the cost effectiveness. **Design:** : We retrospectively reviewed the x-rays, clinical letters and physiotherapy letters of 30 patients from each group, who had presented to our A&E and orthopaedic department between Jan 2013 and June 2014 with an isolated, closed shaft fracture of either little or ring finger metacarpal, after excluding those who had unacceptable angulation or shortening. **Results:** In this study, all fractures healed in an acceptable position with no significant mal-union requiring further treatment seen in either group. Both treatment methods appeared to adequately maintain the fracture reduction when comparing the initial radiographs with the final radiographs of the healed fracture. Radiological review of the healed fractures showed no difference, in terms of shortening or angulation, seen between the 2 treatment methods. **Conclusions:** Patients treated in a Futuro-splint had a lower incidence of stiffness at clinic review a 5 weeks following the injury. Furthermore, a Futuro-splint is very convenient for patients and medical staff, can be removed to apply ice to the hand to reduce any swelling, and is cost effective.

**Abstract No.: 40287**

**COMPARISON BETWEEN POSTERIOR SHORT-SEGMENT INSTRUMENTATION COMBINED WITH LATERAL APPROACH INTERBODY FUSION AND TRADITIONAL WIDE-OPEN ANTERIOR-POSTERIOR SURGERY FOR THE TREATMENT OF THORACOLUMBAR FRACTURES**

Xiang Li, Yi Hong

Introduction: Lateral approach interbody fusion have achieved satisfactory results for thoracic and lumbar degenerative disease. However, few studies have focused on the use of this technique for the treatment of thoracolumbar fractures. Purposes: To compare the radiographic and clinical outcomes between posterior short-segment pedicle instrumentation combined with lateral approach interbody fusion and traditional anterior-posterior (AP) surgery for the treatment of thoracolumbar fractures. Methods: All patients who meet above criteria were prospectively treated by posterior short-segment instrumentation and secondary-staged minimally invasive lateral approach interbody fusion and classified as group A. A historical group of patients who were treated by traditional wide-open AP approach were used as control group and classified as group B. The radiological and clinical outcomes were compared between the two groups. Results: There were 12 patients in group A and 18 patients in group B. The mean operative time and intraoperative blood loss of anterior reconstruction were significantly higher in group B than those in group A. Two of 12 patients in group A experienced 2 surgical complications: 1 major and 1 minor. Six of 18 patients in group B experienced 9 surgical complications: 3 major, 6 minor. There was no significant difference between the two groups regarding loss of correction and neurological function at final follow-up. No case of instrumentation failure, pseudarthrosis or nonunion was noted. Conclusions: This minimal invasive procedure seems to be a reasonable treatment option for selective patients with thoracolumbar fractures.

**Abstract No.: 40290**

**REDUCING RADIATION EXPOSURE DURING KYPHOPLASTY WITH THE USE OF A REMOTE CONTROL INJECTION SYSTEM**

Jianru Wang, Hui Liu, Zhaomin Zheng

**Objective:** To compare surgeons' radiation exposure during kyphoplasty with and without the use of a remote control injection system. **Methods:** 44 patients admitted for single-level osteoporotic vertebral compression fracture were randomly divided into 2 groups (groups A and B) and treated with kyphoplasty. The remote control injection system was used only in group B. The radiation doses to the surgeon's eyes, thyroid, chest, and right wrist were recorded with 4 unprotected radiometers simultaneously. Operation time, fluoroscopic time, cement amount, patient-reported pre and postoperative visual analogue scale scores for pain, and complications were recorded. **Results.** For group A, the radiation doses at the eyes, thyroid, and right wrist were  $1.132 \pm 0.104$  mSv,  $0.647 \pm 0.049$  mSv,  $0.578 \pm 0.056$  mSv, and  $1.877 \pm 0.214$  mSv, respectively; for Group B, these doses were  $0.257 \pm 0.067$  mSv,  $0.201 \pm 0.049$  mSv,  $0.145 \pm 0.033$  mSv, and  $0.353 \pm 0.046$  mSv, respectively (  $P < 0.05$ ). The proportion of average fluoroscopic time devoted to the bone cement injection step for groups A and B was 64% and 63%, respectively, and the average proportion of the radiation doses that were received during the bone cement injection step was 66% for group A and 36% for group B. **Conclusion:** During kyphoplasty, the use of the remote control injection system can significantly reduce surgeons' radiation exposure without affecting the efficiency of procedures.

**Abstract No.: 40298**

**A CLASSIFICATION TO GUIDE ?POSTERIOR ONLY APPROACH? OSTEOTOMIES FOR SAGITTAL DEFORMITIES**

Bhaskara kanakeshwar RAJA, S Rajasekaran

Many posterior only approach osteotomies have been described but there is frequent loss of clarity on the best osteotomy for each patient. Analysis of prospectively collected data of 75 deformities was done. A structural classification of sagittal deformities based on the status of the two columns, the extent of column deficiency and flexibility was devised which showed a high association between the classification and type of osteotomy. An average correction of 41% (11 to 78%) was achieved and a trend towards more complex osteotomies for higher classification was seen. Four spine surgeons classifying the 75 deformities had a high agreement rate (K 0.83). The classification will be useful as guideline for osteotomy selection and for comparing the practice preferences and outcomes between different institutions.

**Abstract No.: 40300**

**MINIMALLY INVASIVE VERSUS OPEN TRANSFORAMINAL LUMBAR INTERBODY FUSION FOR LOW-GRADE LUMBAR SPONDYLOLISTHESIS**

Bolai Chen,

**Abstract :** Objective To compare the clinical outcomes and complications between minimally invasive transforaminal lumbar interbody fusion (TLIF) and traditional open approach. Methods Fifty-three patients with lumbar spondylolisthesis who was undergoing MI-TLIF and open approach at our department from March 2010 to May 2013 were analyzed retrospectively(26 MIS,27 open) The clinical outcomes of Japanese Orthopaedic Association Scores(JOA), visual analog scale(VAS), the MOS item short form health survey (SF-36) , operative time, length of stay, estimated blood loss , anesthesia time, Tailard index and intervertebral height were evaluated. Results Average surgical time was shorter for open TLIF than the MI-TLIF group. Estimated blood loss, length of stay and frequency of painkiller were reduced for the MI-TLIF versus the open group( $P<0.05$ ).VAS and JOA scores decreased , and SF-36 scores were raised ,for both groups. And the fusion and complications rate were similar in the two groups ( $P>0.05$ ). Conclusion This prospectively study shows statistically significant clinical outcomes improvement after MI-TLIF and open surgery with low-grade spondylolisthesis.MI-TLIF has the advantages of less invasion and quick recovery.

**Abstract No.: 40303**

**A PROPOSED SCORING SYSTEM FOR EVALUATING NEUROLOGIC DEFICIT AFTER SACRAL RESECTION-FUNCTIONAL OUTCOMES OF 170 CONSECUTIVE PATIENTS**

Tao Ji, Lin Huang, Wei Guo, Rongli Yang, Xiaodong Tang

Background: Surgical resections of sacral tumors usually cause neurologic deficits. A quality-of-life oriented scoring system for evaluation of lower limbs, bladder and bowel functions of patients after sacral tumor resection has been proposed. Methods: The proposed scoring system has three domains with 3 items in each domain, being allocated 0 to 3 points of each item according to the degree of functional impairment. Overall function scale is presented in percentage form. In the current single-center retrospective study, it was adopted to evaluate and quantify the postoperative functional outcomes of 170 consecutive patients underwent sacrectomy. Results: Significant observer agreement ( $p < 0.01$ ) was found in all nine items of the proposed system. Detailed functional outcome and difference between each group can be well described by the scoring results. Preservation of bilateral S1 nerve roots preserved majority of motor and sensory function in lower limbs. The probability and degree of urine incontinence ( $P=0.003$ ) and abnormal bladder sensation ( $p=0.039$ ) was significantly lower in patients with bilateral S3 nerve preserved than those whose unilateral S3 was severed. Patients with unilateral S3 preserved had a lower incidence and degree of dysuria, constipation, bowel incontinence and abnormal rectal sensation than those whose bilateral S3 were sacrificed. Functional outcomes for patients with retained coccyx were better than those with coccyx transected. Conclusion. The scoring system can be used to evaluate sacral nerve function after sacrectomy under oncological condition.

**Abstract No.: 40308**

**RISK FACTORS FOR MAJOR COMPLICATIONS IN SURGERY FOR HYPERVASCULAR SPINAL TUMORS-  
AN ANALYSIS OF 120 EMBOLIZED CASES**

Tao Ji, Benqiang Tang, Wei Guo, Rongli Yang, Xiaodong Tang

**Purpose.** To determine the frequency of major complications and identify related risk factors in surgery for hypervascular spinal tumors after preoperative selective arterial embolization. **Methods.** Patients with spinal tumors who underwent preoperative embolizations between January 2010 and March 2013 were retrospectively reviewed. Perioperative complications were classified as either major or minor. Preoperative and intraoperative factors were analyzed for any association with major complications using univariate and multivariate regression analysis. **Results.** There were 120 embolizations with subsequent 120 spine operations that met the inclusion and exclusion criteria. Overall, 27.5% (33/120) experienced major complications and 11.7% (14/120) had at least 2 major complications. Respiratory complications were the most commonly seen with a rate of 10.8% (13/120). Multivariate regression analysis identified two risk factors for major complications: reoperation and higher score of surgical invasiveness index. Two risk factors were identified for 2 or more major complications: age  $\geq$  65 years and higher score of surgical invasiveness index. Two risk factors were identified for major respiratory complications: thoracic surgery and higher score of surgical invasiveness index. However, embolization-related factors did not reach significance in the multiple regression model. **Conclusion.** Major complications in surgery for hypervascular spinal tumors after embolization are prevalent. Risk factors identified in this study are useful prognostic indicators when considering surgical treatment combined with embolization.



**Abstract No.: 40313**

**CLINICAL FEATURES OF ROTATOR CUFF TEAR WITH NIGHT PAIN**

Satoshi Iwashita, Hiroshi Hashiguchi, Atsushi Okubo, Shinro Takai

Purpose: the purpose of this study was to analyze clinical features of rotator cuff tear with night pain. Method: 114 patients with full-thickness rotator cuff tears treated by arthroscopic rotator cuff repair were the subjects of this study. There were 48 females and 66 males whose average age was 57.7 years. 34 patients had history of trauma. The average duration of disorder was 33 weeks. 16 patients were diagnosed as diabetes. On types of the tears, articular side tear was observed in 27 patients, bursal side tear in 19 patients, small tear in 32 patients, medium tear in 26 patients, large tear in 4 patients, and massive tear in 6 patients. The shoulder stiffness was observed in 31 patients. Factors compared between the patients without night pain and the patients with night pain were as follows; gender and age of the patients, history of trauma, duration of disorder, diabetes, smoking, type of rotator cuff tears, shoulder stiffness, active range of motion and impingement sign. Results: The night pain was observed in 63 patients (55.3%). The patients with impingement sign were suffer from night pain more frequently than the patients without it. The active internal rotation of the patient with night pain was significantly less than those without night pain. Conclusions: the night pain was more frequently observed in patients with impingement sign and low range of active internal rotation. The pressure of subacromial space and position of upper extremity may influence night pain in the patients with rotator cuff tear.

**Abstract No.: 40315**

**A STUDY OF 50 CASES OF ANKLE FRACTURE IN ADULTS**

Vishal Mandlewala, Abhijeet Shroff

**INTRODUCTION:** Ankle fractures are one of the most common injuries treated by orthopaedic surgeons. On the basis of position of foot and the direction of the force many classification have been described, the most popular being that of Lauge Hansen. In ankle fracture, operative treatment-internal fixation provides good result. So, we decided to study the role of internal fixation in treatment of ankle fracture. **AIM AND OBJECTIVES:** study the role of internal fixation in treatment of ankle fracture with restoration of normal ankle function. **MATERIALS AND METHODS:** This is a prospective study of 50 cases of ankle fracture treated with open reduction and internal fixation by 4mm cc screws ,Tension Band wiring (K wires with 18/20 gauge stainless steel wire loops), Neutralization plate -1/3rd tubular plate, Interfragmentary screws for oblique fibular fractures, Rush pins and DCP at D.Y.Patil medical college and research centre, pune carried out from april 2012 October 2014.In present series criteria and scoring system for clinical as well as radiological assessment have been used in a modified form as suggested by William A. Philips , Herbert S. Schwartz et al. Criteria for assessment of quality of reduction used are the same as that of Burnwell and Charnley. **RESULT:** Out of total 50 patients treated, 30 (60%) patients obtained excellent results, 14 (28%) obtained good results and 6 (12%) had poor outcome. **CONCLUSION:** The keyword of success is good anatomical reduction and rigid fixation of the fracture, irrespective of the classification of the fracture or the mode.

**Abstract No.: 40317**

**FIXATION OF DISTAL HUMERAL SHAFT FRACTURES WITH LAG SCREWS AND SINGLE POSTERIOR CONTOURED NEUTRALIZING PLATE.**

Mostafa Azab, Enjie Ibrahim

**Introduction:** Different methods of open reduction and internal fixation (ORIF) are described for comminuted extra-articular distal humeral shaft fractures. Our case series presents a technique for rigid fixation of such fractures allowing early mobility of elbow joint. **Methods:** 42 cases (27 males and 15 females) with ages ranging from 17-46 years (mean age 27) underwent ORIF using interfragmentary screws and dynamic compression plate (DCP) contoured to fit the lateral humeral condyle distally which was fixed to the posterior aspect of the humerus using cortical screws proximal and distal to the comminution. Immediate postoperative range of motion (ROM) was allowed. Lifting heavy objects and vigorous rotatory movements were postponed until radiological healing was visualized in the x-rays. Follow-up x-rays were done every 2 months. Elbow ROM was examined in all cases in every follow-up visit. **Results:** Complete union was achieved in 39 cases primarily. One case achieved union after bone grafting. 2 cases required revision after implant failure using double plates and bone grafting. Elbow ROM showed extension lag of the last 10-15 degrees in 40 cases without limitation in elbow flexion. **Discussion and Conclusion:** Implants used for fixation of distal humeral extra-articular shaft fractures are many and can be applied in different planes for allowing rigid fixation for the sake of early mobility. Our technique allows for rigid stable fixation and hence early mobilization of the elbow joint in addition to a good rate of union associated with loss of only the last few degrees of elbow extension.

**Abstract No.: 40318**

**LUDLOFF'S DIAPHYSEAL OSTEOTOMY IN TREATMENT OF HALLUX VALGUS.**

Mostafa Azab, Enjie Ibrahim

**Introduction:** Numerous osteotomies of the first metatarsal have been devised to correct the deformity in cases of Hallux Valgus. They are grouped into distal, basal and diaphyseal osteotomies. The aim of our study is to evaluate the outcome of Ludloff's diaphyseal osteotomy as a treatment modality for Hallux Valgus. **Patients and Methods:** 14 cases of Hallux Valgus were enrolled in this retrospective study (all females). The mean age was 38 years (19-56 years). Pre-operative x-rays in weight-bearing stance to evaluate the intermetatarsal (IMA) and Hallux Valgus (HVA) angles. 9 patients had moderate (IMA>13°, HV>40°) and 5 had severe deformities (IMA 16-20°, HVA 41-50°). An osteotomy from proximal-dorsal to distal plantar was performed and fixed by two screws. A short leg cast was applied for 3 weeks after which full weight-bearing was allowed. Assessment for pain improvement, radiological correction of the aforementioned angles and union was done 6 weeks post-operative. Mean follow-up was for 3 years. **Results:** The 14 enrolled patients have had an IMA and HVA post-operative average of 9.4° and 13.4°; respectively. These reductions were statistically significant (p-value <0.05). The average 1st metatarsal shortening noted was 1.4mm. One case suffered of transfer metatarsalgia. No non-union was documented. **Conclusion:** Ludloff osteotomy has potential in treatment of Hallux valgus with minimal complications reported on long term follow-up. Advantages include rapid bone healing, early weight bearing, satisfactory correction of the angles and less metatarsal shortening.

**Abstract No.: 40330**

**COMPARATIVE STUDY BETWEEN PULL OUT SUTURE AND EXTENSION BLOCK TECHNIQUES IN TREATMENT OF ACUTE BONY MALLET DEFORMITY**

Metwally Shaheen, Mostafa Azab, Enjie Ibrahim

**Introduction:** Acute bony mallet deformity is common to all ages and usually affects males during manual work or sport activities. Different surgical techniques are described to deal with such injury. **Aim of our study** is to evaluate the results and complication rate of pull-out sutures in comparison to extension block technique as a treatment modality for such cases. **Patients and Methods:** A retrospective study involving 50 cases of bony mallet with a fracture fragment involving >1/3rd of articular surface divided into 2 groups 25 patients in each. (Group A): who underwent pull out suture fixation of the avulsed fragment with K-wire transfixing the DIP joint. (Group B): were treated by extension block technique. Mean age was 28 years (23-45 years). Average follow-up was 3 years. K-wires removed 6 weeks post-operatively followed by 2 weeks splinting. **Results:** All cases achieved anatomic reduction and none had persistent post-operative pain. Average active flexion of DIP for Group A was 88.1° and no extension lag was noted; meanwhile average active flexion of DIP for Group B was 74.2° with an average extension loss of 1.5°. Mean time for fracture union was 39 days for both groups. 2 cases of nail-plate deformity and 1 case of skin necrosis were noted in Group B. **Conclusion:** Pull-out suture technique has a better functional outcome with no complications recorded when compared to extension block for treatment of acute bony mallet.

**Abstract No.: 40333**

**RECURRENCE OF GIANT CELL TUMOUR OF POSTERIOR TIBIALIS TENDON- A CASE REPORT**

Vishal Mandlewala,

Giant-cell tumour of the tendon sheath is a solitary benign soft-tissue tumour of the limbs. It usually appears as an enlarging painless mass and has a synovial origin. Giant cell tumor of the tendon sheath is approximately 1.6% of all soft tissue tumors. Giant cell tumour of tendon sheath of tibialis posterior is very rare and recurrence has not been reported. 21 year old male patient came to D.Y.Patil hospital and research centre, pune with complain of swelling over right ankle since 3 years. Patient was operated for swelling 10 yrs back, histological examination revealed giant cell tumour of tendon sheath . Pt was asymptomatic for 3 years after operation and then develop swelling since last 3 years. On local examination hypertrophic scar mark 1x4 cm present at right medial malleolus. Plain xray of ankle ap,lateral and mortise view was done.Ultrasonography of right medial malleolus and Magnetic resonance imaging was done for further evaluation. Under spinal anesthesia and tourniquet control, medial approach was taken extending from 7 cm above the medial malleolus posterior to the tibia upto the talar head. Tissue was cleared and was sent for histopathology which confirmed the diagnosis of giant cell tumour of tendon sheath. Pt is on regular follow up since then and there has not been no recurrence.

**Abstract No.: 40337**

**TREATMENT OF UPPER END TIBIA TYPE 6 SCHATZKER FRACTURE WITH BLISTERS BY HYBRID FIXATION UMEX FIXATOR+CC SCREW & CONTRALATERAL TIBIAL SHAFT FRACTURE IN A 25 YEAR OLD MALE: A CASE REPORT**

Yuvraj Hira,

Tibial plateau fractures constitute 1% of the fractures. Medial plateau fractures constitute 55%-70% of the fractures. Bicondylar fractures constitute 11%-31% of the fractures. We present a case of bilateral tibia-fibula fracture consisting of left tibial plateau # (schatzker type 6) treated with universal mini external fixator (Umex) and right tibia diaphyseal fracture (AO Type 42-A3.3) treated with intramedullary interlocking nail. A 25 year old male came to D.Y. Patil medical college and hospital with complaints of pain and swelling in the left knee along with pain and swelling in the right leg since 1 day. Patient had a history of Road traffic accident. On examination, left knee joint revealed diffused swelling, multiple abrasions and severe tenderness. On examination of right leg swelling was present diffusely over mid shaft, with severe tenderness. There was no DNVC. X-rays of the left knee joint revealed left tibial plateau fracture and of the right leg revealed tibia-fibula fracture. Umex fixator with intercondylar screw for left leg was applied was applied due to the presence of multiple abrasions and fracture blisters over the left proximal tibia and intramedullary interlocking nail for the right limb was inserted. After 6 weeks external fixator was removed and PTB cast was given in the left limb. PTB cast was removed after 6 weeks and full weight bearing was started. Follow up after 4 months showed the patient had complete ROM. Hence we conclude that Hybrid Fixation with Umex is effective management in poor skin conditions and in compound fractures.

**Abstract No.: 40344**

**GIANT CELL TUMOUR OF PATELLA- CASE REPORT**

Vishal Mandlewala,

Giant cell tumor is usually located in the long tubular bones. In the skeletally mature patients, it is found most often in the epiphyseal ends of long bones, especially the distal femur, proximal tibia and distal radius. We present a case of 24 years old male patient who came with complaint of pain and swelling over left knee joint since 18 days . He has history of fall 18 days back which was diagnosed as giant cell tumour on xrays. Patellectomy was done and diagnoses was confirm on histo pathological examination. No recurrence has occurred till date.



**Abstract No.: 40345**

**CUCURBITACIN E INHIBITS TNF- $\alpha$ -INDUCED INFLAMMATORY CYTOKINE PRODUCTION IN HUMAN SYNOVIOCYTE MH7A CELLS VIA MODULATION OF NF- $\kappa$ B PATHWAY**

Wenxiang Cheng, Qingyun Jia, Ye Yue, Peng Zhang

**Objective:** Increasing studies indicate that Cucurbitacin E (CuE), a derivative isolated from Cucurbitaceae plants may exert anti-inflammatory effect. In this study we explore the effect of CuE on TNF- $\alpha$ -induced inflammatory cytokines production in human synoviocytes MH7A cells, and further explore the detailed molecular mechanism involved in its anti-inflammatory effect. **Materials and method:** MH7A cells were stimulated with TNF- $\alpha$  in the presence or absence of CuE, The expression of pro-inflammatory cytokines was determined by quantitative real-time PCR and enzyme-linked immunosorbent assay (ELISA). Signal-transduction protein expression was determined by Western blot. Nuclear translocation of NF- $\kappa$ B p65 was determined by a confocal fluorescence microscopy. **Result:** CuE suppresses TNF- $\alpha$ -induced interleukin-1 $\beta$  (IL-1 $\beta$ ), interleukin-6 (IL-6), and interleukin-8 (IL-8) mRNA and protein expression in MH7A cells in a dose-dependent manner with no apparent cytotoxicity. CuE also suppressed TNF- $\alpha$ -induced phosphorylation of NF- $\kappa$ B p65, IKK $\alpha$ / $\beta$ , I $\kappa$ B $\alpha$  as well as NF- $\kappa$ B p65 nuclear translocation in a dose-and time-dependent manner. Furthermore, CuE suppresses the TNF- $\alpha$ -induced activation of PI3K/Akt similarly as the PI3K inhibitor LY294002, which also decreases the activation of NF- $\kappa$ B as well as mRNA and protein expression of IL-1 $\beta$ , IL-6, and IL-8 in TNF- $\alpha$ -induced MH7A cells. **Conclusion:** These findings demonstrate that Cucurbitacin E as a potential therapeutic agent for Rheumatoid arthritis can inhibits TNF- $\alpha$ -induced inflammatory cytokine production in human synoviocyte MH7A cells via modulation of PI3K/Akt/NF- $\kappa$ B pathway.

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**Abstract No.: 40347**

**ICARIIN INCORPORATED INTO A POROUS SCAFFOLD PROMOTES OSTEOGENESIS IN VITRO AND IN VIVO**

Huijuan Cao, Shukui Chen, Ming Zhang, Nan Wang, Ye Li, Long Li, Linying Wang, Xinluan Wang, Yuxiao Lai, Ling Qin

**Intruduction:** A local delivery system with sustained release of agents from an carrier is desirable for orthopedic applications. This study designed to develop a bioactive scaffold to enhance bone defect repair. **Methods:** Icariin was homogenized into PLGA/TCP to form an icariin-releasing scaffold (PLGA/TCP/ICI) with three different mass ratios (PLGA/TCP/L-ICI, 80:20:0.64; PLGA/TCP/M-ICI, 80:20:0.32; PLGA/TCP/H-ICI 80:20:0.16) by 3D biospining technology. The characterizations of scaffolds were analyzed. MC3T3-E1 cells and a 3 mm bone tunnel defect in bilateral distal femora of SAON rabbits model were used to evaluated the osteogenic effects. **Results:** Our results showed that microstructure of these scaffolds with 400-500  $\mu$ m pore size was similar to cancellous bone of human being. In vitro results confirmed PLGA/TCP/ICI scaffolds could significant promote MC3T3 E1 cells binding, migration and ingrowth with a lower cytotoxicity. After 10 days' induction, ALP activity was increased, OC and BSP mRNA levels in PLGA/TCP/ICI groups was higher than those of in PLGA/TCP group, especially PLGA/TCP/M-ICI group. In vivo results showed that PLGA/TCP/M-ICI significantly promoted new bone formation. At week 4 and week 8 after operation, PLGA/TCP/M-ICI group's BV, BV/TV and BMD significantly increased and the ratio of the CG/OX labelled area was higher than PLGA/TCP group. Meanwhile, the mechanical test showed the compression stiffness and energy in PLGA/TCP/M-ICI group were enhanced compared to that of in PLGA/TCP group.

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**Abstract No.: 40348**

**FIRST EXPERIENCE OF USING THE ?OMPUTER-ASSISTED FLUOROSCOPIC NAVIGATION OF SPINAL INTERVENTIONS**

Olzhas Bekarisov, Khanat Muhametzhanov, Dulat Muhametzhanov, Buratai Karibaev, Murat Baydarbekov

**PURPOSE:** analysis of O arm use during operations on the spine. **METHODS:** 87 patients, were operated on using computer-assisted fluoroscopic navigation from 2014 to 2015, there were 39 men and 48 women; vertebroplasty (VP) was made to 40 of them, transpedicular fixation (TPF) was made to 7 of them; 24 – TPF, 15 – (plastic of vertebral body and TPF), three of them have degenerative diseases of the spine– PLIF and TPF, 2 - patients with anterior spine fusion (ASF) of the cervical spine and other operations were made to 3 patients. **RESULTS:** from 253 screws only one was replaced (0, 4%), from 94 needles only 5 during VP they passed through the lumen of the spinal canal, but in 2D image needles were correctly, two needles were replaced, after 3 needles bone cement wasn't injected in order to avoid the complications. Plastic of vertebral body with granules of porous NiTi, installation of cages with PLIF and the mesh implant for cervical spine were strictly controlled. **CONCLUSIONS:** using O arm allows to control the proper installation of screws at TPF, the navigation of needles at VP, as well as the division of bone cement and NiTi at plastic of vertebral body, installation of implants in plastic of the cervical spine and interbody fusion using the PLIF.

**Abstract No.: 40350**

**SELECTION OF FUSION LEVELS USING THE FULCRUM BENDING RADIOGRAPH FOR THE  
MANAGEMENT OF ADOLESCENT IDIOPATHIC SCOLIOSIS PATIENTS WITH ALTERNATE LEVEL  
PEDICLE SCREW STRATEGY: CLINICAL DECISION-MAKING AND OUTCOMES**

Dino Samartzis, Yee Leung, Hideki Shigematsu, Deepa Natarajan, Oliver Stokes, Kin-Cheung Mak,  
Keith Dip Kei Luk, Kenneth Man-Chee Cheung

Introduction: Selecting fusion levels based on the Luk et al criteria for operative management of thoracic adolescent idiopathic scoliosis (AIS) with hook and hybrid systems yields acceptable curve correction and balance parameters; however, it is unknown whether utilizing a purely pedicle screw strategy is effective. This study aims to assess the efficacy of pedicle screw fixation with alternate level screw strategy (ALSS) for thoracic AIS. Methods: A prospective radiographic and clinical analyses of 28 operative thoracic AIS patients undergoing ALSS was performed. Fusion level selection was based on the Luk et al criteria and compared to conventional techniques. Results: In the primary curve, the mean preoperative and postoperative 1 week and 2 years follow-up standing coronal Cobb angles were 59.9°, 17.2° and 20.0°, respectively. Eighteen patients (64%) had distal levels saved (mean: 1.6 levels) in comparison to conventional techniques. Fulcum bending correction index were 122.6% at 1 week and 115.0% at 2 years. Trunkal shift was decreased from preoperative to last follow-up ( $p=0.003$ ). No statistically significant difference from preoperative to last follow-up was noted in sagittal alignment, radiographic shoulder height and list ( $p>0.05$ ). Successful fusion was achieved in all cases. No "add-on" of other vertebra or decompensation was noted. Conclusion: This is the "first report" to note that using the FBR for decision-making in selecting fusion levels in thoracic AIS patients undergoing management with pedicle screw constructs, in this case ALSS, is a cost-effective strategy that can achieve clinically-relevant deformity correction that is maintained and without compromising fusion levels.

**Abstract No.: 40353**

**TRANSPEDICULAR PLASTIC OF VERTEBRAL BODY OF PATIENTS WITH SPINAL CORD INJURY**

Olzhas Bekarisov, Khanat Muhametzhano, Dulat Muhametzhano, Buratai Karibaev, Murat Baydarbekov

**PURPOSE:** the analysis of the results of treatment the patients with spinal cord injuries developed by the way we had made. **METHODS:** from 2008 to 2015 202 patients with spinal cord injuries were operated, there were 133 men and 69 women. Fractures of the brest part of spine were observed in 37, lumbar - in 128. Spine body plastic with granules porous NiTi was transpedicularly made under transpedicular fixation (TPF): TPF is mounted on the right after distraction screws and tension of ligamentotaxis unscrewing the screw from a broken vertebra on the left, the groove is formed in the vertebral body and through the funnel pour the granules, which are pushed beyond funnel via bolts. **RESULTS:** from 202 patients 191 were made one operation and 11 were made the reoperations, among these patients the anterior spine fusion with cages was made to three patients, rewiring of TPF to 6 patients, spinal canal stenosis removal to one patient and cement vertebroplasty adjacent vertebrae operation was made on another patient. 36 patients had a breaking of TPF. **CONCLUSIONS:** transpedicular plastic of vertebral body indicated in patients with acute fractures of A2, A3, B2 AD type, the transpedicular plastic of spine body is contraindicated in patients with age-old explosive and vertebral fractures and with size of the arch root at least 5 mm.

**Abstract No.: 40360**

**ARTHROSCOPIC GRADING OF COMMON INTRAARTICULAR WRIST DISORDERS**

Maysara Bayoumy, Hisham Elkady, Hatem Said, Amr Elsyed, Hisham Elkady

introduction:Wrist arthroscopy is nowadays a commonly used procedure employed in the diagnosis and treatment of traumatic pathologies, such as triangular fibrocartilage injuries, distal radius fractures,scapholunate and lunotriquetral injuries and scaphoid fractures, as well as degenerative conditions such as scapholunate advanced collapse, wrist, Kienboeck's disease and dorsal wrist ganglia cysts. Several procedures have recently been undertaken arthroscopically. aim of the work: The aim of this work is to provide standard terminology, and grading systems in the field of wrist arthroscopy and provide guidelines for the assessment of normal and pathologic aspects of the wrist joint at arthroscopy. Assessment of wrist pathology starts by the clinical diagnosis. Clinical diagnosis is based on history and physical examination. The clinical diagnosis might be confirmed by radiological investigations including ultrasound scan, plain radiograph, ct scan, mri scan with or without arthrogram. different clinical diagnoses in the field of wrist arthroscopy are described. The arthroscopic findings are presented that typically belong to the clinical picture. Of these typical arthroscopic findings the definition is given followed by a classification concerning this abnormality. tiangular fibrocartilage tears ,scapholunate and lunotriquetrl ligaments injuries,chondral lesion,keinbocks disease, wrist arthrofibrosis are the common pathologies that have to be classified or graded to reach the accurate method and technique for treatment and prognosis

**Abstract No.: 40370**

**SPECTROMETRAL AND HISTOLOGICAL EVALUATION OF TISSUES SURROUNDING UNCEMENTED HIP ENDOPROTHESIS**

Krzysztof Kmiec, Marek Synder, Piotr Kozłowski

**Introduction:** We performed the spectrometral and histopathological evaluation of tissues surrounding uncemented implants, removed during revision hip arthroplasty. The tissues were evaluated of metal ion concentration and the presence of wear products in collected tissues. Twenty – five patients (25 hips) underwent revision hip arthroplasty during the years 2007-2009 for aseptic loosening. The mean follow-up from primary hip replacement to revision was 11.2 years (from 2 to 17 years). **Methods:** All tissues collected during the revision arthroplasty, were submitted to analysis under a light microscope and to the ICP – MS analysis. **Results:** In all tissues we observed: "foreign body" type chronic inflammatory infiltration with PE and/or metal deposits and metallic inclusions. The ICP - MS study of tissues surrounding loose elements of three types of cementless hip endoprosthesis (Mittelmeier, Parhofer - Monch, Bicontact) revealed that the metal ions (Ti, Al, Co, Cr, Mo) from evaluated implants pass into the surrounding environment in the significant concentrations - from a few hundred to several thousand  $\mu\text{g} / \text{kg}$ . Moreover the tissues surrounding loosened cups contained significantly higher concentrations of metal ions than tissue surrounding the stems. **Conclusions:** In the course of prosthesis use, wear products are produced and transferred into the tissues surrounding each element of hip endoprostheses. It has been confirmed that metals, used for uncemented hip implant construction, release ions to human body environment in significant levels up to 999999,9  $\mu\text{g} / \text{kg}$ . **Key words:** hip replacement, metal ion level, debris concentration, aseptic loosening



**Abstract No.: 40374**

**COMPARISON BETWEEN STAGED ORIF AND EFLIF IN TREATMENT OF PILON FRACTURE: A SYSTEMATIC REVIEW**

Dan Jin, Shijuan Xie

To analyze and compare the differences in curative effect between staged open reduction and internal fixation and external fixation with limited internal fixation by systematic review. Literatures about the effectiveness analysis of staged open reduction and internal fixation and external fixation with limited internal fixation, published from 2000 to 2014, were collected through database retrieval and manual search. The index words were "Pilon fracture, distal tibia fracture, staged ORIF, EFLIF, therapy". The evaluation indicators were set as soft tissue infection rate, osteomyelitis incidence rate, bone nonunion, malunion incidence rate and arthrodesis incidence rate. RevMan5.2 software was adopted to analyze the results and characteristics in the form of forest plots. Six studies were included after the full text analysis. The results indicated that the soft tissue infection rate in Staged ORIF group was significantly lower than that of EFLIF group ( $Z=2.82$ ,  $P=0.005$ ). And there were no differences between the two groups respectively in osteomyelitis incidence rate ( $Z=0.97$ ,  $P=0.33$ ), bone nonunion ( $Z=0.48$ ,  $P=0.63$ ), malunion incidence rate ( $Z=1.86$ ,  $P=0.06$ ) and arthrodesis incidence rate ( $Z=1.46$ ,  $P=0.14$ ). The soft tissue infection rate was lower when the technique of staged open reduction and internal fixation was used. However, with respect to the overall curative effect, there was no obvious difference comparing with the method external fixation with limited internal fixation.

**Abstract No.: 40378**

**MOBILITY OF THE FIRST METATARSAL-CUNEIFORM JOINT IN HALLUX VALGUS PATIENTS: IN VIVO 3D ANALYSIS USING LOADING CT SCAN**

Xiang Geng, Xin Ma, Xu Wang, Jiazhang Huang, Chao Zhang

Objective: To investigate the mobility in multi-plane and about multi-axis during weight-loading and compare it between volunteers and hallux valgus patients. Methods: 10 volunteers (20 feet) and 10 hallux valgus patients (20 feet) participated in this study. With a custom-made foot-loading device, CT scans of both feet in each participant were taken both in unloading and weight-loading condition. 3D models were reconstructed for the first metatarsal and the medial cuneiform. Mobility for each bone in multi-plane and about multi-axis during weight-loading process was evaluated in reverse engineering software. Result: With weight-bearing, for normal volunteers and hallux valgus patients respectively, the first metatarsal was averagely 2.1° versus 7.0° dorsiflexed, 4.4° versus 4.9° pronated, 0.9° versus 1.4° externally rotated, while the medial cuneiform was averagely 0.5° versus 3.4° dorsiflexed, 5.3° versus 8.1° pronated, 2.2° versus 1.2° externally rotated. So the first metatarsal-cuneiform joint was averagely 1.6° versus 3.6° dorsiflexed, 0.9° versus 3.2° supinated, 1.3° internally rotated versus 0.2° externally rotated. And relative to the cuneiform, the first metatarsal moved 0.21mm versus 0.49mm medially, 0.22mm versus 1.00mm distally and elevated 0.29mm versus 1.02mm. All these difference were significant ( $P < 0.05$ ). Conclusion: During weight-loading process, the first metatarsal-cuneiform joint in hallux valgus feet presents more dorsiflexed and supinated but less rotation about the vertical axis compared with normal feet. The metatarsal moves more medially, distally and elevates more relative to the cuneiform in hallux valgus feet.

**Abstract No.: 40382**

**PATHOANATOMY OF POSTERIOR MALLEOLAR FRACTURES ASSOCIATED WITH PILON FRACTURES**

Dan Jin, Shijuan Xie

It is known that the posterior malleolar fracture (PMF) is often associated with pilon fracture. Thus, we conducted a computed tomographic study to clarify the pathologic anatomy of the PMF in pilon fracture. A total of 42 pilon fractures were studied to analyze PMFs between Jan.2010 and Dec.2014, CT scan was routinely performed in the ankle region preoperatively, whereas the pilon fracture was found in the primary plain X-ray films. We reviewed the patients' CT scans to determine (1)The cross angle( $\alpha$ ):the angle between the major fracture line of the posterior malleolus and the bimalleolar axis on the transverse image.(2)The sagittal angle( $\beta$ ):the angle between the major fracture line of the posterior malleolus and the horizontal line on the sagittal image.(3)The fragment area ratio ( FAR) :the ratio of the posterior fragment area to the total cross- sectional area of the tibial plafond. Based on the definition of the PMF, 29 cases were brought into this study. And the PMF was described with a mean  $\alpha$  of  $35.7^\circ$ , a mean  $\beta$  of  $85.0^\circ$ , a mean FAR of 30.4%. Pilon fracture of the distal tibia commonly always has an associated PMF. CT scan of the ankle joint for a pilon fracture is needed. Although the PMFs size appear to be highly variable, most of the PMFs were located on the posterolateral of the distal tibia, and showed features with vertical to the ground. Most of PMFs need operation and fixation treatment.

**Abstract No.: 40384**

**THE CONSTRUCTION AND STABILITY AFFECTING FACTORS ANALYSIS OF FINITE ELEMENT MODELS OF POSTERIOR MALLEOLAR FRACTURE AND POSTERIOR PILON FRACTURE**

Dan Jin, Su Fu

The purpose of this finite element analysis is to construct the finite element models of posterior malleolar fracture and posterior pilon fracture, and then analysis whether the stability affecting factors proper that fragment height and the ratio of articular surfaced involved when used for both two fracture models. The CT data of ankle obtained from a volunteer was used to make a three-dimensional reconstruction by mimics and geomagic ofware. After the building of three-dimensional finite element model of the ankle with the stimulated ligaments in ANSYS software, the validity of the model was verified. The models of posterior malleolar fracture and posterior pilon fracture in various fragment height and the ratio of articular surfaced involved were cut according to the established methods. The displacements of fragments which reflecting the stability were calculated by finite element analysis and then decided the possible relationship between them and stability. The models of posterior malleolar fracture and posterior pilon fracture were established with a relatively good persistence with the results in previous study. Fragment height and the ratio of articular surfaced involved both affect the fracture stability with a similar trend. Both the relationship in the two models was determined. The models of posterior malleolar fracture and posterior pilon fracture could be constructed persistent with the real model in the previous study. Fragment height and the ratio of articular surfaced involved both affect the fracture stability with a similar trend for posterior malleolar fracture and posterior pilon fracture.

**Abstract No.: 40385**

**COMPARATIVE FINITE ELEMENT ANALYSIS OF FIXATIONS IN POSTERIOR MALLEOLAR FRACTURE**

Dan Jin, Su Fu

The purpose of this finite element analysis is to compare the biomechanical stability of the tube plating, T-plate and screws fixation in posterior malleolar fracture, thus help make a proper clinical choice. The CT data of ankle obtained from a normal male volunteer was used to make a three-dimensional reconstruction by mimics 14.0 and geomagic 2012 software. The model of posterior malleolar fracture was cut from the posteromedial point of tibial to the one-fourth point of the distance from the posterior to the anterior margin in the Solidworks 2012 software. The model of screws, 1/ 4 tube plate and T-plate were also constructed in Solidworks 2012 software. According to the method established in the literature, two screws, 1/ 4 tube plate or T-plate were applied respectively, making up totally three models. Under the same neutral weight bearing, the flexion loading or the external loading, the displacement of fragment, as well as the stress of fracture and fixation were calculated by finite element analysis. Under neutral or external loading, fixation of T-plate caused the smallest fragment displacement. However, the similar displacement was identified in all fixation methods under flexion loading. The plating caused smaller displacement in Z-axis under neutral loading than screws fixation. Under all loading conditions, the stress was not observed as excessively concentrated. T-plate showed a better biomechanical stability than tube plate and screws, while plating reduced the upward displacement than screws. The three fixation all showed no obvious stress concentrating excessively.

**Abstract No.: 40386**

**EVALUATION OF PROGRESSION OF OSSIFICATION OF LIGAMENTUM FLAVUM IN THE THORACIC SPINE USING COMPUTED TOMOGRAPHY**

Zhongqiang Chen, Yan Wang

**Introduction:** The natural history of ossification of ligamentum flavum (OLF) is still unclear. In this study, we examine the progression of thoracic OLF based on cross-sectional computed tomography (CT) comparisons. **Methods:** X-rays and CT scans of 17 patients diagnosed with multiple thoracic OLF who underwent decompressive laminectomy, but the OLF without spinal cord compression being reserved, were retrospectively reviewed (mean follow-up 6.3 years). Canal area unoccupied ratio (CAUR) of reserved OLF was measured using Photoshop. 15 OLF segments were randomized selected for repeated measurement and evaluate the measurement deviation. Factors influencing OLF progression were also analyzed. Two-year follow-up results were assessed to evaluate the influence of OLF progression on long-term outcomes. **Results:** Sixty OLF levels were compared between perioperative and final follow-up CT. The final follow up CAUR was significant lower than the initial in all OLF levels. Repeated measurement was used to reduce the effect of measurement error, and progression of OLF affected approximately 60% of patients and 33% of OLF segments, with the annual growth rate in OLF area of 1.61%. CT mature/immature classification was an independent risk factor for the development of OLF. The increasing kyphotic angle of adjacent levels was 9.112° on average and had no significant effect on the progression of OLF. No patients exhibited neurological deterioration due to OLF progression. **Conclusions:** Thoracic OLF that are not involved in laminectomy still progress, and progression of OLF is not associated with neurologic regression. Preventive laminectomy on OLF segments that do not compress the spinal cord is unnecessary.

**Abstract No.: 40387**

**THE ROLE OF MODERN TECHNOLOGY IN THE TREATMENT OF PATIENTS WITH TROCHANTERIC FRACTURE FRACTURES OF THE FEMUR**

Nurlan Batpenov, Kuanysh Ospanov, Yergali Nabiyev, Birzhan Dosmailov, Nikolay Orlovsky, Muhtar Abilmazhinov

This paper presents the results of treatment of 380 patients with trochanteric fractures of the femur. There were 210(55.3%) men, 170(44.7%) women. The age was from 15 to 90. Operative measure were made in following time period: 30(7,9%) patients had on 1st day, 220(57,9%) had on the 2nd and 4th day, 110(28,9%) had on the 5th and 10th day, 20(5,3%) had later than 10th day. Osteosynthesis was made to 285(75%) senior patients. 98(25,8%) needed the correction of vital organs functions in the preoperative period. 355(93,4%) had proximal femoral nail with blocking, are from different manufacturers («Ch-M», «Osteomed»), 15(3.9%) had dynamic hip screw, 10(2.6%) had dynamic condylar screw as anchor. Long-term results of treatment of 80 patients from 1 to 3 years were observed. We did not observe signs of nonunion, pseudoarthrosis. There were no fatal cases. 72(90%) patients achieved good and satisfactory results. Only 8(10%) patients were observed unsatisfactory result. Consequently, the usage of new technology in the surgical treatment of patients with trochanteric fractures of the femoral bone depends on age, general condition of patients, concomitant diseases, from period after injury and nature of fracture, allows to make stable fixation of bone fragments, make early rehabilitation and to achieve good and satisfactory results in 90% of cases.

**Abstract No.: 40390**

**COMPARATIVE BIOMECHANICAL EVALUATION OF FIXATION METHODS IN POSTERIOR PILON FRACTURES: A FINITE ELEMENT ANALYSIS**

Dan Jin, Su Fu

The unique fracture pattern involved the entire posterior plafond of tibia, described as “posterior pilon fracture (PPF)” has been gradually recognized. However, the clinical management of PPFs remains a controversy with various surgical fixation techniques induced as the screws or tubular plate. There have been no reports regarding the comparison of stability of fixation methods for posterior pilon fractures. Therefore, the displacement and stress of fragment fixed via screws, T-plate and tubular plate were studied by finite element analysis method. A three-dimensional finite element model of normal ankle was established while the PPF model with single fragment were built by cutting the posterior tibial lip parallel to the bimalleolar axis, while the three fixations were established and applied on the unstable model. The peak displacement and stress on bone or fixation system were identified under the loads of neutrality, external rotation and plantar flexion. For PPF with single fragment, the T-plate system was proved superior to screw or tubular plate system in terms of highest displacement of fracture under neutral loading or external rotation loading. For PPF with double fragments, two tubular plates provide the minimum of fracture displacement under neutral loading or external rotation loading. T-plate can be superior to screws and tubular plate in fracture stability for single segment of PPF. In addition, the two tubular plates could be most stable in fixing double segments in PPF, while the medial plating could behave more stable than lateral plating.



**Abstract No.: 40393**

**DISCUSS THE SURGICAL TREATMENT OF UPPER CERVICAL LESION AND THE APPLICATION OF CERVICAL ANTERIOR TITANIUM PLATE IN CERVICAL STABILITY RECONSTRUCTION.**

Jinglong Yan, Ye Ji, Chunyang Xi

Introduction: Review and analyze the data of 7 patients suffering from upper cervical lesion treated by our department including a man and six women; the age range is among 25-67 years old and the average age is 50.3; three patients of them suffering from giant cell tumor of bone, a patient with tuberculosis of bone, a patient with chordoma, a patient with schwannoma and a patient with metastatic adenocarcinoma. Use Frankel and JOA standards to grade of the patients' preoperative and postoperative neurological function. Result: All cases were treated with combined anterior and posterior operation. The average operation time was 9.6 hours, and the average blood loss was 1614ml; the symptoms of the patients improved significantly after operation; 2 patients died because of metastatic tumor; among the 5 living patients, only one patient had tumor recurrence after 1 year after the operation. No internal fixation instability or failure appeared during the follow-up. Cervical anterior titanium plate fixation can provide reliable stability in cervical stability reconstruction after operation and it is in favor of the early recovery of patients.

**Abstract No.: 40396**

**HIGH TIBIAL OSTEOTOMYHTO ( CAN WE DO IT MIS ? )**

Firooz Madadi, Firoozeh Madadi

Based on important current complications of HTO that arise by bone stripping ( lower bone healing potential and significant rate of loss of correction and also infection ) . Since last 24 years almost 1000 HTO by a simple two parts patent of bone supporter we were able to do osteotomy from a stab incision without bone stripping . Then for fixation we had two different choices 1- external fixator 2- walking cast. On June 2010 preliminary report of 413 patient was published in journal of Ortopedics , with zero percent of infection and only 4 loss of correction. Population of external fixators who we could find them for follow up were no more than 89 patients with again zero percent of surgical site infection , and only one loss of correction. Conclusion : MIS HTO can be a relative good solution of complications like infection / loss of correction .

**Abstract No.: 40397**

**EQUAL CONTRIBUTIONS AND CREDIT: AN EMERGING TREND IN THE CHARACTERIZATION OF AUTHORSHIP IN MAJOR SPINE JOURNALS DURING A 10-YEAR PERIOD**

Zhiwei Jia, Yong Tang, Yaohong Wu, Dike Ruan

**Introduction:** The practice of giving certain authors equal credit in scientific publications was increasingly common in some medical specialty. However, whether this trend existed in major spine journals remain unclear. **Methods:** Manual searches were performed to identify original research articles with equally credited authors (ECA) published between 2004 and 2013 in three major spine journals, including Spine, European Spine Journal, and The Spine Journal. The number of authors with ECA and their positions in the byline, total number of authors, year of publication, and country were analyzed. **Results:** The practice of ECA was found in all three journals. Articles with ECA had a greater proportion of the total number of publications in each journal in 2013 versus in 2004 (Spine: 7.2% vs. 0.2%; European Spine Journal: 7.5% vs. 0.0%; and The Spine Journal: 6.2% vs. 0.0%). There was a statistically significant increasing trend in annual proportion of papers with ECA for all three spine journals ( $p < 0.0001$ ). The practice of ECA was applied in nearly every position in the byline, and the first two authors received equal credit in most cases. Articles with ECA were published by authors from various countries and regions around the world. However, none of the three spine journals provided specific guidance on this practice in their instructions to authors. **Conclusion:** The practice of giving authors equal credit in original research articles is increasingly common in major spine journals. A guideline for authors regarding when and how to designate equal credit is warranted in future.

**Abstract No.: 40400**

**QUANTITATIVE ASSESSMENT OF THE IMAGING FEATURE IN THE RESEARCH OF THE ?SELF-LIMITING? IN HIRAYAMA DISEASES**

Jun Yin,

Previous studies demonstrated that the Hirayama diseases may be self-limiting in the 2-4 years after the onset of the diseases. In this study, we try to evaluate the forward-shifting of cervical spinal cord and cervical spinal cord morphological changes of the different cervical spinal segments quantitatively in the patients with different duration of Hirayama diseases to clear whether the Hirayama diseases is self-limiting. This study was performed on 11 normal subjects and 64 patients with Hirayama disease. According to the duration of the disease, the patients are divided into 5 groups. Both cervical flexion MRI and conventional cervical MRI were performed. The distance between the posterior wall of the spinal cord and the posterior wall of the cervical spinal canal (X), the distance between the anterior and posterior wall of the cervical spinal canal (Y), were measured at the different cervical spinal segment from C4 to T1. The degrees of the increased X/Y between the cervical neutral position and cervical flexion position and the cervical flexion X/Y are no different among the 5 group of C4-5, C6-7 and C7-T1 segments ( $P>0.05$ ). The Mean Chart shows this is due to rapid increase of the X/Y during the course of the Hirayama diseases. The degree of the forward-shifting of the cervical spinal cord and abnormal signal after the dura sac will not relieved. The main pathogenic factor of Hirayama disease may not disappear along with the progression of diseases, but will gradually deterioration.

**Abstract No.: 40402**

**WHICH APPROACH HAS BETTER OUTCOME IN TERM OF ANT. KNEE PAIN POST TKA (RCT).**

Firooz Madadi, Firoozeh Madadi

Literature has a known anterior Knee pain entity post TKA in a perhaps wide range of 10 – 31 percent. In our RCT we launched on 52 Bilateral Simultaneous Total Knee arthroplasty , in only classic OA Knees as one session procedures . By sealed envelope double blind method , our approach in one side was sub vastus and on the other side classic technique . We followed the patients for at least one year . We visit them for ROM , Anterior Knee pain and Quadriceps muscles strength ( WOMAC & VAS ) after 3 – 6 and 12 months post surgery . Conclusion by P . Value of 0.001 at last follow up shows no difference in term of Anterior Knee pain , But two VMO atrophy in sub vastus group

**Abstract No.: 40403**

**MANAGEMENT OF STAGE I AND II A/B AVASCULAR NECROSIS OF FEMORAL HEAD WITH CORE DECOMPRESSION- AUTOLOGOUS CANCELLOUS BONE GRAFTING AND PLATELET RICH PLASMA**

Pranav Patel, Dhammapal Bhamare

Avascular necrosis of the femoral head is a progressive disease that generally affects patients in the third through fifth decades of life. Treatments range from simple decompression of the femoral head, to free bone grafting, or by using a vascularized fibular graft with varying degree of success. In most instances the disease progresses further and joint goes into secondary arthritis. We present a study of management of early stage AVN (stage I & II A/B of Ficat Arlet classification) with above procedure. Aims: evaluate the results of above modality in management of AVN of hip. Materials and methods: This prospective study was done in 30 patients. They were followed up for 1 year and results were evaluated on the basis of progression or remission of the disease by radiographic studies, pre and post-operative Harris Hip Score (HHS). Results: show males were more affected than females and average age group of presentation in stage I and II was 29 yrs (22-55). Average pre-op HHS was 61 and post-op HHS was 82. 60% (18) showed remission of the disease (Radiographically) compared to pre-op stage at 1 year follow up, in 30% (9) disease did not progress further and 10% (3) progressed despite the above treatment and required arthroplasty. Conclusion: management of stage I and II A/B AVN of femoral head showed good to satisfactory results in terms of disease remission and prevention of further progress of disease by the above method at 1 year follow up. Further follow-up is awaited.

**Abstract No.: 40404**

**SAFE ZONE OF POSTERIOR SCREW INSERTION FOR TALAR NECK FRACTURES**

Dan Jin, Shenghui Ma

Probable screw violation of the posterior calcaneal articular surface, the tarsal canal and the sinus tarsi is the main limitation of posterior screw insertion for talar neck fractures. Safe passage for screw fixation posteriorly has not been rigorously defined. CT data of 5 normal feet were digitally reconstructed in 3-D; 4.0-mm-diameter screws were simulated from the lateral tubercle of the posterior process of the talus to the talar head. The range of screw paths trajectories and screw lengths at 9 locations (10%, 20%... 90% of talar width) that did not breach the cortex of the talus were evaluated. For each talus, the safe zone was mainly between the 30% location and the 60% location; the width of each safe zone was  $13.56 \pm 1.41$  degrees; the maximum height of each safe zone was  $7.76 \pm 1.24$  degrees. The mixed safe zone was between the 50% location and the 60% location, range from 7.10 to 9.84 degrees upward at the 50% location and from 5.17 to 8.72 degrees upward at the 60% location. The screw length was  $48.84 \pm 2.40$  mm. The safe zone of posterior screw fixation have been defined applying to most talus, assuming the fractures are well reduced: screws, approximately 45 mm in length, should be inserted from the lateral tubercle of the posterior process to the area near the center of the mixed safe zone (7.4 degrees outward and 7.8 degrees upward).

**Abstract No.: 40411**

**UNIPOLAR VERSUS BIPOLAR HEMIARTHROPLASTY FOR DISPLACED FEMORAL NECK FRACTURES: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS**

Zhiwei Jia, Yaohong Wu, Fan Ding, Dike Ruan

**Introduction:** Whether bipolar hemiarthroplasty (BH) for displaced femoral neck fractures has benefit over unipolar hemiarthroplasty (UH) remains controversial. We conducted a systematic review and meta-analysis of randomized controlled trials (RCTs) to evaluate the relative effects between BH and UH. **Methods:** A systematic literature search (up to April, 2014) was conducted to include RCTs comparing BH with UH for displaced femoral neck fractures. Two authors independently assessed methodological quality of the included studies and extracted data. Surgical information and postoperative outcomes were analyzed. **Results:** A total of 10 RCTs including 1190 patients were indentified. Our results demonstrated that BH was associated with similar or better outcomes in hip function, hip pain and quality of life while with a higher cost compared with UH. Moreover, there were no significant differences between BH and UH with regard to operation time, blood loss, blood transfusion, hospital stay, mortality, reoperation, dislocation and complications. BH could significantly decrease the incidence of acetabular erosion at 1 year follow-up compared with UH (RR=0.24, 95% CI=0.06 to 0.89, P=0.03), but no significant difference was observed at 4 months, 2 years and 4 years follow-ups. **Conclusions:** Based on the current evidence, BH is not superior to UH in terms of surgical information and postoperative results. Despite similar or better clinical outcomes compared with UH, BH with a higher cost could not decrease long-term acetabular erosion rate.



**Abstract No.: 40412**

**DOES PATELLAR EVERSION DURING TOTAL KNEE ARTHROPLASTY IMPAIR CLINICAL OUTCOMES? A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS**

Zhiwei Jia, Chun Chen, Dike Ruan

**Introduction:** Minimally invasive surgery (MIS) has been widely performed in total knee arthroplasty (TKA). Multiple surgical techniques in MIS TKA are associated with clinical differences. However, whether patellar eversion (PE) could impair clinical outcomes remains controversial. We conducted a systematic review to include all available randomized controlled trials (RCTs) and to provide current understanding on this topic. **Methods:** A literature search was performed in the databases of Pubmed, Embase and Cochrane library. RCTs comparing PE with patellar noneversion (PN) were included. Two reviewers independently selected the studies, assess methodological quality and extracted data. **Results:** A total of five RCTs with 379 knees were included in this systematic review. The results showed that there were no significant differences in functional scores, pain, quality of life, quadriceps strength, patellar height, alignment, hospital stay and complications between PE and PN. **Conclusions:** Based on the current evidence, PE during TKA could not definitely lead to inferior postoperative outcomes. However, further large sample size, well-designed RCTs are still needed.

**Abstract No.: 40413**

**PROTECTIVE EFFECT OF NEUROPEPTIDE SUBSTANCE P ON BONE MARROW MESENCHYMAL STEM CELLS AGAINST APOPTOSIS INDUCED BY SERUM- DEPRIVATION**

Dan Jin, Su Fu

Substance P (SP) contributes to bone formation by stimulating the proliferation and differentiation of bone marrow stromal cells (BMSCs); however, the possible involved effect of SP on apoptosis induced by serum deprivation (SD) in BMSCs is unclear. To explore the potential protective effect of SP and its mechanism, we investigated the relationships among SP, apoptosis induced by SD, and Wnt signaling in BMSCs. The effects of SP on cell viability and apoptosis were determined using an MTT assay, DAPI staining, cleaved-caspase-3 staining, and an Annexin V-FITC flow cytometric assay. The expression levels of apoptosis-related molecules and mRNA and protein levels of Wnt signaling molecules were examined using qPCR and Western blot analysis. SP exhibited a protective effect, as indicated by a reduction in the apoptotic rate, nuclear condensation, caspase-3 and caspase-9 activation, and the ratio of Bax/Bcl-2 that was observed after 24 h of SD. This protective effect was blocked by the inhibition of Wnt signaling or antagonism of the NK-1 receptor. Moreover, SP promoted the mRNA and protein expression of Wnt signaling molecules such as  $\beta$ -catenin, p-GSK-3 $\beta$ , c-myc, and cyclin D1 in addition to the nuclear translocation of  $\beta$ -catenin, indicating that active Wnt signaling is involved in SP inhibition of apoptosis. Our results revealed that mediated by the NK-1 receptor, SP exerts an inhibitory effect on serum deprivation induced apoptosis in BMSCs that is related to the activation of canonical Wnt signaling.

**Abstract No.: 40414**

**NEUROPEPTIDE SUBSTANCE P IMPROVES OSTEOBLASTIC AND ANGIOGENIC DIFFERENTIATION CAPACITY OF BONE MARROW STEM CELLS IN VITRO**

Dan Jin, Su Fu

Our previous work showed that implanting a sensory nerve or vascular bundle when constructing vascularized and neurotized bone could promote bone osteogenesis in tissue engineering. This phenomenon could be explained by the regulatory function of neuropeptides. Substance P (SP), a neuropeptide released by skeletal sensory neurons, has been demonstrated to contribute to bone growth by stimulating the proliferation and differentiation of bone marrow stem cells (BMSCs). However, there have been no prior studies on the association between Wnt signaling and the mechanism of SP in the context of BMSC differentiation. Past studies have also not addressed the effect of SP on migration and vascular endothelial growth factor (VEGF) expression in BMSCs. The expression levels of VEGF molecules and mRNA and protein levels of Wnt signaling molecules were mainly examined using qPCR and Western blot analysis. Our results have shown that SP could enhance the differentiation of BMSCs by activating gene and protein expression via the Wnt pathway and by translocating  $\beta$ -catenin, which can be inhibited by Wnt signaling blocker Dickkopf-related protein (DKK) treatment or by the NK-1 antagonist. SP could also increase the growth factor level of bone morphogenetic protein-2 (BMP-2). Additionally, SP could enhance the migration ability of BMSCs (detected via a transwell migration test and scratch recovery assay), and the promotion of VEGF expression by SP has been studied. These results indicate that a vascularized and neurotized tissue-engineered construct could be feasible for use in bone tissue engineering strategies.

**Abstract No.: 40415**

**NEUROPEPTIDE Y STIMULATES OSTEOLASTIC DIFFERENTIATION AND VEGF EXPRESSION OF BONE MARROW STEM CELLS IN VITRO**

Dan Jin, Song Liu

NPY is a neuropeptide secreted by sensory nerve fibers that innervate the medullar tissues and vascular canals. However, the effect of NPY on regulating the osteogenic ability of Bone Marrow Stem Cells (BMSCs) still remains controversial and is yet to be completely understood. To explore the osteogenic activity and angiogenic capacity of BMSCs affected by NPY and its mechanism, we investigated the relationships among NPY, osteoblastic differentiation, angiogenesis and canonical Wnt signaling in BMSCs. The regulating effect of NPY on osteoblastic differentiation was observed at different concentrations ranging from  $10^{-8}$  to  $10^{-12}$  M while the effect of NPY on protein levels of Wnt signaling were detected using Western blotting. To unravel the underlying mechanism, BMSCs were treated with NPY after the pretreatment of NPY Y1 receptor antagonist or Wnt pathway antagonist DKK1, and gene expression levels of Wnt signaling components as well as osteoblastic differentiation makers were measured by qPCR. Our results have indicated that NPY significantly promoted osteoblastic differentiation of BMSCs in a concentration-dependant manner and up-regulated the protein of  $\beta$ -catenin, p-GSK-3 $\beta$  and the mRNA level of  $\beta$ -catenin. Moreover, NPY promoted the translocation of  $\beta$ -catenin into nucleus. The effects of NPY were inhibited by the NPY Y1 receptor antagonist or DKK1. Additionally, NPY enhanced the migration ability of BMSCs, and promoted vascular endothelial growth factor (VEGF) expression which was studied by immunocytochemical staining, qPCR and Western blotting. These results suggest that NPY may enhance differentiation and angiogenesis of BMSCs via Wnt signaling pathway.

**Abstract No.: 40417**

**SUBSTANCE P PROMOTES BMSCs' EXPRESSION OF BMP - 2 AND WNT PATHWAYS MECHANISM RESEARCH**

Dan Jin, Jun Liu

To explore SP regulation BMSCs' expression of BMP-2 and its time, concentration effect and its relationship with the Wnt signaling pathway. The third passage BMSCs from SD rats were divided into 4 groups according to the stimulator adds: phosphate buffered saline(PBS)(control) , SP (10-8mol/L) , SP (10-10mol/L) , SP (10-12mol/L) ,At 7,14,21 days,observe the cells form and ALP、BMP-2 protein were detected using western blotting. The expression of BMP-2 Protein was assayed by immunohistochemical staining. The third passage BMSCs from SD rats were divided into 3 groups according to the stimulator adds:SP,SP+DKK1(dickkop 1), phosphate buffered saline(PBS)(control). The expression of BMP-2 protein and  $\beta$ -catenin protein were detected using western blotting. At 14 days, the ALP protein was more in SP(10-8 mol/L) group and SP(10-10 mol/L) group than in control group( $P<0.05$ ).At 14、21days,the BMP-2 protein was more in SP(10-8 mol/L) group 、SP(10-10 mol/L) group and SP(10-12 mol/L) group than in control group( $P<0.05$ ).At 7 ,14,21 days,the BMP-2 protein was more in SP group than in SP+DKK1 group and control group( $P<0.05$ ).At 7days,the $\beta$ -catenin protein was more in SP group than in SP+DKK1 group( $P<0.05$ ),but was no more than in control group.At 14,21 days, the,the $\beta$ -catenin protein was more in SP group than in SP+DKK1 group and control group( $P<0.05$ ). SP can promote BMSCs' expression of BMP-2 and SP regulation BMSCs' expression of BMP-2 has time and concentration effect.its may be associated with Wnt signaling pathway.

**Abstract No.: 40418**

**GROWING TREND OF CHINA'S CONTRIBUTION TO THE FIELD OF SPINE: A 10-YEAR SURVEY OF THE LITERATURE**

Zhiwei Jia, Yaohong Wu, Hao Li, Dike Ruan

Introduction: China, as a rapidly developing country with the largest population including over 50000 orthopaedic surgeons, has an increasing importance in the field of spine. However, the quantity and quality of research production in the field of spine in the major regions of China—mainland China, Taiwan, and Hong Kong is unclear. This study aimed to investigate the contribution of China to the field of spine. Methods: Articles published in the 5 major spine journals originating from mainland China, Taiwan and Hong Kong in 2004 to 2013 were retrieved from Web of Science. The basic information was analyzed. Results: There were 1006 publications in spine journals from 2004 to 2013 from China, including 706 from mainland China, 210 from Taiwan, and 90 from Hong Kong. The time trend of the number of articles from these three regions showed an significant increase of 8.74-fold between 2004 and 2013. From 2006, the number of publications from mainland China exceeded Taiwan and Hong Kong. Mainland China had the highest total impact factors and total citations, followed by Taiwan and Hong Kong. Hong Kong had the highest mean impact factor and mean citations, followed by mainland China and Taiwan. The journal Spine published the largest number of articles, followed by European Spine Journal. Conclusions: Chinese contributions to the field of spine have a significant increase during the past 10 years, particularly from mainland China. Hong Kong had the highest quality research output in terms of mean impact factor and mean citation per article.

**Abstract No.: 40420**

**SUBSTANCE P AND VASCULAR ENDOTHELIAL GROWTH FACTOR EXPRESSION OF BONE MARROW STROMAL CELLS AND WNT/ $\beta$ -CATENIN SIGNALING PATHWAY**

Dan Jin, Shang-Chong Wang

To explore the effect of substance P(SP) on the expression of vascular endothelial growth factor(VEGF) in bone marrow stromal stem cells(BMSCs) and its mechanism associated with Wnt/ $\beta$ -catenin signaling pathway. Rat BMSCs were harvested and then induced to osteogenic differentiation dividing into four groups that various concentrations of SP were added: control group, 10-8mol/L SP, 10-10mol/L SP and 10-12mol/L SP. At differentiation durations of 7, 14 and 21 days, the expression of VEGF was assayed by immunohistochemical staining and western blotting. Then, BMSCs during osteogenic differentiation were divided into 3 groups: control group, SP and SP+Wnt pathway antagonist DKK1. At 7, 14 and 21 days, the expression of VEGF protein and  $\beta$ -catenin protein were detected using western blot. The expression of VEGF was significantly elevated by SP treatment compared with control group in a timing-dependent and concentration-dependent manner by the results revealed by western blot. Also, immunohistochemical staining showed the similar trend in SP treatment group revealing the VEGF exerted in the BMSCs. The following results illustrated the expression of protein VEGF and  $\beta$ -catenin were both significantly higher in SP group than control group, while significantly lower in SP+DKK1 group than SP group. SP promotes the expression of VEGF protein in BMSCs, while Wnt/ $\beta$ -catenin signaling pathway may play an important role in this process.

**Abstract No.: 40422**

**RECONSTRUCTION OF FORE-FOOT MINOR SOFT-TISSUE DEFECT WITH THE GREAT TOE FIBULAR ISLAND FLAP**

Yong Hu, Zeng-Tao Wang, Yang Wang, Zhengxun Li, Zheng Huang, Ruilin Cheng, Wenpeng Xu

**Objective:** It has been a crucial challenge for the restoration of the fore-foot soft tissue defect in clinical work. Although a variety of flaps are presented, the recovery of the donor site and recipient site is not satisfied. We present the great toe fibular island flap to restore the fore-foot defect, which is a feasible method to solve the two problems at the same time. **Methods:** This study includes two parts, anatomical study and clinical implementation. In the anatomical study, we observed the blood supplies of the great toes in 40 feet specimens ( 20 bodies) after the specimens perfused with lead oxide plus gelatin. And in the clinical implementation, we have completed 43 cases of the restoration of different fore-foot soft tissue defect by great toe fibular island flap. **Results:** Though anatomy research we find that the great toe fibular island flap is supplied by the first plantar digital artery, and contains plantar digital intrinsic nerve. The first plantar digital artery originates from the first dorsal metatarsal artery or the first plantar metatarsal artery from the first toe-web region. The origin and course of the artery is constant, whose pedicle has a certain range of rotating. In the clinical work, all flaps survived, and the feeling of the recipient site recovered well. **Conclusion:** The restoration of fore-foot soft tissue defect by the great toe fibular island flap is a good method, which has many advantages, such as flap wear-resisting, innervation, constant anatomical position, and concealed donor site.



**Abstract No.: 40425**

**APPLICATION OF LATERAL TASAL ARTERY FLAP IN REPAIRING HAND AND FOOT CUTANEOUS DEFECTS**

Yong HU, Zhengxun Li, Yang Wang, Zheng Huang, Wenpeng Xu, Ruilin Cheng

Objective: To explore method of defect coverage and sensory restoration in repairing hand and foot cutaneous defect. Methods: Cutaneous defect on hand or foot were covered by a retrograde flap which pedicled on dorsal pedal artery and centered at perforating site of cutaneous branch of lateral tarsal artery. The accessory lateral dorsal cutaneous nerve of foot was inosculated with plantar metatarsal nerve in repairing defect on foot, or inosculated with superficial radial nerve in repairing defect on hand. Donor site defect on lateral foot was covered with full thickness skin from fold inguen by method of dermatoplasty. Results: Both lateral tasal artery flap and transplanted skin of 51 treated patients all survived, with satisfying sensory and profile, no needing subsequent reshaping. Conclusion: In cutaneous defect coverage, neurosensory lateral tasal artery flap is recommended for its advantages of thinness, nerve innervated, and constant anatomical position etc.

**Abstract No.: 40428**

**X-FIT: A NOVEL NECK PRESERVING STEM ? EARLY CLINICAL RESULTS AND ROM SIMULATION**

Francesco Falez, Gianluca Mazzotta, Luca Marega, Piero Budassi, Alessandro Massé

X-Fit is an uncemented neck-preserving stem designed to maximize bone preservation through a X-shaped grooved cross-section (offering also torsional stability) and a low-invasive metaphyseal profile. Herewith we present the results of two studies. A pre-clinical study (computational simulation) assessed the influence of the head dimension and the neck resection level on the ROM. Five joint models were created: intact hip joint, standard primary hip stem, stem with total (sub-capital) and partial (mid 50% and high 75%) neck preservation. For each model maximum angular ranges were measured for basic rotations and high-subluxation-risk daily activities. A running prospective multicenter clinical study, EC-approved, evaluates the radiological and functional performances of X-Fit targeting 100 cases. The HHS is used to measure outcomes at different timepoints. At present 57 cases have been enrolled, with average patient age 54,9 years, most frequent diagnosis was primary coxarthrosis. Pre-clinical simulation proved that: mid-to-high neck preservation allows a higher ROM than intact femur and comparable to primary THA; total neck preservation reduced ROM; femoral head diameter had very limited influence on ROM. The average HHS motion values are aligned to those numerically generated. The 57 cases have an average follow-up of 16 months, the average HHS grew from 45,6 pre-op to 94,7 12 months post-op. The X-ray assessment does not show any radiolucency. 6 neck microfracture (cabled) were reported intra-op. No revisions occurred. Our studies support X-Fit design rationale and the short term follow-up looks clinically promising; a longer follow-up is required to support its mid-term outcomes.

**Abstract No.: 40429**

**DISC GENE THERAPY: DEVELOPMENT OF A NOVEL INDUCIBLE SYSTEM TO REGULATE EXPRESSION OF THE THERAPEUTIC TRANSGENE TIMP1**

Wenjun Wang,

Introduction: We successfully developed a new gene therapy recombinant adeno-associated viral (rAAV) vector, rAAV-NF- $\kappa$ B-hTIMP1. To test out hypothesis that rabbit annulus fibrosis cells transfected with rAAV-NF- $\kappa$ B-hTIMP1 will not express high level of hTIMP1 unless stimulated with the pro-inflammatory cytokine IL-1b. Methods: Cultured Rabbit annulus fibrosis (rAF) cells were divided into six groups; "Control" (cell only); "rAAV-CMV-hTIMP1(cells transfected with AAV-CMV-hTIMP1 plasmid DNA)" and "rAAV-NF $\kappa$ B-hTIMP1(cells transfected with AAV-NF $\kappa$ B-hTIMP1 plasmid DNA)" treated with and without IL-1b. The transfection efficiency was estimated using a CMV-GFP construct, and NF- $\kappa$ B activation after IL-1b stimulation was verified by NF- $\kappa$ B nuclear translocation. Production of hTIMP1 was determined by ELISA and RT-PCR. MMP activity assay was measured by following cleavage of a fluorogenic substrate. Results: The estimated transfection efficiency was over 50% and the NF- $\kappa$ B activation after IL-1b stimulation was almost 100%. RT-PCR analysis demonstrated that the level of hTIMP1 transcription from cells transfected with rAAV-NF $\kappa$ B-hTIMP1 construct was greater than in the IL-1b stimulated condition compared to unstimulated control. ELISA assay showed 5 fold greater hTIMP1 concentration in rAAV-NF $\kappa$ B-hTIMP1 group stimulated with IL-1b than unstimulated cells. Cells transfected with rAAV-CMV-hTIMP1 always produced high levels of hTIMP1 protein. the level of MMP activity was decreased compared to baseline levels or cells exposed to IL-1. Conclusion: This novel construct represents a feasible inducible system of transgene delivery and is unique in that the induction of the transgene is not dependent on exogenous treatments, but on endogenous factors that are present only in the cells requiring the gene therapy product.

**Abstract No.: 40430**

**METAL INTOLERANCE IN PATIENTS UNDERGOING ORTHOPEDIC IMPLANT THERAPY**

Stepan Podzimek, Jarmila Prochazkova, Tatjana Janatova, Jana Duskova

Implants are widespread used mainly as orthopedic and dental implants. Although the majority of implants is well accepted, significant minority of implants is not accepted from unclear reasons. In patients in whom other causes of implant failure were excluded it is therefore appropriate to determine if they tolerate the material from which their implant is made. Aim of the study: To minimize the risk of implantation failure after orthopedic surgery in patients with need of reimplantation or in patients with increased risk of implantation failure due to polyvalent allergy. Material and methods: Thirty-eight patients were examined. Every examined patient underwent blood sample collection for Melisa test performance. Results: In this group of patients, intolerance to nickel was the most common (55%). Intolerance to gold was found in 52% of patients, to paladium and chromium in more then 40% of patients, to titanium trichloride in 38% of patients, to iron in 29% of patients, to molybden mand titanium dioxide in 27% of patients, to cobalt in 23% of patients and to zirkonia in 19% of patients. Few case studies will be presented. Conclusion: On the basis of immunologic examination results more suitable implant material from available materials regarding to individual susceptibility of the patient was selected for reimplantation.

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**Abstract No.: 40440**

**TREATMENT OF POLYDACTYLY AND SYNDACTYLYMORE WITH TOE ARTERY FLAP**

Yong Hu, Yang Wang, Ruilin Cheng, Zhengxun Li, Zheng Huang, Wenpeng Xu

Objective: Polydactyly and syndactylymore are a kind of congenital disease, the incidence of which is about 1/2000 in the crowd. There are many methods introduced used to treat the disease, mostly needed skin graft technology, which often brings about big scar on the dorsum and plantar foot, and leave bad appearance. And the traditional flap technique is not better than that of the skin graft. So we designed the toe artery flap to repair the skin defect after toe cloven for polydactyly and syndactylymore. Methods: In this study the author designed the toe artery island flap to repair the skin defect after after toe cloven for polydactyly and syndactylymore. We designed the Z type incision and dorsal rectangular flap to reconstruct one side of the toe, and then designed the toe artery flap of the adjacent toe or ipsilateral toes to repair the skin defect after toe cloven, and direct suture the toe without skin graft. Results: the author used this method to repair 49 cases and toe deformity. In all cases, the deformity gets rectification, and has a deep toe web with natural radian. No flap necrosis and scar contracture occurred. Conclusion: The authors used toe artery flap to repair the soft tissue defect after toe cloven, in which donor and receient sites don't need a skin graft and the donor site can be directly sutured. This method is reliable useful and safe in toe cloven surgical.

**Abstract No.: 40443**

**CLINICAL EFFECT EVALUATION OF PERCUTANEOUS VERTEBROPLASTY COMBINED WITH THE SPINAL EXTERNAL FIXATOR FOR THE TREATMENT OF OSTEOPOROTIC COMPRESSIVE FRACTURES WITH POSTERIOR VERTEBRAL DEFECT**

Wenjun Wang,

**Introduction:** The purpose of this study is to report a new technique and assess clinical outcome of compressive fractures with posterior vertebral defect treated by percutaneous vertebroplasty combined with the spinal external fixator. **Method:** 202 patients (90 males and 112 females), ranging from 61 to 88 years old with the mean age of 71.5 years, underwent surgery for the compressive fractures with posterior vertebral defect by percutaneous vertebroplasty combined with the spinal external fixator. They underwent spinal external fixation firstly to be fixed and restored, then to be carried out percutaneous vertebroplasty (PVP). The mean follow-up was 24 months (range 16-42 months). Spinal canal encroachment, spinal Cobb angle and vertebral body height loss were measured to assess clinical outcome before and after surgery, at the final follow-up. The Visual Analogue Scale (VAS) and Oswestry Disability Index (ODI) were used for pain and functional assessment. In all cases, preoperative and postoperative radiographs and magnetic resonance imaging were obtained. **Results:** The average time of surgery was 85 min (range, 72-110min). The mean blood loss was 10ml (range, 6-12ml) during surgery. The anterior height loss of vertebral body, the spinal canal encroachment and the Cobb angle were significant differences ( $p < 0.05$ ) among them before and after the surgery. Postoperative VAS and Oswestry scores were both significantly different from the preoperative and follow-up ( $p < 0.05$ ). **Conclusion:** The spinal external fixator combined with percutaneous vertebroplasty was a safe and effective method to treat the osteoporotic compressive fractures with posterior vertebral defect.

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**Abstract No.: 40445**

**THE IMPROVEMENT OF TENSILE STRENGTH FOR COATED PEEK AS ARTIFICIAL INTERVERTEBRAL DISC**

Li-Nan Zhang, Ya-Wei Du, Xin Ye, Zeng-Tao Hou, Peng Shang

Objectives: To evaluate the improvement of the shear strength between polyetheretherketone(PEEK) and coated PEEK as prosthetic disc nucleus(PDN). Methods: According to the disc space height, the PEEK samples machined with different thickness were coated with collagen and BMP2. A rabbit model of degenerated disc disease at levels proximal (L5-6) was used, which was approved by the Ethics Committee. Twelve adult female New Zealand rabbits were divided into two groups. After percutaneous nucleotomy, one group was implanted into coated PEEK, and the other group was implanted into uncoated PEEK as control group. After 8 weeks, the rabbits were euthanasia and the proximal vertebral body was removed. The vertebral body was aligned on a fixture, and the maximum force  $F_{max}$  was recorded. Results: Uncoated PEEK in the vertebral body had lower  $F_{max}$  than coated PEEK. Conclusion: The coated PEEK showed the improvement of tensile strength, which indicated that the bonding strength between modified surface and bone tissue was significantly increased.



**Abstract No.: 40459**

**COMPARATIVE ANATOMICAL STUDY AND CLINICAL APPLICATION BETWEEN THE SUBINGUINAL AND ILIOINGUINAL APPROACHES FOR THE TREATMENT OF ACETABULAR FRACTURE**

Xiaodong Qin,

**Object** To compare the anatomical differences between the subinguinal and ilioinguinal approaches for the treatment of acetabular fracture and investigate the clinical application of the subinguinal approach. **Methods** Seven embalmed cadavers were chosen. Comparative study was performed on the same sample. The ilioinguinal approach was selected on the left side and the inguinal approach was chosen on the right side. The lengths and widths of the first window and the iliopsoas freeness were recorded and compared on both sides. Fifteen patients with a mean age of 40.6 years (20-65), of whom 12 were male, were treated with the subinguinal approach. Operative outcomes were followed up during May 2010 to August 2012. Reduction outcomes, radioactive outcomes during followed-up and clinical outcomes were scored by Matta criteria, Matta's X-ray reduction criteria and modified D' Aubigne and Postel clinical scoring. **Results** Compared with the ilioinguinal approach, the subinguinal approach had advantages in increasing the lengths and widths of the first window and the iliopsoas freeness, which were statistically significant ( $P < 0.01$ ). It helped to expose anterior-medialis wall of acetabulum and anterior hip capsule and simplified the surgery. The prognoses of 15 patients with acetabular fracture were good during the follow-up. **Conclusion** Compared with the classic ilioinguinal approach, the subinguinal approach broadens the visualization of the first window and shortens the surgical procedure.

**Abstract No.: 40461**

**AUTOPHAGY PLAYS A PROTECTIVE ROLE IN AGES INDUCED APOPTOSIS IN OSTEOLASTIC MC3T3-E1 CELLS BY REGULATING INTRACELLULAR ROS LEVEL**

Lei Yang, Qin Fu, Yan Li

Advanced glycation end products (AGEs) form and accumulate rapidly under diabetes, and participate in many pathologic progresses of diabetes. Type II diabetic patients with normal bone mineral density (BMD) were still liable to fracture and that might caused by the changes of bone mirco-structure which was another expression of osteoporosis besides low BMD. Interestingly, experiments showed AGEs could induce apoptosis in osteoblasts which can only explained the low BMD. Autophagy, interacting closely with apoptosis, is considered as both survival mechanism and a way of cell death. The aim of this study was to observe the change of autophagy in AGE-treated osteoblasts, and to determine whether reactive oxygen species (ROS), a key medium in AGEs-related pathology participates in the regulation of AGEs induced autophagy. Osteoblastic MC3T3-E1 cells were used in the study. Autophagy level was evaluated by detecting the level of LC3B-II, a maker for autophagy using Western blotting and immunofluorescence. Autophagy inducer rapamycin (RA) and inhibitor 3-methyladenine (3-MA), were used to observer the interaction between autophagy and apoptosis as well as the changes in ROS and the mitochondrial membrane potential ( $\Delta\Psi_m$ ). Autophagy was up-regulated in the osteoblastic MC3T3-E1 cells treated with AGEs. Further induction of autophagy with RA decreased the AGE-induced apoptosis, intracellular ROS, and stabilized  $\Delta\Psi_m$ . Inhibition of autophagy with 3-MA showed the opposite effect. N-acetylcysteine (NAC), a ROS inhibitor neutralized the AGEs induced autophagy. Conclusion: Autophagy plays a protective role in AGEs induced apoptosis in osteoblastic MC3T3-E1 cells by regulating intracellular ROS level.

**Abstract No.: 40463**

**TRAUMATIC BUCKET-HANDLE TEARS OF BOTH MENISCI WITH ANTERIOR CRUCIATE LIGAMENT INJURY ON THE SAME KNEE - A CASE REPORT**

Lin-Min Yang,

Bucket handle tear of the meniscus is a common knee joint injury and account for about 10% of all reported cases of meniscal injuries. Most of them are unilateral, either medial or lateral, and often associated with various degree of anterior cruciate ligament (ACL) injury. However, both meniscal bucket handle tears on the same knee is very rare, and only cases were reported. We reported a 30-year-old male patient with both bucket handle meniscal tears and anterior cruciate ligament partial tear on the same knee due to a jump from about two meter height. The knee was locked in a slight flexion position. Two monthes after arthroscopic partial menisectomy, the patient reported no more knee pain and the knee regained full range of motion.

**Abstract No.: 40466**

**COMPARISON INTRA-JOINT INJECTION OF CROSSLINKED HYALURONIC ACID HYDROGEL /  
DEXAMETHASONE WITH HYALURONIC ACID HYDROGEL ALONE FOR OA TREATMENT**

Zhiwei Zhang, Xiaochun Wei, Li Guo, Yu Zhao, Ziquan Yang, Lei Wei

**Objective:** To compare the treatment effects of crosslinked hyaluronic acid (HA) gel with/without dexamethasone (Dex) on surgery-induced osteoarthritic models in rats. **Methods:** Male 2-month-old rats were randomly divided into three groups (n=10/per group): 1) ACL transection (ACLT)+Saline; 2) ACLT+HA gel; 3) ACLT+HA gel +Dex (BioRegen Biomedical Inc.). Intra-joint injections were performed 4 weeks after ACLT on the right knee. All animals were killed at 3 months after surgery. The treatment effects of HA gel with/without Dex were measured by X-ray, Indian ink staining, Safranin-O/Fast Green staining, Immunohistochemistry and RT-PCR. **Result:** X-ray indicated the joint space of injection group with HA gel+Dex was wider than the injection group with HA gel or saline alone. HA gel+Dex group had less Indian ink staining (indication of cartilage fibrillation) than only HA gel or saline injection group alone. Safranin-O/Fast Green staining indicated that more PG staining and less cartilage damage was found in the animals treated with HA gel + Dex compared with HA gel or saline injection group alone. OARSI scores of histology quantity changes from saline, HA gel, and HA gel + Dex were  $5.75 \pm 0.29$ ,  $4.5 \pm 0.20$ ,  $2.62 \pm 0.19$  ( $p < 0.05$ ) respectively. A strong staining of COLII was found in the HA gel+Dex group compared with other two groups. Similar results were found for the mRNA levels of Col II, Col X and MMP-13. **Conclusion:** HA gel treatment alone didn't prevent OA pathogenesis process. HA gel+Dex has a chondroprotective effects in rat OA models. It is able to delay or reduce the severity of OA development.

**Abstract No.: 40469**

**ADENOVIRUS-DELIVERED PDCD5 COUNTERACTION ADRIAMYCIN RESISTANCE OF OSTEOSARCOMA CELLS THROUGH ENHANCING APOPTOSIS AND INHIBITING PGP**

Hui Zhao, Junlin Zhou, Yihan Li, Tie Lu

In the present study, we investigated the roles of PDCD5 (programmed cell death 5) in multidrug resistance (MDR) osteosarcoma cells and the possible lurking mechanisms. We constructed the adenovirus expression vector of PDCD5 and transfected it into human Adriamycin-resistant osteosarcoma cell line Saos-2/ADM. We observed that up-regulation of PDCD5 could significantly enhance the sensitivity of Saos-2/ADM cells towards Vincristine, Methotrexate, Cisplatin and Arsenic Trioxide (As<sub>2</sub>O<sub>3</sub>), and could decrease the capacity of cells to efflux Adriamycin. What's more, the results show that PDCD5 could significantly down regulate the expression of P-glycoprotein (Pgp), but not affect the expression of multidrug resistance associated protein (MRP) or the glutathione S-transferase (GST). PDCD5 was also able to significantly increase the apoptotic activity of modified osteosarcoma cells. Further study of the biological functions of PDCD5 might be helpful in the understanding of the mechanisms of multidrug resistance (MDR) in osteosarcoma and exploring PDCD5 based adjuvant genetic therapy.

**Abstract No.: 40474**

**INFLUENCING FACTORS OF EFFECT FOR PROXIMAL HUMERAL FRACTURES TREATED WITH LOCKING-PLATE FIXATION IN THE ELDERLY**

Kang-Quan Zhao, Bin Pi

**Objective** To analyze the influencing factors affecting curative effect of locking plate fixation on the proximal humeral fractures in the elderly. **Methods** A retrospective analysis was done for the 42 integrate elderly cases of proximal humeral fractures who had been treated from January 2011 to August 2013. There were 16 males and 26 females. The patients ranged from 60 to 78 years old, with an average age of 70.2 years. **Results** They were followed up for a mean time of 20.6(12 to 33)months. The average Constant score was 79.1(33 to 91). Shoulder joint function had a significant correlation with fracture type, time interval from injury, position of the plate and the varus of the neck-shaft angle. There were no significant difference regarding gender, associated injury and the time to begin exercise after operation. **Conclusion** Fracture type, time interval from injury, position of the plate and the varus of the collodiaphyseal angle were key factors affecting the shoulder function after operation.

**Abstract No.: 40476**

**RELATIVE BENEFIT-RISK COMPARING DICLOFENAC TO IBUPROFEN IN PATIENTS WITH OSTEOARTHRITIS (OA): A COMPARISON FROM TWO NETWORK META-ANALYSES (NMAS) OF RANDOMIZED CLINICAL TRIALS (RCTS)**

Ricardo Chaves, Andrew Moore, Shaloo Pandhi, Richard Nixon, Patricia Guyot, Andreas Karabis

There is argument over benefits and risks of NSAIDs for treating chronic musculoskeletal pain. We compared efficacy and tolerability results obtained from two new discrete NMAs for diclofenac and ibuprofen: (1) systematic literature review (SLR) using Medline/EMBASE/Cochrane (up to 06/2013), which included 176 RCTs (160 double-blind) with 146,524 patients with arthritis; (2) NMA of all 19 RCTs (18 double-blind) from Novartis' archives conducted between 1982 and 1999 (legacy studies [LS]) including 5030 patients with OA. For pain relief at 12 weeks, measured as change from baseline (CFB) on visual analogue scale, diclofenac 150mg/day was likely to be better than ibuprofen 2400mg/day (the difference in CFB [95%CrI] in SLR NMA: -4.5mm [-11.5; 2.4]; in LS NMA: -3.1mm [-8.1; 1.8]). Diclofenac 100mg/day was comparable to ibuprofen 2400mg/day for pain relief in both NMAs. For patient global assessment CFB at 12 weeks, diclofenac 75-150mg/day was likely to be better than ibuprofen 1200-2400mg/day in the SLR NMA. In the LS NMA, diclofenac 150mg/day was likely to be better than ibuprofen 1200mg and 2400mg/day, and diclofenac 100mg/day was comparable to ibuprofen 2400mg/day and likely to be better than ibuprofen 1200mg/day. Withdrawal due to all causes of diclofenac was found lower than with ibuprofen in the SLR NMA. In the LS NMA, both diclofenac 100 and 150mg/day were found comparable to ibuprofen 1200 and 2400mg/day. Both NMAs indicate that the benefit-risk profile of diclofenac is comparable to ibuprofen in patients with OA. Potential advantages of each compound need consideration in clinical decision making.

**Abstract No.: 40487**

**MORBIDITY ASSOCIATED WITH EXTERNAL FIXATION OF ANKLE FRACTURES**

Daniel Thurston, Katerina Peleki, Rajpal Nandra, Pantelis Tsantanis, Bardia Barimani, Seyed Ashgar Ali, Paul Fenton

Introduction: Early definitive open reduction & internal fixation (ORIF) may reduce morbidity following ankle fracture. However ORIF is not always possible due to tissue oedema, open injury, or complex fracture/dislocation, and external fixation (EF) may be utilised to maintain talar congruity until definitive fixation. We investigated the incidence of EF-related complications, time to definitive fixation and radiographic & clinical outcomes following ankle fracture. Method: Observational study involving retrospective analysis of consecutive ankle fractures treated with EF in a single trauma centre over a four-year period. Data collected included basic demographics, fracture personality, clinical and radiographic outcomes. Results: 66 patients identified (mean age 55.5 years, 1:1 M:F ratio). Mean follow-up time was 8 months (range 1-44). Injuries included: unimalleolar (10.6%), bimalleolar (43.8%), trimalleolar (45.3%) and open (10.6%) injuries (Gustilo I-IIIb). Mean time to ex-fix of 2.5 days. 72.7% of patients underwent ORIF at mean time of 10 days post initial surgery, with 15.2% treated definitively with EF. Mean length of admission was 28 days. Infections included: 16.6% pin site, 24.2% superficial and 6% deep tissue. Non-union rate was 13.6%. Adjustment of EF was required in 37.5% of patients. Radiograph analysis showed 87.8% incidence of talar shift, with mean improvement post-fixation in medial clear space (MCS) of 1.6mm. Talar tilt and talocrural angle showed 12.6% and 5.6% improvement respectively. Conclusion: External fixation has a role in the management of complex ankle fractures where immediate definitive fixation is not feasible. Patients should be made aware of prolonged hospital stay and potential wound complications.



**Abstract No.: 40488**

**EXTERNAL FIXATION IN ANKLE FRACTURES: USE OF VENOUS THROMBOEMBOLISM PROPHYLAXIS & INCIDENCE OF THROMBOEMBOLIC EVENTS**

Daniel Thurston, Pantelis Tsantanis, Katerina Peleki, Bardia Barimani, Rajpal Nandra, Paul Fenton, Seyed Ashgar Ali

Introduction: Temporary external fixation (EF) of ankle fractures is often used to maintain talar congruity when definitive fixation is not immediately possible, due to soft tissue oedema, open injury or complex fracture/dislocation. EF however is associated with reduced mobility & prolonged hospital admission, risk factors for venous thromboembolism (VTE). We investigated the use of VTE prophylaxis, as well as the incidence of Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE) in patients treated with EF. Method: Observational study involving retrospective analysis of consecutive ankle fractures treated with EF in a single trauma centre over a four-year period. Data collected included basic demographics, fracture personality, use of VTE prophylaxis on admission & discharge and incidence of DVT / PE. Results: 66 patients identified (mean age 55.5 years, 1:1 M:F ratio). Mean follow-up time was 8 months (range 1-44). Injuries included: unimalleolar (10.6%), bimalleolar (43.8%), trimalleolar (45.3%) and open (10.6%) injuries (Gustilo I-IIIb). Mean time to ex-fix of 2.5 days. 72.7% of patients underwent definitive fixation at mean time of 10 days post initial surgery, with 13.6% treated definitively with EF. Mean length of admission was 28 days. 93.9% of patients were commenced on enoxaparin and 84.8% were fitted with anti-embolic stockings on admission. 27.3% of patients were discharged home with enoxaparin, 4.5% with anti-embolic stockings. Incidence of DVT was zero. 1 patient (1.5%) diagnosed with PE. Conclusion: External fixation of ankle fracture & associated reduced mobility increases risk of VTE; this can be prevented by ensuring appropriate VTE prophylaxis is prescribed.

**Abstract No.: 40489**

**RE-OPERATIONS FOR RECURRENT PRIMARY MALIGNANCIES OF THORACIC SPINE**

Dadi Jin, Haomiao Li, Binsheng Yu

**Objectives:** By reviewing the experience of re-operations for recurrent primary malignancies of thoracic spine to identify the key surgical techniques and the optimum treatment algorithm.

**Methods:** Sixteen cases of postoperative recurrent primary malignancies of thoracic spine were subject to surgical treatment between November 2009 and November 2014. The pathological diagnoses were 4 cases of chondrosarcoma, 3 cases of osteosarcoma, 3 cases of malignant peripheral nerve sheath tumor, 3 cases of angiosarcoma, 2 cases of aggressive osteoblastoma, 1 case of low degree malignant angioendothelioma. Surgical procedures included 4 cases of en-bloc resection, 7 cases of piecemeal excision, and 5 cases of palliative decompression. The postoperative treatments included 5 cases of simple chemotherapy, 4 cases of simple radiotherapy, and 5 cases of combined chemo-radiotherapy. **Results:** After the re-operations, pain was relieved in 14 cases and neurological function was improved in 11 cases. All cases had been following up for  $15.44 \pm 9.06$  months, and the mean survival time was  $20.98 \pm 2.92$  months. As the main cause of death, distant metastasis was diagnosed in 2 cases preoperatively and in 3 cases postoperatively. **Conclusion:** Although wide resection with tumor-free margin could rarely be performed in the re-operations for recurrent primary malignancies of thoracic spine, optimum surgical margin still could be achieved due to preoperative elaborative design and carefully operating. The adjuvant radiotherapy should be administered readily for the cases with high sensibility or highly risky in resection.

**Abstract No.: 40492**

**ELECTRIC VITAMINS - REDOX CURRENTS IN THE TREATMENT OF PATIENTS WITH FRACTURES OF THE DISTAL RADIUS- COMPLICATIONS OF NEUROPATHY OF THE MEDIAN NERVE**

Andrey Kopylov,

INTRODUCTION: Roller Massager Redox by mechanical and physico-chemical action has a positive effect on the microcirculation and neuro-trophic disorders of the upper limb in patients with fractures of the distal radius, complicated by neuropathy of the median nerve. METHODS: From 2012 to 2013, the specialists of the Nizhny Novgorod Traumatology and Orthopedics Research Institute observed 50 patients with wrong accrete fracture of the distal radius, complicated post-traumatic neuropathy of the median nerve (group 1 - 20 patients without the use of redox currents and Group 2 - 30 patients using the massager Redox). All patients was performed osteosynthesis of the distal radius volar plate LCP with neurolysis of the median nerve. Postoperatively, they received physiotherapy with complex medical gymnastics standard protocol. RESULTS: All patients anketirovalis based on non-equilibrium point evaluation system with mandatory implementation electroneuromyography. In group 1 patients had improvement in the average of the functional state of the upper limb from 56% to 84%, and in the 2nd group - from 54% to 92%. Dynamics of indicators of motor and sensory electroneuromyography patients who received electrical vitamins Redox in the postoperative period was significantly better than in patients without the use of redox currents.

**Abstract No.: 40493**

**LIGAMENTEUS BONY AVULSION AROUND THE KNEE**

Hisham Elkady, Maysara Abdelhalim Bayoumy

The knee is the largest joint in the human body , is the most vulnerable for injury ,and so it is protected by a huge amount of collagen condensations forming very strong ligaments ,tendons ,retinaculae , and capsule. In the sagittal plane we have the ACL , PCL , Patellar tendon , and the quadriceps tendon. In the coronal plane we have the MCL , LCL , Biceps tendon , Popliteofibular ligament and the Iliotibial band . Ligamentous bony avulsions occur after injury in children and adolescents as the ligaments are strongly attached to the perichondrium and also occur in adults when there is relative osteopenia at the ligament attachment sites. A large variety of ligamentous bony avulsions inside and around the knee will be discussed , as well as their different mechanisms of injury , operative fixation modalities and postoperative rehabilitations. Special attention is given to ACL avulsion from tibial side , PCL avulsion from tibial side ,and PLC avulsion at the arcuate fibular head fracture. Also patellar tendon avulsion from tibial tuberosity , quadriceps tendon avulsion in transverse fracture patella , popliteus tendon bony avulsion , capsular Segond bony avulsion , and iliotibial band avulsion at Gerdy`s tubercle will be demonstrated.

**Abstract No.: 40496**

**TRIPLE BIPEDICULAR LUMBAR FRACTURE. A CASE REPORT**

Amine Touhami, Fz Messabis, Mourad Hamidani

Bipedicular lumbar fractures are rare. Triple bipedicular fractures are exceptional. In our case it occurred in a 56 years patient following a crisis of epilepsy during sleep. Neurological examination was unremarkable apart some tingling in extremities. Xrays, Ct Scan and MRI were done : there were bipedicular fracture of L3, L4 and L5. The cord and nerve were not injured. The patient was operated three days after the accident after having done a full review because he had a cardiopathy, he was diabetic, hypertensive and epileptic. In the operating room, the reduction of the displacement was not possible on a regular table so he was put on a traction table (COTREL) so we obtained a better but not complete reduction. We did a construct from L2 to S1 and we reduced progressively the residual displacement by screwing from up to down using radioscopy. We intend to do a longer construct from T12 to S2 but during surgery haemodynamic state of the patient was not good and the anaesthetist asked us to not do more. In post operative the patient was ok but the neurological examination detected decreased muscle strength on L3 territory. The patient leaves the hospital one week later with a better neurological status. But 2 days later he had a deep wound infection that needed 2 operations of debridement under general anesthesia. Unfortunately he had 1 week later a pulmonary embolism that was lethal for him.

**Abstract No.: 40507**

**OSTEOPOROTIC VERTEBRAL FRACTURES DIAGNOSED AT VARIOUS LEVELS- USING THE TELIPARATIDE IN THE TREATMENT OF THE FRACTURES DURING THE PERIOD 2004-2014. STUDY OF 175 CASES: VALUATION AND RESULTS**

Juan Moreno Rivelles, Damian Mifsut Miedes

**OBJECTIVE:** Valoration of the drug associated to orthopaedic stabilization of the spine in each case and tracking of each patient during 18-24 months, for value the analgesic power and the restructuring of the fracture callus and possible difficulties. **METHODS:** Valuation of the parameters: age, history of previous fractures, associated treatments that affect to the trabecular bone structure, independence evaluation previous of the fracture, analgesic power of the drug, and state at the end of treatment in their incorporation into their daily lifes. We did medical tests through: RX, bone densitometry, TAC, bone scintigraphy, analysis at the start, 6, 12, 18 and 24 months. We put to every patients dynamic thoracolumbar orthosis. **RESULTS and CONCLUSIONS:** 175 vertebral fractures: Female: 147 - Male: 28; Level of affectation of fractures: 1: 58 - 2: 67 - 3: 32 - 4:18; Age: 50-60 years: 60 - 61-70 years: 72 - 71-80 years: 43; Types of fractures (compression): 0-25%: 25 - 25%: 37 - 25-50%: 48 - 50-75%: 45 - >75%: 20; From 9 months we observed trabecular remodeling without perceiving more compression of the fractures. Table pain has decreased from 6 months. Using the teliparatide were removed medicines associated (analgesics, opioids, antiinflammatory, and anxiolytics). Control-Rx and additional tests at 12,18 and 24 months show that there are not associated fractures. There are not differences between age of patients and injuries, when you rate the administration, tolerance and drug response of the restructuring of bone callus.

**Abstract No.: 40515**

**PROSPECTIVE RANDOMIZED TRIAL COMPARING THE OUTCOMES OF PEDICLE SCREW FIXATION WITH OR WITHOUT BONE GRAFT IN THE MANAGEMENT OF THORACOLUMBAR BURST FRACTURES**

Aaradhana Jivendra Jha, Bikram Prasad Shrestha, Guru Khanal, Raju Rijal, Rajiv Maharjan, Abhijeet Kunwar, Abhijeet Kunwar

**Background:** Posterior fixation using pedicle screws is an accepted standard method of treatment of thoracolumbar vertebral fractures. Bone graft adjunct is supposed to improve outcomes of pedicle screw fixation. Nevertheless, bone graft supplement is controversial due to conflicting results.

**Purpose:** We conducted prospective randomised clinical trial on 60 patients with thoracolumbar vertebral fractures to ascertain role of bone graft. **Methods:** Sixty patients aged 18-60 years presenting with thoracolumbar vertebral fractures were randomly allocated to treatment with pedicle screw fixation with or without bone graft. Thirty were assigned Group A(with bone graft) and Group B (without bone graft). Clinical and radiological parameters were studied in both groups pre- and post-operatively. These patients were followed up at 2, 6, 12 and 24 weeks. ASIA score, Modified Frankel grade, Visual Analogue Score, Cobb's angle, Anterior Vertebral Height were employed to study the clinical and radiological parameters to compare the outcomes in the two groups. **Results :**The clinical and radiologic outcomes did not vary significantly between the two groups in terms of post-operative back-pain, complications, hospital stay , neurologic improvement ( ASIA scores and Modified Frankel grade), loss of correction of kyphotic angle and anterior vertebral height. The fusion group had additional operative time, blood loss, graft site morbidity and cost. **Conclusion :** There is no significant difference in outcomes of pedicle screw fixation with or without bone graft in the management of thoracolumbar vertebral fractures, moreover grafting has its own drawbacks. However, long term studies are required to further validate this.

**Abstract No.: 40534**

**OSTEOSARCOMA OF THE PROXIMAL TIBIA: RESECTION- RECONSTRUCTION**

Sihem Garmaz, Kamel Achour, Djelloul Maldgi, Hadjira Zerrouki, Sidahmed Miloudi, Mourad Hamidani

introduction : the proximal tibia is the preferential site of primitive malignant bone tumors particularly adolescent's osteosarcomas, resection – reconstruction with a massive prosthesis in combination with chemotherapy is currently considered as the most highly successful treatment of osteosarcoma of the knee. methods : we report the case of 16 years old patient, followed since June 2013 for left knee ache, the x-ray showed a heterogeneous lesion badly limited of the upper end of the tibia, the mri showed a neoplastic osteolytic process of the 1/3 upper of the tibia measuring 60mm by 98 mm high with invasion to the soft tissue and without encroachment of the neurovascular pedicle, the staging is negative. the patient underwent four months after the biopsy of a large surgical resection of the tumor carrying 14 cm of the tibia with an anterior-medial approach and placement of a cement spacer associated with neoadjuvant and adjuvant chemotherapy initially, followed a year later by reconstruction with a massive prosthesis. results: eight months later, the patient had no local recurrence of metastases and preserved his knee's joint mobility .conclusion : although that resection-reconstruction allows the preservation of joint mobility and is way better experienced by patient, it shouldn't reduce the priority of the oncological treatment, the perspective of reconstruction should never limit the wide character of resection.



**Abstract No.: 40537**

**CULTURED AUTOLOGOUS BONE MARROW STEM CELLS IN ROTATOR CUFF RECONSTRUCTION**

Vojtech Havlas, Petr Konicek, Oksana Sevastyanova, Tomas Trc, Simona Konradova, Zuzana Koci, Eva Sykova

Purpose of the study: A prospective clinical trial has been set up to evaluate safety and effectiveness of using cultured human autologous mesenchymal stem cells (MSC) applicated in the suture site during rotator cuff reconstruction surgery. Material and methods: 10 patients have been enrolled based on inclusion/exclusion criteria for rotator cuff reconstructive arthroscopy. Bone marrow for MSCs had been obtained 3-4 weeks before surgery. After that a reconstructive arthroscopy of rotator cuff has been executed with applying of cultured MSCs into a suture site in the end of the procedure. Patients have been followed up and evaluated at 6 weeks, 3 months, 6 months postoperatively using VAS score, Constant and UCLA questionnaire. MRI check-up has been made in 6 months after surgery. Results: Final assessment was completed in 8 patients out of 10. There was found a substantial improvement in physical examination in 6 weeks postoperatively. Average value of VAS after 6 months was 0, UCLA 32, Constant score 84. MRI findings showed fully repaired tissue of rotator cuff. Discussion: Clinical using of human MSCs in human medicine has been mentioned rarely so far. Present studies are applying model of uncultured mononuclear cell suspension. Our study documents safety of using cultured human MSCs in following indication. Conclusion: Preterm results of our trial show us that therapy of rotator cuff tendon tear is safe method in short-term evaluation. Further research would be eligible in proving of method effectiveness.

**Abstract No.: 40538**

**COMPLICATIONS WITH THE INTRAMEDULLARY NAILING OF 2-PART SURGICAL NECK PROXIMAL HUMERUS FRACTURES**

Xiaoming Wu,

Introduction: The aim of this study was to evaluate the complications due to the technique error by the straight IM nail in treating surgical neck fracture of the proximal humerus. Methods: This is a retro perspective study of forty-two adult patients with a displaced 2-part surgical neck fracture of the proximal humerus treated by the Trigen PHN. The surgical approaches were reviewed. The radiographic outcomes were analyzed for the position of the nail, the quality of reduction etc. The shoulder function was evaluated at the last follow up. We registered 26 intra-operative complications in 13 patients. Complications include : wrong nail entry point, mal-reduction, inappropriate nail insert depth etc. The final Constant score was influenced by the reduction quality and the nail position. Lateral nail entry point together with nail protruded over the humeral head resulted in chronic shoulder pain and weakness which needed a second surgery for nail removal. The complication risk was correlated well with the surgical experience, the fracture type by AO Classification and the surgical approach. When the first 10 nails are used, the complication rate was 2 times (5/10) compared to the later 32 ones (8/32) The AO11A3 using the percutaneous approach are more prone to varus displacement leading to lateral entry point in the early phase of the procedure. Conclusion: The avoidance of these complications due to technical errors will allow IM nails to be a reliable alternative method bridge the gap between minimal surgical approach like K wire and strong fixation like locking plate

**Abstract No.: 40543**

**EVALUATION OF TREATMENT OF OPEN DIAPHYSEAL FRACTURES OF TIBIA IN CHILDREN BY ELASTIC STABLE INTRA-MEDULLARY NAILING**

Nehad El Mahboub, Mohamed Zaazou

Open fractures of the tibia in children usually result from high injury trauma the associated fibular fracture and soft tissue injury make the treatment of these fractures is a surgical challenge. The options of treatment include debridement and casting, debridement and external fixators which may be monolateral or circular. In the period between February 2012 to February 2014, 25 cases of open diaphyseal fracture of the tibia in children, underwent debridement and fixation by elastic stable intra-medullary nails. The age ranged between 5 to 12 years. There were 16 boys and 9 girls. The right side affected in 15 cases and the left side in 10 cases. All cases subjected to careful general and local examination. The fractures were classified according to Gustilo-Anderson classification: ( type one) 10 cases, (type two) 9 cases and (type three) 6 cases 2 from type A and 4 from type B and no cases from type C. All patients were under antibiotics coverage. The time from injury to operative interference varied from 3 to 9 hours. Coverage procedures for cases with type three were done after repeated dressing and debridement to ensure clean wounds. All cases evaluated postoperative clinical and radiological for wound healing , malalignment, bone union, bone lengthening or shortening and according to Flynn's scoring criteria. Excellent and satisfactory results were obtained in 23 cases and poor results in 2 cases.

**Abstract No.: 40544**

**FRACTURES OF THE CAPITELLUM: RESULTS OF SURGICAL TREATMENT IN 15 PATIENTS**

Kamel Achour, Sihem Garmaz, Djelali Guendouz, Mourad Hamidani

fracture of the capitellum is rare and even exceptional before the age of 12 years. it is an intra-articular shear fracture characterized by a frontal fracture line involving the anterior articular portion of the capitellum, capitellar fracture poses problems about its diagnosis and its treatment. we report the results of a series of fifteen patients treated between 2002 and 2013. there were eight females and seven males with a mean age of 34 years (range: 15–49 years). according to the modified classification of bryan and morrey, the distribution of the fractures was: type 1 in 14 cases, type 2 in only one case; no case of the type 3 or 4 was individualized. all patients were operated. the fixation techniques used were herbert screw fixation in 9 cases; interfragmentary compression screw fixation in 3 cases; lateral screw fixation in one case and kirschner wire fixation in another case. excision of the fragment was performed in the last case. nine patients had excellent or good results and two patients had some limitation of range of movement. there were no instances of infection or avascular necrosis. capitellar fracture is an intra-articular fracture which requires in most cases surgical management. herbert screw fixation represents the most suitable fixation technique. prognostic of this injury remains favourable. poor results of treatment are observed after imperfect reduction, delayed treatment or resection of the capitellum.

**Abstract No.: 40546**

**ISOLATED DISLOCATION OF THE CARPAL SCAPHOID. A CASE REPORT.**

Kamel Achour, Djelali Guendouz, Sihem Garmaz, Mourad Hamidani

isolated dislocation of the carpal scaphoid is an extremely rare injury, which is usually accompanied by significant ligamento-capsular lesions. a review of the literature found only 21 reported cases. we report a case of 39-year-old, right handed agricultural worker presented after sustaining an axial loading and hyperextension injury to his wrist. he reported immediate pain and deformity without neurovascular symptoms. on examination the wrist was swollen and tender on the radial side. a bony prominence was evident along the radial aspect of the wrist. the x-ray, demonstrated isolated radial dislocation of the carpal scaphoid. the proximal pole was displaced radial and volar to the radial styloid process and the distal pole had moved in front of the capitate. the other carpal bones remained in their normal positions. based on the clinical imaging we decided by a dorsal approach to, reduce the scaphoid and repair the scapholunate ligament via transosseous suture which is protected with scapholunate and scaphocapitate pins, and supplement the repair with a dorsal capsulodesis of the dorsal intercarpal ligament fixed to the dorsal lunate. after surgery the wrist was immobilized in a long arm splint for 2 weeks and then in a short arm cast for 4 weeks. the k-wires were removed at 6 weeks and range of motion therapy commenced. at eighteen months follow-up, the result was good. the patient did return at the same work. clinically, there was a range of motion of 70° in flexion–extension. radiologically, there were no scapho-lunate or intracarpal desaxation.

**Abstract No.: 40551**

**UTERINE CONTRACTIONS AND PER VAGINAL FLUID AS A SIGN OF ABDOMINAL EXTRAVASATION IN HIP ARTHROSCOPY.**

Sarthak Patnaik, Luis Perez Carro

**Objective :** We present a case of abdominal fluid extravasation after hip arthroscopy associated to symptoms not described previously in the medical literature. **Material and methods** A 42 year old healthy woman with a Mixed type of femoroacetabular impingement who underwent hip arthroscopy in a supine position. **Results:** Immediately after the surgery the patient started complaining of severe abdominal pain and painful uterine contractions with water-like liquid coming out of her vagina. An abdominal ultrasound and CT were taken showing at least 1500-2000 ml of intra-abdominal and retroperitoneal fluid, without any sign of visceral suffering. There was a regress in the abdominal fluid which was monitored periodically with the help of ultrasound . The patient was discharged after two days without any additional medical complications. At the time of discharge the patient was comfortable with no signs of per vaginal water leakage or abdominal distension. Five months after the surgery, the patient was able to do sports without any hip pain. **Discussion :** The access of the arthroscopy irrigation liquid into the abdomen in this case is unclear but it is likely to have been through the psoas muscle reaching retroperitoneum space and the iliac vessels in at the intraperitoneal space. We suppose that in this case the fluid reached the vagina through the Fallopian trumps, anatomical structures that connect intra-abdominal space with the uterus opening close to the ovaries. **Conclusion** Per vaginal discharge Though uncommon/ unknown in its incidence it should be considered in hip arthroscopy in female population.

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**Abstract No.: 40555**

**EFFECTS OF OBSTACLE HEIGHT ON THE JOINT MOMENTS OF THE LOWER EXTREMITIES WHEN CROSSING OBSTACLES WITH HIGH-HEELED SHOES**

Kao-Shang Shih, Hui-Lien Chien, Tung-Wu Lu

In modern society, many women wear high-heeled shoes. High-heeled shoes increase the difficulty of maintaining balance and thus the risk of falling, which is further increased by the presence of obstacles. A successful and safe obstacle-crossing requires the stability of the body provided by the stance limb. The current study aimed to investigate the influence of obstacle height on the joint moments of the lower extremities when crossing obstacles with high-heeled shoes. Twelve healthy females crossed obstacles with heights of 10%, 20% and 30% of their leg lengths when wearing high-heeled shoes (7.3 cm) while kinematic and kinetic data were measured. With increasing obstacle height, the mechanical demands to the ankle plantarflexors, and hip and knee abductors were all reduced linearly, primarily because the stance limb became more extended. In contrast, the knee extensor moments of the trailing stance limb was increased. This strategy relies on the knee extensors to provide the whole body support when facing obstacles with increasing height. Therefore, inability to recruit the knee extensor muscles or weakness of the knee extensors, such as resulting from aging, may lead to an increased risk of unsuccessful obstacle-crossing. The current results may be helpful for the development of strategies aiming at minimizing the risk of falls during obstacle-crossing in high-heeled shoes.



**Abstract No.: 40558**

**DISTAL FEMORAL EXTENSION OSTEOTOMY AND PATELLAR TENDON ADVANCEMENT IN  
MANAGEMENT OF CROUCH GAIT IN CHILDREN: A PRELIMINARY REPORT**

Guanghai Zhu, Haibo Mei, Kun Liu

**Objective:** To evaluate the preliminary outcome of distal femoral extension osteotomy and patellar tendon advancement in management of crouch gait in children. **Methods:** From April, 2009 to June, 2012, we carried out distal femoral extension osteotomy and patellar tendon advancement in the management of crouch gait in cerebral children with 10°-30° fixed knee flexion contracture. The degree of fixed knee flexion deformity, popliteal angle, range of motion in the knee joint, improvement of crouch gait, VAS scores of knee pain, strength of quadriceps, hamstring and musculus triceps surae, Insall-salvati index in lateral view of X ray and Wren modified crouch gait visual score by physicians was recorded and analyzed for outcome evaluation. **Results:** 16 cases (26 lower extremities) were enrolled in our study. The crouch gait was improved or disappeared in all the cases. Compared with preoperative VAS scores of knee pain, the scores post-op decreased significantly ( $P < 0.05$ ). The degree of fixed knee flexion deformity and popliteal angle were diminished significantly ( $P < 0.01$ ). Range of motion in the knee joint increased ( $P < 0.01$ ). Strength of quadriceps improved significantly ( $P < 0.05$ ). Strength of hamstring and musculus triceps surae was not significantly changed. Insall-salvati index was diminished with the patella alta in all cases corrected. **Conclusions:** When we use distal femoral extension osteotomy and patellar tendon advancement in the management of crouch gait in CP children, we can effectively improve crouch gait, correct knee flexion deformity and patella alta, increase quadriceps strength and relieve knee pain. The preliminary outcome is good.

**Abstract No.: 40564**

**STUDIES OF COMPOSITE OF AUTOLOGOUS MICROMORSELIZED BONE AND TITANIUM FIBER USED TO REPAIR THE BONE DEFECTS IN RABBITS**

Ye Ji, Yicai Zhang, Huanxin Xie

Introduction: To explore the effects of Autologous micromorselized bone composite with titanium fiber and type I collagen on repairing bone defects in rabbits. Methods : Models of bilateral radial bone defects were created in 55 New Zealand big-eared white rabbits which were subsequently divided into 3 even groups according to the materials used to fill the defects: group A, were prepareate into simple bilateral radius bone defect; group B, were simply implanted of autologous micromorselized bone and type I collagen; group C, bone defects were implanted of Autologous micromorselized bone composite with titanium fiber and type I collagen. Animals are killed in the 3 and 6 weeks afier operation. Samples were harvested at 3 and 6 weeks post-operation for X-ray,SEM examination and biomechanical tests. Results : X-ray examinations found no repair but sclerosis of bone ends in group A while different extents of bone repair were observed in group B and C. SEM observation on the 3 and 6 weeks in group C of bone matrix deposition was similar to that in B group, C group showed bone matrix deposition on titanium fiber filament. Biomechanical tests showed that the mechanical properties in group C had a significantly batter than group B, with statistical significance( $P<0.05$ ). Autogenous morselized bone with titanium fiber and type I collagen, reduce the autogenous morselized bone quantity, mechanical strength has been significantly improved, the in vivo osteogenic properties is improved to a certain degree.

**Abstract No.: 40573**

**RESULTS OF ARTICULATING PROSTHETIC SPACERS IN STAGED TREATMENT OF INFECTED HIPS**

Mohamed ABO-ELSOUND, Mohamed Abdulmoneim, Ahmed Atyat Allah, Fouad Sadek

Introduction: Treatment of both advanced degenerative joint disease with a coexisting or recent septic arthritis & peri-prosthetic joint infection is challenging. The gold standard treatment for these cases is two-stage debridement and spacer application with later replacement with permanent implants. This prospective study assessed the use of articulating prosthetic spacers in treatment of these cases. Patients: The study included twenty four patients (14 Males) with mean age of 49 years. Only 10 cases presented with a discharging sinus. We used a spacer made of a snap fit all polyethylene cup and a small tapered stem loosely fixed with antibiotic loaded bone cement . A minimum of 3 months before the second stage to ensure infection eradication with a mean total follow-up period of 12 month. Results: At the end of follow-up period 22 cases showed clearance of infection confirmed by clinical and laboratory criteria with improvement of their HHS from 27 preoperatively to 78 postoperatively. Only 2 cases suffered from reinfection & and 2 cases suffered from dislocation of the spacer. 7 cases underwent subsequent exchange to THR, 11 patients are still waiting for revision THR while the remaining 4 cases preferred not to undergo 2nd stage revision and was convinced with spacer functional results. Those who had THR revision showed further improvement of their HHS to 88. Conclusion: The use of prosthetic articulating hip spacer in treating infected hips is effective for eradication of infection, maintaining good hip function and making the revision easier.

**Abstract No.: 40578**

**COMPLETE DEBRIDEMENT FOR TREATMENT OF THORACOLUMBAR SPINAL TUBERCULOSIS: A CLINICAL CURATIVE EFFECT OBSERVATION ZILI WANG A\*- QIAN WANG B-WEIDONG JIN A-GUANGQI GENG-A.A:GENERAL HOSPITAL OF NINGXIA MEDICAL UNIVERSITY-B: UNIVERSITY OF SOUTH FLORIDA.**

Qian Wang, Zili Wang, Weidong Jin, Guang Qi Geng

**Objective:**Complete debridement is an important way for treatment of spinal tuberculosis. Sclerotic walls, multiple cavities, and affected bony bridges are areas of focus in spinal tuberculosis and are the main causes for delayed cure after spinal surgery .**Methods:**A total of 296 patients with spinal tuberculosis who underwent complete debridement. All patients were divided into two groups according to different complete or incomplete debridement: group A (complete debridement group) and group B (incomplete debridement group), and regular follow-up was required. Complete debridement involves traditional debridement, and complete removal of sclerotic walls, multiple cavities, and affected bony bridges. **Results:**162 cases were assigned in group A, 134 cases were assigned in group B. C-reactive protein and erythrocyte sedimentation rate were more improved in group A than group B. After six months postoperative, graft healing in A and B groups had 125 patients (77.16%) and 6 patients (4.48%), respectively. 146 (90.12%) cases of the duration for anti-tuberculosis treatment were less than 9 months in group A, one case were performed reoperation, others patients extended the time of chemotherapy. 109(81.34%) cases of the duration for anti-tuberculosis treatment were more than 9 months in group B, 7 cases were performed reoperation, others patients extended the time of chemotherapy, and 18 cases were not cured at the final follow-up. Reoperation rate in A and B groups had 0.62% and 5.22%, respectively. **Conclusion:**Clearing tuberculous foci, sclerotic bone, multiple cavities, and bony bridges in order to increase the curative effect is an effective treatment method.

**Abstract No.: 40579**

**OSTEOCHONDRAL AUTOGRAFT TRANSFER COMBINED WITH CANCELLOUS ALLOGRAFTS FOR THE TREATMENT OF THE LARGE CYSTIC OSTEOCHONDRAL DEFECT OF THE TALUS**

Yuan Zhu,

**Objective:** This retrospective control study looks at the use of osteochondral autograft transfer combined with cancellous allografts in patients with advanced subchondral bone damage of the talus. **Methods:** Thirteen patients were chosen with large cystic osteochondral defect of the talus between Feb 2010 and Jul 2013. All of these defects are larger than 15mm in diameter. The subchondral defects were filled with cancellous allografts and the top of the lesions were sealed with an osteochondral cylinder autograft which was harvested from the ipsilateral medial femoral condyle. The VAS score for pain, AOFAS scores, and subjective satisfaction survey rating were obtained. Plain radiographs and magnetic resonance imaging of the ankle were obtained before and after surgery. In 5 cases second-look arthroscopy was performed 12 months postoperatively. **Results:** Twelve patients were available for follow-up at a mean of 21.7 months (range, 12 to 48 months). Average postoperative AOFAS -HA score 12 months after surgery was 91.8 (compare with 75.7 preoperatively). The mean VAS score decreased from  $5.71 \pm 1.83$  preoperatively to  $0.98 \pm 0.98$  at the latest follow-up. Seven patients rated the result as excellent, 5 as good and none as fair. The radiolucent area of the cysts disappeared on the plain radiographs in all cases. The mean International Cartilage Repair Society arthroscopic score from follow-up arthroscopy was  $9 \pm 1.4$  points. **Conclusions:** The use of osteochondral autograft transfer combined with cancellous allografts is a reasonable and effective option for the treatment of large talar osteochondral lesions.

**Abstract No.: 40581**

**CROSS FOREARM VESSEL TRANSFER FOLLOWED BY SECONDARY FLOW-THROUGH FLAP TRANSFER TO SALVAGE AN UPPER LIMB WITH EXTENSIVE BRACHIAL ARTERY DEFECT AND SEVERE WOUND INFECTION**

Qing-Tang Zhu,

A limb seems unsalvageable if it suffers extensive artery defect complicated with deep wound infection. In the present paper, we reported a method to solve such a difficult problem. An 18-year old male with left humeral open fracture and brachial artery injury was initially treated with fracture fixation and artificial vessel grafting. However, the graft was failure due to deep wound infection and then removed. It resulted in a severe ischemic limb and amputation had to be considered. To salvage the limb, radial artery on the contralateral forearm was transferred to the wrist of the injured limb, and was anastomosed to the radial artery at the recipient site in an end-to-side manner. Therefore, the limb was revascularized by blood perfusion from the contralateral limb. Wound infection was treated with multiple debridement and wound care. After the infected wound healed, a flow-through flap with posterior artery was transferred to the left arm to reconstruct the brachial artery, and the pedicle at the wrist was divided at the second stage. Six months after the final surgery, his left upper limb was survived with limited movement. In conclusion, cross-limb vessel transfer followed by secondary flow-through flap transfer can be a feasible method to salvage a limb with extensive artery defect complicated with deep wound infection.

**Abstract No.: 40582**

**THE EXPERIMENTAL STUDY OF CALCIUM SULFATE/AMINO ACID POLYMER ARTIFICIAL BONE CARRYING 3 ANTI-TB DRUGS ON VITRO RELEASING. WANG QIAN 1-LIU HAITAO2- WANG ZILI 3- SHI JIANDANG 3- ET AL.**

Qian Wang, Zili Wang, Haitao Liu, Jiang Dang Shi

**Objectives:**To explored of the properties for vitro drug release of the calcium sulfate/amino acid polymer artificial bone carrying 3 anti-TB. **Methods:**Maked the calcium sulfate/amino acid polymer artificial bone carrying 3 anti-TB drugs in dark environment(proportion:100:3:3:12 calcium sulfate/amino acid composite 500mg, INH 15mg, RFP 15mg, PZA 60mg). To test concentration of each drug (isoniazid, rifampicin, pyrazinamide) were detected by High Performance Liquid Chromatography and calculated unit period of drug release quality at 3h、12h、24h、36h、48h、60h、72h、1-14w,respectively,in simulated body fluid in vitro. **Results:**The concentrations of INH, RFP and PZA release in simulated body fluid of Triple anti-tuberculosis drugs calcium sulfate / poly (amino acids) bone in 3h were reached  $152.96\pm 1.32\mu\text{g/ml}$ ,  $92.90\pm 2.17\mu\text{g/ml}$  and  $334.90\pm 12.3\mu\text{g/ml}$ , respectively, and the three kinds of drug concentrations were higher in extracts of eight weeks before each time point. In the eighth week the concentration of PZA, In the tenth week the concentration of RFP and in the eleventh week the concentration of PZA were still higher than the concentration 10 times the MIC, then decreased gradually. There was no contamination peak in drug appearance time of effective measurement time in control group. **Conclusions:**Triple anti-tuberculosis drugs calcium sulfate/poly (amino acids) bone in vivo release have a properties with reliable and longer duration of effective release. Concentration of three drugs in simulated body fluid can reach to kill Mycobacterium tuberculosis of concentration in vivo theoretically.

**Abstract No.: 40584**

**MID-TERM FOLLOW-UP OF THE RESULT OF PERIARTICULAR OSTEOTOMY IN TREATING  
ASYMMETRICAL ANKLE ARTHRITIS**

Yuan Zhu,

Objective: A retrospective control study to evaluate periarticular osteotomy in treating asymmetrical ankle arthritis. Methods: Sixty-six consecutive patients with asymmetrical ankle arthritis were chosen between Feb 2005 and June 2011. All the cases were performed the surgery of periarticular osteotomy. Forty-three cases got ligament reconstruction procedures. The age of surgery of the 43 female and 23 male ranged from 35 to 74 years old (mean, 55.5). According to the Takakura classification of ankle arthritis, 29 cases were in grade 2, 33 in grade 3 and 4 in grade 4. The AOFAS-HA score and radiographic examinations including TAS and TLS were compared before and after surgery. MRI of the ankle was obtained before and after surgery (midterm result) in fifteen patients to evaluate the condition of the cartilage. Results: Fifty-two patients were followed up with an average time of 47.7 months. All the patients got complete bone healing with an average healing time of 8 weeks. Average postoperative AOFAS -HA score by the last follow-up was 78.6 (compare with 49.7 preoperatively). Delayed wound healing occurred in 5 cases and was solved with wound care. Twenty-one patients felt the result of excellent, 26 good and 5 of fare. The radiological assessment by the last follow-up showed no worsening of the ankle arthritis grade. Conclusions: Periarticular osteotomy is a sound method in treating asymmetrical ankle arthritis in the midterm follow-up. It can decrease the contact pressures on the degenerated cartilage with mechanical realignment and prolong the life span of the ankle itself.



**Abstract No.: 40592**

**STUDY OF ULTRA SHORT-COURSE CHEMOTHERAPY TREATMENT OF SPINAL TUBERCULOSIS GENE EXPRESSION IN PERIPHERAL BLOOD. WANG QIAN--A- NIU NINGKUI-B- SHI JIANDANG-B- WANG ZILI-B- GENG GUANGQI- B- JIN WEIDON-. B-**

Qian Wang, Zili Wang, Ningkui Niu, Jiang Dang Shi, Guang Qi Geng, Wei Dong Jin

**Objective:**Evaluate the relationship between clinical efficacy of spinal tuberculosis by using ultra-short-course chemotherapy (UCCT) and peripheral blood messenger RNA (mRNA) gene expressions. **Methods :**The study group was composed of peripheral blood samples from 27 spinal TB patients, and divided into three groups. Group A (untreated group) 8 cases, group B (treatment-completed group) 9 cases, and group C (1-yr follow-up group) 10 cases. The control group was made up of the peripheral blood samples from 5 non TB patients. Gene chip was employed to detect the differentially expressed gene in the peripheral blood samples. Detect the peripheral inflammatory cytokines and nuclear transcription factor  $\kappa B$  (NF- $\kappa B$ ). **Results :** 942 differentially expressed genes between group A and B, 936 genes up-regulated and 6 genes down-regulated, and the functions of these differentially expressed genes were mainly related to the immune regulation of patients. No differential expressed genes were identified between group B and C, and they were non-specific differences 30 genes. Group A compared with group B and group C showed TNF- $\alpha$ , IFN- $\gamma$ , IL-12, and IL-8 expression levels were significantly increased, which were consistent with the level of expression of NF- $\kappa B$ . **Conclusion :**The clinical efficacy of UCCT for spinal tuberculosis was consistent with peripheral blood gene expressions, protein expression of inflammatory cytokines, and the level of NF- $\kappa B$ ; mRNA gene expression profiles can be used to assess the efficacy of UCCT.

**Abstract No.: 40616**

**ASYMMETRY CHANGE OF PARAVERTEBRAL AND PSOAS MUSCLE IN DEGENERATIVE SCOLIOSIS**

Yiwei Wu, Jianyuan Jiang, Xiaosheng Ma, Xinlei Xia, Lixun Wang, Hongli Wang

**Purpose:** This study was to assess the asymmetry change of psoas and paravertebral muscles in patients with degenerative scoliosis. **Methods:** Forty patients with degenerative scoliosis were evaluated with whole spine X-ray radiography of both lateral and anteroposterior projection to assess the apex and direction of scoliosis, Cobb's angle, rotational deformity and lumbar lordosis. Magnetic resonance imaging scan was taken to measure the cross-sectional area and the fatty infiltration rate of bilateral paravertebral and psoas muscles at apex of curvature level. **Results:** Twenty seven patients had apex of curves on the left side and thirteen patients on the right side. The mean Cobb's angle was 19.3°. The cross-sectional area of psoas at apex of curvature level was significantly larger in convex side rather than that in concave side ( $p=0.007$ ). Fatty infiltration rate of multifidus muscle (including rotatores lumborum) and spinal erectors at apex of curvature level was significantly higher in concave side rather than that in convex side ( $p=0.013$ ). **Conclusion:** Atrophy of the muscles on the concave side might be the reason for the asymmetry change of the paravertebral and psoas muscle in patients with degenerative scoliosis. Whether atrophy of muscles is the reason or result of degenerative scoliosis is still unclear.

**Abstract No.: 40617**

**EFFECT OF SILICON INCORPORATED ZIRCONIA FILMS FACRIBATIE BY CATHODIC ARC DEPOSITION ON ADHESION OF OSTEOLAST-LIKE CELLS**

Shailin Zhang, Bing Ji, Xiangyu Cheng, Qiang Zhou, Jixiang Shi, Junying Sun

We fabricated silicon incorporated zirconia films (Si-ZrO<sub>2</sub>) and zirconia films (ZrO<sub>2</sub>) by cathodic arc deposition technique. The surface morphology, phase and element composition of the films were detected by scanning electron microscopy, thin film X-ray diffraction and X-ray photoelectron spectroscopy, respectively. Adhesion behavior of osteoblast-like MG63 cells cultured on the surface of Si-ZrO<sub>2</sub> and ZrO<sub>2</sub> films was investigated and compared. The results showed that Silicon was successfully incorporated into the Si-ZrO<sub>2</sub> films, and both Si-ZrO<sub>2</sub> and ZrO<sub>2</sub> films were amorphous. MG63 cells on Si-ZrO<sub>2</sub> films appeared more spreading and showed stronger cytoskeleton and focal adhesion than those on ZrO<sub>2</sub> films. The CCK8 assay results showed more MG63 cells adhesion on the Si-ZrO<sub>2</sub> films compared to that on the ZrO<sub>2</sub> films after 12 and 24 hours culture. In addition, real-time polymerase chain reaction analysis indicated that integrin $\beta$ 1, FAK and ERK1/2 gene expression of MG63 cells was up-regulated on the Si-ZrO<sub>2</sub> films than that on the ZrO<sub>2</sub> films. The results obtained from our work suggest that the Si-ZrO<sub>2</sub> films fabricated by cathodic arc deposition can promote osteoblast adhesion and has the potential for surface modification of orthopedic implants in the future.

**Abstract No.: 40619**

**MOTOR CORTEX ACTIVATION AND REORGANIZATION IN PATIENTS WITH HIRAYAMA DISEASE FOLLOWING SURGICAL TREATMENT**

Yiwei Wu, Jianyuan Jiang, Xiaosheng Ma, Xinlei Xia, Lixun Wang, Hongli Wang

**Purpose:** This study was to record the cortical activation in patients with Hirayama disease with BOLD-fMRI both before and after the surgical treatment of anterior fusion of the cervical spine to explore the relationship between functional recovery and cortical reorganization. **Methods:** Eighteen patients diagnosed as Hirayama disease received the BOLD-fMRI scan with the same 3.0T whole body MRI system both before and after the surgical treatment (3, 6, 12 months). The task mode adopted fist clenching/extension exercises of unilateral hand. The images were analyzed by the MATLAB SPM8. **Results:** Preoperatively, motor tasks of affected limb caused the activation of the bilateral motor cortex, while the movements of asymptomatic limb mainly caused the activation of the contralateral motor cortex. Higher volume of activation is also seen in the affected limb. Although some of the patient maintained the bilateral motor cortex activation after surgery, the differences between the symptomatic and asymptomatic limb were narrowing along with the functional recovery. Patients with both upper limbs affected show the similar activation pattern with the affected limb of the patients with unilateral symptom. **Conclusion:** Cortical reorganization was seen in patients with Hirayama disease. A higher volume of cortical activation, which includes the activation of the ipsilateral motor cortex, occurs to compensatorily maintain the function of the affected limb. Surgical treatment may put an end to the progressive worsening of upper limb function in patients with Hirayama disease.

**Abstract No.: 40631**

**TOTAL HIP ARTHROPLASTY VERSUS HEMIARTHROPLASTY IN THE TREATMENT OF ELDERLY PATIENTS WITH DISPLACED FEMORAL NECK FRACTURES**

Shailin Zhang, Bin Ji, Xiangyu Cheng, Yu Yao, Tongsheng Tang, Qiang Zhou, Junjie Zhou, Jixiang Shi

**Aim:** To perform a systematic review and meta-analysis of relevant published evidences to evaluate the relative effectiveness and safety of Total hip arthroplasty (THA) versus hemiarthroplasty (HA) in the treatment of displaced fractures of the femoral neck. **Methods:** A comprehensive search of relevant randomized controlled trials was performed using Medline, Embase, Science Citation Index Expanded, and the Cochrane central register of controlled trials. **Results:** Nine individual RCTs reported in 12 separate publications were included in this review. The last follow-up of individual trials ranged from 24 months to 156 months. THA was associated with higher incidence rate of dislocation (RR 2.63, 95% CI: 1.57 to 4.41,  $P=0.0002$ , fixed-effect model), and higher hip score (WMD 3.41, 95% CI: 0.98 to 5.85,  $P=0.006$ , random-effect model), compared with HA. No significant differences between the two groups were detected for the following outcomes, including reoperation rate (RR 0.71, 95% CI: 0.32 to 1.60,  $P=0.41$ , random-effect model), overall complications (RR 1.13, 95% CI: 0.87 to 1.46,  $P=0.35$ , fixed-effect model), and mortality (RR 0.98, 95% CI: 0.80 to 1.21,  $P=0.85$ , random-effect model). **Conclusions:** Our results suggested that THA may improve the hip function, and reduce the reoperation rate at the cost of higher incidence rate of dislocation. So the decision of choosing THA or HA should depended on the cost-effectiveness data, patient's preference, patient's general conditions, and surgeon's discretion.

**Abstract No.: 40634**

**NITRIC OXIDE DONORS IN TREATMENT OF OSTEOPOROSIS**

Satish Chandra Goel, Gyanendra Jha

Introduction: Nitric oxide (NO) is a short-lived free radical involved in several biological processes as a bioregulator and as a second messenger. It inhibits osteoclastic bone resorption in vitro and regulates bone remodeling. Zolendronic acid has been established as a treatment for post menopausal osteoporosis. Method: The study was designed to compare the effect of L Arginine with that of Zolendronic acid in treatment of osteoporosis. One hundred patients of osteoporosis having T score of -2.5 or more, were randomized to receive L-arginine) or Zolendronic acid. All patients received 1.0 g of calcium and 400 IU of vitamin D supplementation per day. In addition Group I patients received Larginine (2 gm.) per day while Group II patients received zoledronic acid 5 mg i.v. over 15 min. Results: Patients in both groups improved clinically and bio-chemically over one year period. T score on DEXA scan at one year showed improvement in bone density. Average pretreatment T score was -3.65 in group I and -3.52 in group II. At one year followup average T score was -2.9 in group I and -2.6 in group II. Difference was not statistically significant. Discussion: Oral administration of L-arginine in pharmacological doses induces growth hormone and insulin like growth factor-1 responses and stimulates nitric oxide synthesis. While nitric oxide is potent inhibitor of osteoclastic bone resorption because of this dual effect on physiological regulator of bone remodeling. L-arginine could potentially increase bone formation over bone resorption and consequently increase bone mass.

**Abstract No.: 40644**

**SCLEROSTIN ANTIBODY TREATMENT CAUSES GREATER ALVEOLAR CREST HEIGHT AND BONE MASS IN AN OVARECTOMIZED RAT MODEL OF LOCALIZED PERIODONTITIS**

Xinchen Xu, Eryi Lu

**Introduction:** Periodontitis and osteoporosis are bone destructive diseases with a high prevalence in the adult population. The concomitant presence of osteoporosis may be a risk factor of progression of periodontal destruction. We studied the effect of sclerostin-neutralizing monoclonal antibody (Scl-Ab) on alveolar bone endpoints in an ovariectomy rat model of induced experimental periodontitis. **Methods:** Sixty female, 4-month-old Sprague-Dawley rats underwent sham operation or bilateral ovariectomy. 4 weeks later, experimental periodontitis was established for 4 weeks. Thereafter, ligatures were removed and 25 mg/kg vehicle or Scl-Ab was administered subcutaneously twice weekly for 6 weeks. Rats were randomized into four groups: (1) Sham+Vehicle, (2) Sham+Ligature+Vehicle, (3) OVX+Ligature+Vehicle, and (4) OVX+Ligature+Scl-Ab. Terminal blood and right maxilla specimens were collected for analyses. **Results:** Group 4 rats had higher alveolar crest height, as assessed by linear distance of cement-enamel junction to the alveolar bone crest and greater alveolar bone mass than group 3 rats. Significantly higher values of mineral apposition rate and mineralizing surface/bone surface were also observed in Group 4 rats by analyzing polychrome sequential labeling data. Increased serum osteocalcin and osteoprotegerin, and decreased serum tartrate-resistant acid phosphatase and CTx-1 illustrate the ability of Scl-Ab to increase alveolar bone mass by enhancing bone formation and decreasing bone resorption. **Conclusion:** Scl-Ab could be a potential bone anabolic agent for improving alveolar crest height and higher alveolar bone mass in conditions where alveolar bone loss in periodontitis is compounded by estrogen deficiency osteopenia.

**Abstract No.: 40646**

**THE FINITE ELEMENT ANALYSIS OF STRESS IN THE INTERNAL FIXATION SYSTEMS WITH DIFFERENT POSTERIOR LUMBAR FUSION METHODS**

Jinglong Yan, Duanyang Wang, Chunyang Xi, Ye Ji

Introduction: We used related softwares to establish a finite element model of the L3-S1 segment and the establishments of three new models of internal fusion, posterolateral fusion and new posterolateral fusion at the L4-5 segment are on this basis. After that, we analyzed the pressure of internal fixation systems. Methods: Firstly, we selected a volunteer and scanned his lumbar with CT to get DICOM files. Extracting these files, we established a geometric model with Mimics. Secondly, we defined the material properties by means of Mimics and divided into grids with HyoerMesh, then we established a finite element model. Thirdly, After the validity of the model has been verified, we established three models which contain the internal fusion, posterolateral fusion and new posterolateral fusion and assembled the internal fixation system model into the three models. Finally, we analyzed the pressure of internal fixation systems in three different models under the physiological status and weight-bearing loads. Results: The structures of models were accurate and we successfully established three models of different fusion. The results showed that: under the physiological load, the maximum pressure of internal fixation systems was in the posterolateral fusion model, second was in new posterolateral fusion model and the minimum was in internal fusion model. Under the weight-bearing loads, the pressure was stronger and the trend of comparison was as same as that under the physiological loads. By statistical analysis of all data,  $P < 0.05$ .



**Abstract No.: 40653**

**LOCKING PLATE VERSUS HEMIARTHROPLASTY TREATMENT OF THE PROXIMAL HUMERAL THREE/FOUR PART FRACTURES**

Qirong Dong,

Objective: To report the clinical outcome of treating with locking plate or hemiarthroplasty for the treatment of the Neer three or four part proximal humeral fractures. Methods: 97 consecutive patients who were over 55 years older with the Neer three or four part proximal humeral fractures had been treated surgically from June 2007 to June 2013. In the retrospective study, 55 patients were treated by locking plate and 42 patients treated by hemiarthroplasty. The main measures include operation time, the bleeding, visual analog scale(VAS), the Constant-murley system and complication. Result: At the average 27.9 months follow-up, 29.3% complication in locking plate group were encountered and included impingement syndrome, varus displacement, nerve injury, osteonecrosis, infection and heterotopic calcification. 25.3% complication in hemiarthroplasty group included tuberosity nonunion, tuberosity migration, impingement syndrome and joint semiluxation, prosthetic loosening. The mean Constant score of three part fracture was better in locking plate group ( $77.4 \pm 4.8$ ) than hemiarthroplasty group ( $65.2 \pm 6.7$ ) ( $p=0.043$ ). There were no apparent differences between the two groups with regard to operation time, the bleeding, VAS score. As for the four-part fracture, the mean operation time was shorter and the mean bleeding was less in hemiarthroplasty group than in locking plate group, while there were no obvious differences about VAS score and the Constant score between the two groups. Conclusion: Both locking plate and hemiarthroplasty were the reliable methods for the proximal humeral three/four part fractures. It was very important for operation strategy to evaluate age, bone quality, fracture classification, osteonecrosis possibility of patients.

**Abstract No.: 40654**

**SHORT-TERM CLINICAL**

**RESULTS OF UNICOMPARTMENTAL KNEE ARTHROPLASTY FOR SPONTANEOUS OSTEONECROSIS OF THE KNEE**

Yoshinori Yasuhara, Yasuyuki Shoji, Kusabiraki Yoshiharu, Ryuichi Nagayama

**Objective** The purpose of this retrospective study was to analyze the clinical results of patients with spontaneous osteonecrosis of the knee treated by unicompartmental arthroplasty(UKA) using fixed-bearing design(Zimmer). **Methods** We reviewed 27 knees in 27 patients with a fixed-bearing UKA from April 2007 to March 2013. The patients included 7 males and 20 females. 24 patients presented osteonecrosis of the medial femoral condyle, and 3 patients presented osteonecrosis of the medial tibial plateau. The mean age at surgery was 71 years(range, 51 to 83 years). The mean follow-up period was 51 months(range, 24 to 94 months). We evaluated the clinical results using Knee Society score(KSS) and the tibiofemoral angle preoperatively and at the final follow-up. **Results** The mean KSS was 92.7(range, 62 to 100) at final follow-up. The mean tibiofemoral angle was 179 (range, 172 to 187) preoperatively. The improvement of tibiofemoral angle was 2.0°. No patients underwent revision surgery. There was no progression of osteoarthritis in the lateral femoral condyle at the final follow-up. **Conclusion** Although poor results were reported after unicompartmental knee arthroplasty in earlier studies of patients with spontaneous osteonecrosis of the knee, our data suggest that fixed-bearing UKA was a good result for the treatment of patients with spontaneous osteonecrosis of the knee.

**Abstract No.: 40663**

**MANAGEMENT OF MALUNITED SUPRACONDYLAR FRACTURES OF HUMERUS**

Yuvraj Hira, Bharti Deokar

**Introduction:** Supracondylar humeral fractures are the most common elbow fractures in children. The left or the non dominant side is most frequently injured in almost all studies. There are various immediate and late complications of supracondylar humeral fractures. The most common late complication is malunion leading to Cubitus Varus deformity which is also known as Gunstock Deformity. **Aims and objectives:** To determine the efficacy & outcome of Lateral closing wedge osteotomy in children as a treatment of malunited supracondylar fracture of humerus with cubitus varus. To evaluate various technical problems, morbidity, complications of Lateral closing wedge osteotomy and to suggest ways to overcome them. **Materials and methods:** 50 children were operated for malunited supracondylar fracture of humerus at Dr. D.Y. Patil medical college and research center, Pune from September 2013 to October 2015. Children were selected irrespective of sex. The principle of correction applied in this study was lateral closing wedge osteotomy fixed with screws and tension band wire and a lateral K-wire. **Results:** The outcome for above 50 cases according to the Oppenheim et.al. criteria: 36(72%) cases had excellent outcome, 11(22%) cases had good outcome, 3(6%) cases had poor outcome due to loss of fixation. **Conclusion:** Lateral closing wedge osteotomy with K-wire fixation is an easy, simple, technically less demanding method, which corrects the varus deformity in varus deformity secondary to malunited supracondylar fracture.

**Abstract No.: 40672**

**PROXIMAL FEMORAL NAIL VS DYNAMIC HIP SCREW IN TREATMENT OF INTERTROCHANTERIC FRACTURES**

Deven Taneja,

Objectives: To compare the results in intertrochanteric fractures treated by dynamic hip screw and proximal femoral nailing. Methods: Our study is retrospective & prospective study of 50 patients with intertrochanteric femur fracture AO type A1 & A2 treated during 2013 to 2015. 25 patients are included in each group. The parameters studied total duration of operation, rate of union, blood loss and blood transfusion, infection and radiation exposure. Results: The average age of the patient was 72.9 years. Most common mechanism of fracture was domestic fall. Twelve patients had A1 type fracture 38 patients had A2 type fractures. The average blood loss was 111.8 and 325.6 ml in PFN and DHS group respectively. There was more radiation exposure intra operatively in PFN. The average operating time for the patients treated with PFN was 116.4 min as compared to 106.4 min in patients treated with DHS. Total complications were 6 in which 5 were implant failure and One got infected. The patients treated with PFN started early ambulation. In the long term both implant has a similar functional outcome which was calculated on basis of Harris Hip score. Conclusion: Any patient with type A1 fracture treated with expertise & proper technical skill has same results with DHS or PFN. PFN has better results in Type A2 fractures. Keywords: Intertrochanteric fracture, Dynamic Hip Screw, Proximal Femoral Nail.

**Abstract No.: 40673**

**RESULTS IN CLOSED TIBIAL PLATEAU FRACTURES TREATED SURGICALLY**

Deven Taneja,

Abstract: In a series of 65 closed Tibial plateau fractures in 64 patients; the main indication of surgery was instability of knee in full extension and 20 degrees of flexion. It was a retrospective and prospective study. We intended to evaluate the functional outcome and complications faced by various modalities of surgical treatment. Mean duration of follow-up was 20.32 months (range: 6-96 months). The average fracture union was seen at 13.06 weeks (range: 8-16). The Schatzker's type V (38.46%) fracture was the most common type followed by type VI (26.15%) and II (21.50%), suggesting a shift in trend towards complex fracture pattern due to high velocity trauma. Mean Rasmussen's functional score at final follow-up of 6 months or more was 27.53 (range: 20-30). We achieved excellent functional outcome in 47/65 (72.30%) cases and good outcome in 18/65 (27.69%) cases with overall 100% acceptable results. In our study, excellent functional results were obtained in 100% of type I, 78.57% of type II, 100% of type III, 50% of type IV, 72% of type V, and 64.70% in type VI fractures. One case (1.53%) each of infection, valgus and varus deformity, and numbness at lateral aspect of knee were seen. Surgical treatment is recommended in closed Tibial plateau fractures as it helps in achieving anatomical reduction of articular surface, good alignment, and a stable knee joint thereby reducing chances of post-traumatic osteoarthritis and improves functional outcome.

**Abstract No.: 40680**

**TREATMENT OF NEGLECTED ANTERIOR SHOULDER DISLOCATION BY OPEN REDUCTION AND BONE BLOCK**

Abd Elrahman Elganainy,

Introduction: Untreated chronic shoulder dislocation eventually leads to functional disability and pain. Open reduction and anterior bone block had been introduced for better fixation and good results. The longer the delay between occurrence of dislocation and diagnosis, the more limited the treatment options with more guarded prognosis. Methods: between January 2010 and September 2014; seven cases with unilateral chronic anterior shoulder dislocation (mean age: 36 years) with an average delay of twelve weeks from injury. The mechanism of injury was falling or road traffic accident. All included patients were subjected to open reduction and anterior bone block operation using deltopectoral approach. Clinical and radiographic data were analysed at an average follow up 16 months. Results: according to ROWE score: two patients had excellent results, four patients had good results, and one patient had fair result. All patients were able to perform their daily activities and they had mild or no pain. Conclusion: concomitant open reduction and anterior bone block operation is a good option for neglected anterior shoulder dislocation.

**Abstract No.: 40685**

**ALIGNMENT IN KNEE FLEXION POSITION DURING NAVIGATION-ASSISTED TOTAL KNEE ARTHROPLASTY**

Jae-Hyuk Yang, Jung-Ro Yoon

**Purpose:** The aim of this study was to demonstrate the lower limb alignment in knee flexion position after navigation-assisted total knee arthroplasty using the gap technique and to identify the correlative factors. **Methods:** 120 patients were prospectively enrolled for intraoperative data collection. All TKA surgeries were performed using the navigation system. Before and after final prosthesis implantation, the lower limb navigation alignment in both knee extension(0°) and knee flexion(90°) position were recorded. The knee flexion alignment was divided into 3 groups: varus, neutral and valgus alignment. To determine the factors of the alignment in flexion knee position; preoperative demographics, radiologic and intraoperative obtained data were obtained. The KSS and WOMAC were compared between groups. **Results:** Although all postoperative extension alignment was within neutral position(between -2°and+2°), postoperative knee flexion alignment was divided into three groups: varus( $\leq -3^\circ$ ); 24cases(20%), neutral (between -2°and+2°); 85cases(70.8%) and valgus( $\geq +3^\circ$ ) alignment; 11cases(9.2%). There were good correlation of alignment in knee flexion position with the rotation of femoral component relative from posterior condylar axis( $r=-0.502$ ,  $p=0.000$ ) and weak correlations with posterior femoral cut thickness (lateral condyle)( $r=0.207$ ,  $p=0.026$ ), medial flexion(90°) gap after femoral component rotation adjustment( $r=0.276$ ,  $p=0.003$ ). Other variables did neither show correlations. There were no statistical clinical differences between varus, neutral and valgus knee flexion alignment groups. **Conclusion:** About 30% of the cases showed malalignment of more than 3° in knee flexion position although with neutral alignment in extension position. The knee flexion alignment had a good correlation with the rotation of femoral component relative from posterior condylar axis.

**Abstract No.: 40690**

**PARTICULAR LOCATION OF OSTEOSARCOMA IN DISTAL TIBIA:THREE CASES REPORT**

Reda Harrar, Kamel Achour, Anissa Benaida, Mourad Hamidani

Osteosarcoma is the third most common cancer in adolescence, occurring less frequently than only lymphomas and brain tumors. The most common location is the distal femur; the site of these cases report is rare therefore, because of the unusual location. The most common form of treatment is removal of the tumor. Limb-sparing procedures can often be used to preserve function.

Chemotherapy is also required to treat micrometastatic disease. We present three cases of osteosarcoma of distal tibia. Diagnosis was confirmed by standard radiography, magnetic resonance imaging and histopathology. Neoadjuvant chemotherapy, en bloc resection of the tumor with ankle arthrodesis and postoperative chemotherapy was performed. One among three cases has had a postoperative cutaneous necrosis treated by necrosectomy and fasciocutaneous covering flap. These patients made a full clinical and symptomatic recovery after one year of follow up for two patients and fourteen years for one patient of follow up.



**Abstract No.: 40701**

**LONGITUDINAL SKIN INCISION AND HOOK-PLATE FIXATION FOR DISTAL CLAVICLE FRACTURES AND ACROMIO-CLAVICULAR DISSOCIATION**

Zhuo Ma, Shimin Chang

**Introduction:** To introduce the clinical experience of distal clavicle fractures and acromioclavicular dissociation treated through a longitudinal skin incision exposure and hook-plate internal fixation. **Methods:** 20 patients with displaced distal clavicle fractures (Neer type II, 12 cases) and acromioclavicular dissociation (Rockwood grade III, 8 cases) were prospectively treated through a 6-8cm longitudinal skin incision exposure and AO titanic hook-plate fixation. The symptoms of supraclavicular cutaneous nerve injury and shoulder functional outcomes were evaluated using UCLA scale. **Results:** There were no cases reported incisional tingling and numbness at shoulder-thoracic region in postoperative follow up. Radiographic film showed bony union achieved in 3 months. One female case presented osteolysis of the distal clavicle in X-ray film at the second admittance for hook-plate removal. But no symptoms were reported. The mean UCLA shoulder scale in follow-up was 25.3 points in 1 month (20 cases), 32.1 in 3 months (17 cases), 34.4 in 8-12 months (before implant removal, 20 cases), and 34.7 in 3 months after implant removal (3 cases). Good and excellent functional outcomes were achieved in all cases. **Conclusion :** Longitudinal skin incision along the cervical Langer's line is sufficient for exposure of hook-plate implantation for distal clavicle fracture and cromioclavicle dissociation. Its main advantage includes less scar formation and avoiding iatrogenic supraclavicular nerve injury.

**Abstract No.: 40703**

**OSTEOPOROSIS AND OSTEOARTHRITIS: DIAGNOSTIC PECULIARITIES**

Umida Rustamova,

We observed 120 women of menopausal age. Women were divided into 2 groups: the main group - 78 women with knee gonarthrosis; control group - 42 women without gonarthrosis. All patients were examined by digital radiographic, ultrasonographic and densitometric study. The results were analyzed. We measured the angle of deviation of the axis of the bones of the knee with the cursor on the monitor on X-ray images. In 46 out of the 78 women with gonarthrosis it was differentiated valgus deformity and the predominant lesion of the medial segment of the joint, in 8 - varus deformity and even degenerative changes, in 24 it was not detected axial strain knee, but it was noted uniform joint space narrowing and degenerative changes. Osteoporosis were less marked in women without gonarthrosis. The ratio of women and osteoporotic changes were as follows: 42:16 = 2.6:1.0. Conclusions: The correlation between the changes in soft tissue elements of the medial segment and valgus deformity of the knee was found: in women with gonarthrosis on radiographs and ultrasonography more medial lesion elements and valgus deformity of the knee joint axis of the bone were noted; in the presence of valgus deformity of the knee it was more frequent changes of the medial collateral ligament. The mineral density reduction was observed more in women of menopausal age with gonarthrosis, (1.7: 1.0) than women without gonarthrosis (2.6: 1.0).

**Abstract No.: 40714**

**SINGLE-DOSE INTRA-ARTICULAR BUPIVACAINE PLUS MORPHINE VERSUS BUPIVACAINE ALONE AFTER ARTHROSCOPIC KNEE SURGERY: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS**

Guang-Hua Lei, Ye Yang

**Purpose:** the purpose of this meta-analysis was to compare the efficacy and safety of single-dose intra-articular bupivacaine plus morphine versus bupivacaine alone for pain management following arthroscopic knee surgery. **Method:** a comprehensive literature search was conducted to identify randomized controlled trials that used single-dose intra-articular bupivacaine plus morphine and bupivacaine alone for postoperative pain, using Medline (1966 to 2014), Cochrane Library, and Embase databases. The weighted mean difference (WMD), relative risk (RR) and their corresponding 95 % confidence intervals (CIs) were calculated using RevMan statistical software. **Result:** a total of twenty-nine trials (n = 1167) were included. The postoperative visual analog scale (VAS) pain score of the bupivacaine plus morphine group compared with the bupivacaine alone group was significantly lower (WMD, -1.15; 95%CI, -1.67 to -0.63;  $p < .0001$ ). As far as safety, there was no significant difference in side effects between the two groups (RR, 1.10; 95% CI, 0.59 to 2.04; n.s.). Sensitivity analyses suggested that the results of these two primary outcomes were stable and reliable. However, the current evidence didn't suggest a superior effect with respect to the time to first analgesic request (WMD, 51.33; 95% CI, -110.99 to 213.65; n.s.) and the number of patients requiring supplementary analgesia (RR, 1.13; 95% CI, 0.92 to 1.39; n.s.). **Conclusions:** the key findings of the present study were that the single-dose intra-articular bupivacaine plus morphine was significantly better than bupivacaine alone at relieving postoperative pain after arthroscopic knee surgery without increasing the short-term side effects.

**Abstract No.: 40715**

**FUNCTIONAL OUTCOME OF HAHN STEINTHAL FRACTURE CAPITELLUM FIXED WITH K-WIRES VIA POSTEROLATERAL APPROACH**

Aashish Ghodke, Krishnamohan Saindane, Neha Godghate, Ninad Godghate, Sameer Patil

**Introduction:** Isolated coronal shear fractures of the capitellum are extremely rare injuries. Authors continue to differ about the preferred methods of treatment and its results on the functional outcome. If anatomical reduction is not achieved, elbow function is sub-optimal. The purpose of this study was to evaluate the functional outcome following open reduction and internal fixation of Type-1 capitellum fractures with multiple K-wires (2 to 4) via a minimally invasive surgical approach. **Methods:** A retrospective evaluation of 15 patients, 11 females and 4 males, with Type-1/Hahn-Steinthal fracture capitellum according to Bryan-Morreys classification system, within the age-group (21 to 50), operated with open reduction and internal fixation in all cases with multiple (2 to 4) K-wires, in a Criss-cross manner via a minimally invasive posterolateral approach. All 15 patients were available for clinical and radiographic evaluation at a minimum follow-up of 2 years postoperatively. The evaluation of functional outcome was done clinically, radiographically and assessed via MEPI, and the ASES scale. **Results:** All the fractures united uneventfully by the 6-month follow-up on an average. The average MAYO score was 99, i.e. excellent in all fifteen cases. The average ASES score was 91. ROM in flexion/extension averaged 154° , while ROM in supination/pronation averaged 80°. All fractures healed in anatomic position with, no arthritis, avascular necrosis or heterotopic ossification was observed. **Conclusion:** The authors hereby recommend multiple (2 to 4) K-wires as an effective modality of choice in Type-1 capitellum fractures inserted via a minimally invasive posterolateral approach, hence facilitating early mobilisation, to achieve excellent functional outcomes.

**Abstract No.: 40718**

**HIP FRACTURE-DISLOCATION WITH IPSILATERAL LOWER LIMB LONG-BONE FRACTURE:  
TREATMENT AND OUTCOMES**

Yunfeng Yao, Juehua Jing

**Introduction:** Fracture-dislocation of hip with ipsilateral long bone fracture of the lower limb was severe injury and was not usually reported in the literature. The purpose of this retrospective study was to describe the treatment of a series of patients with concomitant fracture-dislocation of hip and ipsilateral lower-limb long bone fracture, and to evaluate outcomes after surgical management. **Methods:** We retrospectively reviewed 21 patients who suffered simultaneous fracture-dislocation of the hip and ipsilateral long-bone fracture of a lower limb between 2007 and 2013. Fifteen patients underwent closed reduction and six underwent open reduction. Sixteen acetabular fractures were treated with open reduction and internal fixation. At the final follow-up, radiologic results were assessed using the scoring system of Matta. The clinical criteria proposed by Merle d'Aubigné and Postel were used to assess clinical outcome. **Results:** All patients received follow-up ranging from 18 to 72 months in duration. Only fourteen dislocations were reduced within 24 hours. Excellent or good clinical outcomes were obtained in 61.8% of the patients. There were four cases appeared femoral head necrosis. Clinical and radiographic outcomes in group with ipsilateral lower-limb long bone fracture were significantly worse than these in group no ipsilateral lower-limb long bone fracture. **Conclusion:** This complex fracture pattern represents a high-energy injury and is often associated with injury to multiple organs, severe injury and delayed reduction result in less satisfactory hip function.

**Abstract No.: 40719**

**LAPAROSCOPIC ACETABULAR FRACTURE FIXATION AFTER THREE DIMENSIONAL MODELING AND PRINTING OF THE ACETABULUM**

Canjun Zeng, Wenhua Huang, Weiyu Han, Guodong Zhang, Huajun Huang, Zhanglin Wu, Dadi Jin

**Introduction:** Current surgical treatment for acetabular fractures is open reduction and internal fixation (ORIF), and requires a large incision resulting in considerable blood loss and a potentially long duration of recovery. Acetabular fractures are complex injuries, and while minimally invasive surgical techniques are used in many fields they are not common for the treatment of acetabular fractures. Three dimensional (3D) modeling is commonly used in medicine, and although 3D printing is used in some fields it has not found widespread use in orthopedics. In this study, we first report a case of an acetabular fracture that received laparoscopic internal fixation after 3D modeling and printing of the acetabulum. **Methods:** A 43-year-old male fell from a height of 3 meters resulting in a right acetabulum anterior column fracture. Thin-section computed tomography (CT) scanning with 0.6 mm increments and subsequent 3D reconstruction was performed, and a 3D model of the acetabulum and fracture was printed. The steel reconstruction plate was prebent ex vivo and placed into the optimized position based on the 3D modeling, and the optimized insert orientation and measured screw length were determined. The fracture was reduced and the plate placed laparoscopically without complications, and the patient had excellent functional recovery. **Results:** 3D reconstruction and printing can allow for highly accurate preoperative planning for the treatment of acetabular fractures such that reduction and fixation can be performed with a minimally invasive laparoscopic approach.

**Abstract No.: 40729**

**AUTOGRAFT VERSUS ALLOGRAFT IN ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS AND SYSTEMATIC REVIEW OF OVERLAPPING SYSTEMATIC REVIEWS**

Guang-Hua Lei, Chao Zeng

**Purpose:** the purpose of this study was to compare autograft with allograft in anterior cruciate ligament (ACL) reconstruction by conducting a meta-analysis of randomized controlled trials (RCTs) and a systematic review of systematic reviews (SRs). **Methods:** PubMed, Embase and Cochrane Central Register of Controlled Trials were searched through on June 26, 2014 to identify Level I and II evidence RCTs with minimum follow-up of two years and SRs that compared autograft with allograft in ACL reconstruction. Both the objective and subjective outcomes, with respect to knee stability and function, were meta-analyzed and summarized. The overall risk ratio (RR) or the weighted mean difference (WMD) was calculated using either a fixed- or random-effect model. **Results:** nine RCTs and ten SRs were included. In general, statistically significant differences in favour of autograft were observed in clinical failure (RR, 0.47;  $p=0.0007$ ), Lachman test (RR, 1.18;  $p=0.03$ ), instrumented laxity test (WMD, -0.88;  $p=0.004$ ), and Tegner score (WMD, 0.36;  $p=0.004$ ). When subgroup analyses were conducted based on irradiation or non-irradiation, autograft achieved better clinical outcomes compared to irradiated allograft in terms of Lysholm score, clinical failure, Pivot-shift test, Lachman test, Instrumented laxity test, and Tegner score. In addition, there was no significant difference between autograft and non-irradiated allograft groups for all the eight indices. Final results of this SR of overlapping SRs were in accordance with the present meta-analysis. **Conclusions:** autograft had greater advantages than irradiated allograft with respect to function and stability, while there was no significant difference between autograft and non-irradiated allograft.

**Abstract No.: 40733**

**THE RELATIONSHIP BETWEEN THE CONCENTRATION OF NPY AND HA IN SYNOVIAL FLUID OF KNEE AND STRUCTURAL SEVERITY OF KOA**

Lei Wang, Li Zhang, William W Lu, Haobo Pan, Songlin Peng

**Introduction:**Due to the known and suggested effects of neuropeptide Y (NPY) and hexadecenoic acid (HA) , we have sought to investigate the relationship between the concentration of NPY and HA in synovial fluid of knee and structural severity of KOA.**Methods:** One hundred KOA patients and twenty healthy participants (control group) were recruited. The radiographic grade of KOA were assessed by Tomihisa Koshino's scoring system. Synovial fluid of knee from all participants was collected with arthrocentesis. Radioimmunoassay was used to examine the concentration of NPY and HA in synovial fluid of knee.**Results:**Concentrations of NPY and HA in synovial fluid were significantly higher in KOA patients compared with controls . According to Tomihisa Koshino's scoring system, 100 KOA patients were divided into 3 subgroups. Concentrations of NPY in middle and advanced stage groups of KOA patients were significant higher than early stage group of KOA patients . Concentrations of HA in advanced stage group of KOA patients has significant difference compare with middle stage group of KOA patients, but NPY in advanced stage group of KOA patients hasn't significant difference compare with middle stage group of KOA patients. **Conclusions:**This study demonstrated the presence and variation of concentrations of NPY and HA in the KOA joint fluid, suggesting a role for NPY and HA as biomarkers in degeneration of KOA.



**Abstract No.: 40736**

**HIGH-INTENSITY ISOTONIC CONTRACTION OF THE TRICEPS SURAE INCREASES LOWER EXTREMITY VENOUS BLOOD FLOW VELOCITY**

Kouji TSUDA, Ato Shinkai, Naonobu Takahira, Kazuki Kaji, Miki Sakamoto

**Introduction:** Active ankle exercise (AAE), a prophylactic method for venous thromboembolism (VTE), considerably increases lower extremity venous blood flow velocity, but only in the absence of resistance. Hence, to intensify its effect, we designed resistance AAE and examined how the intensity of the isotonic contraction of the triceps surae affects lower extremity venous blood flow velocity in order to determine the appropriate intensity of AAE as VTE prophylaxis. **Materials and Methods:** Twenty healthy young adult men (age,  $22.2 \pm 1.3$  years) performed ankle movements from neutral to maximal plantar-flexed position and back to neutral position, every 2 seconds. Resistance intensity was defined according to 5 conditions of one repetition of maximum (1RM) ankle plantar flexion: no resistance, 25%1RM, 50%1RM, 75%1RM, and 100%1RM. Resistance was applied using a leg press machine. We measured peak blood flow velocity of the right superficial femoral vein (PV) twice in the supine position on pulsed Doppler ultrasonography (Aloka, SSD-4000). After 10 minutes' rest, we measured the baseline PV. Before the next condition, we assessed whether PV returned to its baseline value. The mean of two measurements was used in the statistical analysis. **Results:** The PVs in all the conditions were significantly higher than the baseline PV ( $p < 0.05$ ). The PV increase rates were significantly higher at 75%1RM and 100%1RM than without resistance ( $p < 0.05$ ). **Discussion:** To significantly increase PV in one plantar-flexion motion, resistance  $>75\%1RM$  is required. However, high-intensity resistance disables frequent exercise. Thus, we recommend frequent exercises of only about 25%1RM.

**Abstract No.: 40741**

**FUSION-NONFUSION HYBRID CONSTRUCT VERSUS ANTERIOR CERVICAL HYBRID DECOMPRESSION AND FUSION: A COMPARATIVE STUDY FOR 3-LEVEL CERVICAL DEGENERATIVE DISC DISEASES**

Fan Ding,

**Introduction:** The optimal anterior technique for 3-level cervical degenerative disc diseases (cDDD) remains uncertain. This study aimed to compare the safety and efficacy between the fusion-nonfusion hybrid construct (HC: anterior cervical corpectomy and fusion plus artificial disc replacement, ACCF plus cADR) and anterior cervical hybrid decompression and fusion (ACHDF: anterior cervical corpectomy and fusion plus discectomy and fusion, ACCF plus ACDF) for 3-level cDDD. **Methods:** Between 2009 and 2012, 28 patients with 3-level cDDD who underwent HC (n=13) and ACHDF (n=15) were retrospectively reviewed. Clinical assessments were based on Neck Disability Index (NDI), Japanese Orthopedic Association (JOA) disability scale, visual analogue scale (VAS), JOA recovery rate, and Odom criteria. Radiological analysis included range of motion (ROM) of C2–C7 and adjacent segments and cervical lordosis (CL). Perioperative parameters, radiological adjacent-level changes, and the complications were also assessed. **Results:** HC showed better NDI improvement at 12 and 24 months, as well as JOA and VAS improvement at 24 months postoperatively ( $P < 0.05$ ). HC had better outcome according to Odom criteria but not significantly ( $P > 0.05$ ). The ROM of C2–C7 and adjacent segments was less compromised in HC ( $P < 0.05$ ). Both groups showed significant CL recovery postoperatively ( $P < 0.05$ ), but no difference was found ( $P > 0.05$ ). The incidence of adjacent-level degenerative changes and complications was higher in ACHDF but not significantly ( $P > 0.05$ ). **Conclusion:** HC may be an alternative to ACHDF for 3-level cDDD due to the equivalent or superior early clinical outcomes, less compromised C2–C7 range of motion, and less impact at adjacent levels.

**Abstract No.: 40746**

**HIDDEN BLOOD LOSS IN THE TREATMENT OF FEMORAL INTERTROCHANTERIC FRACTURES WITH PFNA**

Zhuo Ma, Shimin Chang, Xiaozhong Zhu

**Introduction:** To analyze the perioperative blood loss in geriatric intertrochanteric fractures treated with PFNA, and to enhance the clinical realization of hidden blood loss. **Methods:** A retrospective case series of 289 patients with an average of 85.4 years, operated between 2009 and 2013 was reviewed. The blood volume and its estimated loss were calculated by Gross formula, on according to the change of pre- and post-operative haemocrit. **Results:** There were 181 cases (62.6%) in the non-blood transfusion group with mean age of 79.2 years. The mean haemoglobin was 113.2g/L preoperatively and 85.3g/L postoperatively (decreased 27.9g/L), and the mean haemocrit was 34.27% preoperatively and 26.13% postoperatively (decreased 8.14%). The calculated mean total blood loss was 937 ml with observed loss during operation and drainage 169 ml. There were 108 patients (37.4%) in the blood transfusion group with an average of 89.7 years. The mean blood transfusion volume was 646ml. The mean Haemoglobin value was 98.4g/L preoperatively and 96.1g/L postoperatively (decreased 2.3g /L), the mean haemocrit was 29.97% preoperatively and 29.35% preoperatively (decreased 0.62%). The calculated mean total blood loss was 706ml with observed loss during operation and drainage 137ml. The hidden blood loss was 768ml in non-transfusion group and 569ml in transfusion group, which was about 6 times greater than the observed blood loss, and occupied about 80% of the total blood loss volume. **Conclusion:** The hidden blood loss was found in the treatment with PFNA and could lead to severe postoperative anemia.

**Abstract No.: 40749**

**A PROSPECTIVE STUDY OF DYNAMIC TREATMENT OF FRACTURE PHALANX AND METCARPALS OF THE HAND WITH K-WIRE FIXATION/EXTERNAL FIXATOR AND FINGER SPLINT-DAY CARE MANAGMENT**

Yuvraj Hira,

Introduction: Fractures of the phalanx and meta-carpals are some of the most frequently encountered orthopaedics injuries. Phalangeal fractures comprises 46% of the hand fractures and out of that mostly involved are the proximal phalanx and then the middle and distal phalanx. Conventionally buddy strapping and splinting treated these fractures. Complications were stiff painful joints due to prolonged immobilisation. In our study we treated patients either with k-wire or external fixation or hybrid fixation depending on the type of fracture. Materials and methods: In our prospective study we are reporting our experience in 30 cases performed in DR. D.Y. Patil medical college Pune during july2013 to july2014 the patients were treated by fixation either with kwire or external fixation or by hybrid fixation. These were day care treatment i.e. patients were admitted, treated and discharged on the same day. All the cases were done under local anesthesia. Depending upon the type of fracture whether intra-articular or extra-articular or combined or with subluxation or dislocation the mode of treatment was planned. Results: This was a day care procedure and patients were encouraged to begin mobilization of the joints of hands from day1. Patients were allowed to begin his daily routine work. During this course the operated site was protected with splinting(frog splint/cock-up splint). Conclusion: We would like to conclude that k-wire fixation/external fixator and finger splint(hybrid fixation) is the ideal surgical management for the treatment for fractures of the phalanx and metacarpals.

**Abstract No.: 40751**

**THE VERTEBRAL MORPHOLOGY IN KUMMELL'S DISEASE AND THE FEATURES OF PVP AND PKP**

Shulian Chen, Xiaobing Zhao

Introduction: To evaluate the effectiveness of percutaneous vertebroplasty(PVP) and percutaneous kyphoplasty(PKP ) for the treatment of osteoporotic vertebral Kummell's disease. Methods :63patients suffered 65 vertebral Kummell's diseases were treated with PVP or PKP. PVP group: 35 segments in 33 patients,,PKP group:, 30 segments in 30 patients Clinical outcomes were evaluated using VAS. the restorations of kyphosis, the rate of cement leakage. Results, Postoperative VAS scales(1 day, 1 week, 4 weeks, 12 weeks, 24 weeks, 1 year) of all patients reduced obviously with a significant difference( $P<0.01$ ), the changes of VAS had no significant difference between two groups( $P>0.05$ ).The restorations of kyphosis were observed in both groups, but no significant difference between two groups( $P>0.05$ ).All patients were satisfied with these treatments, but no significant difference between two groups ( $P>0.05$ ) .The rates of cement leakage had no significant difference between two groups ( $P>0.05$ ). Conclusion PVP and PKP. can both effectively relieve the back pain, obtaining the partly restorations of kyphosis .the closed space developed by the up and down surfaces and the anterior longitudinal ligament contributes to the lower rates of cement leakage besides , PVP can be more popular with the patients due to its less steps and less economic load .

**Abstract No.: 40752**

**A NEW MODIFIED RESECTION ARTHROPLASTY IN POST-TRAUMATIC STIFFNESS OF PROXIMAL INTERPHALANGEAL JOINT**

Rex Chandrabose, Kumar Aswin

Background: Stiffness is a common presentation following any traumatic insult to the fingers of the hand, and are usually left alone due to unpredictable surgical outcomes. We present a technique of Resection arthroplasty of the PIP joints, which provides a predictable outcome in such cases, and is cost effective with extreme patient satisfaction. Materials and methods: Patients (n=34) with post-traumatic stiffness of fingers (thumb excluded) affecting the PIP joints, were chosen for this study and evaluated prospectively. The functional outcomes have been measured by the Total Active Motion Score (ASSH), the Belsky's criteria and the Grip strength. All patients were followed up for a period of 2 years. A formula on initial bone resection was also agreed upon during this study. Results: All 34 patients showed considerable improvement in function and grip strength. Excellent to good results were obtained in 30 patients as per the TAM score and a grip strength of grade 4 or more. Relatively poor functional outcome was noted in 4 patients, who had low grip strength and instability. Conclusions: Resection arthroplasty of the PIP joints for finger stiffness is a reliable method providing predictable functional outcome in stiff fingers with a good soft tissue envelope. This surgical procedure is technically demanding in terms of soft tissue balancing and the amount of bone resection for which a formula has been proposed by us in this study.

**Abstract No.: 40754**

**EPIGENETICS IN LEGG-CALVE-PERTHES DISEASE: A STUDY OF GLOBAL DNA METHYLATION**

Pengfei Zheng, Yue Lou

**Background:** The etiopathogenesis of Legg-Calvé-Perthes disease (LCPD) remains unclear. To date, no specific genes have been conclusively demonstrated to be associated with the development of LCPD. Many factors, including the inflammatory process, vascular occlusion, thrombophilia, and smoke exposure may be linked to the occurrence of LCPD. These factors are closely associated with DNA methylation; however, altered global DNA methylation in patients with LCPD has not been reported. In the current study, we examined the global methylation status of DNA in blood cells of children with LCPD. **Methods:** Methylation levels of the Long interspersed nuclear element 1 (LINE-1), a biomarker of global DNA methylation, were quantified by methylation-specific PCR. A total of 82 children with LCPD (68 males and 14 females) and 120 controls (98 males and 22 females) matched for age, sex and body mass index were evaluated. **Results:** Methylation of the LINE-1 promoter was significantly lower in patients with LCPD compared to controls. We found that methylation of the LINE-1 promoter was significantly lower in males with LCPD as compared to male controls. No significant differences were observed in females. **Conclusions:** Reduced global DNA methylation is associated with an increased risk of LCPD in male children. It may provide theoretical basis for clinical diagnosis and early intervention of LCPD.

**Abstract No.: 40756**

**BIOMARKERS IN PROSTHETIC ASEPTIC LOOSENING OF ARTHROPLASTY: A SYSTEMIC REVIEW**

Tao He, Yuanqing Mao, Mengning Yan, Kerong Dai, Weidong Xu

**Background :** Various biomarkers were investigated in prosthetic aseptic loosening (AL) of arthroplasty, but the results were controversial. We systematically reviewed the studies of biomarkers in AL to screen the efficient ones. **Methods :** The databases PubMed, OvidMedline, Embase and WanfangData (Chinese) were reviewed and total 32 longitudinal studies about biomarkers in AL with complete data were included. The infection, tumor or metabolic bone disease etc. were excluded from participants. The study quality was assessed by Oxford Center for Evidence-based Medicine (CEBM) and the Newcastle-Ottawa Quality Assessment Scale (NOS) and the evidences were synthesized to show the efficacy and recommendation grade of each biomarker in AL. **Results:** The studies of biomarkers in AL increased quickly. There're total 48 kinds of biomarker investigated and 33 of them had statistically significant differences. Only cross-linked N-telopeptide of type I collagen (NTX) had moderate evidence for AL and the grade of recommendation was B. The interleukin (IL)-1 $\beta$ , tumor necrosis factor (TNF)- $\alpha$ , IL-8, tartrate resistant acid phosphatase (TRAP), prostaglandin E2 and osteocalcin (OC) had limited evidence and the grade of recommendation was C. **Conclusion:** Among various biomarkers investigated in periprosthetic AL of arthroplasty, IL-1 $\beta$ , TNF- $\alpha$ , IL-8, TRAP, PGE2, OC and especially NTX had moderate evidence and could be recommended as efficient and reliable markers in detecting AL.



**Abstract No.: 40758**

**THE APPLICATION OF THE GONIOMETER IN DEROTATIONAL OSTEOTOMY OF THE PROXIMAL FEMUR**

Ziming Zhang,

Derotational osteotomy (DO) is a routine procedure in the proximal femur, especially in patients with developmental dysplasia of the hip (DDH), coxa vara, or Legg-Calve-Perthes disease (LPCD). Correction of the femoral anteversion angle is the key point of achieving the aim of the operation. A new goniometer is developed to use in DO in our institution since 2014. Before osteotomy, two 1.5mm Kirschner wires are fixed into the proximal and distal femur separately as the reference line. Both pins must be lined up with a straight steel ruler. After osteotomy, the stationary arm of the goniometer is inserted into one of the pins. Then the degree of rotation is measured by the moveable arm with the help of the straight ruler. In our present series, totally 30 patients who were performed with DO due to DDH, coxa vara, or LPCD, acquired the expected degree of femoral anteversion angle.

**Abstract No.: 40770**

**CHANGES OF HEMOGLOBIN AND HEMATOCRIT IN ELDERLY PATIENTS RECEIVING TOTAL HIP AND KNEE ARTHROPLASTY**

Qi Zhou, Hai-Shan Wu, Yu-Li Wu, Qi-Rong Qian

Background: It has rarely been reported about the changes of hemoglobin (Hb) and hematocrit (Hct) in elderly patients receiving total knee arthroplasty (TKA) or total hip arthroplasty (THA). Objective: This study aimed to evaluate the changes of Hb and Hct after TKA or THA in elderly patients, and analyze its relationship with sex and type of arthroplasty. Methods: This is a prospective cohort study including 107 patients receiving TKA or THA without allogeneic blood transfusion. There were 54 males and 53 females, with a mean age of 69.42 years. Levels of Hb and Hct were examined preoperatively and during the 6 months follow-up after operation. Results: Levels of Hb and Hct decreased postoperatively and reached their minimum points on postoperative day 4. Thereafter, Hb and Hct recovered to their preoperative levels within 6-12 weeks. No significant differences in the levels of Hb and Hct were noticed between different sexes. THA patients showed significantly greater drop in Hb and Hct than TKA patients in the first 4 days postoperatively ( $P < 0.05$ ). Conclusion: Levels of Hb and Hct decreased during the first 4 days after arthroplasty and gradually returned to their normal levels within 6-12 weeks postoperatively. THA may be associated with higher postoperative blood loss than TKA.

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**Abstract No.: 40779**

**ZERO-PROFILE IMPLANT (ZERO-P) VERSUS PLATE CAGE BENEZECH IMPLANT (PCB) IN THE TREATMENT OF SINGLE-LEVEL CERVICAL SPONDYLOTIC MYELOPATHY**

Zhidong Wang, Ruofu Zhu, Huilin Yang

introduction: compare the clinical effects of zero-profile implant and plate cage benezech implant (PCB) on treating cervical spondylotic myelopathy. Methods: conduct anterior cervical discectomy and fusion (ACDF) to 57 patients with single level cervical spondylotic myelopathy from January 2010 to October 2012 with 27 patients adopting Zero-p as implant (Zero-p group) and 30 patients adopting integrated plate cage benezech (PCB) as implant (PCB group). Observe whether are differences between the two groups of patients on operation time, intraoperative blood loss, JOA scores, intervertebral height, cervical physiological curvature, fusion rate, Postoperative dysphagia and complications. Results: Zero-p group's operation time is  $98.2 \pm 15.2$  min and its intraoperative blood loss is  $88.2 \pm 12.9$  ml, both of which are lower than those of PCB group ( $109.8 \pm 16.9$  min,  $95.2 \pm 11.6$  ml) ( $P < 0.05$ ). The two groups' JOA scores three months after operation and in the last follow-up are significantly higher than those before operation ( $P < 0.05$ ). The two groups' operation segments intervertebral height and Cobb angle three months after operation and in the last follow-up improves obviously compared with before operation ( $P < 0.05$ ). Zero-p group has one patient with dysphagia after operation and PCB group has four patients with dysphagia after operation, so there is no statistical differences on dysphagia rate ( $P > 0.05$ ). PCB group has two patients with screws backing out and two patients with hoarseness after operation, Zero-p group postoperative complications are lower than PCB group ( $P < 0.05$ ). Conclusions: Zero-p and PCB both achieved good clinical effects on the treatment of cervical spondylotic myelopathy, but Zero-p has the advantages of short operation time, less intraoperative blood loss and less complications.

**Abstract No.: 40787**

**K WIRE TECHNIQUE FOR REMOVAL OF UNCEMENTED FEMORAL STEM IN REVISION THA**

Mahmoud Hafez,

Introduction: Failure of primary total hip arthroplasty (THA) has been repeatedly reported although the recent advancements in digital templating, preoperative planning and surgical techniques. Due to the increasing number of revision THA surgeries especially for uncemented prostheses, we describe herein a new technique to remove well-fixed uncemented femoral stem using K wires avoiding any bone cutting or osteotomy. Patients and Methods: We applied the K wire technique for five patients who had revision THA for a well-fixed uncemented femoral stem. The technique involves using multiple K wires to be inserted in the metal-bone interface circumferentially to create a space and loosen the femoral stem. Results: Removal of femoral stem in all cases was done successfully using K wires without converting to any type of femoral osteotomies. The assessment showed no evidence of bone loss or fracture after one month to 3 years follow up. Conclusion: K wire technique is simple, inexpensive and safe procedure to be used for removal of uncemented femoral stem.

**Abstract No.: 40790**

**ANTHROPOMETRY OF ARABIAN ARTHRITIC KNEES: COMPARISON TO OTHER ETHNIC GROUPS**

Mahmoud Hafez, Emad Saweeres, Sharafeldin Sheikhedrees

Introduction: Morphology of the knee joint varies from one ethnic group to another, according to gender and the morphotype of the patients. No studies have been previously published regarding anthropometric parameters of the Arabian knee. Objectives: To measure the dimensions of the proximal tibia and distal femur of the osteoarthritic knees of Arabian patients and to identify the morphological matching between resected these bony surfaces in individual Arabian knee. Methods: 3D CT reconstructions (AP and mediolateral) were initially obtained for PSI planning and used to collect morphologic data from 124 Arab osteoarthritic knees. These measurements were compared to other ethnic group (Caucasian and Asian). The Arabian anthropometry was also compared to the dimension for six different types of knee implants. Results: The average tibial mediolateral (tML) and tibial anteroposterior (tAP) measurements for Arabian knees were  $74.36 \pm 6$  mm and  $48.94 \pm 4.57$  mm, respectively; the medial tibial plateau was larger than lateral. The average femur mediolateral (fML) and femur anteroposterior (fAP) measurement for Arabian knees were  $72.04 \pm 6.6$  and  $68.1 \pm 7.75$ , respectively. Differences were found between morphometric measurements of males and females with significantly higher parameters for males when compared to female in AP and mediolateral dimensions. Conclusions: The size of Arabian knees was generally smaller than Caucasian and larger than Asians. There is significant asymmetry of proximal tibial plateau and femur condyles. These ethnic differences should be considered when designing knee implants.

**Abstract No.: 40794**

**DAMAGE CONTROL ORTHOPEDIC IN THE TREATMENT OF THE ELDERLY FEMORAL  
INTERTROCHANTERIC FRACTURES GUIDED BY POSSUM SCORING SYSTEM**

Meng Wang,

Introduction: To evaluate the clinical efficacy of damage control orthopedic in the treatment of the elderly femoral intertrochanteric fracture guided by POSSUM scoring system. Method: From December 2008 to December 2013, a total of 166 patients over 80 years with intertrochanteric fracture treated by damage control techniques were recruited. There were 68 males and 98 females. AO classification: type A1 in 18 cases, type A2 in 89 cases and type A3 in 59 cases; preoperative diagnosis of 135 cases with obvious medical disease. The incidences of complications and mortality were assessed by POSSUM scoring system. The low-risk group ( $\text{POSSUM} < 20$  points) after carefully examination can arrange surgery in short term. The high-risk group ( $\text{POSSUM} \geq 20$  points) was actively corrected medical illness and adjusted the patient's general state, wait for the next timing of surgery. Results: On admission, there were 61 cases in low-risk group and 105 cases in high-risk group. The preoperative score, the incidences of complications and mortality in low-risk group was significantly different with high-risk group. Predicted incidences of complications and mortality were  $(48.6 \pm 6.8)\%$  and  $(10.12 \pm 1.86)\%$  prior to damage control, but incidences of complications and mortality were  $(35.6 \pm 4.5)\%$  and  $(4.58 \pm 1.36)\%$  after damage control. The actual complications and mortality were 37.35% and 1.81%. The use of damage control can significantly reduce preoperative scoring results, thereby reducing morbidity and mortality. Conclusion: POSSUM scoring system can guide physicians to implement damage control measures for the elderly patients with intertrochanteric fracture, to avoid risks and reduce the incidences of postoperative complications and mortality.

**Abstract No.: 40797**

**SURGICAL TREATMENT OF FRACTURES OF DISTAL FEMUR?OUR EXPERIENCE AND A REVIEW OF LITERATURE**

Yifu Zhuang, Yaokai Gan

Objective: To explore the optimum surgical treatment of fractures of distal femur, and compare the outcome of locking plates and intramedullary nails. Method and material: From 2006 and 2014, 35 fractures of distal femur were diagnosed and treated in our department. Mean age is 59.3 years old(range from 21 to 90),the predominance of male patients is 45.7%. There were 16(45.7%) AO33A type, 2(5.7%) AO33B type and 17(48.6%) AO33C type fractures, including 5 multiple injuries and 12 open fractures. Most patients were treated by open reduction internal fixation. Shelbourne standard score was used to assess functional recovery. A systematical search was performed at Pubmed,Embase and Web of Science to compare the outcome of locking plates and intramedullary nails.Results: After a fellow-up of 6 months to 2 years,23 patients were excellent,9 were well, the excellent and good rate was 91.4%. Complication include one delayed union, two non-union and one knee varus. Two methods(locking plates and intramedullary nails) appear to have the same percentage of excellent results and same time to bony union. Conclusion: Anatomical reduction and mechanical axis restoration are the critical factors to ensure an excellent outcome. Bone graft is recommended in patients with huge defect.



**Abstract No.: 40806**

**AN ANALYSIS OF SPINOPELVIC SAGITTAL ALIGNMENT AFTER LUMBAR LORDOSIS RECONSTRUCTION FOR DEGENERATIVE SPINAL DISEASES: HOW MUCH BALANCE CAN BE OBTAINED?**

Hui Liu, Zhaomin Zheng

Objective: To explore the changes in spinopelvic sagittal alignment after lumbar instrumentation and fusion of degenerative spinal diseases. Methods: Radiographical analysis of 83 patients with spinal degeneration was performed by measuring sagittal parameters before and after operations. Comparative studies of sagittal parameters between short (1 level) and long ( $\geq 2$  level) instrumentation and fusion were performed. Different variances ( $\Delta$ ) of these sagittal parameters before and after operations were calculated and compared. Correlative study and linear regression were performed to establish the relationship between variances. Results: No significant changes were shown in the short-fusion group postoperatively. In the long-fusion group, postoperative lumbar lordosis (LL) and sacral slope (SS) were significantly increased; pelvic tilt (PT), sagittal vertical axis (SVA), pelvic incidence minus lumbar lordosis, and PT/SS were significantly decreased. Different variances of  $\Delta LL$ ,  $\Delta SS$ ,  $\Delta PT$ ,  $\Delta SVA$ ,  $\Delta(\text{pelvic incidence} - LL)$ , and  $\Delta PT/SS$  were significantly greater in the long-fusion group than the short-fusion group. Close correlations were mainly shown among  $\Delta LL$ ,  $\Delta PT$ , and  $\Delta SVA$ . Linear regression equations could be developed ( $\Delta PT = -0.185 \times \Delta LL - 7.299$  and  $\Delta SVA = -0.152\Delta LL - 1.145$ ). Conclusion: In degenerative spinal diseases, long instrumentation and fusion ( $\geq 2$  levels) provides more efficient LL reconstruction. PT, SS, and SVA improve corresponding to LL in a linear regression model. Linear regression equations could be developed and used to predict PT and SVA change after long instrumentation and fusion for LL reconstruction.

**Abstract No.: 40819**

**MAIN THORACIC CURVE ADOLESCENT IDIOPATHIC SCOLIOSIS: ASSOCIATION OF HIGHER ROD STIFFNESS AND CONCAVE-SIDE PEDICLE SCREW DENSITY WITH IMPROVEMENT IN SAGITTAL THORACIC KYPHOSIS RESTORATION**

Hui Liu, Zhaomin Zheng

**Object:** The aim of this study was to evaluate the effects of rod stiffness and implant density on coronal and sagittal plane correction in patients with main thoracic curve adolescent idiopathic scoliosis (AIS). **Methods:** The authors conducted a retrospective study of 77 consecutive cases with Lenke Type 1 main thoracic curve AIS who underwent single-stage posterior correction and instrumented spinal fusion with pedicle screw fixation. Radiological parameters in the coronal and sagittal planes were measured and analyzed. Patients were divided into 4 groups based on the type of rod and density of screw placement that had been used. **Results:** The mean coronal correction rate of the major curve, for all 77 patients, was  $(81.45\% \pm 7.51\%)$ , and no significant difference was found among the 4 groups. Regarding sagittal plane correction, Group A showed a significant decrease in TK after surgery, while Group D showed a significant increase; Group B and C showed no significant postoperative changes in TK. The TK restoration rate was highest in Group D and lowest in Group A. Screw density on the concave side was significantly higher than that on the convex side in all the groups. **Conclusions:** For flexible main thoracic curve AIS, both rods with high stiffness and those with low stiffness combined with high or low screw density could provide effective correction in the coronal plane; rods with high stiffness along with high screw density on the concave side could provide better outcome with respect to sagittal TK restoration.

**Abstract No.: 40822**

**COMPARISON OF SMITH-PETERSEN OSTEOTOMY AND PEDICLE SUBTRACTION OSTEOTOMY FOR THE CORRECTION OF THORACOLUMBAR KYPHOTIC DEFORMITY IN ANKYLOSING SPONDYLITIS: A SYSTEMATIC REVIEW AND META-ANALYSIS.**

Hui Liu, Changsheng Yang, Zhaomin Zheng

**Objective:** To compare the efficacy and safety outcomes of SPO and PSO for AS patients with thoracolumbar kyphotic deformity. **Methods:** A systematic literature search was performed. Studies concentrating on treating thoracolumbar kyphotic deformity due to AS with SPO and/or PSO were included. Efficacy was determined with radiographic outcomes, including sagittal vertical axis (SVA) and lumbar lordosis (LL). Safety was determined with complication rates. The data were analyzed with Review Manager and R software. **Results:** Twenty-three studies were included. Among them, five were comparative studies and were used for a meta-analysis. All twenty-five studies were pooled to evaluate the radiographic correction and incidence of complications. The meta-analysis of the five comparative studies showed no significant difference between groups in either correction of SVA and LL or incidence of complications. The pooled data also showed similar radiologic correction and complication rates between SPO and PSO. SPO was found to have potential risk of aortic rupture and slightly higher risk of permanent neurological deficit without statistical significance, while PSO was shown longer operative time and more blood loss. **Conclusions:** This systematic review and meta-analysis demonstrates that both SPO and PSO are effective in correcting thoracolumbar kyphotic deformity in AS and have similar risk of most complications. Aortic rupture and related death during correction is reported in SPO and should be taken into consideration for decision-making.

**Abstract No.: 40826**

**POSTERIOR VERTEBRAL COLUMN RESECTION IN SPINAL DEFORMITY: A SYSTEMATIC REVIEW.**

Hui Liu, Changsheng Yang, Zhaomin Zheng

**Purpose:** This study aimed to assess the amount of correction and risk of complications of posterior vertebral column resection (PVCR) in the treatment of spinal deformity. **Methods:** A comprehensive research was conducted in MEDLINE, EMBASE and Cochrane Database of Systematic Reviews for published articles about PVCR in spinal deformity. Data from these included studies were pooled with the help of the Review Manager software from the Cochrane Collaboration and the R software. The amount of correction of PVCR was indicated with change of coronal and sagittal Cobb angle after operation. Risk of complications was demonstrated with prevalence. **Results:** 7 studies, a total of 390 patients, were included for analysis. The average operative time for PVCR was 430 min and the estimated blood loss was 2639 ml. The mean amount of correction by PVCR was 64.1° in scoliosis and 58.9° in kyphosis, accounting a correction rate of 61.2% and 63.1%, respectively. As to coronal and sagittal imbalance, data were limited. The overall prevalence of complications of PVCR was 32% . The most common was neurologic complications, estimated to be 8%. And risk of spinal cord injury was 2% . The revision rate was 6%. Incidence of infection was pooled to be 2% . Complication rate related with implant was 2% . **Conclusion:** PVCR is a powerful surgical procedure for severe spinal deformity. However, it has the risk of excessive blood loss and major complications. Decision of PVCR should be prudent and the procedure should be performed by an experienced surgical team.

**Abstract No.: 40827**

**SAGITTAL BALANCE EVALUATION OF SPINAL DEFORMITIES USING CURVE HARMONY ANGLES**

Hui Liu, Zhaomin Zheng

**Objective:** To introduce Curve Harmony Angle (CHA) to quantify the relationship between adjacent curves of the spine and pelvis and evaluate sagittal balance in spinal deformities. **Methods:** Radiographic analysis of 93 asymptomatic volunteers and 95 patients including Degenerative Scoliosis (DS), Adolescent Idiopathic Scoliosis (AIS) and Ankylosing Spondylitis (AS) was performed by measuring sagittal parameters. Correlation study among parameters was further conducted. Curve Harmony Angles (CHAs) including the following three parameters were measured. Cervical-Thoracic Angle (CTA), Thoracic-Lumbar Angle (TLA) and Lumbar-Sacral Angle (LSA). Comparative study between normal population and different spinal disorders were performed in order to describe the characteristic changes of CHAs. Besides, according to Schwab SRS adult deformity classification, comparative study of CHAs in different balance status was performed to test the reliability of CHA on sagittal balance evaluation. **Results:** All subjects showed typical changes of sagittal parameters. Different spinal disorders showed characteristic patterns of CHAs. In Schwab-SRS Adult Deformity Classification, Compensatory Balance group showed smaller LSA compared to Balance group; Imbalance group showed significantly smaller CTA, LSA and significantly greater TLA. **Conclusion:** CHAs are parameters used to quantify the relationship between adjacent curves. Comparative study of CHA between normal population and different spinal disorder or among different balance status showed specific characters respectively. It is feasible to use CHA to evaluate the clinical sagittal balance and the results of deformity correction.

**Abstract No.: 40828**

**SPINO-PELVIC SAGITTAL ALIGNMENT ANALYSIS IN SEVERE ADULT IDIOPATHIC SCOLIOSIS**

Hui Liu, Zhaomin Zheng

**Objective:** To investigate the spino-pelvic sagittal alignment characters of severe scoliosis.

**Methods:** A total of 79 asymptomatic volunteers, 83 mild and 69 severe scoliosis patients (41 Severe Thoracic curve (ST) and 28 Severe Thoraco-Lumbar/Lumbar curve (STL/L)). The coronal and sagittal alignments were measured. Correlations between the parameters were determined using the Pearson correlation coefficient. Comparison of the values for the same parameters in different groups was done with a one-way ANOVA and rank-sum test. **Results:** In severe scoliosis, LL, TLK, TK, and PRS1 were significantly increased and PI-LL were significantly decreased while SVA (within normal range) was significantly increased and SS was significantly decreased in Thoraco-Lumbar/Lumbar curve Scoliosis. Correlation were absent between coronal parameters and sagittal parameters in asymptomatic volunteers and mild Thoracic curve scoliosis, while correlation were shown between Cobb angle and TK and TLK in the other three groups. Besides, different correlation between CB and sagittal parameters were shown in mild Thoraco-Lumbar/Lumbar curve scoliosis and severe scoliosis curves. Correlation were shown between LL and TK, LL and TLK, PI and PT and PI and SS. Correlation between TK and TLK was shown in asymptomatic volunteers and severe scoliosis patients. Correlation between TK and SVA was only shown in severe scoliosis patients. Correlation between LL and SVA were only shown in Thoraco-Lumbar/Lumbar curve scoliosis . **Conclusions:** Severe scoliosis showed characteristic changes of increased TK, TLK, LL and decreased PI and PT. The morphology of pelvis in severe scoliosis patients was changed into a narrow and horizontal shape.

**Abstract No.: 40836**

**THE ANATOMY OF THE LATERAL FEMORAL WALL**

Zhuo Ma, Shimin Chang, Shouchao Du, Sunjun Hu

**Introduction:** The lateral femoral wall plays an important role in the stability of intertrochanteric fracture. The purpose of this study was to determine the area and dimensions of the lateral femoral wall and the soft tissue attached on the lateral femoral wall. **Method:** We defined the lateral femoral wall was the lateral femoral cortex proximal to the vastus ridge and distal to mid-point of less trochanter. Twenty-two normal adult freeze-dried femurs were digitized. Five fresh-frozen cadaveric hips were dissected. The cross tendon of gluteus medius, gluteus minimus and vastus lateralis on the lateral femoral wall were digitized and mapped. The area, location, and dimensions of the lateral femoral wall and the cross tendon insertion were determined. **Results:** The mean height of lateral femoral wall (the distance between the tip of vastus ridge and the level the mid-point of less trochanter) is  $24.35 \pm 2.36$ mm, the mean width (the distance at the mid-height) is  $23.25 \pm 2.02$ mm. The mean area is  $567.02 \pm 82.83$ mm<sup>2</sup>. We also observed gluteus medius, gluteus minimus, vastus lateralis cross on the lateral femoral wall, arranging like “y”. The mean length of the cross tendon is  $33.22 \pm 2.34$ mm, the mean width is  $28.16 \pm 1.95$ mm, the mean thickness is  $1.60 \pm 0.13$ mm, the mean area is  $784.45 \pm 66.66$ mm<sup>2</sup>. **Conclusion:** The lateral femoral wall and the attached soft tissue play important roles in the stability of intertrochanteric fracture. The injury of the lateral femoral wall should be accurately estimated preoperatively and the attached soft tissue should be protected in the treatment as far as possible.

**Abstract No.: 40838**

**AN EARLY CT MEASUREMENT RESULT OF ARTHROSCOPIC LATARJET PROCEDURE WHICH USED SUTURE ANCHOR TO FIX BONE BLOCK**

Xu Cheng, Guo-Qing Cui

Since 2014, March, 44 patients accepted arthroscopic Latarjet procedure which used suture anchor to fix bone block. Among them, male 28 cases, female 16 cases, average age is 27 years old. The average duration of medical history is 6.1 years. The average dislocation times is 13. Average glenoid bone defects is 13%. The first day postoperative CT examination showed that the bone block located around 4.25 o'clock. The average height of bone block is 0.5mm. The average thickness of bone block is 9.0mm, the average contact area is 120.1mm<sup>2</sup>. Six months post operation, CT examination showed that average thickness of bone block is 8.0mm. It is decreased by 11.1%. Average Bone contact area is 112.4mm<sup>2</sup>, which is reduced by 6.5%.



**Abstract No.: 40843**

**JOINT LESIONS IN PATIENTS WITH DISORDERS OF SEX DEVELOPMENT**

Jun Qian,

Objectives: to explore the internal relationship between joint lesions and disorders of sex development. Methods: we treated two female patients with knee lesions in 2014. One complained recurrent pain and swelling of right knee for 4 months while the other complained pain and swelling of both sides. A series of biochemical tests and arthroscopic exploration, synovium resection and biopsy were carried out. Results: in case 1, all immune and infection tests results were negative. Chromosomal test showed 46, XY. Pathological results indicated mixed acute and chronic inflammation of joint synovium with focal lymphocytes gathering and capillary vessel hyperplasia. She was diagnosed as 17 $\alpha$ -hydroxylase deficiency by gene tests. In case 2, she was diagnosed as Turner syndrome before. ESR, HsCRP and ANA level were obviously higher than normal range. Pathological results also indicated mixed acute and chronic inflammation with fibrous hyperplasia and degeneration of joint synovium. Joint symptoms relieved after surgery with no decline of ESR and HsCRP. After prescription with steroids, MTX and SASP, symptoms further relieved and inflammation index level declined. Conclusions: Joint pathology may be the main complaint of DSD patients. Careful analysis, appropriate tests and arthroscopic procedures help to achieve correct diagnosis and treatment protocols.

**Abstract No.: 40848**

**COMPLICATIONS AND MID-TERM OUTCOMES OF TOTAL HIP ARTHROPLASTY FOLLOWING FAILED INTERNAL FIXATION OF THE PROXIMAL FEMORAL FRACTURES**

Afshin Taheriazam, Farshad Safdari

Despite good outcomes of internal fixation (IF) following hip fractures, some patients experience failure of IF due to several causes. These problems lead to severe pain and disability and necessitate revision surgery. Salvage treatment with total hip arthroplasty (THA) can be considered. In current study, we aimed to investigate the mid-term clinical and functional outcomes and incidence of complications of THA for patients with failed ORIF of proximal femoral fractures. Between 2004 and 2010, there were 44 patients (31 males, 13 females) with failed IF of previous femoral neck fractures (FNF). The age of the patients averaged  $36.3 \pm 16.1$  years. The etiology of the failure included avascular necrosis with collapse in 29 patients, nonunion in 9 patients and nail cut-out or screw breakage with acetabular abutment in 6 patients. Patients were followed for  $5.9 \pm 3.5$  years. Two patients had died and 5 were lost due to the changing of the contact information. Intraoperative femoral fracture occurred in one patient. There was no patient with dislocation, deep venous thrombosis and pulmonary embolism. Heterotopic ossification was found in 2 patients. Three patients had developed superficial infection of the surgical wound and were treated with oral antibiotic therapy. Thirty seven patients returned for last visit. Five patients complaint from mild to severe pain and required analgesics. Three patients could not ambulate without crutches. Harris hip score averaged  $86.7 \pm 15.2$ . Our findings confirm that THA is an effective and safe salvage procedure for patients with failed IF of FNF and results in satisfactory functional and clinical outcomes.

**Abstract No.: 40850**

**INFLUENCE OF BONE MARROW MESENCHYMAL STEM CELLS TRANSPLANTATION ON ADRENOCORTICOTROPIC HORMONE AND THE EXPRESSION OF AMPA RECEPTOR PROTEIN IN RATS WITH SPINAL CORD INJURY**

Zhou Jun, Sun Jiajia, Yang Huilin, Zhu Xuesong

**Objective** To investigate the effect of BMSCs transplantation on adrenocorticotrophic hormone and AMPA receptors in rats with SCI and elucidate the potential anti-chronic stress mechanism of BMSCs transplantation in treating rats with spinal cord injury. **Method** 48 adult male SD rats were divided into three groups : group A ,B and C. For group B and C, lower thoracic SCI model was constructed . For group A, only laminectomy was performed. After 7 days, 100uL Hank's buffer suspension containing 106 BMSCs was injected into L4-5 intervertebral space of rats in group A and C. The rats were sacrificed on 14 and 28 days after transplantation. The blood samples were collected for ELISA and brains were harvested for immunohistochemical assay. **Result** Although the serum CORT content was found to be elevated in each group, there was a significant difference between group B and C ( $P<0.05$ ) . The immunohistochemical assay suggested the number of cells expressing positively Glur2 receptor (from AMPA channel) was dramatically increased on 28 days after transplantation, compared with that on 14 days after transplantation. Furthermore, a significant difference in the number of cells expressing positively Glur2 receptor was also found between between the group B and C( $P<0.05$ ). **Conclusion** BMSCs transplantation can improve the motor function of hind limbs in SCI rats. It can also contribute to the secretion of ACTH and corticosterone. More importantly, it is able to regulate the central nervous AMPA channel Glur2 receptor, suggesting its potential role in preventing chronic stress in SCI rats.

**Abstract No.: 40869**

**TREATMENT OF OPEN AND COMMINUTED SUPRACONDYLAR FRACTURES OF THE FEMUR USING ILIZAROV EXTERNAL FIXATOR.**

Md Mofakhkharul Bari,

Introduction: Open supracondylar fractures, severely comminuted with intra-articular extension is still an orthopaedic challenge. The aim of the study is to evaluate the effectiveness of the Ilizarov method as a treatment of open and comminuted supracondylar fractures which are uncommon and difficult to manage because of the wide range potential complication. Methods: 48 cases with open and comminuted supracondylar fractures of the femur were treated by Ilizarov method from January 1995 to July 2012. G-I 16 cases, G-II 18 cases, GIIA 14 cases. Results: 40 cases united primarily and 8 united after compression distraction method. The mean range of knee flexion at final follow-up was 95° (rang from 40°-130°). Discussion and conclusion: We concluded that Ilizarov technique is a very safe and useful method in the treatment of open and comminuted supracondylar fractures of the femur in providing stability and allowing early rehabilitation.

**Abstract No.: 40871**

**COMPUTER ASSISTED MINIMALLY INVASIVE SPINE SURGERY FOR RESECTION OF OSSIFICATION OF THE LIGAMENTUM FLAVUM IN THE THORACIC SPINE**

Qiang Yuan, Wei Tian, Shan Zheng

**Purpose:** The purpose of this study was to describe the clinical outcomes of computer assisted minimally invasive spine surgery (CAMISS) during posterior decompression for thoracic myelopathy due to ossification of ligamentum flavum (OLF). **Methods:** The surgical procedure of all cases was under the assistant of intraoperative 3-dimensional navigation system. Decompression of spinal cord was performed with high-speed drill with ligamenta supraspinale and partial spinous process intact. The outcomes were evaluated with the modified Japanese Orthopaedic Association (JOA) scores and recovery rates. **Results:** The mean follow-up period of all 14 cases is 3.9 years. All patients showed neurological recovery with a mean JOA score that improved from 6.1 points preoperatively to 8.6 points at the final follow-up and a mean recovery rate of 52.7% (excellent in 2 cases, good in 8 cases, fair in 3 cases, unchanged in 1 case). **Conclusions:** CAMISS is safe and effective for Resection of OLF in the thoracic spine.

**Abstract No.: 40888**

**AGGRESSIVE GIANT CELL TUMORS OF THE DISTAL RADIUS: RESECTION - RECONSTRUCTION BY LONG VASCULAR FIBULAR GRAFT (A CASE REPORT)**

Kamel Achour, Reda Harrar, Sihem Garmaz, Amine Touhami, Anissa Benaida, Meriem Ait Saadi, Mourad Hamidani

giant cell tumors (gct) are locally aggressive tumors with a preference for epiphyses and metaphyses of long bones. they represent 5%–10% of all primary bone tumors. the distal radius is the third location after the distal femur and proximal tibia. their treatment remains controversial because of the high rate of recurrence. we report the case of a 38-year-old woman who presented in 2009 with a voluminous exuberant tumor of the right wrist, with areas of necrosis and infection. radiography and mri showed a large osteolytic tumor of the distal radius involving the soft tissues. Biopsy of the lesion showed that is an aggressive giant cell tumor. surgery was performed via the dorsal approach .en-bloc resection removing 12 cm of the distal radius, followed by reconstruction with a long vascular fibular graft. the cutaneous defect was filled with a groin flap. At five years follow-up, she had an excellent clinical appearance though moderate restriction of wrist motion, and there was no evidence of recurrence. oncological resection of the diseased bone segment, with reconstruction by vascular fibular graft allows to reduce the rate of recurrence and salvage the wrist with this pathology.

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**Abstract No.: 40891**

**SHORT-TAPERED FEMORAL STEM IS MORE PRONE TO SAGITTAL MALPOSITIONING THAN STANDARD TAPERED STEM**

Abdulrahman Algarni,

**Introduction:** The use of short-tapered femoral stems in total hip arthroplasty is increasing. However, few data have been published regarding the risk of sagittal mal-alignment of these stems. Our hypothesis was that a short-tapered stem is more prone to sagittal mal-positioning than a standard tapered femoral stems. A secondary aim was to assess the cause of this malalignment.

**Methods:** We retrospectively reviewed the immediate post-operative radiographs of 190 hips (95 on each group) who underwent a total hip arthroplasty by a single surgeon through a direct lateral approach. A standard tapered femoral stem (Corial, Depuy Synthes) or short-tapered stem (Tri-Lock BPS, Depuy Synthes) was inserted on either group. The femoral stem position was assessed in the sagittal view using the computer-assisted EBRA-FCA (EinzelBildRontgenAnalyse-Femoral Component Analysis) method. All radiographic measurements were performed twice with a time interval of at least 3 weeks by a single independent observer who was not involved in the management of these cases. **Results:** There was a significant difference between the two stems in the sagittal stem orientation ( $p=0.01$ ). The short stem was significantly more prone to sagittal mal-alignment. This possibly was due to the loss of guiding effect of the femoral shaft when using a short stem.

**Conclusion:** Our results illustrate that a neutral stem tip position in THA is significantly more difficult to obtain with a short tapered stem, when compared to a long standard tapered stem. Further studies are required to assess any effect on the functional outcomes and survival of these stems.



**Abstract No.: 40895**

**ACL RECONSTRUCTION USING A FREE-HAND DRILLED TRANSTIBIAL TECHNIQUE**

Abdulrahman Algarni,

Objective: Femoral tunnel positioning during single-bundle ACL reconstruction can be performed through a transtibial or anteromedial portal techniques. The transtibial technique carries the theoretical risk of vertical placement of the femoral tunnel in the intercondylar notch. The aim was to assess the efficacy of a free-hand drilled-transtibial technique in achieving optimal graft positioning. To our knowledge, this technique has not been described. Methods: We analyzed a retrospective series of postoperative knee radiographs in 52 consecutive patients who underwent a single-bundle ACL reconstruction by a single surgeon using this transtibial method, from June 2009 through January 2010. Tunnel positioning was radiographically assessed by an independent single observer. The graft inclination angle, the coronal and the sagittal femoral and tibial tunnel placements were evaluated. Results: Postoperative radiographs of 40 patients (40 knees) were retrospectively evaluated for femoral and tibial tunnel positioning. In the coronal plane, the mean graft inclination angle was 21°, the femoral tunnel was positioned at a mean of 43% lateral to the lateral femoral condyle and the tibial tunnel at a mean of 46% lateral to the medial border of the medial tibial plateau. In the sagittal plane, the femoral tunnel was placed at 84% posteriorly across Blumensaat's line and the tibial tunnel at a mean of 43% along the length of the tibial plateau. The results were consistent with optimal tunnel positioning according to anatomic and clinical studies. Conclusion: The transtibial technique described in this series can achieve optimal tunnel positioning for single-bundle ACL reconstruction.

**Abstract No.: 40896**

**TIGHTROPE FOR HALLUX VALGUS CORRECTION: A CASE SERIES**

Abdulrahman Algarni,

Our experience with Hallux Valgus Correction using a Mini TightRope Objectives: Hallux valgus is the most common deformity of the great toe. Many traditional forms of osteotomy are available, but none has proven to be superior, despite their aggressiveness. The Mini TightRope (Arthrex Inc.) procedure appears to be a less invasive alternative, and the objective of the present study was to test the hypothesis that the procedure is an effective surgical option for reducing the intermetatarsal angle (IMA) and hallux valgus angle (HVA) in cases of hallux valgus of mild-to-moderate severity. Methods: Four patients (four feet) with hallux valgus underwent the Mini TightRope procedure. All the patients were women, and their mean age was 30.5 years. All patients were reviewed before and after the procedure, with an average post-operative follow-up of 1 year. The IMA, HVA and sesamoid bone position were the radiological indicators of correction. Results: In the four operated patients, the mean IMA decreased from 15.75 to 4.5 degrees and the mean HVA from 31.25 to 5.75 degrees. Conclusion: The Mini TightRope procedure is a simpler, more effective, less invasive surgical option than other procedures and seems to correct IMA and HVA satisfactorily in cases of hallux valgus of mild-to-moderate severity. In view of the small number of cases and short follow-up, further studies with more cases and longer follow-up are needed.

**Abstract No.: 40904**

**FUNCTIONAL OUTCOMES OF NAVIGATION-ASSISTED TOTAL KNEE ARTHROPLASTY AT MID-TERM FOLLOW UP**

Abdulrahman Algarni,

**Aim.** The aim of this study is to investigate the functional outcomes of navigation-assisted total knee arthroplasty (TKA) after an average follow up of 2.5 years. **Method.** Between December 2004 and December 2009, a total of 147 TKAs in 94 patients were performed by the same surgeon at a single institution. Of the 147 procedures, 123 were navigation-assisted and were compared with the remaining 24 conventional TKAs. Hospital for Special Surgery (HSS) knee score and radiographic measurements of all patients in both groups were recorded preoperatively and for a minimum duration of 1-year-follow up. **Results.** The survivorship of all knees was 99.3%. Only, one patient required revision due to deep infection. No statistically significant difference was noted for HSS scores in both groups; however, TKAs performed using navigation-assistance consistently results in good outcomes with low variance. **Conclusion.** Navigation-assisted TKA produces good clinical outcomes comparable to conventional TKA that are consistent and reproducible. Further studies with longer follow up are required to assess functional outcomes of navigation-assistance in TKAs. **Key words:** Total knee arthroplasty; Functional outcomes; Navigation; Computer-assisted surgery.

**Abstract No.: 40905**

**EFFECTS OF ATORVASTATINS ON UNION AND UNION TIME IN FRACTURES**

Ahmadreza Mirbolook, Mohammad Reza Golbakhsh, Mir Mostafa Sadat, Mohammad Javad Zehtab, Mohammad Sadegh Mousavi

Introduction: atorvastatin effects on human osteoclasts show this drug is associated with inhibition of osteoclast formation. In general, bone tissue undergoes continued changes through cycles of destruction and renewal with balanced activity of osteoclasts and osteoblasts. Methods: This is a prospective cohort study that investigates the effects of atorvastatins on union of closed fractures of tibia and fibula in patients admitted to Poursina Hospital of Rasht. Inclusion criteria included all patients aged 18 to 60 years closed unifocal transverse fractures of Tibia & Fibula. Since the beginning of treatment and during the whole follow-up, they were given atorvastatin 20 mg per day according to treatment routine of hypercholesterolemia before fracture. The patients were then evaluated after two days, two weeks, six weeks and every month until the end of the 12 months . Results: 170 patients entered the study, among which 18 patients were excluded during follow-up. Of the 152 patients who entered the study, 75 patients were included in the exposed group and 77 patients were in the non-exposed group. A total of 12 patients had delayed union and 9 patients were with non-union. distribution of patients by exposed and non-exposed groups with delayed union or non-union, which showed statistically significant difference among the distribution. In our study, the mean time to union was  $2.03 \pm 1.37$ . Conclusions: The results of our study strongly support the positive role of atorvastatin in non-union.

**Abstract No.: 40906**

**A NOVEL TECHNIQUE OF RETRIEVING THE WELL-FIXED FRACTURED FEMORAL COMPONENT FOLLOWING TOTAL HIP REPLACEMENTS**

Fares Uddin, Bader Tayara, Hesham Al-Khateeb

Fractures of the femoral component are well reported complications that present a challenging task in revision total hip arthroplasty. Albeit being uncommon, with an incidence of 0.23-11%, the consequences can be devastating. Its extraction being a demanding undertaking that is potentially detrimental to the remaining host bone. Several techniques have been described to address this complex issue prior to revision: drilling of the exposed part of the femoral stem and attaching a threaded extraction device, surface undercutting with an extraction device wedged in, femoral trephine techniques, creation of a femoral cortical window, an extended femoral osteotomy procedure, as well as extraction by means of retrograde nail impaction. Here we present the technique we employ in the revisions of failed cementless extensively porous coated femoral components that have fractured at the neck-stem interface. The proximal femoral component is visualized and an orthopedic burr and a femoral osteotome employed surrounding the component. Utilizing a Midas Rex® MR7 [Medtronic - Minneapolis, Minnesota, USA] drill with its metal cutting attachment, a circular recess is created in the shoulder of the femoral component. This facilitates the application of the distal end of a universal slap hammer. The component is then retrieved successfully with no associated bone loss negating the need for a femoral osteotomy. Revision hip arthroplasty is a perplexing field where unpredictable prosthetic failures require innovation to tackle the unique problems encountered. Our method allows a safe and efficient alternative in retrieving femoral components with no associated complications.

**Abstract No.: 40909**

**SHORT STEMS: DXA STUDY ABOUT 2 SAVING BONE STOCK STEMS**

Francesco Falez, Damiano Longo

Introduction: In hip replacement surgery, the minimally invasive principle, concerning the preservation of bone stock and the decreasing age of patients who undergo hip replacement surgery, have led many surgeons to use more conservative femoral implants. Objectives: The aim of our study is to evaluate the reaction of peri-prosthetic bone density when the shape of the prosthetic implant is altered. Bone densitometry has proven to be a valid method to measure the biomechanical response of the bone implant prosthesis, that varies according to the shape of the implant. Methods: The study includes 36 patients submitted to total hip arthroplasty with short stem, 20 implants Metha type (BBraun) and 16 SMF type (Smith & Nephew). Patients were submitted to clinical evaluation and preoperative bone densitometry evaluation of bone quality pre-implantation and after at least 12 months from the operation, with a clinical and radiographic follow-up of at least one year. Results: Both implants had a good osseointegration and did not show stress-shielding. The stem SMF showed a better response in the Gruen 4 than Metha. Conclusions: Various factors may affect the bone remodeling, including the patient's general condition, bone quality prior to surgery and implant design. The biological response is optimal when the shape of the implant is able to involve the whole metaphyseal region rather than the single region of the neck in the distribution of the loads.

**Abstract No.: 40913**

**THIGH MUSCLE STRENGTHENING AS PART OF PHYSICAL THERAPY PROGRAM FOR THE MANAGEMENT OF KNEE OSTEOARTHRITIS**

Abdulrahman Algarni,

Background and objective: Lower limb strengthening exercises are important component of the treatment regimen for osteoarthritis of the knee. Strengthening hip abductor and adductor muscles may influence joint loading and/or OA-related symptoms. The objective was to examine the effect of hip muscle strength on OA of the knee. Subjects and methods: The present study included 20 patients ranging in age from 45 to 60 years with a body mass index  $<30 \text{ kg/m}^2$ . This group underwent hip abduction and adduction strengthening exercises in addition to receiving a traditional exercise program in the form of stretching exercises for the hamstring and calf muscles, and strengthening exercises for the quadriceps and hamstring muscles. The treatment regimen was applied three times per week for a period of six weeks. Outcome measures included pain severity assessed by visual analogue scale; range of motion (ROM) assessed by universal goniometer; and functional activity level assessed by the Western Ontario and McMaster Universities Osteoarthritis (WOMAC) index scale. Measurements were performed pre- and post-treatment. Results: Statistical analysis of the results revealed significant differences with respect to pain assessed by visual analogue scale ( $P<0.001$ ); ROM of active flexion ( $P<0.001$ ); ROM of passive flexion ( $P<0.001$ ); ROM of active extension ( $P<0.001$ ); and ROM of passive extension ( $P<0.001$ ). Significant differences were also found using the WOMAC scale for measures of pain ( $P<0.001$ ), stiffness ( $P<0.001$ ) and physical function ( $P<0.001$ ). Discussion and conclusion: Strengthening exercises targeting the abductor and adductor hip muscles proved to be beneficial in the treatment of patients with knee OA.

**Abstract No.: 40914**

**STAGE IV PRIMARY BRONCHOGENIC CARCINOMA PRESENTING AS A LESSER TROCHANTER  
AVULSION FRACTURE**

Fares Uddin, Bader Tayara, Hesham Al-Khateeb

Atraumatic avulsion fractures of the lesser trochanter in adults are rare and always occur due to compromised bone as a result of a pathological process. These patients require timely investigation of the causal condition and this further directs the management. Most common underlying disorders are metastatic lesions of a primary neoplasm, a primary bone tumor, or chronic metabolic disorders. Here we present the case of a middle-aged active female, with a relatively insignificant smoking history, who presented to us with a lesser trochanter avulsion fracture. This patient had been completely asymptomatic until the atraumatic incident. Following a multidisciplinary work up, she was diagnosed with Stage IV bronchogenic carcinoma with large metastatic lesion involving the right proximal femur. A host of underlying pathologies may cause these rare fractures in adults. 60% of these lesions have been found to occur secondary to a metastatic lesion. Primary bone tumors, leukemia, and chronic debilitating medical conditions have also been implicated. Our patient had been a middle aged active professional with a minimal exposure to inhalational carcinogens. This broadens the patient population in which these lesions have previously been described. Awareness of this rare presentation and its correlation to a serious and possibly undiagnosed medical condition is prudent to facilitate rapid processing and treatment of the patient.



**Abstract No.: 40916**

**PHYSICAL THERAPY PROGRAM FOR THE MANAGEMENT OF CHRONIC MECHANICAL LOW BACK PAIN**

Abdulrahman Algarni,

**Background and Purpose:** A physical therapy program that includes stretching exercises for tight muscles that reduce range of motion (ROM) and restrict the activities of daily living in patients with chronic low back pain is important. The present study was conducted to determine the effect of stretching the gastrocnemius muscles as part of a physical therapy program used to treat patients with chronic low back pain. **Subjects and Methods:** The present study included 20 chronic low back pain patients with a mean ( $\pm$  SD) age of  $32.8 \pm 6.68$  years (range 20 to 40 years of age), who underwent a six-week physical therapy program consisting of stretching exercises for muscles of the back, hamstrings, iliopsoas and gastrocnemius, and strengthening exercises for the abdominal muscles three times per week. The program also included postural instruction for the activities of daily living. Outcome measures included visual analogue scale scores to measure pain, tape measurement of fingertip-to-floor manoeuvres to assess ROM of trunk flexion, and the Oswestry disability index questionnaire for low back pain/dysfunction. **Results:** Study participants demonstrated significant differences in pain levels ( $p=0.0001$ ), ROM of trunk flexion ( $p=0.0001$ ) and Oswestry disability questionnaire index ( $p=0.0001$ ). **Conclusion:** The present study demonstrated the benefits of physical therapy and the importance of stretching the gastrocnemius muscles as part of a rehabilitation program for chronic low back pain.

**Abstract No.: 40917**

**LUMBAR INTRADURAL CYSTIC SCHWANNOMA MASQUERADING AS LUMBAR CANAL STENOSIS**

Srinivasa Moolya, Gururaj Mallikarjun

**INTRODUCTION :** Schwannoma is a benign slowgrowing encapsulated tumor arising from the myelinated nerve sheaths. We report a rare case of intradural lumbar cystic schwannoma. **CASE :** 55 yr old lady presented with bilateral buttockpain radiating to both lowerlimbs ( L5,S1 dermatome) of 9 months duration(VAS 7). Neurological examination revealed grade 4 motor power in both legs with dysaesthesias . Lumbosacral radiographs were normal . MRI of the lumbar spine showed an intradural cysticmass approximately 40mm X 27mm X 22mm in size behind L3-4 vertebra ,isointense with CSF . Adjacent roots were displaced to periphery . Cystic mass showed peripheral enhancement on gadolinium contrast administration. Wide laminectomies L3 to L5 with posterior stabilization was done. Intraoperatively , an encapsulated cystic mass with abundant vessels in the capsule was found after durotomy .Near total tumor excision was done as the base of tumor was adherent to L4 nerveroot . Histopathological examination revealed alternate Antoni A and Antoni B areas, suggestive of schwannoma . Postoperatively, she had relief of symptoms (VAS 2) . No recurrence was found at 17 months. **DISCUSSION :** Intradural spinal schwannomas are well-described slow growing benign tumors of the peripheral nervous system, arising from Schwann cells. Cystic degenerations of schwannomas are found in cranial region and is very rare in lumbar region. They appear as hypointense on T1-weighted and heterogenous intensity on T2-weighted MR images with peripheral enhancement on contrast . Surgical outcome depends on early diagnosis and complete excision

**Abstract No.: 40932**

**ANALYSIS OF CRITICALLY ILL POSTOPERATIVE ORTHOPAEDIC PATIENTS TRANSFERRED TO A TERTIARY CARE TEACHING CENTER ? LESSONS LEARNT**

Vishesh Khanna, Senthilnathan Sambandam

Introduction: trauma and elective orthopaedic patients form a significant proportion of critical care admissions postoperatively. The aim of this study was to analyse critically ill postoperative orthopaedic patients transferred to a tertiary care center and to identify factors increasing mortality in these patients. Methods: the study was carried out at a 300 bedded super-speciality tertiary care teaching center possessing a 42 bedded intensive care facility fully equipped with all modern and state-of-the-art facilities along with round-the-clock services of super-specialists including neurosurgeons, cardiologists, cardiothoracic surgeons and pulmonologists. Retrospective analysis of postoperative patients transferred from various hospitals between 2012 and 2014 was performed and their demographic data, preoperative physical status, operative data, reasons for transfer, details on arrival and outcomes were analysed. Results: univariate analysis performed with death as the outcome measure identified the following factors increasing the risk of mortality in operated orthopedic patients transferred to our facility: age greater than or equal to 60 years, an age factored Charlson Comorbidity Score more than or equal to 5, a time interval of 5 days or more between the date of injury to date of surgery, the presence of a femur fracture, a delay in transfer postoperatively by 4 days or more, transfer from level 2 trauma care centers, renal complications (acute renal failure) and sepsis at the time of admission to our center. Conclusions: risk-based identification of patients and definitive management at centers backed by super-speciality services can prevent morbidity and mortality among orthopaedic patients.

**Abstract No.: 40936**

**DYNAMIC BALANCE IS IMPROVED WITH CORE STABILIZATION TRAINING IN SOCCER PLAYERS**

Abdulrahman Algarni,

**Objectives :** Core Stability Training (CST) is widely used as a sport training and therapeutic exercise. The current study was aimed to determine the effectiveness of the CST in enhancing dynamic balance (DB) in soccer players. **Methods:** A convenience sample of 40 professional soccer players with mean age of  $18 \pm 2$  years were divided into 2 groups, experimental and control group ( $n = 20$ ) in each group. The experimental group participants were given CST. Both the experimental and control groups were allowed to follow their normal playing and training schedule. The total study duration was for 4 weeks. Core Stability (CS) and DB outcomes were measured between pre and post intervention at 3 phases using Double Straight Limb Lowering Test (DSLTT) and Star Excursion Balance Test (SEBT). **Results:** Overall results revealed significant differences of DB and CS within the experimental group as compared to the control group ( $p < 0.05$ ). The post hoc analysis observed that significant improvement in the DB after the completion of phase-II, however experimental group showed significant improvement in CS even between phase-I and phase-II, however maximum improvement observed after the completion of phase-III ( $p < 0.05$ ). **Conclusions:** CST can be added for enhancing the DB and CS in players in addition to their training sessions. The current study observed that minimum duration of 2 weeks CST requires improving the DB whereas CS can show improvement even after one week of CST in soccer players.

**Abstract No.: 40937**

**ADVANTAGES OF ARTROSCOPY IN THE TREATMENT OF INTAARTICULAR FRACTURES OF THE KNEE**

Nicolae Erhan, Viorel Vetrila, Alexandru Betisor, Andrei Olaru

Introduction: The purposes of surgical treatments of the knee's intra-articular fractures are: perfect anatomical reduction, stabile osteosynthesis of fragments, repairing associated intra-articular trauma. Arthroscopic surgery allows for diagnosis of all types of intra-articular trauma, perfect reduction of fragments under visual control. Indications for osteosynthesis of intra-articular fractures of the knee using arthroscopy are: condylar fractures of the tibia of type B, AO. fractures of intercondilean eminence., unicondylar fractures of the femur type B, AO. Methods: Research includes an arthroscopic treatment of 92 patients with intra-articular fractures of the knee using arthroscopy and transcutaneous osteosynthesis with cannulated screw in the tibial, femoral and condylar fractures, type B1-B3 AO classification. 62 - condilo-tibial fractures, 8 – with femoral fractures. In 22 the cases of intercondilea eminence osteosynthesis wich - style suture, 19 patients were with meniscal terse, 6 – with injure LCA. In 18 cases of meniscal terse done were sutures, in 4 - resection. Results: The results evaluated every 2 to 4 after surgery. The average of functional results was - 92,6, the knee's score was – 89,5 (IKS). After surgery the patients were without immobilization, with permission to make moves in the knee on the second day, but excluding full effort 8-12 weeks. Conclusions: Arthroscopic surgery allows for the rapid recovery of the functions of the articulation with long-lasting results. The arthroscopic surgery highly reduces perioperative morbidity, in particular septic infections, and also allows a clear diagnosis and treatment of intra-articular associated injures in a single surgical procedure.

**Abstract No.: 40939**

**LOWER LUMBAR SPINE SAGITTAL ENDPLATE MORPHOLOGY: MRI BASED STUDY**

Srinivasa Moolya, Kedar Phadke

Introduction : Lower lumbar spine sagittal endplate morphology has variability. Endplate concavity is symmetrical in the coronal plane but same is not true in sagittal plane and may lead to implant – endplate mismatch. .Methods : 150 MRI scans of the adult lumbar spine satisfying the inclusion criteria, were analyzed. Superior (SEP) and inferior (IEP) endplate shape were divided into flat (no concavity), oblong (homogeneous concavity) and ex-centric (inhomogeneous concavity). The concavity depth (ECD) and location of concavity apex (ECA) relative to endplate diameter of the vertebrae L3–S1 in midsagittal plane were determined . Result :Flat endplates were predominant at the sacrum SEP (77.3%). L5 SEP was flat in 26.7% and all other endplates in less than 9%.Majority of endplates were concave and became more ex-centric from L3 IEP (58.2% oblong vs. 30.1% ex-centric) to L5 IEP (13% oblong vs. 85.3% ex-centric). Ex-centric ECA was seen in the posterior half of the lumbar endplates. Average Oblong and ex-centric ECD was 2–3 mm .IEP was deeper than SEP. Conclusions : majority of lumbar endplates are concave and sacral endplates are flat. ex-centric endplate shape is more common at the lower lumbar levels. apex of the concavity of ex-centric endplate is located in the posterior half of the endplate and the concavity of the inferior endplate is deeper than that of superior endplate. TDR implant design doesnt sufficiently match the morphology of lower lumbar endplates in the sagittal plane

**Abstract No.: 40940**

**GIANT CELL TUMOUR TENDON SHEATH OR TENDON SHEATHS???**

Pankaj kumar SHARMA, Samarth Mittal, Vivek Tiwari, Tahir Ansari

Introduction: Giant cell tumour of tendon sheath is a benign soft tissue tumour arising from the tendon sheath. It is most commonly seen associated with the small joints of the hands. The involvement of foot and ankle by such tumours is relatively rare. The age group affected by this benign entity ranges from 30 to 50 years. Children are not commonly afflicted by this condition. All such tumours are reported to arise either from a single tendon sheath or one joint. Case report: We report a case of giant cell tumour of tendon sheath in a 12 year-old child, arising simultaneously from the tendon sheaths of tibialis posterior and flexor digitorum longus tendons, as well as extending into the ankle joint. It was treated by complete excision of the mass along with the tendon sheaths. Widespread nature of the disease required excision of the flexor retinaculum, which was later reconstructed using a part of tibialis posterior tendon. At a follow-up of one year, the patient was content with a good functional outcome without any local recurrence. Discussion: Careful pre-operative planning and complete liberal excision of the tumour is an important part of the treatment to prevent recurrence and to provide good functional results. The location of the tumor, age of the patient, diffuse nature of the tumour, its origin from two separate tendon sheaths and involvement of the joint, make this case extremely rare and the first to be reported in literature.

**Abstract No.: 40941**

**FUNCTIONAL RESULTS OF ARTHROSCOPIC BANKART REPAIR WITH KNOTLESS ANCHORS FOR ANTERIOR GLENO-HUMERAL INSTABILITY**

Abdulrahman Algarni,

The purpose was to evaluate the functional results of arthroscopic Bankart repair in patients with posttraumatic recurrent anterior glenohumeral instability, comparing the results of using pushlock knotless anchors with that of Mitek knotless anchors. Method: thirty patients underwent arthroscopic Bankart repair with knotless anchors for posttraumatic recurrent anterior glenohumeral instability. 15 patients were repaired with pushlock and 15 patients were done using mitek anchors. Pre and postoperative evaluations included detailed physical examination, assessment with the ASES score for shoulder functions, antero-posterior & axillary radiographs as well as MRI. Postoperatively the mean follow up was 6 months. The patients were divided into two groups: group 1 (pushlock) & group 2 (mitek). Results: In group 1, 46.7% of patients were assessed as having excellent ASES score, 46.7% were assessed as having good ASES score and only one patient (6.7%) was assessed as having a poor ASES score. In group 2, about 20% of the patients were assessed as having excellent ASES score, 73.3% were assessed as having good ASES score, and also one patient (6.7%) was assessed as having a poor ASES score. The mean post-operative ASES score in group 1 was 82.53(SD; 7.85), and 81.13(SD; 6.56), in group 2. Conclusion: Arthroscopic Bankart repair with knotless anchors for recurrent anterior glenohumeral instability is a useful and successful procedure. Our study did not show a statistically significant difference between the two anchors used in this study.



**Abstract No.: 40947**

**BILATERAL MEDIAL TIBIAL PLATEAU AND LEFT CALCANEUS STRESS FRACTURES: A RARE CASE**

Yusuf Erdem, Bulent Karslioglu, Dogan Bek

Stress fractures are seen more frequently in soldiers and athletes due to repetitive activity. Tibial medial plateau fracture has a higher incidence. Sometimes it is difficult to diagnose on plain radiographs, so additional imaging modalities is mostly required. Here we have aimed to report a retired soldier who suffered bilateral medial tibial plateau and left calcaneus fractures after a prolonged repetitive activity. This was a rare case with an additional calcaneal fracture. We got the bone healing and full weight-bearing at 8 weeks by conservatively with no pain. As a result clinicians should suspect of stress fracture if a prolonged strenuous activity is mentioned. Anamnesis and physical examination takes a crucial role for diagnosis, and imaging helps to confirm the fracture site and treatment options whether it may be conservative or surgical.

**Abstract No.: 40950**

**COMPLICATIONS OF THE SURGICAL TREATMENT OF HALLUX VALGUS: A REVIEW OF 2017 CASES**

Eulalia Lopez Capdevila, Alejandro Santamaria Fumas, Jorge Muriano Royo, Andrea Manent Molina, Isabel Parada Avendaño, Jordi Alvarez San Nicolas, Alejandro Dominguez Sevilla, Jorge Roman

**INTRODUCTION:** Analysis of complications of the surgical treatment of 2017 cases of Hallux valgus in the last 8 years in our hospital. **MATERIAL:** 2017 Hallux valgus (88% women, mean age 62 years) who were treated from June 2005 until June 2013. Clinical and radiological controls with mean follow-up 1,8 years. Assessment of gender, age, year of surgical intervention, surgeon, surgical technique (Chevron, Scarf, Weil 1st metatarsal, Minimally invasive surgery, Keller-Brandes-Lelievre and others), complications. Exclusion criteria: hallux rigidus, metatarsalgia. **METHODS:** Descriptive retrospective study of 2017 Hallux valgus. Analyzing complications with Chi-square test. **RESULTS:** 19,5% of complications: metatarsalgia (8,1%), recurrence (4,8%), hallux rigidus (3,3%) and others (3,3%). A major number of complications has been registered in secondary hallux valgus compared with primary ( $p \leq 0,006$ ) and are statistically different according to the surgical technique ( $p < 0.001$ ). Transfer metatarsalgia is more frequent depending on surgical technique (21% of the scarf vs 9% chevron,  $p < 0.001$ ). About 57 % of the forefoot reconstructions have some complications, the recurrence being one of them. Hallux rigidus is a frequent complication independent from surgical technique. **CONCLUSIONS:** One fifth of the hallux valgus treated surgically have some complications. These complications are statistically more probable in some surgical techniques, especially in reconstruction of all metatarsals compared to the reconstruction of first metatarsal, and in recurrent hallux valgus. Nevertheless, only 16% of the complications would require a reintervention.

**Abstract No.: 40955**

**THE SYSTEM OF EXTERNAL FIXATION IN THE TREATMENT OF PATIENTS WITH TUMORS OF THE HAND**

Evgenij Varganov,

Introduction: Osteoplasty due to defects of hand bones is one of the important components of reconstructive surgery. Materials and Methods: In the period from 1992 to 2014, a total of 324 patient with hand bone defects after removal of tumors of the hand were operated using the transosseous osteosynthesis at the Hand Surgery Center in the city Chelyabinsk. The external fixator was applied after bone resection due to tumour or after primary surgical debridement of the wound preserving the anatomical length of the operated ray. It was noted that when osteoplasty was combined with transosseous osteosynthesis, the process of union went on faster than in cases when a plaster cast is used. Results: Long-term outcomes were followed from 1 year to 22 years in 282 patients. Nine developed osteomyelitis and then the graft was rejected, the ray became shorter and contracture developed. The hand function was restored in all the remaining cases. Conclusion: The use of external fixators in the treatment of patients with tumors of the hand leads to good functional results, significantly reduces hospital stay, reduces the number of postoperative complications.

**Abstract No.: 40956**

## **ULTRASOUND DIAGNOSIS OF TUMORS OF THE HAND BONES**

Evgenij Varganov, Nataliya Situnova

**Introduction:** Ultrasonography is one of the basic methods for diagnosing of tumors of the hand.

**Materials and Methods:** The study carried out using the ultrasound system LOGIQ-3 PRO supplied with an ultrasound scanner of high quality class and multipower sensor 8L (period between 2001 and 2014). Longitudinal and transverse scanning was performed before surgery, after wound healing and at long-term follow-ups. Tumours were detected, their size, structure and contours were estimated, and topical diagnosis was performed. The study was conducted in 204 patients with tumors and tumor-like diseases of the hand bones. **Results:** In cases of tumore-like diseases of hand tendons, a discontinuity of their contours can be detected with appearing hyperechogenic defect zone. In a number of cases, lesions to nerve trunks and their shift due to a tumour can be clearly identified. If the joint is involved, the changes in width and uniformity of the joint space, lytic alterations of the articular surfaces are revealed. In cases of malignant tumours of hand bones (chondrosarcoma), thickening of the cortical layer round the tumour, usuration and collapse (fibrosarcoma and osteosarcoma) of the latter can be noted. In peripheral types, there is destruction focus, bone lysis and the exit into soft tissues. Diagnostic ultrasound enables observation of the reparation process in the postoperative rehabilitation period, in particular after suturing tendons and nerves, and osteoplasty.

**Abstract No.: 40957**

**COMPARATIVE STUDY BETWEEN CONSERVATIVE BRACING & PINNING IN THE MANAGEMENT OF BOXERS FRACTURE OF THE HAND OF FIFTH METACARPAL BONE**

Ahmed Gaber Mostafa, Atef Morsy, Emad Elbana

Background: Subcapital fifth metacarpal (boxers) fractures, are one of the most common injuries encountered by hand surgeons. Closed reduction and plaster cast immobilization, Kirschner wires and lag screws are treatment options. Methods: In our study we documented twenty cases of boxers fractures. ten cases are treated by conservative bracing and ten are fixed percutaneously by k-wires and evaluated radiographic and functional outcome. Results: Overall, patient satisfaction was high in both groups. Nine of the 10 patients in the surgically treated group (95%) and 8 patients in the conservatively treated group (90%) were satisfied with the result. However, the displaced metacarpal head was considered disturbing by three conservatively treated manual workers (25%). Furthermore a majority of patients (55%) in this group disliked the appearance because of the loss of prominence of the normal small finger metacarpal head. In the surgically treated group the appearance was rated better; only one patients (5%) criticized the complexity of the treatment in relation to the result. Conclusion: we could not demonstrate any statistically significant differences in the conservative and surgical treatment of displaced boxer's fractures in terms of range of motion at the MCP joint or grip strength. Nevertheless, patient satisfaction and the aesthetic results seem to be better in the operative treatment group. We therefore believe that treatment options should be discussed on an individual basis, according to the patient's demands. Keywords: little finger metacarpal neck fracture, boxer's fracture, intramedullary splinting, conservative treatment

**Abstract No.: 40959**

**MORPHOMETRIC STUDY OF OCCIPITAL CONDYLES IN INDIAN POPULATION**

Srinivasa Moolya, Abhishek Srivastava

**INTRODUCTION:** Occipital condylar screws is a novel technique being explored in proximal fixation of Occipito-cervical stabilization. gender and ethnic variations in anatomical structures might influence feasibility of this technique . **Methods :** We measured and analyzed the dimensions of occipital condyles on coronal, sagittal and axial reconstructed images of CT scan of 90 adult patients (180 condyles). Differences were noted between right and left side and also between male and female. These were put for significance tests. Based on the results and available literature, authors help in determining the feasibility of putting occipital condyle screws in Indian population. **Results :** The mean Sagittal length and height were  $18.54 \pm 1.67$  mm and  $10.12 \pm 1.46$  mm. Mean Condylar angle /screw angle was  $38.5 \pm 5.45$  degrees from midline with Mean Condylar Length of  $20.32 \pm 2.53$  mm and condylar width of  $9.93 \pm 1.04$  mm. Average coronal height on anterior and posterior part of hypoglossal canal was  $11.25 \pm 1.67$  mm and  $9.33 \pm 1.16$  mm respectively. All Female parameters were shown to be significantly lower compared to male values, except for screw angle and condylar width. There was no significant difference between right and left condylar dimensions. Based on Lin et al's proposed criteria 14/180 condyles were not suitable for condylar screws . **Conclusion:** Preliminary CT morphometry data of occipital condyles shows that, condylar screws are anatomically feasible in a large part of Indian population. However, a small number may not be suitable for this technique . Detailed CT study is required preoperatively for planning and execution

**Abstract No.: 40960**

**AN IMMEDIATE SOURCE OF PURIFIED AUTOLOGOUS MESENCHYMAL STEM CELLS FOR MUSCULOSKELETAL REGENERATION**

Iain Murray, Chris West, Winters Hardy, Hamish Simpson, Chia Soo, Bruno Peault

Adipose tissue is an attractive source of mesenchymal stem cells (MSCs) as it is largely dispensable and readily accessible through minimally invasive procedures such as lipoaspiration. Until recently MSCs could only be isolated in a process involving ex-vivo culture. Pericytes (CD45-, CD146+, and CD34-) and adventitial cells (CD45-, CD146-, CD34+) represent two populations of MSCs (collectively termed perivascular stem cells or PSCs) that can be prospectively purified using fluorescence activated cell sorting (FACS). We performed FACS on lipoaspirate samples from n=129 donors to determine the frequency and yield of PSCs and to establish patient and processing factors that influence yield. The mean number of stromal vascular fraction (SVF) cells from 100ml of lipoaspirate was  $37.8 \times 10^6$ . Within the SVF, mean cell viability was 82%, with 31.6% of cells being hematopoietic (CD45+). Adventitial cells and pericytes represented 31.6% and 7.9% of SVF cells respectively. As such, 200ml of lipoaspirate would theoretically yield 24.5 million MSCs –a sufficient number to enable point-of-care delivery for use in several orthopaedic applications. The yield and prevalence of PSCs were minimally affected by donor age, sex and BMI. Storing lipoaspirate samples for up to 72 hours prior to processing had no significant deleterious effects on MSC yield or viability. Our study confirms that pure populations of MSC-precursors (PSCs) can be prospectively isolated from adipose tissue, in sufficient quantities to negate the necessity for culture expansion while widening possible applications to include trauma, where a time delay between extraction and implantation excludes their use.

**Abstract No.: 40962**

**PLASTIC REPLACEMENT TUMOR OF BONE DEFECTS IN MATERIALS COLLAPAN AGAINST THE  
BACKGROUND OF OSTEOSYNTHESIS EXTERNAL FIXATION**

Evgenij Varganov,

Introduction: Application for osteoplasty bioceramic materials recently quite true. Materials and Methods: The material is based on an analysis of results of treatment of 119 patients treated at the Hand Surgery Center in Chelyabinsk for the period 2007-2014 using "CollapAn" to replace bone defects wrist, metacarpals and phalanges, occurred after removal tumors or bone resection due to neoplastic diseases. Unused "CollapAn" in the form of granules, plates, and gels. In order to fix the bones - the Ilizarov, Obukhov and Kataev fixators. Results: The results were assessed according to the principles of functional and cosmetic restoration of the limbs and from the standpoint of recurrence of cancer. Relapses require repeated surgical intervention, were found in 9 patients. The form and function of the hand in all the operated restored in full.



**Abstract No.: 40965**

**ANATOMICAL STUDY OF APPROACHES FOR DISTAL TIBIAL FRACTURES**

Eulalia Lopez Capdevila, Alejandro Santamaria Fumas, Xavier Martin Oliva, Mariano Monzo Planella, Jorge Muriano Royo, Andrea Manent Molina, Isabel Parada Avendaño, Joan Giros Torres

**PURPOSE:** A proposal of the optimal anatomical approach for each distal tibia fracture. **MATERIAL:** Anatomical study with photographic documentation of five approaches in 30 cadaveric limbs. Reference points, anatomical risks and the limits of the exposition were registered, allowing to decide which of them might be the best approach for each of type of fracture. **METHODS:** 1. Anterolateral: between Extensor digitorum longus and Fibularis tertius. 2. Anteromedial: medial to Tibialis anterior tendon. 3. Medial: over medial malleolus. 4. Posteromedial: between Posterior tibial tendon and Flexor digitorum longus tendon. 5. Posterolateral: between Fibular longus and brevis tendon and Flexor hallucis longus. **RESULTS:** 1. Anterolateral: allows to adress articular fractures with anterior and anterolateral involvement. 2. Anteromedial: articular and partial articular fractures, especially with medial malleolus involved. Straight incision allows better visualization than curvilinear incision. 3. Medial: extraarticular fractures and main approach for percutaneous technique. 4. Posteromedial: posterior comminuted articular fractures or posterior malleolus involvement. 5. Posterolateral: partial articular fractures or anterior soft tissue injury. The proximal extent of this approach is limited. The posterior malleolus and fibula can be treated through the same incision. **CONCLUSIONS:** As each distal tibial fracture requires its own approach, it is essential to know all their anatomical limits. For example, a distal tibial fracture with an extensive anterior soft tissues damage might require a posterior approach, a multifragmentary joint fracture may require to be approached from anterior and posterior, two approaches could be required with a distance of at least 5 cm to avoid necrosis.

**Abstract No.: 40966**

**EKSTRASKELETAL MESENCHYMAL HONDROARKOMA OF THE RIGHT HAND - A RARE LOCALIZATION**

Evgenij Varganov,

Introduction: Mesenchymal chondrosarcomas represent less than 10% of all chondrosarcomas. The majority of these tumors arise from the skeleton; only 22% have an extraosseous origin. Of the extraskeletal locations, the meninges, brain, and thigh are the most common (John T. Anderson et al., 2007). Involvement of the hand is a rare occurrence. Materials and Methods: The material of the analysis medical record of the patient K., 30 y.o., underwent treatment in the center of hand surgery with extraskeletal mesenchymal chondrosarcoma involving the right hand. Primary reconstruction procedures considerably reduce the treatment period. After removal of the tumor performed dermepenthes. Then, the affected finger is fixed in the Obukhov apparatus. Results: Application of the apparatuses enables stable fixation and the possibility to train motion to restore the functioning of tendons and joints. 2 months after surgery, the patient was discharged for work. Hand function fully restored. Within six years of tumor recurrence were observed.

**Abstract No.: 40968**

**KNEE RESURFACING: HYPE OR REALITY ? SHORT TO MEDIUM TERM INDIAN CLINICAL EXPERIENCE**

Mutha Sankalp,

Background: The objective of the present study was to evaluate the short to medium term clinical outcome of Orthoglide Knee Resurfacing Methods: Eleven Knees of Orthoglide Knee Resurfacing performed between March 2012 to March 2014 (6 males and 5 females studied) The mean age of patient was 57.8 years (Range 50 to 70) mean follow up period was minimum 12 months. The Preoperative Diagnosis was medial unicompartmental Osteoarthritis in 11 patients. Results: The mean improvement in Oxford Knee score was from 15 (Range from 10 to 16) to 42 (Range from 35 to 46) and mean WOMAC score improved from 30 (range 20 to 36) to 87 (Range from 80 to 92) at mean follow up of 18 months. Good to excellent results obtained in all of the knees with one case of persistent anterior knee pain managed by Vissco supplementation and Knee Brace over 3 months. Conclusions: • Newer designed; minimally invasive knee resurfacing implant like Orthoglide appears to be safe and reliable treatment option. • It can be effective, economic surgical option in trained hands especially with optimal pre-operative and ongoing post-op. patient education. • The jury is still not out regarding hype vs. reality as it may need larger pool of cases in different demographics for long term follow up. • Refinement in implant design and materials, technique and indications is on the horizon which can revolutionize future treatment.

**Abstract No.: 40977**

**ONCOLOGY HAND: TUNNEL NEUROPATHY DISTAL FOREARM**

Evgenij Varganov, Mariam Varganova, Klavdia Shchus

Introduction: In 22.5% of cases the cause of tunnel neuropathies distal forearm are neoplastic lesions. Materials and Methods: The evaluation of test results and treatment of 42 patients with tunnel syndrome of the upper extremities - carpal tunnel (26 cases), Guyon canal (10 cases) and joint destruction radial and median nerves (6 patients) who were treated in 1996 -2014 years. The treatment tactic depends on the causes of the compartment syndrome. In a study of applied clinical, X-ray, ultrasonography and tomographic methods. Treatment tunnel syndrome, caused by the tumor and tumor diseases, only surgery - removal of tumor focus. Results: The results were assessed in terms of 6 months to 18 years in 36 patients treated. Six patients were operated on again because of recurrence of cancer. Pain syndrome in all the examined patients reduce or docked. In the neurological status marked decrease parastezii, reduced sensory disorders. All examined patients remove restrictions clenching hand, breeding and extension of the fingers. Conclusions: 1) Treatment of patients with tunnel syndrome caused by tumors and tumor-like formations, should only be operative. 2) Selection of the operational benefits in the treatment of this disease should be individualized and appropriate to the nature of the tumor process, combining the principles of limb salvage orthopedic and oncologic principles of radicalism and ablatic.

**Abstract No.: 40983**

**PELVIC INCIDENCE IN THE PATIENTS WITH SECONDARY OSTEOARTHRITIS OF DYSPLASTIC HIP**

Keiichi Nakai, Hiroshi Koyama, Daisuke Togawa, Hiroki Furuhashi, Hironobu Hoshino, Yukihiro Matsuyama

**Introduction:** Pelvic incidence (PI) is a parameter of spino-pelvic sagittal alignment. It is showed by the angle between perpendicular line to the center of S1 endplate and line from the center of S1 endplate to hip axis, and regarded as the important key factor for managing the spinal balance. However the relationship between PI and hip osteoarthritis (OA) was unknown. The purpose of this study was to investigate the PI in the patients with secondary OA of dysplastic hip. **Methods:** We examined the radiographs from the 21 patients with secondary OA of bilateral dysplastic hip. Inclusion criteria was no severe pelvic backward inclination (pelvic tilt < 20°). Sixteen normal hips were used as controls. Using their radiographs, we measured sacral slope (SS), PI and height of femoral heads (FH: the ratio of the vertical distance between femoral head-neck junction and inter-teardrop line against pelvic height (%)), and compared these parameters between both groups. **Results:** The average in OA group were SS 46°, PI 58° and FH 4.6%, respectively. Those in Control group were SS 35°, PI 49° and FH -1.7%, respectively. Significant differences were observed between both groups in all parameters ( $p < 0.05$ ). When two groups were put together, the correlation between SS and PI ( $r = 0.91$ ) and that between FH and PI ( $r = 0.37$ ) were observed. **Conclusion:** PI in the patients with secondary OA of dysplastic hip was greater than normal hips, due to forward inclination of sacrum and/or cranial shift of the hip axis.

**Abstract No.: 40984**

**ARTHROSCOPIC ASSISTED REDUCTION AND FIXATION OF TIBIAL PLATEAU FRACTURES**

Walid Awadallah, Abu Bakr Zein, Abdoulmoneem Haitham

**Introduction:** Displaced tibial plateau fracture can have severe consequences if not properly treated. This study evaluates the outcome of arthroscopically-assisted reduction and fixation of tibial plateau fractures. **Materials and Methods:** Thirty two patients with tibial plateau fractures treated by arthroscopically-assisted reduction and fixation were enrolled in this prospective study. Twenty six patients completed the questionnaire and follow up. Mean age was 34.3 years (range, 19 to 58 years). Fractures were classified according to Schatzker classification. The mean delay from injury to surgery was 7.3 days (range, 3 to 12 days). The mean follow-up period was 14 months (range, 26 to 10 months). Clinical and radiologic outcomes were scored by the Rasmussen system. **Results:** The mean postoperative Rasmussen clinical score was 24.5 (range, 17 to 30), and the mean radiologic score was 15.4 (range, 9 to 18). Satisfactory clinical results were achieved in 84.6% of patients and satisfactory radiologic results were achieved in 92.3% of patients. All 26 fractures were successfully united at a mean time 11.5 weeks (range, 10 to 16 weeks). The mean preoperative fracture depression was 9.3 mm (range, 5 to 15 mm). Fracture depression at final follow-up averaged 1 mm (range, 0 to 4 mm). No complications directly related to arthroscopy were noted in any of the 26 patients. **Conclusions:** Arthroscopic-assisted reduction and fixation of tibial plateau fractures allows accurate intra-articular fracture reduction with diagnosis and treatment of associated soft-tissue injuries, which is a safe and effective procedure.

**Abstract No.: 40990**

**LEECH THERAPY IN THE RECONSTRUCTIVE HAND SURGERY**

Evgenij Varganov, Konstantin Mosin, Danil Bikmullin

Objective: To prove the effectiveness of leech therapy in reconstructive and plastic surgery of hand.

Materials and Methods: Experience leech therapy for use in the treatment and prevention of ischemic complications in terms of Hand Surgery Centre of 20 years. Treated more than 400 patients. Most patients - people with severe trauma or hand undergone reconstructive plastic volumetric intervention. Results: Clear criteria developed to demonstrate the advantages of using leech therapy in the treatment of ischemic complications in hand surgery is currently unavailable. Given the wealth of personal experience against the backdrop of a comparison group of patients treated by conventional methods and with the use of leeches, we can confidently say that the use of leech therapy gives tangible effect on the prevention of postoperative amputation and the possibility of preserving the body of human labor - the hand. Leech therapy has a reflex, anticoagulant, thrombolytic, anti-ischemic-hypoxic, hypotensive, immunostimulant, anti-inflammatory, analgesic, anti-sclerotic, regenerative action is bled, dekonjestiyu internal organs, protective antithrombotic effect, the elimination of microcirculatory disorders.

**Abstract No.: 40991**

**WAY FORWARD TO EFFICIENT FRACTURE CLINIC.**

Mansoor Jafri, Faiz Hashmi, Ike Nwachukwu

We present a prospective study to improve the emergency department referrals to the fracture clinics with a view to improve fracture clinic efficiency. Currently referrals to the fracture clinics from emergency department at Warwick hospital are made for the next working day, resulting in significant inappropriate referrals and increased workload. Method: All the fracture clinics referrals from ED case notes were prospectively reviewed by one orthopedic registrar during working days between 9 am to 5 pm over consecutive 38 days period. Using a set criteria for type of injuries the appointment were rescheduled for the later date or discharge the patients. Patients were then contacted by phone and advised the management plan. Rescheduled patient were issued fresh appointments letters. Results: Total of 229 cases reviewed, 112 (48.90%) patients planned for rescheduling for later clinics, 17 (7.42%) patients planned for discharge and 1(0.43%) patient recalled for earlier clinic. 130 (55.76%) changes were planned. However 33 (14.41%) patients were unreachable over the phone, resulting in actual reduction of 97 (42.35%) patients. Further 21 (9.17%) patients identified which could have been provided with walker-boots / off-loaders in emergency department and discharged. Workload reduction was 42.35%, with potential of 55.76% should all patients were contacted. This resulted in early start of ward rounds and theatres, longer patient – doctor interaction and increased supervision for junior doctors. Conclusion: Significant reduction in fracture clinic work load is possible by trauma & orthopaedics registrar review of referral and it will impact and improve the fracture clinic efficiency.



**Abstract No.: 40996**

**CARPAL TUNNEL SYNDROME: POSTOPERATIVE COMPLICATIONS**

Evgenij Varganov, Mariam Varganova, Leonid Kurzov, Konstantin Mosin, Danil Bikmullin

In the period 2010-2014 operated on 68 patients with compression neuropathy of the median nerve. Results: The best results are achieved with moderate disease. In the presence of thenar muscle atrophy, discriminatory sensitivity on the distal phalanx of the finger II more than 6 mm before surgery, after the intervention is possible to achieve only a slight improvement. When electroneuromyographic examination at 6 months after surgery, full recovery of function was not observed in any of the 28 patients with the above parameters. After the initial incision carpal ligament 9 patients (13.2%) reported some time re-emergence of symptoms of compression. The causes of this complication have become incomplete dissection ligament (1), and compression of the nerve fascia in the distal forearm (2) and scar scarring nerve with the surrounding tissues, which created scar nerve block, limiting its mobility relative to the surrounding tissue, thereby causing its traction neuropathy (6). The last complication is the most formidable. Treatment began with his conservative measures: splinting the wrist, transcutaneous stimulation of the median nerve, recurrent nerve blocks lidocaine to reduce pain. In 4 cases, these measures have not been successful, a repeat operation. To improve the blood supply to the nerve and reduce scar formation in the carpal canal in these cases used rags worm-shaped muscles that unfold proximally and wrapped their median nerve. Conclusion: To achieve good results it is necessary to operate the patients before, without waiting for the development of gross disorders of sensitivity and muscle atrophy of hand.

**Abstract No.: 41001**

**TOTAL ELBOW REPLACEMENT IN THE TREATMENT OF FRACTURES OF THE DISTAL HUMERUS**

Bruno Correia, Álvaro Botelho, Maria Miguel Carvalho, Pedro Martins, Filipe Medeiros

Total elbow replacement (TER) could be an option in complex intrarticular multifragmentary fractures of the distal humerus in old low demanding patients. The main indication was a complex intrarticular multifragmentary fracture of the distal humerus, not suitable for ORIF due to the comminution and poor bone stock, mainly in type 13-B and 13-C of AO classification. The authors study is about twelve patients treated between January 2012 and January 2014. Clinical results were evaluated using the Mayo Clinic scoring index for the elbow. AP and lateral radiographs were carried out in the post-operative period, at 6 weeks and then at 3, 6 and 12 months. The results and complications are presented in our series, with a mean follow-up of 24 months. We think that primary total elbow replacement is an alternative option in the treatment of this specific subset type of fractures, especially in osteoporotic and low demanding elderly, when ORIF is not technically feasible.

**Abstract No.: 41012**

**FACTORS INFLUENCING THE LENGTH OF STAY AFTER SIMULTANEOUS BILATERAL TOTAL KNEE REPLACEMENT: ROLE OF ANAESTHETIST**

Nikhil Shetty, Amith Shetty, Vijay Shetty

We studied 100 consecutive patients undergoing simultaneous bilateral total knee replacements (TKRs) in order to establish the influence of anaesthetic technique and anaesthetist concerned on the length of hospital stay. All patients received standard combined spinal and epidural anaesthesia from eight separate anaesthetists. Our analysis showed that the technique and the anaesthetist concerned did not significantly influence the length of stay after simultaneous bilateral total knee replacement.

**Abstract No.: 41013**

**SIMULTANEOUS BILATERAL TOTAL KNEE REPLACEMENT: USE OF AN EVIDENCE BASED CARE PATHWAY SYSTEM**

Nikhil Shetty, Amith Shetty, Prajyot Jagtap, Vijay Shetty

Safety of simultaneous (one stage) bilateral total knee replacement (TKR) remains controversial and highly debatable. We wish to report our experience with simultaneous bilateral conventional TKRs, followed by a carefully planned evidence based and, regularly reviewed care pathway system. In our experience, simultaneous bilateral TKRs are safe and very effective, provided attention to details of rehabilitation and overall multidisciplinary medical care is exercised.

**Abstract No.: 41020**

**REVERSE TOTAL SHOULDER REPLACEMENT IN COMPLEX PROXIMAL HUMERAL FRACTURES**

Bruno CORREIA, Maria Miguel Carvalho, Álvaro Botelho, Pedro Martins, Filipe Medeiros

Reverse total shoulder replacement is a demanding surgical technique that could be an option in acute complex proximal humeral fractures. The authors study is about 36 patients treated between January 2009 and January 2013. The main indication was a three or four part fracture or fracture-dislocation not suitable for ORIF or hemiarthroplasty, in patients above 70 years old, with a past history of rotator cuff disease and with normal deltoid function. Clinical results were evaluated using the Constant-Murley scoring system. AP and lateral radiographs were carried out monthly, for 2 months, then once a year. Every year, the subjective grade of satisfaction was evaluated. The results and complications are presented in our series, with a mean follow-up of 24 months.

**Abstract No.: 41024**

**INDUCING DYNAMIC VALGUS FORCE BY ELASTIC NAILS FOR BETTER STABILIZATION OF SUBTROCHANTERIC FRACTURE OF FEMUR**

Jawahar Jethwa, Rohit Shah, Atul Bhatt, Bharat Patel

**Introduction:** While dealing with subtrochanteric fractures, intense concentration of deforming forces frequently lead to primary or secondary varus collapse, cut-out and secondary implant failure. To avoid malunion, delayed union or nonunion many fixation devices are available and none address to counteract strong, dynamic, cyclic antero-medial (varus) forces. By inducing counter action in the form of 'dynamic valgus force' using smartly bent elastic nails, excellent results are achieved.

**Methods:** From 2005 to 2010, thirty non-osteoporotic patients from age group of 15 years to 50 years having unstable subtrochanteric fractures were treated by negotiating appropriate numbers and size of elastic nails. All nails were given a shape on operation table as per the fracture configuration to stabilize fracture and induce dynamic valgus force. Depending on available space of the canal three or four nails are placed in 'Y' configuration. **Results:** 27 (92%) fractures were united in 10 to 18 weeks without loss of reduction or fixation. 4 patients had complications like proximal or distal migration of nails, infection and bursa. One patient required change of implant. **Discussion:** High level of expertise and experience are needed to create effective dynamic stabilization. Failure to precise bending or placement leads to unhappy fixation. Skillful surgeon is able to arrange sequence of nails to be negotiated. **Conclusion:** Internal fixation of subtrochanteric fractures using precisely bent elastic nails so as to induce dynamic valgus force, give good results. To study further scientific laboratorial equipments are required to understand counter forces arising from intramedullary placement of elastic nails.

**Abstract No.: 41031**

**COMPARISON OF ANTERIOR AND POSTERIOR DISLOCATION AFTER TOTAL HIP ARTHROPLASTY THROUGH THE POSTERIOR APPROACH**

Ye Tian,

We aimed to identify the differences between anterior and posterior dislocation following total hip arthroplasty (THA) and explored potential risk factors and effective treatment for dislocation. The study included 1433 THAs (751 women, 682 men) operated on at a mean age of 58 years (22 to 78), with a mean follow-up of 14 months (6 months to 3 years). There was strong association between anterior dislocation and anteversion of the acetabular cup and femoral stem, size of the femoral head, and soft tissue tension. On the other hand, a higher incidence of postoperative posterior dislocation was found to relate to soft tissue tension, revision arthroplasty, and incorrect posture. There are multiple factors associated with both anterior and posterior dislocation. However, the two types of dislocation have different pathologic and anatomical characteristics, as well as risk factors. Excessive anteversion of the acetabular cup and femoral stem combined with other unstable factors lead to anterior dislocation in the early postoperative period, whereas posterior dislocation often results from unsuitable movement of the hip in the first few postoperative weeks. Closed reduction and immobilization are adequate for most patients who experience these two dislocations.

**Abstract No.: 41038**

**VALGUS OSTEOTOMY OF THE PROXIMAL FEMUR WITH DHS FOR THE TREATMENT OF FEMORAL NECK NONUNIONS?THE APPLICATION OF DIGITAL ORTHOPEDIC TECHNIQUE**

Xuecheng Cao, Pingshan Wang, Qing Zhang

Femoral neck nonunion is not a rare complication after internal fixation of the femoral neck fracture. Traditionally , it has been treated with an intertrochanteric valgus osteotomy and blade plate. The authors propose a method with proximal valgus osteotomy and dynamic hip screw system using digital orthopedic technique ( 3D technique and computer assisted orthopedics). Four cases was included in the series, and the age is below 30 years old. One patient complicated with femoral neck necrosis. Another patient's femoral neck was completely displaced ( Garden **IV** ) although with primary internal fixation. The following period was between 7 months and 2 years. All the nonunion united and the patient got almost equal-length legs. The necrosed head was not changed. They concluded that the technique is easy and reproducible with less complications.



**Abstract No.: 41086**

**GROSS ANATOMICAL FEATURES OF STERNOCLEIDOMASTOID MUSCLE IN 58 FETUSES**

Longlong Zhou, Shengping Tang

Specimens of sternocleidomastoid muscle(SCM) obtained from 58 fetuses corpses with gestation distribution from 18 to 28 weeks were studied by morphology and histological section. Bilateral asymmetric SCM were observed in 1 case. Whose right SCM(RSCM) was 10mm wide and the left was 0.6mm. Under the light microscopy, there were mild interstitial edema, interstitial collagen fibers proliferation, plasma scarcity, immature adipose tissue and no hemorrhage. There was only partial hyperemia in LSCM. Three cases were asymmetric in bilateral mastoid head. 8mm wide in right mastoid head, 2mm wide in left mastoid head were found in first case. Under the Light microscopy, interstitial collagen fibers proliferation, immature muscle fibers and no hemorrhage were found. The second case showed that right mastoid head was 22mm wide and left was 4mm. Under the Light microscopy, plasma scarcity, immature and disordered muscle fibers were found in LSCM, and rich plasma, vascular distribution and mature muscle fibers in RSCM. In the third case, left mastoid head was 20mm and the right was 4mm. Under the light microscopy, rich plasma, rare collagen fibers were found in right mastoid head and little immature adipose tissue in left mastoid head. 12 cases had partial blood stasis and 11 cases had all blood stasis in bilateral SCM. Light microscopy showed partial vascular engorgement, plenty of red cells included obvious interstitial hemorrhage and even partial necrosis. Various kinds of reasons in uterus could affect SCM and its own reasons must not be ignored too. These discovery could be beneficial to CMT.

**Abstract No.: 41089**

**PEDICLE SCREW PLACEMENT IN SPINE SURGERY: A RETROSPECTIVE REVIEW OF O-ARM/STEALTH VS NON-COMPUTERIZED NAVIGATION TECHNIQUES**

Evalina BURGER, Ryan Martyn, Khaled Zaghloul, Emily Lindley, Christopher Kleck, Christopher Cain, Vikas Patel

Introduction: Pedicle screws are commonly used for posterior stabilization of the thoracolumbar spine. Intraoperative CT-based navigation techniques are commonly used to decrease the risk of pedicle screw misplacement. The purpose of this study was to compare the accuracy of pedicle screw placement using O-arm navigation to that of non-navigated techniques. Methods: 597 pedicle screws were measured in 70 patients using intraoperative or postoperative CT. Of these, 401 were placed using navigation and 196 were placed without computerized navigation. Screw placement was assessed on a grade I-IV scale, with Grade I including pedicle screws that were entirely within the pedicle/vertebral body. Screws that breached the cortex of the pedicle or vertebral body were graded (II-IV) in 2mm increments, noting the direction of the breach. The two groups were compared for accuracy in screw placement using chi-square test. Results: 85.5% of navigated screws were Grade I, while 66.8% of non-navigated screws were entirely within the pedicle/vertebral body. Overall, 15 screws (3.7%) breached the pedicle or vertebral body cortex in the navigated group, and 19 screws (9.7%) breached the pedicle or vertebral body cortex in the non-navigated group. The number of cortical breaches in the non-navigate group was significantly higher than in the navigated group (OR 0.36 [95%CI] P=0.002). There were no neurologic or vascular compromises related to misplaced screws. Conclusion: This study suggests that CT-based navigated techniques are more accurate than non-navigated techniques for the placement of pedicle screws, and thus decrease the risk for pedicle screw breaches.

**Abstract No.: 41121**

**SURGICAL TREATMENT FOR COMPLEX TIBIAL PLATEAU FRACTURES INVOLVING THE POSTERIOR COLUMN**

Qun Chen, Li-Jun Song, Jia-Hu Fang, Tian-Run Lv, Tian-Run Lv

**Objective** To investigate surgical techniques for tibial plateau fractures involving the posterior column and the corresponding clinical effect. **Methods** From February 2008 to February 2012, 15 patients with tibial plateau fracture involving the posterior column underwent surgical treatment in our hospital, including 10 males and 5 females, aged from 27 to 54 years (average 39.2 years). Posterolateral and anteromedial approaches were used in 2 patients with posterolateral and medial columns fracture. Posteromedial and anterolateral approaches were used in 5 patients with posteromedial, medial and lateral columns fracture; Posteromedial and anterolateral approaches were used in 5 patients with posteromedial, posterolateral and lateral columns fracture, while posterolateral and anterolateral approaches were used in other 3 patients with same fracture. **Results** All patients obtained satisfactory exposure and reduction. They were followed up for 4 to 36 months (average 18.3 months). The average bone union time was 7.2 weeks, and the average time from operation to full weight-bearing was 16.2 weeks. The average range of motion of knee was 115.5°. According to HSS (Hospital for Special Surgery) score, the results were excellent in 10 cases, good in 4 cases, fair in 1 case and bad in 0 case. **Conclusion** For tibial plateau fractures involving posterior column, satisfactory reduction and fixation can be obtained via posteromedial and posterolateral approaches which have many advantages such as earlier functional exercise, fewer complications and excellent clinical results

**Abstract No.: 41140**

**THE POSTERIOR PILON FRACTURE: TREATMENT AND RESULTS VIA A POSTEROLATERAL APPROACH**

Ming Xie,

Introduction: This study was designed to describe the fracture patterns and early results of treatment of posterior pilon fractures who were treated using a posterolateral approach. Method: This study consisted of 14 cases, 10 males and 4 females with the mean age of 47 years (range, 28-63 years). The causes were traffic accident in 2 cases, falling in 6 cases and sprain injuries in 6 cases. The duration from injury to operation was 7-14 days. Including 12 cases combined with distal fibula fracture and medial malleolus fracture in 3 patients. There were 3 posterior dislocation fractures. All cases were treated with open reduction and internal fixation (ORIF) using the posterolateral approach. Result: A consistent fracture pattern was identified with a primary, inferiorly posterior pilon fracture that likely occurs through a combined rotational and axial load mechanism. The average duration of clinical patient follow-up was 26 (range, 24-37) months. The postoperation average American Orthopedic Foot Ankle Society (AOFAS) score was 92 points which was much higher than before operation. Anatomical reduction was obtained in all cases. Two complications (1 wound superficial infection and 1 sural cutaneous nerve injury) were all managed nonoperatively. Conclusion: Posterior pilon fractures form a consistent pattern. They can be successfully managed using a posterolateral approach with direct reduction and buttress fixation of articular fragments.

**Abstract No.: 41144**

**CEF (COMPRESSIVE EXTERNAL FIXATION) AFGAN PATTERN AND ILIZAROV FIXATOR FOR THE TREATMENT OF PATELLA AND OLECRANON FRACTURES**

Md Mofakhkharul Bari,

**Aim:** To evaluate a form of treatment for patella and olecranon fractures using a novel CEF and Ilizarov device. Our recommendation is that the CEF and Ilizarov Technique is a safe and effective method with advantages over traditional forms of fixation. **Materials and Methods:** From March 2008 to March 2014, 85 patients presented to us with 65 displaced fractures of the patella and 20 displaced fractures of the olecranon. These fractures were treated by a new method of CEF and Ilizarov device. CEF or Ilizarov fixator were chosen by us. Both equally gives excellent results. Patient follow up was performed at an average of 4 years post operatively. 5 patients were lost to follow-up. **Results:** All fractures that we treated by CEF or Ilizarov method healed with clinical and radiological union at an average of 45 days. Patients were discharged within first 4 days of surgery. 80 patients regained the same motion as their unaffected limb within 2 weeks after removal of the device. The mean Imsall knee score for patient function obtained on 60 patients was 96 points. No major complications were observed except 3 wire site infection and 5 cases with temporary synovial fluid leakage from wire site. **Conclusion:** Treatment of patella and olecranon fractures by Ilizarov and CEF device is a safe and effective method with distinct advantages over traditional forms of internal fixation. It allows rapid recovery and no secondary surgery is needed.

**Abstract No.: 41148**

**INTRAOPERATIVE 3D-FLUOROSCOPY WITH THE SIEMENS ISO-C-3D MOBILE C-ARM RADIOGRAPHY SYSTEM ASSISTED CLOSED REDUCTION AND PERCUTANEOUS SCREW FIXATION FOR SANDERS II CALCANEAL FRACTURES**

Ming Xie,

**Introduction:**The purpose of this study was to evaluate Siemens ISO-C3DC with multiplanar reconstructions (MPR) in the closed reduction and percutaneous screw fixation for Sanders II calcaneal fractures. **Methods:**18 patients of Sanders II calcaneal fracture were treated with the method of closed reduction and percutaneous screw fixation, assisted with Siemens ISO-C3DC with multiplanar reconstructions (MPR) from June 2008 to December 2010. There are 12 males and 6 females with an average age of 36.6 years (ranged from 18 to 72 years). 10 feet were on right side and 8 feet were on left side. The mechanism of injury was fall from a height. According to Sanders classification, 7 Sanders II a, 8 Sanders II b, 3 Sanders II c. **Results:**The mean follow-up period was 11.5 months with a range from 6 to 18 months. According to AOFAS ankle-hindfoot score scale system, the final result was scored from 65 to 94 (average 84.3). excellent in 12 cases, good in 4 cases, fair in 1 case. dissatisfactory in 1 case. The total rate of good results was 88.9%. **Conclusion:** Intraoperative 3D-fluoroscopy with the Siemens ISO-C3D mobile C-arm radiography system is a valuable assistant for the accurate reconstruction of these anatomical structures of calcaneus. Closed reduction and percutaneous screw fixation was effective and applicable minimal-invasive treatment for Sanders II calcaneal fractures. It can significantly reduce the risk of soft tissue injury and other complications while ensure satisfactory reduction and reliable fixation.

**Abstract No.: 41150**

**ILIZAROV TECHNIQUE IN CORRECTION OF THE POST-TRAUMATIC EQUINUS DEFORMITY IN ADULTS**

Ming Xie,

**Introduction:**To investigate the clinical efficacy of Ilizarov technique in correction of the post-traumatic stiff equinus deformity in adults by soft tissue release combined with limited osteotomies and arthrodesis. **Methods:**Between June 2009 and February 2012, 18 club feet of 18 patients in post-traumatic lower extremities were corrected, using Ilizarov tissue distraction technique combining conventional surgical treatments. 13 feet were talipes equinovarus and 5 were equinovarus. The operative procedure of limited soft tissue release and tendon transfer/lengthening, osteotomy and arthrodesis should be selected according to the deformity of the foot, for partly correcting the foot deformity and installing the frames conveniently. Special distraction apparatus of the foot—ankle were designed according to the talipedic deformity appearance. Gradual and slow tissue distraction was applied until the deformities were completely corrected. The fixation of ankle-foot orthosis were applied on all patients to prevent late recurrence of the deformities. **Results :**All patients' clubfoot were completely corrected over treatment. Finally, 18 patients were followed up for all average duration of 16 months (range 8—36). There were one case of pin tract infections. One foot suffered mild recurrent deformity with equinus < 15°. Some patients obtained a more mobile foot. The final outcome was assessed using the International Clubfoot Study Group (ICFSG) score: 3 feet were excellent, 11 were good, 4 were fair and no poor. **Conclusion:**Ilizarov soft tissue release distraction combined with limited osteotomy and arthrodesis allows installation of external fixators and a greater degree of correction of equinus deformity in the adult post-traumatic lower extremities. Moreover, callotasis of tarsal bone(s) allows decrease of recurrent deformity.

**Abstract No.: 41154**

**LCP DISTAL ULNA HOOK PLATE AS ALTERNATIVE FIXATION FOR FIFTH METATARSAL BASE FRACTURE**

Ming Xie,

**Introduction:**The purpose of this study was to evaluate the results of surgical treatment of fifth metatarsal base fractures using locking compression plate (LCP) distal ulna hook plate.

**Methods:**Seventeen patients with Lawrence classification zones I (n=14) and II (n=3) fifth metatarsal base fractures with an initial fracture displacement more than 2 mm and significant disruption of the cuboid–fifth metatarsal joint were included in the study. Patients treated using a LCP distal ulna hook plate fixation method were prospectively evaluated. Results Fifteen patients were followed up for 28 weeks (range, 24~64 weeks), Mean time to complete union as determined by X-ray, was  $84\pm 10$  days (range, 70-118 days). Clinically, the American Orthopaedic Foot and Ankle Society (AOFAS) midfoot scale questionnaire was administered postoperatively. Mean AOFAS midfoot scale scores were  $87.4\pm 5$  points (range, 76-91 points) 16 weeks postoperatively. All patients reported returning to prior activities of daily living at a mean of  $104\pm 10$  days (range, 91-137 days).

**Conclusions:**LCP distal ulna hook plate fixation is an effective alternative surgical method for zones I and II displaced fifth metatarsal base fractures. A mini-hook tubular plate was designed so that the last hole functioned as a hook for the application of compression force, grasping of comminuted fragments, and rotational stabilization in metatarsal base fractures.



**Abstract No.: 41155**

**APPLICATION OF EXTERNAL FIXATION TECHNIQUE IN SALVAGE ANKLE JOINT ARTHRODESIS**

Ming Xie,

introduction:To study the methods and value of arthroscopically assisted foot and ankle joint arthrodesis. Methods:From January 2001 to July 2009, under arthroscopical assist, ankle joint arthrodesis was undertaken in 27 cases.subtalar joint arthrodesis in three and talonavicular joint arthrodesis in eight, in which 18cases were male and 9 female, with average age of 43 years (age range from 32 to56 years. There were 21 cases with traumatic osteoarthritis of ankle joint, three with tuberculous arthritise. Under arthroscope, osteophytes, scar tissue, osteochondral fragment and cartilage were removed or cleared so as to do autogenous bone grafting. At the same time, external fixation was necessary in order to reach the state that bone contacted closely. Results:All the cases were followed up for 6-38 months(average 10 months) . No pain or swell appeared. The walk gait and function showed a significant improvement and X-ray verified the bone fusion. Conclusion:External fixation arthrodesis healing rate, infection of the ankle joint and combined ankle has some advantages of joint deformity.

**Abstract No.: 41157**

**STUDY OF THE THERAPEUTIC EFFECT OF SUPRAMALLEOLAR OSTEOTOMY FOR MALUNION ON ANKLE JOINT**

Ming Xie,

**Introduction:**To investigate the therapeutic effect of supramalleolar osteotomy for malunion of the ankle joint. **Methods:**15 patients being admitted to our hospital from September, 2005 to octomber,2008, who had suffering from malunions on the ankle jiont, were treated with this operation. 13 patients of them obtained full informations, 11 had got the open wedge-shaped osteotomy and the other 11 of which had treated with the lengthening osteotomy of the fibula. In detail, of the 12 patients, 10 had been corrected the varus deformity of the ankle immediately during the operation, 3 cases also got the releaseing of tarsal tunnel at the same time. Besides this operation, while the other 2 cases which had a severe varus deformity, were also treated with the Ilizarov correct the malformation slowly. **Results:**During a mean 27.3 (12 months to 48 months) months following-up, all the fracture were healed, the mean time was 14.5 weeks(11-17 weeks),and the mean time of totally weight-bearing was 14.1weeks(1-19weeks). The mean score of the ankle function 12 months after the operation was 86.5, in which , there was 8 excellent, 3 good, 2 mild, and the ratio of good outcomes was 84.6%. After the operation, all the patients were healed by expectant treatment, while anaesthesia on the inter side of the foot happened to 1 patients, symptom disappoint after 1 week. None of them had no complications with failure of the internal fixation. **Conclusion:** Supramalleolar osteotomy could come to a good outcome for the malunions of the ankle joint.

**Abstract No.: 41159**

**OPERATIVE TREATMENT AND CLINICAL SIGNIFICANCE OF LATERAL MALLEOLAR'S ANATOMICAL HOOK-PLATE FOR FIXATION OF ANKLE FRACTURE WITH DISTAL FIBULAR FRACTURE**

Ming Xie,

**Introduction:**To evaluate the clinical significance of lateral malleolar's anatomical hook-plate in treating ankle fracture including distal fibular fracture. **Methods:** we identified 19 patients who had undergone open reduction and internal fixation of ankle fracture including distal fibular fracture as inpatients from January 2006 to January 2009, 19 patients were treated with lateral malleolar's anatomical hook-plate, The mean follow-up period was 18.8 months with a range from 6 to 32 months. **Results:**According to Mazur ankle joint scoring scale system, the final result was scored from 67 to 92 (average 82.3).No patient had nonunion, ankle instability, and traumatic arthritis. **Conclusion :**The lateral malleolar's anatomical hook-plate represents a definite biomechanical superiority in treating fracture of external malleolar, with advantage of restoring anatomic structure, joint activity effectively and firm fixation.

**Abstract No.: 41171**

**LIMB RECONSTRUCTION PROCEDURES IN TIBIAL HEMIMELIA**

Md Mofakhkharul Bari,

Introduction: It is a longitudinal deficiency of the tibia which is either complete or partial. Its prevalence is 1 permillion live birth. 30% of the cases are bilateral. It may present as an isolated anomaly of the assessed with variety of skeletal or extraskeletal. Materials and Methods: 12 cases of different tibial hemimelia, 8 boys and 4 girls were treated from 1995 to 2013 at NITOR and Bari-Ilizarov Orthopaedic Centre. In 9 cases the right side was affected, the left side in 2 cases and bilateral affection in 1 case. The procedure that was used is the surgical technique(Brown procedure) to centralize the fibula at the knee and ankle with stabilization by Ilizarov technique. Sometimes reconstruction of knee extensor mechanism and deficient ligament reconstruction in ankle is needed. Ilizarov technique is absolutely needed to correct the knee, ankle and foot deformities and to overcome the LLD. Results: The results that we obtained were very much satisfactory in all cases. Complications are a fact of life that every orthopaedic surgeon has to face. In my series 1 refracture was observed and that was treated by reapplication of Ilizarov and union was achieved. Conclusion: Ilizarov technique is a reliable and adaptable technique by which we can correct deformity and gain limb length simultaneously by intelligent meticulous followup.

**Abstract No.: 41173**

**FIBULAR HEMIMELIA**

Md Mofakhkharul Bari,

**INTRODUCTION:** Fibular hemimelia is the commonest type of limb hypoplasia which represents difficult clinical entity because of coexisting severe limb shortening, angular deformity, foot deformity with syndactyly and polydactyly. **Materials and methods:** We reviewed the records of 18 patients (12 males and 6 females) treated because of type II Aichterman –Kalamchi fibular hemimelia. 12 segments were lengthened (8 tibia, 4 femur). The tibia was lengthened twice in six patients, simultaneous tibia and femoral lengthening in 4 cases. The age at surgery ranged from 2-15 years (mean 8 years); mean shortening was 7.5cm (ranged from 3-15cm). Valgus deviation in 12 patients, in 2 of them combined with rotational deformity. Ilizarov frame used for tibial lengthening in 10 segments. Hind foot stabilization was done in all the patients. Femoral lengthening was done in 4 patients. **Results:** Lengthening achieved from 3-9cm. Axial deviation (valgus 8, detorsion 4) was corrected in 8 patients. **Complications:** Fracture at bone regenerate after Ilizarov frame removal occurred in 3 cases. In 2 cases because of knee ROM limitation and posterior subluxation needed additional surgery. Other minor complications like pin track inflammation was treated by dressing and proper antibiotic prophylaxis. **Conclusion:** Treatment of fibular hemimelia is very difficult, particularly lengthening and it is technically demanding, required multiple surgeries and entails a lengthy procedure with many complications anticipated.

**Abstract No.: 41176**

**3D COMPUTED TOMOGRAPHY ANALYSIS AFTER TRIPLE OSTEOTOMY OF PELVIS IN CHILDREN UNDER 6 YEARS OLD**

Maroun Raad, Fadi Jammoul, Roger Jawish, Hassan Najdi

**Aim:** We carried out a periacetabular osteotomy in young children requiring high degree of reorientation, to avoid deformity of the pelvis with retroversion of the acetabulum observed in innominate osteotomy. **Methods:** 12 hips (10 patients) between 2 and 6 years old with important acetabular deficiency: 6 cases dysplastic hips after failed treatment for DDH with CEA ( $-14^{\circ}$  to  $20^{\circ}$ ), 4 cases Legg-Perthes, Stulberg IV with subluxation. **Results:** CT axial analysis: the acetabular anteversion was  $-1^{\circ}$  for operated hip (OH) and  $2^{\circ}$  for non operated hip (NOH). Excluding the LPC, the mean anteversion was  $+9^{\circ}$  (OH). The mean anterior coverage angle  $37.5^{\circ}$  for (OH),  $34.75^{\circ}$  (NOH). The mean posterior coverage angle was  $21^{\circ}$ . Exclude the LPC, mean anterior coverage  $47.6^{\circ}$ (OH),  $39.2^{\circ}$ (NOH). CT-3D analysis, the mean angle of inclination of the anterolateral lip  $32.7^{\circ}$ (OH),  $52^{\circ}$ (NOH); whereas the posterolateral lip inclination  $48^{\circ}$ (OH),  $66^{\circ}$ (NOH). The anterior acetabular inclination angle measured with lateral 3D views  $5.5^{\circ}$  (OH),  $15^{\circ}$ (NOH). **Conclusion:** In children less than 6 years-old, when important displacement of the acetabular fragment is necessary, the TOP permits the normalization of different parameters of hip's deficiency. Compared to the opposite side, acetabular anteversion and posterior coverage of the hip remain of normal values.

**Abstract No.: 41177**

**RADIOLOGICAL DESCRIPTION OF THE REGENERATE IN TREATMENT OF CONGENITAL  
BRAHIMETHATARSUS WITH DISTRACTION METHOD**

Muratjan Saliev, Shavkat Ravshanov, Sukhrob Saliev

Radiographic features of the elongation process of the metatarsal bones in brachimetatarsus is less observed field in orthopedics. We investigated radiographic parameters of the regenerate bone formation in treatment of congenital brachimetatarsus with distraction method depending on mode of distraction. We observed 196 X-rays of 28 female patients underwent lengthening shortened metatarsal bones with average age  $16,5 \pm 0,3$  years. Elongation was conducted using the Ilizarov apparatus with distraction and subperiosteal shortened metatarsal osteotomy. For the first group (13 patients) performed distraction 0.5 mm (1/4 turn 2 times) daily on average  $18,0 \pm 0,6$  mm. For the second group (15 patients) performed distraction 1.0 mm (1/4 turn 4 times) daily on average  $18,2 \pm 0,9$  mm. X ray follow up was on 1, 15, 30, 60, 90, 120 days. Evaluation criteria were: signs forming "cloudy" shadows of cortex, signs of "disease" regenerate. In the first group, we determined cloudy clumpy shadows and regenerate on 15th day in five patients. After 30 days, all patients had a shadow of compact regenerate; by 90 days was determined cortex. In one patient on 60th day was determined "disease" and regenerate cortex was seen by 120 days. In the second group, regenerate's shadow became noticeable in five patients by 30 day, cortex identified in eight patients by 120 days and 150 days in 7 patients. Thus, more rapid formation of sterling fragment observed in group I, which means distraction mode of 0.5 mm daily is preferable for lengthening shortened metatarsus in congenital brahimetatarsus.

**Abstract No.: 41179**

**SHORT-TERM RESULTS OF THE LUDLOFF OSTEOTOMY IN THE AGED**

Ze-Lu Li, Xiao-Hua Li, Shi-Min Chang, Xu Wu, Sun-Jun Hu

**Background:** The modified Ludloff proximal first metatarsal osteotomy is indicated for the surgical correction of moderate-to-severe hallux valgus deformity associated with metatarsus primus varus. We report the Short-term results of this procedure. **Methods:** Twenty patients (21 feet) with a mean age of 65 years underwent a modified Ludloff proximal first metatarsal osteotomy and a distal soft-tissue procedure for the treatment of a moderate-to-severe hallux valgus deformity. The American Orthopaedic Foot and Ankle Society score were assessed preoperatively and after a mean duration of follow-up of 8 months. **Results:** The mean American Orthopaedic Foot and Ankle Society score improved significantly ( $p < 0.0001$ ) from 53 points preoperatively to 88 points at the time of the most recent follow-up. The mean hallux valgus angle decreased significantly from 45 degrees preoperatively to 15 degrees at the time of the most recent follow-up ( $p < 0.0001$ ), and the mean intermetatarsal angle decreased significantly from 17 degrees to 10 degrees ( $p < 0.0001$ ) and mean 8 degrees plantar-flexion for reconstruction transverse arch of forefoot. All osteotomy sites united without dorsiflexion malunion but with a mean first metatarsal shortening of 2.2 mm. **Conclusions:** Our short-term results demonstrate that the procedure achieves significant correction of moderate-to-severe hallux valgus deformity, significant reduction in forefoot pain, and significant improvement in functional outcome in the aged.



**Abstract No.: 41182**

**HIGH-INTENSITY ISOMETRIC CONTRACTION OF THE TRICEPS SURAE INCREASES LOWER EXTREMITY VENOUS BLOOD FLOW VELOCITY**

Kouji TSUDA, Ato Shinkai, Naonobu Takahira, Kazuki Kaji, Miki Sakamoto

**Introduction:** Anticoagulant medication is recommended for venous thromboembolism (VTE), but not for patients with a high bleeding risk. Although cast leg immobilization is a major risk factor for VTE, its physical prophylactic effect has scarcely been examined. We aimed to examine how the intensity of the isometric contraction of the triceps surae affects lower extremity venous blood flow velocity. **Materials and Methods:** Twenty healthy young adult men (age,  $22.2 \pm 1.3$  years) performed 3-second isometric contraction of the triceps surae, with the ankle in neutral position. Contraction intensity was defined according to the following maximal voluntary contraction (MVC) conditions: 15–35%MVC, 40–60%MVC, 65–85%MVC, and 90–100%MVC. Myoelectric potential was monitored using electromyographic biofeedback. Peak blood flow velocity of the right superficial femoral vein (PV) was measured twice in the supine position on pulsed Doppler ultrasonography (Aloka, SSD-4000). After a 10-minute rest period, the baseline PV was measured. Before the next condition, we assessed whether PV returned to its baseline value. The mean of two measurements was used in the statistical analysis. **Results:** The PV rate at  $\geq 40\%$ MVC was significantly increased ( $p < 0.05$ ), and this increase was significantly greater than those at 15–35%MVC ( $p < 0.05$ ). **Discussion:** No significant difference was observed between PV at rest and PV at 15–35%MVC. Therefore, to significantly increase PV during isometric contraction of the triceps surae, a strong contraction  $\geq 40\%$ MVC is required. As VTE prophylaxis for patients with cast leg immobilization, we recommend high-intensity isometric contraction of the triceps surae.

**Abstract No.: 41186**

**SURGICAL HIP DISLOCATION FOR TREATMENT OF VARIOUS HIP DEFORMITIES**

Jun Li,

Objective Analyzing the clinical and radiographic results of surgical hip dislocation (SHD) for treatment of various hip conditions. Methods 29 surgical hip dislocation surgeries were performed for exploring, repairing and reconstructing the hip joint problems. All patients have the symptom of hip pain and dysfunction of hip. Radiographs were taken for primary diagnosis of the hip deformity, and the postoperative radiography was comparative detect any sign of ANV and the correction of the deformity. The clinical evaluation involved changes in the pre- and postoperative radiographic sign and Non-Arthritic Young Hip Scores score (YHS). Result all patients have some degree of the pain relief and increasing range of motion, the mean YHS improved from 59 to 82 points. Conclusion Surgical dislocation of the hip can be used to treat a variety of hip joint conditions with good view of the hip joint.

**Abstract No.: 41190**

**NEW TECHNIQUE IN AN ACHILLOTOMY IN THE TREATMENT OF CLUBFOOT. GURAM M. CHOCHIEV-MD**

Guram Chochiev, Olga Korolkova

In 90 percent patients who were treated by the Ponseti method require a percutaneous Achilles tenotomy. Purpose: To evaluate the effectiveness of needle techniques of achillotomy in the treatment of clubfoot by Ponseti management. Material and method. Since January 2010, performed 96 achillotomies in 72 patients using the needle technique. The average age of patient was 6 weeks (4 -10 weeks). 24 patients had bilateral clubfoot. The intervention was carried out under local anesthetic cream EMLA and Procain solution 0.25% - 1.0. Closed Achillotomy had performed at the level approximately 1 cm above the calcaneal tuberosity. We used 25G needles. Results. Follow-up was 6 - 60 months (av. 42 ms). In all cases achillotomy been fully achieved, having brought down the heel and the correcting the equinus. Duration of intervention was 10 - 120 seconds. No case of bleeding, hematoma formation, or scar was observed. The procedure is completely painless. Conclusion. Needle achillotomy is a simple, safe, effective, and minimally invasive technique that even novice surgeons can perform. Significance. The lack of complications is a significant advantage of the needle technique compared with conventional methods.

**Abstract No.: 41198**

**ARTHROSCOPIC TECHNIQUE OF ARTIFICIAL SPACE ON BUTTOCKS: A SAFETY STUDY.**

Wentao Zhang, Tian You, Jiuqun Li, Shuang Wang

Objective: The study was for evaluating the safety of arthroscopic operation with artificial space of gluteal muscles contracture. Methods: 30 cases of gluteal muscle contracture(GMC) were joined in the study, including 11 males and 19 females, with age range from 4 to 39 years. 28 patients had received repeating intragluteal injections. The disease duration ranged from 1-30 years. During operation, normal saline solution was used as lavage fluid, and radiofrequency energy was used as cutter for releasing GMC. The plasma sodium, plasma potassium, blood glucose, blood urea nitrogen concentrations, and plasma osmolarity were compared before and after operation; input and output volume of lavage fluid and intravenous dropping volume were recorded. Whether patients suffered from water intoxication or not was observed. The effect was evaluated through the criteria proposed by XIA Rongxi et al. Results: The operation was successful in all patients, without water intoxication. The operation time was 16-70 minutes. The input volume was 2-23 L, the output volume was 2-22 L, and the absorption volume was 0.1-1.2 L; and the intravenous dropping volume was 350-1300 mL. No significant difference was found in plasma sodium, plasma potassium, blood glucose, blood urea nitrogen concentrations, and plasma osmolarity between before and after operations. All patients were followed up 3-26 months. At last follow-up, the results were excellent in 27 cases, good in 3 cases, and the excellent and good rate was 100%. Conclusion: Arthroscopic operation with artificial space on the buttocks is safe and reliable in the treatment of GMC.

**Abstract No.: 41216**

**ARTHROPLASTY FOR FEMORAL NECK FRACTURE THROUGH DIRECT ANTERIOR APPROACH:  
MINIMAL RISK OF DISLOCATION**

Sm Javad Mortazavi, Navid Salehi

Introduction: Arthroplasty is the treatment of choice for displaced intracapsular femoral neck fracture in elderly. However, dislocation following hemi- or total hip arthroplasty is significantly higher in this group of patients. We design this study to see if arthroplasty through direct anterior (DA) approach has any effect on this complication. Material and method Between January 2010 and 2013, 64 patients underwent arthroplasty for femoral neck fracture through DA approach. All patients were followed prospectively at 3rd, 6th, 12th week, and 6 months postoperatively and annually thereafter. Results: In our study the average duration of the surgery was 48.84 min. There was no intraoperative complication including periprosthetic fracture. No patients needed transfusion either intra or postoperatively. The mean hospital stay was 3.7 days. No hip dislocation happened in our patients up to the latest follow up. Five patients died for existing comorbidities at a mean 8 months following the operation. The functional status of patients measured by Harris hip Score (HHS) has been significantly improved at the last follow up. Conclusion: Our study showed that the arthroplasty for femoral neck fracture through DA approach is associated with very low rate of dislocation. It is also associated with less blood loss, less operative time and faster rehabilitation.

**Abstract No.: 41220**

**TOTAL HIP ARTHROPLASTY IN PATIENT WITH OLD POSTERIOR WALL FRACTURES: SIMPLE RECONSTRUCTION OF A DIFFICULT DEFECT**

Sm Javad Mortazavi, Alireza Aminjavaheri

Introduction: Total hip arthroplasty (THA) in patients with acetabular fracture is a challenge for joint surgeons. There are many reports on THA following acetabular fractures treated by internal fixation, however, we are not aware of any previous report on THA following missed posterior wall fracture. Materials: 4 patients (mean age: 47.5) with untreated posterior wall fracture of the acetabulum, presented to our institution with severe osteoarthritis 6 months after primary trauma. Both patients had severe posterior wall deficiency due to fracture. We decided to put the cup in a little higher center rather than reconstructing of posterior wall. Results: We could get in press fit cup fixation in a mean of 14 mm high hip center. We use additional screw fixation in our patients to secure the cup. All patients were ambulated on the same day of surgery with weight bearing as tolerated program. We did not apply hip precautions to these patients like our other primary THA. At the latest follow up (mean: 26.8 months), radiographic assessment showed satisfactory cup position with bone ingrowth and no signs of loosening. Harris Hip Score, WOMAC and SF-36 showed significant improvement following surgery. Conclusion: Putting acetabular cup in a higher but more supportive bone offers a reliable and easier technique for reconstruction of acetabulum in patients with posterior wall deficiencies. Further studies are needed to prove the long-term outcome of this method.

**Abstract No.: 41224**

**WARMED INTRAVENOUS FLUIDS TO PREVENT HYPOTHERMIA MAY REDUCE LENGTH OF STAY FOLLOWING PRIMARY TOTAL KNEE ARTHROPLASTY**

Mohammed ALI, Mustafa Alnaib, Husham Alshather, Lee David, Helen Burdette

**Introduction:** Perioperative hypothermia is a common but preventable complication. Adult surgical patients undergoing primary knee arthroplasty are at risk of developing hypothermia at any stage of the perioperative pathway which may lead to increased perioperative blood coagulopathy, longer post anaesthetic recovery, postoperative shivering and increased oxygen consumption, cardiac events including myocardial ischaemia and arrhythmias, delayed wound healing and increased rates of surgical wound infection. The use of warmed intravenous fluids (WIVF) together with a forced air warming device (FAWD) are popular methods to prevent hypothermia. Little evidence is available on the effect of perioperative hypothermia on the length of stay following total knee arthroplasty.

**Methods:** A retrospective study was conducted to quantify this effect. A total of 50 patients were reviewed. **Results:** There were (52%) female and (48%) male patients. Average age and BMI were 71 and 29.78, respectively. The median ASA grade was 2. Patients were assigned into two groups. Patients with perioperative temperature  $>36.5$  were assigned to Group A (56%) and patients with perioperative temperature  $<36.5$  were assigned to Group B (44%). Patients in groups A received WIVF and FAWD and had an average length of stay of 4 days compared to group B who received FAWD only had a length of stay of 5 days. The difference was statistically significant ( $p < 0.05$ ).

**Conclusion:** The use of WIVF to prevent hypothermia may reduce length of stay in patient undergoing primary total knee arthroplasty. We acknowledge the small population size in this study and recommend further research into this interesting finding.

**Abstract No.: 41226**

**THE EFFECT OF MAGNETICALLY CONTROLLED GROWING ROD ON THE SAGITTAL PROFILE IN EARLY-ONSET SCOLIOSIS PATIENTS**

Kenny Kwan, Kenneth Cheung, Dino Samartzis, John Ferguson, Colin Nnadi, Ilkka Helenius, Muharrem Yazici, Gokhan Demirkiran, Behrooz Akbarnia

**Introduction:** The effects of gradual lengthening on regional and overall sagittal profile in early onset scoliosis (EOS) are not well-documented. This study aimed to report on the changes of the sagittal profile after magnetically-controlled growing rod (MCGR) implantation. **Methods:** A retrospective review of prospectively collected data from consecutive patients undergoing MCGR treatment with a minimum of 2-year follow-up from 6 centres was carried out. Clinical data and complications were noted. Radiographic measurements including thoracic kyphosis (TK), lumbar lordosis (LL) and sagittal vertical axis (SVA) were analysed. **Results:** Thirty patients were reviewed and twenty-three patients had full radiographic data for analysis. The mean age at the time of surgery was 7.3 years (range: 4-14 years) and the mean follow-up period was 39.2 months (range: 24-61 months). Patients were divided into 3 groups according to their pre-operative TK: group 1 (TK<20°), group 2 (TK 20°-40°) and group 3 (TK>40°). Mean TK did not change in group 1 or 2 during MCGR lengthening but decreased in group 3, and mean LL remained the same in all 3 groups. At final follow-up, global sagittal balance (SB) improved or returned to neutral alignment in 60% of cases, did not change in 27%, and worsened in 13%. **Conclusion:** This study showed that MCGR reduced TK in those with pre-existing TK >40° and had no effect on other regional sagittal parameters. It had a tendency to improve the global sagittal balance. Further studies are required to evaluate fully the effect of MCGR on sagittal profile.



**Abstract No.: 41228**

**IPILATERAL CLOSED CLAVICLE AND SCAPULAR SPINE FRACTURE WITH ACROMIOCLAVICULAR JOINT DISRUPTION ? A RARE CASE REPORT**

Raghvendra Kembhavi, Boblee James

Introduction: Injuries involving lateral end of clavicle involving acromioclavicular joints are commoner injuries whereas midshaft clavicle fractures with acromioclavicular joint disruption are relatively rare and have been described only few times in English literature. In this rare injury , we report about a case involving clavicle and scapular spine fracture with acromioclavicular disruption which has never been described in English literature so far. Methods: A patient with closed clavicle fracture mid-distal one-third junction ,communitied and scapular spine fracture with acromioclavicular joint disruption was treated with open reduction and internal fixation of clavicle and scapular spine as a staged procedures after a interval of week , clavicle being plated first . 3.5 mm recon titanium plate was used in both surgeries. Acromioclavicular joint was not opened in any stage of surgery since it did not show instability after clavicular plating probably due to intact coracoclavicular ligament. However joint still showed minimal opening after both surgeries probably because of clavicular shortening due to its communitied. Patient was assessed functionally with Constant-Murley clinical method of shoulder assessment and radiologically. Results : Six months post operatively, X-rays showed complete fracture union and functional assessment with Constant-Murley clinical method showed score of 96(out of 100) with no pain at acromioclavicular joint. Conclusion : Ipsilateral clavicle fracture with scapular spine fracture with acromioclavicular disruption is one of the rarest injury. But when managed properly, with proper preoperative planning, staged procedures and strict physiotherapy protocol, its possible to achieve good functional outcome.

**Abstract No.: 41230**

**DELAYED OPEN REDUCTION AND INTERNAL FIXATION OF ACETABULAR FRACTURES WITH AN INJURY-TO-SURGERY INTERVAL OF 22-399 DAYS: CLINICAL OUTCOME WITH 82 MONTHS? FOLLOW-UP ON AVERAGE**

Sun Yu-Qiang,

Introduction: Delayed management of acetabular fractures is of great challenge. In the current study, we report clinical outcome of 61 acetabular fractures treated by delayed open reduction and internal fixation with an injury-to-surgery interval (ISI) of 22-399 days. Methods: The operations were performed between April 2001 and December 2008. There were 42 males and 19 females, with an average age of 38 years old. All patients were followed for an average of 82 months.

Demographic data, fracture pattern, ISI, concomitant injuries, surgical approach, complications and clinical outcome were recorded and analysed. There were 16 simple fractures (26.2%) and 45 associated fractures (73.8%). Matta criteria were used to evaluate reduction quality. In terms of functionality, Merle d'Aubigné and Postel scoring system was employed. Results: Anatomical reduction was achieved in 45 cases (73.8%). Clinical result was excellent in 38 cases, good in 13 cases, fair in 6 cases and poor in 4 cases. Osteonecrosis of the femoral head was observed in 3 cases, and heterotopic ossification was found in 28 cases. Four patients had a transient palsy of sciatic nerve. Conclusions: Delayed open reduction and internal fixation could yield satisfactory clinical outcome in the majority of patients with acetabular fractures.

**Abstract No.: 41236**

**EARLY LOCAL SIDE EFFECTS OF COLLAGENASE CLOSTRIDIUM HISTOLYTICUM INJECTION FOR TREATMENT OF DUPUYTREN'S CONTRACTURES**

Sarang Kasture, Raj Sakamuri

Collagenase clostridium histolyticum (CCH) injection for treatment of the Dupuytren's contracture has become popular as it is a minimally invasive modality of treatment. Though considered safe and effective, it is associated with local side effects. This study aimed to report local side effects after the collagenase injection. 55 patients received collagenase injection for correction Dupuytren's contracture in a single digit with manipulation after 24 hours. They were prospectively followed-up for the assessment of local side effects for the first two weeks. The most common side effect was pain and swelling which occurred in 100% of the patients. The bruising and itching around the site of injection occurred in 90.9 % while blister formation occurred in 36.36% of patients. Skin tear was seen in 27.7% while epitrochlear and axillary lymph node enlargement was seen in 26.6% of patients. All the skin tears healed within two weeks with regular dressings while lymph node enlargement settled down in one week time. None of the patients were noted to have severe complications of tendon or ligament rupture. This study confirms that most of the local complications resolve within two weeks but larger studies will be required to assess major complications as the incidence is low. We believe that the patients should be well informed about the these complications before commencement of the treatment to avoid disappointment.

**Abstract No.: 41239**

**COLLAGENASE CLOSTRIDIUM HISTOLYTICUM INJECTION FOR TREATMENT OF DUPUYTREN'S CONTRACTURE: ONE YEAR FOLLOW UP.**

Sarang Kasture, Raj Sakamuri

Collagenase clostridium histolyticum (CCH) injection provides a minimally invasive option of treatment for Dupuytren's deformity correction in a limited subset of the patients with a well palpable cord. The early reports are encouraging with results comparable to surgery. This study prospectively evaluated the outcome in 61 fingers in 56 patients with deformity more than 30 degrees and palpable cord who underwent CCH injection for Dupuytren's deformity correction. 30 patients (49.1%) had isolated metacarpophalangeal (MP) joint deformity (MP group), 11(16.3%) had isolated proximal interphalangeal (PIP) joint deformity (PIP group), while 20 (34.4%) had deformity at both MP and PIP joints (MP+PIP group). The average deformity in MP group was 54.8 deg, PIP group was 65.2 deg. and MP+PIP group was 54.1 and 47.6 deg. in MP and PIP joint respectively. Full correction was obtained in 25 (83.4%) of the MP group, 8 (80%) of the PIP group and 15 (71.5%) of the MP+PIP group. In MP+PIP group out of 6 patients, 5 (83.3%) had residual deformity in PIP joint only while one (16.6%) had residual deformity in both MP and PIP joints. At one year follow up, recurrence was seen in 6 (9.8%) patients. This study suggests that isolated MP joint deformity can be better corrected by CCH than isolated PIP or MP+PIP joint deformity together.

**Abstract No.: 41249**

**COMBINED MODIFIED STOPPA APPROACH FOR PELVIC AND ACTABULAR FRACTURE**

Jun Li,

Objective: Modified STOPPA, iliac board, and ilioinguinal approaches were comparatively studied to investigate the advantage and disadvantage of these anterior hip approaches. Methods: 26 cases of pelvic fractures and 9 cases of acetabular fractures were treated on surgery. 10 cases of 26 pelvic fractures were fixated with Stoppa approach alone, 15 cases combined with iliac fossa approach, and 1 case combined with posterior approach. 3 cases of 9 acetabular fractures were fixated with Stoppa approach alone, 4 cases combined with t Kocher-Langenbeck approach, 2 cases combined with iliac fossa and Kocher-Langenbeck approaches as well. Results: the average operating time was 90 min , the average blood loss was 320 ml. According to Matta postoperative radiographic score, reduction and fixation results of pelvic ring injuries are excellent (19), good (3), fair (3), bad (1); results of acetabular fracture are excellent (4), good (3), fair (1), bad (1). Conclusion: The Modified Stoppa approach can be used alone or in combination with other approaches pelvic acetabular fractures, which has convenient operation, less complication.

**Abstract No.: 41262**

**PREDICTIVE VALUE OF COGNITIVE OR PHYSICAL SCREENING FOR INSTITUTIONALIZATION AFTER FRAGILITY HIP FRACTURE**

Harri PIHLAJAMÄKI, Harri Pihlajamäki, Markus Hongisto, Tiina Luukkaala, Maria Nuotio, Harri Pihlajamäki

We examined the predictive value of Instrumental Activities of Daily Living (IADL) and Mini Mental State Examination (MMSE) for institutionalization after hip fracture. Methods: Fragility hip fracture patients  $\geq 65$  years of age ( $n=584$ ) were examined at an outpatient department 4 to 6 months after surgery and followed 1 year postoperatively. A telephone interview with a structured inquiry was carried out at 1, 4, and 12 months postoperatively. Results: Age-adjusted univariate logistic regression analysis revealed that IADL and MMSE scores measured at the outpatient clinic, age, mobility level before hip fracture, previous living arrangements, American Society of Anesthesiologists grade, living with somebody, number of medications on admission, and living arrangements at 1 or 4 months after hip fracture were significantly associated with living arrangements 1 year after hip fracture. Multivariate logistic regression analysis established that institutionalization 1 year after hip fracture was significantly predicted by institutionalization at 4 months (odds ratio [OR] 13.53, 95% confidence interval [CI] 5.88-31.14), IADL (OR 1.73, 95% CI 1.27-2.36), and MMSE (OR 1.10, 95% CI 1.02-1.19). Receiver operating characteristics analysis with 95% CI indicated excellent discrimination by IADL (area under the curve [AUC]=0.88) and MMSE (AUC=0.83). During the time period from 4 to 12 months, 66 (11.3%) patients changed living arrangements. Conclusion: IADL and MMSE scores performed 4 to 6 months after hospital discharge predicted institutionalization among fragility hip fracture patients  $\geq 65$  years of age at 1 year after hip fracture. IADL score of  $\geq 5$  excludes institutionalization. Changes in living arrangements also often occur after 4 months.

**Abstract No.: 41271**

**SHORT-TERM OUTCOME OF CONVERSION TOTAL HIP ARTHROPLASTY FOR FAILED TREATMENT FOR FRACTURED NECK OF FEMUR**

Rohit Dhawan, Assad Farooq, Roy Saha, Ralph Perkins

Introduction: Revising failed primary treatment for fracture neck of femur (NOF) is challenging because of distorted proximal femoral, scarred soft tissue, poor physiology and bone fragility.

Objectives: We present the results of prospective data for conversion surgery of failed primary

treatment for fracture NOF's between 2007 and 2014. Methods: Femoral prosthesis consisted of uncemented long stemmed fluted cone-conical stem. Constrained liners were used in 15 patients.

Constrained cups were used for 22 mm femoral head size. Indication for constrained cup was age => 80 years and neurological disorders including parkinsonism, cerebral palsy and stroke. Patients were

followed up in clinics where Oxford Hip Scores (OHS) and radiographs were taken. Results: 29

patients underwent conversion procedures including 23 females and 6 males. Mean age was 67

years (38 - 86 years). Primary procedures included 17 hemiarthroplasties, 12 internal fixations

consisting of 8 dynamic hip screws, 3 cannulated screws and 1 proximal locking plate. The average

time from the primary surgery to conversion surgery was 13.2 months. Post-operative complications

included 2 infections and 2 patients complaining of groin pain. Mean follow up was 44 months and

mean OHS was 30. There were no hip dislocations or peri-prosthetic fracture. Survival at 7 years was

82.7% (CI 63.5 – 93.4). Conclusion: Long stem uncemented femoral prosthesis are suitable

prostheses for treatment of failed primary surgical treatment for patients with NOF's. The fluted

nature of femoral stem is essential to maintain torsional stability in the elderly group of patients with widened femoral canal.

**Abstract No.: 41275**

**REVIEW OF CURRENT LITERATURE TO COMPARE EARLY VS DELAYED MOBILIZATION AND WEIGHT BEARING POST OPERATIVELY AFTER INTERNAL FIXATION OF ANKLE FRACTURES**

Faheem Kamal Ali, Anjani Singh

Introduction: Ankle fractures are amongst the most common fractures associated with high cost for both the individual and society. Post-operative regime after operative fixation of unstable ankle fractures varies from complete non weight bearing immobilization for several weeks to early mobilization with or without weight bearing. The regime depends on the preference of the surgeon or the institution. We did a systematic review of the current literature for the last 20 years on this subject. Method: Only PubMed recognised articles from the English literature were included. Articles were searched through PubMed and via other search engines like science direct, google scholar, Ovid using different combinations of MeSH terms and appropriate search limits set. Randomised control and cohort studies were included. Studies were limited to 20 years around which time the modern method of fixation became established. Results: Thirteen papers were identified out of which 6 favours early weight bearing and mobilization and 4 favours early mobilization on its own. Only 3 papers do not support early mobilization. The papers looked at various objective and subjective functional outcome including pain, swelling, range of motion, length of stay in the hospital, earlier return to work and complication like loss of reduction, wound problems and infection. Conclusion: Current literature clearly favours early mobilization and weight bearing in appropriately selected patients after operative fixation of ankle fractures which improves the overall functional outcome; thus reducing the cost of managing these injuries thereby benefiting the patient and the society.



**Abstract No.: 41278**

**MANAGEMENT OF VALGUS KNEE DEFORMITY WITH FIXATOR ASSIST NAILING TECHNIQUE AND DISTAL FEMUR OSTEOTOMY**

Shengsong Yang, Sheng Song Yang

Introduction: traditional method to treat valgus knee deformity in young patients is distal femur osteotomy (DFO), the osteotomy can be fixed with plate or external fixator. This study discuss the result of treating valgus knee deformity with fixator assist nailing (FAN) technique and distal femur osteotomy . Method: 8 patients with 10 valgus knee deformity were treated with DFO and FAN. the average age of patients is 23( 17-44) years old. 6 patients is unilateral deformity cause by sequalea of growth plate injury, 2 patients are bilateral deformity cause by metabolic disorder. The pre-operation and post-operation of lateral distal femur angle(LDFA) and mechanical alignment deviation(MAD) and range of motion(ROM) were measured and analysis. Result: All 8 patients were followed for 12-72 months (average 34 months). The osteotomy site united in 3-5 months (average 3.5 months) post-operatively. The average pre-OP MAD=lateral  $60.2\pm 26\text{mm}$  (31-117mm) , average post-OP MAD=lateral  $3\pm 7\text{mm}$  (medial 5mm-lateral 44mm),  $P<0.01$ . average pre-OP LDFA= $71\pm 5^\circ$  (60-77 $^\circ$ ) , average post-OP LDFA= $86.5\pm 3^\circ$  (82-91 $^\circ$ ) ,  $P<0.01$ . The ROM is not significantly changed before and after operation. There is no infection or neuro-vascular injury occurred. Conclusion: The FAN technique an effective method to treat valgus knee deformity in young patients with DFO.

**Abstract No.: 41283**

**NOVEL NTRK1 MUTATION AND NDN VARIANT IN CONGENITAL INSENSITIVITY TO PAIN WITH ANHIDROSIS**

Sen Liu, Nan Wu, Jiaqi Liu, Zhenlei Liu, Yuzhi Zuo, Weisheng Chen, Zhihong Wu, Guixing Qiu

Congenital insensitivity to pain with anhidrosis (CIPA) is a rare autosomal recessive disorder. It has been reported that CIPA could be due to a defect in the neurotrophic tyrosine kinase receptorencoded by the NTRK1 gene. NGF mediates biological effects by binding to and activating TrkA. NGF is initially synthesized as proNGF, the product of NGFB, and then processed and secreted as mature NGF. Another paternally inherited gene, necdin (NDN), is essential in NGF-induced phosphorylation of TrkA, terminal differentiation and survival of primary dorsal root ganglion neurons. We performed mutation analysis in the NTRK1, NGFB and NDN genes in a Chinese Han 17-year-old female CIPA patient with a history of progressive lumber hump noticeable for 2 year. The patient was found to have a novel insertion in exon7 (c.727insT) of NTRK1 which causes premature termination and a SNP (rs2192206 G->A) in NDN. We inferred that the contribution of NTRK1 frame shift and paternal variant in NDN together might be the causative of this rare case.

**Abstract No.: 41284**

**THE RESULTS OF CALCANEAL LENGTHENING OSTEOTOMY FOR THE TREATMENT OF PES PLANOVALGUS: A STUDY OF 28 CASES**

Hassene Affes, Khaled Kamoun, Amani Ammar, Mourad Jenzri, Omar Zouari

Introduction: Pes planovalgus (PPV) is a common deformity in children. Surgical treatment is rarely necessary. It is indicated for disabling and painful deformities. Calcaneal lengthening osteotomy has demonstrated efficacy and superiority over certain techniques. Methods: We report a series of 25 children (28 feet) operated according to Evans technique, carried out in pediatric orthopedic department over a period of 7 years. The Clinical assessment was based on the AOFAS score, and radiographic assessment was based on different parameters on standard radiographs. Results: The mean age at surgery was 13 years. Etiologies were cerebral palsy (n=15), and traumatic (n=1); nine patients were evaluated as idiopathic. In addition to the calcaneal lengthening osteotomy, 21 cases benefited from a lengthening of the Achilles tendon. At mean follow-up of 3 year, 18 (72%) cases had very good results with plantigrade feet without any deformity while weight-bearing, complete disappearance of pain and near-normalization of radiographic measures. Five cases (20%) had good results with occasional pain and light hindfoot valgus. Two feet had bad result given the persistence of pain and functional limitations. The AOFAS score ranged from 50 to 85 with an average of 74. Conclusion: A successful calcaneal lengthening osteotomy removes pain in symptomatic PPV, provides meaningful correction clinically and radiographically in both hindfoot and forefoot. Good results concern reducible flat feet. The advantages of calcaneal lengthening osteotomy are being easy to be applied technically, but it shouldn't be ignored that this osteotomy may cause problems especially in subtalar joint and it's hard to predict long term results.

**Abstract No.: 41311**

**REGENERATION OF SPINAL CORD WITH ACELLULAR SPINAL CORD SCAFFOLDS: AN IN VIVO STUDY  
IN RAT MODEL OF HEMI-SECTIONED SPINAL CORD INJURY**

Denghui Xie, Jia Liu, Xu Li, Xiaochun Bai, Dadi Jin

**Introduction:** Various tissue-engineering scaffolds have been applied to repair spinal cord injury. However, most of them failed to restore highly similar spinal cord structure. Therefore, we prepared a novel acellular spinal cord (ASC) scaffold by chemical extraction and consequently investigated its effect on cell adhesion and proliferation, axonal remyelination and functional recovery in spinal cord injury (SCI) model. **Methods:** Lateral hemi-section surgeries in thoracic spinal cord were performed to establish SCI model in twenty-four adult Sprague Dawley rats. The lesion gap was either filled with ASC scaffold in ASC group (n=12) or left untreated in control group (n=12). Basso, Beattie, and Bresnahan (BBB) locomotor test were conducted to assess neurologic function weekly for 8 weeks. At each timepoints postoperative, five rats in each group were sacrificed and spinal cord specimens were measured by histological and immunohistochemical examination as well as Transmission electron Microscope (TEM). **Results:** ASC scaffold was found to be integrated well with the host spinal cord at the lesion site and has beneficial effect on functional recovery. On ASC scaffold, few astrocytes was observed, creating the astrocyte-free area, and only a few neural stem cells and neurons were observed. Among them, oligodendrocytes, main cell type, were distributed on ASC scaffold on day 56th post-SCI. Some remyelination of ingrown axons occurred inside ASC scaffold. **Conclusions:** ASC Scaffold could provide a microenvironment favorable to differentiation or proliferation of host oligodendrocyte and promote axon remyelination for spinal cord restoration.

**Abstract No.: 41321**

**SLIDING BONE GRAFT AS TREATMENT FOR DELAYED UNION OF TIBIAL FRACTURE**

Jewel Sadiang-Abay,

Bone graft and substitutes are vital entities in the orthopedic practice. Cases of patients having bone loss are inevitably encountered by orthopedic surgeons. There is a wide array of options that can be used to address bone loss or augmentation. This case report expounds the utilization of adjacent bone and turning it into a sliding graft to fill in a cortical bone loss. A technique that renders not only osteoinduction but more importantly a cortical strut. This is a case of a delayed tibial union treated with an open reduction and internal fixation using a plate. The construct was augmented with a sliding bone graft. A two by two centimeter rectangular bone was osteotomized on the anteromedial side of the tibia proximal to the fracture line. This bone fragment was slid to the fracture line with a snug fit spanning the entire cortical loss and was secured with one screw. The patient was monitored for one year since the time of operation and he showed results at par with the common practice of using iliac bone grafts or bone substitutes.

**Abstract No.: 41341**

**MANAGEMENT OF INFECTED NON UNION OF LONG BONES WITH LIMB RECONSTRUCTION SYSTEM (LRS).**

Dibya Singha Das, Satya S Patra, Divya Madharia

Incidence of complex and open fracture of long bones is increasing day to day due to the increase in high energy traumatic events leading to increased incidence of non-union associated with infection in long bones. Open debridement of the infected non-union site, freshening of the bone ends, appropriate antibiotics and stabilization of fracture are the basic principles of treatment in a case of infected non-union. Various devices have been used in treatment of infected non-union as Ilizarov's ring fixator, intramedullary nails, dynamic compression plates, locking compression plates, limb reconstruction system (LRS) etc. Method: The study was conducted on patients with infected nonunion of fractures of long bones like femur and tibia treated with LRS fixator. The study period was spanning from September 2012 to December 2014 –we prospectively analysed 17 cases of infected non-unions treated with LRS fixators. All patients were males with a mean age of 50.1 years (range,15-85 years). Method: Fixation of the limbs were done with the LRS fixators using 3-clamps constructs. Corticotomy and bone transport was done in 11 cases presenting with gap nonunions and the rest with acute docking and limb lengthening. Result: The union rate was found to be 85.7% with single procedure and the rest needed secondary plating and bone grafting. Among them, 30% had primary compression, 50% needed bone transport and 7% by callus distraction. The complex nonunion are managed satisfactorily with LRS. It appears a very good alternative to the complex Ilizarov fixator in management of infected nonunion of long bones.

**Abstract No.: 41344**

**RELEVANCE OF ANTERIOR KNEE PAIN AND WEIGHT-BEARING AXIAL RADIOGRAPHIC VIEW AFTER TOTAL KNEE ARTHROPLASTY.**

Takeshi Kojima, Etsuo Chosa

Introduction: Anterior knee pain is a common cause of complaint following total knee arthroplasty. Radiographic assessment of the patella after total knee arthroplasty is typically performed with use of static, unloaded Merchant views. However, it is not in vivo kinematics. The purpose of the present study was to evaluate the relevance of anterior knee pain and weight-bearing axial radiographic view after total knee arthroplasty. Method: Radiographs were made for 46 knees in forty-six (average age 75.3 years old) who had undergone total knee arthroplasty. Postoperative follow-up was performed at a mean of 2 years. On both Merchant view and weight-bearing axial views, measurements of patellar tilt and patellar displacement were made. Result: A significant difference in the patellar tilt of Merchant view (averaged 8.5 degrees), and weight-bearing axial view (averaged 6.9 degrees) was observed. In mean patellar displacement of Merchant view, 1.8mm, weight-bearing view observed significant difference at 1.0mm. The amount of change of patellar tilt, patellar displacement and anterior knee pain did not show a significant difference. By the role of the quadriceps muscle, a significant difference in the patellar tilt of Merchant view and weight-bearing axial view was observed. Weight-bearing axial view may provide additional information over standard radiographic views.

**Abstract No.: 41352**

**BILATERAL AVASCULAR NECROSIS OF FEMORAL HEAD FOLLOWING ASYNCHRONOUS POST-ICTAL FEMORAL NECK FRACTURES ? A CASE REPORT**

Avinash MAHENDER, Venkatadass Krishnamoorthy

**INTRODUCTION:** Bilateral avascular necrosis following post-ictal bilateral fracture neck of femur is a rare occurrence. We herein report a case of bilateral AVN of femoral head following asynchronous bilateral post-ictal fracture neck of femur. **CASE:** A 16-year-old autistic boy was brought with Left hip pain following an episode of seizures and X-rays showed delbet type II fracture Neck of Left femur. This was treated by closed reduction and cancellous screw fixation and skeletal traction for 6 weeks. At three months, follow-up radiograph showed union of the fracture but he had developed segmental avascular necrosis with collapse of the head. At eight months, the patient was brought with pain on the right hip following another episode of seizures and X-rays showed a fresh delbet type II fracture Neck of right femur with established AVN of the left femoral head. He underwent closed reduction and cancellous screw fixation of the Right hip and implant exit of the left hip. Six months follow-up x-rays showed avascular necrosis with collapse and extrusion of the femoral head on the right side as well. **DISCUSSION:** Literature review shows an increased risk of fracture neck of femur among epileptics. The incidence of AVN is maximum in Delbet Type I followed by Type II and Type III. Most of the series have reported that most of the cases of post-traumatic AVN will end up in arthritis and need total hip replacement at a later date. **CONCLUSION:** Upon extensive review no case report of bilateral fracture neck of femur with bilateral avascular necrosis was found and hence this case was reported.



**Abstract No.: 41355**

**AN ANATOMIC STUDY OF GLENOID REGARDING ANCHOR INSERSION POSITION AND DIRECTION**

Jianlin Zuo, Shengqun Wang, Jiayin Wang, Changyue Gu, Zhongli Gao

Objective: To investigate normal bony anatomy of the glenoid rim for successful anchor insertion during arthroscopic labral repairs. Methods: 12 unpaired human scapulas were CT scanned, then three dimensional model were reconstructed by using MIMICS. Inner glenoid rim angle ( $\alpha$ ) and outer glenoid rim angle ( $\beta$ ) were measured from the cross-sectional images of the glenoids at 8 positions: the 2, 3, 4, 5, 6, 7, 8, and 9-o'clock positions. The glenoid joint surface was outlined, and all the clock positions were marked. Anchor insertion was simulated by selecting the entry points as 3, 4, 5 and 6 o'clock, and the anchor length was supposed to be 12mm. The angle formed by the long axis of the anchor and the line connecting 12 o'clock and 6 o'clock was analyzed at each position. The borderline angle beyond which the whole anchor would be inside the bone was noted as angle  $\gamma$ . The statistical analyses were performed with SPSS 16.0. Results: The smallest  $\alpha$  was at the 4-o'clock position (right  $50^{\circ}\pm 6^{\circ}$ , left  $52^{\circ}\pm 9^{\circ}$ ) ; while the smallest  $\beta$  was at the 3-o'clock position (right  $50^{\circ}\pm 6^{\circ}$  , left  $53^{\circ}\pm 10^{\circ}$ ). Angle  $\gamma$  from the 3-o'clock to the 6-o'clock were  $24^{\circ}\pm 4^{\circ}$ ,  $55^{\circ}\pm 5^{\circ}$ ,  $86^{\circ}\pm 6^{\circ}$ ,  $119^{\circ}\pm 3^{\circ}$ . No significant difference of any angle at the same position was noted between left and right side ( $P>0.05$ ). Conclusions: The available bone mass for the anchor insertion was found to vary depending on the position of the glenoid rim. Meanwhile, minimum insertion angle of anchor should also be considered before anchor insertion.

**Abstract No.: 41356**

**CLINICAL EFFECT OF ROI-C PEEK CAGE IN CERVICAL DISC HERNIATION**

Weihua Cai, Guoyong Yin, Ning Zhang, Pengyu Tang

[Abstract] Objective: To study the clinical effect of anterior cervical discectomy and fusion with ROI-C for patients with cervical disc herniation. Methods: Nineteen patients (male ten) suffered from cervical disc herniation were treated by the same orthopedist with anterior cervical operation from May 2013 to Nov 2014, thirteen patients in single level and six patients in two-level. The evaluation index included Japanese Orthopaedic Association (JOA) scores, rate of bone fusion, complications, intraoperative blood loss, duration of operation and costs of operation. Results: JOA scores was statistically improved after operation at three-month follow-up and last follow-up, but there is no significant differences between JOA scores of three-month follow-up and that of the last follow-up. All of the patients achieved bony fusion during the three-month follow-up. One patient had dysphagia after operation. The patient's dysphagia was mostly relieved at discharge and disappeared at the three-month follow-up. The intraoperative blood loss, duration of operation and costs of operation of patients with single level is  $16.67 \pm 4.92$  ml,  $73.50 \pm 9.18$  min and  $4839.58 \pm 671.97$  yuan respectively, what of patients with two-level is  $18.57 \pm 3.78$  ml,  $112.14 \pm 11.50$  and  $6075.71 \pm 1053.43$  yuan respectively. Conclusion: ROI-C is simple, having reliable fusion and affirmative clinical effect, and can also reduce the rate of complications, such as dysphagia.

**Abstract No.: 41358**

**APPLICATION AND DEVELOPMENT OF ILIZAROV TECHNIQUE IN CHINA**

Sihe Qin, Qi Pan

We had introduced Ilizarov technique from Russia for over 20 years. Thousands of patients had been treated with this technique in China. Many of them had suffered very severe limb deformities for long time before they received treatments. During the process, we faced many very rare diseases and had our own understanding of the technique. We had organized many conferences and societies to spread this technique. We also invented many new instruments and developed new methods. We summerized all these, it is the Ilizarov technique with Chinese characteristic

**Abstract No.: 41359**

**BIMALLEOLAR WEBER B ANKLE FRACTURES - RESULTS OF ORIF IN FIFTY PATIENTS**

Vishesh Khanna, Alphonse Mariadoss, Senthilnathan Sambandam, Sakthivel Annamalai

**Introduction:** The Danis Weber system classifies ankle fractures based on the level of fibular fracture. In type B fractures, the fibula is fractured at a suprasyndesmotic level. Outcomes of surgically managed bimalleolar Weber type B ankle fractures remain unclear. The aim of this study was to assess functional and radiological outcomes of surgically treated Weber type B bimalleolar ankle fractures. **Material and Methods:** Fifty patients of surgically treated adult, fresh Weber type B bimalleolar ankle fractures were included over a period of three years. Compound, old malunited and non-operatively fractures were excluded. Reduction and fixation were achieved in accordance with AO principles. Syndesmotic stability was assessed and managed intraoperatively. Plaster slab and non-weight bearing was maintained for six weeks post-operatively. Analysis was carried out in terms of demographics, fracture type, operative details, time to union, functional assessment using Olerud Molander Ankle Score (OMAS), radiological evidence of union, measurement of talocrural angle and complications. Patients were followed up till fracture union. **Results:** Good to excellent results were achieved in thirty five patients (70 %). Thirteen patients had fair results while two patients had a poor result. The average time to union was ten weeks. The mean talocrural angle was eighty-four degrees. Superficial skin infection was seen in three patients. Other complications included residual pain, hardware issues, stiffness and swelling which gradually improved in most patients. **Conclusion:** Surgically treated Weber type B bimalleolar ankle fractures have satisfactory functional and radiological outcomes. Post-operative pain, swelling and stiffness maybe encountered which does subside eventually.

**Abstract No.: 41363**

**THE MICROCIRCULATION REVASCULATION IN POST ILIZAROV ERA**

Sihe Qin, Baofeng Guo

[Background] Doctor Ilizarov observed the regeneration of the angiogenesis appeared firstly in the study of dog leg pull osteogenesis (distraction osteogenesis, DO) with the angiography confirmed capillaries and microcirculation reconstruction on the extremity pull area .The Ilizarov distraction histogenesis technique and the microcirculation reconstruction technique for the limbs ischemic diseases are called “The microcirculation revascularization in Post Ilizarov Era” [Method]By bone lateral force distraction technique, after about three weeks time, organization clearance can form numerous capillaries within the network.Through a suitable bone drawing stress, It can mobilize the natural repair potential of the tissue, to make bones and attachment musculoaponeurotic blood vessels and nerves of synchronous growth, so as to realize the natural reconstruction of damaged tissue microcirculation. [Results]Ilizarov bone removing microvasculature revascularization for the treatment of lower limb ischemic diseases and infectious bone defect, were confirmed by postoperative angiography that around the bone area formed the rich network of new blood vessels, effective rebuilt the microcirculation of ischemic tissues.Application of skull bone removal in patients with chronic cerebral ischemic diseases, can effectively improve the microcirculation of the brain.Treatment of thromboangiitis obliterans, can significantly improve the foot rest pain and skin temperature.Applied to diabetic foot, can improve the blood supply from the area around ulcer, promote ulcer healing. [Conclusions]Compared with the usual microcirculation reconstruction means ,the technology has more minimally invasive characteristics and was conformed to meet the organization law of natural restoration rule, has the incomparable advantage .The technology has a bright prospect.

**Abstract No.: 41369**

**THE ISOLATED WEBER B LATERAL MALLEOLAR FRACTURE: IS IT A SIMPLE INJURY?**

Xiaoyu Yan, Xiaoyu Yan, Ronggang Xia, Congfeng Luo, Yimin Chai, Tao Cheng

**Introduction:** The isolated lateral malleolar fracture is one of the most common ankle injuries and is usually considered as a simple fracture. Nonetheless, it remains widely misunderstood and controversial about the injured structures, injury sequences and ankle stability. **Methods:** 57 isolated Weber B fractures were treated from February 2014 to January 2015. The mean age was 44.7years. The fracture features and bone relationship of the ankle were investigated by X rays and CT scan. The soft tissue damage and ankle stability were evaluated by physical examination, MRI, stress test and operative exploration. All of them were treated by ORIF with screw and plate. The injured deltoid ligaments (DTL) and anterior distal tibiofibular ligaments (DTFL) were repaired on base of the intraoperative stress test. **Results and conclusion:** Most of isolated Weber B lateral malleolar fractures are spiral or oblique with the mechanism of lateral rotation load. The DTL injuries are very often (21/57) and many were completely broken with ankle sub-dislocation (9/57). Anterior DTFL are always injured (55/57) and most of them were disrupted completely (43/57). Nevertheless, the posterior DTFL injuries were very rare (2/57) and it remained intact even in most patients with DTL injuries (20/21). Both DTL and anterior DTFL injuries could result in ankle or distal syndesmosis instability, which indicated ligament repair. Physical examination, X rays, CT scan, MRI and stress test were very helpful to detect these ligament injuries. Intraoperative stability test should be made to determine if the injured DTL and DTFL need to be repaired.

**Abstract No.: 41373**

**COMPARISON OF OUTCOME OF ANTI-ROTATION PLATING WITH A NAIL IN SITU WITH EXCHANGE NAILING FOR ASEPTIC FEMORAL SHAFT NONUNION AFTER FEMORAL NAILING**

Bosong Zhang,

**Objective:** The purpose of this study was to compare the outcome of two treatment methods of anti-rotation plating with nail in situ and exchange nailing for aseptic femoral shaft nonunion after intramedullary nailing. **Methods:** Between May 2003 and June 2011, 104 patients of femoral shaft nonunions after intramedullary nailing were treated. Among these, 83 patients were treated with anti-rotation plating combined with autogenous bone grafting with nail in situ, and 21 patients were treated with exchange nailing. The operating time, intra-operative blood loss, volume of intra-operative blood transfused, volume of drainage, length of hospital stay, cost of hospitalization and time to radiographic union were summarized and compared between the two treatment groups using independent t-test, t'-test and X2 test. **Results:** There were no significant differences in age, gender, nonunion site, previous operation times, injury type, smoking and associated injuries between the two treatment groups. Compared with the treatment of exchange nailing, the treatment group using anti-rotation plating with nail in situ with autogenous bone grafting had significantly shorter operating time, less intra-operative blood loss and intra-operative blood transfusion, lower cost of hospitalization and a shorter healing time to radiographic union. **Conclusion:** Anti-rotation plating leaving the nail in situ with autogenous bone grafting may be a better option than exchange nailing for femoral shaft nonunion.

**Abstract No.: 41375**

**3-D RECONSTRUCTION OF THE FEMUR AT CHILDREN WITH RESIDUAL HIP DYSPLASIA**

Pavel Volotovski, Aleh Sakalouski, Bolat Dosanov, Darya Sakalouskaya

We used intertrochanteric osteotomy with posterior 45- 90° rotation of the proximal part of the femur proposed by Anatoly Sokolovsky in 112 cases (110 patients). The indications for surgery were severe damage or deformity of the superior segment of the femoral head of the femur. The aims of the surgical intervention were elimination of load on deformed superior segment of femoral head, restoration of femoral head centralization, restoration of articular surface congruity, lengthening of the femoral neck and the limb. Before of the operation all the patients older than 10 years (74.3%) complained of pain in the hip and Trendelenburg test was positive in more than a half of them. Limb-length discrepancy (ranged from 0.5 to 3.5 cm) was revealed in 87% of all the cases. The long-term results were studied in 3-23 years (the mean 6.7 years) after the operation. The mean value of the epiphyseal quotient increased to 83, the epiphyseal-neck quotient - to 88 against 62 before the intervention, the neck-diaphyseal angle became 133° after the operation. Before the manipulation the Wiberg angle only in 8 cases was equal to 20°-25°, after - in 46 cases it became equal to 20°-40°(the average was 30°). Good and excellent results were registered in 87 % of all the cases. The merits of the intervention are orientation of the femoral head in three dimensions, absence of angle deformities and negative influence on the growth plate of the femoral head, lengthening of the femoral neck and the limb.



**Abstract No.: 41384**

**MUSCULOSKELETAL TUBERCULOSIS AN EASILY FORGOTTEN DIAGNOSIS**

Davoud Khodatars, Faiz Anwar, Shahbux Lashari, Simond Jagernauth

The diagnosis of musculoskeletal tuberculosis is often challenging and can be delayed. We present two interesting cases of musculoskeletal tuberculosis (TB) to reiterate the importance of considering TB in the differential diagnosis of patients with unusual presentations of musculoskeletal pain, especially amongst Asian immigrants. Between 2009 and 2014, of all TB cases at our institution, the incidence of musculoskeletal TB was 3.5% on average and as much as 7% in 2009. These figures are considerably higher than the 1-2% that suggested by the literature and are accounted by the large Asian migrant community within our borough. As the number of overseas born Asians immigrating to the UK and worldwide increases every year, it is important for clinicians to recognise TB as a differential diagnoses in Asian patients presenting with musculoskeletal pain.

**Abstract No.: 41388**

**PERIOPERATIVE COMPLICATIONS OF REVISION SURGERY IN SPINAL DEFORMITY**

Youping Tao, Jigong Wu, Huasong Ma

Study design: Retrospective study. Objective: To investigate the perioperative complications of revision surgery in spinal deformity. Methods: From Jan 2010 to Jun 2014, a total of 38 patients with spinal deformity underwent revision surgery in our hospital. There were 14 males and 24 females with an average age of 22 years. Smith-Petersen Osteotomy (SPO) in 8, pedicle subtraction osteotomy (PSO) in 18, and vertebral column resection(VCR) in 12. A retrospective analysis on perioperative complication was performed. Results: All patients were followed up for 8 to 50 months (average, 18.6 months). 8 cases had been occurred the perioperative complications. Subarachnoid hemorrhage occurred in 1 case (2.6%); fluid leakage in 2 cases (5.2%), wound deep infection in 1 case (2.6%); postoperative pleural effusion in 1 case (2.6%); pulmonary infection in 1 case (2.6%); neurologic deficit in 2 cases (5.2%), there was no death and paralysis occurred. There was no permanent neurological deterioration in all patients, and no instrumentation failure and loosening over the follow up. Conclusion Revision surgery is an effective and safe method for spinal deformity. However, perioperative managements should be standardized to ensure successful surgical procedure. Key words spinal deformity; perioperative complications; revision surgery;

**Abstract No.: 41389**

**MINI-INVASIVE TREATMENT FOR MASON TYPE II RADIAL HEAD FRACTURES IN ADULTS**

Yu-Jie Chen, Wei Wang

Background: Although ORIF seems to be a better option for Mason type II radial head fractures in adults, the complications impacts clinical outcomes and prognosis. Thus we introduced a minimal invasive technique to optimize the surgical treatment and minimize the complications. Methods: From Jan 2009 to Jan 2013, we totally treated 21 adult patients (16 females and 5 males) with Mason type II radial head fracture by using elastic stable intramedullary nailing (ESIN) technique. Early rehabilitation was encouraged within 24-48 hours postoperatively. The visual analogue scale (VAS) , elbow and wrist range of motion, range of forearm rotation, radiographs, MEPS, HHS, DASH were recorded. Results: The VAS in the 1, 2, 3 days postoperatively were 3.6, 2.6 and 2.5 respectively. All fractures got solid union in 3 months. The mean range of elbow joint, forearm rotation and wrist joint at 2 weeks, 1 month, 3 months, 6 months and 1 year after surgery were 101.7°/126.0°/139.7°/146.7°/145.2°, 146°/153°/168°/169°/166° and 62°/68°/84°/90°/92° respectively. The score of MEPS and HHS were assessed at 1 month, 3 months, 6 months and 1 year after surgery, which was 91.7/99.3/100/100 and 92.7/99.7/100/100 respectively. The DASH score were 4.27, 2.73 and 0.93 at 3 months, 6 months and 1 year after surgery. No heterotopic ossification or nerve dysfunction was observed. Conclusions: The ESIN technique was an effective and mini-invasive protocol to treat Mason type II radial head fracture in adults. A larger cases and comparative study should be carried out to further consolidate this treatment.

**Abstract No.: 41390**

**EPIDEMIOLOGY OF PERI-PROSTHETIC FEMORAL FRACTURES.**

Matthieu Ehlinger, David Bahlau, Michel Rahme, Philippe Adam, Francois Bonnomet

Introduction : femoral fractures on implants are constantly increasing. The typical patient as defined by the 2005 SOFCOT symposium on peri-prosthetic fractures was a female over 75 years old with a hip replacement. This is recent update. Material & method : all of the peri-prosthetic fractures were gathered on a prospective period of 18 months. The usual epidemiological data, the type of implant, the fracture, its location, the delay, the stability of the implant were noted. Results : the serie had 82 patients (59F), mean age 82.2 yo, 56 lived at home. Average Parker score was 4.5, average Devane 1.8 and average Katz 4.1. 3.6% were admitted as emergencies. During the same period 28 fractures (1.2%) on osteosynthesis were noted. There were 46 fractures on THAs, 40 on TKAs, with 4 inter-prosthetic and 2 fractures between a TKA and an osteosynthesis. The time between THA and fracture was 12.8 years, 5.3 years for hemiarthroplasties and 7.6 years for TKAs. Patients were younger in THA (81 yo) than in TKA (84 yo). The fracture was situated in the proximal third in 48.8%, 36.6% in the distal third and was mostly spiroid (45%). In 57.3% it was on the implant. Sixteen THAs and 4 TKAs were loose. Discussion - conclusion : Typical patient is a female, 82 yo with a proximal or distal femoral fracture on a prosthesis, with a number of TKAs close to the THAs. Patients live home, are autonomous but sedentary. However these peri-prosthetic fractures stay rare

**Abstract No.: 41392**

**TRIPLE PELVIC OSTEOTOMY IN CHILDREN AND ADOLESCENTS**

Pavel Volotovski, Aleh Sakalouski, Darya Sakalouskaya

Residual dysplasia of the hip is complemented with a complex of biomechanical problems, the pelvic component of dysplasia being often the leading one (more than 58% of all the cases). Triple pelvic osteotomy (TPO) is operation which permits to achieve the aims. We've performed 246 TPO in children of 10 to 18 years using our own operative technique. The features of it are: the only one approach (by Smith-Petersen), pelvic bones osteotomies without detachment of the periosteum, use of incomplete ischium osteotomy (osteotomy-osteoclasy), pubic paraacetabular osteotomy; angle-shaped ilium cut line, avoidance of direct contact with large nerve trunks and vessels. In case of considerable abnormality of the proximal end of the femur, that can not be removed by transfer of the acetabulum, especially if the latter is flattened markedly, additionally we perform correction osteotomy of the femur. In case with a relative overgrowth of the greater trochanter against a short neck of the femur the greater trochanter prevents free reorientation of the acetabulum. Therefore, in this case at the first stage of the operation from the lateral approach we perform resection of the bottom of the greater trochanter bringing it downward. Triple osteotomy of the pelvis reorients the acetabulum in three dimensions and permits to get the angle of vertical correspondence between pelvic and femoral components of the joint up to 90°. Displacement of the acetabulum from its position into a nearly horizontal or horizontal position is the most important biomechanical result, as it considerably increases the joint tolerance to load.

**Abstract No.: 41397**

**FAILURE OF PAVLIK HARNESS FOR DEVELOPMENTAL DISLOCATION OF THE HIP: CLINICAL FEATURE AND TREATMENT**

Zhe Fu, Jianping Yang, Zhongli Zhang

**Introduction:** Developmental dislocation of the hips(DDH) after failure of pavlik harness were different from that older than 6 months and without prior treatment. The purpose of this study is to analyse the clinical feature and treatment result of closed reduction of pavlik harness failures.

**Method:** The study included the cases undergoing closed reduction after pavlik harness failure who had complete medical records and more than 1 year follow-up. The clinical feature included initial treatment age, gender, side, reducibility and Graf classification. We used dynamic ultrasound to determine the reducibility of the dislocated hips. Then we compared success rate of reduction, incidence of Avascular Necrosis(AVN) and Acetabular Index(AI) between the groups of different feature. **Result:** 48 patients(60 hips) were included in the study. 52 hips (86.7%) achieved successful reduction, 5 hips(9.0%) occurred AVN, the average AI at last follow-up was 23.5°. The success rate of reduction of Graf **IV** group was significantly lower than Graf **III** group (75.9% vs. 96.8%,  $p=0.017$ ), as was the irreducible than reducible group (71.4% vs. 91.3%,  $p=0.055$ ). The incidence of AVN of Graf **IV** and irreducible groups were respectively 18.2% and 30.0%. The average AI was similar between the groups of different Graf classification and reducibility. **Conclusion:** Closed reduction and spica casting had satisfactory result in the management of DDH after failure of pavlik harness, however, Graf **IV** and irreducible dislocated cases had worse results. We should distinguish the different Graf classification and reducibility in the treatment of pavlik harness failures.

**Abstract No.: 41399**

**RETURN TO RECREATIONAL SPORTS AND WORK AFTER CALCANEOPLASTY: A PROSPECTIVE EVALUATION OF 18 CONSECUTIVE PATIENTS**

Lynn Thwin, Bing Howe Lee, Kannan Kaliyaperumal, Gowreeson Thevendran

**Introduction:** Insertional achilles tendinopathy is an increasingly common condition particularly amongst sportspersons. Operative treatment has a variable impact on time return to work and sports. **Objective:** To assess time return to sports and work after calcaneoplasty for insertional Achilles tendinopathy. **Methods:** 18 patients who underwent calcaneoplasty were analysed with a mean follow-up of 16 months (8-32 months). A subset of employed patients were categorized into office and manual workers and time taken to return to work was recorded. A second subset of recreational sport athletes were assessed using Halasi ankle activity scale, the Tegner score and time taken to return to sport. **Results:** 100% follow up with an average age of 55.9 years (40-74). 13 out of 18 patients were employed full time, with 4 office and 9 manual workers. All 13 patients returned to their original jobs with no differences in time return to work comparing office and manual workers. Of the 8 sportspersons, two failed to return to pre operative sport at the time of final follow up. The mean time to return to sport was 5.83 months. (SD 3.71) 75% of sportspersons regained their pre-injury level of activity. There were significant improvements in the Tegner, Halasi and AOFAS scores. SF 36 score showed significant improvement in 4 out of 8 components. Overall, 14 out of 18 patients reported good or very good results. **Conclusion:** In this series, 100% of patients returned to their original jobs and the vast majority of sportspersons resumed their preinjury level of activity.

**Abstract No.: 41400**

**MOTORIZED TWO WHEELER ACCIDENTS IN CHILDREN - LESSONS LEARNT**

Prasanth JAYAKUMARI SUDEVAN, Senthilnathan Sambandam, Vishesh Khanna, Prasanth Jayakumary Sudevan

Introduction: The expansion of motorization and road networks has resulted in exponential increase of motor vehicle accidents and related mortality. Our aim was to analyse critically injured pediatric patients following motorized two wheeler (MTW) accidents with respect to demographics, injury details, outcomes and prevention. Methods: Patients admitted in the Intensive Care Unit (ICU) from 2012 to 2013 with severe trauma following MTW accidents were included in the study. Minor injuries and outpatients were excluded. We recorded the demographics, injury details, hospitalization and management details, disability and number of school days lost, helmet-wearing status, co-passenger status, four-wheeler ownership status and socio economic status of the parents. Results: Of 32 critically injured pediatric trauma patients, 12 sustained injuries due to a MTW accident. None of the victims were wearing a helmet. Only 2 co-passengers were wearing helmets. 9 co-passengers, mostly adults, escaped uninjured. Parents of three victims had four wheelers at home as an alternative mode of transport. 5 of the families were from low socio economic backgrounds with poor educational status. Conclusions: Programmes on safe transport of children need to be framed by policy makers, law enforcing agencies, educational authorities, health care professionals, parents and the society.



**Abstract No.: 41406**

**THE IMPACT OF RIVAROXABAN AND NADROPARIN ON THE BLOOD LOSS VOLUME AFTER TOTAL KNEE ARTHROPLASTY**

Jun Xiao, Zhanjun Shi, Ge Yan

**Objective** To compare the blood loss volume given by rivaroxaban and nadroparin after total knee arthroplasty (TKA). **Methods** 73 patients undertaken unilateral TKA with a primary diagnosis of osteoarthritis were randomly separated into a rivaroxaban group (n=29) and a nadroparin group (n=44). And the hidden blood loss and the total blood loss were calculated via Gross formula. **Results** Drainage and the volume of autologous blood transfusion were counted to be  $613.68 \pm 401.02$ ml and  $413.16 \pm 295.80$ ml in the rivaroxaban group, and those were counted to be  $679.84 \pm 419.85$ ml and  $460.98 \pm 315.71$ ml in the nadroparin group, but each of them had no interclass difference ( $P=0.56$ ,  $P=0.58$ ). Both the postoperative Hb and Hct of the rivaroxaban group was significantly lower than that of nadroparin group ( $P=0.04$ ,  $0.01$ , respectively). However, the hidden blood loss and total blood loss were counted to be  $1106.23 \pm 565.01$ ml and  $1820.44 \pm 517.94$ ml in the rivaroxaban group, and those were counted to be  $1006.24 \pm 561.71$ ml and  $1766.86 \pm 687.26$ ml in the nadroparin group, but both of them showed no interclass difference ( $P=0.52$ ,  $P=0.76$ ).  $157.89 \pm 300.58$ ml allogeneic blood was transfused to 54.72% patients in the rivaroxaban group, but both the rate and volume of blood transfusion showed negative difference to that of the nadroparin group ( $230.77 \pm 323.44$ ml allogeneic blood was transfused to 38.46% patients;  $P=0.17$ ,  $P=0.28$ ). **Conclusion** The postoperative blood loss and the rate of allogeneic blood transfusion after total knee arthroplasty between the rivaroxaban group and the nadroparin group suggested have no significant difference. But the impact of rivaroxban on the postoperative Hb and Hct was greater than that of nadroparin.

**Abstract No.: 41413**

**DETERMINATION OF BENEFITS AND DISADVANTAGES OF A TOTAL KNEE ARTHROPLASTY  
CONDUCTED WITHOUT AN INDWELLING CATHETER: A RETROSEPECTIVE REVIEW**

Victor Hernandez, Danijel Pericic, Zachary Post, Alvin Ong, Fabio Orozco

**INTRODUCTION:** The use of an indwelling catheter is not necessarily mandatory for patients undergoing total knee arthroplasty (TKA). Others have reported that there's not a significant difference in postoperative complications or length of stay when using an indwelling catheter versus not using one. However, no study investigating which patient population is at the greatest risk of postoperative complications resulting from the use, or absence, of an indwelling catheter could be found in the literature. The objective of our study is to analyze the factors that can predict acute urinary retention that would required the use of catheterization or foley after TKA. **Material and methods:** A retrospective review of patient records between January 1st, 2014 and January 1st, 2015 were included. 399 TKA were performed during this period and no catheters were used. **Results:** 34.5% of the patients required either straight catheterization or use of a foley during hospitalization, but only 1 % was diagnosed with urinary retention. Predictors for the requirement of catheterization or foley were excessive use of IV fluid during surgery(>2150ml) and an increase LOS. Independent predictors of urinary retention were age(>66 y/o) and gender(males). All patients that had urinary retention increased their LOS( $P<0.05$ ) and required insertion of foley catheter. **Conclusion:** IV fluid hydration >2L was associated with the need for straight catheterization and foley insertion and >LOS. Additionally, males >66yo were at greatest risk of urinary retention after TKA. Prior knowledge of an individual relative risk would be helpful to counseling the patient before the procedure.

**Abstract No.: 41418**

**INJECTION SITE DIVERSITY INFLUENCE HYALURONIC ACID DISTRIBUTION ON KNEE CARTILAGE SURFACE**

Jun Xiao, Zhanjun Shi, Yuqiang Luo

**Objective** To elucidate whether and how injection site diversity influences the hyaluronic acid (HA) distribution on cartilage surface of the knee. **Methods** 32 human cadaveric knees were equally divided into patella medial (PM) group and medial joint line (MJL) group with roughly matched femoral condyle width (FCW, measured via X-ray). Both groups were injected with a 2.5ml HA-MB (methylene blue) tracer through corresponding approaches. Each specimen was simulated a 5~45 degree alternating walking for 2h. After all the specimens being cut open, the coverage area of HA was scored based on the eight-zoning classification law of the cartilage surface, and the HA zonal distribution diversity between groups were analyzed. **Results** HA of both groups showed analogical distribution in all zones except the lateral tibial plateau ( $P=0.017$ ) when  $FCW \leq 7.5\text{cm}$ . However, HA coverage through the PM approach showed significantly higher distribution scores in the patella zone and the femoral trochlear zone ( $P=0.001; 0.001$ ), but lower scores in the antero-lateral, postero-lateral, postero-lmedial femoral condyle zone and the lateral tibial plateau zone ( $P=0.005, 0.006, 0.001; 0.000$ ) compared with MJL approach when  $FCW > 7.5\text{cm}$ . **Conclusion** HA showed analogical distribution characteristics despite different approaches in population with a small bodily knee ( $FCW \leq 7.5\text{cm}$ ). In the case of population with a big bodily knee ( $FCW > 7.5\text{cm}$ ), HA injected through the MP approach tended to be distributed mainly over the patella-femoral articulation and the anterior knee cavity. Whereas HA injected through the MJL approach was distributed mainly over the tibio-femoral articulation and the posterior knee cavity.

**Abstract No.: 41434**

**ABNORMAL BONE MINERAL IN SERUM AND BONE MINERAL DENSITY FOLLOWING STEROID ADMINISTRATION IN THE EARLY PATHOGENESIS OF STEROID-INDUCED OSTEONECROSIS**

Lei Wang, Li Zhang, William Weijia Lu, Haobo Pan, Songlin Peng

**Introduction:** To investigate the early changes in serum calcium (Ca) and phosphorus (P) content and bone mineral density (BMD) of the femoral head , following steroid administration and to clarify the timing of the abnormal bone mineral development in steroid-induced osteonecrosis (ON). **Methods**

: A rabbit model was utilized for this study. Rabbits were injected with 4 mg/kg of methylprednisolone and then divided into three time points (3, 7 and 14 days) consisting of 15 rabbits each. Ten control rabbits were kept in the same conditions but did not receive a steroid injection. Histology sections of the bilateral femora were stained with haematoxylin-eosin and used to measure the rate of development of ON. Also, using the special kit, serum Ca and P were measured. Micro-CT was used to measure BMD. **Results** : ON was not seen 3 days following steroid treatment; however it was detected at the 7 and 14 day timepoints. Ca was significantly decreased at the 3 and 7 day timepoints ( $P < 0.05$ ); however there was no a significant reduction at the 14 day timepoint. P was identified to be time dependent and significantly declined gradually following steroid administration with the lowest levels at 14days. BMD showed significantly decreased at 7 days timepoint compare with the control group. **Conclusion:** According to the timepoint abnormal bone mineral in serum and BMD following steroid administration may be involved in the early pathogenesis of steroid-induced osteonecrosis.

**Abstract No.: 41444**

**POST ARTHROSCOPY VISCOSUPPLEMENTATION: MYTH OR REALITY? A PROSPECTIVE  
RANDOMIZED CONTROL STUDY WITH Hylan GF 20**

Kiran Kumar Vedavyasa Acharya,

**INTRODUCTION:** Benefit of arthroscopic debridement and viscosupplementation in OA have been well described in the literature. **AIM:** To study the effectiveness of viscosupplementation 3 weeks following arthroscopic debridement by means of a prospective, randomized control study.

**METHODS:** The study included three subsets 41 patients each (n=123) who had knee osteoarthritis according to the KL grade I, II & III, with VAS score more than 4. First subset: nonoperative management. Second subset: arthroscopic debridement. Third subset: arthroscopic debridement with viscosupplementation (single Hylan G-F 20), at three weeks following arthroscopy. Evaluations were made preoperatively, at three weeks and 3, 12, 24, 52 weeks & 18 month post injection, using a patient satisfaction questionnaire, VAS, and the WOMAC osteoarthritis index. Other subsets too were followed up at similar intervals. **RESULTS:** Mean age of patients was 55+/-5 years. Change of VAS was maximum in Arthroscopy with Viscosupplementation subset (83% at 18 months), followed by Arthroscopic debridement subset, least in nonoperative group. Following viscosupplementation, patient satisfaction, WOMAC and VAS scores were significantly improved. (Improvement of Pain:46%, Stiffness:32% and Function:43%). Adverse events were noted in nonoperative subset.

**CONCLUSION:** Our results at 18 months suggest that visco supplementation following a checklist based arthroscopic debridement is an effective treatment option for select patients with knee osteoarthritis. Beneficial effects of arthroscopic debridement alone are the best at 6 weeks to 24 weeks post operatively. The beneficial effects of arthroscopic debridement were prolonged following additional visco supplementation. Non operative management has the risk of non compliance, adverse events and dependency on analgesics.

**Abstract No.: 41449**

**MINIMALLY INVASIVE PLATE OSTEOSYNTHESIS (MIPO) TECHNIQUE FOR HIGH ENERGY COMPLEX TIBIAL SHAFT FRACTURE**

Sungwook Choi, Hyunsung Kang, Paul Shinil Kim

Background: We report our experiences with minimally invasive plate osteosynthesis (MIPO) for high energy tibial shaft fracture, with specific reference to fracture union and complications encountered. Material and Method: We reviewed the 20 cases of complex tibial shaft fracture treated with the MIPO technique from June 2006 to March 2013, and all cases were followed up for at least 1 year. External fixation was used for open fracture (6 cases) until the soft tissue damage has healed (Average 4.8 weeks, 3~8 weeks), then MIPO technique has performed to stabilize the fracture. For the result, bone union time and radiological bone alignment were measured and complications has evaluated. Clinical outcomes have evaluated with full weight bearing initiation time, pain score (visual analogue scale). Result: The mean time to union in the open fracture group was 20.6 weeks (range, 9–39 weeks) and 18.7 weeks in closed fracture group (range, 4–32 weeks), 4 fractures had delayed union (1 patient with open fractures and 3 with closed fracture). There was no case of nonunion but angular deformity more than 5 degree was observed in two and one case of superficial infection occurred. The mean time to initiate full weight bearing was 8.5 weeks (range, 4-13 weeks) and mean score of VAS scale was 0.8 (range, 0-3). Conclusion: Treatment of high energy complex tibial shaft fractures with the MIPO technique is a reliable alternative method of stabilization and it decreases the incidence of complications.

**Abstract No.: 41464**

**MALE OSTEOPOROSIS: EMERGING MESSAGE FROM A TERTIARY CARE ORTHOPAEDIC CLINIC.**

Kiran Kumar Vedavyasa Acharya,

Introduction: Osteoporosis in men is increasingly recognized as an important health problem. Aim: In this study we analyzed the data from our Osteoporosis Registry to recognize its presence, associated features which set apart this entity from Osteoporosis in women. Material and Methods: Study included 1284 individuals presenting at the Osteoporosis screening clinic between April 2008 and April 2014. With monthly screening camps, individuals at risk were motivated to enroll for the services of the clinic. A questionnaire based data collection included assessment of clinical risk factors and medication details. BMD was assessed using ultrasound densitometry. The cases with BMD results of first and last visits (36 months apart) were included in the study and their data was analyzed. Results: There was a prevalence low BMD 29% at the first visit and 27% at the end of 36 months. Significant number of individuals in the lower BMD group had intake of cholesterol lowering medication, cardiac medication. Those with such concomitant medication were also resistant to change with respect to improvement of BMD. Conclusion: Male osteoporosis is a definite clinical entity in our practice. Men have higher mortality rates than women after hip fracture, experience fractures at higher BMD values than women. Our experience reestablishes the need for monthly BMD assessment of at risk individuals & reemphasizes the need for adherence to medical management. Monthly osteoporosis clinic also provides an opportunity to monitor those at risk, enables group counseling and helps monitor medication compliance.

**Abstract No.: 41468**

**THE RELATIONSHIP BETWEEN PELVIC SAGITTAL INDEXES AND INCLINATION/ ANTEVERSION IN TOTAL HIP ARTHROPLASTY OF PARTICULAR SPINAL DISEASES**

Minghui Gu,

Objective: To investigate the relationship between pelvic sagittal indexes and inclination/ anteversion in total hip arthroplasty of particular spinal diseases. Methods: From April 2004 to December 2011, 27 patients (38 hips) with particular spinal diseases received THA, including 5 hips with spinal internal fixation and 33 hips with ankylosing spondylitis, 19 right hips and 19 left hips, 2 female and 25 male. The average age is 40.33 years (21-61 years). The course of disease was 0.5-20 years with an average of 12.1 years. Results: The relationship between the pelvic sagittal indexes in all these patients was pelvic incidence (PI) = pelvic tilt (PT) + sacral slope (SS). PT is positive related with anteversion and inclination, Pearson relation is 0.82 (P=0.007) and 0.866 (P=0.003). SS is negative related with anteversion and inclination, Pearson relation is -0.412 (P=0.27) and -0.254 (P=0.51). Conclusion: PT is positive related with anteversion and inclination, and SS is negative related with anteversion and inclination. Adjustment of the anteversion and inclination with the pelvic sagittal indexes was important in the patient with particular spinal diseases during THA.



**Abstract No.: 41473**

**TRABECULAR BONE SCORE AND BONE MINERAL DENSITY IN UKRAINIAN MEN WITH VERTEBRAL FRACTURES**

Vladyslav Povoroznyuk, Anna Musiienko, Nataliia Dzerovych

The aim of this study is to evaluate the trabecular bone score (TBS) and bone mineral density (BMD) in men with osteoporotic vertebral fractures. Materials and methods. We've examined 243 men aged 30-89 years, divided according to the gerontologic classification: 30-44 yrs (n=46), 45-59 yrs (n=83), 60-74 yrs (n=86), 75-89 yrs (n=28). The basic group consists of 52 men with osteoporotic vertebral fractures in the anamnesis (mean age –  $59.8 \pm 13.7$  yrs) and control group - of 191 men without fractures (mean age –  $57.4 \pm 13.7$  yrs). The BMD of PA lumbar spine and proximal femur were measured by the DXA method (Prodigy, GEHC Lunar, Madison, WI, USA) and PA spine TBS were assessed by the TBS iNsight® software package installed on our DXA machine (Med-Imaps, Pessac, France). Results. We have observed a significantly lower TBS (L1-L4) in the basic group (30-44 yrs –  $1.083 \pm 0.187$ , 45-59 yrs –  $1.025 \pm 0.248$ , 60-74 yrs –  $1.084 \pm 0.170$ , 75-89 yrs –  $0.951 \pm 0.170$ ) as compared to the control group (30-44 yrs –  $1.276 \pm 0.121$ , 45-59 yrs –  $1.226 \pm 0.156$ , 60-74 yrs –  $1.150 \pm 0.175$ , 75-89 yrs –  $1.183 \pm 0.174$ );  $F = 1.56$ ;  $p < 0.001$ . We also found the lower BMD of lumbar spine in the basic group of patients – 30-44 yrs  $0.981 \pm 0.125$  g/cm<sup>2</sup>, 45-59 yrs  $1.028 \pm 0.184$  g/cm<sup>2</sup>, 60-74 yrs  $1.014 \pm 0.158$  g/cm<sup>2</sup>, 75-89 yrs  $0.970 \pm 0.183$  g/cm<sup>2</sup> ( $F = 1.52$ ;  $p < 0.001$ ) and of the proximal femur – 30-44 yrs  $0.854 \pm 0.149$  g/cm<sup>2</sup>, 45-59 yrs  $0.873 \pm 0.139$  g/cm<sup>2</sup>, 60-74 yrs  $0.823 \pm 0.136$  g/cm<sup>2</sup>, 75-89 yrs  $0.716 \pm 0.107$  g/cm<sup>2</sup> ( $F = 1.10$ ;  $p < 0.001$ ) compared to the control group. Conclusion. Subjects with vertebral fractures have TBS and BMD parameters significantly lower than the healthy men.

**Abstract No.: 41477**

**UNPLANNED RE-OPERATION DUE TO ACUTE SPINAL SUBDURAL HEMATOMA FOLLOWING POSTERIOR VERTEBRAL COLUMN RESECTION FOR CORRECTION OF SEVERE ANGULAR KYPHOSIS.**

Youping Tao, Jigong Wu, Huasong Ma

Study design: A case report; Objective: To investigate the outcome of unplanned re-operation due to acute spinal subdural hematoma following posterior vertebral column resection for correction of severe angular kyphosis. Methods: The authors present a severe and rigid post-tuberculosis angular kyphosis been unplanned re-operation due to acute spinal subdural hematoma following posterior vertebral column resection(PVCR). To their knowledge, no such case has been reported in the literature previously. The case is a 38-year-old woman, pre-operative long-standing scoliosis radiographs revealed sagittal kyphosis Cobb angle was 132°. The patient was treated by PVCR and pedicle screw fixation. During the surgery, there was no change in motor evoked potentials (MEP) and somatosensory evoked potential (SSEP), wake-up test to was normal. However, one hour after the operation, the patient exhibited paralysis (American Spinal Injury Association Grade A). It was no hesitate that the patient had been unplanned return to the operating room and evacuate spinal subdural hematoma at once. Results: Fortunately, 2 weeks after un-planned reoperation, the patient's neurological status improved to ASIA E. Post-operatively, long-standing scoliosis radiographs revealed good correction of severe and rigid spinal deformity, which the sagittal kyphosis Cobb angle was 35°. At the 24 months follow-up, there was no neurological status deterioration, instrumentation failure and loosening correction. Conclusion: PVCR show as a safe and efficacious but challenging option for the correction of severe and rigid post-tuberculosis angular kyphosis. When delayed postoperative neurological deficit occurred, the emergency unplanned return to operating room immediately to may be improved neurological function.

**Abstract No.: 41494**

**ARTHROSCOPIC CAPSULAR RELEASE AND MANIPULATION FOR PRIMARY FROZEN SHOULDER**

Hu Ri Cha Bao, Yong Sheng Xu

**Introduction:** This study was to evaluate effectiveness of arthroscopic capsular release combined with manipulation for the treatment of primary frozen shoulder. **Method:** From 2012 to 2014, a total of 13 patients with frozen shoulder were treated by arthroscopic capsular release followed with manipulation at our institutions. The ages of the patients ranged from 48 to 59 (average, 51 years old), 9 were women and 4 were men. The right shoulder was affected in 9 patients, and the left side was affected in 4 patients. We performed a thorough synovectomy arthroscopically and patients were treated with manipulation under anesthesia after arthroscopic release in operation room. All patients were examined preoperatively and postoperatively for range of shoulder motion, Constant score and visual analog scale score. **Results:** Patients were followed up for an average period of 16 months (range 4 to 23). All the patients had significant improvement in range of motion. The mean Constant score improved from 26 to 78 ( $P < .01$ ). Preoperative abduction improved from a mean of 43 degrees to 168 degrees, elevation improved from 50 degrees to 169 degrees, and external rotation improved from 9 degrees to 50 degrees. The mean preoperative visual analogue scale pain score was 6 and the mean postoperative score was 1.6. **Conclusion:** This study shows arthroscopic capsular release combined with manipulation is a safe procedure, with rapid improvement in pain and a marked improvement in range of motion.

**Abstract No.: 41496**

**PERCUTANEOUS COMPRESSION PLATE VERSUS DYNAMIC HIP SCREW FOR TREATMENT OF INTERTROCHANTERIC HIP FRACTURES: A UPDATE META-ANALYSES OF RANDOMIZED CONTROLLED TRIALS AND SYSTEMATIC REVIEW**

Shushan Zhao, Yong Zhu, Zhangyuan Lin, Haitao Long, Yifu Tang, Zhongwei Luo, Lizhang Chen

Intertrochanteric hip fracture is a serious health problem resulting in devastating consequences. As a minimally invasive technique, percutaneous compression plating (PCCP) has been considered to have several theoretically potential advantages than dynamic hip screw (DHS) in treatment of intertrochanteric hip fracture. Three meta-analysis had been done and the results were still inconsistent. What's more, after reading these papers carefully, our group found all the studies had fatal pitfall. To assess the effect of PCCP and DHS, we conducted this update meta-analysis strictly according to the Cochrane's guideline. PubMed, Scopus, CCRCT and CNKI were searched to identify the potential literatures. After screening carefully by two authors, five randomized controlled clinical trials were left to future analysis. Our meta-analysis demonstrated that the PCCP was only associated with less blood loss [SMD=-2.35, 95%CI(-4.26- -0.44),  $P<0.01$ ] compared with DHS. To avoid false positive result, trial sequential analysis was performed and the results show cumulative Z-curve crossed the monitoring boundary which mean no type I errors occurred. As for other outcomes such as mortality and operative time, it is difficult to get the conclusion right now from current evidence because of the limited number of studies, participates and the significant heterogeneity between the included studies. So more high-quality randomized clinical trials are needed to assess the benefits of PCCP.

**Abstract No.: 41499**

**BONE MINERAL DENSITY- SPINAL MICRO-ARCHITECTURE (TBS DATA) AND BODY COMPOSITION IN THE OLDER UKRAINIAN WOMEN WITH VERTEBRAL FRAGILITY FRACTURES**

Vladyslav Povoroznyuk, Nataliia Dzerovych

The aim of this study is to evaluate the bone mineral density (BMD), trabecular bone score (TBS) and body composition in women taking into account the presence of vertebral fragility fractures (VFF).  
Materials and methods. We've examined 171 women aged 65-89 years (mean age –  $73.12 \pm 0.39$  yrs; mean height –  $1.58 \pm 0.004$  m; mean weight –  $72.54 \pm 0.99$  kg). The patients were divided into the groups depending on the VFF presence: A – no VFF (n=105; mean age –  $72.70 \pm 0.54$  yrs; mean height –  $1.58 \pm 0.006$  m; mean weight –  $74.43 \pm 1.33$  kg), B – present VFF (n=66; mean age –  $73.79 \pm 0.55$  yrs; mean height –  $1.58 \pm 0.008$  m; mean weight –  $69.53 \pm 1.37$  kg). BMD, lateral vertebral assessment, TBS (L1-L4), lean and masses were measured by DXA densitometer (Prodigy, GE). Appendicular skeletal mass (ASM) was measured at all the four limbs with DXA. We've also calculated the appendicular skeletal mass index (ASMI) according to the formula  $ASM/height^2$  (kg/m<sup>2</sup>). Results. We have found the following parameters to be significantly lower in women with the VFF compared to women having no VFF: BMD of total body ( $p < 0.05$ ), spine ( $p < 0.05$ ), femoral neck ( $p < 0.05$ ), 33% forearm ( $p < 0.05$ ), TBS ( $p < 0.05$ ), whole-body fat mass ( $p < 0.05$ ), whole-body mass ( $p < 0.05$ ), ASM ( $p < 0.05$ ) and ASMI ( $p < 0.05$ ). The frequency of presarcopenia was 2% in women with no VFF and 14% - in women with the VFF. Conclusion. Women with the VFF have the BMD, TBS, lean and fat masses data significantly lower in comparison to women with no VFF.

**Abstract No.: 41513**

**LOCOMOTARY ANALYSIS OF 100 CEREBRAL PALSY CHILDREN**

Chittaranjan Sahu, Rohit Bansal, Jagadesh Gudar

Children with cerebral palsy were analyzed for their locomotory capabilities to know current trends and to compare with international prevalence. Age of presentation was significantly later than at western countries. Representation of males was more than females. Diplegics(44%) were most frequently seen followed by hypotonics, which were over represented. Whereas ataxic and athetoid varieties were under represented. More than 50% cases were independent ambulators, late starters or timely intervened children leading to swaying away from international trends. 37% patients needed support for locomotion and 4% were non ambulant. Spasticity of hip flexors, internal rotators and adductors were less and was correlating with the gait patterns. No fixed deformities were seen. Factors like anxiety of child, hi-mood and fatigue affected gait. Knee flexion was most frequent. Few patients had hyperextended knees. Equinus was most frequently noticed at ankle but valgus deformity was over represented. Majority of joints of upper limb were normal with some flexion deformities at shoulder, elbow or wrists. Thumb in palm was less than expected. Majority needed some assistance for ADL and social living. Children requiring assistance were large, showing the social impact, suggesting someone needs to be around these children to help them survive. Observations have a tendency to deviate from internationally and earlier trends indicating a changing natural course. This could be a positive drift towards better survival with planned intervention which could be further improvised by a more focused research and tailor made treatment protocols for Indian CP children.

**Abstract No.: 41515**

**ACETABULAR REVISION WITH LARGE BONY DEFECTS USING JUMBO CUPS**

Afshin Taheriazam, Farshad Safdari

There are several methods introduced for treatment of large bony defects in revision acetabular components. Some authors suggested that Jumbo cups are useful for these patients. In current prospective study, we investigated the midterm the clinical, radiographic and functional outcomes of acetabular revision using Jumbo cups. Between 2004 and 2008, 51 consecutive patients underwent uncemented revision total hip arthroplasty (THA) in current prospective study. Nine patients lost during follow up. The remaining patients were followed for  $8.6 \pm 4.9$  years. Unfortunately, aseptic implant loosening occurred in two patients who required re-revision surgery. One patient experienced dislocation. Radiolucency around the bone-implant interface was found in other 4 patients, however, none of these patients suffered from instability. No patient developed infection or thromboembolic events. The Harris hip score (HHS) averaged  $81.4 \pm 14.6$ . Based on the HHS, the functional outcomes were excellent in 5 patients, good in 17 patients, fair in 13 patients and poor in 7 patients. The findings of our study confirms that using Jumbo cups for acetabular revision with large bony defects leads to almost satisfactory functional, clinical and radiographic outcomes without complications.

**Abstract No.: 41523**

**CHONDROMAS HAND .ABOUT 12 CASES TREATED WITH ALLOGRAFT**

Anissa Benaïda, Meriem Ait Saadi, Fatima Zohra Messabis, Mourad Hamidani

Introduction: Chondromas are common benign bone, particularly level of the hand. These are original cartilage lesions corresponding to a mature hyaline cartilage proliferation in metaphyseal bone Regions endochondral ossification. Material and Method: This is a retrospective study involving 12 cases including 05 men and 07 women. The diagnosis was based on clinical examination and standard radiographs. The proximal phalanx was reached in half the cases. The treatment consisted of a recess with spongy filling (allografts) Results :Histological examination confirmed the diagnosis. The evaluation focused on radio-clinical course and on the functional outcome. The results are considered good in all cases after a 18-month average. Conclusion :The chondroma is a benign tumor often single. The diagnosis is clinical and radiological histology but must confirm. The risk of malignant degeneration requires surgical treatment.



**Abstract No.: 41527**

**CONGENITAL PSEUDOARTHROSIS OF HUMERUS**

Avinash Rai, Srikiran Thalanki, Chirag Bhatia, Shivbhagwan Sharma, Ram Prasad Meena, Sumer Singh, Ashwin Gondane

Congenital pseudoarthrosis of tibia, though rare has been a well known entity with various forms of treatment attempted. Similarly, pseudoarthrosis of clavicle , radius, ulna have been reported A 6 week old female presented with painless mobility of left arm noticed by the parents one week after birth..Radiographs showed a fracture of the shaft of the humerus. Both the proximal and distal ends of the humerus were tapered with a wide zone of radiolucency with no evidence of callus formation. The extremity was otherwise intact and sensory and motor function was completely intact. Initial treatment was with an above elbow splint. On detailed evaluation at our centre non union was diagnosed on Xray. The child was operated at 7 weeks by open reduction & internal fixation via posterior approach with a 2.7mm AO metacarpal plate. The soft tissue specimen at nonunion site sent for histology did not show any evidence of neurofibroma. The child was regularly followed up for 1 year and clinical & radiological examination revealed union at nonunion site. Congenital pseudoarthrosis has been a challenging disease to treat over the years. There is lack of literature suggesting the involvement of humerus. Several forms of treatment have been attempted to treat this condition such as "vascularized autograft or autogenous bone graft or osteogenesis by Ilizarov method. This condition often requires multiple surgeries & results are not predictable. However, in this case ORIF with a 2.7mm metacarpal plate proved to be effective resulting in sound union.

**Abstract No.: 41549**

**PATIENT WITH GIANT SOLITARY PELVIC OSTEOCHONDROMA PRESENTS WITH HIP PAIN AND LEFT LOWER EXTREMITY PARESTHESIA AFTER ACUTE SILICOSIS?IMMUNITY MAY PLAY AN IMPORTANT ROLE IN THE DEVELOPMENT OF OSTEOCHONDROMA**

Fubing Li, Yongqing Xu, Yong Sha, Siyou Chen

**PURPOSE:** The purposes of this study were to document the first report of the posterior and anterior sacral osteochondroma in an adult suffering from acute silicosis and review the literature on the solitary osteochondroma along with decreased immune system function. **STUDY DESIGN/SETTING:** The study setting is an academic institution. This is a case report and review of the literature.

**PATIENT SAMPLE:** The patient is an adult male. **OUTCOME MEASURES:** The outcome measure is the visual analog scale for pain. **METHODS:** A 54-year-old man suffered from acute silicosis, hip pain and left lower extremity paresthesia. Giant exostosis was found on the sacrum.. Surgery was chosen as the treatment. X-ray, three dimensions (3D) CT were used for preoperative diagnosis. Final diagnosis was confirmed by pathology postoperatively. **RESULT:** The final diagnosis is osteochondroma without malignant transformation, which is confirmed by pathology. The symptom was significantly relieved and diminished postoperatively. At the 2-year follow-up, no local recurrence was observed.

**CONCLUSIONS:** Solitary osteochondroma seldom occurs in the sacrum with low back pain and sciatica. Surgery is an effective treatment for symptomatic osteochondromas. It's known that acute silicosis can compromise the body's immunity. In the literature, there are cases recorded with compromised immunity along with osteochondroma. From literature records and our case, we deduced that compromised immunity can promote the occurrence and development of osteochondroma.

**Abstract No.: 41552**

**ANALYSIS OF COMBINED KRANIO-ABDOMINAL INJURY SURGICAL TREATMENT IN THE ? ACUTE PHASE OF TRAUMATIC DISEASE**

Sergiy Guryev, Maksym Maksymenko, Andriy Tkachenko

Introduction. Combined injury observed in 50-70% of patients with high-energy trauma. The frequency of combined kranioabdominal injury is 42,6%. Mortality ranged 20,4-76,2% depending on the severity of the injury and the involvement of other anatomical areas. Methods. The retrospective analysis covers treatment of 133 patients with combined kranio-abdominal injury. In the study group were included patients with head trauma and injury of the abdomen, proved by objective data or intraoperatively. Evaluation of anatomic injury severity was conducted by AIS; severity of trauma scales by ISS and ATS; level of consciousness on admission for GCS. According to the severity of cranial and abdominal injuries patients were divided into 4 groups: mild cranial and abdominal trauma; mild cranial and severe abdominal trauma; severe cranial and mild abdominal trauma; severe cranial and abdominal trauma. Results. In the surgical treatment of combined kranio-abdominal trauma was guided by definition of main injury and severity of trauma. In severe cranial and abdominal injuries and inability of leading damage selection gave preference to surgical treatment of abdominal injuries. To establish the severity of cranial injury and determine the surgical treatment in most cases performed CT; surgical intervention performed in 8,2% of cases and include resection craniotomy, hemostasis, evacuation of hematoma and tissue detritus, repair covers of brain. The severity of abdominal injury before the operation was not defined. All patients with hamoperitoneum had laparotomy and total care of damaged organs (92,5%). Due to this strategy 24,3% of laparotomies were diagnostic. The mortality rate was 29,3%.

**Abstract No.: 41556**

**DO COMORBID CONDITIONS DICTATE APPROPRIATE ARTHROPLASTY OPTION FOR FEMORAL NECK FRACTURES IN VERY ELDERLY PATIENTS? ROLE OF CARDIAC CO-MORBIDITY IN DECISION MAKING: A MORBIDITY-MORTALITY ANALYSIS**

Rajiv Thukral, Sks Marya

Background: Standard treatment offered for elderly patients with displaced femoral neck fractures is hip replacement. Which fixation method is better, when is each indicated, does medical comorbidity affect implant/fixation choice? A head-to-head analysis of mortality, morbidity and clinical results of different arthroplasty options in an ongoing prospective patient series is presented. Methods: The first 300 consecutive patients with femoral neck fractures presenting since Jan 2009 that fulfilled our inclusion criteria (age > 70yrs, ASA grade > II, no prior hip surgery, no cognitive impairment, at least community ambulators) were included and assessed at follow up for peri-operative morbidity, mortality & results for at least 12 months. Results: 82 underwent cemented hips (60 bipolar, 22 total) while 218 were cementless hips (180 bipolar, 38 total). 11 cemented and 4 cementless group patients died perioperatively following cardiorespiratory complications, with an overall 5% perioperative mortality. Minor medical complications occurred in 19 cementless group & 15 cemented patients. 4 total hips & 1 bipolar dislocated, and 2 needed revision. 1 deep infection with septicemia and eventual death was seen in each group. Minor surgical complications (superficial infection, calcar fracture, shaft fracture, acetabular protrusion) were noted in 25 patients. Subsidence <3mm was seen in 4 cementless group patients at 6 weeks, without pain or functional impairment. No cementless bipolar patient needed revision. Conclusions: Peri-operative mortality is higher with cemented stems in patients with cardiac comorbidity. Total hips should be reserved for physiologically more active patients with longer life-expectancy.

**Abstract No.: 41567**

**CONSECUTIVE CASE-SERIES OF AN ANTROLATERAL MODIFIED TROCHANTERIC SPLIT APPROACH IN REVISION OF ASEPTIC FAILED CEMENTED TOTAL HIP**

Rajiv Thukral, Sks Marya

Background: Cemented total hips (THAs) have the longest survival rates in registries. Wear causes aseptic failure and consequent loosening at 10-15 years. Extraction of femoral stems and cement mantle during revision may be achieved through laborious trochanteric fossa exploration, or through an extended trochanteric osteotomy (ETO). We report our results in a consecutive case series of revision hip arthroplasty for aseptic failed cemented hips using modified anterolateral ETO.

Methods: 35 consecutive patients with aseptic failed cemented THAs were operated using a modified anterolateral ETO over 6yrs (Oct2008-Sep2014). The ETO was closed using multiple cerclages. Regular clinicoradiological assessment (Harris hip scores, orthogonal radiographs) was done & assessed for intra-operative issues, post-operative complications. Clinical scores were charted. Results: There was distal fracture propagation in one case, managed by additional wiring. Rehabilitation was delayed, with good clinical and functional outcomes at 6 months. In 2 cases, the revision stem had inadequate distal purchase (wide medullary canal) leading to subsidence, with recurrent dislocations. These prostheses were eventually removed. 2 patients had superficial infection managed conservatively with eventual good results. At 24 months follow up, 31 patients had good hip function, while 2 continued to complain of pain and limp. We had no incidences of trochanteric nonunion or escape. Conclusions: The anterolateral modified ETO approach improves exposure, permitting easy cement mantle & femoral implant extraction, without risks of nonunion or escape. Care must be taken to prevent distal migration of the surgical fracture by prophylactic wiring.

**Abstract No.: 41569**

**ORIF FOR 3- AND 4-PART UPPER END HUMERUS FRACTURES THROUGH THE SPLIT DELTOID  
APPROACH: RESULTS AND COMPLICATIONS**

R Thukral,

Background: Proximal humerus 3- and 4-part fractures need open reduction and internal fixation (ORIF) with adequate repair of the rotator cuff mechanism to obtain good clinical results. The split deltoid approach can be used to minimize soft tissue trauma with equally good results in most cases. We present the results of our series of 48 such fractures operated through the split deltoid approach, the advantages and concerns. Methods: 48 consecutive patients (mean age, 38 years) with 3- or 4-part proximal humerus fractures presenting to us between Nov 2007 & Oct 2014 were operated using the split deltoid approach and fixed using proximal humerus locking plates. Fractures wherein the humeral head was split were excluded. Rotator cuff sutures were routinely taken and tied to the plate. Clinicoradiological follow up was recorded regularly and assessed. Results: All but 2 fractures united at a mean of 3.5months (range, 2-5months). At 3 months, average range of motion achieved was 100° of flexion, 90° of abduction & 30° of internal & external rotation; which improved to 120° of flexion, 110° of abduction & 40° of internal & external rotation at 12 months. Our complications included superficial infection (1), implant cutout (1), varus collapse (2), deltoid atrophy following axillary nerve injury (1), and greater tuberosity escape (3) leading to poor results. Conclusions: Early ROM & return to near-normal function are possible following the minimally invasive split deltoid approach for 3- and 4-part fractures. Restoration of biomechanics of the tuberosities (greater and lesser) is critical.

**Abstract No.: 41572**

**RETROSPECTIVE ANALYSIS OF THE DIRECT CAUSES OF DEATH OF PATIENTS WITH COMBINED PELVIC TRAUMA RESULT OF AN ACCIDENT**

Sergiy Guryev, Maksym Maksymenko

Introduction. Abstracts reveal the problem of emergency medical assistance of combined trauma pelvis in the prehospital and early hospital stages. Methods and results. The main objective of providing medical assistance to victims is to preserve the life of the injured were identified by clinical analysis appropriate to the immediate cause of death in patients with pelvic trauma combined result of an accident that conducted according to protocols forensics in the amount of 56 victims of the total amount of research, in 53 affected the immediate cause of death in the prehospital and early hospital stage was massive uncompensated blood loss, which is 94,64% of the array with negative results affected the course of the TA, 5,36% in other cases, the immediate cause of death was suffered traumatic shock. The volume of blood loss in trauma basin averaged 1800 ml. The 47,17% not conducted intensive infusion therapy, and 35% was conducted in a volume of 200-300 ml. The level of assistance can't be considered adequate in 47,17% of deaths or 9,8% of total amount of victims affected, and in 17,46% medical care was inadequate or the nature or volume. Pain relief was inadequate in 89,29% of patients, while 66,07% were used powerful analgesic agents, including drugs. The analysis measures the adequacy of transporting victims among the dead proved that on stretcher special design sanitary transport was delivered 48,21% of patients on stretchers sanitary transport with no special design, transported 41,07%, adjusted to the same media was transported 10,71 % of patients.

**Abstract No.: 41585**

**ACTIVITY LEVEL AND SATISFACTION IN YOUNG TKA PATIENTS**

Victor HERNANDEZ, Peter Boyle, Alvin Ong, Fabio Orozco, Zachary Post, Eric Buxbaum

Introduction: We studied activity level and satisfaction in TKA patients under 55. We hypothesized that younger patients would be active and satisfied with their TKA. Methods: A retrospective chart review and telephone survey evaluated 21 patients under 55 who underwent TKA. Results: 95% walking on even surface, 95% walk stairs, 81% walk on uneven surfaces, 76% perform leg strengthening, 62% squat, 76% carry heavy objects, 38% kneel down, 90% stretch, 48% dance, 71% climb, 38% jog, 33% sprint, 62% turn and cut, 52% row, 57% use an elliptical machine, 10% play soccer, 10% play football, 24% play basketball, 81% ride a stationary bicycle, 81% ride a bicycle on a smooth surface, 52% ride a bicycle on an incline, 29% ride a bicycle off-road, 5% downhill ski on both groomed and difficult trails, 71% swim, 33% golf, 76% garden, 85% are sexually active. Mean Knee Osteoarthritis and Outcome Scores was 83.9. Mean Knee Society Score (KSS) was 92.5. Mean KSS function score was 79.3. Conclusion: Young TKA patients continue to be active and are satisfied with their procedure. Comparatively, our study shows younger patients to be as active, not more active than their older counterparts. Younger patients participate in the ill-defined activity spectrum recommended for TKA patients. This study offers limited guidance on postoperative TKA activity.



**Abstract No.: 41593**

**FUNCTIONAL OUTCOME OF ILIZAROV EXTERNAL FIXATOR IN COMPLEX ANKLE AND FOOT DEFORMITIES IN CHILDREN-AN INDIAN EXPERIENCE**

Jefferson George,

Introduction: This study was conducted to evaluate the corrective capability of the Ilizarov external fixator in the treatment of complex foot deformities in children and adolescents due to various etiologies. Methods: Prospective study that assessed 25 patients (30 feet) with a mean age of 13.28 (4 to 18) years due to deformity from congenital (10 patients), neuromuscular (8), posttraumatic (5) post infectious and burn contractures (1 case each). A limited soft-tissue dissection, Achilles tenotomy and plantar fasciotomy were done for most cases. In a few cases, osteotomy was added. Progressive correction of the deformities was achieved through differential distraction. 21 feet required realignment of fixator. The mean duration of fixator application was 3 months, and after removal, a short leg walking cast was used followed by an ankle foot orthosis. Results: At the time of fixator removal, correction of all foot deformities was achieved in 26 of the 30 feet. Compared to preoperative status, gait was subjectively improved in all patients. Follow-up time from removal averaged 27 months. Pin tract problems were observed in most cases. Other complications were toe contractures and first metatarsophalangeal subluxation. One case had posterior tibial arterial pseudoaneurysmal rupture that resulted in removal of fixator and ligation of aneurysm. Recurrence was found in 2 feet. Conclusion: The Ilizarov external fixator allows simultaneous correction of all complex foot deformities with minimal open surgery, reducing risks of cutaneous or neurovascular complications. Our results indicate that the Ilizarov method is an effective means of correcting complex foot deformities.

**Abstract No.: 41614**

**TOTAL KNEE ARTHROPLASTY IN PATIENTS WITH VALGUS DEFORMITY: WHAT CONSTRAINT IS NECESSARY?**

Sm Javad Mortazavi, Babak Haghpanah

Introduction: Less the 10% of the cases of knee osteoarthritis refer with a valgus deformity. Performing surgery on these cases has its own challenges because valgus knees have pathoanatomic characteristics, distinctly different from varus knee and need special considerations and measures. We present the results and complications of our populations of valgus knees. Materials and Methods: Between January 2010 and January 2013, we performed 756 TKA at our institution, only 19 of them presented with valgus deformity. All patients underwent operation through medial parapatellar approach irrespective to severity of the deformity. The main technique for soft tissue balancing was pie crusting. All patients were followed-up prospectively at 3,6, 12 and 24 weeks postoperatively and then annually. Results: The mean age of the patients was 57.6 year. All patients received Posterior Stabilized knees, In 5 patients we had to use wedge and stem. The mean preoperative valgus of mechanical axis was 21.5 degrees (10 to 30 degrees). The mean postoperative degree of mechanical axis was 3.5degrees that has been improved significantly ( $p<0.005$ ). All measured scores including clinical KSS, functional KSS, WOMAC and SF-36 have been improved significantly. Conclusion: The incidence of valgus knee in our patient population is low. We believe that the majority of valgus knees of can be treated successfully with usual PS prostheses through medial parapatellar approach. Careful soft tissue balancing is crucial to improve the results and maintaining constraint to a lower level. Pie crusting seems a reliable method even in severe cases.

**Abstract No.: 41626**

**PIN TRACT INFECTION**

Fred Mathew Toboso Otsyeno, Vincent Muoki Mutiso, Martin Omotto Oduori

We reviewed patients who developed pin tract infection following Steinmann pin insertion in the proximal tibia for skeletal traction for fracture femur in adults over 5 year's period between January 2009 and December 2013. These were 37 patients among 2757 patients representing 1.54 % of the total, of these 7(0.25 of the total and 18.9 % of those who developed infection) patients developed chronic osteomyelitis. The commonest organism grown was staphylococcus aureus, although staphylococcus epidermidis as well as pseudomonas aeruginosa, e coli and proteus was also seen. 30(81%) of the patients were treated successfully, by removal of pin, antibiotics and regular dressing. For those who developed chronic osteomyelitis treatment involved; debridement, Sequestrectomy, irrigation and drainage and antibiotics. This was repeated twice in two patients and three times in one patient who also needed autologous bone and skin grafting. We conclude that the majority of pin tract infection is superficial and may not progress to chronic osteomyelitis once appropriate simple measures are constituted. Once chronic osteomyelitis sets in then additional surgical procedures may be required.

**Abstract No.: 41627**

**SHORT TERM EXPERIENCE OF HIP RESURFACING IN A DISTRICT GENERAL HOSPITAL**

Graham Hastie, Vinod Shah, Rajan Mohan, Kiran Ramesh

Introduction: Metal on metal hip resurfacing surgery, although developed to delay the need for total hip replacement in young patients, has been subject to concerns over adverse reactions to metal debris (ARMD) and formation of pseudotumour. It has been shown however that with correct patient selection and careful choice of implant hip resurfacing still has its advantages. Recent National Institute of Clinical Excellence (NICE) guidelines state that prostheses used for hip resurfacing arthroplasty are only recommended as treatment options if they have rates (or projected rates) of revision of 5-10% or less at 10 years. Methods: We prospectively followed all patients who have had hip resurfacing performed by two consultants at our district general hospital for the last 12 years with our main outcome measure being revision for any reason. Results: Over the 12 years 250 patients have undergone hip resurfacing with an average follow-up of 81 months (50-142). 14 (5.6%) patients had undergone revisions to total hip replacement; 6 for femoral neck fracture; 6 for aseptic loosening and 2 for ALVAL. Conclusion: From these results we can conclude that currently we are on track to meet the nice guidelines with regards to revision rate. This demonstrates that hospitals other than the originating centre for the implant can provide good results for hip resurfacing with the correct patient selection.

**Abstract No.: 41628**

### **3D TOPOGRAPHICAL ANALYSIS OF PROSTHETIC RADIAL HEAD ARTHROPLASTY**

Srinath Kamineni, Adam Talal, Andrew Amis

**Background:** In today's market, there are many prosthetic options for radial head arthroplasty that attempt to mimic the radial head's natural shape. However, machining technology has, in the majority, limited these prostheses to a symmetrical shape. This paper will compare the asymmetrical shape of the human radial head to several prostheses. **Hypothesis:** Prosthetic radial head

**arthroplasty designs rarely truly mimic a human radial head geometry or radius of curvature**

**Method:** An industrial 3D analyser was used to create point clouds by touch triggered digitization.

We compared the diameter, wall height, and radius of curvature for 11 radial head prostheses, and

compared them to a human radial head. **Results:** We found that 4 of the 11 were statistically similar in fit ( $p < 0.025$ ) to the natural radial head in all dimensional categories. These dimensional similarities

relate **ONLY** to the articulating surface, not to the outer geometry of the radial head. **Conclusions:**

These results suggest that a symmetrically machined radial head implant can closely match the

capitellar articulation of a human radial head. However, manufacturer implant sizes made available to the market and the proximal radio-ulnar articulation have not been addressed and require more investigation to optimize radial head replacements.

**Abstract No.: 41629**

**THE INDIVIDUAL APPROACH TO CORRECTION LEG LENGTH WITH TOTAL HIP REPLACEMENT**

Alexey Denisov, Viktor Shilnikov, Rashid Tikhilov, Igor Shubnyakov

Among the problems of arthroplasty, the operated limb length compensation is not paid enough attention. According to literature and our own experience, the difference in the length of the limbs on the value of more than 3 cm can lead to severe changes of the musculoskeletal system. The aim of this study was to optimize the length of the limb at the hip joint in a shortening of more than 3 cm in view of the objective and subjective factors to improve treatment outcomes. Methods: During the studied 109 patients before and after hip replacement with the initial shortening of the lower limb more than 3 cm with the Harris hip score and the "Questionnaire expectations", in which patients reported their main hope of the operation: pain relief and the overall increase in the quality of life. Results: A study of more than 95 % of patients with limb shortening eliminated happy outcome of joint replacement, although in some patients significantly decreased range of motion and pain appeared on the front of the thigh. During the analysis of the questionnaire before the operation was heavily weighted towards the restoration of limb length in certain age groups, and in the postoperative period, the majority of patients would prefer a better mobility. Conclusions: It is necessary to take into account that does not always eliminate limb shortening can give a positive result, so preoperative careful analysis of factors that may have an influence, and to identify priorities individually from the patient.

**Abstract No.: 41634**

**THE USE OF TECHNOLOGY TO PREVENT THE RISK OF BLOOD LOSS DURING OSTEO-RECONSTRUCTIVE SURGERIES**

Anna Alabut, Vladimir Sikilinda, Dmitry Chuyko, Anastasia Golenishcheva

**Introduction:** Reconstructive orthopedic surgery and arthroplasty of large joints are accompanied by the risk of significant blood loss. Uncompensated blood loss increases by 65% the risk of infectious complications, prolongs wound healing by 93% and increases the risk of death by a factor of 2.

**Methods:** The aim of the study was to develop an algorithm to reduce blood loss in reconstructive orthopedic surgery, depending on the presence of anemia and the patient's age and his relationship to the use of blood preparations. The study included 344 patients who underwent plastic bone defects, tumor resection and arthroplasty of large joints. The patients were divided into two groups: the main group (198) were operated using blood saving technology, the second group (146) was a control group. The blood saving methods were: anesthesiological (controlled hypotension), pharmacological, surgical (a two-stepped strategy, avoiding drainage), autohemotransfusion.

**Results:** In order to reduce blood loss, an algorithm has been developed to use blood saving technologies. For the anesthetic technique, a controlled hypotension method was used. The main contraindications are: hypovolemia, anemia, cerebrovascular insufficiency, etc. In order to reduce surgical blood loss, minimally invasive techniques were used during arthroplasty in 62 patients and a two-stage reconstructive surgery in 18 patients. In 59 patients the surgical wound drainage was not used. Autologous transfusion was performed in 12 patients considering the body weight, age, level of hemoglobin. In order to reduce blood loss, a pharmacological use of tranexamic acid was applied.

**Abstract No.: 41641**

**ARTHROSCOPIC TREATMENT OF PERSISTENT PAIN AFTER KNEE REPLACEMENT**

Alabut Alabut, Aleksandr Glukhov, Vladimir Sikilinda, Dmitry Kubasov

Introduction: total knee joint replacement leads to an improvement in joint function and reduces pain in most of the patients with gonarthrosis. However, according to the data in the national register of arthroplasty of the knee joint, up to 18,2% patients are not satisfied with the results of the surgery due to pain. Methods. Patients with persistent unexplained pain in the medial knee joint underwent clinical, laboratory, radiation examination. No signs of inflammation, instability, gross errors in the installation of the endoprosthesis or in the ineffectiveness of conservative therapy were found. The patients underwent knee arthroscopy. Results: we noted an association of the persistent unexplained pain of the medial part of the knee joint of the patients after knee arthroplasty with a neuropathy of the infrapatellar branches of the saphenous nerve. The compression of the nerve causes the pain of the medial part of the knee joint. That is why patients with unexplained medial pain after arthroplasty of the knee joint undergo an arthroscopy of the joint. We examined: the anterior chamber of the knee joint, the medial and lateral facets of the polyethylene liner, the medial, lateral and upper volvulus, the joint surface and the patellar balance, the intercondylar notch, the "spike" of the polyethylene liner. We evaluated the stability of the tibial and femoral components of the endoprosthesis. If no pathological change was noted, then the medial pain of the patient is due to a neuropathy of the infrapatellar branch of the saphenous (femoral) nerve.



**Abstract No.: 41642**

**PRELIMINARY RESULTS OF A PROSPECTIVE COMPARATIVE STUDY BETWEEN KAPANDJI PINNING AND HK2<sup>®</sup> PINNING**

Rachid Bellahsene, Kamel Achour, Meriem Ait Saadi, Anissa Benaida, Morad Hamidani

Introduction: Our objective was to compare the clinical and radiological results of two series, the first by HK2<sup>®</sup> (H series), the second operated by Kapandji pinning (K series), 8 patients in each series. Fractures were in posterior displacement. Methods: these are two prospective series, mono-centric, single-operator. The standardized protocol was as follows: • the pin under local anesthesia. • No immobilization for H series patients, 15-day of splint for K Series patients • an analgesic protocol and regimen of self-rehabilitation • the control is done at regular intervals. The average follow-up was 6 months for the H series against 4 months for the K series, Results: the curves of mobility and muscle strength Advanced seem parallel. Early recovery of mobility seems to be obtained in the H series, with less secondary displacements. Other complications are in equal proportions. In the H series, a most important change is noted in the radio-ulnar index relative to that observed in the K series conclusion: HK2 pinning has the same advantages that Kapandji pinning. It offers more additional stability; it requires special equipment that has a higher cost.

**Abstract No.: 41644**

**SURGICAL ALGORITHM FOR PATIENTS WITH LUMBAR SPINE POLYSEGMENTAL LESIONS**

Darya Tesakova, Oleg Dulub, Alexandr Beletski, Andrey Babkin, Zinaida Jahorova, Oleg Golnerovitch, Sergey Korchevsky

The aim was to reduce surgery trauma and to develop surgery algorithm for patients with lumbar spine polysegmental lesions to prevent scar-adhesive processes. Surgical algorithm for patients with lumbar spine polysegmental lesions was determined to include 2 stages surgery: minimally invasive decompressive selective intervention with or without stabilizing the affected vertebral segments and shelter postoperative defect over the dural sac and spinal roots with materials based on polytetrafluoroethylene. This algorithm is shown in the performance of the dural sac selective decompression (hemilaminectomy, radiculolysis, foraminotomy, excision of hypertrophic and / or ossified yellow ligament), its contents and the spinal cord for more than two vertebral segments or when performing decompressive extended intervention (laminectomy, medial facetectomy) for more than one vertebral segment. The stabilization of the operated spine performed in the presence of unstable vertebral segments (spondylolisthesis, ante- or retrolisthesis) polysegmental decompression. This technique of surgical treatment effectively used in Belarusian scientific-practical center neurosurgical departments in 7 patients (5 women and 2 man between the ages of 37 to 65 years), continues its introduction into clinical practice. Immediate and long-term results show the correctness of the chosen tactics and the need for further research in this direction.

**Abstract No.: 41645**

**EVALUATION OF THE BONE STRENGTH OF PATIENTS AFTER AN ARTHROPLASTY OF THE KNEE JOINT**

Vladimir Sikilinda, Anna Alabut, Dmitry Chuyko, Anastasia Golenishcheva, Mohamad Hammad

Introduction: The arthroplasty of a knee joint with an osteoporosis background is accompanied by a risk of fracture of the femoral neck and an early development of endoprosthesis loosening. Aim: comparison of the data from osteodensitometry and bone strength in patients undergoing knee replacement. Methods: 50 patients underwent densitometry in the preoperative period. After surgery, the strength of the resected fragments of the femur and tibia were examined. Results: A classification was developed for bone strength. Patients with the worst bone strength were classified in class 1. Pathological bone break-down occurred for excess weights of not more than 3 times. The bone strength in this group was less than 240 kilograms of force (KgF). Patients with a bone strength of 241-400 KgF were set in class 2, 401-480 KgF to class 3, more than 480 KgF to class 4. There were more than 3 times more women in the classes 1 and 2, in classes 3 and 4 more men. The average ages by class were as follows: 1 - 63,93 years, 2 - 61,45 years, 3 - 64,11 years, 4 - 62,56 years. According to the data from the densitometry and bone strength of the femur in classes 1 and 2, osteoporosis and osteopenia were present. Classes 3 and 4 had normal indicators. The average BMI for each class was as follows: Class 1 - 30,05, class 2 - 31,11, class 3 - 31,48, class 4 - 30,63.

**Abstract No.: 41650**

**APPLICATION OF HIGH-INTENSITY MAGNETIC STIMULATION IN OLDER PATIENTS AFTER TOTAL JOINT REPLACEMENT OF LARGE JOINTS**

Anna Alabut, Vladimir Sikilinda, Dmitry Chuyko, Anastasia Golenishcheva

Introduction: the advantage of using magnetic stimulation and electromyography as compared to electric stimulation is the excitation of deeply seated tissues without pain for the patient. It was proven that magnetic stimulation causes hyperemia and optimizes metabolism in tissues. Methods: 45 patients from the orthopedics department were studied after undergoing a TER. The patients were subjected to EMG [(n. Peroneus, the residual latency (ms) and the amplitude of the M-response (mV) were evaluated]. The patients from the first group were subjected to MS therapy; the patients from the control group were treated without being subjected to MS, surveying the subjective evaluation of pain (VAS, McGill, Oswestry). Results: the average result after EMG: in both groups before treatment: L,ms and A,mV of the operated limb were 5,22 and 1,4, and that of the «healthy» one - 5,03 and 2,7 respectively. The average results of the survey were as follows: VAS – 7,25, McGill -41,75 points, Oswestry – 55,43 %. After rehabilitation in the 1st group, L ms and A, mV were 5,1 and 2,0 and the results of the survey: VAS -4,5, McGill -32,55 points, Oswestry- 37,4%. The results in the 2nd group were worse: L, ms and A, mV in the operated limb were 5,3 and 1,1 respectively, the volume of the limb was almost without change, the results of the survey were as follows: VAS -6,5, McGill -38,55 points, Oswestry - 8.3 %.

**Abstract No.: 41651**

**MECHANICAL FAILURE OF INTRAMEDULLARY FIXATION FOR SUBTROCHANTERIC FRACTURE FEMUR  
IN 4 CASES USING SAME TYPE OF NAILS**

Hannah Lennox-Warburton, Elmunzar Bagouri, Dakshinamurthy Sunderamoorthy

Intramedullary nailing is the preferred method and recommended by NICE for the treatment of Subtrochanteric fractures. Despite the complex nature of these fractures, mechanical failure shouldn't occur with good reduction and bone that heals. The aim is to design a prothesis that can stand the cyclic stress exerted until the bone unites. In this series we are reporting mechanical failure of 4 cases with sub-trochanteric fractures of the femur treated with intra-medullary Affexus long nail. Findings: This case report outlines 4 cases over the past 3 years (2012-2015) which have presented with mechanical failure of the intramedullary nail fixation. All 4 cases initially presented with subtrochanteric femoral fractures and returned with mechanical failure of the nail within a year of the primary fixation. Each case was initially treated with a long Affexus® nail but following failure each patient has been managed differently. 2 of the cases presented with breakage/bending of distal screws prior to their presentation with failure of the nail. Conclusions: With adequate reduction, fixation and with no sign of infection we can assume that the mechanical design of the nail was enough to stand the mechanical load exerted. The results were discussed with the manufacturer.

**Abstract No.: 41652**

**CLINICAL AND RADIOLOGICAL OUTCOMES AT A MINIMUM FOLLOW UP OF 15 YEARS OF EXETER  
UNIVERSAL STEMS IMPLANTED VIA LATERAL APPROACH**

Abdulrahman Algarni,

We retrospectively reviewed the outcomes of 254 Exeter Universal stems implanted at our institution through a lateral approach. All were inserted between March 1994 and February 1998 by two surgeons using the same standardized setting. Clinical and radiological results at a minimum follow up of 15 years (mean: 18; Range: 15to 22 years) after operation with no loss to follow-up. With an endpoint of revision for aseptic loosening, the survivorship at the most recent follow up was 100%. The mean Harris pain and function score was 73. Radiological review showed excellent preservation of bone stock in the proximal femur and no failures of the femoral component.

**Abstract No.: 41653**

**TOTAL HIP REPLACEMENT WITH PSEUDOARTHROSIS OF THE FEMORAL NECK**

Alexey Denisov, Viktor Shilnikov, Rashid Tikhilov, Igor Shubnyakov

Introduction: Hip replacement with a pseudoarthrosis of the femoral neck is difficult for the surgeon and an increasing number of complications Objective: To evaluate the results of arthroplasty and analyze the causes of possible complications. A total of 156 patients operated on the pseudoarthrosis of the femoral neck with a scale Harris and X-ray to determine the stability of the implant components. Results: The functional outcome in a year averaged 83 points, which was significantly lower in idiopathic coxarthrosis arthroplasty. And directly correlated with the age of the patients and the degree of recovery of limb length. Marked by a strong inverse correlation with the duration of the existence of a false joint. In 12 patients showed instability with cementless acetabular component fixation. In 8 patients had dislocation of the femoral head at various times after surgery. In 24 patients with acetabular component is installed protrusion. Conclusion: The results of arthroplasty patients with pseudarthrosis of the femoral neck on functional status and survival of the implant was significantly inferior in patients with idiopathic coxarthrosis. To improve the suitable cement fixation components, especially in osteoporosis due to the lack of long-term stress on the joint. In addition to improve the functional result it is necessary to evaluate the operation possibility and expediency of the full restoration of limb length, using specialized techniques. In general, when a false joint arthroplasty hip significantly improves the quality of life is so difficult and unfortunate category of patients, allowing return to normal working lives.

**Abstract No.: 41654**

**EXPERIENCE OF SURGICAL TREATMENT OF BONE DEFECTS AND CANCER GENESIS OF PATHOLOGICAL FRACTURES**

Anna Alabut, Vladimir Sikilinda, Ilya Filonov, Ilya Filonov

The most common complication of cancer is pathological bone fracture. The difficulties in treatment involve the need for an adequate compensation of the bone defect and a stable fixation, as well as the increasing risk of recurrence and malignancy. The aim of the study: analysis of the results of treatment of patients with bone defects and pathological bone fractures. Materials and methods: the treatment analysis of 311 surgical patients was performed, with various oncological processes of the bones of extremities. 9.32% of the patients had a pathological bone fracture. 3 steps are considered in the surgical treatment tactic: 1 – tumor resection, 2 – elimination of the defect – one-stage or two-stage (stage 1 - putting the spacer, the second - the ultimate replacement of the bone defect), 3 – stabilizing the segment. Results: it was impossible to save the extremities in 10 patients. The bone defects of 301 patients were filled with: auto-transplants (116), allotransplants (42), porous titanium (11), biodegradable hydroxylapatite (32). Were performed 3,99% bone replacements, 29,24% joint replacements in the patients. To stabilize the segment, external fixation devices were used in 3,32% of the patients, extramedullary fixation in 29,24% and intramedullary osteosynthesis in 2,99%, plaster immobilization in 20,27% of the patients. 33 patients did not require supplementary fixation. The bone cavity was treated with liquid nitrogen. 1 patient died within 5 years. 15 patients had other complications. Individual approach to the choice of treatment strategy yielded good short- and long-term results in 86.71% of patients.



**Abstract No.: 41660**

**CLUBFOOT DISABILITY: NIGERIA MODEL FOR SUSTAINABLE HEALTH SYSTEM PROGRAM.**

Olayinka Oladiran Adegbehingbe, Cook Thomas, Parker Edith, Jose Morcuende

Introduction: Nigerian Sustainable Childcare Clubfoot Program started in 2009 and strengthened by USAID Fund (2012-2014) to make the Ponseti clubfoot treatment available to all affected infants born in Nigeria in a timely, safe, effective, and sustainable manner. At end of the 2025, reduce to zero level the incidence of neglected idiopathic clubfoot deformity, Increase awareness on treatment availability through community and public health programs and Increase the capacity of health care workers. Methods: National challenges of Ponseti method adoption evaluated. Ponseti clubfoot management manual -available in Hausa/Igbo/Yoruba languages. Reproducibility of good outcome was established across geopolitical zones and Clubfoot parent advocacy group formed. manpower developed through 5 Basic & 1 Advanced Ponseti Workshops. National Guideline on Clubfoot Management and Public Healthcare pathway adopted by Federal Ministry of Health. Results: 30 states across over national six geopolitical regions and Federal Capital territory, Abuja has well developed Ponseti Clubfoot Clinics. 4931 clubfoot patients (7745 clubfeet) ; M/F - 1.5:1.0 were treated. 2012-2014 :2411 patients (2012-2014 48.9%, Males=1425, Females=986). 4426 patients with 6947 (Bilat=2814, Unilat=2117, 89.7% ) clubfeet were treated successfully with satisfactory outcome. 5626 (77.03%) patients had Percutaneous Achilles tenotomy . 253 Relapsed Clubfeet (194 patients , 4.0%) required repeated casting for two to four weeks. Causes of failure varied among patients and Ponseti practitioners. Nigerian national clubfoot correction rate was 96.80% and a Paradigm shift 34% to 3.0% of major clubfoot surgery. Conclusion: The Nigeria Model of Sustainable Health System program for Clubfoot disability is effective and to be recommended for Global Health System Development .

**Abstract No.: 41665**

**CLINICAL EPIDEMIOLOGY OF CLUBFOOT IN NIGERIA: IMPLICATIONS FOR THE FAMILY AND CLINICIANS**

Olayinka Oladiran Adegbehingbe, Oluwadare Esan, Joseph Olorunsogo Mejabi, Hakeem David Badmus, Joseph Effiong Asuquo

**Introduction:** The etiology of congenital idiopathic clubfoot (CTEV) is largely speculative and the influence of genetic factors is unclear. Comparative evaluation of clinical epidemiology and family positions has not been reported in Sub-Saharan desert. This study aimed to assess trend in clubfoot clinical epidemiology between 1990-1999 and 2000-2009 periods and to evaluate the family position occurrence of clubfoot patients over two decades. **Methods:** A descriptive comparative cross sectional study of CTEV patients managed at a University Teaching Hospital, Nigeria. Ethical committee approved the study protocol. Biodata and clinical information retrieved from Ile-Ife clubfoot data bank. The alpha error level of 0.05 was accepted. **Results :** 204 CTEV patients [Bilateral =108 (52.9%), Unilateral=96(47.1%)] were managed representing 89(43.6%) and 1115(56.4%) patients for the 1990-1999 and 2000-2009 period respectively. 72.4% were born as first or second position in the family and no significant change occurred over 20years. The maternal age was lower ( $p=0.021$ ), higher delivery by caesarean section ( $p=0.031$ ), lower age at presentation ( $p=0.001$ ), more male sex ( $p=0.032$ ), higher bilateralism ( $p=0.023$ ), reduced frequency of neglected clubfoot ( $p<0.0001$ ), right foot predominance ( $p=0.016$ ), reduced surgical frequency ( $p=0.007$ ), parents refusal of surgery ( $p=0.005$ ), shorter hospital stay ( $p=0.002$ ), and Ponseti method of treatment ( $p=0.0001$ ) predominated in the 21st century decade compared to the 20th century period. **Conclusion:** The hospital prevalence of CTEV appeared to have been increased among Nigerians. A paradigm shift equally occurred in the clinical epidemiology without any significant change in family position of occurrence in the last 20 years.

**Abstract No.: 41671**

**ROTATIONPLASTY IN LOWER LIMB REPLANTATION**

Sandor Mester, Jozsef Szarvas

Lower limb traumatic amputations might pose a special challenge when neither weight bearing stump can be shaped, nor regular replantation can be performed due to the extent of injury. Shortening and rotating the leg in order to replace the missing knee joint with the ankle, offers a viable alternative under such circumstances to restore walking ability. The authors report a case of a 26 year old female motor vehicle driver with a right femoral traumatic amputation, and loss of the knee segment. The right foot and ankle with the distal tibia was recovered separately from the site of the accident. Accompanying injuries included pubic rami fractures, left hip fracture-dislocation, left lower leg segmental, compound fracture. A short limb with weight bearing capability was created by rotationplasty on the amputation side. The rest of her injuries were managed by staged surgeries. Prosthetic replacement of the amputated limb was possible six months after the injury. The patient regained her independent walking ability after nine months. Two years after the accident she underwent a total hip replacement on the opposite side due to avascular necrosis of the femoral head. A functioning hip joint could be preserved and weight-bearing limb was created employing rotationplasty in this case of a traumatic lower limb amputation which otherwise would have ended up in hip disarticulation. Subsequent development of avascular necrosis in the opposite femoral head justified the surgical decision. Possibility of rotationplasty should be kept in mind when facing lower limb amputations with extensive segmental damage.

**Abstract No.: 41673**

**MALIGNANT MELANOMA IN ORTHOPEDICS**

Ivan Gerov,

Introduction: The Malignant melanoma (MM) is rare and associated with high mortality diagnosis often missed in the common orthopedic practice. Definite radical treatment is very important in association with the other treatment options for these patients, in order to save their life. Methods: Three patients initially treated for other conditions underwent surgical excision of lesions, misdiagnosed and delayed. Histological sampling confirmed the presence of MM and helped with the staging of the disease. Results: All three patients had a histological confirmation of the MM and amputation a joint above the original process site. Despite the combined chemo and radiotherapy though all three patients died in 4 to 6 months after the final surgical procedure due to complications, associated with the multiple metastases. The lack of clinical insight or the scarcity of the symptoms are the major predictors for the lethal outcome in such cases. Active follow-up and further surgery immediately after the histological confirmation are the only chance these patients are given, in line with the modern adjuvant treatment available.

**Abstract No.: 41682**

**STAGED RECONSTRUCTION OF HALLUX VARUS - RATIONAL APPROACH**

Ivan Gerov, Nedelcho Tzachev

Introduction: The hallux varus (HVr) is debilitating complication of enthusiastic hallux valgus reconstruction and is often associated with the lack of experience and the overcorrection. The reconstruction is difficult and mostly on the expense of the 1 MTPJ sacrifice. Methods: A 63 yo woman had bunions on both feet and was treated with McBride procedure, repeated twice for the right greater toe. The leftt foot had a relapse 3 years later and underwent second procedure, but the excessive bunionectomy led to varus deformity and she was later unable to fit a shoe. Keller procedure was performed for the proximal phalanx base. Stabilizatin with a K-wire was used to retain the positio and the rotation of the greater toe. Second to the fourth MT bones underwent subcaputal Wolf osteotomies because of the profound metatarsalgia, without implant stabilization. The malleus deformity of the second and the third PIPJ was corrected as well. Full weight bearing was allowed immediately on a high heel orthopedic shoe. Results: Solid bone healing of the MT osteotomies was observed 2 months after the surgery. There was no relapse of the varus or the valgus deformity of the greater toe in 1 year and the pain subsided completely and despite the shortening of the foot by 0.5 cm, the patient was fully satisfied.

**Abstract No.: 41683**

**ACETABULAR RECONSTRUCTION WITH IMPACTION BONE GRAFTING WITH REINFORCEMENT CROSS AND CEMENTED CUP**

Mourad Oubira, Kamel Achour, Mourad Hamidani

Total hip arthroplasty (THA) knows an important growth since these last years .acetabular bone deficiency is especially seen in revision of THA, but can be observed in other situations: post traumatic arthritis, neglected osteoarthritis, in post avascular necrosis hip and after hip dysplasia. The challenge of this surgery is to ensure the acetabular reconstruction, restoration of the hip center and lower limb length, which provides good hip stability. We report a cohort of 36 patients and 40 hips studied between 2008 and 2015 in Blida hospital in Algeria; we treated 20 aseptic revision THA, 06 hip dysplasia, 05 acetabular protrusion and 09 post traumatic arthritis. Method: in acetabular reconstruction we used allograft, auto graft and we recommended to add an acetabular reinforcement cross to improve fact with a cemented cup.in our study we used 25 Kerboull cross, 07 Ganz cross, 14 auto graft and 26 allograft.in conclusion: the acetabular reconstruction is major surgery that requires a pre-operative planning for the demonstration of bone defect zones and predict their reconstruction. Cemented acetabular components with a reinforcement cross provide good medium-term fixation after hip revision and allows to recover the length of the member.

**Abstract No.: 41684**

**PRESENTATION AND TREATMENT OF AVULSION FRACTURES OF THE TIBIAL TUBEROSITY IN DOUALA CAMEROON.**

Pius Gwesang Fokam, Farikou Ibrahima, Cyrille Taku

Introduction: Avulsion fracture of the tibial tuberosity is an uncommon injury typically in adolescents occurring usually during sports. It has been classified by Watson- Jones and modified by Ogden into types I II and III depending on the severity. Treatment is mainly surgical. Complications may include genu recurvatum and extension lag. Materials and method; We reviewed 15 patients with this injury managed in Hopital General Douala and Polyclinic Bonanjo for a three year period. Results: There were 14 adolescents between the ages of 13-17yrs and an exceptionally 1 adult of 43years old. We had 14 males and 1 female. A majority were type II(60%) and were treated by open reduction and internal fixation with screws with or without tension band wiring. The results were excellent with complete union of fracture site and full range of motion after 6 months of follow-up. There was only 1 reported case of extension lag of 10 degree. Conclusion: There has been a steady but slight increase in the incidence of this injury. Diagnosis is straight forward, treatment is typical and patients generally do well.Key words: avulsion fractures, tibial tuberosity, adolescent

**Abstract No.: 41688**

**FINDING AN ASSOCIATION BETWEEN CONGENITAL TALIPES EQUINOVARUS (CTEV) AND DEVELOPMENTAL DYSPLASIA OF HIP (DDH): ROLE OF EARLY ULTRASONOGRAPHY**

Alaa KAWAS, Khalid Hasan, Shamsi Abdul Hamed, Shibly Basith

Introduction: Congenital Talipes Equinovarus (CTEV), also known as club foot is a common condition and can be diagnosed upon simple clinical examination. On the other hand, it requires expert clinical examination and use of ultrasound as the definitive method for the diagnosis of developmental dysplasia of hip (DDH). There has been a controversy on use of ultrasound as a screening tool for diagnosing DDH. This observational cohort study evaluates association between CTEV and DDH and defines the role of ultrasound screening. Methods: A pre-formatted form was used to register details about the targetted patients. The main outcome of interest was incidence of DDH amongst patients with clinical CTEV as compared to the overall incidence of DDH in the region. Statistical analysis was done for calculation of cumulative incidence, risk ration and relative risk (total population) calculations. Results: Out of 50 patients with CTEV referred to the pediatric orthopedic clinic from 2011 to 2013, there were 5 cases of hip dysplasia among 3 babies. The overall incidence of DDH in patients with CTEV is calculated to be 10% whereas the overall whereas the overall incidence of DDH is 8/1000 in the general population. That means that every 10th child with clubfoot will have underlying hip dysplasia. It also means that the child born with CTEV has 12.5 times more risk of having a concurrent DDH. Conclusion: With a statistically significant association between CTEV and DDH, this study advocates selective ultrasound screening of hip in babies with CTEV.



**Abstract No.: 41704**

**SURGICAL OUTCOME OF PERCUTANEOUS FULL ENDOSCOPIC TECHNIQUE FOR HIGHLY MIGRATED DISC HERNIATION**

Yi Jiang,

Objective: A retrospective analysis of 56 patients operated for excision of highly migrated intracanal lumbar disc herniations by percutaneous full endoscopy. Methods: Fifty-six consecutive patients (Male:Female=35:21, mean age  $41.2 \pm 16.3$  years old) with highly migrated herniation who underwent percutaneous full endoscopic lumbar discectomy (PFELD) via transforaminal or interlaminar approach under local anesthesia were enrolled in present study from June 2011 to June 2013 retrospectively. Of 43 cases (L2-3:1, L3-4:8, L4-5:32, L5S1:2) via transforaminal approach with foraminoplasty and 13 cases (L5S1) via interlaminar approach. The disc material was migrated superiorly in 18 patients, inferiorly in 38 patients. Magnetic resonance imaging (MRI) were available confirmed migrated disc matter pre- and post-operatively. Patients were evaluated by postoperative Visual Analog Scale (VAS) score for leg pain and Japanese Orthopedic Association (JOA) score and Japanese Orthopedic Back Pain Evaluation Questionnaire (JOABPEQ) for functional recovery. Results: Mean follow-up was  $15.7 \pm 4.6$  months. Mean operation time was  $82 \pm 18$  min. Mean blood loss  $15 \pm 9$  ml; postoperatively average time of stay in hospital  $3.3 \pm 1.5$  day, duration from back home to work or normal daily life  $12.6 \pm 7.2$  day; Mean VAS score for radicular pain improved from  $7.5 \pm 1.1$  to  $0.3 \pm 0.8$  and mean JOA score improved from  $9.3 \pm 2.4$  to  $26.3 \pm 1.7$ . Five aspects of JOABPEQ improved significantly. Two patients had dura tear without symptoms. 9 cases underwent temporary hyperalgesia after surgery relieved by conservative treatment. Conclusion: PFELD is safe and effective procedure for surgical treatment of soft migrated herniation. Foraminoplasty contributed good working area when the transforaminal approach was applied.

**Abstract No.: 41707**

**CHANGES IN SPINAL SURGERY IN JAPAN DURING 25 YEARS: EPIDEMIOLOGIC STUDY USING THE SPINAL SURGERY REGISTRATION SYSTEM OF TOHOKU UNIVERSITY AND ITS AFFILIATED HOSPITALS**

Toshimi Aizawa, Hiroshi Ozawa, Shoichi Kokubun, Eiji Itoi

**Purpose:** There have been no studies to clarify longitudinal changes of surgical trends of spinal disorders in a certain area. We demonstrated longitudinal changes of spinal surgeries in Miyagi prefecture and its surrounding area in Japan during 25 years from 1988 to 2012. **Methods:** Using the data of the spine surgery registration system of Tohoku University Spine Group (TUSG Registration System), the annual changes of spine surgeries, age and sex distributions, pathologies, and surgical procedures for common spinal disorders were assessed. **Results:** In total 56,744 surgeries have been registered in TUSG Registration System between 1998 and 2012. The annual number of spinal surgeries has been approximately four times increased in those 25 years. Particularly, patients in the 8th decades and patients  $\geq 81$  years showed 20 to 90 times increase. Nearly 90% of surgeries were performed for degenerative disorders and the number of surgeries for them showed approximately 5 times increase from 705 surgeries in 1988 to 3,448 in 2012. The most common disease was lumbar spinal canal stenosis in 35.4%, followed by lumbar disc herniation in 27.3%, cervical myelopathy in 19.5%. In 2012, approximately half of the patients with lumbar spinal canal stenosis and cervical myelopathy are >70 years. **Conclusions:** The number of spine surgeries has been increasing gradually, particularly, those for older patients indicated remarkable increase in those 25 years. As Japan is the most aging country in the world, the results here should be a model for advanced countries in the near future.

**Abstract No.: 41730**

**FIBULO-TIBIAL FUNCTIONAL LOCKING SCREWS IN OSTEOPOROTIC ANKLE FRACTURES**

Nenad Sestic,

Introduction: Locked plating systems improve fixation in osteoporotic bone, what includes preservation of the periosteal blood supply and better resistance to all forces compared to conventional plating. In this functional system of solitary screws, although locked plates are not applied, it keeps advantages of the locking principle. Tibia serves as a functional plate, and 4 cortical fibulo-tibial multiple syndesmotic screws serve as an inverse locking of the fibula. Methods: 1. Standard surgical approach, ORIF technique and conventional bone screws. 2. Finite Element Analysis (Catia/Abaqus) of the bone- implant load-stress propagation. Results: 1. Functional fibulo-tibial locking screws can be applied in many directions. They are locally less invasive and mechanically rigid than locked plating systems. Conclusion: The biological advantages are in preserving fibular musculoperiosteal cover, and usually diminished local blood supply and osteogenic vitality. Indications: geriatric, osteoporotic and diabetic ankle fractures.

**Abstract No.: 41733**

**STIMULATION OF REPARATIVE PROCESSES IN FRACTURES OF THE PROXIMAL FEMUR BIOCERAMIC DRUG COLLAPAN**

Evgenij Varganov, Leonid Kurzov, Konstantin Mosin, Danil Bikmullin

Processes of consolidation of fractures of the proximal femur in elderly patients is significantly hampered. There is a constant search for improving the results of their treatment. Material and Methods: After the osteosynthesis of fractures of the proximal femur in 48 patients conducted stimulation osteoreparative processes by introducing "CollapAn" - gel in the fracture. Results: A comparison of this group with the control group (52 patients), in which after the osteosynthesis "CollapAn" is not used. Processes of consolidation of fractures during treatment with "CollapAn" clinically and radiologically have been 1.4 times faster than in the control group. The results were evaluated in accordance with the principles of functional recovery of the operated limb.

**Abstract No.: 41740**

**CONSERVATIVE MANAGEMENT OF OSTEOPOROTIC VERTEBRAL FRACTURES: A PROSPECTIVE STUDY OF OUTCOMES**

Siddharth Shah, Arvind Goregaonkar

Introduction: Osteoporotic vertebral fractures relate to poorer quality of life and higher long term mortality in elderly. In a resource poor setup, conservative management (rest, analgesics, anti-osteoporosis treatment and physical therapy) assumes great importance as a primary means of treatment. Methodology: 30 patients, diagnosed as having vertebral fracture proven to be osteoporotic in origin, underwent the predetermined protocol of conservative treatment, with prospective evaluation done at 3 monthly intervals for 9 months, using VAS score for back pain, Oswestry Disability Index, Radiological and Hematological parameters. Results: Mean age was 66.9years(52-81years], Male:Female ratio 14:1, with Mean 16.75years post-menopause (+/- 8.12years). Presenting complaint was backpain(100%) and deformity(53.33%). Cases with deformity had significantly higher age as those without ( $p<0.01$ ). Increasing age was significantly correlated to increased vertebral collapse( $p=0.001$ ), increased kyphotic angle( $p=0.002$ ) and lower Bone mineral density values( $p<0.05$ ). With treatment there was significant decrease in VAS backpain score( $p<0.0001$ ), and in ODI scores( $p<0.0001$ ), with patient disability improving from 46.67% with Severe disability at presentation to 56.67% with Minimal Disability at 9 months. There was significant improvement in the vertebral collapse on treatment ( $p=0.0474$ ) with no significant change in kyphotic or scoliotic angles. There was significant increase in Serum Calcium levels( $p<0.0001$ ), Phosphorous levels( $p<0.0001$ ) and Vitamin D3 levels( $p<0.0001$ ) with decrease in Parathyroid hormone levels ( $p<0.0001$ ). Conclusion: A multidisciplinary conservative line of treatment is effective and indicated as the primary means of treatment for all patients presenting with osteoporotic vertebral compression fractures. Conservative treatment is also effective in preventing further progression of the disease process, both radiologically and hematologically.

**Abstract No.: 41750**

**SURGICAL TREATMENT OF MULTIPLE MYELOMA OF SPINE**

Xuedong Shi,

Introduction: One of the major clinical features of multiple myeloma is the destructive osteolytic bone disease that occurs in the majority of patients. Some cases with pathological fracture, severe pain or spinal cord compression require treatment of surgery. The purpose of this study is to evaluate the effects and the prognosis which the spinal myeloma treated by surgery. Method: From April 2005 to March 2014, 43 patients of multiple myeloma were treated by surgery because of symptomatic spinal involvement. Outcome measures included visual analogue pain scores (VAS), Frankel scores as well as complications, and long-term outcome in all patients. Results: 29 patients were treated by percutaneous vertebroplasty, 14 cases were treated by open decompression and internal fixation. The VAS scores of patients with percutaneous vertebroplasty fell from 8.4 preoperatively to 3.2, 2.7, 2.5 at 1, 3, 30 days postoperatively. All 11 patients with spinal cord compression were improved of neurological function postoperatively. Cement leakages occurred in 17 cases without symptoms. No fixation failure occurred though severe osteoporosis existed in most of cases. Conclusion: These results indicate that PVP could be a safe and effective procedure as a palliative treatment of the spinal myeloma patients. Decompression and fixation is effective of patients with spinal cord compression.

**Abstract No.: 41751**

**EXTENSOR INDICIS PROPRIUS MUSCLE VARIATION CAUSED DORSAL HAND PAIN**

Fubing Li, Yongqing Xu, Jihong Shi, Sheng Lu, Yueliang Zhu

Extensor indicis proprius muscle variation is a rare cause of dorsal hand pain. We find a case of extensor indicis proprius muscle (EIP) variation associated with dorsal hand and wrist pain. A 23-year-old male soldier, right dorsal hand and wrist pain and swelling, supportive treatment did not improve. A shuttle-type bump was found on the dorsal index finger of the right through MRI. The bump is soft, can move, When the index finger flexed, pain intensified. In order to alleviated the pain. Bump was resected for pathology examination. Swelling muscles, no dysplasia and malignancy is confirmed by pathology. Symptoms were relieved after resection of the muscle. Patients were followed up for 3 years with normal activities and no symptoms of hand pain. We found EIP muscle over accrementition is the main reason lead to dorsal hand and wrist pain. We believe that this to be the first report of a EIP variation over accrementition caused hand and wrist pain, although there had a lots of reports of other variations in the past.

**Abstract No.: 41756**

**MENOPAUSE IS ASSOCIATED WITH LUMBAR DISC DEGENERATION: A REVIEW OF 4230 INTERVERTEBRAL DISCS**

Hongliang Chen, Chao Lou

Objective: to investigate, in a population of normal postmenopausal women, the association between menopause and severity of lumbar disc degeneration from L1/L2 to L5/S1 on magnetic resonance imaging. Methods: between January 2010 and May 2013, 846 normal women and 4230 intervertebral discs were retrospectively analyzed. Age, height, weight and years since menopause (YSM) were recorded. Disc degeneration was evaluated using the modified Pfirrmann grading system. Results: Compared to premenopausal and perimenopausal women, postmenopausal women had more severe disc degeneration after removal of age, height and weight effects ( $p < 0.0001$ ). Postmenopausal women were divided into six subgroups for every 5 YSM. When YSM was below 15 years, there was a significant difference between every two groups, i.e. groups 1–5 YSM, 6–10 YSM and 11–15 YSM ( $p < 0.01$ ). A positive trend was observed between YSM and severity of disc degeneration, respectively, i.e. L1/L2 ( $r = 0.235$ ), L2/L3 ( $r = 0.161$ ), L3/L4 ( $r = 0.173$ ), L4/L5 ( $r = 0.146$ ), L5/S1 ( $r = 0.137$ ) and all lumbar discs ( $r = 0.259$ ) ( $p < 0.05$  or  $0.01$ ). However, when YSM was above 15, there was no difference, i.e. groups 16–20 YSM, 21–25 YSM and 26–30 YSM ( $p < 0.05$ ), and the significance correlation also disappeared ( $p < 0.05$ ). Conclusion: Menopause is associated with disc degeneration in the lumbar spine. The association almost entirely occurred in the first 15 years since menopause, suggesting estrogen decrease may be a risk factor for lumbar disc degeneration.



**Abstract No.: 41759**

**SUB-MENISCAL PORTAL: AN ALTERNATIVE PORTAL FOR AN EASY ACCESS FOR PARTIAL MENISCECTOMY OF THE UPPER LEAF IN HORIZONTAL TEAR OF POSTERIOR HORN OF MEDIAL MENISCUS**

Kwang Am Jung Kwang Am Jung, Ravi Kumar Ravi Kumar

Approach to the pathologies in the posterior horn of the medial meniscus in a tight knee may be a challenging technique to the arthroscopic surgeon in certain patients. The pie-crusting technique of the medial collateral ligament which can be done percutaneously to open up a tight posteromedial compartment would be a good option in such patients. Here, the authors introduce a useful alternative portal for approaching the upper leaf of posterior horn of the medial meniscus, the sub-meniscal portal. The sub-meniscal portal is located under the meniscus and can be placed safely and easily without any complication. The authors suggest the sub-meniscal portal as a good alternative portal for resection challenging lesions like unstable upper leaf of the posterior horn of the medial meniscus.

**Abstract No.: 41760**

**RESULTS OF FOUR-LEVEL ANTERIOR CERVICAL DECOMPRESSION**

Jianhua Hu, Jiliang Zhai, Zhuolin Zhong

Objective: To evaluate the results of four-level anterior cervical decompression and bone graft fusion. Methods: A series of 17 patients between september 2011 and may 2014 were included in this study. There were 12 male and 5 female patients, with an average age of 60.2 years old ( range 44-69 years). All the surgeries were performed by one surgeon. 13 of sugeries were cervical corpectomy, and 4 had cervical corpectomy and disectomy. Demographic datas, JOA scores, cervical curve, the rate of bone graft fusion and complications were retrospectively analysed. Results: The mean time of follow-up was 23 months (range 9-43 months). The JOA score improved from 11.7 preoperatively to 15 at the last follow-up. All the patients had kyphosis preoperatively and improved 12° postoperatively. The angle of cervical curve improved with an average of 12°. All the implants were in situ, and no complications, such as bone absorption, implant subsidence or dislocation, and neurological damage occurred. Conclusion: Four-level anterior cervical decompression and bone graft fusion is a safe and effective method for long segment of cervical spondylosis.

**Abstract No.: 41761**

**PERIOPERATIVE COMPLICATIONS AFTER FEMORAL HEAD REPLACEMENT FOR FEMORAL NECK FRACTURE PATIENTS AGED 90 YEARS OR OLDER**

Jiliang Zhai, Xisheng Weng, Jin Lin, Jin Jin, Wenwei Qian, Yanyan Bian

**Objective** To evaluate the perioperative complications after femoral head replacement for femoral neck fracture patients who was 90 years older. **Methods** A series of 23 patients aged 90 years or older (very elderly group) and 46 patients younger than 70 years (elderly group) were involved in this study. Demographic data, past medical history, ASA scores, blood loss, drainage, blood transfusion amounts, complications and mortality were retrospectively analyzed. **Results** The average age at surgery for the two group of patients were 92.0 and 63.6 years, respectively. Complications occurred in 6 patients (26.1%) patients of the very elderly group, 2 (8.7%) of whom died due to acute myocardial infarction, and other complications included lung infection in 3 cases, postoperative delirium in 3, deep vein thrombus in one, and urinary tract infection in one . One patient in the elderly group suffered various serious complications, including cholecystitis, biliary pancreatitis, metabolic encephalopathy, dislocation, and other patients had no complications. **Conclusion** Patients in the very elderly group had a higher rate of complications and mortality, mostly acute myocardial infarction and lung infection, should be carefully selected for femoral head replacement when suffered from femoral neck fracture, especially for cardiac and pulmonary function.

**Abstract No.: 41765**

**FEMORAL CORONAL BOWING AND LOWER LIMB ROTATION SUGGEST FEMUR VALGUS ANGLE ADJUSTMENT**

Peihui Wu, Ming Fu, Baoxi Yu, Shuying Fang, Weiming Liao

**Object:** This study was to determine the effect of femoral bowing angle(FBA) on femoral valgus angle(FVA), and the effect of femur axial rotation on radiographic measures of these two angles.**Method:** CT data for 113 normal femurs were used for reconstruction of 3D femur models. FVA enclosed by mechanical axis and distal femoral anatomical axis and FBA enclosed by proximal and distal femoral anatomical axes in frontal plane, were measured as the femur axial rotated from internal 20° to external 40° with 10° interval.**Result:** The average of FVA was  $5.30^{\circ} \pm 1.40^{\circ}$ . According to the value of FBA, all femurs were divided into 4 groups: severe varus group ( $FBA > 4^{\circ}$ ) included 16 femurs,  $FVA = 7.2^{\circ} \pm 1.1^{\circ}$ ; mild varus group ( $1^{\circ} < FBA \leq 4^{\circ}$ ) included 49 femurs,  $FVA = 5.6^{\circ} \pm 0.87^{\circ}$ ; neutral group ( $-1^{\circ} < FBA \leq 1^{\circ}$ ) included 32 femures,  $FVA = 4.7^{\circ} \pm 1.0^{\circ}$ ; valgus group ( $FBA \leq -1^{\circ}$ ) included 16 femurs,  $FVA = 3.4^{\circ} \pm 0.8^{\circ}$ . There were significant differences in the FVA between these 4 groups( $p < 0.001$ ), and significant positive correlations were found between the FVA and FBA ( $R^2 = 0.6$ ,  $p < 0.001$ ). Femur axial rotation from internal position to external position produced greater measured FVA and FBA in each group.**Conclusion:** It is reasonable to adjust the femur valgus angle to 7° or 3° in the few patients with severe genu varum or genu valgum. Special care of limb rotation must be taken when acquiring these full length radiographs for use in measure femoral valgus angle.

**Abstract No.: 41766**

**DOES ACCURACY OF ULTRASOUND (US) GUIDED CORTICOSTEROID INJECTION PREDICT OUTCOME IN PAIN AND FUNCTION IN SUBACROMIAL IMPINGEMENT SYNDROME (SIS)**

Parag Raval,

Introduction: Corticosteroid injection has been shown to be a suitable treatment option for sufferers of SIS. This can be either blind or US-guided; the benefit of one over the other is controversial, with the use of US requiring greater expertise and cost for use. The actual accuracy with which US-guided injections are administered has not been reported in the literature. Here we have investigated the accuracy with which US-guided corticosteroid injections are administered and their effect on SIS patient's pain and function. Method: The US data used from a larger RCT concerning SIS was used. US imaging was reviewed by consultant ultrasonographer categorising accuracy of an injection into 4 groups. Shoulder Pain and Disability Index (SPADI) questionnaires provided scores for patients on their pain and function at baseline, 6 weeks and 6 months. Results: 114 patients data used. Statistical analysis was carried out using mixed effect models and adjusted for covariates at baseline. We compared mean SPADI scores at 6 weeks and 6 months. Definitely in the right place group adjusted mean difference at 6 weeks (-0.57,  $p=0.908$ ) and at 6 months (3.03,  $p=0.668$ ). Probably in right place group adjusted mean difference at 6 weeks (8.22,  $p=0.189$ ) and at 6 months (12.38,  $p=0.171$ ) Conclusion: We can conclude that accuracy of US- guided corticosteroid in SIS has no impact on pain or function. Corroborating other research findings of no benefit with use US-guided injection for SIS, suggesting the quicker, cheapest and easier option of blind injection may be preferable.

**Abstract No.: 41779**

**VERSATILITY OF ADULT PROXIMAL HUMERAL LOCKING PLATE FOR FIXATION OF PEDIATRIC SUB TROCHANTERIC AND SUPRA-CONDYLAR FEMUR**

Mukul Mohindra, Lalit Maini

**INTRODUCTION:** Even in modern era, one is entrapped in choosing implant to fix sub-trochanteric femoral fracture in child nearing adolescence while many surgeons are still using plasters to shield a femoral osteotomy performed for correcting genu valgum in similar age group child. We hereby describe our experience with versatility of adult proximal humeral internal locking plate (PHILOS) to fix both sub-trochanteric and supra-condylar area of femur. **METHODS:** We operated 12 children (7 with sub-trochanteric fracture and 5 with genu valgum where supracondylar dome osteotomy was performed) with average age 11.6 years. In all cases 4.5 mm PHILOS plate of ipsilateral side was used (without contouring) with length and number of screws required, determined by the need of fracture/ osteotomy. For fixation in proximal femur target was to drive long screws up the femoral neck in two rows through proximal expanded part of the locking plate. **RESULTS:** Average follow-up was 12 months. All patients demonstrated union at fracture/ osteotomy sites with desired alignment within average of 10 weeks, with return to full range of motion by average of 6 weeks. There were no deep infections or significant limb length discrepancies. At final follow-up, no patient had any restriction of activities. **DISCUSSION:** PHILOS is an excellent option for stable fixation of either end of femur. It's design is well supportive for its use we have described. Its contour fits very well at both ends of femur. It's locking capability additionally provides an exceptionally stable configuration at the metaphyseal ends of bone.

**Abstract No.: 41782**

**ASSESSMENT OF TOE INJURY REFERRALS TO FRACTURE CLINIC**

Graham Hastie, James Barrie, Ravi Goyal

With the increases in patients attending emergency departments there are more patients being referred onto orthopaedic services. Guidelines have been produced by the British Orthopaedic Association (BOA) which state new fracture clinic patients should be seen within 72 hours. With the added pressures and current cuts in the NHS budget this target will be difficult to meet, and some hospitals are moving to virtual fracture clinics to reduce load in actual clinics. We aimed to assess all new referrals for toe injury to one consultant's fracture clinic over a 4 year period. New patients with toe injuries were recorded prospectively in 2 periods from 1st January 2007-31st December 2008 and the 1st January 2010-31st December 2011. A total of 131 patients were identified. 16 patients had purely soft tissue injuries with no evidence of fracture on radiographs. 4 patients had simple dislocations which had all been reduced in the emergency department. Out of the remaining 121 patients 31 had intra-articular fractures and 90 were extra-articular. Out of the 31 intra-articular fractures 1 patient had a displaced fracture of the 1st toe and was offered surgery but declined. All 131 patients referred with toe injury were discharged at the 1st clinic appointment. We suggest that simple fractures/dislocations and soft tissue injuries should not be referred to the fracture clinic as treatment can effectively be given in the emergency department. We concede that crush injuries, open fractures and displaced intra-articular fractures of the 1st toe should still be referred for clinical review.

**Abstract No.: 41785**

**THE VALUE OF SAVING THE PHYSIOLOGICAL MOVEMENT DURING FIXATION OF TIBIOFIBULAR SYNDESMOSIS**

Evgeniy Kulagenko,

We have done a research about movement of tibia as to fibula in non-damaged ankle joint in different axes with load and without it using a spiral tomography. The result of the research shows evaluated parameters of movement in the region of tibiofibular connection and we have stated the following types of movement of fibula as to tibia- the displacement in vertical-4mm, frontal and sagittal -2mm axes, the rotational- referring to vertical axis 5-7 degrees. All of them have been measured. Our measured parameters provide optimal functioning of syndesmosis. On the basis of acquired data we have developed a method of surgical treatment of tibiofibular syndesmosis injury. In rehab period we have completed CT scan in similar period. The results of damaged lateral malleolus and tibiofibular connection with developed device have been processed. In the given research we have completed a comparative study of results of treatment compared to non-damaged foot. For controlling of effectiveness of treatment we have used the sum electromyography and stimulating electromyography. Also the research of muscle biocapacity of anterior and posterior groups of shin and foot on damaged and non- damaged legs was made.- mm. extensor digitorum brevis, tibialis anticus, abductor digitorum V, soleus. These results have shown that the saving of physiological movement while using given method of surgical treatment of lateral malleolus fracture and damage of tibiofibular syndesmosis allows to start early rehabilitation and dosed load on operated foot, prevent neuro-dystrophic changes in lower extremity and degenerative changes in ankle joint.



**Abstract No.: 41799**

**?THE SANDWICH TECHNIQUE? FOR THE TREATMENT OF GIANT CELL TUMORS**

Ashish Rustagi, Shobha Arora, Chandra Kumar, Kutubbudin Akbary

Introduction: Curettage followed by cementation is a commonly accepted treatment modality for giant cell tumors of bone. However, concerns regarding articular cartilage damage related to the exothermic reaction during polymerization and the change in stress distribution in the subchondral region have been reported to occur within 5 years following cementation. Methods: Six patients (five men, one woman) presenting with giant cell tumor around the knee and two patients (one man, one woman) with giant cell tumor around ankle were treated with the “sandwich technique” of subchondral bone grafting and cavity filling cementation after extensive intralesional curettage. Prolene mesh was used to cover the cavity. The average age of the patients was 28.5 years. The mean duration of follow-up was 11.8 months. All lesions were found to extend within 3 mm of the subchondral bone. Results: All patients had an uneventful recovery and regained an average range of motion at knee was 105° in the knee and full ROM at the ankle. However, the swelling persisted in all of them. One patient had a local recurrence within the first 1 year of the procedure and was treated with extended curettage. None of the patients developed signs of articular cartilage degeneration at final follow-up. Conclusions: The “sandwich technique” of reconstruction of the subchondral bone after extended curettage produces good functional results with a low recurrence rate. Insertion of a corticocancellous bridge between the subchondral bone and the cement layer may retard the progression of early cartilage degeneration.

**Abstract No.: 41801**

**IMMUNOLOGICAL DISORDERS IN PATIENTS WITH SPINAL TRAUMA**

Nurlan Batpenov, Olga Ignatenko, Elena Scherbakova, Anna Chernyshova, Yevgeniya Boretskaya

Background: the dynamics of immunological parameters after a spinal trauma correlates with the state of resistance in the general adaptation syndrome, keeping within the stages of a traumatic disease development. The aim of the study was to assess the state of the immune system by studying the quantitative composition of the main lymphocyte subpopulations in spinal trauma.

Methods: immunophenotyping of basic lymphocyte subpopulations in 49 patients with spinal trauma. Results: our studies have shown an increase of the relative number of CD3+ cells up to 85.7% in the 76% of the inspected patients accompanied by the growth of the number of T-helper cells (CD4 +) to 59.1%. The level of CD8+, CD56+16+, CD19+, and activated cells expressing on their surface HLA-DR+ receptors remained within the reference amounts. Conclusion: it is detected that 76% of patients with a spinal trauma have a reaction from the part of the immune system, manifested by cell-mediated syndrome, characterized by an increase of the number of T-lymphocytes at the expense of helper cells, which can have a negative impact on the stability of metalware in the postoperative period.

**Abstract No.: 41807**

**THE CORAIL STEM - OUTCOME AT THE DEPARTMENT OF ORTHOPEDIC SURGERY- MEDICAL  
UNIVERSITY OF GRAZ: CLINICAL EXPERIENCES AFTER 998 IMPLANTATIONS**

Joerg Friesenbichler, Werner Maurer-Ertl, Michael Maier, Christian Weger, Andreas Leithner

Introduction: Improvements in materials as well as improvements in surgical techniques have led to improved long-term results of total hip arthroplasty. The aim of this retrospective data analysis was the clinical evaluation and survival analysis of the Corail stem. Patients and Methods: Between January 2005 and December 2012, 998 hip replacements were performed using the Corail stem in 891 patients (408 men and 483 women). The mean age at operation was 63 years (range: 18-91) and post-operative follow-up ranged from 0 to 105 months (average: 49 months). Results: In 69% of cases a standard Corail stem was implanted, followed by High-Offset variant (21%) and the Vara version (4%). In 93% of cases the Corail stem was paired with a Pinnacle cup combined with a ceramic-on-ceramic bearing (88%). Out of 998 Corail stems, 5 had to be revised due to aseptic loosening (0.5%; mean: 48 months, range: 14-91 months) and nine revisions had to be done due to periprosthetic fractures (0.9%). Discussion: The current study shows that the Corail stem provides good clinical results in terms of performance and durability as well as revision rates after an average of 49 months. The actual data also shows a minimal risk of aseptic loosening (0.5%), whereas periprosthetic fractures might be associated with failures at implantation. The results of our study are comparable to the register data from Australia, New Zealand, Denmark and England. The reported survival of the Corail stem is indicated between 97% and 99% after up to 7 years of follow-up.

**Abstract No.: 41808**

**THE ASR IMPLANT RECALL: AN AUSTRIAN SINGLE CENTER EXPERIENCE**

Joerg Friesenbichler, Peter Hoefler, Christian Weger, Matthias Wolf, Christoph Mueller, Andreas Leithner, Werner Maurer-Ertl

Introduction: Metal-on-metal large diameter devices became popular for joint replacement due to propagated favorable wear patterns. Nevertheless, the number of revisions for failed hip arthroplasties increased, especially following hip resurfacing. Herein we report complications and revision rates for the ASR device. Materials & Methods: There were 64 total hip replacements in 56 patients using the ASR Resurfacing (n=20) or the ASR XL-Head device (n=44) between 2005 and 2008. The mean age at operation was 51 years (range, 29 to 68). Overall, there were 27 female and 29 male. The average postoperative follow-up ranged from 20 to 109 months (mean: 81). Results: Within the ASR recall 35 MARS MRI were performed detecting 12 cystic formations (ARMDs). Overall, there were 19 revision surgeries in 15 patients. The mean time from index operation to revision for any reason was 48 months (range, 0 to 72). In four patients a second revision had to be done within 41 months following first revision (range, 12 to 74). Reasons for revision were serum metal ion elevation (n=8), luxation or subluxation (n=3), aseptic loosening of the femoral stem (n=3), pseudotumour formation (n=3) and infection (n=2). The resurfacing device showed a revision rate of 10% within 5 years, whereas the XL-Head device had a failure rate of 19%. Discussion: Regarding to the most recent EFORT and AAOS guidelines, we recommend close and periodic follow-ups of all MoM THA/THR designs investigating metal ion concentrations and plain radiographs. Furthermore, cross sectional imaging (MRI) should be done once to exclude ARMDs.

**Abstract No.: 41810**

**LONG-TERM RESULTS OF TOTAL HIP REPLACEMENT.**

Roman Kozak, Georgiy Gayko, Victor Torchinsky, Taras Nizalov, Oleksandr Haluzynskyi

We determined the long-term results of 2744 primary total hip replacements (THR), performed in the period from 2003 to 2012. The main reasons for primary THA were: idiopathic coxarthrosis 44.6%, dysplastic coxarthrosis 18.8%, avascular necrosis of femoral head 14.8%, femoral neck fractures 13.2%. Most of the patients were age groups 45-59, 60-74 years. Men were 40.7%, women 59.3%. Cemented fixation in THR used in 31%, uncemented - 58% and hybrid - 11%. In the 10-year period aseptic loosening was determined in 1.79% implants with cemented fixation, 0.88% uncemented and 0.32% hybrid fixation. Revision cemented cups for aseptic loosening after 10 years were carried out in 1.79%, uncemented in 0.47%. Revision cemented stem for aseptic loosening after 10 years were carried out in 0.61%, uncemented in 0.69%. Survivorship based on revision for aseptic loosening using the Kaplan-Meier technique showed survival of the implants with cemented fixation at 5, 10 years of 99.2%, 96.1%; of the implants with uncemented fixation - 98.8%, 98.2%; and hybrid fixation – 99.2%, 99.2% accordingly. Survival was not significantly different among the different types of prosthesis fixation ( $\chi^2 = 1.1$ ;  $p = 0.578$ ). Survival of uncemented cups significantly higher for 10 years compared with cemented 99% to 96.1% ( $F$  (Cox) = 3.82;  $p = 0.0006$ ). Survival of cemented and uncemented stems for 10 years 98.3%, 98.5% were not significantly different ( $F$  (Cox) = 1.14;  $p = 0.382$ ).

**Abstract No.: 41816**

**ALL ROUND TRANSACETABULAR SCREWS FIXATION IN CONTOUR REVISION CUP: A CADAVERIC BIOMECHANICAL STUDY IN VITRO**

Zhimin Ying,

**Introduction:** One of the major causes of loosening of cementless acetabular cup implants is insufficient initial stability. Our study aims to assess the initial acetabular cup stability through all round transacetabular screws fixation including anterior iliac zone, posterior iliac zone, ischium zone and pubis zone in the presence of bone defect and to analysis strain distribution of the metal acetabular cup in order to clarify the biomechanics value of all round transacetabular screws fixation. **Methods:** Ten unembled adult human cadaveric hemipelvis were obtained to develop bone defect model type C according to AAOS classification. There are two groups: one is using superior and inferior screws fixation and the other one is using superior and inferior screws fixation together with all round transacetabular screws fixation. The migration distance of inferior part of the shell related to anterior inferior iliac spine was used to assess initial stability of the cup. **Results:** Migration distance of the inferior of the cup related to anterior inferior iliac spine were  $0.40\pm0.26\text{mm}$ ,  $0.64\pm0.27\text{mm}$ ,  $0.89\pm0.28\text{mm}$  without all round transacetabular screws fixation and  $0.37\pm0.22\text{mm}$ ,  $0.61\pm0.19\text{mm}$ ,  $0.89\pm0.33\text{mm}$  with all round transacetabular screws fixation. No significant difference was found between two groups. **Conclusion:** Combination with all round transacetabular screws adjunctive fixation can decrease strain value of the cup, better distribution of strain, decrease fatigue breakdown of the metal cup under fatigue cycle, maintain the intact biomechanics of the reconstruction cup and beneficial to the long-term survival rate of the cup though it can't improve the initial stability of the reconstruction cup.

**Abstract No.: 41821**

**FATTY TUMOR COMPRESSING ON TO PERIPHERAL NERVE IN AN UNSUAL LOCATION?RARE REPO**

Nipun Rana,

Report: A man aged 52 years presented with 4 month old history of painless swelling over outer aspect of right proximal forearm and inability to actively extend his right middle and ring finger at the metacarpophalangeal (MP) joints since 2 months. The swelling was located from middle of anterior surface to posterolateral surface of forearm in the cross sectional plane and nearly 8 cm distal to the anterior elbow joint crease. Radiograph showed a complete homogenous soft tissue shadow with well-defined margins in the same location with no bony involvement. Discussion: Taking into consideration the age, sex of patient, size (> 5 cm), site and location of tumour, involvement of nerve and the MRI findings of multiple septations we considered the possibility of a liposarcoma as well. Patient was posted for open biopsy for the same using an anteromedial approach to proximal forearm. Frozen section was sent for histopathological examination. Mass was found to be well encapsulated within the two layers of supinator muscle extending medially between the radius bone and extensor muscles. These superficial fibres showed degenerative changes and were cut with in the substance up to its proximal extent (Arcade of Frohse). Marginal resection of tumour mass was done. PIN was safely released. Fatty mass measured 5 x 7 cm. Cut section did not show any signs of heterogenous, necrotic, calcific or haemorrhagic zones. Histology report suggested findings of a Lipoma

**Abstract No.: 41823**

**NON UNION FRACTURE NECK OF FEMUR IN PAEDIATRIC AGE GROUP- A TREATMENT APPROACH**

Amit Sharma, Lalit Maini

Fractures of the femoral neck in children and adolescents are not common. They represent fewer than 1% of all the paediatric fractures. Femoral neck fractures in children are traditionally considered to have a poor prognosis. Potential complications include osteonecrosis, nonunion, coxa vara, and premature physeal closure with trochanteric overgrowth and leg length inequality. Complication rates are proportional to the initial degree of displacement. The incidence of pseudoarthrosis varies from 7 to 10%, depending on the location of the fracture in the neck of femur. But, with increasing medical care, incidence of non union in paediatric age group has reduced to 1-2%. Management of non union # neck femur always fraught surgeon with complications like AVN, damage of capital femoral epiphysis and many more. Valgus osteotomy is well known treatment of non union neck of femur. Fixation implant to be used for osteotomy is always debatable whether a plate, or screws. Plates are bulkier implant requiring major surgery for removal on other hand screws may provide less fixation. Our case is a 3yr old child presented to us as non union fracture neck femur for which valgus osteotomy done. We used k-wire and 2 non cannulated screw for stabilizing the osteotomy. Implant removed after one year and child asymptomatic. Patient was followed up for 2 years with no complications.



**Abstract No.: 41824**

**RETROSPECTIVE REVIEW OF 31 REVISION TOTAL KNEE ARTHROPLASTY IN NORTHEASTERN CHINA**

Bojian Liang, Jidong Xia, Changyue Gu

Introduction: Investigation of the failure reasons of primary total knee arthroplasty (PTKA) is extremely important for the guidance of clinical work at absence of Chinese Joint Replacement Registry. The purpose of the present study is to evaluate the reasons of revision total knee arthroplasty (RTKA) in our hospital with largest numbers of PTKA in northeastern China, in order to reduce the revision rate and increase the survivorship of PTKA in the future. Methods: A retrospective analysis was performed with the inpatient sample database of our hospital from 926 PTKA procedures performed between January 1, 2009 and December 31, 2014. According to the interval time of 2 years between PTKA and RTKA, RTKA patients were divided into early and late revision group. The original diseases, the cause of failure, the revision type, and the survival period of PTKA were analyzed. Results: 31 RTKA were analyzed, in which 20 PTKAs were performed in our hospital. The mean interval of early revision group was 8.4 months (1.5 - 9 months), the revision reasons were infection (48.4%), loosening (19.4%), and stiffness (12.9%); while the mean interval of late revision group was 71.7 months (25 - 216 months), the revision reasons were infection (19.4%) and loosening (9.7%); 13 RTKA (41.9%) had more than two revision reasons. Conclusions: No matter the early or the late revision, the main reason for RTKA was infection in China. To reduce the revision rate, it is most important to reduce the infection of PTKA in our future practice.

**Abstract No.: 41827**

**THE FACTORS WHICH AFFECT THE CARTILAGE THICKNESS OF ANKLE JOINT**

Fei Chang, Hanyang Zhang, Quanyu Dong, Zhuan Zhong

Introduction: In osteoarthritis, progressive thinning of joint cartilage occurs and therefore assessment of its thickness is indisputably important for the evaluation of disease severity. At present, there are many researches on the influence factors of knee joint cartilage thickness, but little research about the thickness of the ankle joint cartilage. Methods: From January 2011 to August 2014, there are 145 patients took ankle MRI in our hospital. Inclusion criteria included age between 20 and 60 years old, without rheumatoid disease and OA, non-athletes, no self-reported chronic pain and significant injury in ankle joint. There are 99 individuals adopted. MRI images are used to measure the cartilage thickness of ankle joint. The relationships between cartilage thickness and body height, body weight, age, BMI were investigated. Also, the multivariate linear regressions were taken. Results: There is only "body height" has linear correlation with the cartilage thickness of ankle joint. The cartilage thickness of ankle joint is different between the group of male and female, but if balanced the reference of body height, no difference had been shown between male and female. Conclusion: The cartilage thickness of ankle joint is mainly related to the body height, but it is not affected by body weight, BMI, gender and the growth of the age.

**Abstract No.: 41831**

**SURGICAL OUTCOME AND ASSOCIATED FACTORS OF DECOMPRESSIVE SURGERY FOR SINGLE-LEVEL THORACIC OSSIFICATION OF LIGAMENTUM FLAVUM:A MINIMAL 2-YEAR FOLLOW-UP STUDY**

Fabo Feng, Chuiguo Sun, Zhongqiang Chen

**Objectives:** To assess the effectiveness of surgical decompression, and determine the prognostic factors relevant to patients with thoracic myelopathy caused by single-level thoracic ossification of ligamentum flavum(OLF). **Methods :** 36 patients who underwent surgical decompression for single-level thoracic OLF between February 2005 and June 2012 were retrospectively reviewed. The mean JOA score was  $7.08 \pm 1.66$  points preoperatively. The follow-up results were classified according to the recovery rate and then the rates of excellent or good were calculated. The degree of spinal canal occupation was graded on axial T2 weighted MRI. OLF type and intramedullary high signal intensity were also evaluated. Canal grade(midline, boundary, paramedian) and the cross-section area occupying ratio were calculated. Sato's classification and the growth position of OLF were observed on CT. Correlations between the surgical outcome and various factors were analyzed through univariate linear correlation analysis and multiple linear regression analysis were then used. **Results:** The mean follow-up period of these 36 cases was 56 months(24–112 months). At the end of follow-up, the rate of excellent or good was 80.56%, with an average improvement rate of 63.72%. The multiple linear regression analysis revealed that only canal grade (paramedian) on axial CT and preoperative JOA scores significantly correlated with recovery rate ( $P < 0.05$ ). **Conclusions:** Surgical decompression is effective in treatment of patients with single-level thoracic OLF. The results of our study show that canal grade (paramedian) on axial CT and preoperative JOA scores had significant effect surgical outcome.

**Abstract No.: 41841**

**USE OF BAG BON ALIVE FOR REPLACEMENT OF BONE DEFECTS APPEARED IN THE RESULT OF OSTEOMYELITIS**

Chingz Alizadeh, Huseyn Aliyev, Farhad Alizadeh

We have performed surgical treatment on 30 patients with postosteomyelitic bone defects which were filled in with BAG Bon Alive. The defects were formed in the result of osteomyelitis and its surgical debridement. Depending on their location, depth and volume of damaged bone tissue we have classified all defects into the following groups: Location: 1. diaphyseal defects of unbroken bone; 2. metaphyseal defects of unbroken bone; 3. diaphyseal defects of broken bone; 4. metaphyseal defects of broken bone; 5. diastase defects: 5.1 up to 4 cm; 5.2. from 4 till 8 cm; 5.3 over 8 cm. 6. defects of foot and hand bones (short bones). Depth: 1. cortical defects; 2. cortical and cancellous defects; 3. cancellous defects. Volume: (V5) – defect up to 5 cc; (V10) - defect up to 10 cc; (V15) – defect up to 15 cc; (V20) – defect up to 20 cc and more. When defects are over 10 cc we recommend mixing Bon Alive with crushed autograft. Example: diaphyseal cortical defects of broken bone with volume 10 cc will be coded as 3.1.V10; metaphyseal cortical and cancellous defects of unbroken bone with volume up to 5 cc will be coded as 2.2.V5; diastase defect in the diaphysis with volume 20 cc is to be coded as 5.1.1.V20 and etc. In our opinion the proposed coding will help the surgeon to choose an optimal method of surgical treatment using BAG Bon Alive and correctly compare outcome of surgical treatment performed by various surgeons.

**Abstract No.: 41843**

**A RARE CASE OF MYOSITIS OSSIFICANS PROGRESSIVA PRESENTING AS PROGRESSIVE MULTIPLE CONTRACTURES**

Jatin Prakash,

Introduction: Myositis ossificans progressiva is a rare disease characterised by formation of areas of calcification in soft tissue like ligaments, muscles and tendons. There are few sporadic case reports all over the world. The disease has an incidence of less than 1 in 10,000,000 population. Case

Presentation: We here present a case report of myositis ossificans progressiva presented to us with numerous lumps and shoulder and hip contracture. Patient was treated conservatively on bisphosphonates. No progression of lumps or swelling were seen in 1 year follow up. Myositis ossificans progressiva is a disease of early childhood. The disease is often progressive with multiple soft tissue contracture and subsequent death by 3rd or 4th decade of life. There is no effective treatment till date. Conclusion: This presents a case report of a very rare disease. In most cases there is history of any trauma or inciting factors that result in formation of myositis mass. This case however presents a very aggressive form of disease with patient developing spontaneous swellings and progressive contractures. The disease was controlled on bisphosphonates and no new swelling developed in follow up of 1 year.

**Abstract No.: 41844**

**STUDY OF VARIOUS SURGICAL MODALITIES IN TREATMENT OF PAEDITRIC GENU VARUM**

Jatin Prakash, Anil Mehtani

Introduction: Genu varum is a common presenting complain that causes alterations in normal biomechanics of the knee causing not only cosmetic but also functional impairment. No single technique works best in all cases. We evaluated various treatment modalities - growth modulation, illizarov and osteotomy. material and methods: 35 knee deformities from age 4-16 years were evaluated in our study. Those presenting before physeal closure with adequate growth remaining were treated with figure of 8 plate. Older individuals were treated with illizarov or opening wedge osteotomy. patients were followed for 3 years. results: fig of 8 plates were able to achieve good correction in all cases with minimal and manageable complications however rebound growth after removal was important problem. High tibial osteotomy had an advantage of single step correction but amount of correction that could be achieved was limited. also a second procedure of plate removal was required. Illizarov had an advantage of post op correction of deformities, larger deformities could be corrected. however this is time taking process. conclusion: we concluded that no single method is ideal in all cases and a careful selection of cases pre-operatively is required. growth plates are good if adequate growth is remaining and over-correction is always useful. minor degree of varum deformities could be corrected with high tibial osteotomy and plate fixation as it allowed early rehabilitation and illizarov was better method when degree of correction required is large, or patient's height is already short where growth modulation may further hamper the growth

**Abstract No.: 41845**

**ROLE OF CONSERVATIVE TREATMENT IN NEGLECTED PAEDIATRIC HIP DISLOCATIONS**

Jatin Prakash,

Background: Traumatic hip dislocations are rare in children accounting for less than 5 % of all paediatric dislocations. It is further rare to see a neglected dislocation in paediatric age group. Owing to rarity of the lesion, the management in neglected hip is still controversial with treatment modalities ranging from closed reduction, open reduction, realignment osteotomy, arthrodesis and pelvic support osteotomies. Lately most series have reported dismal results with closed reduction after 3 weeks of dislocation material and methods: We here present 1 such case of 5 month old neglected dislocation of hip in 4 year old girl child with avascular necrosis of hip treated with closed reduction and heavy traction. after confirmation of reduction, patient were given hip spica. Results: The check X-rays were done at removal of spica, 3months later and 1 year later. All Xrays showed concentric reduction of head resolving signs of AVN. The latest X-ray at 1 year follow up showed complete hip reduction with no AVN sign. Patient regained excellent range of motion and child is able to carry out all her floor level activities. Conclusion: A fair trial of closed reduction should be tried in neglected paediatric hip dislocations even if they present after 3 weeks. It not only achieves concentric reduction but may also reverse the AVN changes in younger age group. Long term results are favourable with achievement of excellent functional scores.

**Abstract No.: 41847**

**PATELLA TUBERCULOSIS - A RARE DIFFERENTIAL OF NON HEALING ULCER ON KNEE**

Jatin Prakash,

Introduction: Tuberculosis of patella is a rare occurrence with incidence of less than 0.2% in literature. Because of its rarity the diagnosis is usually missed. Here we present a case of tuberculosis patella, being treated as chronic synovitis elsewhere, presented to us with chronic knee swelling and a draining sinus. Material: Standard X-rays revealed a lytic area with surrounding coke like sequestrum in patella. MRI was suggestive of osteomyelitis of patella with soft tissue edema. Diagnosis was confirmed on biopsy. Patient was managed by curettage and excision of sinus tract along with anti-tubercular treatment. Result: Patient responded well to anti tubercular therapy and gained excellent functional range of movement. Conclusion: the rare locations of tuberculosis like patella should be borne in mind while dealing with chronic lesions of the knee.



**Abstract No.: 41849**

**STUDY OF ANATOMICAL HELICAL NAIL FOR FEMORAL FRACTURE IN ADULTS**

Jatin Prakash,

Introduction : Interlocking nail is the standard treatment for fracture shaft of femur. However uniplaner nails through piriformis entry are associated with number of complications like avulsion of piriformis tendon, damage to superior gluteal nerve and branches of medial circumflex femoral artery, increased risk of iatrogenic neck fracture and difficulty in finding of entry site. Entry through greater trochanter is an alternative. The results of anatomical helical nail entering through tip of greater trochanter were studied in 30 patients in our study. Methods: 30 patients presenting to Lady Hardinge Medical College with fracture shaft of femur were treated with anatomical helical nail. The patients were assessed for operative time, blood loss, union time and complication rates. Functional outcome was based on modified Harris hip score at 12 weeks. Result: 29 of thirty fractures united. None of the cases got infected. Average operative time was 66 min and average union time was 91 days. There was single case of non-union, one case of malunion and two cases of iatrogenic intertrochantric fracture. CONCLUSIONS: A femoral nail specially designed for trochanteric insertion resulted in equally high union rates, equally low complication rates, and functional results similar to conventional antegrade femoral nailing through the piriformis fossa. The greater trochanter entry portal coupled with an appropriately designed nail represents a rational alternative for antegrade femoral nailing with the benefit of low complication rate, ease of finding entry site and decreased operative time in patients and particularly those who are obese.

**Abstract No.: 41852**

**GIANT CELL TUMOR - A VERY RARE DIFFERENTIAL OF LYTIC LESION OF DISTAL MEDIAL HUMERAL CONDYLE**

Jatin Prakash, Anil Mehtani

Giant cell tumor (GCT) is still one of the most obscure and intensively examined tumors of bone. GCT is mainly a locally aggressive tumor affecting mainly the skeletally mature distal femur, proximal tibia or distal radius. No case of isolated medial condyle involvement has ever been reported. We here report a one such case . The tumor only involved medial condyle. The tumor was confirmed on core needle biopsy. It was managed by en-bloc resection. Patient was mobilised in elbow brace at 3 weeks and she gained good functional range by 6 weeks. No signs of relapse have been seen in 2 year follow up.

**Abstract No.: 41853**

**STUDY OF 200 RACHITIC KNEE DEFORMITIES - CONSERVATIVE AND SURGICAL OPTIONS**

Jatin Prakash,

Introduction: Defective mineralisation of osteoid matrix of bones prior to their physeal closure causes rickets. The recent literature has seen an increase in the incidence of the disease. We here present our experience of 137 patients with 200 lower limb deformities due to rickets, effect of conservative treatment and finally the surgical management of cases not responding. Materials and Methods: All patients from 2-18 years presenting with knee deformities (genu varum/ valgum wind swap deformity) were evaluated for rickets. They were evaluated clinically and radiologically, treated for vitamin- D deficiency and followed for resolution. Those who failed to resolve were managed surgically with growth modulation, illizarov or osteotomy. Results: 67 genu varum were observed in our study. Most children with genu varum were under 4 years except two. Of 65 deformities 7 (10.7%) were regarded as failure which either did not show any improvement. 133 deformities in our study had genu valgum. The average valgum was 21 degrees and average age group was 7.3 years. Most patients with valgum were over 3 years. It was observed that valgum did not correct as rapidly as genu varum. Conclusion: The study concludes that most rachitic deformities get corrected with age with Genu varum having better chances of correction compared to genu valgum. The rate of correction is also faster in genu varum compared to valgum. Growth modulation is effective and safe method for correction of deformities in early age. Chevron osteotomy can be an alternative in treatment of valgum deformity in children presenting after physeal closure.

**Abstract No.: 41855**

**TUBERCULOSIS OF CAPITATE IN SKELETALLY IMMATURE PATIENT- A RARE CASE REPORT**

Jatin Prakash,

Primary Tuberculosis of wrist joint is rare, generally affects adults, mostly starts as synovitis and quickly involves other carpus and end as arthritis. We here present a case of isolated involvement of Capitate bone in a skeletally immature patient. No such case has ever been reported in literature. A 12 year old male presented to us with swelling and a non-healing sinus in the dorsum of the wrist joint of 5 months duration. Blood examination revealed anemia , elevated E.S.R and a positive mountoux test. Radiograph of the wrist at presentation suggested osteopenia of carpal bones with a lytic lesion of Capitate.. MRI showed increased signal intensity in Capitate with surrounding soft tissue edema in T2 weighted images. . Intra-osseous tissue histology confirmed the diagnosis of bone tuberculosis. Patient was treated with antitubercular therapy for 1 year. The sinus healed and lesion resolved. No signs of reinfection were seen in 1 ½ year follow up.

**Abstract No.: 41856**

**DIFFERENTIAL DIAGNOSIS OF BENIGN LYTIC LESIONS OF CLAVICLE**

Jatin Prakash,

**Introduction:** With the exception of traumatic lesions, most data on clavicle in literature is regarding its neoplastic lesions. Even this data mostly revolves around the malignant lesions which are by far more common than benign lesions. The data on benign lytic lesion is however sparse. Asymptomatic nature of lesions, their rare occurrence, the difficulty to read the X-rays because of surrounding structures and striking similarities in various lesions further make the diagnosis of such atraumatic lytic lesions difficult. **Material And Methods:** Prompted by the rarity of lesion and scarcity of data regarding presentation and management, we present our series of 37 patients who presented with benign lytic lesion of clavicle. A prospective study of benign lytic lesions of clavicle was performed from 2008-2013. The results of the lesions are categorised in infective, metabolic and neoplastic conditions. **Results:** infective lesions were most common cause of symptomatic painful benign lytic lesions. metabolic lesions, like rickets, were the most common cause of painless swelling in clavicle. Neoplastic conditions although rare were an important differential. our study describes the clinical, radiological and histological features along with the treatment and follow up of these cases. **Conclusion:** It is important to differentiate and diagnose such lesions. Asymptomatic lesions may be a clue for underlying metabolic condition. Tuberculosis of clavicle is important differential of all lytic lesion and single most common cause. Early MRI and Biopsy of the lesion helps in preventing an undue delay in diagnosis. Most lesions when diagnosed in time have excellent results.

**Abstract No.: 41858**

**PRRIMARY TUBERCULOSIS OF CLAVICLE- OUR SERIES OF 17 PATIENTS**

Jatin Prakash,

Tuberculosis of clavicle is a very rare lesion accounting for less than 1% of osteo-articular tuberculosis. The lesion has been described mostly as scattered case reports. The lesion can have varied presentation ranging from dull aching pain to a bony swelling and a draining sinus. Rarity of the lesion, non-specific symptoms and striking resemblance to common cystic conditions including bone tumors and metabolic condition like rickets make the diagnosis very difficult. We are here presenting a series of 17 patients with primary tuberculosis of clavicle. All the patients in series received X-rays and MRI and preliminary diagnosis was made on the basis of clinical features and results of ESR, CRP and mountaux test. X-rays show either diffused thickening and honey combing or eccentric expansile lytic lesions with surrounding osteopenia or these may even show sequestration not unlike pyogenic infection. MRI is useful for determining the extent of the lesion and soft tissue involvement. The radiological and laboratory findings provided complimentary information. The diagnosis was confirmed on biopsy material which was analysed with "histopathology". Patients were treated with multi-drug anti tubercular chemotherapy for 18 months. The patients were assessed on University of California, Los Angeles (UCLA) shoulder rating scale. The results of conservative management of tubercular osteomyelitis were uniformly good and all patients recovered well. The article stresses on the varied presentation of the lesion and a high level of suspicion which a clinician should keep in mind which can help in early diagnosis and excellent outcome of the disease.

**Abstract No.: 41859**

**A VERY RARE CASE OF CHRONIC FOOT PAIN - METATARSAL TUBERCULOSIS**

Jatin Prakash,

Pure tubercular osteomyelitis without joint involvement is rare and easily missed. Moreover the lesion is common in spine and large joints like hip and knee. The involvement of isolated metatarsal has been described rarely, only as few sporadic case reports. We here present one such case of isolated 1st metatarsal involvement in an 8 year old child who presented with chronic pain in left foot for over 6 months. The X-rays suggested a lytic lesion and lesion was confirmed on histopathology and AFB staining. The patient was treated on multi drug anti-tubercular chemotherapy. The results were excellent with complete healing of the lesion.

**Abstract No.: 41860**

**TUBERCULOSIS WRIST MIMICING KEINBOCK'S DISEASE**

Jatin Prakash,

Tuberculosis of wrist is very rare disease. On most occasions it starts with synovial involvement and then involves bones rapidly. Tuberculosis is a great imposter and it may mimic other commoner disease both clinically and radiologically. We here present one such case where 30 year old female had tenderness in wrist for 7 months without any swelling or constitutional symptoms. The X-rays showed a picture very similar to Kienbock's disease. In absence of any clinical signs of infection and radiological picture of collapsed and sclerosed lunate, diagnose of Kienbock's was made. However MRI revealed it to be of infective etiology with biopsy confirming it to be tuberculosis. 12 month of multidrug ATT showed complete clinical resolution of disease. The case stresses on the fact a very high index of suspicion has to be kept in endemic areas for making a timely diagnosis of tuberculosis especially in such un-common sites.



**Abstract No.: 41861**

**TUBERCULOSIS SACRO-ILIAC JOINT -A NEGLECTED DIFFERENTIAL OF CHRONIC LOW BACK PAIN**

Jatin Prakash,

Introduction : Isolated sacroiliac involvement is very rare. It usually presents as vague back pain. Plain radiographs are often inconclusive. Due to rarity of lesion, vague symptoms and non-conclusive X-rays the diagnosis is further delayed. We present a series of 35 patients presented with sacroiliac tuberculosis. Methods : 35 patients were diagnosed of sacroiliac tuberculosis from January 2008 to December 2011. After a thorough history and clinical examination, patients were taken up for X-rays and MRI scans. Ultrasound guided needle aspiration was done from suspected area. After histological confirmation of the diagnosis, patients were treated with Anti tubercular therapy. Results: Persistent low back pain and difficulty with walking were noted in all patients. There were 21 males (60%) and 14 females and the age ranged from 22 to 55 years (mean: 27 years). Most of the patients (91.4%) had unilateral disease (32 patients). Results of conservative management were good. 21 (60%) of our patients achieved bony ankylosis at the end of study. 9 patients did not respond to conservative management where surgical debridement was done. 4 of these cases had MDR tuberculosis. Conclusion : Sacroiliac tuberculosis must be kept as a differential in all refractory low back pain particularly in endemic areas. MRI is very helpful in early diagnosis of disease. In the early stages of the infection aspiration using a closed needle biopsy is recommended. An open biopsy is essential when the aspirate yields no growth. Open debridement should be done in those not responding to conservative management.

**Abstract No.: 41867**

**ANATOMICAL ACROMIOCLAVICULAR JOINT RECONSTRUCTION. A MODIFIED TECHNIQUE.**

Ahmed Elguindy, Walid Reda, Ahmed Rizk Mohamed, Khaled Shohayeb

**Introduction:** The surgical techniques for the management of acromioclavicular (AC) joint dislocation are abundant, suggesting the imperfection of all of them. Several biomechanical studies showed that anatomic AC joint reconstruction can provide adequate stability and reduce the incidence of failure in AC reconstruction. **Aim of work:** Present a new modification in the technique used for anatomical Coracoclavicular ligament reconstruction and the short term results. **Methods:** Twenty patients underwent anatomical AC joint reconstruction. The patients were assessed by history, standard shoulder examination, and the Constant score. Plain X-rays (Anteroposterior and Zanca views) were obtained and the dislocations were classified according to Rockwood's et al classification. Patients were surgically treated with anatomical AC reconstruction using a modification of the technique by Mazzuca et al. Distal clavicle excision was added for patients presenting after 3 weeks from injury. All patient were assigned the same postoperative protocol. **Results:** Sixteen patients were available with mean follow-up period of 6.8 month. X-ray examination in the immediate postoperative time showed fourteen patients had complete reduction and two patients had AC subluxation less than 25 %. At last follow up, 10 patients had complete reduction and 6 patients had less than 25% AC subluxation. All parameters of the constant score improved at last visit. All patients returned to preinjury level of activity. **Conclusion:** This technique provides anatomical soft tissue solution for AC joint dislocation with adequate short term results and high percentage of return to regular activities.

**Abstract No.: 41868**

**FLEXOR HALLUCIS LONGUS INSERTION IN A CLUBFOOT [CONGENITAL TALIPES EQUINO-VARUS]**

Gideon Shadrack Lungu,

Flexor Hallucis Longus Insertion in a clubfoot [Congenital Talipes Equino-Varus]: Introduction: Postero-medial release in CTEV was one of the major ways of treating a clubfoot in Zambia, until 2006 when the Ponseti Manipulation of a clubfoot method was officially launched in the country. In the review of literature, many scholars have commented on the bones, particularly the talus, the ligaments, the Tibialis Posterior muscle and Tendo Achilles [as the two main deforming forces] and some accessories muscles. The Flexor Hallucis Longus, however, have not been discussed in great detail. In view of the above, the researcher of this paper undertook a prospective study of the insertions of the Flexor Hallucis Longus in clubfeet. This study included all the children that were earmarked for the postero-medial release and in patients that had a “true” clubfoot while excluding the syndromic type, so as to gain more insight of the anatomy of the clubfoot; viz a viz FHL. Methods: The study was a prospective study and a standard proforma was used to collect data. During surgery the individual toes were moved (while others were fixed) and the FHL tendon was observed for any movement, and vice versa. The attached tendons would glide with the movement of the tendon and vice versa. Conclusion: The FHL is distributed or attached to beyond the 1st and 2nd toes in over 70% of clubfeet.

**Abstract No.: 41871**

**THE ACCURACY AND EFFICACY OF PRE-OP TEMPLATING OF PRIMARY TOTAL HIP REPLACEMENT WITH TRAUMACAD SOFTWARE AT DONCASTER ROYAL INFIRMARY**

Samuel Osieku, Parameswaran Nair Hari Kumar, Oluwakemi Ishola

We conducted a Retrospective study to assess the accuracy and efficacy of Pre-op templating of Primary Total Hip Replacements using the Traumacad software (April to December 2014). This study aimed at comparing the pre-op templating sizes to the sizes of prosthesis actually used in theatre and with the help of statistical analysis, assess the effectiveness of the software and to assess if there were other options with an even better accuracy in the future. Source: Theatre staff nurses record of prosthesis sizes and sizes derived on Synapse using Traumacad. Sample size: 33.

Measurements: Acetabular cup diameter, femoral stem size, femoral offset. Criteria: correlation coefficient and p-value (significance level).  $r = 0.7 - 0.79$  (acceptable match),  $r = 0.8 - 0.89$  (good match),  $r > 0.9$  (Excellent match).  $p < 0.05$  (significant). Results: Femoral stem size:  $r = 0.8074$  (good match),  $p < 0.00001$ . Femoral offset:  $r = 0.9381$  (excellent match),  $p < 0.00001$ . Acetabular Cup diameter:  $r = 0.7706$  (acceptable match),  $p < 0.00001$ . Accuracy/Efficacy; Femoral Offset: Excellent, Stem size: Good, Acetabular Cup diameter: Acceptable. All 3 components matched above 70% hence the software has at least an acceptable precision. A much better precision can be achieved for all component with introduction and trying new software which improves the traumacad drawbacks to achieve perfection.

**Abstract No.: 41872**

**HIGHLY CROSS-LINKED POLYETHYLENE LINER BREAKAGE WHEN USED WITH 36MM METALLIC FEMORAL HEAD AS A BEARING SURFACE -CASE REPORT-**

Wonkee Choi, Myung Rae Cho, Won Kee Choi

Introduction: We reviewed one case of fractured highly cross-linked polyethylene liners(Longevity,Zimmer, Warsaw, Indiana) coupled with 36mm metallic femoral head as a bearing surface, and analyze the factors that played a role in their failure. Patient: The patient was 66-year-old male, and had 19.6(kg/m<sup>2</sup>)BMI. He had revision operation due to loosening of the bipolar arthroplasty caused by avascular femoral head necrosis. Revision operation conducted with a Trilogy shell (Zimmer) with a 54-mm outer diameter and a Longevity liner with a 36-mm metallic femoral head. Radiographs showed a cup abduction angle of 48° and 23.4° anteversion. 6 years after index operation, abrupt onset hip pain developed without trauma history. Applied liner thickness was 5.8mm at 45°direction, Finding: we found out fragmentation of the Longevity liner was noted at the superior quadrant, severe scratch damage in just below the neck portion of femoral stem and superior quadrant area of liner. Steady state liner wear rate was 0.75mm/year Conclusion: Until now, many factors known as making liner fracture were revealed. Polyethylene thickness plays a major role in the failure of these liner. In this case liner thickness is 5.8mm beyond the threshold of polyethylene fracture. There is still concern on the importance of plastic thickness of peripheral indentation site around locking area as a crack initiation. Habitual posture of the patient might be also a factor of the plastic fracture.

**Abstract No.: 41875**

**COPYING LETTERS TO PATIENTS PROGRAMME ? BASED ON GOOD PRACTICE GUIDELINE-  
DEPARTMENT OF HEALTH-UNITED KINGDOM**

Muhammad Zahid Saeed, Srinivas Gadikoppula

Introduction: The “copying letters to patients programme is a key part of the NHS-UKPlan. It goes to the heart of putting the relationship between patients and doctors on a more equal footing.Objectives: The objectives of our study was to involve patients in decisions about their health care and communicate with them.Methods: It is a standard practice in National Health services (NHS) to send a copy of the letter to Patients General Practioners.We conducted a study about sending a copy of the letters.The study was conducted at North Middlesex University Hospital NHS Trust London UK from June 2014 to July 2014. Results: We received 31 Responses. 61.3% of the respondents were Consultant grade doctors. 93.5% of all respondents were of the opinion that sending a copy of clinic letter to patient is a good idea. We Re-audited a month letter using the same methodology.100 % of all respondents were of the opinion that sending a copy of clinic letter to patient is a good idea.20% of respondents admitted that it will change their practice of writing a clinic letter. 20 % of all participants said they would worry about distressing patients by sending a copy of clinic letters to their correspondence address. 20% of the clinician suggested that they will omit some harmful information from the clinic letter. Conclusions: Potential benefits of copying letters between professionals to patients are:The patients are better informed about the decisions regarding their health.There are better consultations,health promotion and clearer communication between professionals.

**Abstract No.: 41878**

**PERCUTANEOUS TREATMENT OF HALYUS VALGUS**

Kairat Tazhin,

Recently, percutaneous minimally invasive treatment of feet deformity, which is known as technology "MIS", have become much more popular. Materials and methods: Percutaneous minimally invasive technique is carried out from the mini incision 3-5mm in lower-medial corner of the first metatarsal head, which produces economical medial eczostosectomy of head by M1 Ad micro mill. From the same access subcapital linear osteotomy of the first metatarsal bone is made by microfoam, followed by lateral displacement of the head and screw fixation Hebert, which is performed via a rear puncture the skin. The speaker on the medial surface of the proximal fragment of the M1 after the transposition of the head is laterally removed by microfoam. Through the separate incision in the medial projection of the base of proximal phalanx produce Akin by microfoam. Remediation and closure of the wound 2-3 interrupted sutures. The day after surgery, the patient is activated and goes to a special orthopedic shoes Baruk period of 1.5 months. Results and discussions. All patients were satisfied by cosmetic and functional side of the postoperative outcome, as well as a period of rehabilitation. In summary, we can say that minimally invasive percutaneous surgery of the foot can be safely introduced into routine practice of orthopedics. In case of severe deformities there can be combine open and closed access, which in any case reduce the aggressiveness of the operation.

**Abstract No.: 41882**

**LEVEL OF INTERLEUKIN - 6 (IL - 6) AT ENDOPROSTHESIS REPLACEMENT OF HIP JOINT**

Nurlan Batpenov, Olga Ignatenko

To determine the level of IL -6, we used immunochemiluminiscent analysis on an automatic analyser IMMULITE. The level of IL – 6 of patients after hip replacement surgery has been analyzed. The level of IL -6 had been evaluated before surgery, on the 2nd and on the 7th day after surgery. Before the surgery the patients had level of IL - 6 within the normal range. On the 2nd day it was committed to paper the increase of index in 11 times ( $p < 0.05$ ). On the 7th day it was committed to paper the decrease of index in 1.96 times ( $p < 0.05$ ) and reached index  $19.2 \pm 1.2$  pg/ml, which is 41.6% higher than the standard value. The high concentration of IL - 6 in the postoperative period may have disregulatory influence on the immune response, which may complicate the postoperative period and rehabilitation. Testing the hypothesis for connectivity between two or more variable signs, we used the contingency measure. For the analysis of contingency of IL - 6 level on the 2nd and the 7th days after surgery and prognosis of the postoperative period, we used the criterion of  $\chi^2$ . We detected the existence of cases of high ( $> 10$  pg / ml) IL - 6 level. The analysis showed that the high level of IL - 6 in serum may indicate an unfavorable postoperative process. The monitoring of the level of IL - 6 may indicate a positive prognostication in the result of endoprosthesis replacement and during the postoperative period.



**Abstract No.: 41885**

**DIFFICULT PRIMARY TOTAL HIP ARTHROPLASTY: DA APPROACH IS BETTER?**

Sm Javad Mortazavi, Alireza Aminjavaheri

Total hip arthroplasty (THA) in some patients is not straightforward. Difficult primary THA could be due to comorbidities such as obesity or as a result of morphological abnormalities. We designed this study to investigate if direct anterior (DA) approach has any role in the complex primary THA.

**Material:** We defined difficult primary THA as patients with acetabular protrusion, DJD secondary to Perthes disease and superior migration of greater trochanter, developmental dysplasia with upward head migration and morbid obesity. From Jan 2011 to Dec 2013, 72 hips in 67 patients (43 women and 24 men) underwent THA via DA approach in our institution. There were 29 acetabular protrusion, 19 Crow type 3 DDH, 5 patient greater trochanter superior migration, and 19 morbidly obese patients. The average age was 34.4 years (rang, 22 to 64). All patients underwent THR with DA approach in supine position. Patients were allowed to weight bearing as tolerated on the same day of surgery. Operation time, intraoperative and postoperative complications and functional outcome evaluated. **Results:** The mean follow up period was 21 months. Average operating time was 78 minutes. 3 calcar crack occurred intraoperatively and fixed with wire. No femoral shortening was needed. All patients showed significant improvement in Harris hip score, WOMAC and SF-36 at the latest follow-up. **Conclusion:** Our study showed that DA approach is a good option for some of difficult primary THA. We think that anterior capsulectomy, double neck osteotomy and ability to do an extensive release make this approach suitable for thes patients.

**Abstract No.: 41886**

**TOTAL HIP REPLACEMENT VIA ANTERIOR APPROACH IN HAEMOPHILIC PATIENTS**

Sm Javad Mortazavi, Alireza Aminjavaheri

**INTRODUCTION:** Total hip arthroplasty (THA) is a good option for hemophilic patients with severe hip involvement, however, it is not without complication. Direct anterior (DA) approach is associated with less muscle damage and bleeding as well as faster recovery. We hypothesized that THA in hemophilia patients via DA approach is associated with better result. **MATERIAL:** From January 2011 to Dec 2013 eight patients with hemophilia (8 hips) underwent THA through DA approach at our institution. All patients had severe hemophilia (<1%). All patients were positive for hepatitis C virus. We use only mechanical prophylaxis for DVT. No drain were used after surgery. All patients were followed prospectively at 3, 6, 12 and 24 weeks postoperatively and annually thereafter. Outcome measures include Harris hip score, WOMAC, SF-36 and blood loss. **RESULTS:** The average estimated blood loss during surgery was 295 cc (140- 400 cc). There was no blood transfusion. The average operating time was 72 minutes (55 -85 minutes). All patients were ambulated on the same day of surgery, At the mean follow up of 2.4 years, all patient showed significant improvement in Harris hip score, WOMAC and SF-36. All patients were satisfied with the result of surgery. **CONCLUSION:** THA in patients via DA approach is a viable option for hemophilic patients with severe hemophilic arthropathy of the hip. We think less invasive nature of this approach through interanervous planes and no muscle cut may lead to less bleeding and faster rehabilitatio.

**Abstract No.: 41888**

**TOTAL HIP ARTHROPLASTY IN YOUNG PATIENTS: EARLY RESULTS ARE BETTER**

Sm Javad Mortazavi, Shahin Marzban

Background: Managing young patients with end-stage hip disease has been a challenge. Although Total Hip Arthroplasty (THA) has been successful in the elderly patients, the results in the young seem unsatisfactory. Material and methods: we prospectively compared the outcome of 91 uncemented THAs which were performed on patients younger than 40 years old with the result of 169 cases that were performed on patients older than 40 years old. The mean time of follow up was  $16.32 \pm 8.8$  months. 1 patient in the young group and six patients in the elderly group passed away. Results: Regarding Harris Hip Score, Womac score and SF-36 score, both groups improved after the surgery. (P value=0) however the mean post-operative HHS and Womac score was significantly higher in the young group. (P value=0, 0.003 respectively) The mean post-operative SF-36 scores were not significantly different between two groups. (P value=0.12, 0.34) One patient from the young group and 2 patients in the elderly group underwent revision surgery due to acetabular loosening. Six dislocations were observed and only one occurred in the young group. Radiographic findings were similar between two groups. Conclusion: uncemented THA using metal on poly ethylene prosthesis can provide satisfactory early results in both young and elderly patients, however in terms of complications, failure rate and post-operation scores, our results were superior in younger patients.

**Abstract No.: 41889**

**DEPRESSION AND POST TRAUMATIC STRESS DISORDER AMONG PATIENTS INVOLVED IN ROAD TRAFFIC ACCIDENTS RECEIVING TREATMENT AT UNIVERSITY OF CALABAR TEACHING HOSPITAL**

Joseph Asuquo, Innocent Abang, Bassey Edet, Kingsley Chigbundu, Ehiosun Aigbomian, Emmanuel Essien

Introduction: Psychological responses to traumatic events vary widely across different cultures; studies in the developing countries are scant. Objective of this study is to compare the prevalence of depression and post traumatic stress disorder (PTSD) amongst patients involved in road traffic accident (RTA) with that of other patients attending other clinics matched for age and sex. Method: It is a prospective study of 115 patients. Standard questionnaire for depression and PTSD were administered to all patients with previous trauma attending the orthopedic clinic at University of Calabar Teaching Hospital and also to patients attending other clinics without trauma in the past year as control. The data was extracted and analyzed using SPSS. p – Value of  $< 0.005$  was significant statistical inference. Results: Mean age was 39.9yrs, male were 71(61.7%) out of which 15(21.1%) has PTSD and 28(39.4%) has depression, while female 44(38.3%) out of which 13 (29.5%) has PTSD, 20(45.5%) have depression. In those with recent RTA 19(67.9) have PTSD, 29(60.4) have depression. In the control, 9(32.1) have PTSD, 19(39.6) have depression. These was significant with a p – value of  $< 0.005$ . PTSD was prevalent in 31 – 40yrs age group while depression in 41 – 50yrs respectively. The more educated are more prone to PTSD and depression while marital status has no significant effect. Those who are employed are more prone to PTSD and depression. Conclusion: Patient who sustains trauma from RTA should undergo psychiatric evaluation as they come for follow-up to diagnose and manage these psychological disorder early.

**Abstract No.: 41890**

**CROSS FINGER FLAP IN ORTHOPAEDIC PRACTICE**

Sundararajan Sadasivam,

Introduction: The general orthopaedic surgeon sees on an average at least one hand injury every day. A basic training in hand and plastic surgery or working with a qualified plastic surgeon may be useful to manage hand injuries with soft tissue loss. Conventional cross-finger flap is useful to cover the soft-tissue defects in the palmar aspect of fingers exposing bone or tendon. Reversed cross-finger flap is a technique to manage similar soft-tissue defects in the dorsal aspect. Materials and methods: A total number of 28 patients were treated by cross finger flap in the past 7 years and only 20 of these patients had a follow up of 1 year or more. There were 17 males and 3 females. There were 16 cross finger flaps and 4 reverse flaps. One patient had cross finger flaps for 2 fingers simultaneously. The complications include 1, Doubtful vascularity of the flap in one patient, 2. Post operative stiffness of the recipient finger in three, 3. Post operative stiffness of the donor fingers in three and 4. Deformity due to skeletal injury in 2 patients. Results: The results were analyzed using the DASH Score and this ranged from 0 to 23 – the average was 5. The 2 point discrimination was good in finger tip and thumb tip injuries ranging from 4 mm to 7 mm- average was 5.2 for 7 patients, unlike their counterpart of finger injuries where the 2 point discrimination could not be measured and they had only appreciation for pressure.

**Abstract No.: 41891**

**REIMPLANTING LARGE SECTION OF FREE INFECTED TIBIAL WHICH REVASCULARIZED IN SPATIUM INTERMUSCULAR TO REPAIR BONE DEFECT: A CASE REPORT**

Mingwu Zhou, Xun Zhang, Yang Li, Jie Zhu, Li Zhou

Highenergy trauma always leads to open comminuted fracture on lower limb, which is a difficult problem in the department of orthopedics, especially the open fracture with free infected bone segments. How to deal with the free infected bone segments during the debridement? If abandon the segments during the debridement, the area of bone defect will be amplified; If directly reimplant the segments after sterilization in vitro, the postoperative infection probability will increase. Although the tissue engineering bone transplantation has become the hot spot in repairing bone defect, and the study on its related carrier materials, growth factors and blood supply reconstruction has made great progress, there is still no significant and substantive breakthrough. In particular, it can not meet the needs of reparation of large bone defect. How to deal with the free infected bone segments appropriately in such situation? After careful consideration and with consent of the patient, we sterilized the bone segments which will be abandoned during the debridement, then transplanted them in the spatium intermusculare where have rich blood supply and near by an artery to let them revascularize and turn to vascularized living bone. When the revascularization procedure finished, there were a lot of vessels came from the artery and entered into the sterilized bone segments, then cut the free pedicled bone flap which carried vessels and revascularized living bone, and reimplanted it to repair bone defect.

**Abstract No.: 41892**

**TOTAL HIP REPLACEMENT IN TROCHANTERIC FRACTURES OF FEMUR**

Sundararajan Sadasivam,

A total number of 10 patients underwent cemented total hip replacement after sustaining trochanteric fracture of femur in the past 3 years. Of these 10 patients, 5 patients had already undergone dynamic hip screw fixation which failed. All the other patients underwent primary THR considering the instability of the fracture and or the old age of the patients. The age group ranged from 65 years to 80 years. The patients were followed up for a minimum period of 20 months. The radiographs were analysed for cement mantle in femur and acetabulum. The functional results were analysed by modified Harris hip score and presented. There were 1 excellent 3 good, 3 fair and 3 poor results. The literature unanimously agrees that there are five key elements which should be evaluated in order to determine if initial component positioning and fixation is adequate. These include leg length, horizontal centre of rotation, acetabular inclination, femoral stem positioning and assessment of the cement mantle. These were also analysed in all the patients. The merits and demerits of the procedure in these patients are also discussed. Literature analysis regarding the arthroplasty for the failed as well as unstable trochanteric fractures was done before concluding on the procedure.

**Abstract No.: 41894**

**TOTAL KNEE ARTHROPLASTY AFTER DEFORMITY CORRECTION USING TAYLOR SPATIAL FRAME ?  
SERIES OF 3 INTERESTING CASES**

Abhishek Abhishek, Rajan Maheshwari, Sanjeev Madan

**Abstract:** Total knee Replacement(TKR) after deformity correction using taylor spatial frame(TSF) – series of 3 interesting cases. **Aim:** Osteoarthritis of knee in presence of severe leg deformity is a challenging problem. We report three cases with TKR after being successfully treated for deformity correction using TSF. **Methods:** 63year old female with a stress fracture proximal tibia treated with plating and bone graft had non-union and procurvatum deformity and osteoarthritis of knee. She underwent deformity correction with tibial osteotomy and TSF, subsequently had TKR 18 months later. 64year old male with post-traumatic varus and recurvatum deformity of mid tibia, a history of arthrodesis of ipsilateral ankle and knee osteoarthritis underwent deformity correction with TSF, and TKR 20 months later. 63year old female with a valgus knee, severe ankle deformity had TSF correction with supramalleolar osteotomy and TKR. **Results:** Mean follow up post arthroplasty was 38 months (26 to 50 months). All three patients are extremely satisfied with their outcome, and have 0 to 90 degrees flexion with excellent pain relief. Complications with TSF included superficial pin site infection in one. One patient had delayed union of tibial osteotomy. Metalwork breakage in one and this patient also needed readjustment of the frame. There was no incidence of DVT, PE and deep sepsis in either of the three. **Conclusion:** TKR can be performed successfully after correction of deformity using TSF, however, surgeon and the patient need to be aware of the demanding nature of surgery and long term follow up is recommended.



**Abstract No.: 41898**

**THE USE OF LOCKED PLATE FOR TREATMENT OF COMPLEX PROXIMAL HUMERAL FRACTURES.**

Alaa Eldin Elzoheiry,

Background: This fracture comprise 4% to 5% of all fractures and the most common humeral fractures. Female-to-male ratio 2:1, 85% The AO Classification was used to emphasize vascularity . Type C is intracapsular and the head with or without soft tissues ,4 fragments, AVN expected. The incidence of AVN is 50-90%. AVN also has a 26% occurrence in the "valgus impacted" fracture. The proximal humeral internal locking system (PHILOS) plate give good solution in these complex fractures. It offers advantage over fixed-angle device with multiple points of fixation of the proximal part. Decreased failure rate when compared with unlocked .Increased stability of fixation in osteoporotic patients. Patients and Methods: This work was done at Seuz Canal University Hospitals at January 2012 till January 2014 on fifty patients, aged 55 to 80 years old, 35 females 15 males. It offers advantage over fixed-angle device with multiple points of fixation of the proximal part. Increased stability of fixation in osteoporotic patients. General anesthesia with the patient in the semi-sitting position. Deltopectoral approach was used in all cases with the C-arm to assure the position of the plate and screws after good reduction was checked. Three phases of rehabilitation is essential. Results: Good results in all cases with no infections or complications Conclusion: Internal locking system give good solution in these complex fractures. It offers advantage over fixed-angle device with multiple points of fixation of the proximal part. Decreased failure rate when compared with unlocked .Increased stability of fixation in osteoporotic patients.

**Abstract No.: 41902**

**OPTIMAL STRATEGIES TO REDUCE INTRA-OPERATIVE BLOOD LOSS DURING PLANNED ORTHOPEDIC SURGERIES**

Saravanan SANKARANARAYANAN ARUMUGAM, Victor Voloshin, Igor Dorozhko, Vladimir Litvinov, Valeriy Tsarev

**Aim:** To develop and introduce an optimal strategy in clinical practice for compensating the blood loss during surgeries with the patient's own blood. **Materials and methods:** Data of 1900 patient's (1500 auto donors, 400 recipients of donors blood) laboratory examination and results of functional control who underwent planned surgeries of major joints were analyzed in the study. In 100 patients, intra operational blood sampling was performed using foreign and local separators (sampling, separating auto erythrocytes) and was returned immediately during surgery using with Cell Saver 5+. In 75 patients, postoperative blood sampling was performed in the first 6 hours after surgical intervention with the help of special systems (HandyVac ATS) for sampling and filtration of drained blood. In the control group with 400 patients who refused to be as autodonors before surgery had transfusion of blood components from other donors. The values of lab tests in the study group were comparable with the results of control group. At the same time, 2 delayed hematological reactions were observed in the control group. In 82 patients, Trenexam acid (15mg/kg preoperatively and 6 hrs after surgery) is used which helped to reduce blood loss up to 30%. **Summary:** Administration of autohemotransfusion allowed us to decrease the general necessity of donor's blood up to 90% and dismissed the use of donor's blood components during planned orthopedic surgeries. Donor's blood components were used in 7% during cement fixation of endoprosthesis of hip joint, whereas 30% during revisional endoprosthesis of hip joint.

**Abstract No.: 41903**

**CASE REPORT : SURGICAL REPAIR OF PATELLA TENDON RUPTURE**

Chunhui Chen, Wen Chin Chen

【Introduction】 A patella tendon rupture is a painful and serious injury in sports. It is the tendon that extends from patella to tibia tubercle, and along with the quadriceps muscle. The complication of ruptured patella tendon is extensor mechanism disruption, leading to extremely disabling. Surgical intervention allows for recovery of motion and strength. 【Case report】 The 48 y/o man suffered from painful disability of left knee due to sport injury (playing basketball). The X ray image revealed left patella upward migration. PE showed difficult knee extension and palpable gap over infra-patella site. Complete patella tendon rupture was suspected. MRI revealed patella tendon rupture over infra-patella insertion site. Surgical intervention was indicated, then he underwent surgical repair with two suture anchors. Besides, Platelet-rich plasma (Gel form) was also applied to ruptured tendon. After operation, long leg splint will apply for 6 weeks. 【Discussion】 Rupture of the patella tendon is a disabling injury that usually requires surgical treatment. The standard method of repair involves placing suture loops through transpatellar tunnels. For this patient, We use suture anchors. Ettinger et al. present patellar tendon repair with suture anchors yields significantly better biomechanical results than repair with the commonly applied trans-osseous sutures. Besides, due to scar formation and remodeling is still problematic with inhomogeneous tissues such as bone-to-tendon junction. We applied the PRP gel to ruptures tendon to enhance healing.

**Abstract No.: 41906**

**CASE SERIES :AO OLECRANON LOCKING PLATE FOR FEMORAL GREATER TROCHANTERIC FRACTURE**

Chunhui Chen, Wen Chin Chen

Introduction: The greater trochanter is the insertion site of the gluteus medius and gluteus minimus (which aid in hip abduction) and the insertion site of the piriformis, obturator internus, and gemelli muscles (which aid in hip rotation). The greater trochanter fracture may cause lower limb weakness and limping gait. It may require reduction, fixation of greater trochanteric fracture for better life quality. Case series: I : This 63 y/o man had left hip AVN s/p left revision THR and recurrent dislocation s/p reduction twelve times. He felt left hip pain after surgery. There were associated with severe limping gait and difficulty in weight bearing. X-rays showed old fracture of peritrochanter. He underwent revision THR and ORIF (olecranon locking plate for greater trochanter periprosthetic fracture). II : This 69 y/o man had left hip OA s/p THR. He suffered from left hip pain for days. X-ray showed left femoral intertrochanteric periprosthetic fracture. Then, ORIF with Olecranon locking plate performed for his left femoral periprosthetic fracture. The post-operative X-ray showed good reduction. Discussion: Femoral greater trochanter fracture can be treated conservatively with protected weight bearing until the symptoms resolve. If the trochanteric fracture involves a large, displaced, and mechanically significant fragment of bone, it may require reduction and fixation. Screws, cable devices, and tension band techniques have been advocated in such cases to reattach the insertion site of the hip abductors and hip rotators to the proximal femur. We offered another choice for greater trochanteric fracture, which also offered good result.

**Abstract No.: 41916**

**A RARE CASE: ATYPICAL ULNA AND TIBIA FRACTURES ASSOCIATED WITH LONG-TERM  
ALENDRONATE USE**

Yusuf Erdem,

**Introduction:** Osteoporosis is one of the most common osteoclast-induced musculoskeletal disease characterized by Bone Mineral Density (BMD) decrease. Alendronate is widely accepted for inhibiting bone resorption. We present a 62-year old woman with atypical ulna and tibia fractures due to long-term alendronate therapy. **Case:** She had 7-year history of alendronate use. She had atypical fractures on the same ulna at different times. She had also tibia-fibula shaft fracture afterwards. Ulna fractures was treated conservatively by casting, She underwent internal fixation for tibia-fibula fracture. All fractures was healed uneventfully. Alendronate therapy was ceased.

**Discussion:** In the literature there was many reports of femoral insufficiency fractures after long-term use of alendronate, but few reports about ulna and tibial fractures. The fracture mechanism was not clearly understood, but fracture patterns due to bisphosphonate therapy are similar. There is no consensus about treatment in case of fracture, either go on therapy or not. Many authors suggest that it should be stopped once the optimal bone density is achieved as we did. **Results:** Clinicians should be aware of stress fracture in a patient who have have complaint of extremity pain and history of long-term bisphosphonate therapy.

**Abstract No.: 41922**

**FUNCTIONAL OUTCOME OF PRIMARY CEMENTED HEMIARTHROPLASTY IN TREATMENT OF UNSTABLE TROCHANTERIC FRACTURES IN ELDERLY PATIENTS**

Vijayakumar Palaniyandi,

Introduction: Unstable osteoporotic intertrochanteric fractures are common in the elderly population. Failure rate of as high as 56% have been noted with internal fixation of unstable fractures mainly due to inadequate purchase in the osteoporotic bone and early full weight bearing. Hemiarthroplasty is a frequently employed alternative as it gives stability and allows immediate full weight bearing. This study evaluates the effectiveness of primary cemented hemiarthroplasty in treatment of unstable Trochanteric fracture. Materials and methods: 20 elderly patients with unstable osteoporotic inter-trochanteric fractures who underwent bipolar hemiarthroplasty were studied prospectively from 2011-2013. Fractures were classified based on Boyd and Griffin classification. Patients were assessed using modified Harris hip score. Mean follow up period was 12 months. Results : In our study, mean age of the patient was 69.4 yrs, 18 cases were of type 2 fractures, 2 cases were type 3 fracture. The average Harris hip score was 74. Excellent to fair results were obtained at follow up in 15 cases (75 %), 2 cases (10%) had poor results. 3 patients died postoperatively due to unrelated causes. There was no case of infection or dislocation in our study. Conclusion: Primary cemented hemiarthroplasty for unstable osteoporotic elderly trochanteric fractures appears to be a good alternative treatment modality. Early full weight bearing and rehabilitation is a definitive advantage of this method.

**Abstract No.: 41929**

**ONLINE RESOURCES IN FOOT AND ANKLE**

Juan Manuel Rios Ruth, Isabel Parada Avendaño, Alejandro Santamaría Fumas, Jorge Muriano Royo, Alejandro Dominguez Sevilla

Introduction: There are currently more than 16,000 websites about trauma and related sciences whose number increases daily. If we restrict the search to websites related to foot and ankle, the amount is reduced to 215, still fewer the ones with support from the scientific community. The objective is to review the webs with scientific quality resources for the learning of orthopedic surgeons interested in this specialty and the trends in its use. Methods: Reviewing the most visited websites by residents and specialists in foot and ankle through a survey of 50 professionals which is focused on the use of online training resources. Results and conclusions: Internet has become an essential part of the training not only for the resident but also specialist. There are many online resources of various contents based on audiovisual materials, case reports, courses, articles and online journals (AOFAS, Efas, Ao reference surgery, Foot & Ankle surgery, footinovate, ankleplatform). The trend in online learning needs of foot and ankle surgery are based on the use of audiovisual resources with rigor and scientific evidence under the guidance of societies or professionals with recognized prestige. This learning should include from the understanding of basic principles to the final treatment of diseases, with the description of the main surgical techniques in first person view, coupled with the possibility of direct contact between different doctors; a more dynamic understanding of a subspecialty which is at its peak.

**Abstract No.: 41931**

**COMPARATIVE EVALUATION OF ACCURACY OF CLINICAL EXAMINATION- MRI & ARTHROSCOPY IN DIAGNOSING AN ACUTELY INJURED KNEE**

Ashish Rustagi, Sunil Gupta, Aditya Aggarwal

**INTRODUCTION:** Use of MRI in the evaluation of meniscal & ACL injuries has become widespread during the last few years. However, prompt assessment of the full extent of injury is essential for appropriate management. The comparison of clinical assessment, MRI assessment and subsequent arthroscopic evaluation has always been a challenge for orthopaedic surgeons. **MATERIALS AND METHODS:** Thirty patients presenting to the OPD with more than six weeks old suspected ACL or meniscal injury of the knee were enrolled in the study. Thorough Clinical examination was performed in all the affected knees. MR imaging and Arthroscopy were performed of all the affected knees were performed and findings were noted. **Results:** In our study, the mean age was 28 year with a range of 20-45 years. Joint swelling was present in 13% cases; while it was absent in 87%. We diagnosed clinically 20 ACL injuries, 17 medial meniscal and 6 lateral meniscal injuries in 30 patients. MRI detected 23 ACL injuries, 20 medial meniscal and 6 lateral meniscal injuries. Arthroscopy revealed 17 ACL injuries, 13 medial meniscal and 6 lateral meniscal injuries. Sensitivity of clinical examination, MRI, & Arthroscopy for ACL tear is 100%, 100% & 80.9% respectively and Specificity is 76.9%, 53.8%, & 100% respectively. **Conclusion:** The diagnostic accuracy of clinical examination was better than MRI for anterior cruciate ligament and lateral meniscal injuries. The diagnostic accuracy of MRI was better than clinical examination for medial meniscal injuries, also a highly sensitive investigation for the diagnosis of anterior cruciate ligament injuries.



**Abstract No.: 41938**

**BONE PELVIC HYDATIDOSIS: A CASE REPORT**

Mourad Oubira, Amel Djerbal, Mourad Hamidani

Human cystic echinococcosis (CE) is a zoonosis caused by the larval stage of the *Echinococcus granulosus* and the most common sites affected are the liver and lung in approximately 80-90% of cases. The hydatid bone represents the 0.5-2.5% of all cases and localization cord is present about 50% of the time. The localization in the pelvic bones is rare and represents less than 25% of all bone lesions. This benign and commonly asymptomatic disease may simulate an aggressive malignancy because of osseous destruction and aggressive extension. We report a case of a 22-year-old female patient, presented a large hydatid cyst of the iliac wing. Allowed for the exploration of a right lumbar swelling associated with low back pain. Emerged since 8 months, complicated by fistula at the gluteal fold. Conventional radiography shows: osteolysis of the right iliac wing. Ultrasound examination revealed a cystic mass in the iliac wing. Pelvic MRI diagnosed hydatid cystic bone; while the hydatid serology was negative. The patient was operated, with complete excision of the cyst and drain a huge number of daughter cyst vesicles, than mannitol injection and sterilization with hydrogen peroxide. The postoperative course was uneventful. Back after a six-month; the clinical course was favorable whereas the pelvic TDM showed lasting osteolysis lesions. Bone localization of cyst hydatid is rare and poses a threefold problem, diagnostic, therapeutic and prognostic. Treatment remains controversial but is always surgical and must be radical like malignancy.

**Abstract No.: 41950**

**MODIC CHANGES OF THE LUMBAR SPINE: EPIDEMIOLOGY AND ASSOCIATION WITH MRI PHENOTYPES**

Dino Samartzis, Juhani Määtä, Kenneth Man-Chee Cheung, Jaro Karppinen

**INTRODUCTION:** Modic changes (MC) are associated with low back pain. The morphology, involvement and the association of MC with other spinal phenotypes remains speculative. We evaluated the relationship of MC with spinal MRI phenotypes in a large-scale population-based study. **METHODS:** Based on the Hong Kong Disc Degeneration Cohort, we assessed lumbar T1/T2W MRIs of 1,604 subjects (62.4% females; mean age: 49 years). The MC assessment included: the presence, type, vertical height and axial area. Additional imaging findings were assessed (herniations/bulges, Schmorl's nodes (SN)). A global degenerative disc disease (DDD) score was tabulated. **RESULTS:** The prevalence of MC was 24.7% (M1: 6.3%, M2: 15.5%), mainly occurring at L4-S1. Subjects with MC were older (mean age: 53 vs. 48 years,  $p<0.001$ ) and had higher DDD scores ( $p<0.001$ ). M1 mainly occurred at lower levels ( $p=0.021$ ), were less likely located in the anterior region only ( $p=0.017$ ), and were associated with disc herniations ( $p<0.001$ ) in comparison to M2. MC of the lower levels (L4-S1) were not commonly noted in the anterior region only, involved the left or right EP, and had a higher prevalence of disc herniation/degeneration in comparison to upper levels (L1-L4) ( $p<0.001$ ). Large MC were more prevalent at lower levels, and had higher prevalence of disc herniation and SN at the affected level compared to smaller MC ( $p<0.001$ ). **CONCLUSION:** Based on one of the largest studies, MC were clearly associated with disc and endplate changes. Specific MC types and level-specific findings in relation to MRI phenotypes were identified.

**Abstract No.: 41960**

**THE ARTHROPATHIC AND FUNCTIONAL IMPAIRMENT FEATURES OF ADULT KASHIN-BECK DISEASE PATIENTS IN ABA TIBETAN AREA IN CHINA**

Qiang Huang, Qiang Huang

**Object:** To analyze the features of arthropathic changes and functional impairments as well as the correlations between them of adult patients suffered with Kashin-Beck disease (KBD) in Abo Tibetan area of Sichuan Province, China. **Method:** 989 adult KBD patients were investigated. The arthropathic changes including arthritic pain, deformity, limited range of motion (ROM), as well as daily living and working function were examined, evaluated and analyzed. **Result:** 92.4% patients suffered with multiple affected joints in both upper and lower extremities. The most frequently affected joints were knee (86.1%) and hand (77.2%), The most painful joints were knee and elbow. Joint deformities most frequently represented as enlargement of interphalangeal joints (93.2%), flexion deformity of distal phalanx joints (74.6%) and varus/valgus/flexion deformity of knee (70.3%). Limitation of ROM occurred most frequently in hand (76.7%) and elbow (38.4%). Multivariate linear regression analysis revealed that only joint pain (regression coefficient: -0.504, 95% CI: -0.820—0.188,  $p=0.000$ ) and ROM (regression coefficient: 0.017, 95% CI: 0.011—0.024,  $p=0.000$ ) were independent factors affecting daily living and working function status. Pains in elbow and hand were correlated well to upper limb function, while pains in knee and ankle were correlated well to lower limb function. ROM of elbow and knee correlated well to upper and lower limb function respectively. **Conclusion:** Most adult patients suffered with multiple affected joints. Elbow, hand and knee were the most frequently and severely affected joints. The pain and limited ROM of these joints were the primary factors of dysfunction of daily activities.

**Abstract No.: 41961**

**VALIDATION OF THE SF-12 AMONG ADULT KASHIN-BECK DISEASE PATIENTS IN ABA TIBETAN AUTONOMOUS AREA IN CHINA**

Qiang Huang,

Abstract Object: To validated the 12-item Health Status Survey (SF-12) of Chinese version for evaluating health-related quality of life (HRQL) of Kashin-Beck disease (KBD) patients in Abo Tibetan autonomous area, China. Method: 338 adult KBD patients in Rangtang County of Abo area were investigated with SF-12. Principal component analysis with varimax rotation was used to test the original factor pattern. Internal consistency reliability was assessed by using Cronbach's alpha. "Known groups" construct validity was assessed by comparing SF-12 component scores between respondents hypothesized to differ in health-related variables. Result: Two latent factors were extracted explaining 69.4% of the variance of the questionnaire. The factor loadings were mostly according with the principle concept, except for "vitality" (VT) and "social functioning" (SF) scales that loaded heavier on physical component. The Cronbach's alpha coefficient was 0.909 for the physical health domain, 0.900 for the mental health domain, and 0.914 for the whole scale. The SF-12 had satisfactory "known group" validity and could well discriminate the differences between patients and healthy controls and between subgroups divided by age, duration of suffering or number of affected joints. Conclusion: The SF-12 could be used to evaluate the HRQL of adult KBD patients in Abo Tibetan autonomous area in China and with good feasibility, reliability and validity.

**Abstract No.: 41974**

**X-RAY IMAGE CHARACTERISTICS AND RELATED MEASUREMENTS IN THE ANKLES OF 118 ADULT KASHIN-BECK DISEASE PATIENTS**

Yi Zeng,

**Abstract Background:** The purpose of this study was to demonstrate the radiographic characteristics of the ankles of adult Kashin-Beck disease (KBD) patients. **Methods:** One hundred eighteen KBD patients were examined with lateral radiographs of the right ankle. The morphological abnormalities in the talus, calcaneus, navicular bone, distal tibia and joint space were analyzed, and the calcaneus length, height, length/height ratio, tuber angle, front angle, plantar angle, and distal tibia anteroposterior (AP) length were measured using Riepert's method. **Results:** Eighty-one patients (68.6%) had abnormal ankle radiographs; 72 (88.9%) patients had talus changes, 69 (85.2%) patients had calcaneus changes, 28 (34.6%) patients had navicular bone changes and 48 (59.2%) patients had distal tibia changes. For 118 KBD patients, the average calcaneus length was 7.4 cm, the height was 4.3 cm and the length/height ratio was 1.7. The calcaneus tuber angle was 28.2°, the front angle was 38.0° and the plantar angle was 74.2°. The distal tibia anteroposterior length was 4.05 cm. Compared with 50 normal adults as a control group, significant differences were found for the calcaneus length, the calcaneus length/height ratio and the distal tibia AP length. **Conclusions:** Patients with KBD have characteristic abnormalities on ankle radiographs, and talus depression and deformity, calcaneus shortening deformity and distal tibia deformity with AP length widening were the most typical changes. **Key words:** Kashin-Beck Disease; Ankle; X-Ray Film

**Abstract No.: 41975**

**EFFECTS OF THE MYCOTOXIN NIVALENOL ON BOVINE ARTICULAR CHONDROCYTE METABOLISM IN VITRO**

Siyuan Li, Siyuan Li

**Introduction:** Kashin-Beck Disease (KBD) is an endemic, age-related degenerative osteoarthropathy and its cause is hypothesised to involve *Fusarium* mycotoxins. This study investigated the *Fusarium* mycotoxin Nivalenol (NIV) on the metabolism of articular chondrocytes in vitro. **Methods:** The effect 0.0 - 0.5µg/ml NIV on transcript levels of types I and II collagen, aggrecan, matrix metalloproteinases (MMPs), a disintegrin and metalloproteinase with thrombospondin motif (ADAMTS) and the tissue inhibitors of MMPs (TIMPs) was investigated using quantitative PCR. Amounts of sulphated glycosaminoglycans, MMPs and TIMPs were assessed using the Dimethylmethylene Blue assay, gelatin zymography and reverse gelatin zymography respectively. Cytoskeletal organisation was analysed using confocal microscopy and cytoskeletal gene and protein levels were measured by quantitative PCR and Western blot analysis, respectively. **Results:** NIV caused a dose-dependent increase in aggrecan transcription with a concomitant retention of sGAG in the cell lysate. Furthermore, NIV significantly increased MMPs -2, -3 & -9, ADAMTS-4 and -5, and TIMP-2 and -3 transcript levels but inhibited type I collagen, MMP 1 and TIMP 1 mRNA levels. NIV promoted extensive cytoskeletal network remodelling, particularly with vimentin where a dose-dependent peri-nuclear aggregation occurred. **Conclusion:** NIV exposure to chondrocytes decreased matrix deposition, whilst enhancing selective catabolic enzyme production, suggesting its potential for induction of cellular catabolism. This NIV-induced extracellular matrix remodelling may be due to extensive remodelling/disassembly of the cytoskeletal elements. Collectively, these findings support the hypothesis that trichothecene mycotoxins, and in particular NIV, have the potential to induce matrix catabolism and propagate the pathogenesis of KBD.