

Date: 2013-10-17

Session: Short Oral Communications - Trauma

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 33828

NON-OPERATIVE TREATMENT COMPARED WITH PLATE FIXATION OF DISPLACED MIDSHAFT CLAVICULAR FRACTURES – A COMPARATIVE STUDY

Naved Ahmed ANSARI¹, Farid ANSARI²

¹Basaveshwar Hospital, Mumbai (INDIA), ²Prince Aly Khan Hospital, Mumbai (INDIA)

INTRODUCTION: Recent studies have shown a high prevalence of symptomatic malunion and non-union after non-operative treatment of displaced midshaft clavicular fractures. We sought to compare patient-oriented outcome and complication rates following nonoperative treatment and those after plate fixation of displaced midshaft clavicular fractures. **METHODS:** 42 patients with a displaced midshaft fracture of the clavicle were randomized to either operative treatment with plate fixation(22) or non-operative treatment with a sling (20). Outcome analysis included standard clinical follow-up and the Constant shoulder score, the Disability of the Arm, Shoulder and Hand (DASH) score, and plain radiographs completed 1 year of follow-up. There were no differences between the two groups with respect to patient demographics, mechanism of injury, associated injuries, Injury Severity Score, or fracture pattern. **RESULTS:** Constant shoulder scores and DASH scores were significantly improved in the operative fixation group at all time-points. The mean time to radiographic union was 26.4 weeks in the non-operative group compared with 16.2 weeks in the operative group. There was 1 non-union in the operative group compared with 3 in the non-operative group. Most complications in the operative group were hardware-related.. **CONCLUSIONS:** Operative fixation of a displaced fracture of the clavicular shaft results in improved functional outcome and a lower rate of malunion and non-union compared with non-operative treatment at one year of follow-up. Hardware removal remains the most common reason for repeat intervention in the operative group.

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THE USE OF A PRE-FABRICATED BRACING SYSTEM FOR THE MANAGEMENT OF HUMERAL SHAFT FRACTURES: EXPERIENCE OF A CENTRE IN THE UK

Rohit SINGHAL¹, Stewart PAUL², Charalambous CP²

¹Royal Liverpool and Broadgreen Hospitals NHS Trust, Liverpool (UNITED KINGDOM), ²Blackpool Victoria Hospital, Blackpool (UNITED KINGDOM)

Introduction: The aim of our study is to evaluate the ability of a pre-fabricated humeral bracing system in providing sufficient stability to fracture union and to carry out a cost analysis comparing bracing versus surgical fixation of these fractures. Methods: A review of humeral shaft fractures treated with a pre-fabricated humeral bracing system was undertaken. Fractures were classified according to the AO classification. Results: 20 patients (20 humeral fractures) were included. Mean age of the patients was 56.8 years (range 16- 89). There were 14 AO type A, 3 type B and 3 type C fractures. Median time interval from the fracture to brace application was 8 days (range 0-41). Clinical and radiological union was achieved in 15 humeri (75%). Median time to clinical and radiological union was 80 days (range 32-434). The cost of treating humeral shaft fractures surgically by internal fixation (plating) and by humeral bracing was estimated to be £2292.99 and £1228 per case, respectively. Conclusion: A pre-fabricated bracing system is an efficacious and cost effective modality of treatment for humeral shaft fractures.

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HUMERAL SHAFT FRACTURE: WHAT TO DO? NAIL OR PLATE, A COMPARATIVE CLINICO-RADIOLOGICAL STUDY TO ASSESS DIFFERENCE IN FUNCTIONAL OUTCOME BETWEEN INTRAMEDULLARY AND EXTRAMEDULLARY FIXATION

Shah Waliullah WALI, Sharma VINEET, Singh AJAI, Kumar ASHISH,
Kushwaha NARENDRA
KGMU, Lucknow (INDIA)

Introduction: About 90% of humeral shaft fracture treated conservatively with good functional outcome. Operatively they can be managed by either intramedullary or extramedullary fixation. Both of them have their own advantages and disadvantages. We have evaluated the difference in clinico-radiological and functional outcome of diaphyseal humeral fractures managed either by intramedullary or extramedullary fixation. Materials And Methods: A total of 62 patients, after satisfying or inclusion and exclusion criteria, having diaphyseal fracture shaft humerus, were recruited in our study. Patients were divided into two groups. In Group A(n=33), all patients were managed by extramedullary fixation by plating either dynamic compression plate or locked compression plate. In Group B(n=29), all patients were managed by intramedullary fixation by antegrade intramedullary locking nail. All patients followed clinically as well as radiologically. Functional and radiographic results were evaluated by American Shoulder and Elbow Surgeons' Score scoring system. Results: All patients, except 4, have shown healing. Four cases developed superficial infection, while 2 patients in group A developed deep infection and treated by extended course of antibiotics. The average time for fracture healing in group A healing was 15.2 weeks while in Group B it was 14.3 weeks. Slight difference in American Shoulder Elbow Scores in both groups observed, In Group A ,it was 81.4 while in Group B 80.8, it was not clinically significant ($p>.01$). Conclusion: We suggest that intramedullary fixation is a better option as compared to extramedullary as it requires lesser operative time, lesser incidence of infection and other complications.

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PROXIMAL HUMERUS FRACTURE: CAN JESS SOLVE THE PROBLEM?

Devwart KAUSHIK, Narendra JOSHI, Rahul SAPRA

SMS Medical college, Jaipur (INDIA)

BACKGROUND: Fractures of upper end of the humerus are common and account for 4-5% of all fractures. Management of displaced fractures of proximal humerus is still under debate and the need to evaluate alternative methods has been emphasised. We present a prospective randomised controlled clinical trial comparing transcutaneous reduction and external fixation with close treatment in terms of reduction, fracture healing and function.

MATERIALS AND METHODS: A total of 81 displaced 2-part, 3-part and 4-part fractures in 81 patients, classified according to Neer, were entered into trial. The Study group had transcutaneous reduction and external fixation while Control had closed manipulation under general anaesthesia and application of sling.

RESULTS: Mean age was 68.9 yrs. Mean follow-up was 13 months. According to Constant score, excellent score(>80 points) was seen in 16(41.66%) in study group, while 3(6.67%) in control. Satisfactory results were seen in 16(41.66%) in study group, 12(30%) in control. Unsatisfactory to poor results (<70 points) were shown by 16.66% of patients in operative group, while this figure was significantly higher in control (63.33%)($p<0.05$).

CONCLUSION: Our study showed significant superiority of percutaneous reduction and external fixation over closed reduction and functional results were also comparable to those with open methods. In addition, external fixation carries a lower risk of injuring important structures or of interfering with glenohumeral movements. We recommend this method, as a useful alternative, but recognize the consequences of deep infection, the holding power of pins in osteoporotic bone and management of uncooperative patients are still unsolved problems.

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TREATMENT OF THE HUMERAL SHAFT NON-UNION AFTER FIXATION FAILURE

Asen BALTOV¹, Nedelcho TZACHEV¹, Ivan GEROV¹, Dian ENCHEV²,
Andrey IOTOV¹

¹Military Medical Academy, Sofia (BULGARIA), ²Emergency Hospital Pirogov, Sofia (BULGARIA)

Introduction: For a period of 7 years, 55 humeral shaft non-union (NU) after fixation failure were treated 34 (62%) with plating (PL) and 21 (38%) with interlocking nailing (ILN). Material and methods: We treated 40 NU after operative treatment and 15 recalcitrant NU. 27 of the cases were male at the average age of 41 (20-83) and 28 – female, at the average age of 54 (20-88). There were: 6 (11%) hypertrophic, 11 (20%) oligotrophic and 36 (69%) atrophic, as 14 (25%) of them were infected. The initial trauma in 32 (58%) cases was high energy. The most common predisposing factors are: mechanical instability inadequate fixation 45 (82%) cases, distraction 24 (44%) cases. ABG was done in 41 (75%) cases, and reaming – in 20 (36%) cases. Results: 31 (91%) cases treated with plating consolidated and 17 (80%) of the cases with nailing. The mean blood loss for both groups is 400 ml, operative time 150 min. As postoperative complications we had 3 (19%) cases of iatrogenic neurological injury with PL, 5 (24%) cases of shoulder impingements with ILN, and 2 (10%) cases of infection. The patients were followed for minimum 12 months after bone union. The final functional result PL versus ILN according to Constant-Murley score: excellent – 21 (62%) v. 10 (48%), very good – 8 (24%) v. 3 (14%), good – 3 (8%) v. 4 (19%), bad – 2 (6%) v. 4 (19%). Conclusion: The PL is more appropriate method for the treatment of NU after fixation failure. Angulare-stable plate is good option for osteosynthesis, but if it fails there is total destruction of the bone. ABG is absolutely necessary for good solution.

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THE PROXIMAL ULNA ANATOMY, WITH RESPECT TO A NEWLY DESIGNED PROXIMAL INTERLOCKING SCREW SYSTEM AT INTRAMEDULLARY NAILING OF THE ULNA, A CADAVER STUDY

Fatih KÜÇÜKDURMAZ¹, Necdet SAGLAM², Ismail AGIR³, Cengiz SEN¹, Fuat AKPINAR⁴

¹Bezmialem Vakif University, Department of Orthopaedics and Traumatology, Istanbul (TURKEY), ²Orthopaedics and Traumatology, Umraniye Research and Education Hospital, Istanbul, (TURKEY), ³Department of Orthopaedics and Traumatology, Adiyaman University, Adiyaman (TURKEY), ⁴Abant Izzet Baysal University, Department of Orthopaedics and Traumatology, Istanbul (TURKEY)

Introduction: One of the limiting steps of intramedullary nailing (IMN) of the ulna, which makes IMN a secondary choice, are problems experienced at the proximal interlocking screw (PIS). A new PIS system may solve most common problems with an eccentrically aligned screw. The purpose of this in vitro study was to define the optimum safe angle of eccentrically aligned PIS for IMN. Methods: 36 dry cadavers' ulnas are split into two equal pieces sagittally. The following points were identified for each ulna: the deepest point of incisura olecrani(A), the point where perpendicular lines from A and the ideal IMN entry point(D) are intersected(C) and a point at 3.5mm (2mm safety distance from articular surface+1.5mm radius of PIS) posterior from point A (B). With respect to D-C and B-C, we calculated the angle of the screws when inserted from point D through to point B. In addition, an eccentrically aligned screw was sent at a standard 20° through the anterior cortex of ulna in each bone and the articular surface was observed macroscopically for any damage. Result: The mean A-C distance was 9.6mm(SD:0.763), A-B distance was 3.5mm, C-D distance was 12.5mm(SD:1.371) and the mean angle was 25.9°(SD:2.0). Lack of articular damage was confirmed macroscopically in all bones after the 20° eccentrically aligned screws were sent. Discussion: The new PIS may give us the opportunity to interlock IMN without articular damage and confirmation of fluoroscopy if the nail is manufactured with a PIS aligned at a 20° fixed angle with respect to IMN.

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**COMPLEX UNSALVAGEABLE FRACTURE OF HEAD OF RADIUS:
FASCIA LATA INTERPOSITION ARTHROPLASTY**

Kodali Siva Rama Krishna PRASAD, Harinder GAKHAR, Hemant SHARMA,
Vijay RAJAMANI, Barrie MCCONNELL, George ZAFIROPOULOS
Prince Charles Hospital, Merthyr Tydfil (UNITED KINGDOM)

Introduction: Management of complex comminuted fractures of the head of radius remains controversial, particularly when comminution extends to radial neck and proximal metaphysis. Interposition arthroplasty with fascia lata graft represents a unique surgical application in this context. We are presenting an unusual complex unsalvageable fracture of radial head and neck with metaphyseal extension treated by excision of radial head, fixation of the metaphyseal element and interposition arthroplasty using fascia lata graft.

Methods: A 37-year old man sustained comminuted fracture of head and neck of left radius with extension to proximal metaphysis. Fracture geometry precluded radial head reconstruction or replacement. We evolved a surgical plan for excision of radial head and preservation of bone stock to maintain stability and avoid delayed proximal migration of radius. Through extensile posterolateral approach radial head was excised and metaphyseal fragments reconstructed with two mini-fragment screws. A strip of fascia lata was harvested, rolled into cylinder of adequate thickness and anchored to radius and capsule through drill holes. He was maintained in hinged brace, allowing 20°-120°. Brace was unlocked after three weeks and physiotherapy commenced.

Results: After 3 years he was managing full-time manual labour with no pain. Elbow motion was 25°-125° and supination and pronation 0°-75°. Radiographs revealed mild heterotopic ossification.

Conclusion: Interposition arthroplasty with fascia lata autograft adds a new surgical dimension to manage comminuted unsalvageable fractures of radial head with extension to metaphysis, when fracture configuration preempts safe reconstruction or prosthetic replacement and could be a successful alternative with good outcome.

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SHOULD ORIF REPLACE CRIF IN TREATMENT OF DISPLACED DISTAL RADIUS FRACTURE?

Tirthankar BHATTACHARYA

Apex Hospital, Kolkata (INDIA)

Introduction: The introduction of 2.4mm/2.7mm locked distal radius system has changed the way we treat displaced distal radius fractures. Materials and methods: 89 patients of distal radial fractures were treated by ORIF through volar approach and Synthes distal radius system. All patients were put in slab for 7 days. Next 2 weeks slab was used as a removable splint in between exercises. Slab was discarded at 3 weeks. Results: The forearm and wrist movements returned remarkably early in all patients. By six weeks, more than 80% were able to perform common household works. ROM was 90% or more of the normal side in more than 90% patients. Inference: ORIF of distal radius fractures provides significantly better result than conservative or CRIF.

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AN INNOVATIVE EXTERNAL FIXATOR FOR THE MANAGEMENT OF TROCHANTERIC FRACTURES OF THE FEMUR. SURGICAL TECHNIQUE AND OUTCOMES OF 200 PATIENTS WITH 24 MONTHS' FOLLOW-UP

Mohamed Altayeb MUSSA¹, Adel Refaat AHMED², Ahmed HASAN²

¹Hull Royal Infirmary, Hull (UNITED KINGDOM), ²Alexandria University Hospital, Alexandria (EGYPT)

Introduction: Recent studies have compared the use of external fixation in trochanteric fractures with sliding hip screw. Only elderly patients, who are considered high risk and not suitable for conventional fixation methods, were included in those studies. This is the first prospective study to report the outcomes of external fixation in a larger patient population which includes young and healthy adults. Patients and Methods: 200 patients with intertrochanteric fractures were treated with a newly developed uniplanar external fixator (AlexFix®). All patients received local anaesthesia in the form of femoral nerve and lateral cutaneous nerve blocks. 60 patients were males and 140 were females with a mean age of 71.09 (24 to 91) years. Patients were followed up for a period of 24 ± 2.1 months. Results: The average operative time (and standard deviation) was 26.22 ± 5.9 minutes. The average use of radiation intraoperatively was 16.67 ± 3.5 seconds. Hospital stay was short with an average of 4.3 ± 1 days. No intraoperative complications were encountered. Blood loss was negligible and none of the patients received any blood transfusion. The mean time for union was 10.5 ± 1.1 weeks. The most common postoperative complications encountered were superficial pin tract infection in 16 patients (8%) and deep pin tract infection in 7 patients (3.5%). Conclusion: External fixation of trochanteric fractures is an effective treatment method. It offers minimal operative and anaesthetic risks, no blood loss, early mobilisation and a short hospital stay, with low morbidity and mortality.

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PROXIMAL FEMORAL NAIL AND ITS COMPLICATIONS.

Abhijit KAWALKAR, Sandip BORLE, Chandrashekher BADOLE

Mahatma Gandhi Institute of Medical Sciences, Sewagram (INDIA)

Introduction: Peritrochanteric hip fracture account for approximately half of the hip fracture in the elderly, out of this more than 50 % are unstable. Surgery is advisable in this age to avoid complications of long term recumbency and reduce the morbidity and mortality due to the fractures. Patients and Method: We report here the results of 76 patients who had peritrochanteric fractures and were subsequently treated with PFN. Follow up was done at 6, 12, 24 weeks & and at 1 year and patients were evaluated at final follow up. Observation and results: Fall from standing height accounted for 59 cases. The mean operating time was 60 minutes. The mean hospital stay was 5 days. 52 patients achieved near anatomic reduction. The mean time for bone union was 16 week One patient had breakage of the guide wire during surgery .Seven patients had a Z effect and three a reverse Z effect. Eight patients with osteoporosis had superior migration of the nail with varus collapse. Three patients had superficial infections. And about 17 patients had persistent anterior thigh pain. None had fractures of the femoral shaft or trochanter. Conclusion: PFN is advantageous as it facilitates controlled collapse at fracture site, can be done by closed means, helps in early mobilization & decreases intraoperative blood loss. But still the complication rate is very high. Thus PFN is a good implant for peritrochanteric fracture but it still needs few modifications in implant design & precautions in operative technique.

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OUR EXPERIENCE OF THE MODIFIED STOPPA APPROACH FOR ACETABULAR FRACTURES

Yoshihiro NAKAMURA, Etsuo CHOSA, Takeru SAKAMOTO, Shinji WATANABE, Tomohisa SEKIMOTO, Hiroaki HAMADA, Hiroshi IKEJIRI
University of MIYAZAKI, MIYAZAKI-city (JAPAN)

Introduction: Various surgical approaches have been described previously for the acetabular fracture. An ilioinguinal approach, described by Letournel, is widely used for acetabular fracture. Possible injuries to the inguinal neurovascular bundle remain a major concern and lateral femoral cutaneous nerve palsies occur frequently. A modified Stoppa approach, using extra-peritoneal approach through the rectus abdominus muscle, a wide exposure of Quadrilateral surface to the anterior sacroiliac joint can be visualised. Material and Methods: 2008-2011, surgically treated 14 acetabular fracture using a modified Stoppa approach were analyzed. The use of a lateral window was required in 8 patients for anterior and posterior column with using special forceps. Patients were followed for an average of 14.7 months. Clinical results were excellent (62%), good (9%), fair (9%) and poor (20%). Radiographic grades were excellent (71%), good (5%), fair (9%) and poor (15%). 3 transient obturator nerve palsies were diagnosed. There was 1 infection and 1 adhesion to the bladder. Progressions of posttraumatic arthritic were noted in 4patients, 1 was converted to prosthesis. Conclusion; This approach offers improved visualization, reduction and fixation possibilities, especially quadrilateral surface, and may decrease the rate of complications associated with traditional approaches.

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NEGLECTED ACETABULAR FRACTURES: A RETROSPECTIVE ANALYSIS OF SURGICAL OUTCOME

Nipun JINDAL, Ravi GUPTA

Government Medical College Hospital, Chandigarh (INDIA)

Operative treatment has come to be the mainstay of management of acetabular injuries. However due to referral delays, these fractures tend to be neglected particularly in developing countries. Neglected acetabular fractures more than 3 weeks old have been labelled as poor surgical choices due to shear surgical difficulty and poor prognosis thereafter. We therefore undertook this retrospective evaluation of surgical outcome of neglected acetabular injuries (>3 weeks old) treated at our institute with a minimum follow up of 24 months. Amongst the patients operated from 2002 to 2010 for acetabular fractures, 35 patients were neglected injuries. A radiological evaluation and Harris Hip score (HHS) was performed at final evaluation. Mean age at the time of surgery was 40.6 (20-72) years. Mean follow was 55.4 (24-120) months. The mean surgical time was 253.3 minutes and blood requirements for obtaining perioperative haemodynamic stability were 3.2 units. The mean HHS at final review was 83.5 (70-100). These patients were operated at a mean of 52 days from the time of injury. Time since injury and outcome had a moderate inverse correlation on statistical analysis $r = -0.46$ (Pearson Correlation Coefficient). Eight patients had osteoarthritis, 3 had infection, 3 had myositis and one had fracture non-union. There were 20 excellent to good results, 10 fair and 5 poor results. It is relatively safe to undertake a surgical procedure for attempting osteosynthesis in neglected acetabular fractures after a thorough discussion of the pros and cons with the patients.

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A META-ANALYSIS OF REAMED VERSUS UNREAMED INTRA-MEDULLARY NAILING FOR THE TREATMENT OF CLOSED TIBIAL FRACTURES

Dan JIN

Guangdong Province Key Laboratory for Regenerative Medicine of Bone and Cartilage and Research Centre of Clinical Medicine of Nanfang Hospital, Guangzhou (CHINA)

Controversy exists on the clinical outcomes of reamed versus unreamed intramedullary nailing (IMN) in treatment of closed tibial fractures. We aimed to assess the effects of reamed versus unreamed IMN for closed tibial fractures. We searched Pubmed, EMBASE, BIOSIS and the Cochrane Controlled Trials Register for randomised and quasi-randomised controlled clinical trials from January 1980 to June 2012 comparing reamed versus unreamed IMN for closed tibial fracture in adults. Primary outcomes were non-union, delayed union, malunion, secondary procedure, failure of implants, compartment syndrome, infection and knee pain. Eight randomised and one quasi-randomised clinical trials, involving a total of 1,229 fractures, were included. No statistically significant differences were found between the reamed and unreamed nailing groups in delayed union ($P=0.20$), malunion ($P=0.28$), infection ($P=0.36$), compartment syndrome ($P=0.36$) and knee pain ($P=0.93$). The unreamed group had a higher rate of fracture non-union than the reamed group ($P=0.02$). The subgroup analysis of implant failures (broken screws vs. broken nails) indicated that reamed nailing significantly reduced the risk of screw breaking ($P<0.001$), but there was no significant difference between reamed and unreamed IMN in nail breaking ($P=0.94$). The subgroup analysis of secondary procedure showed that the reamed IMN resulted in significantly lower risks of implant exchange ($P=0.01$) and dynamization ($P=0.04$) but no significant difference in bone grafting rate ($P=0.73$). The present evidence available comparing reamed versus unreamed IMN for closed tibial fractures indicates that reamed IMN may lead to significantly lower risks of non-union, screw failure, implant exchange and dynamization without increasing operative complications.

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MANAGEMENT OF LONG BONE NON-UNION WITH THE DIAMOND CONCEPT – OUR INSTITUTIONAL EXPERIENCE

Suribabu GUDIPATI, Nikolaos KANAKARIS, Peter GIANNOUDIS

Leeds Teaching Hospitals NHS Trust, Leeds (UNITED KINGDOM)

Purpose: The current study aims to reports the first clinical results of usage of Diamond concept for the treatment of long bone non-unions. **Materials and Methods:** Prospective study over a 4-year period. All patients with long bone non-unions treated with the “diamond concept” were included. Exclusion criteria were hypertrophic, pathological, and infected non-unions. Data collection included demographics, initial-fracture-pattern, method-of-stabilisation, previous surgical intervention, time-to-revision of fixation, complications, time-to-union and functional outcome. Clinically union was defined as painless full weight bearing whereas radiological union was defined as the presence of mature callous bridging to at least 3 cortices. The minimum follow up was 12 months (12-32). **Results:** 64 patients (34 males) met the inclusion criteria with a mean age of 45 years (17-83). Fracture distribution included the femur (54.68%), tibia (34.38%), humerus 4.68%, radius 3.13%, and clavicle in 3.13%). The median number of previous interventions were 1(range 1-5). 81.25% of patients underwent revision of fixation, in 9.35% only grafting was performed of which 2 patients needed dynamisation. In all cases biological enhancement consisted of RIA graft, BMP-7 and concentrated bone marrow aspirate. Three patients developed superficial wound infection (one was MRSA), 1 had DVT, and 1 had HO. The overall success rate was 63/64 non-unions at a mean time to healing of 6 months (3-12). **Conclusion:** This study supports the view that the Diamond concept should be considered in the surgeon’s armamentarium especially in cases where difficulty of fracture healing is anticipated.

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**PERIPROSTHETIC FRACTURES OF THE HIP AND KNEE: INCREASING
PROBLEM WITH EVOLVING SOLUTIONS**

Biyyam RAO, Adhish AVASTHI, Michael MOSS, Lee TAYLOR

**St. Richard's Hospital, Western Sussex Hospitals NHS Trust, Chichester
(UNITED KINGDOM)**

Introduction: Periprosthetic fractures (PPF) are complex management problems and their treatment has evolved with advances in surgical techniques, implants for fixation and improved revision systems. Objectives: To present recent incidence of PPF of Hip and Knee and to evaluate the changing trends of management. Methods: Retrospective analysis of 82 patients with PPF (52 Knee and 30 Hip) treated with Compression plates (12), Locking Plates (16), Retrograde Nails (9), Revision Hip and Knee arthroplasty (23), Proximal Femoral (04) and Distal Femoral Replacements (18) over a 9 year period. Patients were analysed using Oxford scores, Knee Society Scores, fracture healing time, full weight bearing and length of stay. Results: It was shown that Locking plates (Vancouver B1 and C fractures, Rorabeck & Lewis type II fractures) had best results in surgical fixation group. The mean time for union was 11 weeks with hospital stay of 21 days. The Revision Hip arthroplasty (Vancouver B2), Revision Knee arthroplasty and Distal Femoral Replacement (Rorabeck & Lewis type III fractures) had better functional results and less hospital inpatient stay than fixation group. They were all full weight bearing by day 3 and had mean length of stay of 9 days. The surgical complication rates and costs of treatment were comparable in each group. Conclusions: Knowledge of the indications, techniques, and implants needed for managing these complex fractures is paramount for success. The recent advances in surgical techniques have improved the outcomes and Revision/Replacement arthroplasty should be considered more often when feasible in appropriate patients.

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IS THE ISKD A SAFE MEASURE FOR BONE LENGTHENING? A SYSTEMATIC REVIEW

Ahmed NAGEEB FATHY, Khaled EMARA

Ain Shams University, Cairo (EGYPT)

Background: The Intramedullary Skeletal Kinetic Distractor (ISKD) is one of the relatively recent methods that were developed in order to overcome the complications of conventional bone lengthening methods, such as external fixators. These complications include pain, muscle transfixation, pin-tract infection, reduced joint motion and prolonged fixation time. However, ISKD-specific complications such as uncontrollable lengthening make the outcomes of ISKD lengthening questionable. In this paper, we review published literature on the efficacy and complications of the ISKD device. Methods: A database search was conducted in PubMed, Ovid Medline, Ovid Full Text, Springerlink, EBSCO Medline, Science Direct, ISI Web of Knowledge and Google Scholar. We included English articles with extractable data about the study population and outcomes, reporting ISKD implantation in the femur or tibia of skeletally-mature patients. Results: Fifteen out of 89 potentially-relevant citations were found to match the inclusion criteria. The most common causes of leg length discrepancy indicating an ISKD implantation were traumatic and congenital causes. The average lengthening achieved, average patient discharge period, mean follow-up time, average consolidation time, distraction time and index, number of patients requiring additional operations and other outcome measures are discussed in this paper. The most common complications were runaway nail, difficulty in achieving lengthening and premature consolidation. Conclusions: Although the classical complications of external lengthening are virtually diminished, alterations to the current design of the ISKD are needed to avoid the "runaway nail" complication. Risk of unplanned surgery makes the outcomes of ISKD less predictable than external lengthening methods.

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INTRODUCTION OF THE OSSEOINTEGRATED PROSTHESES FOR THE REHABILITATION OF PATIENTS AFTER AMPUTATIONS DUE TO TRAUMA OR VASCULAR DISEASES IN HUNGARY

Laszlo Gergely NOT¹, Otto MORICZ¹, Sandor FERENCZ², Gyorgy WEBER³, Rickard BRANEMARK⁴, Laszlo VAMHIDY¹

¹Department of Traumatology and Hand Surgery, School of Medicine, University of Pecs, Pecs (HUNGARY), ²Department of Surgery, School of Medicine, University of Pecs, Pecs (HUNGARY), ³Department of Surgical Research and Techniques, Semmelweis University, Budapest (HUNGARY), ⁴Sahlgrenska University Hospital, University of Gothenburg, Gothenburg (SWEDEN)

Background: The most common causes leading to amputation are traumatic injuries and vascular diseases. According to literature, there is a relatively low percentage of use of prosthetics with low patient satisfactory rate (5%). The OPRA (Osseointegrated Prostheses for the Rehabilitation of Amputees) allows more stability by anchoring the prosthesis directly to the bone. Aims: The purpose of this study was to introduce OPRA for the rehabilitation of amputee patients in Hungary. Patients and Methods: total of six amputees were included into the study: two male patients who suffered traumatic amputation, two female patients with Buerger-disease and two male patients suffering from occlusive arteriosclerosis. Specially constructed titanium screw was installed in the residual bone, using OPRA technique. Six months later, the implanted screw permanently fused with the bone and an abutment was connected to fixture. After physiotherapy with gradually increased loading, the final prosthesis can be attached. Results: In all cases, fusion of the implanted screw - confirmed by radiological examinations - was complete. No complication occurred either during the early, or later follow-up (N.B. an arteriosclerotic patient died in myocardial infarct). One female patient complained for pain with the full-length prosthesis; the other female patient suffered hip fracture. In two cases, moderate osteoporosis was detected without screw loosening; rehabilitation was interrupted only for a two-months period. Conclusion: OPRA improves life quality after traumatic or vascular disease-related amputations. However, it requires careful patient selection and more parameters (osteoporosis, cardiovascular risk factors) should be evaluated prior to routine application.

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Abstract no.: 34662

SARMIENTO PHILOSOPHY OF TREATING FRACTURES: IS IT OBSOLETE OR STILL RELEVANT?

Deven TANEJA

Arihant Hospital & Research Centre, Indore (INDIA)

Fractures can be treated conservatively and by operation. There are many objections to treating patients conservatively. Plaster disease, shortening and malunion complications are well known. Similarly converting close fracture into open fracture and danger of infection are legitimate objections for doing surgery in every case. Sarmiento talked about functional treatment of fractures with excellent results. Author has been treating fractures with Sarmiento technique since 1972. We have treated Tibial, Femoral, Humerus and Radius Ulna fractures with functional method. This method is very suitable for Tibial and Humerus fractures. The author has treated about 4,000 cases in the last 40 years. Although our no. of patients undergoing surgery has increased, this is due to better understanding of fracture geometry, better instrumentation, better implant and better sterility in the operation room. But my experience is that this method is very relevant in developing world as this method is cost-effective and easy to apply. Even in the developed world it is relevant because many fractures can be treated very well by the Sarmiento technique. The author would like to share his experience of treating these fractures by functional method.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 35924

**SCARF OSTEOTOMY FOR HALLUX VALGUS CORRECTION:
EXPERIENCE REDUCES THE COMPLICATION RATE**

Maheswara AKULA, Nikolaos GOUGOULIAS

Frimley Park Hospital, Frimley (UNITED KINGDOM)

Purpose: Aim of this study is to analyze a single surgeon's experience of the Scarf osteotomy. **Methods:** Two hundred cases at a mean age of 54 underwent Scarf osteotomy for hallux valgus correction. In 54 feet lesser ray procedures were also performed. Mean surgical time was 56 minutes for surgeries including only first ray surgery and 70 minutes where additional procedures were needed. The mean pre-op IMA (intermetatarsal angle) was 17 degrees and HVA (Hallux valgus angle) 28 degrees. With meticulous surgical dissection through medial approach, blood supply to head of first metatarsal head preserved. Medial cutaneous branch identified and protected. **Results:** The mean post-op IMA was 4 degrees & mean HVA was 10 degrees. None of the patients required revision surgery for recurrence. No deep infections, AVN, or permanent neuropathies occurred. Complications included one hallux varus malalignment, which later developed arthritis (one first 30 procedures). Two patients had EHL tightness. One intraoperative fracture was fixed with plate proximally and united. One post-op fracture at 4 weeks in a patient with bilateral surgery was treated non-operatively in a cast. Three superficial infections were treated with oral antibiotics. Four minor reoperations (2%) were performed for various reasons. Among these four re-operations, three were for the initial 50 surgeries performed. All patients were satisfied with the functional outcome, cosmesis and scar healing. **Conclusion:** The Scarf osteotomy is a technically demanding but safe procedure, with low complication rate, that further reduced with increasing experience. Radiographic and clinical alignment was optimal.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 34341

CLINICAL OUTCOMES OF THE DISTAL METATARSAL OSTEOTOMY USING BIO-COMPRESSION SCREW FOR ADVANCED HALLUX RIGIDUS

Eun-Myoung LEE, Byung-Ki CHO, Yong-Min KIM, Su-Ri CHONG

Chungbuk National University Hospital, Cheongju (SOUTH KOREA)

Introduction: Hallux rigidus can be treated with various methods depending on the severity of degenerative changes of first metatarsophalangeal(MTP) joint. This study was performed to evaluate clinical outcomes of metatarsal osteotomy using bio-compression screw as the joint preservation method for advanced hallux rigidus. Methods: Thirty-six cases were followed up for more than 3 years after distal metatarsal dorsal closed wedge osteotomy. Clinical evaluation was performed by American Orthopaedic Foot and Ankle Society (AOFAS) scores. Range of motion of first MTP joint, the period to return to running exercise, satisfaction score, and reoperation rate were evaluated. As radiographic evaluation, the interval of first MTP joint space and the period to union were measured. Results: AOFAS hallux score had improved significantly from preoperative average 48.5 points to 88.6 points at final follow-up. Dorsiflexion of first MTP joint had improved significantly from preoperative 9.5° to 32.5° at final follow-up. The period to return to running exercise was average 3.7 months. Satisfaction score of patients was average 94.5 points. There was no case of subsequent fusion or additional operation, and no complication associated with implant. Interval of first MTP joint space was had improved significantly from preoperative average 1.2 mm to 3.6 mm. All cases achieved union of osteotomy site, and the period to union was average 10.3 weeks. Conclusion: Distal metatarsal osteotomy using bio-compression screw seems to be one of effective treatment methods for advanced hallux rigidus, because of restoration of first MTP joint motion, and reliable pain relief, and needlessness of hardware removal.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 35604

**SURGICAL CORRECTION OF BUNIONETTE DEFORMITY WITH
"SCARFETTE" OSTEOTOMY**

Zoltán KOÓS, Lehel BÁLINT

BMI The Droitwich Spa Hospital, Droitwich (UNITED KINGDOM)

INTRODUCTION: There are several options for the surgical management of a bunionette/Taylor's bunion. Most cases require corrective osteotomy including distal, proximal or metatarsal shaft osteotomy. We think that a "scarfette" osteotomy could be successful in all types of bunionettes. **METHODS:** From a lateral incision a medial soft tissue release is done at first. After adequate lateral condyle resection a scarf type osteotomy is done with the necessary medial translation. 2 twist off screws are used as internal fixation. After 5 weeks heel weight bearing, full weight bearing could be commenced. **RESULTS:** 18 patients were treated with this procedure between January 2009 and December 2012. The mean 4/5 IM angle improved from 9.8 to 4.2. Mean AOFAS score improved from 50 to 88. We had to remove the screws in one patient due to over-length and loosening of the distal screw. So far no revision has been necessary due to recurrence. **CONCLUSION:** The "scarfette" osteotomy combined with partial lateral condyle resection and medial soft tissue release allows the necessary correction of the increased 4/5 IM angle. In addition, the possibility to rotate the inferior fragment could improve the DMA angle and the varus deformity of the toe. The shape of this diaphyseal osteotomy provides better stability than the distal or proximal osteotomies. Two 2mm diameter self-cutting screws could be strong enough to maintain the stability till the bony consolidation and remodelling. The outcome of our first 18 cases are encouraging to keep using this method for symptomatic bunionette deformities.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 33954

INTRAOPERATIVE IMAGING IN HALLUX VALGUS SURGERY

Peter RALTE, Philip HOLLAND, James WIDNELL, Andy MOLLOY

University Hospital Aintree, Liverpool (UNITED KINGDOM)

Introduction: We conducted a prospective radiographic study to determine whether intraoperative fluoroscopy provided a significantly measurable advantage in the correction of hallux valgus deformities. Methods: 99 consecutive patients underwent hallux valgus surgery utilising a Scarf osteotomy. Group A consisted of 59 patients who had their procedure performed without the use of intraoperative fluoroscopy, while Group B consisted of 40 patients who did. Measurements of the Hallux Valgus Angle (HVA), Intermetatarsal Angle (IMA) and the Distal Metatarsal Articular Angle (DMAA) were recorded in both groups preoperatively and at 6 and 12 weeks postoperatively. Sesamoid position was graded as per the Hardy Clapham grading system. Results: Preoperatively the mean HVA for the control group and fluoroscopy group was 30.0 and 30.4 degrees respectively. At 12 weeks post procedure the mean HVA measured 12.0 degrees for Group A and 10.0 degrees for Group B. The average correction achieved in the HVA at 12 weeks was 20.4 degrees for the intraoperative fluoroscopy group compared to 18.0 degrees for the control group. The mean IMA at 12 weeks measured 6.8 degrees for the control group and 6.7 degrees for the fluoroscopy group; this represented an average improvement of 5.9 and 5.7 degrees respectively. The average improvement in sesamoid grade for the fluoroscopy group was 3 compared to 2 for the control group with a statistically significant difference in sesamoid position ($p < 0.05$). Conclusion: Our study has demonstrated a significant improvement in the radiographic appearances following hallux valgus surgery when fluoroscopy has been used intraoperatively.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 35526

SUCCESS RATE OF PLATE FUSION FOR MTPJ ARTHRODESIS

Anand Kumar GARLAPATI, Ajay BAJORIA, Babis KARAGREVEKIS

Queens Hospital, Burton-on-Trent (UNITED KINGDOM)

Objective: The purpose of this study was to determine the results of one method using dome-shaped reamers to prepare the joint surfaces and a low-profile dorsal plate for internal fixation along with a compression screw. Method: We undertook a retrospective study to review the success rate of big toe fusion for hallux rigidus and severe hallux valgus deformity. Twenty-three patients (29 feet) underwent fusion from March 2008 through May 2011. All patients were evaluated preoperatively for underlying pathology, pain, function, and radiographic findings. The average age of the cohort was 46 years (range 45-84) with male female ratio of 11:13 (45.83%: 54.17%). Arthrodesis was fixed with a dorsal plate with preset valgus and dorsiflexion along with a compression screw after the joint surfaces were prepared. Patients had a ribbon plaster around the toe and a postoperative shoe for 6 weeks in total. Results: The mean follow-up period was 16 weeks. 27/29 (93.10%) fusion taken place clinically and radiologically at the end of 12 weeks. 2 patients union took place at 7 months stage. Encountered complications in four (13.7%) cases. One case of cellulitis, one with cellulitis and wound gaping both of which settled with IV antibiotics. Prominent metalwork was removed in one at one year. One patient had unresolved swelling which improved with insole. Conclusion: First MTPJ arthrodesis using this technique achieves a high union rate. There was a good functional result with a significant pain reduction. Limitations were number of patients and no case of rheumatoid arthritis.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 35949

**FIRST METATARSOPHALANGEAL JOINT ARTHRODESIS: A
COMPARISON OF TWO METHODS OF FIXATION.**

Yasir SHAUKAT¹, Mamun AL-RASHID², Wasim KHAN², A KHAN²

¹Royal National Orthopaedic Hospital Stanmore, London (UNITED KINGDOM), ²Southend University Hospital NHS Trust, Southend-on-Sea (UNITED KINGDOM)

Introduction: First metatarsalphalangeal joint (MTPJ) arthrodesis is a well-established and successful treatment for various pathological conditions involving the first MTPJ. However there still remains controversy over the gold standard fixation method. This study compares the first MTPJ arthrodesis rates, time to achieving fusion and complication rates between two methods. Methods: A retrospective analysis of patients undergoing first MTPJ fusion using either dorsal non-locking plate (n=18) or dorsal non-locking plate and additional lag screw fixation (n=34) was carried out. The average follow-up period was 19 weeks. Rates of fusion, time to fusion and postoperative complications of the two groups were compared. Fusion was assessed both clinically and radiographically. All patients followed the same postoperative rehab protocol, and similar surgical techniques. Results: 55.6% of the plate only group had successful fusion at 2 months compared with 83.3% of the plate and lag screw group (p=0.03). 22.2% of the plate only group went into non-union compared with 0% of the plate and screw group. 4 patients in plate and lag screw group developed wound infections compared with none of the plate only group. In the plate-only group, one patient required removal of metalwork due to loosening of the screw, while in the plate and lag screw group, one required removal of metalwork due to infection. Our study demonstrated that patients who have had plate and additional lag screw method of fixation had greater rates of fusion within the first two months compared with a plate only technique.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 33820

TWO-YEAR RESULTS OF 1ST METATARSAL HEAD RESURFACING PROSTHESES (HEMICAP) USED FOR THE TREATMENT OF ADVANCED MTPJ OSTEOARTHRITIS

Mohammed TAHIR, Akash PATEL, Farhan SYED, Amarjit ANAND, Kyriacos ELEFThERIOU, Peter ROSENFELD

Imperial College NHS Trust, London (UNITED KINGDOM)

Introduction: Advanced 1st MTPJ osteoarthritis is an extremely disabling and painful condition. Surgical treatment options include arthrodesis and arthroplasty. Arthrodesis is well established, however, studies have shown non-union rates of up to 10% and increased rate of 1st interphalangeal joint degeneration. The purpose of this prospective study was to evaluate the medium term results of patients treated with 1st metatarsal head resurfacing for advanced osteoarthritis. Method: We undertook 31 1st MTPJ resurfacing (Hemicap, ArthroSurface Inc) procedures in 28 patients in our independent unit. Preoperative radiographic grading was undertaken using Coughlin scale. Outcome measures included range of movement, AOFAS score, VAS pain score, revision rate and complications. Results: Average age at surgery of patients was 56 years (44 – 80), with 9 men and 19 women. Most patients (88%) had severe (grade 3) 1st MTPJ osteoarthritis. Mean follow-up was 41 months (minimum 6 months). The average range of movement, AOFAS score and VAS pain scores improved significantly postoperatively ($p < 0.05$). Three implants required manipulations under anaesthesia for stiffness and 3 implants were revised to fusion. Therefore, five-year survival rate was 89%. At latest follow-up 88% of patients felt that all or most of their expectations were met and 73% of patients rated their satisfaction with the procedure very good to excellent. Conclusion: This study demonstrates good medium term results of 1st metatarsal head resurfacing in patients with severe degeneration, with improved functional scores and low complication rates. Fusion as a salvage procedure still remains an option if revision is required.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 35592

DAY CASE FOREFOOT SURGERY: IS IT EFFECTIVE?

Ran WANG, Abubakar MUSTAFA, Sami ATIYA, Stephen WASHINGTON,
Anand PILLAI

University Hospital of South Manchester, Manchester (UNITED KINGDOM)

Aim: To evaluate the compliance with same day discharge, postoperative pain and patient's satisfaction following forefoot surgery as day case. **Method:** Prospective study of 70 patients who underwent various forefoot surgery between August 2012 to February 2013 as day case surgery. Procedures were performed under general or spinal anaesthesia, by a single surgeon and ankle block used. Initial pilot study of 35 patient carried out to identify reasons for overnight stay. Following the study, Apfel score was introduced to identify and address patients at high risk of postoperative nausea and vomiting (PONV). A standard discharge protocol was followed. Patient satisfaction was assessed using a questionnaire in 2 weeks follow up clinic. **Results:** The study comprised of 16 males (23%) and 54(77%) females, with a mean age of 54 (25-79) years. The surgical procedures included 1st ray surgery, excision of Morton's neuroma and lesser toes correction. 62% had more than one procedure. In the first half of the study, 9 patients (26%) required overnight stay. The most common reason was PONV (4 patients, 11%) and pain (2 patients, 6%). In the second part of the study, 6 (17%) patients required overnight stay, with only one due to PONV(3%) and social reasons (3 patients, 8%). Overall, postoperative pain control was adequate in 97% and patient satisfaction 95%. **Conclusion:** Forefoot surgery is safe and practical procedure for day surgery with excellent patient satisfaction rate. Use of Apfel scoring system and prophylactic antiemetic in the anaesthetic protocol improved efficacy of discharge.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 35735

PLANTAR AND POSTERIOR HEEL PAINS – ARE THEY DIFFERENT?

Saseendar SHANMUGASUNDARAM

Indira Gandhi Medical College and Research Institute, Puducherry (INDIA)

Plantar heel pain is a common complaint in both athletes and non-athletes. For diagnosis of aetiology certain radiological parameters have been developed. However there have been contradictory reports of such radiological measurements. This prospective study aims to evaluate the diagnostic values of these parameters in plantar heel pain. 48 painful heels in 40 patients (11 males, 29 females), age 27-80 years (41.65 ± 10.18) were examined clinicoradiologically. They were compared with 40 heels in 20 control subjects. A lateral weight bearing film of the foot was taken to calculate different angles, lines and soft tissue parameters mentioned in the literature. Steffensen & Evensen angle was $>65^\circ$ in 25 heels (52.1%), while Pavlov's parallel pitch line positivity was seen in 26 (54.2%). Plantar spur was present in 25 (52.1%) while posterior spur or spur was present in 21 (43.8%). Calcaneal pitch angle was higher than normal (17°) in 22 (45.8%). Chauveaux-Liet angle was $>12^\circ$ in 8 (16.7%) while none had total angle $>90^\circ$. None of the heels had positive test of Denis and Huber-Levernieux or Fowler & Philip angle $>75^\circ$. The radiological parameters were significantly elevated or more frequent in comparison to the controls ($p < 0.05$). There was no significant difference between mean values of radiological parameters between affected and unaffected sides in unilateral cases. The findings suggest that though these radiological parameters may be positive in plantar heel pain, parameters specific to posterior heel pain are also affected, suggesting that both are different presentations of a common dysfunction of the foot and ankle. Also the radiological parameters are common to both heels though asymptomatic.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 34255

SUBTALAR ARTHROEREISIS AS A USEFUL ADJUNCT IN SURGICAL RECONSTRUCTION OF ADULT FLEXIBLE FLAT FEET: A SINGAPOREAN EXPERIENCE

Christopher FANG, Gowreeson THEVENDRAN, Nikhilesh TODKARI, Kannan KALIYAPERUMAL

Tan Tock Seng Hospital, Singapore (SINGAPORE)

Objectives: The purpose of this study was to determine the functional outcomes and radiographic results of adult patients who had surgical reconstruction for flexible flatfeet where a subtalar arthroereisis implant was used as an adjunct. **Materials and Methods:** 12 patients with problems attributed to their flexible flatfoot deformities had reconstructive foot and ankle surgery that included a subtalar arthroereisis. Their mean age was 53.5. The American Orthopaedic Foot and Ankle Society (AOFAS) Hindfoot score and Short Form (SF) -36 scores were obtained from all patients before surgery and at final follow-up. Preoperative and postoperative standing radiographs were analyzed to determine radiographic correction of the deformities. The average follow up was 9 months. The subtalar arthroereisis implant did not require removal in any of the patients. **Results:** The mean preoperative AOFAS score was 52.8 and had improved to 68.8 ($p < 0.05$) at final follow up. The mean response to 2 out of the 3 physical component scores of the SF-36 had significantly improved. Correction after surgery was significant in 3 out of the 4 radiographic parameters evaluated. ($p < 0.01$) No complications were recorded at the time of final follow up. **Conclusion:** The use of a subtalar arthroereisis implant as an adjunct in surgical reconstruction of adult flexible flat feet resulted in favourable clinical and radiographic outcomes. Given its ease of technical execution and low complication profile, subtalar arthroereisis compares favourably with other alternative procedures for flexible flat foot deformity correction in adults.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 34141

**MANAGEMENT OF NEGLECTED AND RESISTANT TALIPES
EQUINOVARUS FOOT DEFORMITY**

Patel KEYUR, Jagdish PATWA, Reeny PATEL
S.B.K.S.M.I.R.C., Vadodara (INDIA)

In our country because of poverty we come across resistant and neglected talipes equinovarus deformity of foot. It is secondary to residual poliomyelitis or post-traumatic. It's a great challenge to an orthopaedic surgeon to convert this deformity into a normal foot. When open surgical methods applied leads to stiffness, shortening of foot, damage to the articular surface and under correction are likely complications and bony fusion is must. While such deformity treated with B.B.Joshi fixator, the age limit is up to 7-8 years and wires are non-tensioned. It creates trouble for correcting rigid deformity. In such cases correction by Ilizarov method is an excellent technique to correct the deformity, preserve the articular surface because of differential distraction and bone growth occurs following tension stress leads to correction and bone growth where chances of recurrence is very less. We have treated about 15 cases of resistant, neglected cases of talipes equinovarus foot by Ilizarov technique in which we got excellent result in 10, good in 3, poor in 2. Poor results were mainly because of noncompliance and early removal of frame. We have used mid-path treatment with Ilizarov frame in which we preferred fractional lengthening of tendo achilles, abductor hallucis release and medial planter fascia release before application of frame which leads to rapid differential distraction decreasing pain during treatment and early removal of frame after over correction are the main advantages along with bone growth and remodelling which prevent recurrence.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 35854

PERONEUS BREVIS TENODESIS FOR CHRONIC NEGLECTED RUPTURES OF TENDO ACHILLES WITH LARGE DEFECTS

Rohit JINDAL

Govt. Medical College, Chandigarh (INDIA)

Introduction: A chronic rupture of the Achilles tendon causes difficulty with walking and impairment of ankle plantar flexion. Surgical reconstruction of a chronic tear of tendon of tendo achilles poses surgical challenge as there is a large defect and a very short distal stump. Peroneus brevis is one locally available tendon that might be used to provide an effective reconstruction. Methods: 14 patients of chronic tendo achilles rupture were included in this study. There were 11 males and 3 females. Mean age was 49 years (36-57 years). 8 patients had a previous history of local steroid injections. The symptoms ranged from 6 weeks to 28 weeks. In all the cases the defect in tendo achilles was more than 5cm. Peroneus brevis tendon was harvested from its attachment at the base of the fifth metatarsal and passed through a transosseous drill hole in the calcaneus. The tendon was then passed back on itself and sutured over the tendo achilles. Post operatively above knee cast was given in gravity equinus for 3 weeks and a below knee cast for further 6 weeks. The follow up ranged from 1 year to 29 months. There were no wound complications in this study. All the patients gained active plantar flexion. 13 of the 14 patients regained ability to squat and sit cross-legged while one patient had dorsiflexion up to 90 degrees. Conclusion: Peroneus brevis tenodesis provides an effective reconstruction in cases of large defects in chronic tendo achilles ruptures with very short stumps.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 35103

ATTENTION, FOP! (6 CASES OF FIBRODYSPLASIA OSSIFICANS PROGRESSIVA IN CHILDREN WITH DEVELOPMENTAL ABNORMALITIES OF THE FIRST RAY OF FOOT)

Nadezda KOVALENKO-KLYCHKOVA, Vladimir KENIS, Irina KLYCHKOVA
The Turner Scientific and Research Institute for Children's Orthopaedics,
Saint-Petersburg (RUSSIA)

Introduction: Fibrodysplasia Ossificans Progressiva is a rare genetic disorder. Specific features at birth include clinodactyly of the first toe and adduction of thumb, ankylosis of the interphalangeal joints. The diagnosis can be confirmed genetically. Surgical interventions lead to the progress of the ossification. Materials and Methods: 6 patients with FOP were referred primarily for surgical treatment to our clinic during last 5 years (variation of age was 9 months to 12 years). Clinodactyly of the first toe and adduction of thumbs were congenital in all children. Functional disorders of the lower extremities were evident in 5 patients. One patient was operated earlier for residual hip dysplasia with immediate progress of ossification of the soft tissues. One patient was operated at the age of 9 months by the authors for clinodactyly of the first toe. Diagnosis was confirmed genetically for 3 patients at present and in progress for the other 3. The results: In the patient who was operated at 9 months, local deformity at the dorsal part of the first metatarsal bone appeared. CT scan revealed ossification, including the areas localized apart from the site of surgery. The rest patients were refused for surgical treatment due to high risk of progression of the disease. Conclusion: If the patient is suspicious for diagnosis of FOP is it is necessary to conduct genetic testing, which can confirm the presence of mutation in the ACVR1 gene. Surgical interventions for the persons suspected for FOP must be carried out only as life-saving operations.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 34731

CLINICAL OUTCOMES OF THE MODIFIED-BROSTROM PROCEDURE USING SUTURE BRIDGE TECHNIQUE FOR OVERWEIGHT PATIENTS

Eun-Myoung LEE, Byung-Ki CHO, Yong-Min KIM, Su-Ri CHONG

Chungbuk National University Hospital, Cheongju (SOUTH KOREA)

Introduction: This study was performed to evaluate clinical outcomes of the suture bridge technique for chronic lateral ankle instability in overweight patients known as a contraindication of anatomic ligament repair such as modified-Brostrom procedure. **Methods:** Eighteen overweight patients (BMI:body-mass index > 30) were followed up for more than 2 years after modified-Brostrom procedure using suture bridge technique. Clinical evaluation was performed according to Karlsson scale and Sefton grading system. As evaluation for the longevity of mechanical stability, the measurement of talar tilt angle and anterior talar translation was performed annually through stress radiographs. **Results:** Karlsson scale had improved significantly from preoperative average 41.5 points to 86.2 points. According to Sefton grading system, 15 cases(83%) achieved satisfactory results. The period to return to running exercise was average 4.4 months. Subjective satisfaction score of patients was average 91.8 points. BMI had improved significantly from preoperative average 31.4 points to 26.8 points at final follow-up. Talar tilt angle and anterior talar translation had improved significantly from preoperative average 16.3° and 10.7mm to 3.8° and 4.5mm at postoperative 3 months, to 5.5° and 5.4mm at postoperative 2 years. **Conclusion:** Modified-Brostrom procedure using suture bridge technique seem to be one of effective alternatives for chronic ankle instability in overweight patients. Restoration of ankle stability resulted in the return to active exercise, and the decrease of BMI. Because both talar tilt and anterior talar translation were likely to increase with time postoperatively, further long-term evaluations for the longevity of mechanical ankle stability are needed.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 34277

STUDY OF EFFECTIVENESS OF A NEWLY DEVELOPED FUNCTIONAL REHABILITATION PROGRAM FOR CHRONIC ANKLE INSTABILITY

Dheeraj MAKKAR, Hak Jun KIM, Eui DONG

Guro Hospital, Seoul (SOUTH KOREA)

Objective: This study was done to see whether clinical and functional outcomes of functional instability in patients with chronic ankle instability can be improved by home based exercise program designed by us. Methods: Participants were 30 volunteers, 15 males and 15 females with an age range of 16 to 55 years. 28 participants had unilateral whereas 2 had a bilateral chronic ankle instability. All participants were put through our 4 weeks functional rehabilitation program involving home and supervised components. Pre-exercise ankle varus, anterior drawer stress X-rays, Visual Analogue Scale (VAS) scores and American Orthopaedic Foot and Ankle score (AOFAS) were obtained. Pre and post exercise Cybex 30d plantar flexion, dorsiflexion, inversion and eversion peak torque readings were obtained. Inter-observer and intra-observer correlation was also considered. Data analysis was done using SPSS 12.0 software. Results: On stress X-rays, the mean pre-exercise varus stress in degrees was 7.7024 with a standard deviation of ± 3.69678 whereas mean pre-exercise anterior drawer stress in degrees was 6.1764 with a standard deviation of ± 1.82343 . The p-values calculated for post-exercise VAS ($p < 0.0001$), AOFAS ($p < 0.0001$), Cybex 30d for plantar flexion and eversion peak torque ($p = 0.029$), tests like single leg balance ($p = 0.015$), single leg cycling ($p = 0.004$), one leg squat ($p = 0.009$), multi-direction reach (front- $p = 0.001$ and side- $p = 0.010$) and side stepping ($p = 0.001$) were all found to be significant. Conclusion: This home-based exercise regime does improve the clinical and functional outcome in patients with chronic ankle instability by way of reducing the pain and improving muscle balance around the ankle joint.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 35941

THE INFECTED DIABETIC FOOT – A NOVEL MULTIDISCIPLINARY APPROACH USING SURGICAL DEBRIDEMENT GENTAMICIN BEADS AND HOME ANTIBIOTICS: HAVE WE FOUND THE OPTIMAL TREATMENT?

Dakshinamurthy SUNDERAMOORTHY, Thomas KURIEN, Kamalakannan CHOKKALINGAM, Susan SNAPE, Brigitte SCAMMELL
Nottingham University Hospitals NHS Trust, Nottingham (UNITED KINGDOM)

OBJECTIVES: To assess the healing rate of chronic diabetic foot ulcers using surgical debridement, gentamicin beads and home intravenous antibiotics for the treatment of chronic osteomyelitis. **METHODS:** From November 2011 to March 2012, 14 diabetic and 2 neuropathic patients with longstanding foot ulcers and chronic osteomyelitis underwent a thorough debridement, bone biopsy or amputation of the infected bone. The ulcer was then packed with gentamicin beads and dressed. IV antibiotics were commenced after discussion with the senior orthopaedic microbiologist based on the cultures and sensitivities of the bone and tissue samples taken in theatre. Assessment of healing was made in the combined Foot clinics. **RESULTS:** There were 6 heel ulcers, 4 ulcers over the 1st metatarsal and 6 ulcers over the lesser toes each of which were excised, debrided and gentamicin beads inserted. No growth was found in 2 of the bone specimens and in 1 case no tissue was sent. In 5 cases the organisms isolated pre and postoperative were not matched. 15 patients had antibiotics, the average course of antibiotic treatment was 7.3 weeks. Complete healing of the ulcer was seen in 9 out of the 16 patients (56%) with good granulation tissue with the absence of any underlying infection. **CONCLUSION:** This preliminary report has shown promising results. With faster healing time with this approach, it is hoped to reduce hospital stay for patients, improve their quality of life and reduce the overall costs to the NHS for the management of the neuropathic infected foot.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle II

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 35898

**ARTHROSCOPIC CALCANEONAVICULAR COALITION EXCISION
– TECHNIQUE AND OUTCOME**

Madhavan PAPANNA, Sanjeev MADAN

Sheffield and Doncaster Teaching Hospitals, Sheffield (UNITED KINGDOM)

Purpose: To evaluate the outcomes of the arthroscopic excision of the calcaneonavicular tarsal coalition. **Method:** This was a prospective study of all the patients who had the arthroscopic tarsal coalition surgery performed between Jan 2011-June 2011. The clinical outcomes were measured with FAOS scores. **Results:** Mean operating time was 30 min (Range 25-35). There were no major complications postoperatively, although 1 patient had superficial wound infection that resolved with course of oral antibiotics. FOAS scores improved from 36 to 89.6 (P value < 0.0001), details in table 1. At 2 years' follow-up, there was no recurrence and all the patients had returned to full time sporting activities. **Conclusion:** The resection of tarsal coalition by minimally invasive method has the advantage of early postoperative recovery and function. Although, the gold standard would be a randomised controlled trial comparing arthroscopic to the standard open resection technique.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle II

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 33957

REVISION SUBTALAR FUSION – A MINIMALLY INVASIVE TECHNIQUE

Ashok MARUDANAYAGAM, Antony PERERA

University Hospital of Wales, Cardiff (UNITED KINGDOM)

Introduction: Primary subtalar fusions have a good union rate. Revision subtalar fusions can be challenging. We describe a minimally invasive technique which can achieve a good union with a reduced risk of complication. Case Report: A 48-year-old lady presented with complaints of pain in the right hind foot. On examination, the heel was in normal valgus position and had tenderness in the subtalar region. The subtalar movements were painful and restricted. Radiograph showed significant subtalar degeneration. She underwent open subtalar fusion, fixed with 2 screws postero-anteriorly. At 3 months' follow-up she was complaining of pain, worsening over the next 8 months. At 1 year follow-up, she had swelling and tenderness in the hind foot region. CT scan did not show evidence of subtalar fusion. She then underwent revision subtalar fusion using the minimally invasive technique. The previous screws were removed through stab incisions. From the proximal tibia two 12mm core of cancellous bone was taken using the trephine. Through 2 stab incisions laterally, two 10mm core was taken from the subtalar region under fluoroscopic control. The 12mm core of cancellous bone was then tightly packed in the subtalar region. Subtalar joint was fixed with two 6.5mm screws postero-anteriorly. CT scan done at 4 month follow up showed completely bony subtalar union. Conclusion: Because of the risks associated with the revision surgery, it is important to minimize the soft tissue dissection without compromising on the joint preparation for fusion. We felt that this minimally invasive technique helped to achieve this.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle II

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 34373

TRIPLE ARTHRODESIS: A FRESH LOOK

Bhasker BANERJI, Vinay YADAV

JIMARS, Allahabad (INDIA)

Introduction: A retrospective study of Triple arthrodesis done in India, is presented. Material & Method: 46 cases of Triple arthrodesis, performed for Talipes Equinovarus were reviewed retrospectively. Follow-up period 5 to 15 years. Agnus Criteria for grading the results was used, besides objective clinical and radio logical assessment. The indications, excluded secondary post-polio paralysis foot deformities, and complications documented. Observation: The age at follow up varied from 16 to 32 years, period of follow up 5 to 15 years .Minimum age at Surgery was 10 years. The clinical cause of Talipes Equinovarus for which primary Triple Arthrodesis was performed in this series were: primary Club Foot presenting after age 10 years, club foot with excessive scarring due to repeated Surgery, Recurrent and Relapsed Club foot, Valgus or varus feet after failed attempts at Correction of Club foot, Neurogenic conditions like spina bifida, secondary to primary fibro-muscular conditions like Arthrogyrosis Multiplex Congenita. Results: Objective: Residual Deformity 8%, difference in size of foot 9%, Pseudo arthrosis of Talonavicular joint 4%, Avascular Necrosis Talus 2%, Degenerative changes Ankle 6 %, Mid foot 9 %, Instability 1%, Periodic Pain ankle 2%, Callosities 10%. Subjective: Patient satisfaction high, satisfied to walk on a painless plantigrade foot, Mild residual deformities, a minor concern, Overall results, Good: 74%, Fair: 20 %, Poor: 6%. Summary: Triple Arthrodesis is a simple, low cost corrective surgery of the foot deformity mentioned with minimal complications and high success rate, appropriate for developing countries.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle II

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 34658

RETURN TO WORK AFTER TOTAL ANKLE REPLACEMENT: A CROSS-SECTIONAL STUDY

Sami ANJUM, Anjani SINGH, Jayasree RAMASKANDHAN, Malik SIDDIQUE
Freeman Hospital, Newcastle-upon-Tyne (UNITED KINGDOM)

Introduction: The aim of this study was to assess patients reported fitness to return to work and to driving after ankle replacement. Method: Patients with ankle replacement between 2006 and 2011 were invited to participate. Questionnaires were sent and participants were asked to report the nature and pattern of their work, time to return to work and subsequent nature of work. Participants were also asked about time to return to driving. Results: 173 participants were invited of which 124 responded (response rate 72%). There were 54 male and 70 female respondents. Of the responses 61% (n=75) were retired, 33% (n=41) were employed, 6% (n=8) were unemployed before the surgery. 27 reported working full-time, 10 respondents worked part-time and 4 were self-employed. 18 (44%) patients returned to work by 3 months, 13 (31%) by 6 months, and 10 (24%) at 6 weeks. 5 of the patients did not return to work off which one took retirement. 48 (46%) respondents could drive at 6 weeks, 34 (32%) by 3 months and 11 by 6 months. 20 (15%) patients did not drive before surgery. 24 patients responded about nature of employment, 11 being manual workers and 13 being office workers. Of the manual workers 5 patients returned to full time work. Conclusion: We conclude from this study that the 70% of the employed patients prior to their ankle replacement were able to return to work at an average of 3 months with 24% returning by 6 weeks. 79% were able to drive at 3 months after surgery.

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Session: Short Oral Communications - Foot & Ankle II

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 34649

EFFECT OF AGE ON OUTCOMES OF TOTAL ANKLE REPLACEMENT (TAR): A PROSPECTIVE STUDY

Anjani SINGH, Jayasree RAMASKANDHAN, Malik SIDDIQUE

Freeman Hospital, Newcastle-upon-Tyne (UNITED KINGDOM)

Introduction: The aim of study was to evaluate the clinical and patient reported outcomes between patients of <60 and >60 years who underwent TAR. Method: Patients with a TAR between March 2006 and May 2009 were invited to take part in the hospital patient registry. They were divided into two groups based on Age (Group A-Age>60 and Group B-Age<60). Patient demographics, co-morbidities, clinical (AOFAS) outcomes, patient reported outcomes (FAOS, SF-36, patient satisfaction) and complications were collected from patients preoperatively and at 1, 2 and 3 years follow up. Comparisons were made between the groups. Results: There were 56 patients in Group A and 32 patients in Group B. There was no difference in gender, side of operation and diagnosis reported between the 2 groups ($P>0.05$). There was an association between co-morbidities between the groups; Group A reported higher number of co-morbidities than Group B (1.54 vs. 1.00); $p=0.032$. There was no difference in AOFAS scores and FAOS scores for pain and function at all follow up times ($p>0.05$). Although Group B reported worse scores for FAOS stiffness preoperatively ($p=0.002$) and at 1 year ($p=0.029$); there was no difference between scores at 2 and 3 years follow up. There was no difference in SF-36 scores at all follow-up times between groups. There were no statistically significant differences in patient satisfaction and complications reported between groups. Conclusion: Patients > 60 years of age had higher co-morbidities, but had similar clinical and patient reported outcomes to <60 years of age group.

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Session: Short Oral Communications - Foot & Ankle II

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 34732

LONG-TERM FOLLOW-UP OF MOBILE-BEARING TOTAL ANKLE ARTHROPLASTY IN INFLAMMATORY JOINT DISEASE

Huub J.L. VAN DER HEIDE¹, Tim KRAAL², Marta FIOCCO¹, Bart VAN POPPEL¹, Rob G.H.H. NELISSEN¹, Kees H.C. DOETS²

¹Leiden University Medical Centre, Leiden (NETHERLANDS), ²Slotervaart Hospital, Amsterdam (NETHERLANDS)

Total ankle arthroplasty (TAA) show good short- to midterm results, however, little is known about the long-term results. TAA with the use of two mobile-bearing designs (LCS and BP) was used for the treatment of inflammatory joint disease in 76 patients with 93 ankle replacements between 1988 and 1999. At a mean follow-up of 14.8 years (range 10.7-22.8 years), 28 patients with 31 ankle arthroplasties, still had the primary joint replacement. 39 patients died during follow up and 23 arthroplasties failed and resulted in a fusion (n=17) or a revision (n=6) The cumulative incidence of implant failure at 15 years was 20% (95% CI 11-28). The mean AOFAS score at latest follow-up was 80.4 points (95% CI 72-88). Both designs described in this study, the Buechel-Pappas and the LCS prosthesis, are currently no longer available. However, based both on this study and on other reports, we believe that total ankle arthroplasty with use of current mobile-bearing designs for end-stage inflammatory ankle arthritis remains justified.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle II

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Room: 10 - Hall 4

Abstract no.: 34718

ENDOSCOPIC CORRECTION OF HAGLUND'S DEFORMITY

Andrey SEREDA, Gennadiy KAVALERSKY, Andrey GRITSYUK

I.M. Sechenov First Moscow State Medical University, Moscow (RUSSIA)

Haglund's deformity is a triad of posterosuperior calcaneal prominence, retrocalcaneal bursitis, and Achilles tendonitis just above the footprint at the place of impingement with calcaneal prominence. Traditionally treatment of symptomatic Haglund's deformity includes open surgery with correction. But this correction could be performed endoscopically with less soft tissue disruption. 43 patients with Haglund's deformity (50 heels) were treated in orthopaedic department of First Moscow Medical State university from 2010 till 2011. In first group (30 patients, 34 heels) we used open correction of Haglund's deformity, in the second group (13 patients, 16 heels) we used endoscopy. Short-term results 3 weeks after the surgery by AOFAS scoring scale were significantly better in patients treated endoscopically, but one year after surgery results were the same.

Date: 2013-10-17

Session: Short Oral Communications - Foot & Ankle II

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Abstract no.: 35553

OUTCOMES OF SURGICAL TREATMENT OF CHRONIC ACHILLES TENDON DISORDERS

Ajay BAJORIA, Riazuddin MOHAMMED, Anand GARLAPATI, Babis KARAGKEVREKIS

Burton Hospitals NHS Foundation Trust, Burton on Trent (UNITED KINGDOM)

A retrospective assessment of the complications and outcomes of chronic Achilles tendon disorders performed by a single surgeon at a District General Hospital was conducted. Case note, operating records and imaging were reviewed for 15 patients who underwent open surgical procedures from May 2006 to September 2012 for Achilles tendon problems that failed to resolve with non-operative treatment. The average age of the cohort was 45 years (range 21-70 years) with a male female ratio of 2:3. The surgical intervention was at a mean period of 18 months after the onset of symptoms. Simple Achilles tendon excision was performed in 3 patients who had intra-substance tendinosis. 4 patients had tendo Achilles segmental excision with Flexor Hallucis Longus tendon transfer reconstruction for tendon degeneration which was more than 50% as confirmed on a MRI scan preoperatively. In the remaining 8 patients excision of Haglund's bony prominence and tendon repair with bone anchor sutures was performed for insertional tendinopathy. At a mean follow-up of 5 months, no complications like infection, wound healing problems, nerve injury, tendon rupture etc. were noted in any patient. All patients were satisfied with the outcome of the procedures and have been discharged from follow up care, except for one patient who is on the waiting list to have the contra lateral side operated on. The study concludes that after failed conservative treatment of long-standing Achilles tendon disorders, surgical intervention offered to patients with realistic expectations produces good results.

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Session: Short Oral Communications - Foot & Ankle II

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Room: 10 - Hall 4

Abstract no.: 34357

TREATMENT OF DELTOID CHRONIC INJURY INDUCED FLAT FOOT DEFORMITY USING TWINFIX

Chao ZHANG, Xu WANG, Xin MA, Jia Zhang HUANG

Hua Shan Hospital, Fudan University, Shanghai (CHINA)

Objective: To investigate the treatment of flat foot caused by chronic injury of deltoid ligament. Methods: Seven patients with flat foot confirmed by chronic deltoid ligament injury underwent arthroscopy, open debridement of medial mortise and reconstruction with twinfix, Injury mechanism and pathogenesis were recorded, pre- and post-operation ankle function were assessed using AOFAS scoring system. Results: All these patients had deltoid ligament injury and flat foot deformity, mean pathogenesis were 16.3 months, X-ray examination showed that Meary's angle and hindfoot valgus angle recovered from $5.4\pm 1.8^\circ$ and $8.2\pm 2.6^\circ$ pre-op to $4.0\pm 0.9^\circ$ and $5.3\pm 1.3^\circ$, the AOFAS scores were 76.8 ± 7.0 preoperatively and 94.1 ± 3.3 postoperatively. Conclusion: flat foot deformity caused by deltoid ligament injury differ from that with posterior tibial tendon dysfunction.

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Session: Short Oral Communications - Foot & Ankle II

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Room: 10 - Hall 4

Abstract no.: 33578

COBB PROCEDURE AND CALCANEAL OSTEOTOMY IN THE TREATMENT OF STAGE II TIBIALIS POSTERIOR TENDON: CASE SERIES

Kenneth DAVID-WEST, Birendra SHRESTHA

Crosshouse Hospital, Kilmarnock (UNITED KINGDOM)

Posterior tibia muscle is a powerful unipennate structure with a limited tendon excursion of up to 2cm. We assess the efficacy of Cobb procedure in combination with medial displacement calcaneal osteotomy in the treatment of stage II posterior tibialis tendon dysfunction. Fourteen patients with stage II posterior tibialis tendon dysfunction were treated with Cobb procedure and medial displacement calcaneal osteotomy between 2009 to June 2012. Ten females and four males with a mean age of 58.5 years and mean follow-up of 25.3 month (6 months-42 months) The mean preoperative AOFAS was 60 and postoperative of 88, mean improvement of 28. They were all able to do a single heel raise stand. The medial ache was restored in the entire patient and all the calcaneal osteotomies healed within 3 months. One patient had superficial infection that was treated with antibiotics. They all had improvement in the lateral ankle pain post operatively, and no weakness of anterior tibia tendon. This procedure yields a very good result in stage 2 posterior tibialis tendon dysfunction, with minimal complication and compare very favourably with other method of treatment.

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Session: Short Oral Communications - Foot & Ankle II

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 35419

THE OVERLOOKED DEFORMITY IN HALLUX VALGUS: TAILOR'S BUNION

Osman TECIMEL¹, Alper DEVECI², Ahmet FIRAT¹, Serdar YILMAZ², Ahmet O. YILDIRIM², Ozdamar F. OKEN², Murat GULCEK², Ahmet UCANER²

¹Atatürk Training and Research Hospital, Ankara (TURKEY), ²Ankara Numune Training and Research Hospital, Ankara (TURKEY)

Introduction: This study aimed to investigate the incidence of Tailor's bunion accompanied by hallux valgus(HV) deformity. Clinical results of patients who received a treatment or not for their Tailor's bunions were evaluated. Patients and methods: Between 2009 and 2012, 203 patients with the diagnose of hallux valgus were evaluated retrospectively. One hundred thirty-six feet of 86 patients were treated surgically(group 1) and 240 feet of 117 patients were treated conservatively (group 2). Tailor's bunion was diagnosed clinically as a prominence of the fifth metatarsal bone at the base of the little toe. Also standard radiographs were used for the diagnosis of Hallux valgus deformity and Tailor's bunion. The feet were categorized under Fallat classification. At the last follow-up, American Orthopaedic Foot & Ankle Society (AOFAS) score was used for functional assessment of all patients. AOFAS scores were compared in groups according to accompanying of Tailor's bunion, Results: Mean follow-up time was 28.3 month (range 18-42) There were 20 feet (14.7%) with Tailor's bunion in surgically treated groups, 21 feet (8.7%) in conservatively treated group and 41 feet (10.9%) in both groups. 14 of 41 Tailor's bunions were determined as type 1, 15 as type 2 and 12 as type 3. AOFAS scores were determined as lower in Tailor's bunion accompanied patiens ($p<0.001$). Conclusion: Due to poor functional scores of patients with Tailor's bunion, while planning hallux valgus surgery, Tailor's bunion should be considered.

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Session: Short Oral Communications - Foot & Ankle II

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 34712

USE OF MEMORY STAPLES FOR FIRST METATARSOPHALANGEAL JOINT ARTHRODESIS

Shah JEHAN¹, Andrew BING², Simon O HILL², Alam K KHAN¹

¹Hull Royal Infirmary, Hull (UNITED KINGDOM), ²The Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry (UNITED KINGDOM)

Introduction: The aim of this study was to evaluate the efficacy and safety of memory staples in first metatarsophalangeal (MTP) joint arthrodesis. Methods: We collected retrospective data from patients' case notes to determine the fusion rates, complications and rates of revision surgery in patients undergoing first metatarsophalangeal (MTP) joint fusion with memory staples. The results of 76 consecutive patients (95 joints) were studied. Two memory (20 mm) staples were used in each case. Results: The average duration of follow-up was 24 weeks (6-88 weeks). Bilateral surgery was done in 19 patients and unilateral in 57 patients. Average age was 64 years. The indications were hallux rigidus (49 joints), hallux valgus with degenerative changes (44 joints), gout (1 joint) and previous surgery for hallux valgus (1 joint). The average time for radiological union was 8 weeks (5-18 weeks). Non-union was noted in three joints (3.3 %), malunion in three and delayed union in four joints. Broken staples were noted in four joints but only one of these had a non-union. Three cases with superficial wound infections were managed with oral antibiotics. Three patients with non-unions were offered revision surgery; two underwent revision arthrodesis with plate and screws while one was asymptomatic and declined any further surgery. The union rate with memory staples was 96.7%. Conclusion: The results of this study indicate that the use of memory staples in first metatarsophalangeal joint arthrodesis is safe and effective. However, comparative studies comparing staples with other techniques needed to provide strong evidence.

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Session: Short Oral Communications - Foot & Ankle II

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Room: 10 - Hall 4

Abstract no.: 35745

ACUTE CHARCOT FOOT: ROLE OF SPECT/CT BONE SCINTIGRAPHY IN EARLY DIAGNOSIS AND MORPHOLOGICAL CLASSIFICATION

Krishna BODDU, Ahmed BILAL, Radhika CHAKRAVARTTY, Nicola MULHOLLAND, Gill VIVIAN, N. PETROVA, Venu KAVARTHAPU, Michael EDMONDS

King's College Hospital, London (UNITED KINGDOM)

Introduction: We attempted to evaluate the role of SPECT/CT bone scan in early diagnosis and morphological description of acute Charcot foot. Methods: We included all diabetic patients that attended a tertiary referral diabetic foot unit between 2009 and 2011 with clinical presentation of red, hot and swollen feet and peripheral neuropathy but without clinical deformities or infections. Planar and SPECT/CT bone scans were performed using 'Charcot protocol'. Results: SPECT/CT scans were performed in 149 patients. Preliminary results showed that increased uptake in all three phases confirmed acute Charcot arthropathy in 87% of feet. Most commonly involved area was tarsometatarsal joints (TMTJ) affecting 47% of feet followed by metatarsophalangeal (MTPJ) joints in 35%, midtarsal joint in 30%, subtalar in 28% and ankle in 27%. We observed a clear deviation from the classically described Brodsky's classification of disease distribution. Subtalar joint involvement was mostly associated with ankle joint involvement (55%) and less commonly with midtarsal joint (27%). Avulsion fractures were detected in 18% of feet in the CT images whereas occult avulsion fractures were shown in most of the remaining feet. Occult subchondral fractures were shown in 18% of cases. Discussion: SPECT/CT scan showed added advantages in delineating the anatomical distribution of Charcot arthropathy in the foot and also in detecting occult avulsion fractures. Identifying these lesions early and implementing appropriate treatment can potentially improve the prognosis of these patients. Further, we propose a new classification system of Charcot foot based on the SPECT/CT findings.

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Session: Short Oral Communications - Foot & Ankle II

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 34337

COMPLICATIONS OF TRADITIONAL BONE SETTERS, STRATEGY TO OVERCOME A TRAGEDY: EXPERIENCE FROM SUDAN

Waleed MEKKI

Ministry of Health, Eldewaim- White Nile State (SUDAN)

Introduction: Traditional bone setting is an old practice in an attempt to heal bone fractures, it's still prevalent in some parts of the developing world with low conduct and qualities of treatment and some disastrous outcome attributed to lack of basic medical knowledge and professionalism, they either over or underestimate injuries and by applying tight bandages they provide catastrophes. We report our local experience in the White Nile State villages and Suburbia of Eldewaim city, southern to Khartoum, with a population of around two million, many patients presented with late complications ranging from Mal-union to Gas Gangrene! Methods: Establishment of Orthopaedic Surgery services plus setting up an awareness program in which chief of tribes and locals share in reporting serious injuries early to the hospital. Results: working through a two years' period an increase in local awareness of the effectiveness and safety of modern medical practice resulted in a marked decrease in the appearance of disastrous complications like Ischemic limbs and Gas Gangrene. Conclusion: Establishment of accessible and affordable Orthopaedic services and working through locals and media would result in a remarkable decrease in the ensuing traditional bone setter's complications in areas with prevalent practice.

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Room: 10 - Hall 4

Abstract no.: 35884

TRABECULAR PATTERN OF PROXIMAL TIBIA

H.K.T. RAZA, Shamikh Muneer Ghaus-UI RAZA

NSCB Medical College, Jabalpur (INDIA)

INTRODUCTION: The internal architecture of bones gives an idea of the stresses to which a particular bone is subjected to and the direction of these stresses. The following study was carried out on cadaveric tibia. **AIMS OF THE STUDY:** To ascertain the trabecular pattern of the proximal end of Tibia in a three-dimensional perspective. **MATERIAL & METHODS:** The proximal ends of 12 Tibia (Six of each side) were divided into three groups of four each. 5mm Sections of each group of four were obtained in one of three planes: Transverse, coronal, sagittal. All sections were studied by naked eye observation, under a magnifying glass and after obtaining radiographs. **OBSERVATIONS:** The most important features discovered were:(a) An arcuate arrangement of trabeculae in the sagittal sections only, representing stresses of movements of flexion-extension at Knee in sagittal plane.(b) Thick concentration of vertically aligned trabeculae in coronal sections under centre of medial/lateral condyles of tibia merging into medial and lateral cortex of proximal tibia. (c)These vertically placed trabeculae were found to be maximally concentrated in centre of condyles in transverse sections. **DISCUSSION & CONCLUSION:** The concentration of trabeculae along Central Zone of condyles and the arcuate arrangement seen in sagittal planes will help in designing of tibial components for knee arthroplasty. It will also help in explaining fracture patterns around the proximal end of Tibia.

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Session: Short Oral Communications - Foot & Ankle II

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Room: 10 - Hall 4

Abstract no.: 33872

A NEW HINGE SYSTEM IN LIMB LENGTHENING AND CORRECTION OF AXIAL DEVIATIONS

Ghassan SALAMEH¹, Michael SCHMIDT²

¹Salamehfix Centre for Limb Lengthening & Reconstruction, Damascus (SYRIA), ²Waldhof Centre Frankfurt, Frankfurt (GERMANY)

Simultaneous limb lengthening and correction of axial deviations need a special external hinge distraction system which has been developed, and allows combined Treatment of congenital, acquired, complex deformities and shortness of lower and upper limbs. Since 1995 to 2012 this new hinge system was used in 950 patients with deference indications in lower limbs, they presented with limb length discrepancies and axial deviations or mal rotation. The External Fixation Hinge System / SLDF1; Salamehfix 1/; is an arch hinged system consisting of small arches with various diameters and perimeters, to assemble the shape of the limb in the upper and distal part with connecting special hinges allows combined and simultaneous lengthening with correction of axial deviations, deference sizes of arcs to choose a special size for each patient with keeping an excellent technical functions, milt planar, multidimensional corrections; makes the system more suitable to each patient in size and allows the patient to move his joints freely. Stable fixation of the system because of insertion wires and screws in nearly right angles and in deference levels and angles allows also early weight bearing, the insertion of wires and half pens in minor painful regions makes the tolerance to the system more acceptable. X-ray control is easy. Complications were mostly superficial pin infections, No nerve or vascular injuries. The new developed hinge system is more comfortable, easy to use and allows treatment of complex deformities with simultaneous lengthening and early weight bearing.

Date: 2013-10-18

Session: Short Oral Communications - Spine I

Time: 08:30 - 10:00

Room: 10 - Hall 4

Abstract no.: 35988

PROSPECTIVE STUDY OF VERTEBRAL AUGMENTATION BY PERCUTANEOUS BALLOON KYPHOPLASTY IN OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURES

Kalpesh RANPARIA, Javahir PACHORE, Viral SHAH, Praveen SAXENA
Shalby Hospitals, Ahmedabad (INDIA)

Introduction: Vertebral compression fractures are the common source of morbidity in elderly osteoporotic patients. Balloon kyphoplasty is a minimally invasive outpatient procedure for treatment of vertebral compression fractures, with an advantage of immediate pain relief, stabilization of fractures, vertebral height restoration and correction of kyphotic deformities with minimal complications like cement leakage. **Materials & Methods:** A total of 33 patients were studied prospectively for the duration of 1 year after the index procedure during May 2011 to February 2013. All the patients were evaluated clinically using Visual Analogue Scale and Oswestry Disability Index and radiologically by measurement of wedge angle and kyphotic angle at preoperatively, immediate postoperatively, 3 months, 6 months and 1 year. Complications due to procedure and cement were also noted. **Results:** Mean VAS score reduced from 8.56 preoperatively to 2.55 immediately and 2.13 at the end of 1 year while mean ODI score reduced from 67.88 preoperatively to 28.48 immediately and 25.81 at the end of 1 year. Average wedge angle reduced from 9.0° preoperatively to 6.94° postoperatively and kyphotic angle reduced from 6.42° preoperatively to 5.82° postoperatively. **Conclusion:** Balloon kyphoplasty is an effective, safe and less time-consuming procedure for osteoporotic vertebral compression fractures in elderly people. It also provides immediate pain relief with correction of kyphotic deformity.

Date: 2013-10-18

Session: Short Oral Communications - Spine I

Time: 08:30 - 10:00

Room: 10 - Hall 4

Abstract no.: 34522

VERTEBROPLASTY VERSUS CONSERVATIVE TREATMENT FOR PAINFUL OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURES, WHICH ONE IS BETTER? – A META-ANALYSIS

Liu TAO, Huilin YANG

The First Affiliated Hospital of Soochow University, Suzhou (CHINA)

Objective: To perform a Meta-analysis to compare the clinical outcomes and complications of vertebroplasty versus conservative treatment for painful osteoporotic vertebral compression fractures(OVCF). Methods: MEDLINE, EMBASE databases and other databases were searched for all the relevant original articles published from January 1987 to March 2011 comparing vertebroplasty with conservative treatment For painful osteoporotic vertebral compression fractures. Results: 15 articles fulfilled all inclusion criteria. VAS score for the vertebroplasty group was significantly low than the conservative treatment group at 1-3 days, 1 month, 3 months, 6 months and 1 year after surgery ($P<0.05$). At 2 years after surgery, there was no significant differences ($P>0.05$) for the VAS score. Vertebral height for the vertebroplasty group was significantly higher than the conservative treatment group at 1 week, 3months, 6months after surgery ($P<0.05$).the fracture-related death for the vertebroplasty group was significantly lower than the conservative treatment group ($P<0.05$). Conclusions: Percutaneous vertebroplasty is effective and safe in the treatment of painful OVCF. Pain relief after vertebroplasty is immediate and sustained for at least a year. Keywords: Vertebroplasty; Conservative treatment; OVCF; META

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Room: 10 - Hall 4

Abstract no.: 34842

TREATMENT OF INFANTILE CERVICAL KYPHOSIS USING FIBULAR GRAFTS

Terai HIDETOMI, Suzuki AKINOBU, Hiromitsu TOYODA, Nakamura HIROAKI
Osaka City University Graduate School of Medicine, Osaka (JAPAN)

Introduction: Infantile cervical kyphosis may cause severe neurologic compromise, even sudden death. Early diagnosis and surgical treatment are necessary for these patients, however, it is still challenging. Case 1: 2-year-old female, diagnosed as Larsen's syndrome. Cervical kyphosis was found by MRI and was sent to spine clinic. Halo vest traction was applied prior to fusion surgery. Posterior decompression/fusion and anterior fusion using fibular graft were performed in the same day. Halo vest had been used until bony union was achieved because no implants could be used. Patient can keep sitting position and use her hands after four years of surgery. Case 2: 2-year-old male, diagnosed as chondrodysplasia punctata type I. Cervical hypoplasia/ kyphosis were found and then consulted to us. Posterior cervical decompression/ fusion was performed using bilateral fibulas after Halo vest fixation. Both fibulas were reconstructed using artificial bones. Anterior cervical fusion was performed using regenerated fibulas one month after initial surgery. Two years after operation, he required additional surgery of craniocervico-thoracic fusion with implants because of atlantoaxial dislocation. Patient could start rehabilitation for ambulation, it had been impossible before surgery. Discussion: Cervical fixation using implants is still challenging in infantile because of its anatomical structure such as; non-union between vertebral body and lamina, small diameter of pedicles and small size of iliac bone. However, the ability of bone remodelling in infantile is very high and advantageous. So, we used fibular grafts and Halo vest to treat infantile cervical kyphosis and proved its effectiveness.

Date: 2013-10-18

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Room: 10 - Hall 4

Abstract no.: 34519

ACDF VERSUS LAMINOPLASTY FOR MULTILEVEL CERVICAL SPONDYLOTIC MYELOPATHY

Tao LIU, Huilin YANG

The First Affiliated Hospital of Soochow University, Suzhou (CHINA)

Study Design. A non-randomized controlled trial. Objective: To compare the clinical outcomes, radiographic changes and complications of patients with multilevel cervical spondylotic myelopathy who underwent ACDF with the plate cage benezech (PCB) implant system and laminoplasty. Materials and Methods: We evaluated 52 consecutive patients (25 patients for ACDF group and 27 patients for laminoplasty group) at our institution from 2002 to 2007. The clinical and radiographic backgrounds of both groups were comparable. The mean independent follow-up duration was 25.4 months and 24.5 months respectively ($p>0.05$). The clinical outcomes, radiographic changes and complications were compared between the two groups. Results: Compared with the ACDF group, the laminoplasty group needed longer operative time (187.78 minutes VS 115.92 minutes) and more operative blood loss (361.11 ml VS 118.48 ml). Both groups significantly improved the JOA score ($p<0.001$), and the recovery rate was similar (59.79% for the ACDF group VS 59.54% for the laminoplasty group, $p>0.05$). The cervical ROM significantly decreased after both groups ($p<0.05$), while the laminoplasty group had less decrease rate of ROM than the ACDF group (11.39% VS 29.45%, $p<0.05$). The complications for the ACDF group were significantly more than the laminoplasty group ($P<0.05$). Conclusions: Both ACDF with the PCB system and laminoplasty are effective therapies for multilevel cervical spondylotic myelopathy. Compared with laminoplasty, ACDF with the PCB system needs shorter operative time and less operative blood loss, but has more decrease rate of the cervical ROM and more complications.

Date: 2013-10-18

Session: Short Oral Communications - Spine I

Time: 08:30 - 10:00

Room: 10 - Hall 4

Abstract no.: 34345

ANALYSIS OF THE CHARACTERISTICS OF CERVICAL SPONDYLOTIC AMYOTROPHY AND THE SURGICAL OUTCOMES AFTER ANTERIOR CERVICAL DECOMPRESSION AND FUSION: A RETROSPECTIVE STUDY OF 28 PATIENTS

Hongli WANG, Hengchao LI, Jianyuan JIANG, Feizhou LU, Xiaosheng MA, Xinlei XIA, Lixun WANG

Department of Orthopaedics, Huashan Hospital, Fudan University, Shanghai (CHINA)

Introduction: At present, there are still a lot of controversy on the clinical diagnosis and treatment of cervical spondylotic amyotrophy (CSA). Objective: This study was to investigate the characteristics of CSA and the surgical outcomes after anterior cervical decompression and fusion(ACDF). Methods: We collected data of a cohort of patients with CSA to retrospectively analyze the characteristics and the surgical outcomes after ACDF in our medical centre between June 2006 and February 2012. Based on clinical examination, electrophysiological and radiological examination with consultation of the neurologist, we diagnosed the disease as CSA. Results: The pathophysiology of CSA could be attributed to impinge against either anterior horn(AH) or ventral nerve root(VNR). The most common responsible levels for the most severely atrophic muscles were bi-levels in this study, which were the C4-5 and C5-6 in proximal-type, and the C5-6 and C6-7 in distal-type($P<0.01$). 91.7% of proximal-type patients gained 1 or more grades of muscle power improvement by MMT, whereas that in distal-type patients was 37.5%($P<0.01$). The recovery rate of JOAs in proximal-type and distal-type patients was 60.8% and 41.8% respectively($P<0.05$). Patients' satisfaction in proximal-type and distal-type patients was 8.2 and 6.9 respectively($P<0.01$). There was correlation with each other among the improvement of muscle power, recovery rate of JOAs, patients' satisfaction and course of disease($P<0.05$). Conclusions: Anterior cervical decompression and fusion can effectively improve the clinical function of patients with CSA and obtain good patients' satisfaction. We recommend that the patients with CSA require surgical intervention as early as possible.

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Session: Short Oral Communications - Spine I

Time: 08:30 - 10:00

Room: 10 - Hall 4

Abstract no.: 33938

EN BLOC LAMINECTOMY AND LAMINOPLASTY FOR CERVICAL SPONDYLOTIC MYELOPATHY: A PROSPECTIVE STUDY OF CLINICAL AND RADIOLOGICAL OUTCOMES

Chandrashekher BADOLE, Abhijit KAWALKAR

Mahatma Gandhi Institute of Medical Sciences, Sewagram (INDIA)

STUDY DESIGN: A prospective study comparing the outcomes of the 2 surgical techniques used in the treatment of cervical spondylotic myelopathy. **OBJECTIVE:** We prospectively compared the en bloc laminectomy and laminoplasty in terms of extent of decompression achieved, axial pain, postoperative range of cervical motion, and patient and surgical outcomes. **BACKGROUND:** Laminoplasty is an established procedure for the decompression of multi-segmental cervical compressive myelopathy. However, it often induces postoperative problems, such as axial pain, restriction of neck motion, and loss of lordotic alignment. Skip laminectomy was recently developed as a minimally invasive procedure. **METHODS:** We studied 38 patients operated on for cervical spondylotic myelopathy and spinal cord compression as demonstrated on magnetic resonance imaging (MRI) between the levels C3-4 and C6-7. Each patient was followed up for 2 years. 18 patients underwent en bloc laminectomy and 20 patients underwent laminoplasty. Decompression was assessed by preoperative and postoperative MRI. Patient outcomes were assessed by evaluation of preoperative and postoperative JOA SCORE, Nuricks Score and VAS scores for pain. **RESULTS:** Similar blood loss and operative times with both procedures. Similar degrees of decompression was achieved with both techniques. Both Significantly improved VAS pain scores. However laminoplasty showed more improvement in JOA scores than en bloc Laminectomy, the % improvement being 80.2% and 43.8% respectively. **CONCLUSIONS:** both en bloc laminectomy and Laminoplasty are effective procedures providing adequate decompression of the spinal cord. However long-term follow-up studies are required to assess the superiority of one procedure over another.

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Abstract no.: 33714

ANTERIOR PEDICLE SCREW AND PLATE FIXATION IN CERVICAL RECONSTRUCTION

Yasutsugu YUKAWA, Fumihiko KATO, Keigo ITO, Masaaki MACHINO

Dept. of Orthopaedic Surgery, Chubu Rosai Hospital, Nagoya (JAPAN)

OBJECTIVES: Anterior procedures in the cervical spine are feasible in cases of anterior aetiology such as anterior neural compression and/or kyphosis. Halo vests or anterior plates are used concurrently for cases with multi-segmental fixation. However, halo vests are troublesome and anterior plate fixation is not adequately durable. We have developed a new anterior pedicle screw and plate fixation procedure using the fluoroscope-assisted pedicle axis view imaging technique. **MATERIALS AND METHODS:** 24 patients who underwent multi-level anterior pedicle screw and plate fixation were enrolled. They were 14 men and 10 women and their mean age was 53 years old. Their original diagnoses comprised spondylosis cervical myelopathy (n=19), OPLL (n=4), and post-traumatic kyphosis (n=1). **RESULTS:** Mean operative time was 212 min and average blood loss was 165 ml. All patients were permitted to ambulate next day with a cervical collar. Local sagittal alignment was characterised by 5.6° of kyphosis preoperatively, which improved to 3.6° of lordosis postoperatively. Bony union was observed within 8 months in all cases. There was no serious complication but for each one case of postoperative hematoma and mild dysphagia. Laminoplasty was added in one case with OPLL, due to insufficient decompression. Total 72 anterior pedicle screws were used and postoperative imaging demonstrated screw exposure in 6 screws (8.3%), but no pedicle perforation. **CONCLUSIONS:** Anterior pedicle screw and plate fixation should not be considered as a routine surgical procedure, rather it could be the surgical option which offers the strongest fixation in multi-segmental anterior cervical reconstruction.

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Session: Short Oral Communications - Spine I

Time: 08:30 - 10:00

Room: 10 - Hall 4

Abstract no.: 34272

THE CLINICAL AND RADIOGRAPHIC OUTCOMES OF DYNAMIC CERVICAL IMPLANT REPLACEMENT FOR TREATMENT OF CERVICAL DISC HERNIATION: A 24-MONTH FOLLOW-UP

Lei WANG, Yueming SONG

West China Hospital, Chengdu (CHINA)

This is a prospective and consecutive series study to determine the role of the dynamic cervical implant (DCI) replacement to treat the isolated cervical disc herniation for Chinese patients. 30 patients with isolated degenerative cervical disc herniation were prospectively enrolled between April 2010 and August 2010 including 12 women and 18 men with mean age of 56.5 years. All patients underwent anterior cervical decompression and DCI replacement. Clinical and radiological assessments were performed preoperatively and at 1, 6, 12 and 24 months postoperatively. JOA, VAS, NDI and SF-36 scores were adopted to assess the total recovery situation. Lateral neutral radiographs were taken to survey the intervertebral space height and lateral dynamic radiographs were taken to measure the range of motion (ROM) of the cervical spine and functional spinal unit (FSU) of the treated segment. All patients were followed up for at least 24 months. The DCI implantation shows good clinical and radiographic outcomes. At the final follow-up, JOA, VAS, NDI and SF-36 average scores showed significantly improvement. The intervertebral space height increased a little after operation and maintained during our follow up. The ROM of the cervical spine and FSU decreased at early follow-up, but they recovered to the preoperative level within 1 or 2 years. DCI implantation can not only provide elastic dynamic stability for the targeted segment, but also restore and sustain intervertebral space height and ROM of the cervical spine. But to be sure of its long-term effect, a longer follow-up is needed.

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Session: Short Oral Communications - Spine I

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Room: 10 - Hall 4

Abstract no.: 33899

COMPARISON OF TITANIUM AND POLYETHERETHERKETONE (PEEK) CAGES IN THE SURGICAL TREATMENT OF MULTILEVEL CERVICAL SPONDYLOTIC MYELOPATHY: A PROSPECTIVE, RANDOMIZED, CONTROL STUDY WITH OVER 7-YEAR FOLLOW-UP

Yu CHEN, Xinwei WANG, Deyu CHEN

Department of Spine Surgery, Changzheng Hospital, Second Military Medical University, Shanghai (CHINA)

Purpose: Anterior cervical discectomy and fusion (ACDF) with titanium- or polyetheretherketone (PEEK)-cage reconstruction is widely used in the treatment of cervical spondylotic myelopathy (CSM). This study was to compare outcomes of titanium and PEEK cages in the treatment of multilevel CSM. **Methods:** Between November 2002 and December 2004, a total of 80 patients with 3-level CSM were randomized in a 1:1 ratio to titanium group and PEEK group. The overall follow-up period of the patients ranged from 86 to 116 months (average 99.7 months). Clinical and radiological results were compared between titanium group and PEEK group. **Results:** At the final follow-up, the clinical outcomes including JOA score, NDI score, and the excellent and good rates of clinical outcomes in the PEEK group were better than those in the titanium group. More loss of the Cobb angles and the intervertebral height was observed in the titanium group, resulting the radiological parameters in the titanium group were inferior to the PEEK group at the final follow-up. Cage subsidence rates were 34.5% and 5.4% in the titanium and PEEK groups, respectively. Fusion was observed in all patients of two groups at the final follow-up. Two patients presented with cage dislocation without clinical symptoms in the titanium group. **Conclusions:** In surgical treatment of multilevel CSM, PEEK cage is superior to titanium cage in maintenance of intervertebral height and cervical lordosis, resulting in better clinical outcomes in the long-term follow-up.

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Abstract no.: 34750

THE PELVIC INCIDENCE IS A FUNDAMENTAL PARAMETER ON SURGICAL TREATMENT OF THORACOLUMBAR SPINE FRACTURE

Zoubaier ELLOUZ, Mourad AOUI, Ameer ABID, Zied BELLAAJ, Nadeur TRIGUI, Wajdi BOUAZIZ, Slim MOALLA, Fakher GDOURA, Kamel AYADI, Hassib KESKES

CHU Habib Bourguiba, Sfax (TUNISIA)

Introduction: Actually, the fracture of the spine must not be considered as an isolated lesion of one or two vertebrae. It must be integrated into the overall balance of the spine or take into account the position of the sacrum and then the pelvic ring which must be considered as a 'pelvic vertebra' as mentioned by Dubousset. The degree of kyphosis caused by the fracture is evaluated in the literature by a few parameters: the angle of COBB(CR), the Gardner segment kyphotic deformity(GSKD), Regional Traumatic Angulation(RTA) and Sagittal Index of Farcy(SIF). Determine the type of back must be fundamental to plan the correction. The X-ray lateral view of lumbosacral junction enables to define the pelvic incidence and the type of back regarding to Rousouly and allows us to plan our correction with the appropriate parameters. Materials: In our study, 110 patients were operated for thoracolumbar fracture between February 2005 and December 2011 by the contouring in situ surgical technique. Conclusion: The level of fixation depends on the shape of the back. Backs Type I and II of Rousouly, with a pelvic incidence less than 50°, a short segment pedicle fixation is sufficient. However, for backs Type 3 and 4 of Rousouly, with a high pelvic incidence, a long segment pedicle fixation gives a harmony for this back with high curvatures. The pelvic incidence is a fundamental parameter to evaluate the deformities of thoracolumbar fractures. The correction and the vertebrae included by pedicle fixation must be adapted to the shape of the back.

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Abstract no.: 33984

MANAGEMENT OF EARLY ONSET KYPHOTIC DEFORMITY WITH THE RIB CONSTRUCT

Alaaeldin AHMAD¹, Richard GROSS², Zeke WALTON²

¹Annajah Medical School, Nablus (PALESTINE), ²MUSC, Charleston (UNITED STATES)

Introduction: Current literature stresses the difficulty of managing early onset kyphotic spinal deformity with growing rods and the VEPTR, with increased complications and/or failure of correction for both methods. We report our experience with treating early onset kyphotic deformity with a 4-rib construct. Methods: On-going data from 2 centres 2007-present. 23 patients have been treated with the rib construct, 6 with thoracic kyphosis, 11 thoracolumbar, and 6 whole spine. The construct consists of 2 down-going hooks, on ribs 2-3, and 2 up-going hooks, on ribs 4-5. Syndromic aetiologies were prevalent in thoracic, congenital in thoracolumbar, and neuromuscular in whole spine. Age at surgery ranged from 2-16, follow-up from 5-61 months (average 28). 11 patients had documented WHO osteoporosis. Results: Average preop thoracic kyphosis 123 degrees, post op 76. preop thoracolumbar kyphosis 57 degrees, postop 23. preop whole spine kyphosis 113 degrees postop. Complications: 2 patients died from unrelated causes, 2 infections, one delayed with removal of instruments, one proximal rib fracture with failure of the procedure, 3 dislodgment of instrumentation, replaced. Growth modulation was utilized for congenital deformities rather than resection techniques. Conclusion: The rib construct has provided reliable proximal fixation for patients with kyphotic early onset spinal deformity, with improved results compared with those reported for other methods of proximal spinal or rib fixation.

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Abstract no.: 34570

DOES SELECTIVE THORACIC FUSION PROVIDE SATISFACTORY OUTCOMES IN ADOLESCENTS WITH CHIARI MALFORMATION-ASSOCIATED SCOLIOSIS?

Ze Zhang ZHU

Spine Surgery, Drum Tower Hospital, Nanjing University Medical School, Nanjing (CHINA)

Summary: Twenty-seven adolescents with Chiari malformation-associated scoliosis (CMS), treated with posterior selective thoracic fusion, were retrospectively reviewed. Our results show that selective thoracic fusion can provide a satisfactory outcome in CMS patients. **Introduction:** There are few studies focusing on the long-term results of short instrumentation for scoliosis secondary to Chiari malformation. The purpose of this study is to evaluate the clinical outcome of posterior thoracic fusion in adolescents with thoracic scoliosis secondary to Chiari malformation. **Methods:** Twenty-seven adolescents met the following inclusion criteria: posterior selective thoracic fusion referring to the criteria for selective fusion in AIS, a minimum 2-year follow-up, were reviewed. The average age was 15.2 years (range, 12-18 years). The following radiographic parameters before surgery, immediately after surgery and at the last follow-up were compared: coronal Cobb angle, apical vertebral translation, apical vertebral rotation, trunk shift, thoracic kyphosis, lumbar lordosis, thoracolumbar kyphosis, and sagittal vertical axis. The clinical outcome was evaluated using the SRS-22 questionnaire. **Results:** All the patients received a follow-up from 2 to 7 years (mean 3.4 years). Average thoracic and lumbar Cobb angle was 51.5° and 30.4° respectively, while decreased to 22.7° and 12.4° immediately after surgery. At the last follow-up, the average rate of correction loss in thoracic curve was 2.3% with no correction loss in lumbar curve. Self-image was significantly improved (mean 10.3 vs 20.9) when compared with which before surgery. **Conclusion:** Selective thoracic fusion can provide a satisfactory outcome in CMS patients if they meet the criteria of selective fusion for AIS.

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Abstract no.: 34387

MANAGEMENT OPTION FOR TANDEM SPINAL STENOSIS (TSS)

Chinmay NATH

Apollo Gleneagles Hospital, Kolkata (INDIA)

Introduction: Spondylotic degeneration can cause stenosis in cervical and lumbar spine which is one of the commonest surgical condition affecting spine. Tandem (concurrent) cervical and lumbar spinal stenosis is also a not so rare entity. Primary manifestation of tandem stenosis includes neurogenic claudication, gait abnormality, and a mixture of myelopathy with radiculopathy. A clear management protocol is required to solve this problem. Method: Between 2009 and 2012, 7 cases of tandem stenosis were diagnosed in a series of 195 patients who underwent surgery for spinal canal stenosis of either cervical or lumbar spine or both (3.58%). All seven patients underwent surgery for both the region and all of them got cervical spine surgery done first. Result: Average follow-up period was 29.4 months. Average preoperative JOA score was 8.7 which was improved to 11.9 at 6 months and 12.1 at final follow-up. ODI was improved from 56.8 to 22.5.

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Session: Short Oral Communications - Spine I

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Abstract no.: 35318

EPIDEMIOLOGY OF SPINAL INJURIES – A DESCRIPTIVE STUDY

Gopinath NALLI, Uvaraj NALLI, R. DHANAGOPAL

Institute of Orthopaedics and Traumatology, Chennai (INDIA)

Spinal cord injury has become an epidemic in modern society. With peak incidence in young adults, traumatic SCI remains a major problem for society. An epidemiological study helps to plan future preventive measures and management strategies for spinal trauma. Aim of study is to describe the epidemiology and demographics of all spinal injuries which reported for management in a tertiary referral centre in South India. This study is a descriptive study of all cases of spine injury, admitted during period September 2011 to August 2012. A detailed history was recorded and clinical examination was done for all cases. Radiological investigations were done and diagnosis arrived. Out of the total number of 313 patients, 226 cases were males (71.88%). Cervical injuries (43.45%) predominated, followed by dorsal (27.09%), lumbar (22.36%), and others. Fall from height was the main mode of injury (54.95%) followed by RTA and others. The age group which suffered more due to spinal injuries in both male and female were 26-45 years(55.91%). Average number of transfer before admission at our hospital was 2. About 57.18% of patients were transported by ambulance, the common mode of transfer. The time interval between injury and admission ranges from 25 minutes to 9 hours. Adopting the Frankel's grade, most of the patients at the time of admission presented with Frankel's grade A(31.30%), followed by Grade E(27.47%) neurology. The changes in the pattern of spinal injuries that is occurring over time with rapid urbanization and development is discussed in detail along with comparison of the present study with existing literature.

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Room: 10 - Hall 4

Abstract no.: 34524

KYPHOPLASTY VERSUS VERTEBROPLASTY FOR PAINFUL OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURES: WHICH ONE IS BETTER?

Huilin YANG, Tao LIU

The First Affiliated Hospital of Soochow University, Suzhou (CHINA)

Objective: To perform a Meta-analysis to compare the clinical outcomes and complications of kyphoplasty versus vertebroplasty for painful osteoporotic vertebral compression fractures (OVCF). Methods: MEDLINE, EMBASE databases and other databases were searched for all the relevant original articles published from January 1987 to March 2011 comparing The following outcome were mainly evaluated: visual analog scale (VAS), vertebral height, kyphosis angle, new vertebral fractures, cement leakage Results: 15 articles fulfilled all inclusion criteria. The baseline characteristics including sex, age, number of prevalent fractures, etc. were comparable for both groups ($P>0.05$). VAS score for the kyphoplasty group was comparable with the vertebroplasty group at 1-3 days, 3 months, 6 months, 1 year and 2 years after surgery ($P<0.05$). Vertebral height for the kyphoplasty group was significantly higher than the Vertebroplasty group at 3 months, 6 months and 2 years ($P<0.05$). Kyphosis angle for kyphoplasty group was significantly lower at 3 months, 6 months and 2 years ($P<0.05$). The occurrence of new vertebral fractures for kyphoplasty group had no significant difference with the Vertebroplasty group at 3 months, 6 months and 2 years ($P>0.05$). The occurrence of cement leakage was significantly lower than the Vertebroplasty group ($P<0.05$). Conclusions: Percutaneous kyphoplasty is better than vertebroplasty in the treatment of painful OVCF. Kyphoplasty had better improvement at vas score, vertebral height and kyphosis angle with lower occurrence of cement leakage.

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Room: 10 - Hall 4

Abstract no.: 34956

UNILATERAL VERSUS BILATERAL BALLOON KYPHOPLASTY FOR OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURES

Jun LIN, Huilin YANG

The First Affiliated Hospital of Soochow University, Suzhou (CHINA)

Objective: To compare the safety and long-term radiographic and clinical outcomes of unilateral or bilateral balloon KP to treat patients with osteoporotic VCFs. Study Design: A systemic review and meta-analysis of all randomized controlled trials (RCTs) comparing the analgesic efficacy, radiographic outcomes and complications between unilateral and bilateral balloon KP in patients with osteoporotic VCFs. Results: Three RCTs were enrolled in this study. The VAS scores showed no statistical difference between the groups before surgery and either at short-term or long-term follow-up. There was no statistical significance in polymethylmethacrylate (PMMA) leakage between the groups. Analysis of two studies showed statistical significance in surgery time [WMD -23.77(-27.83, -19.71);P<0.00001] and PMMA [WMD -1.65(-2.28, -1.02);P<0.00001] consumption between the groups. Conclusion: The efficacy of both unilateral and bilateral balloon KP to provide rapid, significant and sustained pain relief for patients with osteoporotic VCFs is validated. Unilateral balloon KP is a reasonable treatment for patients with osteoporotic VCFs considering that it could achieve equivalent pain relief with less surgery time and PMMA consumption compared to bilateral balloon KP. There was no evidence to prove that unilateral balloon KP results in higher incidence of PMMA leakage than bilateral balloon KP. Although unilateral balloon KP was less efficacious in the reduction of fractured vertebral body, it is still unclear if the clinical results of balloon KP were positively correlated with the restoration of vertebral height and amount.

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Abstract no.: 34791

THE THORAX COSTAL FRAMEWORK CHANGE FEATURES IN PATIENTS WITH HEAVY PROGRESSIVE SCOLIOTIC SPINE DEFORMITIES

Darya TESAKOVA, Dmitry TESAKOV, Polina ZUEVA, Helena SOSHNIKOVA
Republic Scientific-Practical Centre of Traumatology and Orthopaedics, Minsk (BELARUS)

Purpose: The purpose of this research was to study thorax costal framework changes in patients with IS heavy progressing spine deformities to determine features of deformity process development. Methods: Clinical-radiological data of 731 patients 4-20 years old with IS spine deformity and the main arches angle from 41 to 168 degrees by Cobb were studied. Arches of an interval of 41-60 degrees were available in 391 cases, 61-90 degrees – in 205, 91-120 degrees – in 101 and over 120 degrees – in 34 cases. The methodology of the radiological visual analysis with carrying out comparative measurements of the chosen contralateral departments of the thorax costal framework in a direct vertical projection was used. Results: The certain stages of thorax costal framework radiological changes revealed. Stage depended on scoliotic spine deformity pathological arches expression and size at its further independent advances over 40 degrees. The special radiological symptoms reflecting gravity of the thorax costal framework deformity lesion were defined. It is expedient to consider the obtained data as objective diagnostic information for specification of scoliotic deformity features and definition of its possible progress prognosis.

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Abstract no.: 35562

THORACIC PEDICLE SUBTRACTION OSTEOTOMY IN THE TREATMENT OF SEVERE PAEDIATRIC KYPHOTIC DEFORMITIES

Kamil Cagri KOSE, Mustafa Erkan INANMAZ, Hakan BASAR, Emre BAL, Islam CALISKAN

Sakarya University Faculty of Medicine, Sakarya (TURKEY)

Introduction: The aim of this study is to determine the safety and efficacy of posterior thoracic pedicle subtraction osteotomy (PSO) in the treatment of severe kyphotic/kyphoscoliotic paediatric deformities. Method: A retrospective review was performed on 6 consecutive paediatric patients (5 F, 1 M) treated by means of a posterior thoracic PSO between 2009 and 2011 in a single Institution. Results: The average age was 11.8 years (range 7–14 years). Five patients had kyphoscoliosis and one had kyphosis alone. The average follow-up was 15.5 months (12-20). The average preoperative kyphosis and scoliosis angles were 82.1 (range 40–105), 68.3 (range 8–132) respectively. The average last follow-up kyphosis and scoliosis angles were 38.3 (20-60) and 18.8 (0–40) respectively. There was 54% correction of kyphosis and 72.5% correction of scoliosis. There was one case with a temporary paraplegia which recovered nearly completely in 6 months. There were no neurological deficits in the remaining patients. There were no early superficial or late deep infections, instrument-related complications or pseudarthrosis. All patients were found to be well compensated regarding the overall sagittal contour and global coronal alignment at the last follow-up. Conclusion: Posterior-based thoracic pedicle subtraction osteotomies should be done with neuromonitorization and represent a valuable tool in the surgical treatment of severe paediatric spinal deformities.

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Abstract no.: 35383

SURGICAL CORRECTION OF DYSTROPHIC KYPHOSCOLIOTIC SPINAL DEFORMITIES IN NEUROFIBROMATOSIS: A REVIEW OF 10 CASES

Abhijeet KADAM, Ashok RATHOD

Lokmanya Tilak Municipal Medical College and General Hospital, Mumbai (INDIA)

Dystrophic spinal curves in Neurofibromatosis are known to be associated with rapid progression and poor outcomes and frequently pose major technical challenges in effective surgical management. The authors here report their experience of surgical management of such dystrophic spinal deformities in 10 cases. 10 patients (7 females and 3 males) were followed up for an average of 21.5 months (range: 8 to 42 months). The average age of the patients at the time of surgery was 13.3 years (range: 9 to 19 years). Apex of the deformity was at the thoracic level in 7 cases and at the thoracolumbar junction in 3 cases. Surgical interventions were done in the form of posterior hybrid instrumentation with pedicle screw and hook systems with augmentation with sub-laminar wires and/or mersilene tapes in most cases. One case necessitated a subsequent anterior procedure for vascularised fibular strut bone grafting for pseudarthrosis. The mean preoperative Cobb angle of the scoliotic curves was 74 degrees (range 40-120) corrected by an average of 56.2%. The mean preoperative sagittal plane deformity was 72 degrees corrected by an average of 55.3%. Surgery related complications were seen in the form of a dural leak in one patient which sealed off spontaneously and postoperative neuro-deficit in one case. In two cases the index surgeries failed due to implant breakage and cut-out for which revision surgeries with bone grafting were necessitated. All patients were braced postoperatively for a period ranging from 4 to 6 months with a total contact TLSO (Thoracolumbar-sacral orthosis) brace.

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Abstract no.: 35044

MANAGEMENT OF SEVERE DYSTROPHIC CURVES IN SCOLIOSIS WITH NEUROFIBROMATOSIS – OUR EXPERIENCE IN 21 CASES

Amitava BISWAS, Saumyajit BASU, Gaurav DHAKAL, Dharmesh PATEL
Park Clinic, Kolkata (INDIA)

Introduction: Spinal deformity in neurofibromatosis, is a major treatment challenge. The aim of this work is to review the clinico-radiographic outcomes - analyzing its efficacy, safety and possible complications. Materials and Methods: From 2005 to 2012, 21 patients (12 M /9 F) with severe dystrophic kyphoscoliosis were treated and 15 were followed up clinically/radiologically for a mean period of 24.64 months (range 1 - 72) (6 non operated patients lost to follow-up). Out of 23, 12 underwent surgery :posterior spinal fusion (7), growing rod instrumentation (1), anterior release and posterior spinal fusion (2), vertebral column resection (1), halo- vest distraction (1). 4 patients were observed as they did not consent for any surgical procedure. Results: Mean preoperative coronal Cobb: 73.18° (range 40° –118°) corrected to 35.45°(range 10° to 89°). The mean preoperative sagittal Cobb was 57.6° corrected to of 37.8° (range 14 to 80). Screening MRI showed plexiform neurofibroma (4). Clinically all patients had multiple café-au-lait spots, 2 had plexiform neurofibromas. 13 patients were neurologically intact, 1 had spastic paraparesis, and 1 had flaccid paraparesis. Other associated findings: arachnoid cyst (1), supraglottic neurofibroma (1), lung neurofibroma (1). Complications include proximal junctional kyphosis (1), which was non-progressive, implant failure / curve progression requiring revision surgery (2), halo pin- tract ulcerations (1), CSF leakage / wound failure requiring rotation flap coverage (1). There was no pseudarthrosis or neurological complications. Conclusion: Surgery for scoliosis in Neurofibromatosis is safe and efficacious though procedural complications can occur.

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Abstract no.: 34600

THE EFFECT OF ROD STIFFNESS AND SCREW DENSITY ON THE CORONAL AND SAGITTAL PLANE CORRECTION RATE IN LENKE 1 ADOLESCENT IDIOPATHIC SCOLIOSIS (AIS)

Zhaomin ZHENG, Hui LIU, Jianru WANG, Zemin LI, Hao YANG

Department of Spine Surgery, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou (CHINA)

To investigate the effect of rod stiffness and pedicle screw placement density on the coronal and sagittal plane correction rate in Lenke 1 AIS, 39 patients (6 males, 33 females) from 2008 to 2012 with Lenke 1 AIS were analyzed. The standing posteroanterior and lateral view whole spine radiographs were obtained before surgery and 1 week after surgery. The following parameters were measured: 1) coronal plane major curve Cobb angle; 2) sagittal plane T5-T12 Cobb angle; 3) the number of fusion segments and screw instrumented vertebrae. All cases were divided into four groups according to the pedicle screw placement density and the rod stiffness: Group A- low stiffness rod with low density of screw placement; Group B- low stiffness rod with high density of screw placement; Group C- high stiffness rod with high density of screw placement; Group D- high stiffness rod and low density of screw placement. The coronal plane and thoracic kyphosis correction rate were compared using SPSS 18.0 One-Way ANOVA. The results showed that in Lenke 1 AIS patients, rod stiffness and screw density mainly influenced the sagittal plane correction rate. Higher rod stiffness and higher screw density could increase the sagittal plane correction rate.

Date: 2013-10-18

Session: Short Oral Communications - Spine II

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 34611

CORONAL IMBALANCE AFTER POSTERIOR CORRECTION WITH VCR OR PSO FOR ANGULAR THORACOLUMBAR KYPHOSCOLIOSIS AND ITS RISK FACTORS

Yong QIU

Spine Surgery, Drum Tower Hospital, Nanjing University Medical School, Nanjing (CHINA)

Introduction: Osteotomy measures like VCR and PSO have been employed to correct angular kyphoscoliosis in thoracolumbar junction. However, postoperative coronal imbalance might occur in some cases. Methods: This study included patients who received posterior correction with VCR or PSO for angular thoracolumbar kyphoscoliosis from January 2008 to October 2011. Patients with postoperative coronal imbalance (C7 shift to either side more than 2cm) were included in the imbalance group. Balanced patients who were randomly selected from our database served as the balance group. Results: Both groups had 28 patients. In the imbalance group, 26 patients had a coronal imbalance to the convex side, except two to the concave side. Between the two groups, corrections of the scoliosis and kyphosis were similar. After surgery, the imbalance group had aggravated inclination of the trunk, and remarkable residual tilting of LIV, in contrast to the balance group. The imbalance group (to the convex side) tended to be more frequent with preoperative C7 convex shift, a more tilted L4 ($\geq 20^\circ$) or L5 ($\geq 15^\circ$), and a more caudal location of LIV, preoperatively. Occurrence of imbalance to the convex side was significantly associated with a postoperative UIV translation over 2 cm or with negative tilt $\geq 5^\circ$, and a residual tilt of LIV $\geq 10^\circ$. Conclusion: Postoperative coronal imbalance might occur after correction with VCR or PSO for angular thoracolumbar kyphoscoliosis. A considerable C7 shift and a large L5 tilt before surgery, and a more caudal LIV location, may be predictive in the development of postoperative coronal imbalance.

Date: 2013-10-18

Session: Short Oral Communications - Spine II

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 33940

MANAGEMENT OF SEVERE MALTREATED GRANULOMATOUS KYPHOSIS

Abolfazl RAHIMIZADEH, Housain SOUFIANI

Department of Spinal Surgery, Pars Hospital, Tehran (IRAN)

Twelve maltreated cases including 3 cases with spinal brucellosis and nine cases with tuberculosis suffering severe kyphosis are presented. Kyphosis ranged from 44 to 100 degrees with mean of 58 degrees. Neurology was accompanying in 10 out of 12 patients. Combined anterior posterior surgery in four patients, anterior only surgery in 3 patients, three stage surgery in 3 patients and one stage posterior only surgery in two subjects result in correction of kyphosis with mean of 41 degrees. Neurological deficit disappeared in those with neurology with an exception of two with transient paresis which disappeared after 3 months. Granulomatous infections including Tuberculosis and Brucellosis respond to medical treatment with early diagnosis. Delay in diagnosis as well as mismanagement in surgical approach result in severe kyphosis. Management of severe kyphosis is a very challenging issue which will be demonstrated in this presentation. For management of severe kyphosis in already healed or maltreated patients, preoperative full standing radiographs is indicated to assess focal and global kyphosis. Dynamic X-rays are necessary to detect the flexibility of the condition. Reconstructed CT and MRI are the prerequisite of successful surgery. Surgery depending on the experience of the surgeon can be done in one-, two-, or three-stage operations.

Date: 2013-10-18

Session: Short Oral Communications - Spine II

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 33643

DYNAMIC CHANGES OF SAGITTAL ALIGNMENT IN THORACIC SPINE

Yasutsugu YUKAWA, Daigo MORITA, Keigo ITO, Masaaki MACHINO,
Fumihiko KATO

Dept. of Orthopaedic Surgery, Chubu Rosai Hospital, Nagoya (JAPAN)

Introduction: Thoracic spine has been considered to have little range of motion (ROM) because it is stable by the rib cage. On the other hand, it is a fact that dynamic factor should induce the thoracic compressive myelopathy in some patients. The purpose of this study is to investigate the dynamic alignment and ROM at each level in thoracic spine and to analyse the correlation between the segmental ROM and the incidence of the thoracic ossification of the ligamentum flavum (OLF). Methods: A total of fifty patients with cervical or lumbar spinal disease who had neither thoracic spinal disease nor compressive fracture were enrolled prospectively. After preoperative myelography, multi-detector-row CT (MDCT) scans were performed in maximum flexion and extension position. Total and segmental thoracic kyphotic angles were measured and ROMs were calculated. Furthermore, the correlation between the segmental ROM and the incidence of thoracic OLF at each disc level treated with surgical intervention was investigated. Results: The apex of kyphotic angle was T6/7 in flexion position. The total(T1-L1) ROM was 31.7 ± 11.3 degrees. The segmental ROM decreased from T1/2 to T4/5 and increased gradually from T4/5 to T12/L1. The maximum ROM was at T12/L1 and the minimum was at T4/5. The incidence of thoracic OLF at each disc level correlated significantly with the segmental ROM. Conclusion: Thoracic spine had some dynamic changes of sagittal alignment, being considered to be a stable region. These findings could give us the useful information for diagnosis and choice of surgical intervention of thoracic spinal disease.

Date: 2013-10-18

Session: Short Oral Communications - Spine II

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 34149

HEMIVERTEBRAE RESECTION FOR UNBALANCED MULTIPLE HEMIVERTEBRAE

Chunguang ZHOU, Limin LIU, Yueming SONG

The Department of Orthopaedics, West China Hospital of Sichuan University, Chengdu (CHINA)

Introduction: Many studies reported results of hemivertebra excision for congenital scoliosis, and most patients in these studies suffered from a single hemivertebra. There is no previous reports of the treatment of unbalanced multiple hemivertebrae. Methods: Thirteen children aged 1 to 6 years with unbalanced multiple hemivertebrae were operated on by hemivertebra resection through a combined anterior and posterior approach or a posterior-only procedure. Mean age at time of surgery was 9.8 years. They were retrospectively studied with a mean follow-up of 48.5 months. Results: The average Cobb angle of the main curve was 63.1° before surgery and 13.1° at last follow-up. The correction rate was 80.7%. The compensatory cranial curve was corrected from 25.9° to 13.5° with a correction rate of 58.9%, and the compensatory caudal curve was corrected from 29.9° to 6.5° with a correction rate of 75.1%. The angle of segmental kyphosis was 38.8° before surgery and 15.1° at final follow-up. The coronal imbalance was -1.0cm before surgery and -0.1 cm at the most recent follow-up. The sagittal imbalance was 0.6cm before surgery and 0.4 cm at the most recent follow-up. Conclusions: In the patients with unbalanced multiple hemivertebrae, hemivertebra resection allows for excellent correction in both the coronal and sagittal planes, and great care should be taken to reduce the rate of complications.

Date: 2013-10-18

Session: Short Oral Communications - Spine II

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 35606

DIFFERENT METHODS OF L5-S1 ANTERIOR FUSION FOR HIGH-GRADE SPONDYLOLISTHESIS

Marchel VETRILE, Alexander KULESHOV, Vladimir DOTSENKO

Central Institute of Traumatology and Orthopaedics named by N.Priorov (CITO), Moscow (RUSSIA)

Symptomatic high-grade spondylolisthesis (Meyerding III–V) is usually treated by surgery. Anterior L5-S1 fusion is a key point for a good outcome. We have performed different techniques of circumferential fusion in high-grade spondylolisthesis using titanium mesh cages, long titanium cages, individual plates. Six patients with symptomatic spondylolisthesis (Meyerding IV) underwent pedicle screw fixation with partial reduction. and then anterior extraperitoneal L5-S1 fusion with titanium mesh cage, filled with cancellous bone. Mesh cage was inserted at L5-S1 level in the same way as strut graft. In one patient we used special long, threaded titanium cage, packed with cancellous bone. In three cases L5-S1 anterior fixation was performed by individual titanium plates. Results: Follow-up was 26 months. In all cases circumferential fusion was achieved. There were no surgical or postoperative complications. Serial X-rays revealed no implant subsidence or loosening. There have been no implant fractures or reoperation. Clinical results have been excellent with significant pain reduction and improved function. Conclusion: Using of titanium mesh cage or threaded cage instead of allo- or autograft have some advantages: it avoids the complications associated with autologous cortical fibular strut graft and also are useful to promote interbody fusion. It avoids fracture risks associated with strut grafting. Using individual anterior L5-S1 plates leads to results to stable fixation and good results, but the operative technique is more complicated. Using long, threaded titanium cage appears to be optimal for L5-S1 anterior fusion in severe spondylolisthesis.

Date: 2013-10-18

Session: Short Oral Communications - Spine II

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 35224

STRATEGIES TO DECREASE PERIOPERATIVE BLOOD LOSS IN ADOLESCENT IDIOPATHIC SCOLIOSIS (AIS) PATIENTS UNDERGOING POSTERIOR SPINAL FUSION (PSF) – JUDICIOUS USE OF DRAINS, PLANNED SURGICAL PROCEDURE, FACTORS INFLUENCING INTRAOPERATIVE BLOOD LOSS

Vijay KAMATH, Jason PUI YIN CHEUNG, Kin Cheung MAK, Keith DIP KEI LUK, Kenneth MAN CHEE CHEUNG

Department of Orthopaedics and Traumatology, Duchess of Kent Children's Hospital, University of Hong Kong, Hong Kong (HONG KONG)

Introduction: Various strategies used to decrease perioperative blood loss. Postoperative drain collection accounts for 30-40% of perioperative blood loss. To decrease postoperative blood loss, contrary to usual use of deep drains we place subcutaneous spine wound drains and no iliac wound drains. We believe planned meticulous surgical technique is the critical factor in reducing intraoperative blood loss. Aim: Evaluate efficacy of subcutaneous spine wound drain in reducing blood loss and its effect on wound healing. Evaluate amount of reduction in blood loss by not placing an iliac crest wound drain. Document intraoperative blood loss in our patients, identify determining factors. Results: 212 AIS patients who had PSF only reviewed. Mean spine-wound drain collection 254.6±211ml, accounted for 25.7% of the total perioperative blood loss. 105 patients had iliac drains, mean drain collection 178.4±66.2ml. Mean drain collection in group with spine drains only was 224.2±193ml and in group with spine and iliac drain was 463.82±242.8ml,SD(p=<0.001). Intra operative blood loss/patient 741.7±403ml, blood loss/level fused 79.3±37ml. 15 (7%) patients had spine wound healing aberrations, 4(1.8%) wound infection. Between patients who had iliac-wound drains and those without drains, no SD in wound healing aberrations(3.9%vs0.9%) and infection(nil Vs 0.9%). Conclusions: Subcutaneous spine drain decreases drain blood-loss, compared to deep drain as in literature without affecting wound healing. Closure of iliac crest donor site wound without a drain significantly decreases drain collection without affecting wound healing. Intraoperative blood-loss in our patients lower than reported in literature. Intraoperative blood-loss significantly influenced by surgical duration, number of levels fused, number of anchor points.

Date: 2013-10-18

Session: Short Oral Communications - Spine II

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 34920

PATHOGENESIS OF “LIGAMENTUM TO BONE” TRANSFORMATION IN ENDEMIC SKELETAL FLUOROSIS

J. NARESH-BABU¹, G. NEELIMA²

¹Mallika Spine Centre, Hyderabad (INDIA), ²Osmanai Medical College, Hyderabad (INDIA)

Introduction: Endemic skeletal fluorosis due to drinking of water containing high concentration of fluoride is common in Asian population and results in ossification of ligaments. Ligament flavum (LF) ossification results in neurological complications. Present study aims at histopathological analysis of the ossified ligamentum flavum (OLF). Methods: 10 OLF specimens, five degenerative LF and five normal LF were studied with Hematoxylin and Eosin (H&E), Verhoff's van Gieson (VvG), Toluidine blue (TB), Masons trichrome (MT) and Alcian Blue (AB) staining. Specimens were analysed qualitatively for elastic fiber orientation, integrity and loss, chondroid metaplasia and Osteoid metaplasia. The quantitative analysis was done using SCION image analysis software. Results: All ten OLF specimens showed areas of irregularly oriented elastic fibers, areas of ossification and in between there was a transitional area of cartilage matrix with chondrocytes progressing towards ossification. Elastic fiber occupying ratio was 60.96%, 40.25% and 22.66%; no. of Chondrocytes per mm² was 37.56, 93.35 and 117.68; area of chondroid matrix (%) was 11.34, 32.37 and 73.56 and the area of osteoid matrix (%) was 0, 9.37 and 33.43 respectively for normal controls, degenerative group and OLF group. Cartilage matrix was more on dorsal compared to dural side of OLF. In contrast, osteogenesis was more in the dural surface than the dorsal surface. Conclusions: In fluorosis, loss of elastic fibers was associated with proliferation of collagen fibers, fibrosis, chondrogenesis and osteogenesis. The pathological process initiates in the dorsal surface of LF with chondroid metaplasia whereas ossification occurs at dural surface.

Date: 2013-10-18

Session: Short Oral Communications - Hip I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 35820

RADIOLOGICAL FINDINGS FROM METAL-ON-METAL HIPS THAT UNDERWENT REVISION SURGERIES

Vaibhav BAGARIA, Rob WALLACE

Sportsmed SA, Adelaide (AUSTRALIA)

There is increasing awareness of potential biologic consequences unique to the metal-on-metal bearing couple. Adverse local tissue reactions specific to metal particulate debris have been described. Previous studies in this field have shown the biological reaction to be a spectrum of reactivity and soft tissue changes, with a number of potential factors (i.e., female gender, implant design and size, acetabular component position, and obesity) supposedly contributing to or predisposing to the same. Over a period of 20 months, 110 patients underwent revision surgery for metal-on-metal hip related complications. All patients who underwent revision had clinical failure with substantial pain and functional limitation. Revision was undertaken when the patient felt their symptoms warranted surgical treatment. We describe the MRI findings specific to the failed hips. Incidence and description of certain unique findings like Periarticular soft tissue collection, pseudotumour, muscle edema, osteolysis, piriformis and obturator internus atrophy is described along with relevant intraoperative findings. A painful metal-on-metal total hip may be difficult to diagnose given our limited experience with these inflammatory synovial reactions and lack of awareness of clinical presentation along with the uncertainty regarding the appropriate treatment. The MRI findings described in this study may prove to be a useful adjunct in reaching a diagnosis and deciding on future course of management.

Date: 2013-10-18

Session: Short Oral Communications - Hip I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 35674

METAL-ON-METAL (MOM) TOTAL HIP REPLACEMENT: A MID-TERM OUTCOME STUDY

Mayank VASHISHTHA, Ibrahim ELTILIB, Karen ROLLINSON, Ajit SHETTY, Aaron NG

Pinderfields Hospital, Leeds (UNITED KINGDOM)

AIM: In light of the UK Medical Device Alert recommendations on the management of MoM THR in June 2012, we assessed the midterm outcomes in MoM THR patients with 36 mm metal heads. **METHODS:** This is a retrospective study to assess mid-term outcomes (minimum 2 years' follow-up) of 112 consecutive MoM THRs in 102 patients at a UK District General Hospital between 2005 and 2010. Methods included serial case notes review, Oxford Hip Scores, radiological investigations and blood biochemistry for cobalt-chromium levels. **RESULTS:** 93 patients were available for follow-up with 9 patients having died of other medical conditions. Average age at time of operation was 65 (range 36 to 86) and mean follow up was 4.5 years (range 2-8 years). 75/93 patients (80%) were asymptomatic. The Mean postoperative Oxford hip score was 37 (range 12 to 48). All follow-up X-rays were satisfactory. Unexplained pain was seen in 18/93 patients (19%) with only 1/18 patient with raised metal ions levels. 4/93 patients (4%) had raised metal ion levels in the series but 3/4 remain asymptomatic. Metal Artefact Reduction Sequence (MARS) MRI scans were performed in 21/93 patients (symptomatic patients and/or high metal ions levels) with only one suspicious of pseudotumour identified. **CONCLUSION:** MARS MRI and Ultrasound are useful adjuncts in diagnosing pseudotumours. No revisions were noted in this study for MoM THRs with 36 mm head. Close surveillance is recommended in all patients with MoM THRs as asymptomatic patients might develop subclinical pseudotumours.

Date: 2013-10-18

Session: Short Oral Communications - Hip I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 33948

OUR EXPERIENCE OF HIP RESURFACING WITH THE BIRMINGHAM MID HEAD RESECTION (BMHR) DEVICE IN A DISTRICT GENERAL HOSPITAL

Aditya PRINJA, Jagwant SINGH, Emeka ORAGUI, Jeremy PARKER

Colchester Hospital University NHS Foundation Trust, Colchester (UNITED KINGDOM)

INTRODUCTION: Birmingham Hip Resurfacing (BHR) is a useful alternative to total hip arthroplasty in young males, however it is contraindicated in patients with poor femoral head anatomy. The Birmingham Mid Head Resection (BMHR) device has a greater spectrum of inclusion and presents a viable solution for patients who are excluded from having a BHR. We present our experience of the BMHR in a district general hospital. **METHODS:** A retrospective analysis was performed of patients who underwent resurfacing with the BMHR device. Included patients had all been deemed suitable for conventional resurfacing but had poor bone quality of their femoral head and neck. Patients were followed up regularly. Clinical assessment was made using Harris Hip Scores. Radiological assessment looked at position, lucency and migration. **RESULTS:** Eight patients underwent the procedure between 2009 and 2012 (5 male, 3 female, mean age 48 years). Mean follow up was 22.4 months (range 9-35). Patient satisfaction was high with 100% happy with the outcome. Harris Hip Scores yielded a score of over 80 out of 91 in 71%, and over 70 in 100%. Radiological assessment did not show any narrowing of the femoral neck or radiolucent areas. None of our patients required revision. There were no cases of infection, neck fracture, dislocation or mechanical failure. **CONCLUSION:** Our results show that BMHR can be used with great success in a district general hospital as an alternative to standard total hip arthroplasty in patients who would benefit from a conservative procedure but have poor femoral head anatomy.

Date: 2013-10-18

Session: Short Oral Communications - Hip I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 33541

MID-TERM OUTCOMES IN 112 METAL-ON-METAL TOTAL HIP REPLACEMENTS (M-O-M THRS) (36MM HEAD)

Ibrahim ELTILIB, Ajit SHETTY, Aaron NG, Vashishtha MAYANK
The Mid Yorkshire NHS Trust, Wakefield (UNITED KINGDOM)

AIM: In light of recent Medical Device Alert (MDA) recommendations on the management of M-o-M THR in July 2012, we assess the mid-term outcomes in patients who had M-o-M THR using 36 mm metal heads at our institution with minimum 2 years' follow-up. **METHODS:** Between 2005 and 2010, 112 consecutive M-o-M THRs in 102 patients were performed. Serial case notes review including Oxford Hip Scores, radiological investigations (X-rays/ MARS MRI/ Ultrasound) and cobalt & chromium levels were assessed. **RESULTS:** A retrospective study with minimum 2 years' follow-up. 93 patients were available for follow-up with 9 patients dying of other medical conditions. Average age at time of operation was 65 (range: 36 to 86) and mean follow up was 4.5 years (range: 2-8 years). 75 patients were asymptomatic (80%). Mean postoperative Oxford hip score was 37 (range: 12 to 48). All follow-up X-rays were satisfactory. Unexplained pain was seen in 18 patients (19%) with only 1 patient with raised metal ions levels. 4 patients have raised metal ion levels in the series but 3 remain asymptomatic. MARS MRIs were performed in 21 cases in symptomatic patients and/or high metal ions levels with only one suspicious of pseudotumour identified. **CONCLUSION:** MARS MRI and US scan are useful adjunct tools in diagnosing pseudotumours. No revisions in this mid-term follow-up. Specialized services such as US guided aspiration and fluid analysis has not been formalized. Close surveillance is recommended in all patients with M-o-M THRs as asymptomatic patients might develop subclinical pseudotumours.

Date: 2013-10-18

Session: Short Oral Communications - Hip I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 34527

THE EFFICACY OF ULTRASOUND AND MRI SCANS IN DETECTING ADVERSE REACTION TO METAL DEBRIS IN POSTOPERATIVE PAIN FOLLOWING METAL-ON-METAL HIP REPLACEMENT SURGERY

Harinder GAKHAR, Alexandros APOSTOLOPOULOS, Naveed AHMED, Phil WARDAL, George ZAFIROPOULOS, Peter LEWIS

Prince Charles Hospital, Merthyr Tydfil (UNITED KINGDOM)

Background: The accuracy of ultrasound and magnetic resonance imaging in evaluating incidence of pseudotumours, ALVAL and metallosis is variable. Aim: To correlate ultrasound and MRI findings with histopathology results in symptomatic metal-on-metal (MoM) hip arthroplasty. Methods: 37 hips (32 patients) that underwent revision hip surgery for painful (MoM) hip arthroplasty were included in this study. All data was prospectively collected. 28 patients (34 hips) underwent ultrasound and 27 patients (33 hips) underwent MRI examination. Results: 24 patients had histopathology. 20 patients were positive for metallosis on histopathology. Ultrasound was positive for fluid collection in 30 hips and MRI was positive in 25 hips. The sensitivity of ultrasound in detecting fluid was 75% whereas of MRI scan was 85%. Four patients who had ultrasound positive scans had normal MRI scans. Two patients who had normal ultrasound scans had positive MRI scans. Three patients who had normal ultrasound and MRI scans were revised due to pain and proven to have metallosis on histology. In two further cases ultrasound scans were negative but histopathology findings were positive for metallosis. Conclusion: MRI and ultrasound have high rates of identifying metallosis. However patient symptoms should be taken into consideration for deciding revision surgery even if MRI and ultrasound results are normal.

Date: 2013-10-18

Session: Short Oral Communications - Hip I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 35773

THE ADVANTAGE OF A COLLAR IN CEMENTLESS TOTAL HIP REPLACEMENT STEMS

Jens BOLDT¹, Guillaume DEMAY², Tarik AIT SI SELMI³

¹Klinik Siloah, Bern (SWITZERLAND), ²Clinique de la Sauvegarde, Lyon (FRANCE), ³Centre Orthopédique Santy, Lyon (FRANCE)

Introduction: Primary stability of collared versus collarless fully hydroxyapatite (HA) coated femoral stems were compared. The Corail implant requires immediate primary stability because of its unique surgical technique of proximal bone impaction and non-press-fit within the diaphysis. Due to this concept proximal metaphyseal fixation is required in order to obtain primary stability and successful secondary osteointegration. Methods: Twenty fresh-frozen bilateral human femurs had the Corail (DePUY) stem implanted. One femur of a human cadaver with a collared and the other femur of the same human with the non-collared standard Corail stem. Vertical and horizontal forces were applied and measured by a machine. The forces for stem subsidence and ultimate femoral fracture were measured and compared to one another. Results: Vertical compression forces initiated subsidence of the collarless stem at an average of 3129 N (± 494) and were almost double with the collared stem 6283 N (± 3584) for collared stem ($p < 0.02$). Femoral fracture occurred at an average force of 6254 N for collarless stems and 11917 N for collared stems ($p = < 0.001$). Discussion: Collared Corail stems showed significantly larger primary stability and were able to withstand significantly larger horizontal and vertical compression forces in human cadaver femurs. Also, significantly higher forces were necessary to fracture the proximal femur under extreme forces, when a collar was present. The data of this study are in favour of using a collared Corail stem.

Date: 2013-10-18

Session: Short Oral Communications - Hip I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 35356

REVIEW OF CERAMIC-CERAMIC BEARINGS IN HYDROXYAPATITE CERAMIC COATED HIP IMPLANTS: A CLINICAL AND RADIOLOGICAL EVALUATION WITH UP TO TWENTY-YEAR FOLLOW-UP

James BUCHANAN, David FLETCHER

Sunderland Royal Hospital, Sunderland (UNITED KINGDOM)

Aims: Recent enthusiasm for metal-on-metal resurfacing seems to be waning. Will Hydroxyapatite hip (HA) arthroplasty associated with ceramic bearings produce uncomplicated function in younger, active patients? The incidence of aseptic loosening, dislocation and broken implants has been particularly investigated. **Methods:** This is a study extending over 20 years of 627 HA hip arthroplasties with ceramic bearings. Annual review has been performed using Harris Hip Score to assess pain and function and X-rays to check osseointegration. Alumina ceramic was inserted in 467 hips. The newer Zirconia Toughened Alumina (ZTA) has been inserted in 160 hips. There are 118 hips still under review at 10 or more years. **Results:** Aseptic loosening is unusual (one stem, two acetabulae) (3 of 1252 components, 0.24%) Failure from mal-orientation with repeated dislocation occurred in six hips (0.96%). Three alumina heads (0.48%) and two alumina liners (0.32%) broke. There has been no failure of ZTA ceramic. No patients have thigh pain. Osteolysis and debris disease have not arisen. Harris Hip Scores show 91.2% scoring over 90 or 100. Overall revision rate is 2.8%. **Conclusions:** Assessments confirm that patients remain well. HA fixation secures the implants in these cementless hips. Ceramic bearings cause negligible wear. Failure from broken alumina components is unusual. Alumina has now been superseded by ZTA for implantation. Ceramic-on-ceramic is a reliable choice for bearing surfaces in patients of any age and either sex.

Date: 2013-10-18

Session: Short Oral Communications - Hip I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 35070

USE OF THE TIP-IMPLANT DISTANCE REDUCES VARIABILITY IN LEG LENGTH FOLLOWING HIP REPLACEMENT SURGERY

Jasvinder DAURKA¹, Peter DACOMBE², Alvin CHEN², Charles GIBBONS², Warwick RADFORD²

¹St. Mary's Hospital, London (UNITED KINGDOM), ²Chelsea & Westminster Hospital, London (UNITED KINGDOM)

Introduction: A minority of patients suffer from symptomatic leg length discrepancy (LLD) following hip replacement surgery (THR). We report the success of a simple method of reducing variability in LLD using a single measurement of length made from a templated preoperative plan. Methods: A radiographic comparative study was conducted on consecutive patients undergoing THR surgery. The patients were separated into two groups dependent on the use of preoperative templating. The Tip-Implant distance was measured in the templated group, and this was reproduced intraoperatively. This is a measurement of the distance from the shoulder of the femoral implant to the tip of the greater trochanter. Results: There were 27 templated and 19 non-templated hips that met the study criteria. The mean LLD (inter-teardrop to lesser trochanter) in the hips was not significantly different at +1.1mm (SD 3.9) and +2.9mm (SD 8.1) in the templated and non-templated hips respectively. The range of leg length discrepancy observed in the templated hips was -6mm to +11mm and in the non-templated hips was -6mm to +21mm. The pre(templated) and postoperative(achieved) mean Tip-Implant measurement was 16.1mm (SD 4.5mm) and 16.5mm (SD 5.2mm) respectively, which correlated strongly with paired t testing 0.749 (p=.0001). There was a significant difference in variances with a Levene's test for equality F value of 12.0 (p=0.01) suggesting a far narrower spread of LLD in the templated group. Conclusion: The Tip-Implant measurement determined preoperatively is reproducible intraoperatively and reduces the likelihood of leg length discrepancy outliers in hip replacement surgery.

Date: 2013-10-18

Session: Short Oral Communications - Hip I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 34724

**THE EFFECT OF REFOBACIN AND PALACOS BONE CEMENT ON
FIXATION OF TOTAL HIP ARTHROPLASTY**

Huub J.L. VAN DER HEIDE, Paul VAN DER VOORT, Danny VAN DELFT,
Bart L. KAPTEIN, Edward R. VALSTAR, Rob G.H.H. NELISSEN
Leiden University Medical Centre, Leiden (NETHERLANDS)

The mechanical properties of acrylic bone cement influence the long-term survival in cemented total hip arthroplasty (THA). The Boneloc disaster showed that even slight changes in the chemical constitution of cement can have tremendous clinical impact. In this randomized, blinded RSA study we compared Palacos R + gentamycine with Refobacin R + gentamycine bone cement in patients eligible for total hip arthroplasty. Sixty-two consecutive cemented THAs in 59 patients were randomized into a Palacos cement group and a Refobacin cement group. All patients received a Stanmore THA (Biomet) using third generation cementing technique. Primary outcome was component migration measured using RSA and secondary outcome was the Harris Hip Score (HHS). Twelve hips with an insufficient marker configuration on the first RSA examination were excluded. Three patients died and 1 patient was lost-to-follow-up as a result of a cerebral infarction. This left 44 stems suitable for migration measurement at 2-year follow-up. At the 2-year follow-up moment no statistical difference existed between the two cement groups, for neither translation nor rotation migration data. The mean subsidence of the stem at 2-year follow-up was 0.5 ± 0.73 mm for Palacos bone cement and 0.4 ± 0.41 for Refobacin bone cement. Both cement groups showed excellent clinical results. The mean HHS at 2-year follow-up was 82 ± 23 points for Palacos bone cement and 82 ± 17 points for Refobacin bone cement. Refobacin bone cement showed similar migration at two-year follow-up as the well-established Palacos bone cement.

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Room: 10 - Hall 4

Abstract no.: 34358

TOTAL HIP ARTHROPLASTY IN OSTEOPETROSIS WITH CEMENTLESS CUP AND MODULAR STEM USING IMAGELESS NAVIGATION – REPORT OF TWO CASES

Jun-Dong CHANG, In-Sung KIM, Atul Mittarsain BHARDWAJ, Bhaskar Murari RAO

Arthroplasty Centre, Department of Orthopaedic Surgery, Dongtan Sacred Heart Hospital, Hallym University, Hwaseong (SOUTH KOREA)

Total hip arthroplasty (THA) in osteoarthritis secondary to osteopetrosis is a challenge due to sclerotic, brittle bones, obliterated medullary canals, high risk of iatrogenic fracture, and the possibility of low bone ingrowth potential. We report two cases of osteopetrosis, treated with cementless THA using imageless navigation. The acetabulum was prepared with a power reamer. The femoral bony cavity was created using a drill and high-speed burr under the guidance of fluoroscopy. Cementless S-rom® modular stem (8mm) and Pinnacle® cup were implanted using an imageless navigation with the concept of combined anteversion. Biolox delta® ceramic couples with 36mm head were used for the bearing surfaces. There was no complication during the follow-up period (3 years and 2 years respectively). Discussion: The modular system was selected to overcome the technical difficulty in creating a femoral bony cavity for the cementless stem. The cementless cup was used for large ceramic femoral head. The difficulty of acetabular and femoral reaming in an extremely hard bone can lead to increased risk of implant malposition, which may cause impingement and dislocation. The imageless navigation was helpful for an accurate positioning of the cup with the concept of combined anteversion. Future studies including longer follow-up would confirm the effectiveness of the cementless cup and the modular stem using the imageless navigation with the concept of combined anteversion.

Date: 2013-10-18

Session: Short Oral Communications - Hip I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 34333

SILENT LONG-TERM BONE REMODELLING OF PROXIMALLY FIXATED CEMENTLESS HA-COATED STEMS AT A MEAN OF 17 YEARS

Jens BOLDT

Klinik Siloah, Guemligen (SWITZERLAND)

Conventional cementless total hip arthroplasty stems have proven long track record. However, femoral stress shielding remains a clinical problem with most diaphyseal loading stems. Hydroxyapatite coated titanium stems can be implanted with primary metaphyseal fixation, provided the proximal bone is impacted rather than removed. Prospective radiographic and clinical analysis of over 600 primary consecutive THA was performed by a group of three co-working orthopaedic surgeons with the same protocol, approach and postoperative management. There were 208 cases available with a 14% loss to follow-up. All patients that were loss to follow-up were contacted and still had their THA in place. Radiographic and clinical data were collected by two different observers. There were five stems that were revised due to aseptic loosening in association with considerable polyethylene wear. 97.6% of stems were left for radiographic and clinical evaluation. Radiographic signs of diaphyseal stress shielding, hypertrophy or ballooning was observed in three stems, two of which were considered to have septic infection. Thigh pain was noted in three cases, all of which had either aseptic or septic proximal loosening and diaphyseal hypertrophy. Clinical thigh pain following long stemmed cementless total hip arthroplasty remains a problem in up to 17% of cases. The data of this study suggest that a combination of proximal bone impaction and avoidance of primary diaphyseal fixation during THA surgery does work without subsidence or stem loosening.

Date: 2013-10-18

Session: Short Oral Communications - Hip I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 34181

A NEW TECHNIQUE OF NECK EXCHANGE TREATMENT OPTION IN FEMORAL NECK FRACTURES OF DUAL MODULARITY STEMS – CASE SERIES OF 5 PATIENTS

Biyyam RAO, Michael MOSS, Lee TAYLOR, Adhish AVASTHI

St. Richard's Hospital, Westren Sussex Hospitals NHS Trust, Chichester
(UNITED KINGDOM)

Introduction: Increasing modularity of femoral components aid in recreating native femoral version, leg length, and offset in total hip arthroplasty (THA). Objectives: To present a case series of modular neck fractures and the technique of extracting the fractured cold welded neck from its Morse taper preventing unnecessary revision of well-fixed femoral stem. Methods: We present 5 patients (mean age 63 years; BMI 34) following uncemented THA using hydroxyl-apatite modular stem of Titanium alloy (Ti6Al4V) and long Titanium necks with atraumatic modular neck fractures at an average of 56 months after index procedure. 3 patients had metal-on-metal articulation with large Co-Cr metal heads (54 mm) and 2 had ceramic-on-ceramic articulations with 32 mm heads. 2 patients needed extended trochanteric osteotomies to extract well-fixed stems as the fractured neck had cold welded into its Morse taper preventing extraction. In the next 3 patients with new instrumentation, it was possible to extract the fractured neck and a new long Co-Cr neck was inserted. Results: At mean follow-up of 26 months neck extraction group of patients had mean Oxford scores of 39 and Harris Hip scores of 84. Conclusion: Bending moment stresses in the modular necks are concentrated at the unsupported modular neck-stem junction with subject to fretting and corrosion, leading to weakening and fatigue fracture. Modular necks help in specific situations, but should be used with caution in normal routine arthritic hips. Though controversial, at present time this new method has prevented unnecessary revision of well-fixed stem.

Date: 2013-10-18

Session: Short Oral Communications - Hip I

Time: 14:00 - 15:30

Room: 10 - Hall 4

Abstract no.: 34000

UNCEMENTED HIP REPLACEMENT IN SICKLE CELL DISEASE

Karthik SOMASUNDARAM, Moji AWOGBADHE, Venu KAVARTHAPU,
Patrick LI

King's College Hospital, London (UNITED KINGDOM)

Introduction: Osteonecrosis of femoral head is well known and recognised complication in Sickle cell disease patients. Due to the severity of the Osteonecrosis, hip pain is major limiting factor for these patients requiring total hip arthroplasty in relatively young age. We report our results of uncemented total hip arthroplasty of sickle cell patients(Corail/Pinnacle-Depuy). Methods: We studied 80 patients from our combined Orthopaedic & Hematology Sickle cell clinic. The patients had varying stages of Osteonecrosis of the femoral heads. Seventeen patients had painful Osteonecrosis with secondary osteoarthritis of hip and underwent uncemented total hip arthroplasty. Two patients had bilateral hip replacements. A total of nineteen replacements were studied retrospectively. All patients had homozygous sickle cell anaemia. 16 out of 17 patients had femoral intramedullary sclerosis and guide wires and reamers were used for stem broach insertion. Results: The average age of the patients at the time of surgery was 38.4 (Range - 20 to 59 years). The average follow-up was 5.1 years (Range - 6 months to 10 years). The average Oxford Hip Function Score was 38.05. Two patients had infection and underwent two-staged revision. One patient had bilateral aseptic loosening after ten years and underwent revision arthroplasty. Conclusions: We report lower rates of infection and loosening rates compared to the earlier studies. Combined Haematological and Orthopaedic team input is optimal during assessment, surgery, perioperative period and at the follow-up. The bone conserving uncemented arthroplasty would facilitate the future requirement of revision arthroplasty in these young patients.

Date: 2013-10-18

Session: Short Oral Communications - Paediatrics

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 35157

SHOULD WE ADD FEMORAL VARISATION, DEROTATION, AND SHORTENING TO ALL SALTER INNOMINATE OSTEOTOMIES?

Mahmut Nedim AYTEKIN, Kasim KILICARSLAN, Tansel MUTLU, Kayaalp CETIN, Mahmut UGURLU

Department of Orthopaedics and Traumatology, Yıldırım Beyazıt University, Ankara Atatürk Training and Research Hospital, Ankara (TURKEY)

The aim of this study is to evaluate Salter Innominate Osteotomy (SIO) for developmental dysplastic hips of children in the midterm. A total of 57 patients were evaluated for their 73 dysplastic hips retrospectively. We included patients whose hips had acetabular angle between 30° and 40°, and who were older than 18 months and younger than 5 years in age. Moreover, we considered patients whose treatment failed when they were treated with conservative ways, and later they were operated on. In addition to SIO, femoral shortening, varisation, and derotation were performed on patients who were older than 30 months in age and who had anteverted and long femur diagnosed by physical examination and radiography. A total of 45 patients (62.2%) had dysplasia of the left hip and 28 patients (37.8%) had dysplasia of the right hip. The mean age was 38.4 (range; 18-58) months and the mean follow-up period was 28.8 (9-36) months. According to Mackay criteria, 82 (90.1%) hips were clinically excellent, 6 hips were (6.6%) good, and 3 hips (3.3%) were fair. According to the radiologic evaluation of Severin, 78 hips (85.7%) were excellent, 8 hips (8.8%) were good, 4 hips (4.4%) were fair, and 1 hip (1.1%) was bad. A patient had redislocation and he was treated with varisation derotation osteotomy. To get best results for patients who underwent SIO, soft tissue procedures and varisation derotation osteotomy must be performed in combination for anatomic pathology. This minimizes the possibility of redislocation and subluxation.

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Session: Short Oral Communications - Paediatrics

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 35060

**MANAGEMENT OF COXA VARA WITH PERCUTANEOUS
SUBTROCHANTERIC VALGUS OSTEOTOMY WITH MINI EXTERNAL
FIXATOR**

Jaideep DHAMELE, Taral NAGDA, Sachin KULKARNI, Tanay PRABHOO
Institute of Paediatric Orthopaedic Disorders, Mumbai (INDIA)

Introduction :The aim of treatment is to promote ossification in the neck of the femur and to correct deformity already present. Subtrochanteric osteotomy with wide abduction of the distal part of the limb will correct the coxa vara and conversion of the sheering strain across the defect into a compression force along the axis of the neck promotes complete ossification in a high proportion of cases. Material and Methods: Both congenital and acquired types of coxa vara were included. Eight patients with eleven hips of coxa vara were subjected to a corrective Percutaneous subtrochanteric valgus femoral osteotomy. All cases were fixed by a mini External Fixator. There were five males and Three female, Three bilateral hips, two Right hip and three Left hip. The Average Age at the presentation was 4.2 (range 2.5 to 7 years). Clinical and radiological (EHA ,HAS) evaluation done for all cases. Results: The Average preoperative Head shaft angle was 94 (range 85-100) and average postoperative head shaft angle was 120 (range 115-125). Postoperatively the average Epiphyseal-Hilgenreiner angle and Head–Shaft angle fell into normal values. No recurrence of deformity and all osteotomy was united in 6-8 weeks. Conclusion: Results suggest that this surgical technique provides good correction of coxa vara in children with both congenital and acquired types. Key words: Coxa Vara - Valgus osteotomy – Mini External Fixator

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Session: Short Oral Communications - Paediatrics

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 35043

OUR EXPERIENCE WITH FEMORAL NECK FRACTURES IN CHILDREN

Shashikanth Shankaranarayana VOKKALERI, Sandeep PATEL, Sudesh
PEBAM

PGIMER, Chandigarh (INDIA)

The aim of this retrospective study was to analyze the clinical outcomes of paediatric femur neck fractures that we managed over a 10-year period. Methods: The study included 36 children (20 boys and 16 girls) who sustained femoral neck fractures and completed a minimum follow-up of one year. The children were treated either conservatively, or by open reduction and internal fixation (ORIF) or closed reduction and internal fixation (CRIF). The outcomes were analyzed using Ratliff criteria and a detailed record of complications was kept for all patients. Results: The mean age of included patients was 10 years (range, 3 to 16 years) and the average follow-up was 3.2 years (range, 1.1 to 8.5 years). A satisfactory outcome was obtained in 27 (75%) children. Avascular necrosis (AVN) was the most common complication. It was seen in 7 of our patients, all of whom had an unsatisfactory outcome. Other complications included three cases each of coxa-vara, non-union, and arthritic changes; and one case each of infection, primary screw perforation of head, and premature epiphyseal closure. Complications were lowest in the group treated by ORIF. Only 2 patients managed exclusively by conservative treatment ultimately achieved a satisfactory outcome. Conclusions: Aggressive operative treatments aimed at anatomical reduction should be the goal and there should be no hesitation in choosing ORIF over CRIF. Outcome of patients is influenced primarily by development of AVN which occurs as an independent entity without much relation to the mode of treatment carried out.

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Session: Short Oral Communications - Paediatrics

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 34405

CAN WE PREDICT PATHOLOGICAL FRACTURE OF THE PROXIMAL FEMUR USING ONLY PLAIN RADIOGRAPHS?

Darko ANTICEVIC, Ozren KUBAT

Department of Orthopaedic Surgery, Clinical Hospital Centre Zagreb
(CROATIA)

Background: Pathological fracture (PF) of the proximal femur in children is rare. Most commonly PF of this location is due to a unicameral bone cyst (UBC) and cystic-like lesions (CLL). No reliable radiographic criteria exist for prediction of PF in the proximal femur. Aim of this study is to assess whether plain radiological criteria can help predict PF. Patients and Methods: Eighteen patients treated at our Department from 1981 to 2011 for a UBC or CLL were divided into two sex-, age- and cyst location-matched groups. The difference between groups was presence of PF through the lesion. Following radiographic criteria were evaluated: thickness of cortex adjacent to the cyst, longitudinal and transverse cyst diameters and presence or absence of intralesional septa. Results: There were two matched groups of 9 boys, depending on absence or presence of PF. In the group without PF, eight patients had a UBC, one had an aneurismatic cyst. Average cortical thickness was 1.3 mm medially and 1.2 mm laterally. The average diameter of the cyst was 31.5 mm longitudinally, and 27 mm transversely. Two cysts showed no septa. In the group with PF, two patients had fibrous dysplasia, while six had a UBC. Average cortical thickness was 3.5 mm medially and 2.2 mm laterally. The average diameter of the cyst was 69 mm longitudinally, and 36 mm transversely. Three cysts showed no septa. Conclusion: Standard radiographic criteria based on lesion appearance alone cannot help predict PF.

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Session: Short Oral Communications - Paediatrics

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Abstract no.: 33995

TITANIUM ELASTIC NAIL FOR PAEDIATRIC FEMORAL SHAFT FRACTURE: CAN WE EXTEND ITS USE IN OLDER CHILDREN?

Abhijit KAWALKAR, Chandrashekher BADOLE, Amit SUPE

Mahatma Gandhi Institute of Medical Sciences, Sewagram (INDIA)

Introduction: For generations, traction and casting were standard treatment for all femoral shaft fractures. But in the last 2 decades there has been a dramatic and sustained trend towards operative stabilization of femoral shaft fractures. But still the controversy exists about the management of femoral fractures in the age group of 12 to 16 years of age. The aim of this prospective study is to evaluate the results of treatment of paediatric femoral shaft fractures with titanium elastic nails & its utility in children aged between 12 to 16 years. Material & Methods: Study was conducted between Jan 2011 to Dec 2012. 19 paediatric femoral shaft fractures of 18 patients were fixed with titanium elastic nails (TENs). Surgery was performed within 7 days of hospital admission. Results were evaluated using Flynn's scoring criteria & radiological union was assessed by Anthony et al scale for grading callus formation. Results: 18 patients were available for follow-up. Patients were followed up for the mean period of 18 months. All the fractures united clinoradiologically between 8 weeks to 12 weeks. Results were excellent in 13 patients, satisfactory in 5 patients. Average hospitalization time was 6 days. There was no statistically significant difference in outcome between children aged 6 to 12 years & 12 to 16 years. Conclusion: titanium elastic nailing is simple, rapid & effective treatment for displaced paediatric femoral shaft and it can be safely used in older children as well. It also reduces the hospital stay and helps in early mobilization of children.

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Room: 10 - Hall 4

Abstract no.: 35546

SUPRACONDYLAR V (CHEVRON) OSTEOTOMY FOR PAEDIATRIC GENU VALGUM

Vipul VIJAY, Vineet TYAGI, Anil MEHTANI, Himanshu KATARIA
Lady Hardinge Medical College, New Delhi (INDIA)

Introduction – Genu valgum is one of the common childhood deformities. The cause is usually idiopathic followed by rickets. The deformity is usually symptom less except in patients who have very large angles associated with abnormal mechanical and anatomic axes. Of the Various options available, we describe a “V” osteotomy of distal femur done at the level of without any fixation. Materials – Total of 34 limbs with deformities in 20 patients treated with supracondylar chevron osteotomy and the correction maintained with above knee cast. The medial distal femoral epiphyseal vessels act as a marker for the tip of the osteotomy. Most common cause for genu valgum deformity was idiopathic. Results – All the osteotomies healed by average of 7 weeks. No osteotomy had delayed union and did not require fixation with an implant. Since a consistent anatomical landmark was used for the osteotomy (epiphyseal vessels), C-arm was not required. The tip of the osteotomy gets impaled in the metaphysis, providing stability. 5 patients had superficial SSI, but the osteotomy healed satisfactorily. Large deformities could be addressed by doing an osteotomy and under-correction followed by change of cast and final correction at 3 weeks. Originally described for osteoarthritis of knee in the adult population, this osteotomy can be easily used in paediatric genu valgum. It is not associated with any risk of stretching of the NV bundle and associated with minimal limb length discrepancy. These advantages make it an excellent option for management of the paediatric genu valgum deformity.

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Abstract no.: 34666

MANAGEMENT OF CONGENITAL PSEUDARTHROSIS OF TIBIA

Hariram JHUNJHUNWALA

Postgraduate Institute of Medical Sciences of Bombay Hospital, Mumbai
(INDIA)

INTRODUCTION:- Management of CPT is a challenge. The problems of managing CPT include difficulty in obtaining union, deformity correction and limb length discrepancy. Many modalities were discussed in the past but none provided a comprehensive constant better result. Today there are 2 main modalities of treatment. 1 By Ilizarov Technique and 2 By vascularised fibular graft. **MATERIAL & METHOD:-** Eleven cases were treated at our institute. Ten by Ilizarov technique and one by vascularised fibular graft. The age group was 4 To 14 years at the time of surgery. **TECHNIQUE:-** Excision of haemarthomatous tissue and pseudarthrotic bone, end to end compression, by Ilizarov frame. A proximal corticotomy of tibia for lengthening of tibia. One case of CPT was treated by vascularised fibular graft which also healed well .But he needed lengthening of the tibia as a secondary procedure. **RESULTS:- CONCLUSION AND DISCUSSION:-** Treatment of CPT by Ilizarov technique is very rewarding. Vascularised fibular graft needs an excellent micro-vascular surgeon and needs lengthening as a secondary procedure. Ilizarov technique can manage whole treatment in one procedure.

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Abstract no.: 34602

GROWTH MODULATION IN CHILDREN FOR ANGULAR DEFORMITY CORRECTION AROUND THE KNEE – RETROSPECTIVE STUDY OF THE USE OF EIGHT PLATES

Kunal SHAH, Sandeep PATWARDHAN, Ashok SHYAM, Parag SANCHETI
Sancheti Institute for Orthopaedics and Rehabilitation, Pune (INDIA)

Introduction: Angular deformities around the knee joint in skeletally immature children are treated with methods of reversible hemiepiphysiodesis like staples, transphyseal screw and eight plate. Hemiepiphysiodesis using Eight plate has showed good results with advantage being faster correction, less complications and can be used in younger age. The aim of this retrospective study is show the efficacy of eight plate application and its complication rate. Methods: Nineteen patients (37 physes) (unilateral :3; bilateral :16) with angular deformity were treated with eight plate application. Seven with pathological physes and twelve with idiopathic physes. Outcome assessment was done clinically with calculation of intermalleolar /intercondylar distance and radiologically with mechanical and anatomical axis. Correction achieved was considered when anatomical/mechanical axis were within normal limits and intermalleolar/intercondylar distance was less than 5 cm. Results: The average age of intervention was 7.4 ± 2.96 years (range 2.4-11.2 years). Rate of correction of IMD/ICD was 1.14 cm per month. Rate of correction of mechanical axis was 0.76° per month. Rate of correction of anatomical axis was 1.04° per month. The average duration of eight plate removal 12.4 months (range 7-24 months). There were two complications one patient with screw backout and other with overcorrection. Conclusion: Reversible hemiepiphysiodesis using eight plates is an effective method with minimal complications and faster rates of correction. Idiopathic physes show faster rates of correction than pathological physes. Physeal growth arrest is not seen with eight-plate application. Larger data and long-term follow-up is required to assess the rebound deformity after eight-plate removal.

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Room: 10 - Hall 4

Abstract no.: 33919

CASE OF OSTEOCHONDRITIS DISSECANS KNEE WITH LARGE FEMORAL FRAGMENT FIXED WITH SMART NAILS

Suraj GULATI, Sumiti VANJANI, Odisseas SHABLAHIDIS

Morrison Hospital, Swansea (UNITED KINGDOM)

OBJECTIVE: To discuss the case of a patient with osteochondritis dissecans affecting the lateral femoral condyle in an adolescent patient, and to discuss its treatment. **Clinical Features:** A 17-year-old male presented to Accident and Emergency Department for the first time with swollen and locked knee in valgus. The patient had a history of pain in the last couple of years which typically appeared during sporting activity and was relieved with rest. **Intervention and Outcome:** With a provisional diagnosis of a possible bucket handle meniscal tear, he underwent arthroscopy which revealed a large loose body measuring 5x3x1.5cm. Biodegradable smart nails were used to fix the fragment and a corrective osteotomy at a later stage was anticipated. At a one-year follow-up, a complete osteointegration of the fragment and remodelling of the femoral condyle had occurred. Clinically, the patient had achieved a complete range of movement and correction of valgus deformity which did not need corrective osteotomy. **CONCLUSION:** Although osteochondritis dissecans is a common orthopaedic problem, its treatment can pose a challenge to the surgeon. The underlying principal of surgical management is preservation and restoration of articular surface congruity even in chronic situation. The option of using a bioabsorbable smart nail could be considered as they have the benefit of ease of handling and rigid fixation.

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Abstract no.: 33888

PRELIMINARY RESULTS OF A 4-SCREW PLATE USE FOR GUIDED GROWTH TO CORRECT LEG LENGTH DISCREPANCY

Sergei SERDJUCHENKO, Alexander BELETSKY, Aleh SAKALOUSKI, Andrei DZEMIANTSOU, Issam HAMMOUD

State Institution "Republican Scientific-Practical Centre of Traumatology and Orthopaedics", Minsk (BELARUS)

Introduction: Shortening of a leg over 2 cm conducts to infringement of all biomechanics of the lower extremity. It is considered that orthopaedic footwear can compensate it up to 4 cm, but it is not always possible and not convenient. For normalization of length of lower extremities we used a method of guided growth, and in children of more than 11-12 years the plates of 4 screws were used. The purpose: to estimate the action of a 4-screw plate on guided growth at correction of a difference of extremities length. Methods: 15 patients at the age from 8 till 14 years were operated. Mean age was 12.3 years, mean follow-up made was 2 years. Mean discrepancy before operation was 3.1 cm. In all cases we used a 4-screw plate. It was installed on a lateral and medial surface of a hip. Owing to its width and 4-screw fixation it had a more expressed and constraining effect. Results: Mean rate of correction was 1.5 cm per year. In 82% of cases it was possible to compensate discrepancy completely, at 13% the residual discrepancy made from 0.5 to 1 cm, and only at 5% of patients the residual discrepancy made above 1 cm. One can explain it by the late consultation with a doctor and late operation performance (at the age of over 14 years). There was no failure of the plates. The use of a 4-screw plate increases the rate of correction of a leg length discrepancy. It provides the enhanced durability and excludes the possibility of a plate failure.

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Abstract no.: 33716

KNEE RECONSTRUCTION IN CHILDREN WITH TIBIAL DEFICIENCY

Dmitry BUKLAEV, Denis DRERVIANKO, Olga AGRANOVICH

Paediatric Orthopaedic Research Institute N.A.H. Turner, Saint Petersburg
(RUSSIA)

Material: 11 patients 1-8 years old with congenital tibial deficiency. Methods: We performed different surgery procedures in 11 cases of tibial deficiency for knee reconstruction. All children have workable extensor muscle – rectus patella. In cases of type 1 according to Kalanichi (6 cases) in first stage we performed bringing down of fibula with Ilizarov device after the mobilization of the fibular head. The second stage was centration of the fibular head on the distal femur, transposition of the ligamentum patellae and fixation with K-wires during 3 weeks. In two cases of type 1 fibula there was no proximal dislocation and only extension osteotomy in distal femur was necessary. In cases of type 2 (5 cases) surgical treatment for knee reconstruction included 2 phases. The first was bringing down of fibula, the second was tibial-fibular fusion. When tibia presented only proximal epiphysis, we performed fusion of the proximal tibial point of ossification and fibular head. If proximal part of the tibial diaphysis was presented, fusion of the tibia and fibula was performed. Results: In type 1 amplitude of moving was significantly limited as and the power of m. quadriceps. In type 2 amplitude of moving was amplitude of moving was the power of m. quadriceps satisfactory.

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Room: 10 - Hall 4

Abstract no.: 33529

**MANAGEMENT OF COMPOUND FRACTURE OF TIBIA IN CHILDREN BY
TITANIUM ELASTIC NAIL**

Iftekar Ali MOHAMMED

Omega Ortho Care, Karimnager (INDIA)

Tibia fractures in the skeletally immature patient can usually be treated without surgery. The purpose of this study was to assess the use of flexible titanium nails in the compound fracture tibia that requires operative stabilization. Over a 3-year period, 12 compound tibia fractures were treated with flexible titanium intramedullary nails. All charts and radiographs were reviewed. The average age was 10 years 4 months. There were eight distal third open fractures, four middle third fractures. All fractures healed. Fracture obtained union by an average of 15 weeks. There were no malunions. The average follow-up was 1 year 5 months. There were no instances of growth arrest, remanipulations, or refracture, infection. In the compound paediatric tibia fracture, flexible titanium nails are an effective treatment to obtain and maintain alignment and stability.

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Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 35029

**TREATMENT OF NON-IDIOPATHIC CONGENITAL TALIPES
EQUINOVARUS BY PONSETI METHOD**

Chasanal RATHOD, Dominic D'SILVA, Rujuta MEHTA, Alaric AROOJIS
Bai Jerbai Wadia Hospital for Children, Mumbai (INDIA)

Introduction: The treatment of syndromic clubfoot is difficult and surgical correction was often recommended in the past. The purpose of this study was to analyse the results of Ponseti method in this subset of patients. Materials and Methods: Patients with non-idiopathic clubfoot were evaluated from the dedicated Clubfoot Clinic database of 204 patients. A total 42 patients with 63 feet with non-idiopathic clubfoot were treated with Ponseti method. This subset was compared with idiopathic group for age at presentation, number of casts, failure rate and rate of recurrence. Results: Among the 42 patients a variety of aetiologies were identified. Mean age at presentation was 7.6 months and average follow up was 12.2 months. Average casts required were 7.7(3-11) and percutaneous TA tenotomy was performed in 88% of cases. Failure was noted in 2 patients (2 feet) which were treated surgically. Recurrence was observed in 12 feet in 9 patients (21%) which was treated with re-casting in 11 feet, re-tenotomy in 2 feet and Posteromedial release in 1 patient(1 foot). The number of casts(7.7 vs. 5.9) and rate of recurrence(21% vs. 10%) was higher and statistically significant($p < 0.001$) in syndromic clubfoot as compared to the idiopathic clubfoot. Conclusion: Contrary to the common perception, the Ponseti technique gives excellent results with a success rate as high as 95%. These difficult feet needed a marginal increase in number of casts and had a higher rate of recurrence as compared to the idiopathic clubfoot. Modification of the brace is often required.

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TREATMENT OF IDIOPATHIC CLUBFOOT USING THE PONSETI METHOD, 10-YEAR UK OUTCOME

Alistair MAYNE, Amit BIDWAI, Neeraj GARG, Colin BRUCE

Alder Hey Children's Hospital, Liverpool (UNITED KINGDOM)

Purposes of study: 10 years following the introduction of the Ponseti casting regimen as standard treatment for idiopathic clubfoot, we reviewed the mid-term outcomes of the initial 2-year cohort. Methods and results: 100 feet were treated in 66 patients. 61 of the 100 feet have been prospectively reviewed, outcomes of the remaining feet were obtained by retrospective analysis. 96 feet responded to initial casting; of these, 31 had a recurrence within the first 2 years (16 of which were successfully treated by repeat casting and/or tenotomy and/or transfer of the tendon of tibialis anterior, the remaining 15 requiring extensive soft tissue release). 12 feet developed recurrence after 2 years (9 of whom were successfully treated with transfer of tibialis anterior tendon and 3 of whom required extensive soft tissue release) Mean dorsiflexion at average follow-up of 9 years is 15 degrees (95% CI 12.96 to 17.04) and mean abduction 41 degrees. (95%CI 37.65 to 45.07). Conclusions: The Ponseti regimen is a successful treatment option for the management of idiopathic clubfoot. The majority of recurrences occur in the first two years and so close follow-up should be undertaken during this period. The importance of strict compliance with boots and bars must be emphasised to parents at this treatment stage. These mid-term outcomes have highlighted that, although fewer recurrences occur after the first two years, it is difficult to predict which feet might recur; consequently, we recommend following children up in an annual/bi-annual fashion until their skeletal maturity.

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THE IMPACT OF A DEDICATED PONSETI SERVICE ON OUTCOMES OF IDIOPATHIC CLUBFOOT TREATMENT

Alistair MAYNE, Amit BIDWAI, Garg NEERAJ, Colin BRUCE

Alder Hey Children's Hospital, Liverpool (UNITED KINGDOM)

INTRODUCTION: When the Ponseti casting regimen was first introduced as standard treatment for idiopathic clubfeet at our institution, children were treated in general paediatric orthopaedic clinics on an ad hoc basis with treatment provided by all paediatric orthopaedic consultants. Two years following the introduction of the Ponseti method, a dedicated Ponseti service was developed with all children treated in specialist clinics led by one consultant with a specialist interest in clubfeet and a dedicated plaster service. We have examined the effect of this dedicated service on patient outcome. **METHODS:** A retrospective case-note analysis was undertaken, with results statistically analysed using Fisher's exact t-test. **RESULTS:** 100 feet in 66 children were treated in the original cohort, between 2002-2004. 96 feet (96%) responded to initial casting. 31 feet had a recurrence within the first 2 years (15 of which required extensive soft tissue release). Between 2005-2006, with a dedicated Ponseti service, 72 feet in 53 children were treated. 72 (100%) responded to initial casting. 11 feet developed recurrence within 2 years; one of these feet required extensive soft tissue release. The dedicated clinic resulted in a lower recurrence rate - 31% vs. 15.2% ($p < 0.05$), a lower rate of surgical release - 15% vs. 1.3% ($p < 0.05$) and no difference in rate of Achilles tenotomy 85% vs. 81.9% ($p = 0.67$). **CONCLUSION:** We have shown a statistically significant reduction of recurrence ($p = 0.02$) and extensive soft tissue release (0.002) in those children treated in a specialist dedicated service compared to an earlier ad hoc treatment programme.

Date: 2013-10-18

Session: Short Oral Communications - Paediatrics

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 34910

TREATMENT OF NEGLECTED MONTEGGIA FRACTURE DISLOCATIONS WITH FLEXION-DISTRACTION OSTEOTOMY OF ULNA: IS ANNULAR LIGAMENT RECONSTRUCTION NECESSARY?

Tanay PRABHOO¹, Ram PRABHOO¹, Mandar AGASHE², Alaric AROOJIS², Dominic D'SILVA², Rujuta MEHTA²

¹Mukund Hospital, Mumbai (INDIA), ²Bai Jerbai Wadia Hospital For Children, Mumbai (INDIA)

Introduction: Missed or neglected Monteggia fracture dislocations pose significant functional and clinical problems due to pain at the dislocated radial head, instability and cubitus valgus. Treatment varies between open reduction with annular ligament reconstruction (ALR) to flexion-distraction osteotomy of the ulna to reduce the radial head. Materials & Method: This was a retrospective case series of 14 cases of missed Monteggia fracture-dislocations (M:F – 8:6) with a mean age of 7.5 years (range 4-15 years) treated at our two institutes between 2008 to 2011. There were 11 Bado I, 2 Bado II and 1 Bado IV lesions. The mean duration between injury and surgery was 6 months (2-18 months). The basic principle used was a flexion-distraction osteotomy of the ulna with or without open reduction of radial head though different methods of fixation (External fixators and small-fragment plates) were used. Annular ligament reconstruction was not performed in any patient. Results: The patients were evaluated at a mean follow-up of 24 months (18-36 months). Radial head was well reduced in 13 out of 14 patients while in one Bado IV patient, it had re-dislocated after 3 months. All but one patient had satisfactory range of motion and were satisfied with surgery. Only minor complications like pin tract infections in two and implant prominence in one patient was noted. Conclusion: This study shows that flexion-distraction osteotomy of the ulna is sufficient to obtain good results in missed Monteggia lesions and annular ligament reconstruction is not necessary in most cases.

Date: 2013-10-18

Session: Short Oral Communications - Paediatrics

Time: 16:30 - 18:00

Room: 10 - Hall 4

Abstract no.: 34300

MODIFIED STEP-CUT OSTEOTOMY FOR POST-TRAUMATIC CUBITUS VARUS: OUR EXPERIENCE WITH 14 CHILDREN

Sandeep PATEL, Sudesh PEBAM, Shashikant VS
PGIMER, Chandigarh (INDIA)

Background: Lateral closing wedge osteotomy is a commonly described procedure for correcting cosmetically unacceptable post-traumatic cubitus varus deformity in children. However, complications like residual deformity, lateral prominence, loss of fixation and ulnar nerve palsies commonly contribute to poor outcomes with such an osteotomy. Methods: Fourteen children (11 boys and 3 girls), malunited extension type supracondylar fracture of humerus with an average age of 8.64 years (6-14 years) were operated around 3 years (1.5 to 7 years) after injury by a modified step-cut osteotomy. The average follow-up period was 2.1 years (1-4 years). Objective assessment included measurement of preoperative and postoperative lateral prominence index, carrying angle and range of elbow motion. Results were graded excellent, good or poor as per the Oppenheim criteria. Results: There were 8 excellent, 5 good and one poor result. Residual varus of more than 10 degrees was seen in the single patient with poor result. None of the patients showed a prominent lateral humeral condyle or formation of hypertrophic scar. Ulnar neuropraxia was, however, seen in 2 of our patients. Our results were comparable to the published results of the classical lateral closing-wedge osteotomy in terms of elbow motion and correction of deformity. However, results were superior to those of the lateral closing-wedge osteotomy in terms of prominence of lateral humeral condyle, acceptability of scar, and cosmesis. Conclusion: A modified step-cut osteotomy is a safe and simple procedure which prevents lateral prominence and leads to good or excellent outcomes in most of the patients.

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Session: Short Oral Communications - Paediatrics

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Room: 10 - Hall 4

Abstract no.: 33709

SEVERE CHRONIC OSTEOMYELITIS IN CHILDREN WITH GAP AND SHORTENING OF LIMB – “OSTEOMYELITIS BURNS IN THE FIRE OF REGENERATION”

M. Mofakhkharul BARI

National Institute of Traumatology & Orthopaedic Rehabilitation, Dhaka
(BANGLADESH)

Chronic osteomyelitis is very common in Bangladesh. We have treated 155 cases during the last 15 years. Of these, 85 were severe. Severity was measured by two parameters: 1. Cierny-Mader classification 2. Local status (sequelae) such as: a. The length of gap created after debridement b. Shortening due to growth arrest and gap closure c. Growth arrest d. Formation of involucrum e. Presence of deformity. These cases were treated as follows: 1. Thorough debridement; removal of sequestrii, curetting cavity. 2. Acute docking, if acute docking is not possible, then gradual docking is done. 3. Condrodiastesis or corticotomy and application of Ilizarov frame. Gaps were closed by bone transport. Lengthening was done as required. Deformities were corrected by the Ilizarov frame. 4. Pan-diaphyseal osteomyelitis with pathological fractures were treated by only the stable fixation of Ilizarov with full weight bearing and motion. Conclusion: Radical removal of all dead tissues, lengthening of bone and bone transport have given excellent results. Children tolerate multiple lengthening very well. Bold resection and bone transport have revolutionized the treatment of chronic osteomyelitis. Recurrence is not due to resistant organism but to inadequate debridement.

Date: 2013-10-19

Session: Short Oral Communications - Tumours

Time: 08:30 - 10:00

Room: 10 - Hall 4

Abstract no.: 35779

CURETTAGE OF BENIGN BONE TUMOURS AND TUMOUR-LIKE LESIONS WITHOUT FILLING THE CAVITY: OUTCOME IN 42 LESIONS

Sukhbir Singh SANGWAN, Zile Singh KUNDU

PGIMS, Rohtak (INDIA)

Background: Curettage is one of the most common treatment options for benign lytic bone tumours and tumour-like lesions. The resultant defect is usually filled in one or other way. We report our outcome of bony defects following curettage alone as treatment of benign bone tumours. Material and methods: We retrospectively studied 42 patients with benign bone tumours who had undergone curettage without grafting or filling of the defect by any other bone graft substitute. The age of the patients ranged from 12 to 45 years. The most common histological diagnosis was that of a giant cell tumour followed by simple bone cyst, aneurysmal bone cyst, enchondroma, fibrous dysplasia, chondromyxoid fibroma, and chondroblastoma and giant cell reparative granuloma. The mean maximum diameter of the cysts was 5.1 (range 1.1-9 cm) cm and the mean volume of the lesions was 34.89 (range 0.94-194.52 cm³). The plain radiographs of the part before and after curettage were reviewed to establish the size of the initial defect and the rate of reconstitution, filling, and remodelling of the bone defect. Patients were reviewed every 3 months for a minimum period of 2 years. Results: Most of the bone defects completely reconstituted to a normal appearance while the rest filled partially. The benign cystic bone lesions with volume greater than approximately 70 cm³ were found to have higher incidence of complications. Conclusion: This study demonstrates the natural healing ability of bone without filling with bone grafts or bone graft substitutes.

Date: 2013-10-19

Session: Short Oral Communications - Tumours

Time: 08:30 - 10:00

Room: 10 - Hall 4

Abstract no.: 34285

BIOLOGICAL RECONSTRUCTION FOR CERVICOTROCHANTERIC LYTIC LESIONS OF FEMUR: A CASE SERIES

Rohit SINGLA, Zile Singh KUNDU

Pt BDS PGIMS, Rohtak (INDIA)

Introduction: Benign lytic lesions of bone represent a diverse group of pathological and clinical entities. Their treatment needs to be decided on the basis of their site, size and stage. This study was done to evaluate the outcome of biological reconstruction for benign cervicotrochanteric lytic lesions of femur. Methods: It was a prospective study of 16 patients (9 female and 7 male) with an average age of 23 years (range 14 to 35) who presented with lytic lesion in the cervicotrochanteric region of femur. Only those cases in which the destruction was more than 2/3 of the cortex in a single view or there was a pathological fracture were incorporated into the study. All the lesions were operated using Smith Petersen approach, and after extended curettage, the cavity was packed with bone chips and sartorius based muscle pedicle bone grafting (MPBG) was done. The mean follow up period was 32 months (range 26 to 74 months). Results: The average time to clinical healing was 4.8 months (range 4-6 months). At the time of final follow-up, full radiological consolidation had occurred in all patients and there was no incidence of any recurrence or avascular necrosis. The average MSTS score was 28.2 and Harris Hip Score was 95. Conclusion: Sartorius muscle pedicle bone grafting using Smith Peterson approach is a good and reliable option in patients presenting with benign lytic lesion in cervicotrochanteric region of femur.

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Session: Short Oral Communications - Tumours

Time: 08:30 - 10:00

Room: 10 - Hall 4

Abstract no.: 34772

SURGICAL TREATMENT FOR FIBROUS DYSPLASIA OF BONE INVOLVING PROXIMAL FEMUR

Yi LUO, Fan ANG, Xuele ZHANG, Yong ZHOU, Li MIN, Chang ZOU, Chongqi TU

West China Hospital of Sichuan University, Chengdu (CHINA)

OBJECTIVE: To find an effective method of surgical treatment of fibrous dysplasia of bone involving the proximal femur. **METHODS:** From January 2001 to January 2012. Eighty-three patients with fibrous dysplasia of bone involving the proximal femur were treated. Fifty-six patients were involved one bone and 27 patients were involved more than two bones. The choice of the various operative procedures depended on the quality of the bone and the extent of the lesion. When the quality of the bone was good, then curettage and bone-grafting was performed. Or else, curettage and bone-grafting combined with internal fixation was performed. Medial displacement valgus or valgus osteotomies were used to treat coxa varus. **RESULTS:** All bone graft were absorbed slightly at 3 months and markedly at 10 to 14 months postoperatively. The average neck-shaft angle was corrected from 78 degrees (55-95 degrees) preoperatively to 122 degrees (97-130 degrees) postoperatively. The relative length of femur was increased 1.8-3.6 cm (mean 2.7 cm). After operation, 71 patients could walk without support, 8 with claudication, 4 ambulated with the aid of unilateral cane. No recurrent fracture or progression of the deformity occurred in all patients. **CONCLUSION:** Impaction allograft is the key of prompting allograft incorporating fully and preventing pathological fracture. An effective internal fixation must be used when the quality of the bone is poor. Medial displacement valgus or varus osteotomies can correct varus deformity, improve function, as well as restore biomechanical axis of femur. It is also able to effectively eradicate lesions and prevent.

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Session: Short Oral Communications - Tumours

Time: 08:30 - 10:00

Room: 10 - Hall 4

Abstract no.: 34998

INTRAOSSSEOUS LIPOMA AND SIMPLE BONE CYST OF THE CALCANEUS: A COMPARATIVE STUDY

Jun TAKADA¹, Manabu HOSHI¹, Naoto OEBISU¹, Tadashi IWAI¹, Koji MANDAI¹, Makoto IEGUCHI², Hiroaki NAKAMURA¹

¹Department of Orthopaedic Surgery, Osaka City University Graduate School of Medicine, Osaka (JAPAN), ²Department of Orthopaedic Surgery, Yodogawa Christian Hospital, Osaka (JAPAN)

Introduction: Intraosseous lipoma and simple bone cyst are both observed as well circumscribed radiolucent lesions in the central triangular area of the calcaneus. We compared clinical and imaging features of our cases to identify the differences. Material and methods: From 2003 onward, we treated 7 patients with lipoma, and 16 patients with simple bone cyst. For the lipomas, mean age was 42.1 years (26-67), 4 male and 3 female. For the simple bone cysts, mean age was 13.5 years (7-25), 9 male and 7 female. Diagnosis was based on MRI, and for the cases which underwent surgery, diagnosis was confirmed histologically. Results: There was no significant difference in respect of laterality, gender, but mean age was significantly higher in the lipoma cases ($p < 0.001$). Calcification and ossification on plain radiograph was observed in 6 cases of lipoma, but none in simple bone cysts ($p < 0.001$). In 2 cases of lipoma with pain, magnetic resonance imaging (MRI) showed diffuse high signal intensity on T2-weighted imaging in the posterior portion of the calcaneus, suggestive of micro-fracture or bone bruise. All patients except for two cases of lipoma, underwent curettage and bone substitute grafting and no recurrence was observed. In the HE stained specimen of cyst wall, cholesterol clefts were characteristic for calcaneal bone cysts and seen in 10 of the 16 cysts. Conclusion: Calcification and ossification on plain radiograph is suggestive of intraosseous lipoma. There may be some relationship between the two entities, but this has not yet been demonstrated.

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Session: Short Oral Communications - Tumours

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Abstract no.: 34386

GIANT CELL TUMOUR OF BONE SURGICAL TREATMENT

Ibrahim Saleh ALSHAYGY, Fawzi ALJASSIR

King Khalid University Hospital, Riyadh (SAUDI ARABIA)

Background: Giant cell tumour of bone (GCT) is a rare, aggressive non-cancerous (benign) tumour, which generally occurs in adults between the ages of 20 and 40 years and very rarely seen in children or in adults older than 65 years of age. Giant cell tumours occur in approximately one person per million per year. Treatment varies from extensive curettage and cementing or bone graft. Methods and Results: Prospective study (2004-2009). 40 patients with GCT. All patients had worked up before surgery (X-ray, MRI, & CT-CHEST). All patients had CT-guided biopsy to confirm the diagnosis prior to the definitive surgery. 36 patients treated with curettage and allograft bone grafting. Two with wide resection and reconstruction. Two with curettage and cementing. Curettage technique we used large cortical window. Headlamp and dental mirrors. Curettes of different sizes. High-speed burrs. Hydrogen peroxide. Post-surgery Immobilization for 6 weeks. Non weight bearing for 3 months. Follow-up with X-ray & functional scores (SF-36, WOMAC & Lysholm Knee Scoring Scale) at 0, 3, 6, 12, 18, 24 months. Age (18–39 years) Average (25 years) Follow-up (12-38 months) Average (22 m). Majority of GCT in our study occurred around the knee joint. 13/16 (81%) classified as stage II. 3/16 (19%) classified as stage III. With average follow-up of two years no recurrence was detected. Conclusion: Extensive curettage and allograft bone grafting is a good option in treating grade II GCT around the knee. Recurrences mainly related to incomplete curettage. Adjuvant therapy may help.

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Abstract no.: 34367

TREATMENT OPTIONS FOR RECURRENT GIANT CELL TUMOURS OF BONE

Feiyan CHEN, Jun XIA, Yibing WEI, Siqun WANG

Orthopaedics Department of Huashan Hospital Fudan University, Shanghai (CHINA)

Objective: to investigate the treatment options for recurrent GCT (bone giant cell tumours). Methods: a retrospective analysis was performed for treatment methods and results of 18 cases of patients with recurrent GCT from 2004 to 2009. 10 male and female 8 cases, average age 32 years old, the average follow-up period was 48 months. Evaluation indexes including MTSS score; radiology evaluation. Results: 18 cases of patients with primary recurrence of 14 cases, secondary recurrence of 4 cases. Lesion site: distal femur in 12 cases, proximal femur in 6 cases, 1 case in patella. Level of Campanacci classification: 7 cases of grade 2, 10 cases of grade 3, 1 of malignant change. Treatment options: expanded excision + bone cement in 5 cases, expand excision + bone cement + internal fixation in 3 cases, wide resection of the tumour + prosthesis reconstruction in 9 cases, 1 case of amputation. 2 recurrences in the 11 patients with expanded excision; no recurrence in the 6 cases of tumour resection + reconstruction; 2 cases of distant metastasis, in which 1 malignancy and died after amputation. MTSS score: good in 12 cases, fair in 6 cases. Conclusions: for recurrent GCT, curettage is preferred if local conditions allow. Wide resection, along with prosthesis reconstruction have advantages of erasing thoroughly and low chance of recurrence. For those recurrences with malignant transformation, soft tissue pollution and damage, amputation can be adopted.

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Abstract no.: 33538

LIMB PRESERVATION IN RECURRENT GIANT CELL TUMOUR OF DISTAL END OF RADIUS WITH PATHOLOGICAL FRACTURE – ROLE OF ULNOCARPAL ARTHRODESIS

Narinder KUMAR

Base Hospital, Delhi Cantt, New Delhi (INDIA)

Close proximity to median nerve, radial artery and multiple tendons makes it difficult to treat giant cell tumours of distal radius. Despite treatment with complete excision of tumour along with local adjuvant measures (bone cement, liquid nitrogen) with or without preservation of radioulnar and radiocarpal joints, recurrence rates are significantly high, especially in Campanacci Grade III lesions. Locally aggressive lesions and recurrences can be managed by complete excision of lesion and reconstruction with prosthetic replacement, ulnar translocation, arthrodesis, allograft replacement, vascularized or non-vascular fibular graft etc. Pathological fractures in recurrent GCT lesions of distal radius and their management have been rarely reported. We report a case of grade III giant cell tumour of distal radius in a 56-year-old woman which was managed by complete excision of tumour and distal radius followed by reconstruction with fibular autograft. Local recurrence in soft tissues and fibular graft was managed by excision of soft tissue lesions and filling of bone defects by bone cement. One year later, patient developed pathological fracture of distal radius which was not reconstructable. This clinical situation was managed by excision of the fibular graft with pathological fracture, translocation of ulna and ulnocarpal arthrodesis. Patient has been followed up for 10 months with no recurrence and her hand function remains well preserved.

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Abstract no.: 33776

UNCOMMON SITES OF PRESENTATION OF ANEURYSMAL BONE CYSTS

Vikram KHANNA, Sanjeev SINGHAL, Umesh PARASHARI, Sudhir SINGH
Era's Lucknow Medical College and Hospital, Lucknow (INDIA)

Introduction: Aneurysmal Bone Cyst (ABC) is a benign solitary lesion. It usually occurs in the long bones but very rarely in the calcaneum, mandible, femur and clavicle. Its frequency of occurrence in skull and mandible is 4%, clavicle and ribs is 5%, femur is 13% and foot is 3%. Only a very few cases of ABC of these unusual sites have been reported till date. Case Reports: Here we report four cases of ABC at unusual sites namely the calcaneum, mandible, proximal femur and clavicle diagnosed primarily on the basis of different imaging modalities and later confirmed on histopathology. All the cases were managed surgically with no recurrence. Discussion: Till 1975 only 25 cases were reported for ABC of Clavicle with majority being lateral end or middle part of clavicle whereas in our case it was the medial end which was involved. There have been only 95 cases of clavicle ABC reported till now. On X-ray, an ABC is usually seen eccentric in position in the metaphysis and it appears osteolytic. Real-time USG in supine position shows multiple, horizontal echo-reflected lines within the mass. CT scan can also help in diagnosing lesions of the pelvis or spine. On MRI both T1 and T2 MRI ABC appears with a low signal rim which encircles the cystic lesion. The histopathological findings elicit an ABC as a thin periosteal membrane lined blood filled cavity. Surgical options include curettage, wide excision and arterial embolism in large cysts.

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Abstract no.: 35153

BENIGN CHONDROMATOSIS IN ANATOMICALLY "TIGHT" PLACES

Ivan GEROV¹, Sergei STOYANOV², Nedelcho TZACHEV¹

¹Military Medical Academy, Sofia (BULGARIA), ²TOKUDA Hospital, Sofia (BULGARIA)

Solitary osteochondroma is a developmental abnormality of bone. It occurs when part of the growth plate forms an outgrowth on the surface of the bone. This bone outgrowth may or may not have a stalk. When a stalk is present, the structure is called pedunculated. When no stalk is present, it is called sessile. Multiple osteochondromatosis is also called multiple osteocartilaginous exostosis, multiple hereditary exostosis (MHE), familial osteochondromatosis, multiple hereditary osteochondromatosis, or diaphyseal aclasia. Osteochondroma can be located near a nerve or blood vessel, such as behind the knee. When it is, there may be numbness and tingling in that extremity. A tumour that presses on a blood vessel may cause periodic changes in blood flow. This can cause loss of pulse or changes in colour of the limb. In 2 years we had 4 patients with MHE CASE 1 – 23 years old, M, proximal femur, biopsy positive for CHS. Family history of lethal malignant transformation of a MHE CASE 2 – 59 years old, F, fossa poplitea. proximal tibia CASE 3 – 22 years old, M, internal iliac surface, 7th rib, femur CASE 4 – 20 years old, M, above fossa popl., distal femur. In all cases a team of abdominal/vascular/thoracic surgeons was involved and special approaches utilised. Meticulous preoperative planning is a must. X-ray in minimum 2 perpendicular plans, CT, MRI, contrast imaging, etc. – all focused on the formation and the surrounding structures. Good surgical technique, strongly considering the individual's anatomy.

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Abstract no.: 35843

OSTEOCHONDROMA: OUR EXPERIENCE OVER 15 YEARS WITH 87 CASES OF SURGICAL EXCISION – THEIR INDICATIONS AND COMPLICATIONS

Nishant JAIN, Zile Singh KUNDU, Narender Kumar MAGU, Anil HOODA

Pt. B.D. Sharma Post Graduate Institute of Health Sciences, Rohtak (INDIA)

Osteochondroma accounts for more than one-third of all benign bone tumours. Usually conservative approach is followed but rarely some patients require surgical excision. Study was done from 1997 to 2012 where 87 patients with symptomatic osteochondroma required excision. Our aim was to investigate indications and outcomes of excision of osteochondroma. Maximum presentations were around knee joint. The indications of surgery were pain (38), progression and increase in size of tumour (16), restriction of joint motion (10), neurovascular compression (10) painful bursa (4), pathological fracture (6), compression of cauda equina (1) and rarely cosmetic (2). The major complications of surgical excision included one patient having common peroneal nerve neuropraxia (due to fibular head osteochondroma excision) and one case of recurrence. Two patients had minor complications. Overall, 95.4% of the preoperative symptoms resolved after excision of the tumours. Extra periosteal excision is a successful form of treatment for symptomatic osteochondroma with low morbidity.

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Abstract no.: 34045

PERCUTANEOUS CT-GUIDED LASER ABLATION OF OSTEIOD OSTEOMA IN CLINICORADIOLOGICALLY CONFIRMED DIAGNOSIS

Srinivas KASHA, M.V. CHALPATHIRAO

Krishna Institute of Medical Sciences, Secunderabad. (INDIA)

Background: Osteoid osteoma is a benign bony neoplasm and its classic treatment is surgery. The aim of percutaneous Laser photocoagulation of osteoid osteoma under CT guidance is thermal destruction of the nidus using low-power laser energy, thus avoiding bone resection, open surgery and surgical morbidity especially in intra-articular lesions (Preservation of blood supply to the head of the femur in case of a hip joint). Materials and Methods: 12 cases of osteoid osteomas were treated with percutaneous ILP of the nidus. Under CT guidance, the needle was positioned in the centre of the nidus. Using a high-power semiconductor diode laser (805 nm) with a 400-mm optical fiber, we delivered 600 to 1400 joules to the nidus, depending on its size. The procedure was performed with the patient under spinal anaesthesia and required overnight hospitalization. Results: The procedure was successful in all patients. 10 had pain relief in 24 hours. 1 patient relieved after 8 days. 1 had recurrence for whom procedure was repeated. Conclusion: Percutaneous ILP of osteoid osteoma is a promising, simple, precise, and minimally invasive technique and may be an alternative to traditional surgical and percutaneous ablations. It has a great value in inaccessible areas and intra articular lesions, especially in a hip joint where in exposure of joint may hamper blood supply to the head of femur. The demerit of the procedure is that there is no tissue available for histopathology in this targeted destruction of lesion. Hence this should not be used in uncertain radiology.

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Abstract no.: 33608

RESECTION AND RECONSTRUCTION OF AGGRESSIVE BENIGN BONE TUMOUR BY AUTOLOGOUS BONE GRAFT – A LONG-TERM RESULT

Mukesh PARUTHI¹, Rajesh CHOPRA¹, Surinder Mohan TULI²

¹Central Institute of Orthopaedics, Safdarjung Hospital and Vardhman

Mahavir Medical College, New Delhi (INDIA), ²VIMHANS, New Delhi (INDIA)

En bloc resection and reconstruction by suitable bone graft has now been accepted by most orthopaedic oncologists as useful procedure for selected aggressive benign bone tumours. Autologous bone grafting is one of the best procedures as there is no danger of immunological reaction and the graft after incorporation behaves like a normal bone. 50 cases of aggressive benign tumours in extremities were treated by resection and reconstruction by massive autologous bone grafts. Majority of the cases were giant cell tumours and others were aneurismal bone cyst chondromyxoid fibroma. Long bones involved were femur, tibia, radius, ulna and humerus. Massive autologous grafts comprised of fibular, turn graft and cortico-cancellous iliac and tibial graft. Primary union at the host graft junction was achieved in 75 per cent of cases. Follow-up varied from one to seventeen years. Mean follow-up was seven years. Patient must adjust their lifestyle to accommodate the arthrodesis. Various complications encountered were non-union, stress fracture, infection resorption of the graft and recurrence. The success of massive bone graft depends upon age, good nutritional status, nature and type of graft, size of graft, good fixation etc. Result according to site of lesion will also be discussed. In properly selected patients this method provided a stable extremity that permitted resumption of vigorous life style. This procedure is an alternative to massive allograft, prosthesis and sometimes even to amputation.

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Abstract no.: 34402

PRIMARY EWING'S SARCOMA OF THE SPINE IN A 2-YEAR-OLD BOY

Electricwala ALI¹, Electricwala JAFFER²

¹Bharati Vidyapeeth University and Bharati Hospital, Pune (INDIA), ²Sancheti Institute of Orthopaedics and Rehabilitation, Pune (INDIA)

Ewing's Sarcoma (ES) is a highly malignant bone tumour that has a peak incidence in the 2nd decade of life and is rare after 30 years of age. It may involve any part of the skeleton but the most frequent parts are the ilium and diaphysis of femur and tibia. Primary ES of the spine is extremely rare. It accounts for only 3.5 to 14.9 per cent of all primary bone sarcomas. The age of presentation ranges from 12 to 24 years (median - 21 years). Primary ES of the spine below 5 years of age has not been reported. Our case report is a very unusual case of primary ES of the spine in a 2-year-old boy who presented with features of cauda equina syndrome. After reaching the diagnosis of a space occupying lesion invading the lumbar spinal canal, we performed a decompressive laminectomy and a biopsy was sent which confirmed the diagnosis of ES. Surgery was followed by good improvement in motor signs. The child was then referred to a higher centre for further treatment, radiation and chemotherapy.

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Abstract no.: 34115

HIGH EXPRESSION OF SURVIVIN IN SACRAL CHORDOMA

Zong Ping LUO, Chao CHEN, Huilin YANG, Xi CHEN

Department of Orthopaedics of 1st Affiliated Hospital and Orthopaedic
Institute, Soochow University, Suzhou (CHINA)

Chordoma is a rare and invasive malignant tumour which primarily relies on surgical treatments. Anticipation of its recurrence and patient survival longevity has been a critical issue of the treatments. This retrospective study examined the survivin expression of sacral chordoma in 30 patients undergoing surgery in our hospital from January 2000 to July 2010, and compared it with chordoma recurrence. Survivin expression was 70% positive in 30 patients. The positive expression of survivin with recurrence was significantly higher than that without recurrence ($p=0.017$), and was inversely related to the continuous disease-free survival time ($p<0.001$). Our data showed that survivin expression was associated with recurrence. The correlation suggested that the survivin expression could be used as an independent predictor of recurrence and could be a potential bio-target gene of angiogenesis in sacral chordoma.

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RESULTS OF WIDE EXCISION AND RADIOTHERAPY IN HIGH-GRADE SOFT TISSUE SARCOMAS

Reetadyuti MUKHOPADHYAY, Zile Singh KUNDU, Paritosh GOGNA
Pt. B.D.S. PGIMS, Rohtak (INDIA)

Introduction: Soft tissue sarcomas are a heterogeneous group of relatively rare malignant neoplasms, being less than 1% of all malignant tumours. A malignant sarcoma is suspected in a painful lesion greater than 5 cm in size, deep-to-deep fascia, which is progressively increasing in size. The prime goal in these cases is to preserve a functional extremity, which is not feasible in every case. In such cases it is important to decrease the morbidity. This is achieved by, translating natural tissue barriers into its distance equivalents by using margins less than that indicated by the true physical distance. **Method:** We treated 50 soft tissue sarcomas by performing wide surgical resection and radiotherapy. The patients were monitored for postoperative problems, local recurrence, distant metastasis and survival of the patients. **Results:** Of the patients treated 72% are disease free till date, whereas only 4% succumbed to the disease. 16% of the patients presented with local recurrence, while 8% are surviving with metastasis. Of all the patients treated four presented with wound dehiscence and one with complaints of local wound infection. Two patients developed neurological deficit due to the wide excision. **Conclusion:** The presence of soft tissue sarcoma in the extremity is no longer an indication for amputation. Wide excision by translating natural tissue barriers into its distance equivalents is an effective treatment modality, which allows function-sparing surgery for soft tissue sarcomas. Good functional and oncological results can be achieved by using a combination of tumour excision and, when required, suitable adjuvant therapies.

Date: 2013-10-19

Session: Short Oral Communications - Tumours

Time: 08:30 - 10:00

Room: 10 - Hall 4

Abstract no.: 35208

PROSTHETIC KNEE REPLACEMENT AFTER RESECTION OF A MALIGNANT TUMOUR OF THE DISTAL FEMUR: MEDIUM-TERM RESULTS

Xuelel ZHANG, Yi LUO, Yi WEN, Chang ZOU, Yong ZHOU, Li MIN, Hong DUAN, Chongqi TU

West China Hospital of Sichuan University, Chengdu (CHINA)

Objective: To assess the oncology prognosis and the risk factors of the malignant musculoskeletal tumour of the distal femur. Methods: According to the inclusion criteria 102 patients had a limb-sparing procedure of lower limb by means of the implantation of the tumour endoprosthesis from January 2000 to January 2012 in the West China Hospital. A follow-up study focusing on the oncology prognosis, limb function and the risk factors was done on 73 patients with during of follow-up ranging from 2-10 years(mean 47.6 months). The survival of the patients was analyzed regarding several risk factors with use of log-rank test. Function evaluated with revised 30-point scoring system of the Musculoskeletal Tumour Society(MSTS) was analyzed by several risk factors using test or rank test. Results: Of the 73 patients, 52(71.2%) were alive at the last follow-up, 46(63.0%) live without tumour, 6(8.2%) lived with tumour. Local recurrence occurred in 5(6.8%) cases and 6(8.2) ended in amputation. Of the 36 patients with osteosarcoma, the overall survival was 63.2%, the 5-year and 7-year were both 57.4%. The mean MTST was 26.4 ± 0.3 , with excellent in 86% patients. Those without pathological fracture had a mean score of 27.1 ± 2.4 , which was higher than that with pathological fracture (23.1 ± 3.6). Conclusion: Limb salvation surgery with tumour-type knee prosthesis had a satisfactory oncology prognosis and postoperative limb function. Enneking stage and sensitivity to chemotherapy of the tumour were important factors affecting the oncology prognosis. The limb function was significantly impacted by preoperative pathological fracture.

Date: 2013-10-19

Session: Short Oral Communications - Tumours

Time: 08:30 - 10:00

Room: 10 - Hall 4

Abstract no.: 34760

FINITE ELEMENT ANALYSIS OF CUSTOM ENDOPROSTHESIS STEM LENGTH IN DISTAL FEMUR RECONSTRUCTION

Yi LUO, Fan TANG, Yong ZHOU, Chang ZOU, Yi WEN, Chong-Qi TU
West China Hospital of Sichuan University, Chengdu (CHINA)

Objective: To analyze the biomechanical change of custom endoprosthesis stem length in distal femur reconstruction. Methods: Based on CT images of the right femur of male healthy volunteer, five three-dimensional finite element models A, B, C, D, E were developed using different stem-length (150 mm, 160 mm, 170 mm, 180 mm, 190 mm) custom endoprostheses to reconstruct 40% defect of the distal femur. The corresponding osteotomy length of the femoral shaft was 160, 170, 180, 190 and 200 mm. Four times of body mass load corresponding to the normal walking gait cycle (3 km/h) was applied. Result: The maximum stress on the bone recorded in the medial proximal femur dropped from 106.8 Mpa to 91.78 Mpa when the stem-length increased from 150 mm to 190 mm. While the maximum stress on the cement recorded in the top one fourth medial dropped from 27.2 Mpa to 19.06 Mpa. Compared to the bone and cement the stress on the stem was greater but had few changes. No bone fracture, cement damage or stem failure occurred in all models. Conclusion: Using custom endoprostheses to reconstruct defect of the distal femur has good biomechanical foundation. Short stems could induce concentrated stress in the bone and cement, easily leading to bone fracture and cement damage. Increasing the length of the intramedullary stem often increases the level of the stress-shielding on the bone.

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 35021

CONSTRAINED INSERTS COMBINED WITH PRIMARY TKA COMPONENTS FOR MANAGEMENT OF MILD CORONAL INSTABILITY

Alvin ONG, Zachary POST, Claudio DIAZ-LEDEZMA, Fabio OROZCO

The Rothman Institute of Orthopaedics, Philadelphia (UNITED STATES)

Introduction: The use of constrained liners can assist in management of mild coronal instability during primary TKA. Concern exists that this approach can lead to early loosening and failure. The purpose of this study was to evaluate use of constrained liners in the setting of primary TKA, their effectiveness for management of mild instability, and outcomes at mid-term follow-up. Methods: A consecutive series of 124 TKA patients managed with primary tibial and femoral components combined with modular constrained polyethylene inserts were retrospectively identified. Using navigation software, an intraoperative decision was made to utilize a constrained liner if ≥ 5 mm of coronal plane instability existed with trial components in place. Among the cohort, 40 patients had minimum 2-year follow-up. Patients were evaluated clinically for pain and satisfaction as well as reoperation for any reason. Latest post-op films were evaluated for signs of loosening. Results: No reoperations for mechanical failure of the implant or instability were identified. There were 5 reoperations for other reasons (3 for infection, 1 due to stiffness and 1 for periprosthetic fracture). The remaining 35 patients had asymptomatic knees that were stable in both flexion and extension. No radiographic evidence of osteolysis or loosening was detected. Discussion: Constrained condylar inserts used in conjunction with primary tibial and femoral components are effective for management of mild intraoperative instability. This study demonstrates good clinical success without evidence of loosening or reoperation at mid-term follow-up. Longer-term follow-up is necessary to further assess this important cohort.

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 34511

CLINICAL AND BIOMECHANICAL EVALUATIONS OF TWO DIFFERENT DESIGNS OF TOTAL KNEE ARTHROPLASTY

Charles RIVIÈRE¹, Martin LAVIGNE¹, Pascal André VENDITTOLI¹, Michel RAHMÉ¹, Alexandre FUENTES², Alexandre RENAUD¹

¹Maisonneuve-Rosemont Hospital, Montréal (CANADA), ²Emovi Institute, Laval (CANADA)

Introduction: Comparing clinical and tridimensional (3D) knee biomechanical data of two different designs of posterior-stabilized total knee arthroplasty (TKA) on the same patient. The hypothesis is that knees with implants allowing pivot would have higher degrees of rotation in the transverse plane and better subjective scores compared to knees with a traditional implant. Methods: Fifteen patients with a TriathlonTM TKA (Stryker) allowing pivot in one knee and a traditional posterior-stabilized NexgenTM TKA (Zimmer) in the contralateral knee were analyzed. 3D knee kinematics analysis was assessed with the KneeKG system (Emovi Inc. Canada). The clinical evaluation assessed range of motion, KOOS, WOMAC and SF-12 questionnaires. Results: At a minimum 2 years' follow-up post-TKA, the transverse plane analysis did not show significant difference for the mean rotation between the implants (12.7° vs. 10.9°, p=0.16). There were no significant difference for the subjective scores. The frontal plane analysis showed significant increase in varus thrust for the NexgenTM from initial contact to mid-stance (1.59° vs. 0.44° of varus, p=0.025). There were no significant differences for the range of motion, nor for static limb alignment. Conclusion: The 3D kinematics analysis did not show difference in the transverse plan nor in the subjective scores. It is possible that gait does not require enough knee flexion to highlight such a difference. The differences in the frontal plane could be attributable to small differences in either limb alignment, or the design, or ligament balancing, between knees.

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 34180

OUTCOME AND SAFETY OF UNILATERAL VS. BILATERAL TOTAL KNEE ARTHROPLASTY IN PATIENTS AGED LESS THAN 60 YEARS – A COMPARATIVE STUDY

Ashwin Kumar ANANTHAKRISHNAN HEMALATHA, Uday Krishna MYNENI
Krishna Institute of Medical Sciences, Secunderabad, Andhra Pradesh
(INDIA)

Introduction: We present a prospective randomized study, to determine the outcome and safety of simultaneous Bilateral Total Knee Arthroplasty in patients, aged less than 60 years. Materials & Methods: 71 patients aged less than 60 years underwent Total knee Arthroplasty in a period of one year. Amongst them, 40 underwent unilateral and 31 patients underwent simultaneous Bilateral Total knee Arthroplasty. Patients were matched for age, sex, BMI. Preoperative Knee society scoring was 52 and 53 in the unilateral and bilateral groups respectively ($p>0.05$). All the surgeries were performed by a single surgeon under tourniquet control. Both the groups were given tranexamic acid to control perioperative blood loss. No drains were used. Both groups had similar DVT prophylaxis and Physiotherapy regimen. Results: Our results showed that there was no postoperative incidence of clinical DVT in both groups. 1 patient amongst those who underwent simultaneous Bilateral TKA needed postoperative blood transfusion ($p>0.05$). There was no incidence of infection in both the groups. Average postoperative Knee society score at the end of 1-year follow-up was similar in both groups. Conclusion: We conclude that patients aged less than 60 years, with single or no co-morbidities are ideal candidates for simultaneous Bilateral Total Knee Arthroplasty when indicated, as it is cost effective, with decreased total duration of hospital stay, and produces similar results as those undergoing unilateral total knee replacement. The study is a pilot study and has its limitations of a small comparative group and a short follow-up.

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 34111

IN VIVO GAP ANALYSIS IN VARIOUS KNEE FLEXION ANGLES DURING NAVIGATION-ASSISTED TOTAL KNEE ARTHROPLASTY

Jae-Hyuk YANG, Jung-Ro YOON, Woo-Seung LEE, Gi-Won CHOI

Department of Orthopaedic Surgery, Veterans Health Service Medical Centre, Seoul (SOUTH KOREA)

Purpose: The aim of gap balancing during TKA is to achieve rectangular flexion and extension gaps. In this study, the intraoperative joint gaps were analyzed at various knee flexion angles (0°, 45°, 90°, 120°) using the navigation-assisted TKA. **Methods:** Prospectively, 50 knees operated by TKA using a navigation-assisted gap balancing technique were evaluated with a minimum of 2-year follow-up period. Intraoperatively, offset-type-force-controlled-spreader-system was used for gap measurements. This commercially-available instrument provides controllable tension in patella reduced position. After achieving rectangular flexion and extension gaps, final mediolateral gaps in each flexion angle (0°, 45°, 90°, 120°) were recorded. Any gap differences of more than 3mm were considered significant. Clinical outcomes were assessed. Correlation between the incidence of midflexion/hyperflexion laxity with the demographic data, preoperative radiologic alignment and intraoperative data was analyzed. For statistical analysis, ANOVA and Pearson correlation test was used. **Results:** All 50 cases were managed to have rectangular gap intraoperatively. Patients were divided into 4 groups according to the gap difference in various knee flexion angles. Group I: no gap difference{n=33(66%)}, Group II: lax in midflexion{n=11(22%)}, Group III: lax in deep flexion {n=4(8%)} and Group IV: lax in both midflexion and deep flexion {n=2(4%)}. All of the joint gaps with significant difference(>3mm) were in trapezoidal shape with a wider lateral side. Correlation between the incidence of midflexion/deep flexion laxity with demographic data, preoperative deformity and intraoperative obtained data was not found. **Conclusion:** This study demonstrated that significant proportion(34%) of TKA cases had laxity in midflexion(45°) even when rectangular extension(0°)-flexion(90°) gap was achieved.

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 33555

**LIGAMENT ADVANCEMENT, ENHANCEMENT AND RECONSTRUCTION
IN PRIMARY TOTAL KNEE ARTHROPLASTY**

Saurabh AGARWAL, Rajeev Kumar SHARMA

Indraprastha Apollo Hospital, New Delhi (INDIA)

Background: Complete or partial disruption of the collateral ligament during total knee arthroplasty in severe deformities is a devastating complication. We analysed 140 knees in 75 patients with over 30 degree varus with flexion deformity (98 knees), flexion deformity alone (30 knees) & valgus deformity (12 knees) treated with primary total knee arthroplasty from January 2001 to January 2007. Materials and Methods: Problems encountered were avulsion of MCL from tibial attachment in 6 knees, femoral attachment avulsion with a bony fragment in 2 knees. Lateral collateral ligament was injured in 2 knees. In 3 knees with varus of >30 degree with element of tibial rotation medial release alone was not enough to balance the joint. Lateral collateral ligament tightening was done in these cases using lateral epicondylar osteotomy. Direct repair was not done in any case. Results: nine patients (9/13) regained stability within 2 mm, three (3/13) patients had instability up to 4 mm and only one patient had gross instability needing hinge knee prosthesis. On the side of ligament reconstruction the ROM remained 10 to 15 degree less than the opposite side. Conclusion: Identification of ligamentous insufficiency and its management will not only prevent unstable joint but also minimize the risk of revision in future. Lateral collateral ligament tightening is needed in certain select extreme varus deformities in addition to medial release.

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 33950

RESULTS OF BONE DEFECTS IN PRIMARY KNEE ARTHROPLASTY TREATED USING WIRE MESH AND MORSELLISED IMPACTION AUTOGRAFTING

Mrinal SHARMA, Yatindra KHARBANDA
Indraprastha Apollo Hospital, New Delhi (INDIA)

Introduction: Large peripheral tibial bone defects encountered during primary total knee replacement. Structural bone grafts or wedges may not suffice. Proximal tibial vertically oriented peripheral segmental deficiencies were reconstructed using a mesh followed by impaction auto grafting. This technique is akin to revision knee arthroplasty has not been so far used in primary knee replacement. Materials and methods: Twelve knees(11 patients) 48-78 years) with vertical bone defects measuring >40 % of cut tibial surface and >2.5 cm deep were contained using a stainless steel mesh stabilised with screws, followed by impaction autografting, followed by cementing of the tibial component. Stem extenders are used in all cases. The average follow-up was 5.6 years(range 2 to 7.4 years). Results: graft union was seen in all cases with complete incorporation. Impacted autograft incorporated early in 6-12 weeks. No graft collapse, non-union, loss of fixation, implant loosening was seen in any of our cases.. Infection was not seen in any of our patients. One patient developed pes anserine bursitis which settled on conservative treatment. One had periprosthetic fracture which was plated. No tibial radiolucencies were observed. None of the knees showed features of aseptic loosening. There were no revisions. Knee society scores improved from 40 to 90 points. Average range of motion achieved was 0 degree to 128 degrees. Conclusion: It is a predictable method of reconstruction during primary total knee replacement. It preserves bone for future revisions, is more biological, cost effective as the autograft is available then and there.

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 34836

**MANAGEMENT OF THE TIBIAL BONE DEFECT WITH AUTOGRAFT IN
PRIMARY TOTAL KNEE ARTHROPLASTY**

Sanjib Kumar BEHERA, Rahul PARDIPURAM

Yashoda Hospital, Secunderabad (INDIA)

Bone defects in primary TKR generally occurs on the tibial side, but can affect the distal femur, and are typically asymmetrical and peripheral, although there may be contained deficiency owing to cyst formation leading to Varus. We used Autograft during surgery when defect is beyond 5mm and no Autograft used with small, less than < 5mm defect and managed with screw. Method: November 2005 to January 2011, 106 pts, (bilateral - 82, unilateral - 24). Male - 62 (bilateral - 42, unilateral - 20) Female - 44 (bilateral - 40, unilateral - 4) total of 188 knees, in the age range of 47-73 (60 years). All were Varus deformity – (traumatic - 4, previous surgery - 10). All patients had an uncontained medial peripheral defect on the tibial plateau >5mm deep to a maximum depth of 23mm on the tibial plateau. Results: None had non-union of graft or instability. There was no gap or infection. We checked stability after release of soft tissue and balance with spacer. Average follow-up was 1.2 years. Discussion: The aetiology of bone defects in primary TKR include erosion secondary to arthritic change and trauma. The defects typically have a condensed sclerotic surface. Varus deformities are characteristically associated with medial defects. Autografts are suitable for peripheral tibial defects >5 mm where there is a tendency to displace at a time of trial reduction. The clinical results obtained in terms of range of movement, OKS and WOMAC score were good to excellent and no failure of the prosthesis was observed.

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 34308

ARTHROPLASTY IN PERSONS WITH HEMOPHILIA IN INDIAN SCENARIO

Shubhranshu Shekhar MOHANTY, Kumar Kaushik DASH

King Edward Memorial Hospital, Mumbai (INDIA)

Introduction: Haemophilic arthropathy leads to severe pain, deformity and functional disability. Arthroplasty has been shown to be effective in reducing both pain and tendency to bleed into the joint, leading consequently to dramatically improved function. Methods: This study involved all arthroplasties in haemophiliacs in our centre between June 2009 to May 2012 (Joints = 11, Patients = 6, Average follow-up 380 days). Pre-op radiological scoring for haemophilic arthropathy and bone loss was done. Pre-validated widely used joint scores (KSS, HSS, Harris Hip Score) were used both pre- and postoperatively. Patient satisfaction and complications of the surgery were also evaluated. Results: The study included 6 Knees (TKA), 4 Hips (THA) and one Bipolar Hemiarthroplasty. Average age of PWHs was 41.6 ± 5.97 years. Pre-op radiological score (Petterson) ranged from 11 to 13 (Avg. 11.5). Four cases of TKA had severe bone loss at presentation (two Type 3 AORI and two Type 1 AORI). All patients were satisfied with pain relief and functional improvement with higher scores. Comorbidities such as HIV (n=1), HCV (n=3), TB (n=1) were present. Three showed delayed wound healing and soakage at wound site, 2 of which required secondary suturing. Three TKAs with bone loss required stem extenders (augments in one case). Average expenditure for factor replacement was 1.57 lakh INR. Conclusion: We conclude that arthroplasty in PWH, although technically challenging, can be done with very good results and without any serious complication by a team-based approach, involving haematologists, orthopaedic surgeons, physiotherapists, occupational therapists, immunohematological facilities and good lab support.

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 34179

TOTAL KNEE ARTHROPLASTY IN HAEMOPHILIC ARTHROPATHY WITH SEVERE FLEXION DEFORMITY AND HIV-TB CO-INFECTION

Kumar Kaushik DASH, Shubhranshu Shekhar MOHANTY

K.E.M. Hospital, Mumbai, Maharashtra (INDIA)

Introduction: Haemophilic arthropathy often presents with structural and irreversible flexion deformity. In addition, those PWHs that are infected with HIV have 26.5% of postoperative infection following arthroplasty. Arthroplasties in severe flexion deformities (>300) of knee require excess distal femur resection and soft tissue release. Case: 32-year-old severe haemophilic with 1200 flexion deformity of knee, with HIV-HCV co-infection and MDR tuberculosis underwent our three-stage management – First stage was percutaneous release of contracted posterior structures followed by serial casting postoperatively. This improved the deformity from 1200 to 800. After confirming CD4 count > 200/mm³, second stage, i.e. total knee arthroplasty with release of patellofemoral ankylosis and posterior capsule and 4mm additional distal femur cut was performed, which decreased the deformity to 400. Final stage was manipulation under general anaesthesia and serial casting based on three-point-correction principle. Patient was simultaneously treated with anti-retrovirals and anti-tuberculars throughout the process. At the end of one year follow-up, final flexion deformity is 100 with pain-free ROM up to 80, with Knee Society Score 86 and Knee Society Function Score of 90. Discussion: Although there are many reports on management of flexion contractures and role of TKA, literature is scant on dealing with deformity as severe as of 1200. Our three-staged protocol provides gradual but effective correction and suggests that haemophilic arthropathy with severe flexion deformity and HIV-TB co-infection can be managed with good results. Patient motivation and compliance are important when such a planned treatment is instituted.

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 35067

METAL HARDWARE REMOVAL PLUS TKR

Mansour ELGASSI¹, Mustafa SAGHIER²

¹Tripoli Medical Centre, Tripoli (LIBYA), ²Misrata Hospital, Misrata (LIBYA)

Introduction: removal of nearby metal hardware at the same setting of total knee arthroplasty is avoided only in presence of infection. Patients and Methods: 39 cases came to total knee arthroplasty with metal hardware needing removal. Clinical assessment of the knee joint motion, signs of inflammation, ESR and CRP in presence of tenderness, swelling or active arthritis. If the serological estimations are four times the normal values, a decrease by 40% in 4 weeks an aspiration for culture and biopsy. 14 blade plates; each one removed through a separate incision. Staplers in (23 patients) removed from the proximal tibia through the same midline TKR incision. One tibial nail and a plate (eight holes) of lower femur. Results: So far no infections were observed in the first 6 months with low drop rate of 5%. Discussion: not much extra time added to TKR operation time and metal hardware removal should be staged given the concern regarding infection. Conclusion: We do recommend removal of the metal hardware as they interfere with the prosthesis. No skin necrosis or infection; It is safe to couple removal of a nearby metal hardware and Primary TKR.

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 33805

THE INFLUENCE OF PATELLOFEMORAL DEGENERATIVE CHANGES ON THE OUTCOME OF THE UNICOMPARTMENTAL KNEE REPLACEMENT

Ali ABDULKARIM¹, N. MOTTERLINI², T.M. O'DONNELL³, M.J. NEIL⁴

¹Department of Orthopaedic Surgery, Cappagh Orthopaedic Hospital, Dublin (IRELAND), ²HRB, Royal College of Surgeons in Ireland, Dublin (IRELAND),

³Department of Trauma & Orthopaedics, UPMC, Beacon Hospital, Dublin (IRELAND), ⁴Department of Orthopaedic Surgery, St. Vincent's Healthcare Campus, Sydney (AUSTRALIA)

Introduction: Unicompartmental knee arthroplasty (UKA) is a recognized procedure for treatment of medial compartment osteoarthritis. Patellofemoral (PF) joint degeneration is widely considered to be a contraindication to medial compartment UKA. Methods: We examined the validity of this preconception using information gathered prospectively on 147 consecutive patients who underwent the Repicci II® UKA for medial compartment osteoarthritis between July 1999 and September 2000 by the same surgeon. The status of the PF joint was assessed intraoperatively in all patients, and accordingly patients were divided into two groups. Sixty-nine had associated PF osteoarthritis (group A) while 78 patients had a normal PF compartment (group B). Variables measured included the International Knee Society (IKS) score, limb alignment, and range of motion. Radiographs, demographic data, length of hospital stay, perioperative complications. All subsequent surgery and survivorship at 10 years were recorded. The mean follow-up was 9.4 years (range: 5-10.7 years) and results of the 2 groups compared. Results: We found no significant differences in terms of IKS scores, alignment, and flexion between the two groups. However, extension was significantly improved postoperatively in those patients with minimal or no PF joint degenerative disease ($p < 0.05$).

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 34184

EXTRACTION OF WELL-FIXED TRABECULAR METAL CONES FROM TIBIA IN REVISION KNEE ARTHROPLASTY

Biyyam RAO, Michael MOSS

**St. Richard's Hospital, Western Sussex Hospitals NHS Trust, Chichester
(UNITED KINGDOM)**

Introduction: The porous tantalum metaphyseal cones provide structural support for large femoral and tibial defects in Revision Knee Arthroplasty (TKA). They are known to osseointegrate with host bone and provide stable fixation. Objectives: To share our experience of extraction techniques of a well-fixed Trabecular metal (TM) cone from proximal Tibia in Revision TKA. Methods: We include 2 patients post Revision TKA with full TM cones used in AORI type IIB tibial defects. They presented with recurrent infection at 9 and 26 months from index procedure. At revision surgery it was found that TM cone and tibial component (RHK-Zimmer Plc.) composite were well-fixed in both patients. In first case undermining of tibial component using fine drills and burrs followed by use of fine oscillating saw blades with other extraction techniques made it possible to extract the tibia along with stem and TM cone. In the second case this was not possible and we had to use Midas Rex with diamond cutting wheel and burr to section the tibial base plate and free the TM cone around rest of Tibial prosthesis and stem. Following this it was possible to extract them separately. Results: Both patients had second stage Revision TKA at a later date and similar sized TM cones were used in both patients confirming the atraumatic nature of extraction of these cones. Conclusions: Though these TM cones osseointegrate and provide stable fixation, one has to be prepared with all eventualities at extraction as this can be extremely difficult.

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 35947

STAGED REVISION OF INFECTED TOTAL KNEE ARTHROPLASTY USING ANTIBIOTIC LOADED SPACER – A DISTRICT GENERAL HOSPITAL EXPERIENCE AND PROTOCOL

Dip CHAKRABARTI, Yaganti China SAIDAI AH, Brian BANERJEE

Good Hope Hospital, Heart of England NHS Foundation Trust, Birmingham
(UNITED KINGDOM)

INTRODUCTION: Management of infected total knee arthroplasty can be a difficult and costly problem. Two-stage revision procedures has been a standard practice. Timing to second stage can pose a dilemma at times. Proper protocols and guidance is essential for management and salvage. **OBJECTIVES:** The purpose was to analyse the clinical results of two-stage revision implantation of an infected total knee arthroplasty using antibiotic loaded cement spacer at first stage. **METHODS:** Retrospective analysis of all two-stage revision total knee arthroplasties done over the last 10 years by two senior authors. 37 patients were identified. Data collection included index diagnosis, associated co-morbidities, time to infection diagnosis, classification of infection type (duration since index) organisms isolated, antibiotics used, approaches used, protocol followed & follow-up results. **RESULTS:** Infection was successfully eradicated in 34 patients. Mean range of motion (knee flexion) improved from 62 degrees to 95 degrees. 72.9% patients were very satisfied following the operation. Four patients with quadriceps turn-down for exposure developed extension lag of 20-30 degrees. **CONCLUSION:** Two-stage revision of infected total knee arthroplasties using an antibiotic spacer and our protocol achieved 91.2% infection control with good patient satisfaction. Extension lag and stiffness can be a problem in some cases.

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 34816

“2-1” SINGLE-STAGE REVISION FOR INFECTED TOTAL KNEE ARTHROPLASTY USING METAPHYSEAL SLEEVES: SURGICAL EXPERIENCE AND EARLY RESULTS

Bhushan SABNIS, Rohit MAHESHWARI, Phil WALMSLEY, Ivan BRENKEL
Fife Hospitals NHS Trust, Kirkcaldy (UNITED KINGDOM)

‘2-in-1’ single-stage revision has shown favourable outcome for revision of septic total knee arthroplasty (TKA). The purpose of the study was to evaluate early clinical and radiological results of single stage re-implantation using steeped metaphyseal femoral and tibial sleeves. From July 2008 to May 2012, 17 patients with a diagnosis of infected TKA were treated with ‘2-1’ single stage re-implantation. During the procedure, we used extraction of implants, debridement and lavage in the first stage and re-draped patients prior to second stage which included definitive implantation. Postoperatively all patients received antibiotics till CRP and WBC were normal. Clinical assessment was done using American Knee Society (AKSS) score, SF12 health survey and Oxford knee society (OKS) scoring system. The radiographic analysis was performed using the knee Society total knee arthroplasty radiographic evaluation system. Patient satisfaction was also assessed. There were 10 men and 7 women with average age of 72 years. 5 patients had frank infection with discharging sinuses preoperatively. Significant improvement was noted in SF12, OKS and AKSS scores. None of the patients showed evidence of continued infection or progressive loosening at the mean follow-up of 24 months (range 12-60). One patient had re-revision for patella resurfacing while one patient suffered from non-fatal pulmonary embolism. 15 patients were extremely satisfied following the procedure. Metaphyseal sleeves enable insertion of stable implant and control of infection in single-stage operation. The increased morbidity and cost of a two-stage procedure is thus avoided.

Date: 2013-10-19

Session: Short Oral Communications - Knee

Time: 10:30 - 12:00

Room: 10 - Hall 4

Abstract no.: 35001

ACHILLES TENDON ALLOGRAFT FOR RECONSTRUCTION OF FAILED EXTENSOR MECHANISM IN TOTAL KNEE ARTHROPLASTY

Alvin ONG, Claudio DIAZ-LEDEZMA, Fabio OROZCO, Zachary POST
The Rothman Institute of Orthopaedics, Philadelphia (UNITED STATES)

Introduction: The reconstruction of extensor mechanism failure after total knee arthroplasty (TKA) is challenging. We present our experience with Achilles tendon allograft (ATA) for the reconstruction of failed extensor mechanism in TKA. Methods: We retrospectively identified 29 knees in 27 patients from 2004 to 2011 that underwent ATA reconstruction for failed extensor mechanism after TKA. Mean follow-up was 5.4 years. There were 10 patellar tendon ruptures, 14 patellar fractures, three quadriceps tendon ruptures, one case of failed trabecular metal patellar reconstruction and one case of symptomatic patella baja. Failure criteria included: 1) Any surgical intervention after reconstruction, 2) extensor lag of $>30^\circ$ or arc of motion <70 degrees, 3) regression to a lower ambulatory status following reconstruction. Results: Seventeen patients (58.6%) had a successful result. Fourteen of these (48.2% of the total) obtained complete active extension against gravity. Mean range of motion was 3 degrees (0-20 degrees) to 106 degrees (90-120 degrees). One case was lost to follow-up. Eleven cases (37.9%) were considered failures. Eight underwent reoperation (27.6% of the total) and three were clinical failures (10.3% of the total). Among the reoperations, there were 4 cases of periprosthetic infection (13.8% of the total), which were diagnosed an average of 2.4 years after the ATA. Conclusion: The results of this study demonstrate the difficult nature of the problem. Despite a high infection rate, we believe that ATA reconstruction represents a viable option for management of failed extensor mechanism after TKA and is comparable to other methods in the literature.

Date: 2013-10-19

Session: Short Oral Communications - Hip II

Time: 13:30 - 15:00

Room: 10 - Hall 4

Abstract no.: 35492

DOS AND DON'TS FOLLOWING PRIMARY TOTAL HIP ARTHROPLASTY

Amit SHAH¹, Ravi BADGE²

¹North-West Deanery, Manchester (UNITED KINGDOM), ²Mersey Deanery, Liverpool (UNITED KINGDOM)

According to Lancet, Total Hip Arthroplasty (THA) has been named as an operation of century. Dislocation is second most factor responsible for revision surgery for aseptic reason and therefore there are certain restrictions imposed on the activities patients can perform following primary hip replacement. There are still no guidelines or consensus on what level of activities patients can perform and what the agreed time period is. 15 questions were constructed as a result of a questionnaire given to patients after primary THA. In order to evaluate this further, the survey was created on a professional website "Survey Monkey" and sent to Hip Surgeons to complete. The responses to the following 15 questions were collected through this pilot survey. 1. Lying on operated side, 2. Walk with one crutch/stick, 3. Walk unaided, 4. Kneel down, 5. Sit cross-legged, 6. Get into a bath, 7. Gardening, 8. Driving, 9. Swimming, 10. Cycling, 11. Impact activities like running, 12. Playing Badminton, 5-a-side football, 13. Sexual Activities, 14. Fly Short Haul (<2 hours), 15. Fly Long Haul (>2 hours). The time frame for activities allowed was divided into <3 weeks, 3-6 weeks, 6-12 weeks, 3-6 months, >6 months and Never. The responses received for this set of questions have been presented. According to this pilot survey there is no consensus on the guidance given to patients following the THA and hence it would be prudent to obtain a more widespread response from all hip surgeons in the UK and establish the guidelines for clinicians and patients.

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IS IT NECESSARY TO DO FEMORAL OSTEOTOMY FOR TOTAL HIP ARTHROPLASTY IN DYSPLASTIC HIP DISORDER CREW TYPE 3 AND 4 OR ONLY SOFT TISSUE RELEASE IS ENOUGH?

Dariush SAVADKOOHI, Babak SIAVASHI

Tehran University of Medical Sciences, Tehran (IRAN)

Introduction: For THA in DDH cases crew type 3 and 4, there are two techniques: femoral osteotomy (proximal or distal) or soft tissue release. The aim of this study is to compare these two techniques. Materials and methods: In a 15-year period, we had 54 cases of THA in DDH crew type 3 and 4. In one group, restoring hip centre of rotation is done with osteotomy and in the other group with soft tissue release. Harris hip score, neurovascular complications, leg length discrepancy, infection, remaining hip contractions, non-union in osteotomy site, loosening, osteolysis and dislocations, operation time, bleeding have been our variables. Results: osteotomy group has 27 cases. There was no sciatic nerve injury but two femoral nerve injuries, average 1 cm LLD, 2 dislocations, 3 loosening and 3 flexion contractions, 1 adduction contracture. HHS average was 89, operation time average was 175 minutes. There was one non-union in osteotomy site. Release group has 27 cases. There was one peroneal nerve injury and one femoral nerve injury, average 1.5 cm LLD, no dislocations, no loosening and no contracture. HHS average was 91, operation time average was 115 minutes. Discussion: There is no statistical difference between the two groups regarding HHS, LLD, nerve injury, and dislocation but operation time and contractures were significantly better in the release group. It seems that soft tissue release, if it is possible to bring the head in true acetabulum, is a preferred option for THA in DDH.

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HIGH HIP CENTRE IN TOTAL HIP ARTHROPLASTY FOR DYSPLASTIC HIPS – A COMPARISON STUDY

Dariush SAVADKOOHI, Babak SIAVASHI

Tehran University of Medical Sciences, Tehran (IRAN)

Introduction: Inserting cup in true acetabulum is a difficult procedure with some complications and needs femoral osteotomy and massive soft tissue release. On the other hand, inserting cup in the false acetabulum (high hip centre) is a simple procedure with less complications. The aim of this study is to compare the results of total hip arthroplasty in different cup positions in dysplastic hips. Materials and methods: 32 hips studied, 16 in each group, one group with cup in false acetabulum and the other group with cup in true acetabulum. Variables are Harris hip score, leg length discrepancy, dislocation, nerve injury, contractures, operation time, bleeding, cup failure and need for acetabulum reconstruction. Average follow-up was 18 months. Results: In the false acetabulum group, there were 2 cm discrepancy, 2 dislocations, no nerve injury, 10-degree flexion contracture and 5 needed to reconstruct acetabulum. In 3 cases there was cup failure. In the other group, there were no LLD, 2 dislocations, two femoral nerve injuries, 10-degree flexion contracture. 2 needed acetabulum reconstruction with bone grafting and no cup failure. Discussion: In one glance, cup failure is a major complication of inserting cup in the false acetabulum. Because there is no roof for bone graft, there is no good support for cup and graft failure occurs. HHS and other factors have no significant difference. So if there is no chance to bring the femoral head in the true acetabulum, accepting putting the femoral head in the false acetabulum is a choice.

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MANAGEMENT OF ACETABULAR DEFICIENCIES IN TOTAL HIP REPLACEMENT

Mrinal SHARMA, Yatindra KHARBANDA
Indraprastha Apollo Hospital, Delhi (INDIA)

Introduction: Acetabular deficiencies are encountered in cases of complex primary and revision hip arthroplasty scenario. Defects are encountered in protusio acetabuli, developmental dysplasia of hip, acetabular fixation, failed fixation of hip, neglected dislocation of hip and chronic hip sepsis (sequelae of septic hip and tuberculosis of hip). Methods: reconstruction of these may be done using cement alone, bone graft augmentation with reinforcement ring (2 cases), uncemented sockets with graft (12 cases), jumbo cups (2 cases), impaction grafting below a rim mesh (8 cases), cemented socket below a roof structural graft (14). Allograft was used in revision cases. We had 38 cases in total (age 18-57 years) in whom there were acetabular deficiencies. Protusion acetabuli (n=8), developmental dysplasia (n=4), tuberculosis hip (n=11), neglected dislocation of hip (n=1), failed acetabular fracture fixation (n=7) and revision hip arthroplasty (n=7). Results: all but one patient were followed for min 2 years (2-6.8 years). One was lost to follow-up. All patients were mobilised next day. None of the cases loosened on the acetabular side till the last follow-up. Structural graft collapsed in one leading to implant failure. Impaction graft incorporated in all cases. Harris hip scores improved from 49 to 91 points. Conclusion: bone grafting restores bone with bone, preserves bone for future revision and size of defect can be reduced. It is an excellent method to reconstruct acetabular deficiencies. Jumbo cups need removal of bone but provide immediate stability. Mesh with impaction bone graft for protusio restores the hip centre and restores bone stock. Apc cages are useful in cases where the defect is large and cannot be reconstructed using bone grafts.

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THR IN PATIENTS UNDER 30 YEARS OLD

Mahmoud HAFEZ, Ismail RASHAD

October 6 University Hospital (EGYPT)

Introduction: Rheumatoid arthritis and OA of the hip is not common in our community. Most cases of THA are performed for paediatric hip diseases, AVN, post-traumatic or neglected conditions. Many of these cases belong to young active patients. Methods & Materials: Our arthroplasty register showed that the mean age of patients who had THA was 35 years. The 5-year follow-up is still comparable to old patients. Below is an example of such cases. 25 cases done using the lateral approach for both sides. Complications were as follow: patients had no reported early or late postoperative complications. Causes are Osteoarthritis 28%, AVN 25%, RA 16%, Post-traumatic 8% & Ankylosing Spondylitis 4%. Implant is either cemented in 4% or uncemented in 96% – ceramic-on-ceramic in 68% Including hip resurfacing 16%. Results: 5 years' follow-up; no change in the position of the stem nor the cup was observed. No radiolucent lines appear around the femoral stem or the acetabular cup. The HHS for the operated hip at 6 weeks, 3 months and 6 months postoperatively were 73, 88, and 93 respectively. Discussion: There is a large percentage of patients under 35 years old who require THA. The common causes are OA, PT, ankylosing spondylitis & AVN. The majority had uncemented, large head ceramic-on-ceramic THA. The 5 years' follow-up is encouraging.

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POSTEROLATERAL APPROACH IN HIP ARTHROPLASTY: EVOLUTION TO STABILITY

Yasir SHAUKAT¹, Emon MALIK², Eric KOEWEIDEN¹

¹St. Lucas Hospital, Winschoten (NETHERLANDS), ²Guy's & St Thomas' NHS Trust, London (UNITED KINGDOM)

INTRODUCTION: The majority of arthroplasty surgeons favour the posterolateral approach for their total hip replacements. However, implant instability has always been a controversial concern. The posterolateral approach has been associated with an increased risk of postoperative dislocations. **METHODS:** In our practice, we have followed the principle of low frictional torque in Charnley Total Hip Replacements, using a 22mm diameter head for the past 10 years. We have now modified our surgical approach and implantation technique, aiming to reduce our number of dislocations in the past decade. We would like to share our experience using our modified posterolateral approach, topographical navigation and component positioning. A prospective analysis of our minimal incision total hip replacement was performed by examining the length of incision, length of stay, dislocation rate and other complications over a two-year period. **RESULTS:** The dislocation rate was reduced to 0% within the cohort, following the introduction of the Charnley Modular Prosthesis (28mm head) combined with a minimal incision modified posterolateral approach. This study thus demonstrates that excellent stability results can be achieved.

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EARLY RESULTS OF A NEW REPAIR TECHNIQUE FOR POSTERIOR STRUCTURES IN PRIMARY TOTAL HIP REPLACEMENT

Shah JEHAN, Asma Shumaila KHAN, Alam Kalil KHAN, Shivakumar GOPAL
Hull Royal Infirmary, Hull (UNITED KINGDOM)

Introduction: Posterior approach is commonly used for total hip replacement due to excellent exposure and preservation of abductors. However, the dislocation rate is comparatively higher. We present the results of a new repair technique for posterior structures of the hip in primary total hip replacement. Methods: We studied 116 consecutive patients who had total hip replacement. The dislocation rate, infection rate, and revision rate were recorded. A single surgeon performed all the operations. Looped polydioxanone suture (PDS) was used to repair the short external rotators along with the posterior capsule. In the superior part of the repair, the posterior structures (capsule and rotators) were attached to the abductor insertion. In the lower part of the repair, these structures were attached directly to the posterior aspect of greater trochanter using drill holes, yet as continuous suture of looped PDS. Results: There were 73 female and 43 male patients with an average age of 55 years (Range, 37-92 years). The indications were: primary osteoarthritis in 106 cases, secondary osteoarthritis in 4 cases, rheumatoid arthritis in 2 and avascular necrosis of femoral head in 2 cases. Two patients had neck of femur fracture. One patient had deep infection and required washout and one patient had superficial infection, treated with intravenous antibiotics. At average follow-up of 24 months, no revision or dislocation was recorded. Conclusion: The results of this series indicate that the early dislocation rates are excellent using this technique of repair. However, long-term comparative studies will be more useful.

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PREDICTORS OF EARLY DISCHARGE AFTER ELECTIVE TOTAL HIP ARTHROPLASTY

Alvin ONG, Zachary POST, Fabio OROZCO, Claudio DIAZ-LEDEZMA,
William HOZACK

The Rothman Institute of Orthopaedics, Philadelphia (UNITED STATES)

Introduction: Fast track total hip arthroplasty (FT-THA) involves a multimodal perioperative approach to enhance post-surgical recovery and accelerate hospital discharge in a safe manner. The aim of this study was to evaluate factors that lead to successful early discharge after THA in patients selected for a FT protocol. Methods: A series of 609 consecutive FT patients undergoing THA during 2010 were retrospectively evaluated. Each patient was selected for a FT recovery protocol prior to surgery based upon patient desire for early discharge. Patients were considered to have successfully completed the FT program if: 1) Discharge from the hospital occurred on or prior to POD #2, 2) There were no in-hospital complications, and 3) Patient was not readmitted within 30 days after surgery for any orthopaedic reason. Twenty potential predictors of successful FT participation were evaluated in a multivariate analysis including demographic variables, comorbidities, surgical and post-surgical variables. Results: 427 patients (70.1%) met criteria for successful FT completion. Factors associated with successful FT were: ASA score < 3 ($p=0.03$, OR=4.08 [1.15-14.43]), use of a direct anterior approach ($p<0.01$, OR=4.05 [1.94-8.45]), and case duration ≤ 90 minutes ($p<0.01$, OR=2.23 [1.39-3.59]). Factors associated with unsuccessful FT were: older age ($p=0.04$, OR=0.95 [0.92-0.99]), and female gender ($p<0.01$, OR=0.32 [0.20-0.52]). Discussion: Utilization of a FT protocol can facilitate early discharge after THA for patients who desire it. Healthy, young males undergoing THA through a direct anterior approach are more likely to successfully complete a FT protocol and be safely discharged without complication.

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SHORT-TERM OUTCOME OF CEMENTED AND UNCEMENTED BIPOLAR HEMIARTHROPLASTY IN FRACTURE OF NECK OF FEMUR IN ELDERLY PATIENTS

Dayanand MANJUNATH, Deepak SHIVANNA

Bangalore Medical College and Research Institute, Bangalore (INDIA)

Introduction: Treatment of fracture of neck of femur in elderly patients is still debatable. Options include hemiarthroplasty, either monopolar or bipolar and total hip arthroplasty. Cemented prosthesis has its own complications like embolism, increased morbidity etc. Thereby we conducted a study to find the outcome of cemented and uncemented bipolar hemiarthroplasty. Materials: A comparative study conducted between 2010 to 2012 includes 40 cases of intracapsular fracture neck of femur in elderly aged more than 65 years, who were divided into 2 groups with 20 patients in each group assigned randomly. One group of the patients was treated by hemiarthroplasty using uncemented prosthesis whereas the other group was treated with cemented bipolar prosthesis. The intraoperative parameters like fall in blood pressure, abnormal ECG tracing, loss of oxygen saturation were noted and postoperatively cases were followed up for 12 months period and functional evaluation was done using Harris hip score. Results: At the end of 12 months, there was no statistical difference in the pain scoring, evaluation of limp, walking ability and functional outcome ($P = 0.589$) between the two groups. The difference in the duration of surgery and amount of blood loss was significant. Cemented patients required ICU admission more frequently for hypotension and hypoxia as compared to uncemented group. Conclusion: Both these types of arthroplasties are good treatment options. For treatment of displaced femoral neck fractures, we recommend performing hemiarthroplasties using uncemented modular bipolar stems in elderly patients to prevent complications.

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REVISION OF FAILED HEMIARTHROPLASTY: CLASSIFICATION, MANAGEMENT, AND MID-TERM FOLLOW-UP

Elsayed MORSI, Taher EID

Faculty Of Medicine, Menoufiya (EGYPT)

Revision of 217 cases of failed hemiarthroplasty (77 bipolar, 140 cemented Thompson) were studied. Classification based on type of revision was introduced. Classification includes: type I: acetabular problem- protrusion; type II: femoral problems- a) aseptic loosening with good bone stock, b) aseptic loosening with bone stock loss, c) periprosthetic fracture; type III: both acetabular and femoral problems; type IV: instability and recurrent dislocation; type V: infection. Operative management, type of revision, difficulties, and complications will be elucidated. Radiological; and functional follow-up of 203 cases had been reported with an average follow-up of 5.1 years (range 2-13).

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PROSPECTIVE COHORT STUDY OF 664 LOOSENED ACETABULAR CUP REVISIONS

Ilya NIKOLAEV, Nikolay ZAGORODNIY, Sergey KAGRAMANOV

Central Scientific and Research Institute named after N.N.Priorov, Moscow (RUSSIA)

From January 1992 through May 2012, 664 revisions of unstable acetabular component of hip endoprosthesis were performed in the joint replacement department of the Central Scientific and Research Institute named after N.N.Priorov in Moscow, Russian Federation. Age of operated patients was from 17 to 81 years. Depending on the type of used implants all patients were divided into 3 groups, which were further subdivided into subgroups depending on the degree of acetabular defect according to W.Paprosky classification. Group 1 consisted of patients in whom revision was performed with use of polyethylene cemented cups, group 2 included patients in whom reconstruction reinforcement rings were used, and patients in whom uncemented fixation type cups had been used were assigned to group 3. If necessary, additional bone grafting was implied within the groups. Unsatisfactory results were followed as occurrence of early instability, chronic pain and deep wound infection. Progression of acetabular bone defects had lowered results from 91.9% of successful operations to 75% in the first followed group. In the second group overall satisfactory results were obtained in 82.9% of cases with massive surgical trauma, wound exposure, blood loss and bone grafting, with 8% of deep wound infections within the group. In group 3, where press-fit and threaded cups were followed, satisfactory results were from 91% to 75% in different subgroups. Study showed expediency of revision operations on minimal bone loss stages, usage of reinforcement reconstruction rings with impaction bone grafting in patients with massive acetabular bone defects and deep wound infection prevention.

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REVISION TOTAL ARTHROPLASTY WITH ACETABULAR REINFORCEMENT RINGS (ARR): MID-TERM FOLLOW-UP RESULTS

Peteris STUDERS, Danils BELAJEVs, Dainis ILJESANS, Silvestris ZEBOLDS, Janis AKMENS

Latvian State Hospital of Traumatology and Orthopaedics, Riga (LATVIA)

Introduction: There is an increasing number of patients requiring revision arthroplasties in Latvia particularly with pelvic bone loss. Objective: 1. Mid-term result evaluation after acetabulum revisions with reinforcement rings performed in Latvian State Hospital in the period of 2004-2011. Reasons of revisions were evaluated clinically pre- and postoperatively according to Harris HS and radiologically. 2. To inquire complications (early and late). Materials and Methods: Retrospective data collection from patient's medical records was obtained. Acetabulum defects were classified according to Poprosky, clinical evaluation pre- and post-revision by Harris HS, radiological evaluation by Chanley De Lee – component stability, position, migration, and restoration of bone loss. The material for investigation were 52 operated patients who underwent surgery with acetabulum reinforcement rings in Latvian State Hospital 2004-2011 (1-6 years) in a retrospective series. Results: Follow-up data was available in 47 cases (5 patients died). The reason for acetabulum revisions were aseptic loosening - 42 patients; septic - 10 patients. The mean preoperative Harris HS were 38 (range 20-64) points improved up to 88 (range 74-94) points. Radiological evaluation gives information about migration reasons of ARR. Conclusions: Septic complications and lysis of the bone graft with consecutive failure of the ARR remains problematic.

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A PILOT STUDY INVESTIGATING THE USE OF AT HOME WEB-BASED QUESTIONNAIRES COMPILING PATIENT REPORTED OUTCOME MEASURES FOLLOWING TOTAL HIP AND KNEE REPLACEMENT SURGERY

Harinder GAKHAR, Barrie MCCONNELL, Peter LEWIS

Prince Charles Hospital, Merthyr Tydfil (UNITED KINGDOM)

Patient reported outcome measures (PROMs) are used routinely in NHS. Traditional pen and paper questionnaire collection is time-consuming. The purpose of this study is to determine if a web-based PROMs system has the potential to provide a satisfactory patient compliance and whether compiled data is equivalent to pen and paper PROMs data. 82 patients who had joint replacement surgery were identified. Each patient was contacted by letter to register on the myClinicalOutcomes.co.uk website, and follow the instructions to complete an Oxford Score. A second request was sent to those failing to initially register. Successfully collated online Oxford Scores were compared with previously recorded pen and paper scores for each patient from a prospectively updated database. 61 (74%) of the 82 patients received a letter or were otherwise contacted by telephone. Of these, 27 (44%) patients confirmed that they had access to the internet. A total of 21 complete sets of data were collected. On review, the available secure online Oxford outcome scores demonstrated a mean of 30.1 (SD 11.4, range 9-47). This was comparable with the pen and paper database mean score for the respective patients of 29.1 (SD 11.8, range 9-48). 78% of those with internet access produced complete scores that were available for real-time review. Available online scores were comparable to those collected via traditional means. With increased internet availability and improved communication, remote web-based collection of patient reported outcomes may facilitate enhanced and efficient follow-up of patients.

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COMPARISON BETWEEN DRAINAGE AND NO DRAINAGE AFTER TOTAL HIP ARTHROPLASTY IN CHINESE PEOPLE: A PROSPECTIVE, RANDOMISED, CONTROLLED TRIAL

Kai ZHOU, Weinan ZENG, Bin SHEN, Jing YANG, Pengde KANG, Fuxing PEI
Department of Orthopaedic Surgery, West China Hospital, West China
Medical School, Sichuan University, Chengdu (CHINA)

Introduction: The object of this study was to know the effect of drainage and no drainage after total hip arthroplasty. Methods: This prospective, randomised, controlled trial includes 78 patients, that were randomly allocated into drainage group(38 patients) and no drainage group(40 patients). All patients were operated by one doctor group with the same pre-, intra-, and postoperative technique. We evaluated the red cells account (RBC), haemoglobin(Hb) and hematocrite(HCT) pre-operation and on the 1st, 3rd, 7th day post-operation, the wound superficial and deep infection, the volume of blood transfusion (erythrocyte suspension), dressing times, wound hematomas thickness (assessed by ultrasonography on the 3rd day), volume of drainage, duration of hospitalization and Harris hip score(HSS) of both groups. All patients were followed up at the 3rd, 6th, 12th, 24th and 36th month after operation; the HSS, infection, dislocation and joint pain were recorded. Results: We found the amount of haemoglobin (Hb) decreased significantly in the drainage group early after THA, but on the 7th day the difference disappeared. The proportion of patients needing a blood transfusion in the drainage group was higher than that of the no drainage group (21.5% vs. 10%, $p=0.176$), but this difference is of no significance. And there is no significant difference regarding the hematomas formation, infection rate, Harris hip score (HHS), the length of hospital stay, and so on, in both groups. Conclusion: We thought that there is no obvious advantage to laid drainage after total hip arthroplasty routinely.