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Abstract Book
Free Papers

Date: 2016-09-08

Session: Free Papers - Trauma Polytrauma

Time: 14:00 - 15:30

Room: Michelangelo 1

Abstract no.: 45437

IVR-CT IN THE EMERGENCY ROOM MAKES IVR FAST FOR PELVIC RING INJURIES IN JAPAN

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Introduction: To reduce mortality and improve function of polytrauma patients, many tactics have been invented. We introduced IVR-CT in the emergency room for the second time in Japan in August 2014. We can make a diagnosis precisely, turn massive transfusion protocol on, and undergo interventional radiology (IVR) without changing room. Patients and Methods: From January 2014 to December 2015, 40 patients with pelvic ring fractures in our hospital are included in this study. We check the time from admission to start IVR. Results: For 16 patients (40%) with hemodynamically unstable pelvic ring injuries, we perform IVR. In each year, 8 patients are included. The average time from admission to IVR is 95.6 minutes (range; 41-148 min.) in 2014, and 59.6 minutes (range; 29-126 min.) in 2015. There is a significant difference (Mann-Whitney U test; P=0.045). Discussion: By introducing IVR-CT, the time to start IVR became short. From literature review, earlier embolization could improve the mortality rate and the function score. Conclusion: By introducing IVR-CT, we perform IVR 36 minutes earlier for hemodynamically unstable pelvic injuries.

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Session: Free Papers - Trauma Polytrauma

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Abstract no.: 44346

PAEDIATRIC POLYTRAUMA: ANALYSIS OF MECHANISM, PATTERN AND OUTCOME IN A UNITED KINGDOM MAJOR TRAUMA CENTRE

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Background: Paediatric trauma is a significant burden to healthcare worldwide and account for a large proportion of deaths in United Kingdom (UK). Method: This retrospective study examined the epidemiological data from a Major Trauma Centre in the UK between January 2012 and December 2014, reviewing all cases of moderate to severe trauma in children. Patients were included if aged ≤ 16 years and had AIS of >2 in one or more body region. Results: 213 patients were included with mean age of 7.8 ± 5.2 years, with the most common cause of injury being vehicle related incidents (46%), and the median length of stay in hospital was 5 days (IQR 4 – 10 days), with 52% of patients having to stay in critical care for a median length of stay of 1 day (IQR 0 – 2 days). 14 out of 213 patients died with average mortality rate of 6.6%. The average ISS was 19 ± 10 . Pearson's (r) shows a positive correlation of ISS with length of stay in hospital and in critical care, with a significance < 0.01 . Conclusion: Mechanism, severity and pattern of paediatric trauma, show significant variation according to age group. A multi-disciplinary team approach is imperative with management in specialist centres to optimize their care and eventual functional recovery. Head injury remained the most common injury with significant mortality in all ages. Rib fractures and pelvic fractures should be considered a marker for the severity of injury and should alert doctors to look for other associated injuries.

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Abstract no.: 44806

EVALUATION OF CLOTTING FACTOR DEFICIENCIES IN CHILDREN FOLLOWING MULTIPLE TRAUMA

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Whereas knowledge about clotting factor deficiencies in adult trauma patients is growing recently, these disorders are barely investigated in injured children. Therefore, we prospectively evaluated the coagulation factor profiles after paediatric trauma. Blood specimens of 15 injured children (age 10 ± 5 years, ISS 15 ± 11 points) were analyzed directly after admittance. Serum activities and levels of all soluble clotting factors were measured. Ten healthy volunteers served as a control group. Differences between patients and controls were analyzed by using the Mann-Whitney-U-Test. After severe trauma, all clotting factor activities and levels expect for factor VIII were reduced. This reduction reached statistical significance for the factors II (82 vs. 128 %), V (79 vs. 117 %), VII (85 vs. 125 %), IX (86 vs. 103 %), X (82 vs. 120 %), XIII (81 vs. 101 %) and fibrinogen (207 vs. 289 mg/dl). In contrast, the activity of factor VIII was elevated significantly (210 vs. 112 %). These results indicate a widespread but rather moderate reduction of clotting factor activities in a paediatric patient cohort of multiple injured children. This eventually reflects the findings in severely traumatized adults. We therefore assume that trauma induced clotting factor disorders in children follow the same basic pathophysiological principles as in adults. In the end, this presumably demands for the same therapeutic approaches. As the observed reductions are rather moderate overall and no single factor showed an excessively reduced activity, factor concentrates with higher ratios of several coagulation factors might be the best treatment option.

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Abstract no.: 44544

VENOUS THROMBOEMBOLISM (VTE) PROPHYLAXIS INSTRUCTIONS IN ORTHOPAEDIC OPERATION NOTES AT A MAJOR TRAUMA CENTRE

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Introduction: NICE guidelines emphasise that after every operation there must be clear documentation of the specific type, dose and duration of VTE prophylaxis. Our aim was to review the precision of VTE prophylaxis instructions in operation notes and the effect this has on ward-based care. Methods: A total of 149 cases were reviewed retrospectively during a one month period. Data collected included VTE prophylaxis instructions, operation type, patient confounding factors for VTE prophylaxis, and adverse outcomes. A questionnaire was also completed by junior doctors to assess their knowledge of the recommended VTE prophylaxis according to operation type, and their confidence in prescribing this. The initial results were presented at the departmental meeting. Following this, we added a template for VTE prophylaxis instructions to the electronic operation notes. A total of 133 cases were reviewed retrospectively over a one month period to close the audit loop. Results: In the first audit only 22% of operations had specific VTE prophylaxis instructions documented and 50% had no VTE prophylaxis instructions. A total of 10 FY1s filled out questionnaires, which revealed that none were confident in prescribing VTE prophylaxis post-operatively. The re-audit showed a significant improvement with 52% of operations having specific VTE prophylaxis instructions. However 32% of the operation notes still had no instructions documented. Conclusion: Clear documentation is vital to improve patient safety and prevent unnecessary delay in prescribing VTE prophylaxis for patients. Education and a simple template are important measures that have shown to improve the documentation on VTE prophylaxis.

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Abstract no.: 44264

DAMAGE CONTROL SURGERY FOR FEMORAL FRACTURES IN POLYTRAUMA PATIENTS

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Femoral fractures in polytrauma patients represent a major problem because both the fracture and the treatment have a significant impact upon the patient. Femoral stabilization must be done as soon as possible, and, since we speak about polytrauma, so patients with potential MSOF, minimal invasive surgery is recommended, especially in unstable and borderline patients. The purpose of this paper is to evaluate the impact of the two methods- ETC and Damage Control upon the outcome of the patients and to improve the currently used algorithms. From the patients operated between 01.01.2009-01.01.2015 in the Clinical Emergency Hospital Bucharest, there were 75 polytrauma patients with femoral shaft fractures .The patients were divided into group A- 35 patients operated with intramedullary nailing from the beginning and 40 patients- group B, treated initially by external fixation. The evaluation criteria were: hospital stay, MSOF rate, ARDS, local complications (non-unions, wound infections, pin track infections, implant failure).The method of stabilization did not influence the hospital stay, but the life threatening injuries and their evolution had the major influence on hospital stay. Patients from DCOS (Damage Control Orthopedic Surgery) group had a smaller rate of MSOF and ARDS even if they had had higher traumatic scores. External fixation followed by intramedullary nailing (IMN) was not associated with higher rate of complications than primary IMN. External initial stabilization in femoral shaft fractures seems to be the optimal treatment in polytrauma because it has a smaller systemic impact and because it protects the organism already affected by trauma.

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Abstract no.: 42592

THE FAULTY EXTERNAL FIXATION: A SCREENING OF FAULTS IN 212 EXTERNAL SKELETAL FIXATORS

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In Iraq, external fixation is the first choice for treatment of injured patient due to military conflicts and mass casualties. Faulty fixation will lead to serious complications. We aim to discover and categorize the faulty external fixation and try to know the reasons behind these faults. We randomly and retrospectively studied 212 external fixators done in many hospitals in Iraq from Oct 5, 2014 until Nov 10, 2015. X-rays were taken to the fracture site and all data was recorded. (1145) pins distributed on (212) fixators were studied. We found that 350 pins (35%) were over penetrated to the far cortex, 112 pins (9.7%) in the fracture, 45 pins (3.9%) just anchored in near cortex, 16 (1.3%) broken pins and 9 pins (0.7%) in the joint. Regarding the fixator configuration, we found that 33 fixators (15.6 %) with pins far away from the fracture line, 88 fixators (41.5 %) with pins not ideally distributed on each segment of the fracture, 15 fixators (7.1 %) with insufficient number of pins, 4 fixators (1.9 %) with wrong decision for fixation, 7 fixators (3.3 %) with wrong site for pin insertion, 131 fixators (61.8 %) were applied without accepted anatomical reduction to the fractured bone. As a final result, 199 (93.86%) external fixator were faulty. We concluded that the faulty external fixation is much more than our expectation due to war atmosphere. The faulty fixators should be revised as soon as possible. The external fixation should be done with radiological assistance.

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Abstract no.: 44222

SKELETAL STABILIZATION BY IMN, AS AGAINST EXTERNAL FIXATION, IS THE KEY STEP FOR INITIAL SUCCESSFUL SURGICAL MANAGEMENT OF MANGLED LIMB INJURY. A STUDY OF 42 CASES

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Introduction: These high velocity injuries lead to high mortality and morbidity. 3 out of 4 systems in extremities are affected. Aim of the study: to show that definite skeletal stabilization by unreamed IM nail yields better outcome in surgical management of mangled extremities. Material methods: 42 mangled extremities gustillo type II, IIIA, IIIB, 111C, 36 male and 6 female between 22-63 age included in two groups. In first-group debridement with IMN fixation and second group debridement with ex-fix done. Gustillo type-II, IIIA, IIIB, IIIC included in both groups. Result Analysis: Result analyzed with wound healing, infection, debridement, stiffness, union after two weeks, 6 weeks, 3 months, 6 months, 1 year. 12 out of 21 salvaged, fracture united with successful functional outcome. 6 had amputations after post-nailed second debridement. 3 delayed union due to flap failure and infection. In second group 13 out of 21 salvaged with temporary external fixation, exchanged IMN between 2-3 weeks, had delayed union. All underwent flap cover. 6 patients had delayed amputation due to infection. 2 expired for florid infection and secondary sepsis. Discussion: Stabilization by IMN, in open fracture type II, IIIA, IIIB and IIIC yield favourable outcome in salvaging limb. In type IIIB, IIIC debridement, temporary stabilization followed by exchanged IMN produces more complications. Conclusion: Primary stabilization by IMN with repeated debridement, coverage by free-flap/ skin graft yields better salvage than stabilization by ex-fix which result in delayed healing, more debridement, more infection, more failure rate, expensive procedure more complications.

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Abstract no.: 44436

TRAUMA RELATED ACUTE RESPIRATORY DISTRESS SYNDROME PREVALENCE- A META-ANALYSIS

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Introduction: Acute respiratory distress syndrome (ARDS) is known to be associated with high mortality and morbidity rates. Recent literature demonstrates conflicting results regarding the ARDS prevalence. We have performed a meta-analysis focusing on following questions: 1: What is the prevalence of ARDS over a period of 3 decades. 2. What is the ARDS prevalence in patients treated in European with patients treated in North American countries? 3. Is there a difference in the prevalence of ARDS in the general trauma population to orthopedic trauma patients? Methods: Following sources were used: PubMed, Medline, as well as regional databases. Search terms: ARDS, ALI, orthopedic trauma, incidence, prevalence, polytrauma, systemic complications. Trials were stratified by decade of patient recruitment (1980-1990, 1990-2000 or 2000-2010), geographic location (Europe or North America), and trauma population (general or orthopedic). Results: In total 40 observational studies were included. The median ARDS prevalence was estimated by 7.4%. Median ARDS prevalence between 1990 and 1990 was estimated by 7.6%, between 1990 and 2000 the median prevalence was 7.7%. Median prevalence of ARDS in the decade 2000-2010 was 7.2%. We did not find any differences in ARDS prevalence over decades ($p=0.9843$). Median ARDS prevalence in the general trauma population was 10.7%, in the orthopedic trauma population prevalence was 5.7%. This difference was statistically significant ($p=0.0279$). Conclusion: Our results demonstrate, that the ARDS prevalence differs between general and orthopedic trauma population. Moreover, our data do not confirm a decrease of ARDS prevalence over the last decades as well as geographic differences.

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INCIDENTAL FINDINGS ON WHOLE-BODY TRAUMA COMPUTED TOMOGRAPHY: EXPERIENCE AT A MAJOR TRAUMA CENTRE

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Introduction: The use of total-body computed tomography (CT) scanning in the evaluation of multiply-injured patients is increasing. Fear of missing significant pathology resulting in serious complications or outcomes and subsequent medico-legal ramifications are legitimate concerns. We aim to evaluate the frequency of incidental findings on whole-body trauma CT scans in a consecutive series of trauma admissions to our unit, as well as the proportion of these which are potentially clinically significant. Methods: Using our trauma database, we identified 104 consecutive patients who received a whole-body trauma CT in our unit in 2013 (out of a total of 976 trauma admissions). The radiological findings were compared against the presenting complaint and medical history to determine the presence of incidental findings. Results: 57/104 patients had incidental findings identified on the radiologist report, with a total of 114 individual incidental findings. 6 (5.8%) patients had potentially severe findings that require further diagnostic work up; 65 (62.5%) patients had diagnostic workup dependant on their symptoms, and 43 (41.3%) patients had findings of minor concern which required no follow up. Discussion: This is an important problem that requires a coordinated effort by trauma services. The integration of trauma care and the overall management of the patient's other problems is an important after the management of the presenting injuries, and a reliable system of documenting and managing and or referring these incidental findings is required. We suggest a standardized approach to incidental findings detected in the course of trauma patient evaluation as performed in our unit.

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Abstract no.: 43350

TRAUMA TEAM - A NEW "BLENDED LEARNING" CURRICULUM FOR FINAL YEAR MEDICAL STUDENTS

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Introduction: The care of severely injured patients is an interdisciplinary task. A large proportion of medical students will be involved in the care of seriously injured patients later in their medical career. The current medical curriculum does not adequately teach the technical and non-technical skills necessary for an adequate patient care. Materials: We developed a new "blended learning" curriculum, made up of four learning modules, each consisting of a eLearning unit of 1-2h self-study and a 3h long skills and simulation training. They are accompanying the 4-week rotation in traumatology. The overall design was influenced by the CanMEDS (particularly the roles "Professional", "Communicator" and "Collaborator") and in light of the recently adopted National Competency-based Objective Catalogue for Medicine. The learning modules take place in small groups of max. 8 students with 2 instructors with a clinical background in trauma surgery, anaesthesia and radiology. Results: Two Pilot courses were instructed in the fall of 2015. Results derived for self and objective assessment showed that final year medical students can achieve the theoretic, practical and non-technical skills to perform as an effective team member in polytrauma care. Conclusion: New teaching strategies should be implemented in order to advance the knowledge and skills of medical school graduates.

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Session: Free Papers - Hip Miscellaneous

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Abstract no.: 45631

TREATMENT OF AVN USING THE CHAMBER INDUCTION TECHNIQUE AND BIOTECHNOLOGIES: INDICATIONS AND CLINICAL RESULTS

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Introduction: The necrosis of the femoral head is a fairly widespread problem especially in young people between 30 and 50 years. Excluding post-traumatic forms, the etiology is not yet fully understood. Several studies in the literature show that core decompression is the method of choice for the treatment of necrosis of the femoral head in the early stages, with good clinical results in the short term. Since some years we are performing core decompression in association with biotechnologies implantation (growth factors, mesenchimal stromal cells and bone substitute). Objectives: to determinate the efficacy of core decompression technique with the use of recombinant morphogenetic proteins, autologous mesenchimal stromal cells (MSCs) and xenograft bone substitute into the necrotic lesion of the femoral head on clinical symptoms and on the progression of osteonecrosis of the femoral head. Methods: We studied 90 patients and 98 hips with early stages of osteonecrosis of the femoral head. Results: Core decompression technique with the use of recombinant morphogenetic proteins, autologous MSCs and xenograft bone substitute afforded a significant reduction in pain and in joint symptoms and reduced the incidence of fractural stages. At 5 years folio up, 83,67 % of patient reach the clinical and radiographic healing. Conclusions: This long term follow-up study confirmed that core decompression technique with the use of recombinant morphogenetic proteins, autologous MSCs and xenograft bone substitute might be an effective treatment for patients with early stages of osteonecrosis of the femoral head.

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Session: Free Papers - Hip Miscellaneous

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Abstract no.: 44980

ILIZAROV HIP RECONSTRUCTION OR PELVIC SUPPORT OSTEOTOMY FOR TREATMENT INSTABILITY OF HIP

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Introduction: Instability of the hip joint can be secondary to congenital pathologies like displastic dislocated hip (DDH) which are neglected and proximal femoral focal deficiency or acquired such as sequelae of infective or neoplastic process. Goal of this presentation is evaluation of results; clarify indications, details of procedure and long-term follow-up. Materials & Methods: Since 1990, 35 patients with unilateral instability of the hip underwent Ilizarov PSO procedure. The age ranged from 6 to 40. Cause of femur instability was CDH 12; defect of femoral head, non-union/defect of the neck of the femur 15. Mono level abductive osteotomy was performed in 9; double level (abductive in proximal part with varizational in diaphyseal part osteotomy) was done in 26. All patients were reviewed clinically at a follow-up time from 1 to 15 years. Results: Leg length discrepancy and mechanical alignment was reestablished in all cases. Complete improvement of Trendelenburg's sign was achieved in 30; Improvement of ROM, lumbar lordosis and gaits was achieved in 25 patients. All patients (25), who had pain syndrome before treatment mentioned improvement in short-term follow-up, but 8 (mostly age 35 and up), complained of pain in later period. Outcomes were evaluated clinically by Harris hip scoring system. Conclusion: The Ilizarov hip reconstruction osteotomy can successfully correct a Trendelenburg gait by stabilizing the hip and supporting the pelvis and simultaneously restore knee alignment and correct lower extremity length discrepancy.

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Abstract no.: 42894

ACETABULAR COMPONENT ORIENTATION IN WIDMER SAFE ZONE PREVENTS EARLY POSTOPERATIVE DISLOCATIONS

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Our aim was to check if acetabular component orientation influences early postoperative stability of total hip. Original work by Lewinnek et al. demonstrated a safe zone where the acetabular component could be inserted with a lower risk of dislocation. This zone was 30-50° of inclination and 5-25° of anteversion. Widmer et al. recommended a considerably narrower zone of 40-45° of inclination and 20-28° of anteversion. All patients who had a total hip replacement using a cemented acetabulum in the year 2014 were selected. Inclination and anteversion of the acetabulum were measured by one of the authors using Hectec GmbH mediCAD 3.0 software. Acetabular orientation was divided into safe and unsafe zones by both Lewinnek and Widmer. 695 patients were included in this study. Mean inclination was 41.2°, anteversion 17.7°. Inclination safe zone by Lewinnek was respected in 581 patients (83.6%) and by Widmer in 207 (29.8%). Lewinnek anteversion safe zone was in 607 (87.3%), whereas only in 193 (27.8%) by Widmer. Both inclination and anteversion met Lewinnek safe zone in 521 (75%) patients and only in 45 (6.5%) by Widmer. 13 patients (1.8%) had early postoperative dislocation. Patients, whose both acetabular inclination and anteversion were in Lewinnek safe zone, had 8 (1.5%) dislocations vs 5 (2.9%) in unsafe zone, although this difference was not significant ($p=0.259$). Absolutely no dislocations were observed in patients with both acetabular inclination and anteversion in narrower Widmer safe zone. We conclude that acetabular component orientation in Widmer safe zone appeared to prevent early postoperative dislocations.

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Abstract no.: 44122

MID TO LONG TERM CLINICAL & RADIOGRAPHIC RESULTS OF PERIACETABULAR ROTATIONAL OSTEOTOMY

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We analyzed mid to long term clinical and radiographic results of periacetabular rotational osteotomy (PARO) which preserve patient's hip joint in dysplastic hip. We performed PARO to 79 patients (97hips) from Aug 1999 to Mar 2010. Average follow up duration was 7.5(5-14.3) year. Average age was 39.6 year-old. Clinical results were evaluated by Harris hip score (HHS) and UCLA score. And radiographic results were evaluated through change of lateral center-edge angle (LCEA), acetabular roof obliquity (ARO), anterior center-edge angle(ACEA) and Tönnis grade. And we check postoperative complications and survival rate by Kaplan-Meier methods. UCLA score was improved to 7.9 from 5.2 and HHS was improved to 92.5 from 69.1. LCEA was improved to 31.6° from 10.6° and ACEA was improved to 37.0° from 11.6°. ARO was improved to 8.3° from 22.6°. Tönnis grade were improved in 33 cases (34.0%) and same in 61 cases (62.9%) and aggravated in 3 cases (3.1%). Conversion to total hip arthroplasty was done in 2 cases due to pain caused by advancement of osteoarthritis and overcoverage. Subcutaneous infection was occurred in 1 case (1.0%) and cured by debridement. Non-union of greater trochanter was occurred in 3 cases (3.1%) and cured by refixation. There was no avascular necrosis of acetabular fragment and nerve injury. 10 year survival rate of PARO was 94.1%. PARO for dysplastic hip shows great mid to long term survival rate. PARO can delay the advance of osteoarthritis and preserve hip joint in a long time or eternally for dysplastic hip with early stage osteoarthritis.

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Abstract no.: 45573

FEMORAL DEROTATION OSTEOTOMIES IN ADULTS FOR VERSION ABNORMALITIES

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Introduction: Version abnormalities of the femur, either retroversion or excessive anteversion, cause pain and hip joint damage due to impingement or instability respectively. Methods: 49 derotation osteotomies were performed in 39 patients, 32 females and 7 males. Average age 29 years (14 to 59 years). Osteotomies were performed closed with an intramedullary saw and fixed with intramedullary nails. 24% of patients had a retroversion deformity (average -8° retroversion, range $+1$ to -23°), 76% had excessive anteversion of the femur (average $+36^{\circ}$ anteversion, range $+22^{\circ}$ to $+53^{\circ}$). Etiology: post-traumatic in 5 (10%), diplegic cerebral palsy in 4 (8%), fibrous dysplasia in 2 (4%), Prader-Willi Syndrome in 1 (2%) and idiopathic in 37 (76%). Previous surgery had been performed in 51% of hips. Fifty-seven percent underwent concomitant surgery, hip arthroscopy in 39%, tibial derotation osteotomy (compensatory excessive external tibial torsion) 12% and periacetabular osteotomy 6%. Modified Harris Hip Score was used, minimum of 24 months follow-up. Results: Average union time was 3.3 months. One patient with Prader-Willi syndrome and one with Ehlers-Danlos syndrome, were converted to hip replacement. At an average follow-up of 6.1 years (range 2 to 19.1 years), the modified Harris Hip Score improved by 26 points ($p < 0.001$, Wilcoxon signed-ranks test): excellent in 71%, good in 22%, fair in 5% and poor in 3%. Subsequent surgery was required in 73%, 93% of which were hardware removals. Conclusion: Excellent or good results were obtained in 93%, despite the need for subsequent hardware removal in more than two-thirds of the patients.

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Abstract no.: 45344

**FRETTING AND CORROSION DAMAGE IN TAPER ADAPTER SLEEVES:
A RETRIEVAL STUDY**

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Introduction: During revision surgery with a well-fixed stem, a titanium sleeve is used in conjunction with a ceramic head to achieve better stress distribution across the taper surface. Little is known about the in vivo fretting corrosion of these sleeves. The purpose of this study was to investigate fretting corrosion in sleeved ceramic heads. Materials and Methods: Thirty sleeved ceramic heads (Bilox Option: CeramTec) were collected during revision surgery as part of a multi-center retrieval program. The sleeves were used in conjunction with a zirconia-toughened alumina femoral head. The femoral heads and sleeves were implanted between 0.0 and 3.25 years (0.8 ± 0.9). The implants were revised predominantly for instability ($n=14$), infection ($n=7$), and loosening ($n=5$). Fifty percent of the retrievals were implanted during a primary surgery, while 50% had a history of a prior revision surgery. Fretting corrosion was scored using a previously described 4-point, semi-quantitative scoring system. Results: Among the sleeved ceramic heads, moderate-to-severe fretting corrosion scores (Score ≥ 2) were observed in 96% of internal tapers, 26% of external tapers, and 82% of the stems. Fretting corrosion scores were higher at the internal taper surface than the external taper. Implantation time was the main predictor of increased fretting-corrosion of the external sleeve tapers. Discussion: For the sleeved ceramic heads, we found that fretting corrosion can occur in these components, particularly on the internal surface of the sleeve. However, because the sleeves are Ti alloy, the corrosion products are considered to be less cytotoxic than Co and Cr.

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Abstract no.: 42769

INCIDENCE AND MAGNITUDE OF METAL ION LEVELS IN BLOOD WITH LARGE CERAMIC AND METAL FEMORAL HEADS: A PROSPECTIVE STUDY WITH FIVE-YEAR FOLLOW-UP

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Introduction: There is a recent recognition of the trunionosis and trunion failure. The incidence and magnitude of metal ion release at the head-neck junction with large ceramic and metal heads has not been studied in a prospective manner. Materials and Methods: Between June of 2014 and January 2015, 60 patients with non-cemented total hip arthroplasty (THA) using a titanium (TMZF alloy) femoral stem with highly cross-linked polyethylene were included and followed for minimum 5 years: 30 THA had large (32- or 36-mm) metal and 30 THA had ceramic femoral heads. Cobalt, Chromium and Nickel levels were measured in all patients. Results: Patients with metal heads had elevated Cobalt and Chromium levels. Cobalt level was elevated in 17 (56.7%) patients with a mean of 2.0 µg/L. Chromium level was elevated in 5 patients (16.7%) with a mean of 0.3 µg/L. All patients with ceramic heads had Cobalt and Chromium levels below 1 µg/L. Cobalt and Chromium levels were significantly higher with metal heads compared to ceramic heads ($p < 0.01$). The incidence and magnitude of elevated Cobalt levels was significantly higher with 36-mm (77.8%) metal heads compared to 32-mm heads (25%) with a mean 2.2 µg/L and 0.0 µg/L, respectively ($p < 0.01$). All ceramic THA were asymptomatic. Conclusions: The elevated levels of Cobalt and Chromium ions can cause adverse soft-tissue reactions. Role of trunion size and metallurgy of the stem may play a role and needs to be further studied.

Date: 2016-09-08

Session: Free Papers - Hip Miscellaneous

Time: 10:30 - 12:00

Room: Michelangelo 2

Abstract no.: 42933

THE CORRELATION BETWEEN URINARY AND WHOLE BLOOD CONCENTRATIONS OF COBALT AND CHROMIUM IN PATIENTS WITH METAL-ON-METAL BEARING TOTAL HIP ARTHROPLASTY

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The purpose of this study to assess correlation between metal ion concentrations in blood and urine following MoM THA, and to examine potential correlation between 24-hr and spot sample. A total of 102 patients provided whole blood, 24-hr urine, and urine spot samples preoperatively and in 2 years following MoM THA. The average preoperative whole blood chromium and cobalt were 1.39 µg/L (0.08–4.36, ± SD 1.19) and 1.56 µg/L (0.08–13.04, ± SD 1.56). The average postoperative chromium and cobalt in 24-hr urine were 2.14 µg/L (0.18–14.4, ± SD 2.13) and 9.85 µg/L (0.5–68.3, ± SD 12.45). The average preoperative chromium and cobalt levels in unadjusted spot sample were 2.62 µg/l (0.14–15.2, ± SD 2.41) and 11.36 µg/l (0.41–87.92, ± SD 13.2). A good correlation was found between cobalt concentrations in blood with unadjusted 24-hr urine collection and spot sample R^2 0.252 ($R = 0.503$) and R^2 0.202 ($R = 0.5$). There was a weak correlation between chromium concentrations in whole blood and unadjusted 24-hr urine collection and spot urine sample, R^2 were 0.17 ($R = 0.4$) and 0.15 ($R = 0.4$). The correlation for metal ion concentrations between urine samples was found to be excellent ($R > 0.75$). The adjusted 24-hr urine collection or spot test cannot be used as surrogate measure to evaluate the metal ion burden after MoM THA. The adjusted spot urine test is as precise as the adjusted 24-hr urine collection when predicting the correlation coefficient. Therefore, if urine testing is to be done, the spot test is sufficient.

Date: 2016-09-08

Session: Free Papers - Hip Miscellaneous

Time: 10:30 - 12:00

Room: Michelangelo 2

Abstract no.: 43586

**THE EFFECT OF GENDER ON ARTICULAR SURFACE REPLACEMENT
HIP RESURFACING ARTHROPLASTY**

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Females with hip resurfacing arthroplasty (HRA) are at a higher risk of implant failure than men, but it is unclear if this risk is attributed to implant size and position or to gender itself. We therefore studied the effect of gender on risk of revision and adverse local tissue reaction (ALTR) and report the differences between genders in metal ion levels and patient-reported outcome measures (PROMs). Methods: 966 HRA patients (1081 hips) were enrolled in a multicenter follow-up study of the Articular Surface Replacement Hip System (DePuyOrthopaedics). EQ-5D, HarrisHipScore, UCLA activity score, VAS pain and satisfaction scores, radiographs, and cobalt and chromium levels were obtained. MARS MRI was obtained on 171 hips. Results: The incidence of revision was higher in female patients than males (6.2% vs. 2.7%). Significant predictors of revision were female gender (OR=2.26), HHS (OR=0.95), cobalt levels (OR=1.03) and age at index surgery (OR=0.95). Moderate-to-severe ALTRs were identified in 29.8% of female patients and in 14.6% of males. The only significant risk factors for ALTR were time from index surgery (OR=1.37) and cobalt levels (OR=1.26). The median cobalt and chromium levels for female patients were significantly higher ($p<0.001$) and males reported higher PROMs. Conclusions: Female patients report worse PROMs and demonstrate higher blood metal ion levels than males. Female gender remains an independent risk factor for revision in HRA patients after controlling for head size, component position, age, and metal ion levels. The only significant risk factors for ALTR were time from index surgery and cobalt levels.

Date: 2016-09-08

Session: Free Papers - Hip Miscellaneous

Time: 10:30 - 12:00

Room: Michelangelo 2

Abstract no.: 44190

16-YEAR OUTCOME OF A MODERN DUAL MOBILITY ACETABULAR CUP

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Introduction: The long-term osteointegration of dual-mobility acetabular cups has rarely been investigated. The aim of our work was to analyse the 16-year follow-up results of a serie of 100 primary total hip arthroplasties with a modern dual mobility cup. Methods: This is an homogeneous, continuous and prospective, study of the first 100 patients who underwent a cementless total hip replacement combining a press-fit dual mobility cup (Sunfit®, Serf,) with a Corail® femoral stem (Depuy). Were only included primary hip arthroplasties. Alls patients were clinically and radiographically reviewed at 45 postoperative days, 3 months, 6 months, 1 year and then every two years. Measurement of the acetabular cup migration was radiographically performed using the DICO-Measure® software. Results: The mean follow-up duration of our study was 14.6 years. At last follow-up, 18 patients had died, 6 were lost to follow-up and 6 adverse events were recorded, of which: 5 aseptic loosening, 1 dislocation. This dislocation was reduced without sedation thus inducing a loss of congruency between the polyethylene liner and the stainless steel femoral head and leading to an intra-prosthetic dislocation which required urgent liner replacement. Discussion: The high stability of dual mobility is confirmed by the low dislocation rate and should be recommended in primary hip replacement in patients at a high risk for postoperative instability. No wear-induced intra-prosthetic dislocation was observed which highlight the good quality of last generation polyethylene and the need to combine mirror polished bearing surfaces and thin femoral necks with dual-mobility cups.

Date: 2016-09-08

Session: Free Papers - Hip Revision

Time: 16:00 - 17:30

Room: Michelangelo 2

Abstract no.: 43422

LONG-TERM OUTCOME OF ACETABULAR REVISION WITH THE BURCH-SCHNEIDER CAGE AND MASSIVE ALLOGRAFTS IN SEVERE BONE DEFICIENCIES

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Introduction: The management of periprosthetic pelvic bone loss is a challenging problem in hip revision surgery. This study evaluates the minimum 10-year clinical and radiographic outcome of major column structural allografts combined with the Burch-Schneider antiprotrusio cage for acetabular reconstruction. Methods: From January 1992 to August 2005, 106 hips with periprosthetic osteolysis underwent acetabular revision using massive allografts and the Burch-Schneider antiprotrusio cage. Forty-five patients (49 hips) died for unrelated causes without further surgery. Fifty-nine hips in 59 patients underwent clinical and radiographic evaluation at an average follow-up of 15.1 years. There were 17 male and 42 female patients, with age ranging from 29 to 83 years (mean 59). Results: Ten hips required rerevision because of infection (3), aseptic loosening (6), and flange breakage (1). Moreover, 4 cages showed x-ray signs of instability with severe bone resorption. The survivorship of the Burch-Schneider cage at 21.9 years with removal for any reason or radiographic migration and aseptic or radiographic failure as the end points were 76.3 and 81.4, respectively. The average Harris hip score improved from 33.2 points preoperatively to 75.7 points at the latest follow-up. Discussion: In hip revision surgery, severe deficiency of pelvic bone stock is a critical concern because of the difficulty in providing a stable and durable fixation of the new prosthesis. Although antiprotrusio cages have a limited role in acetabular revision, the use in association with massive allografts in extended bone loss demonstrated highly successful long-term results, enabling bone stock restoration and cup stability.

Date: 2016-09-08

Session: Free Papers - Hip Revision

Time: 16:00 - 17:30

Room: Michelangelo 2

Abstract no.: 45694

A 2 TO 7-YEAR FOLLOW-UP OF A MODULAR ILIAC SCREW CUP IN MAJOR ACETABULAR BONE DEFECTS

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Background: Inadequate acetabular bone stock is a major issue in total hip replacement and several treatment options are available. Stemmed cups have been used in this scenario with variable results. A novel modular polyaxial uncemented iliac screw cup (HERM-BS – Sansone cup - Citieffe s.r.l., Calderara di Reno, Bologna, Italy) has been recently introduced to overcome the drawbacks of stemmed cups. The purpose of this retrospective study is to report the results of this novel device in patients with large acetabular bone defects at two to seven-year follow-up. Methods: We evaluated clinically and radiographically a consecutive series of 125 hips operated with a novel iliac screw cup (118 revisions and 7 complex primary arthroplasties) at a mean follow-up of 46 months. Kaplan-Meier survival analysis was performed with implant revision for any reason as primary endpoint. A further survival analysis was performed excluding septic failures. Clinical outcome was assessed with Harris Hip Score. Results: There had been 8 reoperations: 2 for aseptic loosening, 5 for deep infection and 1 for recurrent dislocation. In 6 cases implant was removed; estimated survival at 5 year-follow-up with implant removal for any reason as primary endpoint was 94.9% (95% CI, 91 - 99), and 98.3% (95% CI, 95 - 100) excluding those failed for infection. At latest follow-up mean HHS was 77 points (range, 44 to 95; SD 12.2). Conclusion: Iliac screw cup showed excellent implant survival, low rates of complications and encouraging clinical outcome in the setting of large acetabular bone defects at two to seven-year follow-up.

Date: 2016-09-08

Session: Free Papers - Hip Revision

Time: 16:00 - 17:30

Room: Michelangelo 2

Abstract no.: 45086

DOES THE STEMMED CUP WORK? EXPERIENCE IN 288 IMPLANTS

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Stemmed cup is an acetabular implant once known as Mc Minn cup. It is an evolution of the Ring cup used in 60s. Feature of the implant is a stem that goes to the sacro-iliac sincondrosis in axis with physiological weight-bearing lines. The stem allows to get a good primary stability and to turn the most greater part of the tangential solicitations into strengths of pressure avoiding loosening. Technical difficulties, feared by many surgeons in the component implantation, have been partially overcome by the use of cannulated instruments. Our experience counts over 368 cases. In 92 times the socket was used in patients with developmental dysplasia of the hip (DDH), the other 276 times was performed for revision of acetabular component. In this study we reviewed 251 patients (288 implants). The mean follow up is 12,9 years from (6 to 22 years). Average age of our population is 65 years (range 38-87). Good results were observed in 93% of cases. The percentage grows if we consider the revision as the end point of failure: 4,5% (and it becomes amazing if we consider only the DDH cases 2,4% 2/81). Also we had relatively few complications rate 8,6% whereas these implants were used both in difficult revision cases (also in Paprosky 3a, 3b) and in severe cases of DDH (like for Crowe 3, 4). The good mid-term results reported confirm that stemmed cup is a valid solution both in revision and in DDH cases when conventional hemispherical cups are not indicated.

Date: 2016-09-08

Session: Free Papers - Hip Revision

Time: 16:00 - 17:30

Room: Michelangelo 2

Abstract no.: 43064

ACETABULAR REVISION TOTAL HIP ARTHROPLASTY USING KERBULL TYPE ACETABULAR REINFORCEMENT DEVICES -FACTORS RELATED POOR OUTCOME OF THE SURGERY

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Kerboull-type acetabular reinforcement devices (Kerboull) with a structural bone graft have shown excellent mid-term results for acetabular revision THA, while a high failure rate has been described in revisions using a morselized bone graft. We retrospectively evaluated 70 hips, which had undergone acetabular reconstruction using an allogenic bone graft with Kerboull between 1995 and 2014. We focused on the factors related to a poor surgical outcome. The mean follow-up was 5.3 years (range, 1-15 years). We used a morselized bone graft for 26 hips until 2007. Since 2007, a structural bone graft was used in 44 hips. An original cup center (OC) type Kerboull was used in 36 hips, and a high hip center (HH) type Kerboull was used in 34 hips. The HH-type could decrease the volume of bone graft and place the cup in the high hip center. Postoperative radiological failure was defined via three criteria: 1. Migration ($\geq 5\text{ mm}$), Breakage of Kerboull. Radiological failure was revealed in 18 hips (18/70, 25.7%), including 4 revisions (4/70, 5.7%). There were 12 (12/26, 46.1%) failure cases with a morselized bone graft, and 6 (6/44, 13.6%) failure cases with a structural bone graft. Furthermore, 16 hips (16/34, 47%) utilizing HH and 2 hips (2/36, 5.6%) with OC revealed radiological failure. There are significant differences between the 2 types of bone grafts ($p < 0.001$) and 2 types of Kerbulle ($p < 0.001$). Morselized bone graft and HH-type Kerboull could be potential factors for a poor outcome.

Date: 2016-09-08

Session: Free Papers - Hip Revision

Time: 16:00 - 17:30

Room: Michelangelo 2

Abstract no.: 44571

ACETABULAR IMPACTION BONE GRAFTING USING WHOLE FEMORAL HEAD ALLOGRAFT AND RETAINING OF THE ARTICULAR CARTILAGE: MIDTERM RESULTS

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Introduction: Acetabular impaction bone grafting aims to restore anatomy in hip revision surgery. This is an effective but expensive, and time consuming technique. Usually, the articular cartilage is removed from the femoral head allograft. We aimed to reproduce the same results retaining the cartilage of the allograft. Materials and Methods: Eighty acetabular revisions using impacted morselised bone graft retaining the articular cartilage and a cemented cup were studied retrospectively. Six were lost during follow up. The mean follow up was 6.5 years (range 1-13). Clinical and radiological assessment was made using the Oxford hip score, Hodgkinson's criteria for socket loosening and the Gie classification for evaluation of allograft incorporation. Results: Sixty-three sockets (85.1%) were considered radiologically stable (type 0, 1, 2 demarcations), eight (10.8%) were radiologically loose (type 3) and three (4.1%) presented with migration. Fifty-one (68.9%) cases showed good trabecular remodeling (grade 3), twenty (27%) showed trabecular incorporation (grade 2), and three (4.1%) showed poor allograft incorporation. Mean preoperative hip score was 43 and post-operative score was 28. The Kaplan-Meier survivorship at a mean of 6.5 years, with revision of the cup for any reason was 95.7% (95% CI: 5.6-7.5) Conclusion: The mid-term results of our technique are promising. Particularly when the supply of fresh frozen allografts and surgical time is limited, using whole femoral head with articular cartilage is both safe and effective.

Date: 2016-09-08

Session: Free Papers - Hip Revision

Time: 16:00 - 17:30

Room: Michelangelo 2

Abstract no.: 43696

FREEZE-DRIED IRRADIATED AND CHEMICALLY TREATED ALLOGRAFT IN ACETABULAR REVISION ARTHROPLASTY

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After a first series of patients operated 20 years ago (1994-1999), we reviewed the results of 28 consecutive acetabular revisions in THA performed in 1999-2011 using TBF freeze-dried irradiated bone allografts for the French SOFCOT symposium in 2015. MATERIAL and METHOD We studied 28 revisions on 23 patients at a mean of 19 years after a primary THA type CHARNLEY mainly for aseptic loosening and/or wear of the cup. These patients had 2 type II, 17 type III and 8 type IV acetabular defects according to the AAOS classification with a mean pre-operative PMA score of 8. The morcellized allografts were used in combination with a cemented acetabular component alone or with an acetabular mesh (14/28) or with a KERBOULL reinforcement ring (14/28). RESULTS At the mean latest 8 years follow-up, the mean PMA score was 17 and clinical and radiological results were satisfactory in 89% of the cases. There was only 1 revision for an iterative loosening (3.57%), 1 cup migration and 1 broken KERBOULL ring without migration and without revision, but 5 dislocations. Among 24 final radiological evaluations, the allograft was completely incorporated with cortical repair in 14 cases and with trabecular remodelling in 10 cases. DISCUSSION: These results suggest that more frequent use of an acetabular KERBOULL reinforcement ring provides better results with less lucent lines, and the use of cemented dual mobility cup would have been able to prevent the dislocations.

Date: 2016-09-08

Session: Free Papers - Hip Revision

Time: 16:00 - 17:30

Room: Michelangelo 2

Abstract no.: 42844

HOW TO BE COST-EFFECTIVE IN HIP REVISION SURGERY?

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Cost-effectiveness is one of the most important factor in the everyday practice in our circumstances. There is a well defined technique in orthopaedics - the impaction bone grafting - mainly for acetabular revision for keeping the surgical cost low. Following a literary overview was given in the subject of aseptic acetabular revision; author reports his personal experience in this topic. Material and methods: 202 total hip revisions have been followed. Aseptic acetabular revisions have been performed in 146 cases; deep frozen allograft was used in 122 cases. (Sloof technique: 102, acetabular reinforcement ring: 15 and X-change mesh: 5 cases.) The average age of the patients was 66 (31-91) years, and the average follow up time was 6,3 (0,5-9,5) years. D'Antonio classification, Harris hip score and x-R analysis have been performed for assessment. Results: According to the functional assessment the postoperative Harris hip score improved significantly. Complications: 2 dislocations, 2 deep infections-Girdlestone procedure, and 2 aseptic loosening with re-revisions. Conclusion: Using deep frozen allograft impacted alone in cavitory defects, deep frozen allograft and reinforcement ring or X-change mesh in combined or segmental defects with cemented cup is a safe method with excellent results. All orthopaedic departments in our country could be supplied by homologous deep frozen bone from the National Bone Banks for free, therefore hip revision surgery could be really cost-effective by using the technique of impaction bone grafting for acetabular revisions instead of using any cementless design to solve the problem

Date: 2016-09-08

Session: Free Papers - Hip Revision

Time: 16:00 - 17:30

Room: Michelangelo 2

Abstract no.: 43332

REVISION ARTHROPLASTY OF LARGE PAPROSKY 3-B DEFECTS USING IMPACTION GRAFTING AND A METALLIC MESH

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Introduction: In this case series, we present the early institutional experience with Paprosky 3B acetabular defects treated with impaction grafting combined with a containing metallic mesh; followed with cement fixation of a all polyethylene cup. Methods: We reviewed all patients undergoing total hip arthroplasty revision for Paprosky 3B defects between 2005 and 2014. All cases were treated in a similar manner with screw-fixated metallic mesh, impaction grafting with fresh-frozen allograft, and cemented all-polyethylene acetabular cup. Each patient was followed prospectively with Hospital for Special Surgery (HSS) score at follow-up visits and X-rays. Results: Twenty patients (9 males, 11 females) underwent 20 revision surgeries for Paprosky 3B acetabular defects using mesh augmentation and impaction grafting. Average age and BMI were 76.6 (48-91) years and 24 (18.9-31), respectively. All cases were revisions for aseptic loosening. Average follow-up at present is 35 months (1-105). Radiographic assessment of cup migration at latest follow-up shows an average superior migration of 2.29 mm. Average HSS score at latest follow-up was 33.93 (28-40). Complications occurred in 8 patients (40%) including: a limp in 3 patients, heterotopic ossification (Brooker Classification >2) in 3 patients, and a single patient demonstrated loosening at 105 months follow-up without symptoms. There were no returns to the OR for any reason and no revisions to date. Conclusion: Mesh augmentation with impaction grafting is a reliable technique for the treatment of Paprosky 3B acetabular defects. Our early experience with this established revision technique has been favorable with no re-revisions or radiographic failure.

Date: 2016-09-08

Session: Free Papers - Hip Revision

Time: 16:00 - 17:30

Room: Michelangelo 2

Abstract no.: 44477

OUTCOMES IN REVISION SURGERY FOR UNSTABLE TOTAL HIP ARTHROPLASTY

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Purpose of this study is to analyze the outcome of revision surgery due to unstable total hip arthroplasties by following a decision making protocol designed to identify and consequently correct the cause of dislocation. Between January 2000 and March 2012, 68 patients (42 women; 26 men; mean age 73 years-old (range: 34-96)) underwent a THA revision for instability at our institution. Most common etiologies for instability were cup malposition (37%), abductor deficiency (22%) and impingement (22%). Unclear etiology was assessed in 19% of the cases. At an average follow-up of 67 months (range: 24-288 months) 85% of patients were free of new episodes of instability. Surgical strategies most frequently used were constrained liners (40%), cup and stem revision (22%) and liner and femoral head exchange (19%). Femoral head diameter was additionally increased in 53% of the patients. Kaplan-Meier survivorship analysis with re-revision for instability as the end point revealed a survival rate of 96 % (CI 95%: 87-99%) at 24 months of follow-up and 77% (CI95%: 60-93%) at 89 months of follow-up. Comparison using the log-rank test evidenced no difference in the cumulative re-revision rates by type of revision procedure performed. However, there was a tendency ($p= 0.07$) of major risk for re-revision comparing the cases with constrained against non-constrained designs. Unstable THA was successfully managed by identifying the reasons for dislocation and addressing a surgical strategy to correct them looking for improved stability. Even though constrained liners are mostly used in problematic settings, cautious indication is recommended.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 43226

IS QUADRICEPS SPARING APPROACH BETTER THAN MEDIAL PARAPATELLAR APPROACH IN PRIMARY TOTAL KNEE ARTHROPLASTY AT SHORT TERM? A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Median parapatella (MPP) approach is commonly utilised for total knee arthroplasty (TKA). With enhanced recovery and shorter length of hospital stay there is increasing pressure on surgeons to perform surgery allowing a quicker recovery through smaller incisions. The quadriceps sparing (QS) approach causes less tissue trauma than the MPP. The QS is technically more demanding however potentially offers significant advantages. We performed a systematic review and meta analysis comparing MPP vs QS TKA. Methods: We performed an extensive literature search including only randomised controlled studies for analysis. All data reported on incision length, knee flexion, straight leg raise, tibial and femoral component positioning, knee society scores and post operative complications were included for the analysis. Results: Nine studies were included, 342 patients in the QS group and 351 in the MPP group. There were significant differences between the groups in operative time, incision length and straight leg raise within the first week. The tibial and femoral component positioning outliers were both significantly more in the the QS group. There was no difference in the functional scores. post operatively. There was a greater number of complications in the QS group. Conclusions: QS TKR allow a shorter incision and earlier straight leg raise, however it increases the likelihood of component malpositioning compared with MPP TKA. It is also associated with an increased number of complications. In the short term follow up this did not present a clinical difference in the outcome, longer term follow up would be needed to assess this.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 43140

DO WELL-BALANCED PRIMARY TKA PATIENTS ACHIEVE BETTER OUTCOMES WITHIN THE FIRST YEAR AFTER SURGERY?

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Background: Some surgically modifiable factors are related to soft-tissue balance. With computer-assisted surgery it is possible to access these variables quantitatively. The aim was to study the influence of gap balance on clinical outcomes within the first year after computer navigated total knee arthroplasty (TKA). Materials and Methods: Based on navigation data three independent variables reflecting gap balance were used to split the patients in two groups. The Knee Society Scores (KSS-F and KSS-Knee) and the maximal knee flexion (MKF) measured preoperatively, at 3, 6 and 12 months were compared using analyses of variance for repeated measures (2x4 ANOVA). Results: Higher Flexion-Extension Gap Equality led to statistically higher KSS-F scores at 1-year ($p= 0.02$). Higher Medial-Lateral Flexion Gap Equality led to superior mean MKF at all measurement points, however the differences were statistically not significant. There were no differences between the groups across the measurements when comparing their KSS-K scores. The coefficients of variation of the variables used to select the patients were overall very low. Conclusions: With computer assisted navigation it is possible to access quantitatively the size of the medial and lateral flexion and extension gaps. Higher Flexion-Extension Gap Equality values led to statistically significant better KSS-F scores at 1-year. Higher Medial-Lateral Flexion Gap Equality values led to better MKF values, however the differences were statistically not significant.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 42556

**HOW STABLE IS OUR TOTAL KNEE REPLACEMENT? - INTRA
OPERATIVE NAVIGATION ASSESSMENT OF MID FLEXION INSTABILITY**

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KAILATHUVALAPPIL

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Mid flexion instability in total knee replacement is a new emerging concept. During routine navigation TKR procedures we noticed that the joint gap between tibia and femur changes in various degrees of flexion. All these joints were well balanced in extension and ninety degrees flexion. In this study we have analysed the intra operative kinematic joint gap values of 23 navigation assisted knee replacement surgeries taken in 0, 30, 60, 90 degrees and full gravity assisted flexion. Our observation was that there was an increased laxity of average 10 degrees in coronal plane in varus direction in 30 degrees of knee flexion and in valgus direction in 60 degrees of knee flexion in an otherwise well balanced knee in extension and 90 degrees of flexion. It infers that most of the joints irrespective of the type of implant used (Genesis II Smith and Nephew, Nexgen GSF, LPS Zimmer, Vanguard Biomet and PFC Depuy) were opening up more in the early flexion range of 30 to 60 degrees. We conclude that the present day total knee replacement is not inherently stable in the mid flexion zone of 30 to 60 degrees and there is a need for further research into the causes of this so called early/mid flexion instability whether it is due to the technique of the implantation in which we balance a knee or the implant designs available and whether any changes should be made in the same to improve the outcome and patient satisfaction.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 44963

ROBOTIC ASSISTED TOTAL KNEE ARTHROPLASTY IN PATIENTS WITH SEVERE VARUS DEFORMITY

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In severe varus knee deformity, the image free navigation TKA may result in a malaligned knee. The aim of this study was to compare the clinical and radiological results of Robotic TKA in patients with severely varus knee (more than 15°). 136 osteoarthritic knees having Robotic TKA were involved in this study. A study group of 31 patients with a mechanical axis of less than 8° of varus, B study group of 75 patients (8 to 15° of varus) and C study group of 30 patients (more than 15° of varus) were compared. Knee society score (KSS) was used for clinical evaluation preoperatively and postoperatively. A mechanical axis in full weight bearing standing radiography and implant positions were measured. All patients were followed at mean of 2.5 years (range 2-4 years). Preoperatively, Group C showed inferior clinical results (less range of motion, more obese, less KS scores), however, there was no difference of clinical results at final follow-up. Neutral alignment was obtained in 93.8 %. Outliers (more than 3° of mechanical axis) were founded more in severe varus knee groups. No outlier was founded in group A, 5 outliers (6.6%) in group B and 4 outliers (14%) in group C. No significant difference was observed in implant position among three groups. Robotic TKA showed excellent clinical and radiological results. Especially neutral alignment could be obtained in 93.8%. However, varus aligned TKAs were founded more frequently in severely deformed varus knees

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 44992

CLINICAL AND RADIOLOGICAL OUTCOMES OF PRIMARY TOTAL KNEE REPLACEMENT IN PATIENTS AGED MORE THAN 80 YEARS

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Octogenarian population is now more than 1% of the total human population. This along with the growing use of total knee replacement among elderly patients, has increased the interest of a clearer knowledge with age-associated risks for this largely elective surgery. The main purpose of this retrospective study was to answer whether patients, aged more than 80 years, benefit from TKR and if this is related with a higher risk of increased rate of post-operative complications. We evaluated retrospectively 70 patients aged more than 80 years (range, 80 to 92 years) who underwent primary TKR with matched controls (range, 45 to 74 years). We analyzed for each patient clinical scores (KSS, KSFS, WOMAC), ROM, radiological alignment, length of stay and post-operative complications. Statistical analysis was performed using GraphPad Prism and IBM SPSS Statistics. At final follow-up, compared to the preoperative scores, both groups achieved an excellent improvement in WOMAC, KSS and KSFS scores ($p < 0.001$). No differences were found in terms of length of stay, ROM and radiological data between the two groups. The overall post-op complications have shown to be higher in the over-80 group with regard of cardiovascular ones (19% versus 7%, $p = 0,0749$) and blood transfusion rate (39% versus 14%, $p = 0.0011$). Post-operative complications has shown to be higher particularly in those patients presenting relevant comorbidities pre-operatively. In agreement with the literature, we describe good clinical outcomes after TKR in the elderly patients, so we consider this as a safe procedure with an accurate pre-operative assessment.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 42565

**WHICH ONE IS BETTER IN TOTAL KNEE ARTHROPLASTY,
INTRAMEDULLARY OR EXTRAMEDULLARY JIG FOR TIBIAL CUT?**

Darius GOURAN SAVADKOOHI, Babak SIAVASHI, Ehsan PENDARE,
Arash AALIREZAEI

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Sixty two primary total knee arthroplasties (TKAs) using an intramedullary tibial jigging system to obtain ideal tibial alignment were compared with 42 TKAs using an extramedullary tibial jigging system. All femoral components were positioned with intramedullary jigs. Post-operative radiographies show better results with intramedullary jig than extramedullary jigs in coronal plane alignment. Sagittal plane alignment (tibial slope) were the same in two groups. Intramedullary jig had better results in lateralization of tibial component for managing proximal tibial defects in varus knees. In short term and mid-term results, there was no significant difference in knee scores.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 44937

EVALUATION OF EFFECTS OF THE TIMING OF TOURNIQUET RELEASE ON BLOOD LOSS IN TOTAL KNEE ARTHROPLASTY BEFORE THE WOUND CLOSURE AND AFTER THE WOUND CLOSURE AND BANDAGING- A RANDOMIZED CONTROLLED TRIAL

Balaraju MENEGE, Krishna Kiran ECHAMPATI, Chiranjeevi TAYA, Suresh Rao SANKINEANI, Guravareddy ANNAPAREDDY VEKKATA, Balaraju MENEGE, Balaraju MENEGE
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Introduction and Aim: Total knee arthroplasty can be a cause of important blood loss. It is widely accepted that use of a tourniquet in TKA contributes to reduce intra operative blood loss, to allow better visualization, and to ease cementing of the prosthesis. Some researchers believed that tourniquet release before wound closure for hemostasis might be valuable. In contrast, some authors recognized that it was unnecessary to release tourniquet before wound closure for hemostasis. Therefore we have conducted a randomized control trial comparing blood loss with drop in Hemoglobin and Hematocrit between tourniquet release versus without release prior to wound closure. **Material and Methods:** This study was done at our institute between January 2015 to June 2015. One hundred (100) patients were randomized into two groups fifty each. Group 1, in which the pneumatic tourniquet will be maintained until suture and dressing of the operated wound, and Group 2, in which the pneumatic tourniquet released intraoperatively after cementing the prosthesis, with direct hemostasis, before the suture and dressing. The patients were evaluated for blood loss with drop in Hemoglobin and Hematocrit at intervals of 24 and 48 hours in the postoperative period. **Results:** Preoperative Hemoglobin and Hematocrit were analyzed and there were no statistically significant differences between two groups ($P=0.950, 0.923$). Post-operative blood loss with drop in Hemoglobin and Hematocrit at intervals of 24 hours and 48 hours in the were analyzed and there were no statistically significant differences between two groups ($P=0.293, 1.508$) and ($P=0.812, 0.283$). Thus we conclude that releasing tourniquet prior to wound closure does not demonstrate a statistical difference.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 42630

IDENTIFYING AN IDEAL TIME FRAME FOR STAGED BILATERAL TOTAL KNEE ARTHROPLASTY TO MINIMISE COMPLICATION RATES AND MAXIMISE FUNCTIONAL OUTCOME

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Compared with staged bilateral total knee arthroplasty (TKA), simultaneous bilateral TKA carries higher cardiopulmonary and mortality risks, especially in patients with preexisting cardiopulmonary disease or advanced age. However, the period of time between staged TKAs that would optimise surgical outcome has yet to be determined. The purpose of this study is to determine an optimal time frame to perform the second TKA after the index TKA. The authors retrospectively reviewed 306 patients who underwent staged bilateral TKA between 2002 and 2013. Patients were divided into 4 time intervals of 31 to 90 days, 91 to 180 days, 181 to 270 days, and 271 to 365 days, where complication and 90-day readmission rates for the second TKA were identified. Patients were also assessed preoperatively and 2 years postoperatively, using the Knee Society function score (KSFS), Oxford knee score (OKS), and Short-Form (SF)-36. Continuous and categorical variables were analysed using ANOVA and Chi-squared tests respectively. There was no significant difference in complication and 90-day readmission rates between the various time groups. Patients who had the second TKA performed after 31 to 90 days achieved greater improvement at 2 years postoperatively in KSFS (43, $p < 0.001$), and SF-36 subscores of physical functioning (51, $p < 0.001$), role physical (74, $p = 0.015$), bodily pain (52, $p = 0.002$), and social functioning (61, $p = 0.007$). The authors conclude that staging bilateral TKA at 31 to 90 days interval for patients with severe bilateral arthritis of the knee is an effective treatment.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 45650

TOPICAL APPLICATION OF TRANEXAMIC ACID REDUCES BLOOD LOSS AND NEED FOR BLOOD TRANSFUSION IN SIMULTANEOUS BILATERAL TKA: A PROSPECTIVE, RANDOMIZED, DOUBLE-BLINDED STUDY

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Simultaneous bilateral total knee arthroplasty (TKA) results in substantial perioperative blood loss with increased morbidity. Aim was to compare efficacy of topical versus intravenous TXA in reducing blood loss. Prospective, randomized, double-blinded clinical trial was carried out on 70 patients undergoing bilateral TKA, who were divided into two groups. Group 1 received equivalent dose of TXA intravenously 30 minutes prior to deflation of tourniquet of first knee and another dose repeated after 2 hours. Group 2 received topical TXA in the dose of 15mg/kg dissolved in 100 ml of normal saline which was applied into the joint for 10 minutes at the end of implant insertion. Outcome measures were total blood loss as (calculated from the difference between preoperative and postoperative day 3 haemoglobin (Hb) or Hb prior to transfusion), total drain output and amount of blood transfusion. Perioperative blood loss in group 2 (561.42 ± 248.99) was reduced significantly as compared to group 1 (1037.04 ± 506.650) with a p-value of <0.001 . The postoperative Hb in group 2 (10.30 ± 1.11) was also significantly higher as compared to group 1 (9.66 ± 1.47) with a p-value of <0.001 . Total drain output in group 2 (269.14 ± 120.98) was significantly reduced as compared to group 1 (574.14 ± 269.03) with a p-value of <0.001 . There were no reports of deep vein thrombosis or pulmonary embolism in either group. Topical application of tranexamic acid significantly decreases blood loss in bilateral TKA as compared to intravenous administration, with a mean reduction by about 45%.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 45628

MEGAPROSTHESIS IN POST TRAUMATIC AND PERIPROSTHETIC SEPTIC LARGE BONE DEFECTS: ISSUES TO BE CONSIDERED

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Introduction: Recently the evolution of prosthesis technology allows the surgeon to replace entire limbs. These special prostheses or megaprotheses were born for the treatment of severe oncological bone loss. Recently, however, the indications and applications of these devices are expanding to other orthopaedic and trauma situations. Since some years we are implanting megaprosthesis in non-oncological conditions such as: acute trauma in severe bone loss and poor bone quality; post-traumatic failures aseptic/septic (represented by complex non-unions and critical size bone defects); major bone loss in prosthetic revision aseptic/septic; periprosthetic fractures with components mobilization and poor bone stock condition. Objectives: The purpose of this study is to evaluate retrospectively the complications during and after the implantation of megaprosthesis of the lower limbs in post-traumatic and prosthetic bone loss and to propose some tips about how to avoid and manage such complications. Methods: We have retrospectively evaluated all the complications and difficulties we have encountered during or after the implantation of megaprosthesis in non-oncological patients. Between January 2008 and January 2014 we have treated 72 patients with large resections prostheses mono-and bi-articular. Results: Main critical problems found were: the restoration of the correct length and rotation of the limb, the reconstruction of knee extensor mechanism, the trochanteric reconstruction, the stability/dislocation of the implant, the mobility/ROM (range of motion) of the implant, the skin cover, the sepsis and the bone quality. Conclusions: Megaprosthesis in severe bone loss can be considered, in extreme cases appropriately selected, as an available solution for the orthopedic surgeon.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty II

Time: 14:00 - 15:30

Room: Michelangelo 3

Abstract no.: 43038

POSTEROLATERAL OVERHANG OF THE FEMORAL COMPONENT IN TOTAL KNEE ARTHROPLASTY: A COMPARISON BETWEEN SYMMETRIC AND ASYMMETRIC DESIGN

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Introduction: In total knee arthroplasty, patients sometimes have pain in the posterolateral part of the knee. One possible cause is the impingement of the popliteus tendon against femoral components. In previous reports, the incidence has been reported to be 1-4%. The purpose of this study was to quantify the amount of posterolateral overhang of the femoral component using 3-D templating software. **Materials and Methods:** We analyzed preoperative CT scan images in 50 knees with osteoarthritis, all cases were grade 2 or lower in Kellgren Lawrence classification. We used three-dimensional preoperative planning software for analysis. The two femoral components (symmetric and asymmetric designs) position was simulated. In coronal plane, component overhang was measured between the resected lateral part of posterior femur and its corresponding component size and compared two designs in 3 Zones (distal, proximal, center). **Results:** In simulated femoral component, asymmetric design had significantly lower component overhang than symmetric design in proximal zone of the lateral posterior condyle ($0.2\pm 1.9\text{mm}$ vs. $3.5\pm 1.6\text{mm}$, $p<0.01$). In proximal zone, significant overhang ($>3\text{mm}$) was 30 knees (60.0%) in symmetric design, but was only 3 knees (6.0%) in asymmetric design. **Conclusion:** There is the popliteal sulcus in proximal zone of the posterolateral part of the femur. Asymmetric design with rounded and reduced shape of the posterolateral corner in the femoral component would be beneficial in decreasing overhang and complications in posterolateral part of femur.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty II

Time: 14:00 - 15:30

Room: Michelangelo 3

Abstract no.: 44002

PRESSURE SENSOR TECHNOLOGY VARIABILITY IN TOTAL KNEE ARTHROPLASTY

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Introduction: The validity and reliability of load sensing technology needs to be assessed in order to define the intraoperative device expectations. Methods: 54 patients underwent TKA using the OrthoSensor VERASENSE tibial insert to assist with ligament balance. The transepicondylar axis (TEA) was used to determine femoral component rotation. Load measurements were documented at 10, 45, and 90 degrees of flexion with the trial (TRIAL) components and with the definitive (FINAL) cemented implants. Adequate balance was defined as a load differential ≤ 15 pounds between compartments. Results: Adequate balanced with TRIAL and FINAL implants was observed in 96.3% TKAs. Three knees were not balanced with TRIAL and FINAL components. There was a significant linear correlation of the TRIAL and FINAL loads in the medial compartment throughout range of motion. No correlation between the TRIAL and FINAL loads were identified in the lateral compartment. There was no relationship between femoral external rotation and medial compartment loads at 45 ($R^2 = 0.0006$, $Y = -0.10X + 7.3 \pm 2.3$; $p = 0.86$) and 90 degrees ($R^2 = 0.004$, $Y = -0.25X + 6.3 \pm 2.1$; $p = 0.62$) of flexion suggesting that the compartment loads were not significantly altered with femoral rotation. A similar finding was observed in the lateral compartment at all knee flexion angles. Conclusion: Variability between the TRIAL and FINAL implant measurements were higher in the lateral compartment as compared to the medial compartment. Using the TEA and not the posterior condylar line as a landmark to guide femoral component rotation, the flexion gap is frequently balanced without the need of additional ligament releases.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty II

Time: 14:00 - 15:30

Room: Michelangelo 3

Abstract no.: 45583

THE USE OF INTRAOPERATIVE SENSING TECHNOLOGY WITH ALGORITHMIC PIE-CRUSTING OF THE MCL DURING TOTAL KNEE ARTHROPLASTY OF VARUS KNEES REDUCES THE NEED FOR A CONSTRAINED INSERT

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Background: Intraoperative sensing technology is an alternative to standard techniques in total knee arthroplasty (TKA) for determining balance by providing quantitative analysis of loads and component tracking throughout a range of motion. We used Verasense tibial trial inserts (OrthoSensor Inc.) to examine pie-crusting release of the medial collateral ligament in knees with varus deformity in comparison it to a group where balance was obtained with similar release using laminar spreaders, spacer blocks, manual stress, and a ruler. Methods: Surgeries were performed by a single surgeon utilizing measured resection, and posterior-stabilized, cemented implants. There were 225 TKAs in the control and 75 in the study group. Outcome variables included the use of a constrained insert (CCK), the Knee Society Score (KSS) and Knee Society Function Score (KSFS) at 6 weeks, 4 months, and one year postoperatively. The effect of intraoperative sensing technology on the use of CCK and clinical outcomes were analyzed in a multivariate model controlling for age, sex, BMI, and severity of deformity. Results: The use of CCK was significantly lower in the study group (12% vs. 5.8%; $p=0.049$). The use of a CCK was not significant between groups with increasing deformity nor was severity of deformity associated with CCK use. There was no difference in KSS or KSFS between groups at any follow-up interval. Conclusion: The use of intraoperative sensing technology and an algorithmic pie-crusting technique reduces the use of CCK inserts in knees with varus deformity, which may cause a positive shift in value and cost savings.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty II

Time: 14:00 - 15:30

Room: Michelangelo 3

Abstract no.: 43209

VERIFICATION OF PREDICTED CORONAL AND SAGITTAL PLANE ALIGNMENT OF TOTAL KNEE ARTHROPLASTY BETWEEN PATIENT SPECIFIC INSTRUMENTATION AND IMAGE FREE COMPUTER NAVIGATION

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We aimed to verify the predicted alignment between Patient Specific Instrumentation (PSI) and Articulated Surface Mounted (ASM) computer navigation. Eight consecutive patients underwent total knee arthroplasty using MRI based PSI (Zimmer®) planned for 0° femoral and tibial mechanical alignment. After placing the conventional cutting blocks over the pins (placed according to PSI), the predicted coronal and sagittal planes of the cuts were verified with ASM navigation. Good correlation was found for tibial cuts in both planes (maximum variation: 1° in coronal plane, 2° in sagittal plane) and for femoral cuts in the sagittal plane (maximum variation 2°). However, in two patients the coronal plane variation in femur was > 2° (3° and 4° respectively). Navigation predicted combined final alignment of 5° valgus and 4° valgus in those two patients. PSI technique was used to complete the cuts in all cases. Post-operative long leg standing x-rays revealed that there were no outliers. Six were in neutral mechanical alignment (including the 2 navigation predicted outliers). The remaining 2 knees had a maximum deviation of 2 degrees from neutral. We conclude that there was overall good correlation between PSI and navigation. PSI prediction correlated more closely with long leg coronal alignment.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty II

Time: 14:00 - 15:30

Room: Michelangelo 3

Abstract no.: 43248

EFFECT OF PATELLAR RESURFACING ON CHANGE IN INSALL SALVATI RATIO FOLLOWING TOTAL KNEE REPLACEMENT

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Introduction: Effect of Insall Salvati Ratio (ISR) on the outcome of Total Knee Replacement (TKR) and factors contributing to the change in ISR has been studied extensively, however the effect of patellar resurfacing on change in ISR following TKR has not been described. Materials and Methods: Pre-operative and 6 month follow up radiographs of 200 primary TKRs (100 resurfaced and 100 un-resurfaced) were retrospectively analysed to measure the change in ISR and determine its relationship to patellar resurfacing. Errors of magnification and pseudo patella baja were excluded by using ISR as a measure of patellar tendon length. Results: Analysis revealed that TKR resulted in greater than 10% alteration in ISR post operatively in 124 knees (69 resurfaced and 55 un-resurfaced). Of these 124 knees, 83 knees had a decrease in ISR and 41 knees showed an increase in ISR. Resurfaced knees were found to be associated with a greater alteration in ISR, both in number of knees and percentage change in the ratio, however the difference was not statistically significant. Conclusion: Patella baja and pseudo patella baja following TKR has been well documented before, however an increase in patellar tendon length is a new finding as highlighted by this study. The cause and effect of increased Insall Salvati Ratio is being studied and may further help shed some light on change in biomechanics of the knee following total knee arthroplasty. Key words: Total knee replacement, Patella baja, Insall Salvati ratio, Patellar resurfacing.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty II

Time: 14:00 - 15:30

Room: Michelangelo 3

Abstract no.: 42803

CLINICAL AND RADIOGRAPHIC RESULTS OF ATTUNE AND PFC SIGMA KNEE DESIGNS – 2-YEAR FOLLOW-UP: A PROSPECTIVE MATCHED PAIR ANALYSIS

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Introduction: Anterior knee pain (AKP) and/or crepitation are important causes of dissatisfaction after total knee arthroplasty. Potential implant and technique related factors for AKP are patellofemoral maltracking, trochlear groove geometry (anatomic vs. non-anatomic), patellar shape, size, tilt and overstuffing. The primary aim of this prospective, matched pair study was to compare the effect of an anatomic trochlear groove with a medialized anatomic patella (Attune Knee System) vs. a single radius trochlear groove design (PFC Sigma Knee System) with dome shaped patella on the incidence of AKP, crepitation and satisfaction. Methods: 100 consecutive posterior stabilized cemented Attune TKAs were matched to the 100 PFC Sigma based on age, gender, side and body mass index (BMI). Clinical evaluations were assessed using a patient administered questionnaire with mean 2-year follow-up. Results: The mean age was 70.9 ± 7.3 (55.5-89.8) for Attune and 70.1 ± 7.4 (53.4-88.2) for PFC group. The incidence of AKP was lower in the Attune TKA group compared to the PFC Sigma (12.5% vs. 25.8%; $p=0.02$). The incidence of noise was also less with the Attune knee (17.7% vs. 30.9%; $p=0.02$). The incidence of painful crepitation was low in both groups (1.0% vs. 4.1%) with no significant difference between groups ($p=0.37$). Both groups had similar high satisfaction scores of 8.6 and 8.4 for the Attune and PFC groups respectively ($p=0.09$). Conclusion: The Attune group had a lesser incidence of AKP and crepitation, and both groups had high satisfaction rates. Further studies should focus on AKP and noise in cruciate-retaining knees.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty II

Time: 14:00 - 15:30

Room: Michelangelo 3

Abstract no.: 44905

ARTICULAR SURFACE MOUNTED NAVIGATION COMPARED TO NON-NAVIGATED TOTAL KNEE REPLACEMENT IMPROVES COMPONENT ALIGNMENT RELIABILITY

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Introduction: Computer navigation of during total knee replacement (TKR) using convention metaphyseal pins has been associated with peri-prosthetic fractures. The aim of this study was to compare the early functional outcome and reliability of component alignment using articular surface mounted (ASM) navigation with non-navigated TKR. Methods: A prospective comparative cohort study was performed with ethical approval. Functional outcome and radiographic data was collect for 123 patients undergoing ASM navigation and 172 patients undergoing non-navigated TKR by a high volume (>100/year) single surgeon. Inclusion criteria were: primary osteoarthritis and not extra-articular deformity (where ASM may be preferable). Allocation to navigated or non-navigation groups was done according to availability of the ASM navigation. Results: There was no significant difference ($p=0.86$) in the Oxford Knee Scores between the groups one year following surgery. The non-navigation group were significantly more likely to have outliers (greater than 3 degrees) in femoral varus/valgus coronal alignment (odds ratio (OR) 4.5, 95% confidence interval (CI) 1.0 to 20.7, $p=0.049$) and posterior tibial slope (OR 8.3, 95% CI 1.1 to 65.0, $p=0.03$). No peri-prosthetic fractures were encountered. Conclusion: ASM navigation provides a more accurate tool for placement of both the femoral and tibial components compared to conventional non-navigation alignment, even in the hands of an experienced surgeon and in particular in the coronal alignment. ASM does not place the patient at increased risk of a peri-prosthetic fracture from metaphyseal pin sites. However, the overall functional outcome is not influenced by the surgical technique used in the short term.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty II

Time: 14:00 - 15:30

Room: Michelangelo 3

Abstract no.: 42537

WHAT CHARACTERISTICS ARE ASSOCIATED WITH PATELLOFEMORAL INSTABILITY AFTER KINEMATICALLY ALIGNED TOTAL KNEE ARTHROPLASTY?

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Background: Patellofemoral instability after kinematically aligned total knee arthroplasty (KA TKA) has not been reported in the literature. Questions: We asked 1) What is the presentation of patellofemoral instability after KA TKA and how is it treated? and 2) Do patients with patellofemoral instability have preoperative clinical characteristics, postoperative radiographic characteristics, patient reported outcome measures, and an incidence of reoperation that differ from a matched cohort of patients treated with KA TKA? Methods: Out of a consecutive series of 3212 knees treated with a kinematically aligned TKA during a 9-year period, thirteen patients presented with patellofemoral instability. Eight preoperative clinical characteristics, six post-operative radiographic characteristics, and two post-operative patient reported outcome measures (PROM) were compared between patients with patellofemoral instability matched 1:3 to a cohort of patients. Results: The mean follow-up was 43 months. At an average of 5 months post-operatively, an atraumatic event initiated patellofemoral instability in 12 of 13 patients. In 9 of 13 patients, active and not passive flexion caused lateral subluxation. Patients with patellofemoral instability had 6° greater flexion of the femoral component (mean 11°, $p = 0.0012$), and a 6 point lower Oxford Knee Score (mean 36, $p = 0.0045$) than the matched cohort. Conclusions: Patellofemoral instability after KA TKA is infrequent (0.4%), requires patella stabilizing reoperations, and is associated with an average of 11° flexion of the femoral component and an average 36 point Oxford Knee Score at 43 months.

Date: 2016-09-08

Session: Free Papers - Total Knee Arthroplasty II

Time: 14:00 - 15:30

Room: Michelangelo 3

Abstract no.: 43786

PATELLA BAJA AND PSEUDO-PATELLA BAJA FOLLOWING TOTAL KNEE ARTHROPLASTY

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One of the complications of total knee arthroplasty (TKA) is pseudo-patella baja (PBB). True patella baja (PB) is also commonly seen following TKA, which is present when the length of the patellar tendon becomes shorter. In contrast, PBB is present when the patella tendon is not shortened, but the level of the joint line is elevated. In this study, we investigated the incidence of PB and PPB in 216 PS type TKA. For the diagnosis of PB and PBB, Blackburne-Peel index (BPI) and Insall-Salvati ratio (ISR) were measured in plain lateral knee x-ray. An ISR <0.8 indicates PB, while PPB is defined as BPI <0.54 . In addition, time-course of ISR was investigated for an average of 3.7 years postoperatively. PPB was found in 34 knees (15.7%) postoperatively. PB was found in 81 knees (37.5%) at the final examination. The average ISR showed time-dependent decrease, and 104 knees (48.1%) showed $>10\%$ decrease at the final examination. ROM of the knee was significantly less in the knees with $>20\%$ decrease of ISR than those with $<10\%$ decrease. However, no significant differences were detected in the incidences of anterior knee pain and patellar crepitation in the two groups.

Date: 2016-09-08

Session: Free Papers - Spine Degeneration & Disc

Time: 08:30 - 10:00

Room: Caravaggio 1-2

Abstract no.: 44431

**CORRELATION OF CLINICAL AND MRI FINDINGS WITH
INTRAOPERATIVE FINDINGS IN LUMBAR PROLAPSE
INTERVERTEBRAL DISC**

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Introduction: Low backache (LBA) is a common cause of morbidity affecting today's working population and PIVD is one of the most common cause. MRI is popular, non-invasive & gold standard for diagnosis of disc pathology in detail. Sometimes patients with persistent pain are operated because of abnormal images, even though the clinical findings are inconclusive. MRI findings are not predictive of the duration of LBA, hence clinical correlation still remains important in patient's evaluation. Purpose of this study was to correlate degree of correlation between Preoperative MRI, clinical and surgical observations. Materials and Methods: 30 patients with mean age 45.5 years (21-70) with male:female ratio 1:1 were included in study having LBP with/without radiculopathy and neurodeficit with/without any neurological claudication pain, abnormal reflexes, positive SLRT. Results: Tingling was present in 27 cases, SLRT in 16 cases, neurodeficit in 13 cases, reduced reflexes in 4 cases. Protrusion, extrusion and sequestration type disc herniation was reported in 29(70.7%), 8(19.5%) and 4(9.8%) cases respectively on MRI, while 24(60%), 12(30%) and 4(10%) in intraoperative findings. Intermediate, central and lateral type herniation was reported 25(70%), 10 (24.4%) and 6(14.6%) cases respectively on MRI while 25(62.5%) 9(22.5%) and 6(15%) in intraoperative findings. L5-S1, L4-L5 and L3-L4 disc prolapse was reported in 25 (61%), 13 (31.7%) & 3 (7.3%) cases respectively on MRI while 25(62.5%), 12 (30%) and 3 (7.5%) cases in intraoperative findings. Conclusion: MRI and clinical findings had a diagnostic accuracy of 96.6% and 48.4% in relation to intraoperative findings respectively. Extrusion and sequestration prolapses were more commonly associated with clinical findings while MRI had a distinct advantage in diagnosis of lateral and massive disc prolapses.

Date: 2016-09-08

Session: Free Papers - Spine Degeneration & Disc

Time: 08:30 - 10:00

Room: Caravaggio 1-2

Abstract no.: 43721

CLINICO-RADIOLOGICAL FACTORS ASSOCIATED WITH THE DEVELOPMENT OF NEUROLOGICAL DEFICIT IN PATIENTS WITH LUMBAR DISC PROLAPSE AND THEIR ROLES IN NEUROLOGICAL RECOVERY

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Neuro-deficit is rare, but serious complication following lumbar disc herniation (LDH). Clinico-radiological factors causative for neurological deficit in LDH is not clear. Current study is prospective, cohort study on role of various parameters in development of neurological deficit and post-operative recovery. Methods: Patients admitted for microdiscectomy following LDH were divided into two groups: Group 1 included 70 consecutive patients with deficit and Group 2 included 70 patients with intact neurology. Patients were followed up post-operatively for 6 months and assessed for neural recovery. Results: Patients with diabetes (p 0.004), acute onset symptoms (p 0.036), first episode of radiculopathy (p 0.001), L3-4 disc (p 0.001), sequestered discs (p 0.004), superiorly migrated discs (p 0.012), central disc prolapse (p 0.004) and primary canal stenosis (p 0.0001) had positive correlation with neuro-deficit. 5 out of 70 patients were lost to follow-up. 41 out the 65 patients (63%) showed complete neurological recovery by 2 months. Of the remaining patients, 4 had late recovery at 6th month. Patients with diabetes (p 0.025), longer duration of symptoms (p 0.048), bladder involvement (p 0.265), complete neurological deficit (p 0.0001) and multi-level disc prolapse (p 0.006) showed poorer recovery. Conclusion: Major parameters associated with development of neurological deficit were diabetes, acute onset, lesser number of previous episodes, high lumbar discs (L3-4), sequestrated, central and superiorly migrated discs, primary bony canal stenosis, greater canal compromise and larger discs. Non-diabetics, acute onset and shorter symptoms, incomplete deficit without bladder involvement and single level discs were associated with better recovery.

Date: 2016-09-08

Session: Free Papers - Spine Degeneration & Disc

Time: 08:30 - 10:00

Room: Caravaggio 1-2

Abstract no.: 44960

ASSESSMENT OF POSTOPERATIVE EPIDURAL HEMATOMA AFTER LUMBAR MICROENDOSCOPIC SURGERY

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Introduction: Symptomatic postoperative spinal epidural hematoma (SEH) is observed occasionally but rarely gets into serious complication after lumbar spinal surgery. The purpose of this study is to assess characteristics and outcome of those cases which had SEH treated surgically after the initial microendoscopic surgery. Method: From 2003 to 2015, total of 1249 patients with lumbar disc herniation or canal stenosis underwent microendoscopic discectomy or laminectomy. Six patients required evacuation of SEH after the initial surgery and were included in this study. Preoperative characteristics of the patients, clinical outcome and postoperative course were assessed. One of those patients needed evacuation of hematoma several times and blood transfusion. Result: The incidence of SEH required additional treatment was 0.48% (6 of 1249). The initial procedure was microendoscopic discectomy in three cases and microendoscopic laminotomy in three cases. One patient had hypertension, two patients had prediabetes and one patient had thrombocytopenia ($12.110^3/\mu\text{l}$) by hepatitis. Three cases were treated in the acute stage (within 24 hours after the surgery) and three cases were treated in the subacute stage (between 3 and 7 days after the surgery). In all cases, severe leg pain was appeared in short time. Two patients got muscle weakness. One patient had repetitive leg pain after the evacuation with local anesthesia or general anesthesia. Finally Blood transfusion and factor VIII were required to stop SEH. Conclusion: The incidence of SEH was not significant in comparison with a conventional method. Immediate evacuation of hematoma improved neurological symptom immediately of all symptomatic patients with SEH.

Date: 2016-09-08

Session: Free Papers - Spine Degeneration & Disc

Time: 08:30 - 10:00

Room: Caravaggio 1-2

Abstract no.: 44681

PATIENT SATISFACTION AFTER LUMBAR MICRODECOMPRESSION UNDER GENERAL VS. PROGRESSIVE LOCAL ANAESTHESIA

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Introduction: Many studies have shown that microdiscectomy involves a small incision, thereby contributing to less soft tissue damage, decreased blood loss, less post-operative pain, decreased length of hospital stay, thereby allowing the patient to return to work and resume normal activity earlier. To further better patient care, local or “awake” anesthesia has been utilized for lumbar microdecompression so that it can be done on an outpatient basis. Aim: The main objective of this study was to evaluate and compare perceived patient satisfaction after lumbar microdecompression either under progressive local or general anesthesia within at least 12 months after surgery. Materials and Methods: This was a multi-center retrospective cohort study of 34 patients that underwent lumbar microdecompression either under general anesthesia or progressive local anesthesia by a single orthopaedic surgeon from August 2013 to August 2014. Primary outcome data utilized the overall satisfaction item from the Zurich Claudication Questionnaire (ZCQ) at two weeks post-operatively, and one, six, and twelve months post-operatively. Results: The results indicated that time was the best predictor for satisfaction and showed that patients felt more satisfied with their operations as time went by. There was a marked difference two weeks post-operatively indicating patient felt more satisfied with their procedure under progressive local anesthesia, supporting the hypothesis. Conclusion: In the early post-operative period, patients undergoing microdecompression for symptomatic lumbar disc herniations with a predominance of leg symptoms refractory to non-operative management who chose to undergo their surgery under progressive local anesthesia were more satisfied with their operation.

Date: 2016-09-08

Session: Free Papers - Spine Degeneration & Disc

Time: 08:30 - 10:00

Room: Caravaggio 1-2

Abstract no.: 42676

USING TRANEXAMIC ACID SOAKED ABSORBABLE GELATIN SPONGE FOLLOWING COMPLEX POSTERIOR LUMBAR SPINE SURGERY: A RANDOMIZED CONTROL TRIAL

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Introduction: Absorbable gelatin sponge is reported to decrease postoperative drain output and the length of hospital stay after multilevel posterior lumbar spine surgery. However, there is a dearth of literature on the efficacy of Tranexamic Acid soaked absorbable gelatin sponge in reducing postoperative blood loss as well as shortening the length of hospital stay in patients undergoing multilevel posterior lumbar spinal surgery. Methods: A total of 90 consecutive patients undergone multilevel posterior lumbar degenerative procedures were prospectively randomized into one of three groups (TXA Soaked Gelfoam group, absorbable gelatin sponge group or control group) . Demographic distribution, total drain output, blood transfusion rate, the length of stay, the number of readmissions, and postoperative complications were analyzed. Results: In the TXA Soaked Gelfoam, Gelfoam, and control groups, the respective hemovac drainage at the first 8h postoperatively was 81.06±61.21, 166.73±76.76, and 155.67±92.94 ml , while at the second 8h postoperatively was 46.67±40.09, 55.10±43.43, and 82.50±56.67 ml and 23.73±25.56, 32.43±25.81 and 44.20±32.44 ml at the third 8h postoperatively; Also the length of drainage in the TXA Soaked Gelfoam group was shorter than the Gelfoam and control groups significantly (p = 0.019 and 0.000, respectively). The TXA Soaked Gelfoam and Gelfoam also had significantly shorter hospital stay than the control group (p =0.014, and 0.036, respectively). No patient developed adverse reactions attributable to the tranexamic acid soaked absorbable gelatin sponge. Conclusions: Application of tranexamic acid soaked absorbable gelatin sponge at the end of multilevel posterior lumbar fusion have better clinical results.

Date: 2016-09-08

Session: Free Papers - Spine Degeneration & Disc

Time: 08:30 - 10:00

Room: Caravaggio 1-2

Abstract no.: 43858

CLINICAL RELEVANCE OF A NEW CLASSIFICATION FOR DEGENERATIVE SPONDYLOLISTHESIS OF THE LUMBAR SPINE

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Introduction: A new classification system for degenerative spondylolisthesis of the lumbar spine (DSLS) based on sagittal alignment is proposed. This retrospective study evaluates the clinical relevance of this classification. Methods: 166 patients (119 F: 47 M) suffering from DSLS between January 2011 and December 2015 were included. Mean age was 67.1±11 years. Quality Of Life (QOL) and clinical parameters were collected: Short Form-12 questions physical composite scale (SF-12 PCS), Oswestry Disability Index (ODI). Radiographic analysis included the Meyerding grading and sagittal parameters: segmental lordosis (SL), lumbar lordosis (LL), pelvic incidence (PI), pelvic tilt (PT), and sagittal vertical axis (SVA). Patients were classified according to three main types: 1a: preserved LL and SL; 1b: preserved LL and reduced $SL \leq 5^\circ$; 2a: $PI-LL \geq 10^\circ$ without pelvic compensation ($PT < 25^\circ$); 2b: $PI-LL \geq 10^\circ$ with pelvic compensation ($PT \geq 25^\circ$); type 3: global sagittal malalignment ($SVA \geq 40\text{mm}$). Results: Mean sagittal alignment parameters values were: $PI: 59.3^\circ \pm 11.9^\circ$; $PT: 24.3^\circ \pm 7.6^\circ$; $SVA: 29.1 \text{ mm} \pm 42.2 \text{ mm}$; $SL: 18.2^\circ \pm 8.1^\circ$. Affected levels were: L4-L5 (121 patients), L3-L4 (34), L2-L3 (6), and L5-S1 (5). DSLS classification demographics were respectively: type 1a: 73 patients, type 1b: 3, type 2a: 8, type 2b: 22, type 3: 60. Meyerding grading was: grade 1 (124 patients), grade 2 (24 patients). DSLS types were correlated with age, ODI and SF-12 PCS ($\rho = 0.34$, $p < 0.05$; $\rho = 0.33$, $p < 0.05$; $\rho = -0.20$, $p = 0.01$ respectively). Low SL did not influence QOL. Conclusion: This new classification was consistent with age and QOL scales. It could be a useful tool for comprehensive analysis of DSLS before surgical treatment taking into account sagittal balance.

Date: 2016-09-08

Session: Free Papers - Spine Degeneration & Disc

Time: 08:30 - 10:00

Room: Caravaggio 1-2

Abstract no.: 44350

CLINICAL AND RADIOGRAPHIC OUTCOMES OF STAND-ALONE ANTERIOR LUMBAR INTERBODY FUSION VERSUS TRANSFORAMINAL LUMBAR INTERBODY FUSIONS AND 360-DEGREE FUSIONS

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Purpose: To compare (ALIF) to (TLIF) and 360 degree fusion using both clinical and radiographic outcome data. Methods: Retrospective review of adult patients with degenerative disc disease (DDD) that underwent elective one or two level stand-alone ALIF, TLIF or 360-degree fusion over a two-year period. Clinical parameters compared included smoking status, diabetes, steroid use, operative time, estimated blood loss, length of hospitalization, use of rhBMP-2, type of anterior implants, stenosis, anterior decompression, ODI, Index, Numeric Rating Scale, and complications. Radiographic parameters included fusion status, local disc angle, lumbar lordosis, and disc height, degree of spondylolisthesis, sacral slope, pelvic incidence and pelvic tilt. Results: A total of 106 patients were included. There were 53 patients in the ALIF group, 17 in the TLIF group and 36 in the 360-degree group. There were statistically significant differences in operative time, estimated blood loss, and length of stay with the ALIF group being significantly less, $p < 0.0001$. Patient outcomes were not significantly different at 12 or 24 months. Evaluation of radiographic parameters revealed significant differences with disc angle ($p < 0.001$), anterior & posterior disc height ($p < 0.0001$) and pelvic tilt ($p < 0.001$) all favoring ALIF over both TLIF & 360-degree fusion. Conclusions: While patient characteristics will influence the decision regarding surgical approach and technique, stand-alone ALIF in this series delivered equivalent clinical outcomes in relation to pain and function. Operating time, hospital stay and blood loss was less in ALIF. Segmental anatomy was restored more effectively with ALIF.

Date: 2016-09-08

Session: Free Papers - Spine Degeneration & Disc

Time: 08:30 - 10:00

Room: Caravaggio 1-2

Abstract no.: 44041

ANATOMICAL EVALUATION OF LUMBAR VESSELS WITH MAGNETIC RESONANCE IMAGING

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Background: Lateral lumbar interbody fusion (LLIF) is becoming one of popular options of surgical treatments of adult degenerative lumbar conditions, however, there are some reports about serious lumbar arterial injury. Objectives: The objective of this study is to evaluate the anatomical position of lumbar arteries and veins with Magnetic Resonance Imaging (MRI). Methods: We studied 101 patients with lumbar spine disease who underwent preoperative MRI. The length from the upper and lower end plates of vertebra to the lumbar artery and vein were measured. The measurement was performed with coronal images of MRI of every quarter slice of L1 to L4 vertebrae. Results: The lumbar arteries and veins do not always locate in the center of the vertebra. Especially in L4, the lumbar artery and vein tend to go down from an anterior cranial side to a posterior caudal side. Conclusion: It is necessary to investigate a lumbar artery to prevent its injury in LLIF, because the lumbar artery does not always locate in the center of a vertebra. Coronal images of MRI may be valuable in the evaluation of the vessels.

Date: 2016-09-08

Session: Free Papers - Spine Degeneration & Disc

Time: 08:30 - 10:00

Room: Caravaggio 1-2

Abstract no.: 42579

DO MODIC CHANGES PROGRESS WITH AGING?

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Modic change (MC) has been discussed regarding its clinical significance, relationship with low back pain, suitable treatments, and natural history. If MC is actually a progressive condition of a patient, then MC should become more common as the patient ages. The aim of this study was to clarify the trend in generation distinctions of MC including elderly patients. Five hundred and ninety-one patients out of 937 patients who underwent lumbar MRI were ultimately included. The range of age was 13 to 91 years. Cases that had previous lumbar surgery, a vertebral fracture, vertebral tumor including metastasis, an infection, spondylolysis, and high-grade spondylolisthesis were excluded. MC was assessed using T1 and T2 weighted MRI and divided into modic type (MT) 1, 2, 3, and mixed types. The trend in MC was analyzed among distinct generations. MC was identified in 60.2% of the patients. In these MCs, 5.6% were MT1, 75.9% were MT2, 1.6% were MT3, and 17.0% were the mixed type. The incidence of MC in individuals was 18.2% in teens, 40.0% in twenties, 51.9% in thirties, 54.9% in forties, 60.3% in fifties, 71.4% in sixties, 60.5% in seventies, and 56.8% in over eighties, respectively. MC increased with increasing aging, with the highest frequency observed in individuals in their 60s and declining in those in their 70s and 80s. According to this study, same types of MC might have various conditions and some types of MC might have the potential to change into other MT or a normal endplate.

Date: 2016-09-08

Session: Free Papers - Spine Deformity & Tumour

Time: 14:00 - 15:30

Room: Caravaggio 1-2

Abstract no.: 43438

CLASSIFICATION AND DESCRIPTIVE ANALYSIS OF COMPLEX SPINE DEFORMITY EXCEEDING 100 DEGREES: THE OMEGA/GAMMA DEFORMITY

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Introduction: Complex spine deformities >100deg cannot be classified with standard radiographs. We propose a new classification to aid in communication and patient evaluation. Methods: 91 pts were evaluated at a single center in West Africa and AP and Lat radiographs, and 3D CT for evaluation. A descriptive analysis was performed. Type 1: 1C (coronal); 1S (Sagittal); 1CS (both planes). Type 2 (Omega): 2P: Proximal (UEV below the apex); 2D: Distal (LEV above the apex); 2PD Proximal and Distal (Full Omega). Type 3 (Gamma) >180degrees. Results: Of the 78 type 1 and 2 pts, M/F= 51.3% /48.7% (avg age 17.88 yrs). Diagnosis; Idiopathic (43); Cong (26); Nm (5); NF;(4). 49 Type 1pts: 1C (10), 1S (2), 1CS (37), and 29 Type 2 pts: 2DC (1), 2DS(1), 2PC(5), 2PS (4). 2PCS (15), 2DCS (2), 2PCSDCS(1).Major scoliosis avg 131.23 degree, Kyphosis avg 136.85. Coronal HF avg 17.66; There were 13 Type 3 pts (6 M/ 7F). Avg age: 17.8yrs. Coronal VT avg 75%; Sag deformityavg 211deg The HF Avg 49. Thoracic kyphosis avg -42deg.Conclusion: We have classified the 3 complex deformity types using 3D CT and X-rays. Type 3 def exceeds 180 deg with high HF and thoracic lordosis. The descriptive analysis and classification will aid in patient assessment

Date: 2016-09-08

Session: Free Papers - Spine Deformity & Tumour

Time: 14:00 - 15:30

Room: Caravaggio 1-2

Abstract no.: 43683

SURGICAL TREATMENT OF SEVERE DEFORMITIES OF CERVICO-THORACIC JUNCTION

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In this study, the outcomes of surgical treatment of severe spinal cervico-thoracic deformities are evaluated. An analysis of 8 patients who underwent surgery between 2012 and 2015 is presented. Mean age was 11.2 years (range from 2 to 18 y.o.). In 6 patients KFS with cervico-thoracic kyphosis was observed. In 2 patients, both 2-year-old girls, there was anterior displacement at the Th1 vertebra, most likely due to congenital dislocation. In 2 cases type I neurofibromatosis was observed. All the patients with KFS presented with neurological deficit: four patients presented with inferior paraparesis and two patients – with tetraparesis due to cervical myelopathy. In all cases staged surgical treatment was performed: halo-traction for 10-14 days, then occipito-cervico-thoracic instrumented fixation as the 2nd stage. In one case, anterior cervical multilevel fusion with autografting was performed as the 3rd stage. In all but one patient full-scale 3D models of the vertebral column at the deformity level was manufactured based on CT-scans. Mean follow-up time was 18,8 months (range 12-36). In all cases, sufficient correction was achieved. In two cases, there was improvement in neurological status. In two cases fractures of one of the 2,5 mm rods in occipito-cervical instrumentation were observed. This condition requires reoperation and additional reinforcing occipito-cervical fixation using cortical peroneal autograft. Conclusion: Due to the severity and complexity of congenital deformities of the cervico-thoracic junction, full-scale 3-D models are indispensable for understanding anatomical relationships and for surgery planning. Halo-traction is recommended for preoperative correction and neurological complication prevention.

Date: 2016-09-08

Session: Free Papers - Spine Deformity & Tumour

Time: 14:00 - 15:30

Room: Caravaggio 1-2

Abstract no.: 45112

PONTE OSTEOTOMIES AROUND THE APICAL VERTEBRA IMPROVE THE CORRECTION OF THORACIC ADOLESCENT IDIOPATHIC SCOLIOSIS

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Introduction: Assessment of flexibility of the deformity is the cornerstone since motion through the intervertebral discs is required to obtain correction. This study is designed to evaluate the use of posterior-column osteotomies at the apical levels in thoracic idiopathic scoliosis. Materials: 15 patients were treated surgically for adolescent idiopathic scoliosis with Lenke type 1 and 2 curves. Posterior instrumented spinal fusion was performed with Smith-Petersen osteotomies at the level of apical vertebra and extended proximally and distally for one level. In all cases, the extension of the fusion was planned according to the Lenke et al. classification of adolescent idiopathic scoliosis. Pre- and postoperative Cobb angle, kyphosis (T5-T12), number of fused levels, blood loss and operative time were registered and data were pooled. Results and conclusions: average pre-operative Cobb angle was $54^{\circ} \pm 6^{\circ}$ and improved to $18^{\circ} \pm 7^{\circ}$ post-operatively. Average pre-operative and post-operative kyphosis was $21^{\circ} \pm 12^{\circ}$ and $42^{\circ} \pm 10^{\circ}$, accordingly. Mean number of fusion levels was 9 ± 1 with mean blood loss and operative time of 86 ± 35 cc and 35 ± 3 min per level, accordingly. The use of Smith-Petersen osteotomy seems to be effective in conjunction to the posterior instrumented fusion to achieve coronal and sagittal correction in Lenke type 1 and 2 adolescent idiopathic scoliosis curves. However, due to the limited number of patients and the lack of a control group, it is necessary to evaluate the efficacy of this technique in future studies.

Date: 2016-09-08

Session: Free Papers - Spine Deformity & Tumour

Time: 14:00 - 15:30

Room: Caravaggio 1-2

Abstract no.: 44596

DO 3D-PRINTED SPINE MODELS IMPROVE THE ACCURACY OF PEDICLE SCREW PLACEMENT IN SCOLIOSIS?

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Introduction: The use of pedicle screws is increasingly common in surgical correction of scoliosis. Although many studies have shown that pedicle screws are safe, there are still unique challenges due to the morphometry of the deformed spine. Misplacement of pedicle screws can be disastrous, and breaching of the medial pedicular wall carries the highest risk for neurological impairment. **Methods:** 40 patients with scoliosis who were operated by a single surgeon between Jan 2015 and Nov 2015 were divided into two groups. A 3D-printed model of the deformity was available intra-operatively for 20 patients. A total of 298 pedicle screws were implanted in the 3D group and 344 in the non-3D group. Post-op axial CT were reviewed and analyzed and perforation was graded according to the Gertzbein classification. **Results:** There were no misplacement-associated complications in all 40 patients. No difference was observed in the accuracy of pedicle screw placement (grade 0,1) between the two groups. The 3D group had a higher accuracy rate than the non-3D group (90 vs. 85%, $p=0.13$) on the convex side. In addition, the 3D group had a higher rate for anterior perforation (grade 2,3) than the non-3D group (4 vs. 1%, $p=0.048$), but a lower rate for breaching the medial wall ($p=0.038$, 2 vs. 5%). **Conclusion:** Although there was no overall difference in the accuracy of screw position, the intra-operative use of 3D-printed models was found to significantly minimize the incidence of perforation of the medial pedicular wall, which carries the greatest risk for neurological injury.

Date: 2016-09-08

Session: Free Papers - Spine Deformity & Tumour

Time: 14:00 - 15:30

Room: Caravaggio 1-2

Abstract no.: 43596

DEVELOPMENT OF A RISK SEVERITY SCORING SYSTEM FOR SURGICAL SITE INFECTION IN ADOLESCENT IDIOPATHIC SCOLIOSIS: WHAT ARE WE MISSING?

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Design: Retrospective cohort of patients undergoing spinal fusion for treatment of adolescent idiopathic scoliosis. Hypothesis: Analysis of a large multicenter AIS cohort will allow development of a risk severity score which has prognostic value in predicting surgical site infection (SSI). Introduction: SSI in children with idiopathic spinal deformity requiring spinal fusion has a major impact on quality of life, caretaker burden and healthcare expenditure. We aim to develop a risk severity scoring system derived empirically from a multi-center data set to predict SSI in adolescent idiopathic scoliosis patients undergoing spinal fusion. Methods: Pediatric patients who underwent spinal fusion in 4 academic institutions (1/06-12/11) were enrolled in the study. Patient characteristics, preoperative laboratory values, and clinical data were collected. The CDC's case definition of SSI was used. Results: Of 1353 patients reviewed, 1.85% of patients developed a SSI. After multiple regression analysis, only BMI, both <5th percentile and >85th percentile (OR 2.44) and Hgb <11 g/dl (OR 1.37) proved prognostic of SSI with a predictive ability of 62.1%. When preoperative predictors are combined with perioperative predictors, only > 10 levels of fusion (OR: 1.41) and use of posterior osteotomies (OR: 1.10) increased the predictive accuracy, and only slightly to 65.5%. Conclusions: Statistically derived risk severity scores using pre and perioperative variables have only moderate discriminative ability to predict SSI in idiopathic patients undergoing spinal fusion. Other variables, not adequately measured, including perioperative infection prophylaxis seem to drive SSI, and further investigation of these variables is warranted.

Date: 2016-09-08

Session: Free Papers - Spine Deformity & Tumour

Time: 14:00 - 15:30

Room: Caravaggio 1-2

Abstract no.: 44129

SURGICAL STRATEGY FOR PRIMARY CERVICAL SPINAL TUMORS

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Objectives: To evaluate the surgical treatment for primary cervical spinal tumors by retrospectively reviewing of the surgically treated cases with primary cervical spinal tumors. **Methods:** 18 cases of primary cervical spinal tumors was surgically treated between June 2010 and June 2015. The mean age at diagnosis was 39.6 years. There were 6 cases with lesions locating in the upper cervical spine and 12 cases in the lower cervical spine. The clinical manifestations included neck pain, radicular pain and paraplegia. The cases with tumors locating in the cervical canal underwent piecemeal tumor resection under microscope and other cases underwent curettage or piecemeal palliative decompression. And all the cases underwent internal fixation. **Results:** Pathological diagnosis included neurofibroma in 5 cases, neurinoma in 4 cases, meningiomas in 3 cases, chordoma in 2 cases, lipoma in 1 case, osteoidosteoma in 1 case, aneurysmal bone cysts (ABC) in 1 case and Ewing's sarcoma in 1 case. Twelve cases were followed up with mean time of 24.5 months. Recurrence was observed in one of the cases. No severe complications were observed during the follow-up. Neurological improvement was achieved in all the cases. At the last follow-up, the outcome included NED. in 10 cases and AWD. in 2 cases. **Conclusion:** The surgical treatment is effective both in symptom relief and tumor control for primary cervical spinal tumors. The appropriate procedures should be adopted for various cases.

Date: 2016-09-08

Session: Free Papers - Spine Deformity & Tumour

Time: 14:00 - 15:30

Room: Caravaggio 1-2

Abstract no.: 43720

COMBINATION OF NAVIGATIONAL RADIOFREQUENCY ABLATION DEVICE, ULTRAHIGH VISCOSITY CEMENT VERTEBRAL AUGMENTATION AND STEREOTACTIC RADIOTHERAPY FOR THE TREATMENT OF SPINE METASTASIS

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PURPOSE: To evaluate safety and clinical benefit of spine metastasis treatment by combined radiofrequency ablation with a navigational device, vertebroplasty and stereotactic radiotherapy. **MATERIAL AND METHODS:** 15 patients with 17 spine metastasis were retrospectively included from December 2014 to February 2016. All patients were treated with both radiofrequency with the STAR system and high viscosity cement augmentation during the same procedure. In addition, stereotactic body radiotherapy was performed. A whole spine MRI examination was done before and after the percutaneous treatment (1, 3, 6 and 12 months); local control was defined as the absence of tumoral progression within the targeted area. Clinical evaluation was performed by recording pain score with the numerical rating scale and pain medications. **RESULTS:** 17 vertebral metastasis were treated, from T4 to S1. 35% of tumors involved epiduro-foraminal spaces and posterior arch of the vertebrae. The median pre-procedure pain score was 6 (range 0-9). Mean worst pain score dramatically decreased at both one month (median 1.47) and 3 months (median 0.9). No post procedural clinical complication occurred. 2 cases of discal leakage of cement were described without any clinical relevance. MRI follow up examinations showed 88.3% local disease control at 1 month, 88.3% at 3 months and 82.3% at 6 months. **CONCLUSION:** Locally ablative intent treatment of oligometastatic spine disease can be feasibly performed by increasing tumoricidal dose delivery and avoiding radiation induced vertebral fractures.

Date: 2016-09-08

Session: Free Papers - Spine Deformity & Tumour

Time: 14:00 - 15:30

Room: Caravaggio 1-2

Abstract no.: 43675

SPONDYLECTOMY AND SPONDYLODESIS IN PATIENTS WITH SPINE TUMORS

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Introduction: we analysed treatment results of 34 patients with spine tumors, who underwent surgery (spondylectomy) in the Republic Scientific-Practical Centre for Traumatology and Orthopedics (Belarus) in 2000-2015 years. Materials: There were 7 patients with cervical spine tumors; 15 patients with thoracic spine tumors; 12 patients with lumbar spine tumors. Among the primaries benign processes giant cell tumor (14 cases) was the most often occurred, solitary myeloma composed the majority of malignant tumors (10 cases). 10 patients were with single metastases in vertebrae: 6 - with thoracic spine affection, 4 – with lumbar spine affection. Different surgical technologies were used. On cervical spine - single-step spondylectomy with osteal plastic – 1 case, spondylectomy with osteosynthesis – 1 case, separable two-stage tumor extraction in combination with osteal plastic and osteosynthesis – 2 cases, combined spondylodesis in combination with extrafocal correction and Halo-cast stabilization – 3 cases. Stabilization of operated spine mobile segments was realized by transpedicle and combined titanic fixators, interbody vertebral spondylodesis – by porous or reticular titanic implants in combination with auto- or allo- bone graft. Results: therefore, we worked out methods of spondylectomy with adequate technology of operated segments stabilization in cervical, thoracic and lumbar tumors, which help us to raise rehabilitational potential, optimize prognosis and improve quality of life by complicated class of patients. The most important question of surgery plan we consider adequate grade of tumor spreading in vertebrae structures and its morphologic description.

Date: 2016-09-08

Session: Free Papers - Spine Deformity & Tumour

Time: 14:00 - 15:30

Room: Caravaggio 1-2

Abstract no.: 43676

THORACIC SPINE ATYPICAL OSTEOSARCOMA TREATMENT

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Introduction: osteosarcoma is a primary malignant tumor with a poor prognosis. Osteosarcoma is found in 3 - 14% cases among the spine malignant tumors. Giant cell variant of the spinal osteosarcoma is very rare. Materials: since 2013 we have seen a case of giant cell variant of osteosarcoma. In 2013, a patient being 35 weeks pregnant felt back pain spontaneously. Neurological examination showed the lower light paraparesis. At 36 weeks of pregnancy, the patient was performed a cesarean section. The observation revealed the tumor of Th9 vertebra. Closed biopsy was made: morphologically giant cell tumor was diagnosed. Inferior paraplegia and pelvic organs insufficiency had evolved within a week after the biopsy. The patient was transferred to the Republic Scientific-Practical Centre for Traumatology and Orthopedics (Belarus) for the surgical treatment. The patient was performed an open biopsy, spinal cord decompression, tumor excision and posterior fixation on the Th7-Th11 level with transpedicular screws. The result of morphological research: osteosarcoma, giant cell variant. After surgery, the patient took radiation- and chemotherapy. Results: One year after surgery, neurological deficit complete regress achieved. Local recurrence and metastasis were not found. Focal extraosseal recurrence of tumor was found in the postoperative scar area in 18 months after the surgery. Tumor focus was removed en bloc within the healthy tissue. Osteosarcoma was verified morphologically. The patient was performed the chemotherapy course. At the moment there is no tumor recurrence and metastases. Follow-up period is 26 months.

Date: 2016-09-08

Session: Free Papers - Spine Deformity & Tumour

Time: 14:00 - 15:30

Room: Caravaggio 1-2

Abstract no.: 43591

LENKE, SUK, RIGO CLASSIFICATION SYSTEMS: HOW DO THEY COMPARE?

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Several classification systems exist to delineate appropriate treatment for Adolescent Idiopathic Scoliosis (AIS). The most well-known and comprehensive is the Lenke system, with 42 possible curves. The Suk system has 8 curve types, while Rigo has 16. 100 consecutive AIS patients were identified who underwent PSIF. Pre-operative x-Rays, were utilized for the classification by the 3 systems. Lenke: there were 48 Type1, 19 Type2, 7 Type3, 3 Type4, 11 Type5 and 12 Type6 curves. Suk: there were 47 ST, 20 DT, 28 DM and 5 TL curves. Rigo: included 31-A, 47-B, 17-C and 5-E curves, and 15 PT D-modifiers. Comparisons: Within the Lenke-1 curves, 33% were classified as Rigo-ST (A1, A2, C1). 62.5% were double curves (A3, B1, B2, C2). 79% of Lenke-1 were classified as Suk-ST. 58% of Lenke-2 curves had a Rigo-D modifier. Similarly, 74% were classified as Suk-DT. Both Lenke-3 and Lenke-6 are DM curves and were classified as Rigo-B1 58% and 37% B2. Lenke-3 was split between Suk-ST (57%) and DM(43%). Lenke-6 was consistent with Suk-DM. Lenke-5 curves were Rigo-E/Suk-TL (45.4%), or RigoB1/Suk-DM(54.5%) where the thoracic curve bent out. Conclusion: These systems were designed for distinct purposes and did not correlate perfectly. Although there are core areas of overlap, there are inherent differences that make it difficult to translate curve types between systems. Future research efforts should focus on the relative success of bracing of various Rigo curve subtypes and the natural history of evolution into curve patterns as described by Suk and Lenke.

Date: 2016-09-08

Session: Free Papers - Shoulder Arthroplasty and Arthroscopy

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 43406

OUTCOMES OF REVERSE SHOULDER ARTHROPLASTY IN CORRELATION WITH CUFF TEAR ARTHROPATHY STAGES

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This multicentre prospective study aims to evaluate the performance of Reverse Shoulder Arthroplasty (RSA) in treating patients with different stages of cuff-tear arthropathy (CTA). 106 patients (107 shoulders) underwent primary RSA; they were 81% women, with mean age of 73±5 years. According Seebauer classification, 40% presented CTA stage 1A, 32% 1B, 26% 2A, 1% 2B. SMR Reverse (Limacorporate) was used in all cases, with either 36-mm standard (11%), 36-mm eccentric (18%), 40-mm HP (19%) or 44-mm HP (52%) glenospheres. Patients were assessed preoperatively (T0), and postoperatively at 1 (T1), 3 (T2), 6 (T3), 12 (T4), 24 (T5) months using Constant score, ASES and standard radiographs. Mean Constant score (T0: 22±9; T1: 43±11; T3: 68±11; T5: 76±13), ASES (T0: 26±11; T1: 67±15; T3: 82±10; T5: 90±9) and ROM (Forward Elevation, T0: 70°±29°; T1: 90°±27°; T3: 144°±32°; T5: 161°±25°) indicated significant early functional recovery and pain relief, which have shown to improve up to the latest follow-up. Preliminary outcomes don't show any correlation between patient recovery and CTA stage. In terms of complications, it was reported one glenoid intraoperative fracture, one traumatic periprosthetic humeral fracture (treated conservatively), one massive fibrosis (treated with arthroscopy), and one arthroscopic arthrolysis after trauma. One case of joint instability (3 weeks) was resolved with a humeral body extension. At last follow-up, all implants were radiologically stable without any signs of instability or progressive RLs. Clinical and radiographic outcomes demonstrated that RSA was an effective treatment of rotator cuff disorders, independently of preoperative CTA stages.

Date: 2016-09-08

Session: Free Papers - Shoulder Arthroplasty and Arthroscopy

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 43766

REVERSE SHOULDER REPLACEMENT WITH A LATERALIZED CENTRE OF ROTATION: 2-5 YEAR RESULTS FROM AN INDEPENDENT CENTRE

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Purpose: To evaluate patient-reported functional and health-related quality of life (QoL) outcomes of reverse shoulder replacement (RSR) with a lateralized centre of rotation (LCOR) performed by single surgeon from independent centre at minimum of two years post-operatively. Methods: 27RSR performed (26 patients) for irreparable rotator cuff tear associated pseudoparalysis (N=4) and arthropathy (N=23). Implant included a screw-in base plate fixed with locking screws, a LCOR glenosphere & 135° neck-shaft angle humeral stem. Patients assessed at minimum 2 year with Oxford Shoulder Score (OSS), EuroQol EQ-5D, patient reported range-of-motion (ROM), pain scores and satisfaction. Paired samples t-tests conducted to compare mean pre- and post-operative data. Results: Mean patient age was 77.8 years (61- 88 years). Mean follow-up was 34 months (range: 16 - 61). OSS improved from a pre-operative mean of 16 to 30 post-operatively (P<0.01) and EQ5D from 0.24 to 0.65(P<0.01). Active forward elevation improved from pre-operative mean of 65° to 120° post-operatively (P<0.01) and active external rotation (in 0° abduction) from 25° to 41°(P<0.01). On a scale of 0 (no pain) to 10 (worst pain) mean (SD) post-operative patient reported pain scores were 3.0 (3.4) at night, 2.1(2.9) at rest and 3.6(3.4) with activity. On a scale of 0 (unsatisfied) to 100 (fully satisfied) the mean (SD) level of satisfaction was 84(27). One intra-operative complication included a calcar split requiring cerclage wiring. Two post-operative complications included one superficial wound infection and one acromial stress fracture. There were no reoperations/revisions. Conclusions: For painful, end-stage rotator cuff deficiency, RSR using LCOR provides significant improvement with few complications.

Date: 2016-09-08

Session: Free Papers - Shoulder Arthroplasty and Arthroscopy

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 43338

REVERSE TOTAL SHOULDER ARTHROPLASTY WITHOUT BONE GRAFTING FOR SEVERE GLENOID BONE LOSS IN PATIENTS WITH OSTEOARTHRITIS

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Background: Treating shoulders with osteoarthritis (OA), intact rotator cuffs, and substantial glenoid bone loss is challenging. One option is reaming the glenoid flat and inserting a reverse total shoulder arthroplasty (RTSA). The goal of this study is to report the subjective, objective, and radiographic results of the use of RTSA in this patient population. Methods: We retrospectively reviewed 42 consecutive patients (23 women); mean age, 71 years (range, 53 to 89 years) with primary glenohumeral OA, intact rotator cuffs, and Walch type A2 (n = 19), B2 (n = 5), or C glenoids (n = 18) who had undergone 42 RTSAs with glenoid reaming without bone grafting between 2008 and 2013 (mean follow-up, 36 [range, 24 to 66] months). All patients were evaluated before and after surgery subjectively (using a visual analog scale for pain and five shoulder-specific outcome instruments), objectively (with goniometric examination of shoulder range of motion), and radiographically (to assess baseplate loosening and degree of notching). Results: One baseplate (2%) failed, requiring revision surgery. Preoperatively to postoperatively, pain levels improved significantly ($p < 0.001$), as did all patient-reported outcome measures and the following range-of-motion parameters ($p < 0.001$): active abduction, active flexion, active external rotation with the arm elevated 90°, and active external rotation with the arm at the side. Eight (19%) patients had notching. Conclusions: RTSA without bone grafting and with medialization of the baseplate in patients with OA and severe glenoid bone loss affords significant improvement in pain and function.

Date: 2016-09-08

Session: Free Papers - Shoulder Arthroplasty and Arthroscopy

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 43222

CLINICAL AND RADIOLOGIC OUTCOMES OF THE 2ND GENERATION TRABECULAR METAL™ GLENOID FOR TOTAL SHOULDER REPLACEMENTS AFTER TWO TO SIX YEARS FOLLOW-UP

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Background: A porous tantalum glenoid component for Total Shoulder Replacements was introduced in 2003 to promote biologic ingrowth. However, reports of component failure prompted design modifications. The purpose of this study is to present the largest series to date, of TSR with the 2nd generation Trabecular Metal™ glenoid component. Method: A radiologic and clinical evaluation of the 2nd generation TM glenoid was conducted in consecutive cases of 76 shoulders (66 patients) with a mean follow up of 43.2 mos (range: 24-72 mos). Pre-operative VAS score, patient self-assessed ASES score, active shoulder range of motion and radiologic assessment were recorded. Patients were recalled for latest follow-up clinical and radiologic evaluation. Results: On latest follow up, the mean VAS scores (Pre-op: 6.4 - latest: 0.9) and ASES scores (Pre-op: 36.9 - latest: 88.5) improved. Active range of motion improved in all planes. There was no report of glenoid component migration, loosening, or humeral stem subsidence. The incidence of non-progressive radiolucency in the glenoid was 6.6% (Franklin 1: 3 cases, Franklin 2: 2 cases). Post-operative complications involved dislocation (n=2) which were reduced in ED, post-operative stiffness (n= 1), transient axillary nerve neuropraxia (n=1), and supraspinatus tear which underwent arthroscopic repair at 16 months post-op. There were no revision surgeries for implant loosening nor glenoid component fracture at the peg-base plate junction. Conclusions: The modifications established in the 2nd generation TM glenoid resulted to improve early to mid-term survivorship and clinical outcomes in TSR, with promise of long term implant stability through bony ingrowth.

Date: 2016-09-08

Session: Free Papers - Shoulder Arthroplasty and Arthroscopy

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 42491

OUTCOME OF REVISION SHOULDER ARTHROPLASTY AFTER RESURFACING HEMIARTHROPLASTY IN PATIENTS WITH GLENOHUMERAL OSTEOARTHRITIS

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Introduction: Resurfacing hemiarthroplasty has a bone preserving design facilitating revision to other arthroplasty. Especially younger patients are treated with a resurfacing hemiarthroplasty. Objectives: The aim was to report outcome of revision arthroplasty after resurfacing hemiarthroplasty. Methods: We reviewed all patients reported to the Danish Shoulder Arthroplasty Registry 2006-2013. There were 1,210 primary resurfacing hemiarthroplasties, of which 107 (8.8%) required revision. 241 (19%) patients were under the age of 55 years. The Western Ontario Osteoarthritis of the Shoulder index (WOOS) was used to evaluate outcome at one year. Results: The mean WOOS of revised resurfacing hemiarthroplasties was 61.0. Thirty-three patients had unacceptable outcome WOOS <50. Eleven required further revision. The median WOOS in younger patients was 46.6. The resurfacing hemiarthroplasty was revised to stemmed hemiarthroplasty (n=39), stemmed total arthroplasty (n=31), or reverse arthroplasty (n=30). The median WOOS of secondary stemmed hemiarthroplasty (47.6) and secondary stemmed total arthroplasty (73.8) was inferior to that of primary stemmed hemiarthroplasty (74.9) and primary stemmed total arthroplasty (92.8), P=0.002 and P=0.007 respectively. The WOOS of secondary reverse arthroplasty (68.0) was not statistically significantly different from that of primary (76.7), P=0.66. Conclusions: As a revision procedure, the result of a revised resurfacing hemiarthroplasty was acceptable, but inferior to that of primary stemmed hemiarthroplasty and primary stemmed total arthroplasty. A key study finding was that the majority of failed resurfacing hemiarthroplasties in younger patients could not be revised to satisfactory results despite the bone preserving design.

Date: 2016-09-08

Session: Free Papers - Shoulder Arthroplasty and Arthroscopy

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 42633

MID-TERM RATES OF RADIOLUCENCY AFTER PRIMARY TOTAL SHOULDER ARTHROPLASTY USING A CEMENTLESS METAL-BACK PEGGED GLENOID COMPONENT

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Background: Total shoulder arthroplasty (TSA) has shown great clinical efficacy for primary and secondary degenerative conditions of the glenohumeral joint. Glenoid loosening however remains the commonest cause of failure leading to revision surgery. The purpose of this study was to investigate the radiolucency rate in a novel cementless metal-backed glenoid component with a press-fit bone ingrowth mechanism. Materials and Methods: A prospective single-centre study analysing the Epoca (Synthes, Paoli, Pennsylvania) metal-back glenoid component. A standardised deltopectoral approach and recognised operative technique was used by two specialist upper limb surgeons. Radiographs were analysed for radiolucency and component seating. Intra-Observer and inter-observer reliability was assessed for validity. Results: Mean age was 72 years and mean follow up was 2.5 years. Main indications for TSA were primary osteoarthritis, rheumatoid arthritis, revisions for failed hemi-arthroplasties and an acute fracture. Fifty-four (95%) of the 57 shoulders had no radiolucencies, with 96% of components having complete glenoid seating. Completeness of glenoid seating was significantly associated with radiolucency rate ($p < 0.01$). Conclusion: Our study reports novel low radiolucency rates in the glenoid prosthesis used. Improved radiolucency rates correlate significantly with improved glenoid component seating and improved operative technique such as humeral head resurfacing. Scope for longer term study of this implant is required to back up these promising mid-term results.

Date: 2016-09-08

Session: Free Papers - Shoulder Arthroplasty and Arthroscopy

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 44945

ARTHROSCOPIC REPAIR VERSUS CONSERVATIVE TREATMENT IN ACUTE SHOULDER DISLOCATION: TEN YEARS OF EXPERIENCE

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The purpose of this prospective clinical study is to compare patients, who had first time anterior shoulder dislocation, treated arthroscopically or conservatively. Since April 2006 44 patients between 15-30 years were assigned to two groups: Group A, 24 patients, treated with arthroscopic Bankart repair; Group B, 20 patients, treated conservatively. All patients were homogeneous for sex, age and activity level. MRI without contrast was performed within 7 days from the trauma. At a minimum follow up of two years, assessment of the rate of recurrent instability, functional outcome (with use of three scores), return to sports rate was completed for all patients. At a follow up the risk of recurrence was reduced by 95.8% in Group A and 50% in Group B (Fisher's exact test p value < 0.001). In Group A 22/24 patients (92.8%) resumed sport activity with no recurrence, in Group B 3/20 (15%) return to sport; one patient in Group A (4.1%) had a post traumatic dislocation and one (4.1%) had an episode of subluxation. In Group B 10/20 patients (50%) suffered a mean 3.5 re-dislocation episodes (min 1- max 10); six of them (30%) underwent subsequent surgical stabilization of the shoulder. Mean deficit in external rotation range of motion was 7° in Group A; there was no deficit in Group B. The functional scores were better (p < 0.05) in group A Primary repair of Bankart lesion after first time shoulder dislocation in young active people offers better clinical and functional results than conservative treatment.

Date: 2016-09-08

Session: Free Papers - Shoulder Arthroplasty and Arthroscopy

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 44414

RESULTS OF TYPE II SLAP REPAIR IN OVERHEAD ATHLETES

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Introduction: SLAP lesions can be a source of pain and disability in athletes, particularly during overhead activity surgical intervention is often a successful option for the patient with a SLAP lesion who wishes to return to optimal function. In general, approximately 90% of patients demonstrate good or excellent results at the short to intermediate follow-up with type II SLAP repair. Several recent publications have suggested that tenotomy and tenodesis of the long head of biceps is a popular alternative especially in older patients. Patients and methods: The present study was conducted on 20 athletes with a type II SLAP tear of the shoulder. All patients underwent arthroscopic SLAP repair with or without a posterior capsulotomy. The mean age of the patients was 27.3 years and the mean follow was 13 months. Results: The mean DASH score improved from 31.7 ± 5.8 preoperatively to 14.8 ± 3.9 at 12 months post-operative. In the same time, the mean Constant score improved from 64.1 ± 7.2 to 89.4 ± 9 . The overall patient satisfaction was 85% and 77% of the athletes in the study returned to their favorite sport. Conclusion: Our results support the good clinical outcome achieved with SLAP repair especially with younger, traumatic patients, with suture anchors placed posterior to the biceps anchor. In addition, glenohumeral internal rotation deficit (GIRD) should be specifically addressed with posteroinferior capsular stretching with or without arthroscopic capsulotomy.

Date: 2016-09-08

Session: Free Papers - Shoulder Arthroplasty and Arthroscopy

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 44966

**RANDOMISED TRIAL COMPARING ROLE OF INJECTION
CORTICOSTEROID AND INJECTION PRP IN SUBACROMIAL
IMPINGEMENT SYNDROME- MRI BASED STUDY**

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Introduction: Subacromial Impingement Syndrome (SIS) is a common cause of pain in the shoulder. This study was performed to compare the clinical and radiological outcomes of PRP and Corticosteroid injection in subacromial impingement syndrome. Material and Method: 60 Patients with Subacromial Impingement Syndrome were included. Randomization was done into two groups, one group was administered USG guided subacromial corticosteroid injection (2 ml Triamcinolone 80 mg plus 3 ml 2% xylocaine) and the other group received injection PRP 5ml (10,00,000/mm³). Clinical Outcome measures— VAS Score, Constant Score and Disabilities of the Arm, Shoulder and Hand Score —were assessed at 6 weeks and 3-6 months after injection. Radiological evaluation was done after 3-6 months by, X-rays and MRI. Results and conclusions: Injection corticosteroid was found to be better than PRP at the 6th week post-intervention. However, although PRP was found to have delayed onset of action, it was better in the longer follow-up as compared to Corticosteroid. The X-ray features did not show any significant change in any of the study group. The MRI changes were statistically significant in PRP group as compared to the Corticosteroid group ($p = 0.010$). The improvement in clinical outcome and in the MRI findings in patients are suggestive that PRP is helpful in the tendon healing in patients having degenerative partial supraspinatus tear

Date: 2016-09-08

Session: Free Papers - Shoulder & Elbow

Time: 16:00 - 17:30

Room: Caravaggio 3-4

Abstract no.: 44417

PROXIMAL RADIAL NECK RESORPTION AROUND PRESS-FIT RADIAL HEAD PROSTHESES IN TERRIBLE TRIAD INJURIES

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Little is known about resorption of the radial proximal neck due to stress shielding around press-fit stems. We hypothesized that this radiological finding is common but not relevant clinically. For this purpose, we analyzed prospectively a series of patient affected by terrible triad in which radial head prosthesis (RHP) was performed. 16 out of 26 terrible triad were treated with RHP between 2008-2013. The resorption of the proximal radial neck under the prosthetic stem collar was rated as mild (<3mm), moderate (3-6mm) and severe (> 6mm). Final functional outcome was assessed by the Mayo Elbow Performance Score (MEPS), Quick-Disability of the Arm Shoulder and Hand-score (Q-DASH) and the modified-American Shoulder and Elbow Surgeons score (m-ASES). The average follow-up was 31 months (range, 12-65 mo). At final evaluation, mean MEPS, m-ASES and Q-DASH scores were respectively 96, 91 and 7 points. 13 excellent and 3 good clinical results were observed. The bone resorption started 1-2 months after surgery and appeared to stabilize within the first year. Resorption of the proximal neck was observed in 13 out of 16 cases. In particular, 6 displayed a mild resorption, 5 a moderate resorption and 2 a severe resorption. Stress shielding never extended to the bicipital tuberosity, and there were no cases of impending mechanical failure. No correlation was found between radiological and clinical result. Resorption of the proximal portion of the radial neck around RHP is common. However, it is typically minor, no progressive, and of insignificant clinical consequence at short-medium term follow-up.

Date: 2016-09-08

Session: Free Papers - Shoulder & Elbow

Time: 16:00 - 17:30

Room: Caravaggio 3-4

Abstract no.: 45663

ANALYZING PROSTHETIC RADIAL HEAD 3D TOPOGRAPHY

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In today's market, there are many prosthetic options for radial head arthroplasty that attempt to mimic the radial head's natural shape. However, machining technology has, in the majority, limited these prostheses to a symmetrical shape. This paper will compare the asymmetrical shape of the human radial head to several prostheses. Method: Using three dimensional topographic analysis, we compared the diameter, wall height, and radius of curvature for 11 radial head prostheses. Results: We found that 2 of the 11 were statistically similar in fit ($p < 0.025$) to the natural radial head in all dimensional categories. Conclusions: These results suggest that a symmetrically machined radial head implant can closely match the capitellar articulation of a human radial head. However, manufacturer implant sizes made available to the market and the proximal radio-ulnar articulation have not been addressed and require more investigation to optimize radial head replacements.

Date: 2016-09-08

Session: Free Papers - Shoulder & Elbow

Time: 16:00 - 17:30

Room: Caravaggio 3-4

Abstract no.: 43845

RADIAL HEAD FRACTURE AND ITS INVOLVEMENT WITH THE PROXIMAL RADIO-ULNAR JOINT: DEVELOPMENT OF A METHOD OF EVALUATION WITH CT SCAN

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Introduction: The radial head articulates with the proximal ulna during pro-supination movements of approximately 227 degrees of its circumference while the remaining 133 degrees zone, usually called the «safe zone», is extra-articular. Knowing if a radial head fracture is within the range of the proximal radio-ulnar joint (PRUJ) could be a key factor of the preoperative evaluation. The objective of this study is to develop a method using a CT scan in order to assess whether or not the fracture involves the articular area of the PRUJ. **Methods:** The articular area of the PRUJ has been identified and its limits marked on 18 cadaveric elbows. The specimens were scanned using a CT scanner and the relationship between the PRUJ and the various anatomical landmarks was established. Finally, a geometric model was developed. **Results:** The radial tuberosity is a reliable marker for establishing the extra-articular zone of the radial head. Starting from the radial tuberosity, the safe zone is located within the range of $80\pm 20^\circ$ to $226\pm 20^\circ$ (counterclockwise) for a right elbow and $88\pm 28^\circ$ to $233\pm 17^\circ$ (clockwise) for a left elbow. The safest angle that confirms the involvement of the radial head fracture in the safe zone, starting from the radial tuberosity, is 100° to 206° (counterclockwise) for a right elbow and 116° to 216° (clockwise) for a left elbow. **Conclusion:** The geometric model, which includes the radial tuberosity as key anatomical landmark, predicts the involvement of the radial head fracture with the PRUJ with CT scan.

Date: 2016-09-08

Session: Free Papers - Shoulder & Elbow

Time: 16:00 - 17:30

Room: Caravaggio 3-4

Abstract no.: 45520

RECONSTRUCTION OF COMMINUTED RADIAL HEAD FRACTURES USING HEADLESS CANNULATED SCREWS – PROSPECTIVE CASE SERIES AND REVIEW OF LITERATURE

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Introduction: Complex radial head fractures are reconstructed (ORIF) or replaced in Mason Type 3 or 4 injuries. We reviewed outcomes of 18 patients who underwent surgical fixation using the apical technique. Patients and methods: A retrospective review of 18 patients with closed Mason type 3 and 4 radial head treated by ORIF using fragment specific apical screw technique with 2.4/3 mm AO headless compression screws with excision of smaller fragments. Average of 84 weeks' follow-up. Outcomes measured with QuickDASH, functional range of motion (ROM) of the elbow and MEPS. Surgical complications were noted. Results: Eighteen patients with mean age of 42.5 years (range 18-76 years) were evaluated between April 2012 to July 2015. The M/F ratio 14:5 with 11 patients Mason Type 3 and 8 patients Mason Type 4 injuries. 3 patients with Mason 4 had terrible triad injuries and 2 patients were Monteggia variants. Early mobilization was commenced in all patients. One patient lost to follow-up. All patients regained functional range of motion and radiological union. Average flexion 15-125 degrees, supination 80 degrees and pronation 86 degrees. Average QuickDASH score was 52.3 at 12 weeks and 36.4 at 24 weeks. A small number of patients had complications including superficial infection, screw migration, stiffness needing implant removal/manipulation under anaesthesia and heterotopic ossification(<5%). Conclusion: The treatment of complex radial head fracture (modified Mason type III and IV) with ORIF is challenging due to the associated significant bony/ soft tissue injuries. Our study demonstrates an excellent outcome with our management protocol.

Date: 2016-09-08

Session: Free Papers - Shoulder & Elbow

Time: 16:00 - 17:30

Room: Caravaggio 3-4

Abstract no.: 44461

CORONAL STABILIZATION AND BRACING OF DISPLACED CAPITELLUM FRACTURE: A SIMPLE 'J' SHAPED KIRSCHNER WIRE STAPLING TECHNIQUE

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Capitellum fracture was treated with open reduction and internal fixation with a new technique of 'J' shaped coronal Kirschner wires. Since 1989, displaced closed 17 capitellum fractures were internally fixed by inserting J shaped Kirschner (K) wires in coronal plane. The capitellum was approached between extensor carpi radialis brevis (ECRB) and extensor digitorum communis (EDC), anterior to lateral collateral ligament (LCL). Total 17 patients (7 males and 10 females) with mean age 34.8 years (14 to 75) had fractures, Type I: (Hans Steintal #) 12, Type II: (Kocher Lorez #) 1, and Type III: (Broberg and Morrey #) 4. Post-operatively the patients were mobilised immediately without plaster. Average follow up was 31.7 (18-35) months and fractures healed in all the patients. Mayo elbow performance index score (MEPIS) was excellent in 12, good in 4, and fair in 1 patient. Elbow ROM was 5 to 132 degrees, pronation 84.5 (79-90) degrees and supination 88 (85-91) degrees. Complications seen were wire pain in 3 and loosening of wires in 1 patient. Couple of K wires were found to be very stable and a limited exposure of capitellum helped to restore immediate stable elbow, with good function.

Date: 2016-09-08

Session: Free Papers - Shoulder & Elbow

Time: 16:00 - 17:30

Room: Caravaggio 3-4

Abstract no.: 43562

MUSCLE REGENERATION FOLLOWING ROTATOR CUFF REPAIR

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Background: It is unclear if muscle atrophy is reversible following rotator cuff repair. We analysed human muscle tissue before and after cuff repair to look for evidence of muscle regeneration, and if there were any changes in muscle fibre type. Methods: Patients were assessed pre-operatively with Oxford Shoulder Score (OSS) and magnetic resonance imaging (MRI). At surgery, supraspinatus was biopsied. Post-operatively, patients had a further OSS, MRI and supraspinatus biopsy at one year. Biopsies were analysed to assess myofibre cross-sectional area and myofibre sub-type distribution. Results: Paired samples for nine patients were analysed. Mean patients age was 63. All but one patient demonstrated an improvement in Oxford Shoulder Score improved in all but one patient ($p=0.004$). Muscle atrophy improved one grade in 2 patients. Mean increase in myofibre cross-sectional area was $1223\mu\text{m}^2$ ($p=0.02$). There was a reduction of type 2a fibres ($p=0.01$). A clear relationship could not be observed between the MRI and histologic muscle changes seen. Conclusions: Our study is the first of its kind providing scientific evidence that muscle atrophy of supraspinatus is reversible. The myofibre typing analysis suggests changes that may reflect the improved mechanical loading effect and possibly improved neural activity following rotator cuff repair. It is likely that MR assessment of muscle atrophy is not fully representative of myofibre atrophy and its reversibility following cuff repair.

Date: 2016-09-08

Session: Free Papers - Shoulder & Elbow

Time: 16:00 - 17:30

Room: Caravaggio 3-4

Abstract no.: 44386

EVALUATION OF AXILLARY NERVE INJURY AND FUNCTIONAL OUTCOME OF PROXIMAL HUMERAL FRACTURES AFTER FIXATION WITH DELTOID-SPLITTING APPROACH

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Introduction: Proximal humeral fracture can be fixed either through deltopectoral or deltoid splitting approach. Deltopectoral approach is considered as work horse approach for fixation of these fracture however deltoid splitting approach is considered as an alternative and theoretically associated with risk of axillary nerve injury. We evaluated the axillary nerve injury and other complications in proximal humeral fracture, managed with deltoid splitting approach. Methods and Materials: 19 patients with proximal humeral fractures, satisfying our inclusion criteria's were included in our study. All patients were managed by open reduction through deltoid splitting approach and internal fixation with locking plate. Nerve function was evaluated clinically and by electrophysiological testing .All patients were followed up clinically as well as radiologically at 6 weeks after operation and thereafter at 12 weeks and then at 6 monthly interval. Radiological evaluation was done by accessing quality of reduction and union of fracture while functional outcomes of patient were accessed in terms Constant Scoring System. RESULTS: All patients were followed for a minimum of one year. Mean Constant score at final follow-up was 78. Out of 19 patients, one patient showed axillary nerve paresis. All patients showed union of fracture while one patient developed avascular necrosis. CONCLUSION: We observed that deltoid splitting approach is efficacious alternative approach to deltopectoral approach and approach to greater tuberosity is easier in widely displaced greater tuberosity fractures and provides good functional outcome. Key-words: Axillary nerve injury, Deltopectoral approach, Deltoid splitting approach

Date: 2016-09-08

Session: Free Papers - Shoulder & Elbow

Time: 16:00 - 17:30

Room: Caravaggio 3-4

Abstract no.: 43023

DIAGNOSIS OF ROTATOR CUFF TEAR: CORRELATION OF CLINICAL TESTS AND MRI TO ARTHROSCOPIC FINDINGS

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Imaging for rotator cuff injury may provide false-positive and false-negative results. However, many studies have questioned both the accuracy and reliability of orthopedic special tests of the shoulder. Depending on the fact, shoulder arthroscopy is still the gold standard in the diagnosis of a variety of shoulder conditions; this study evaluated the sensitivity, specificity and accuracy of specific clinical tests and MRI of rotator cuff tear in relation to arthroscopic findings. This study was conducted on 45 patients, who were diagnosed clinically to have rotator cuff tear. Mean patients' age at shoulder arthroscopy was 26.18 years old. All patients underwent clinical assessment including the special clinical tests for rotator cuff tear, radiographs, MRI and shoulder arthroscopy. Sensitivity, specificity and accuracy of these clinical tests and MRI of rotator cuff tear in relation to arthroscopic findings were recorded. It was concluded that Jobes test and MRI had good correlation with arthroscopic findings in the diagnosis of supraspinatus tear, Drop arm test had weak correlation while MRI had good correlation with arthroscopic findings in the diagnosis of infraspinatus tear, Lift off test slightly overestimated the diagnosis of subscapularis tear while MRI findings were close to those of arthroscopy. Speed test and MRI correlated fairly well with arthroscopic findings in the diagnosis of biceps tendon pathology. We believe that traditional clinical examination of the shoulder should remain the cornerstone for making the most probable diagnosis for rotator cuff tear, and the addition of MRI, further increases the likelihood of an accurate diagnosis.

Date: 2016-09-08

Session: Free Papers - Shoulder & Elbow

Time: 16:00 - 17:30

Room: Caravaggio 3-4

Abstract no.: 45173

MODIFIED SCAPULAR MANIPULATION TECHNIQUE FOR REDUCING ANTERIOR, POSTERIOR, AND INFERIOR SHOULDER DISLOCATIONS – CLINICAL EVALUATION AND META-ANALYSIS

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Introduction: Acute shoulder dislocation represents a common orthopaedic emergency situation. Unclear is which reduction method should be preferred. Aim of this study was to develop and evaluate an optimized reduction technique for all types of shoulder dislocations based on currently available evidence. Methods: We performed a systematic review of the literature and identified principles associated with high primary success rates in shoulder reduction. By combining these principles we developed a new reduction technique and evaluated our new method prospectively. Outcome measures were primary success rate, time for reduction, demand on premedication, incidence of iatrogenic complications, and single test and global level comparisons. Results: 123 consecutive patients who presented with acute shoulder dislocation to our Level-1-Trauma-Center were treated by 39 different physicians using our new reduction technique by scapular manipulation combined with elbow flexion and overhead position in the prone position. 114 anterior, all 4 posterior and the inferior dislocation were successfully reduced, indicating an overall primary success rate of 97%. The average time required for reduction was 189 seconds. 36% did not need any premedication. In 4 out of 6 single test and global level comparisons the modified method revealed a statistically significant higher primary success rate compared to the original scapular manipulation technique ($p < 0.05$). Conclusions: Modification by elbow flexion and overhead position can even improve the high primary success rates of the original scapular manipulation technique. Our modified technique represents a safe and simple reduction method not only for anterior but even for posterior and inferior shoulder dislocations.

Date: 2016-09-08

Session: Free Papers - Shoulder & Elbow

Time: 16:00 - 17:30

Room: Caravaggio 3-4

Abstract no.: 44840

BENIGN LYTIC LESIONS OF CLAVICLE: A DIAGNOSTIC DILEMMA

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Introduction: With the exception of traumatic lesions, most data on clavicle in literature is regarding its neoplastic lesions. Even this data mostly revolves around the malignant lesions which are by far more common than benign lesions. The data on benign lytic lesion is however sparse. Asymptomatic nature of lesions, their rare occurrence, the difficulty to read the X-rays because of surrounding structures and striking similarities in various lesions further make the diagnosis of such atraumatic lytic lesions difficult. Material and Methods: Prompted by the rarity of lesion and scarcity of data regarding presentation and management, we present our series of 37 patients who presented with benign lytic lesion of clavicle. A prospective study of benign lytic lesions of clavicle was performed from 2008-2013. The results of the lesions are categorised in infective, metabolic and neoplastic conditions. Results: infective lesions were most common cause of symptomatic painful benign lytic lesions. Metabolic lesions, like rickets, were the most common cause of painless swelling in clavicle. Neoplastic conditions although rare were an important differential. Our study describes the clinical, radiological and histological features along with the treatment and follow up of these cases. Conclusion: It is important to differentiate and diagnose such lesions. Asymptomatic lesions may be a clue for underlying metabolic condition. Tuberculosis of clavicle is important differential of all lytic lesion and single most common cause. Early MRI and Biopsy of the lesion helps in preventing an undue delay in diagnosis. Most lesions when diagnosed in time have excellent results.

Date: 2016-09-08

Session: Free Papers - Hand and Wrist

Time: 08:30 - 10:00

Room: Caravaggio 5-6

Abstract no.: 44536

BEST ANESTHETIC TECHNIQUES FOR SHORT HAND PROCEDURES

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Short procedures constitute a large proportion in hand surgery. Most of them are done as one day surgery. Regional anaesthesia is considered to be the best option for these types of operations. Compared with general anaesthesia, regional anaesthesia improves early outcome after wrist and hand surgery. 'Regional anesthesia always works, provided you put the right dose of the right drug in the right place'. The problem with regional anesthesia, and more specifically peripheral nerve blockade, has been getting the drug to the right place. This has traditionally involved a 'blind' approach to the nerve, relying on surface anatomical landmarks to estimate nerve location. The advent of ultrasonography has made performing upper extremity nerve blocks relatively easy with a high degree of reliability. The proximal approaches to brachial plexus block are favored for most of distal upper extremity surgeries, but the delay in the onset time and the proximity to central structures as the pleura, subclavian or axillary artery and phrenic nerve, remain a barrier to their use for short procedures. Distal nerve blocks have the benefits of lying away from critical structures and the preservation of proximal muscle function of the upper limb. Thus this type of nerve block is the ideal for short procedures where the patient can tolerate the tourniquet. In this outgoing study we are comparing wrist block technique through either anatomical landmark based or ultrasound guided distal nerve block in regard block failure, onset duration, inadvertent vascular puncture, infection and nerve damage.

Date: 2016-09-08

Session: Free Papers - Hand and Wrist

Time: 08:30 - 10:00

Room: Caravaggio 5-6

Abstract no.: 43478

TENDON GRAFTING AS SURGICAL TREATMENT FOR RUPTURE OF THE FLEXOR PROFUNDUS TENDON IN NO MAN'S LAND

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³Medical School, Athens (GREECE)

The authors had the opportunity during the last 25 years to treat 64 patients. Different methods have been used to treat the problem in the past such as fusion, tendon grafting, tenodesis. We have treated in our series of 64 patients the method of replacing the flexor tendon of the fingers with tendon graft. All patients operated within 6 weeks to 7 years from the injury. They all had markedly weakness of grasping, especially when more than one finger was involved. Any previous flexion or extension contracture is corrected before the operation, by physical therapy and dynamic splinting. In surgical technique we used a zig-zag incision of the skin and we preserved at least two pulleys, we sutured the graft proximally at the remaining tendon and distally with pull out suture. As tendon graft has been used either the plantaris longus or the palmaris longus depending on the length of the graft we needed. The finger is immobilized for 3weeks in flexion and then the patient starts gently active exercises. The results were as follows: 20 patients had excellent, 32 had good and 12 had fair.

Date: 2016-09-08

Session: Free Papers - Hand and Wrist

Time: 08:30 - 10:00

Room: Caravaggio 5-6

Abstract no.: 43410

RESULTS OF DUBERT'S OPERATION FOR SEQUELLA OF FRACTURE-DISLOCATIONS OF THE FIFTH CARPO-METACARPAL RAY: A REPORT OF 6 CASES

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Introduction: Carpometacarpal Fracture-dislocations of the fifth ray are frequent. At the stage of old lesion, Dubert proposed to associate a resection arthroplasty of the base of the fifth metacarpal with intermetacarpal synostosis with the fourth. Our aim was to evaluate the results of this intervention in the old fracture-dislocations of M5 operated in our department. Methods: 8 patients were operated for painful sequelae of fracture-dislocation of the CMC of the 5th ray. The average age was 36 years [27-45]. All patients had symptomatic osteoarthritis secondary to an isolated articular malunion of the CMC of the 5th ray. The procedure was always performed according to the technique described by Dubert. Results: Consolidation has been obtained immediately in 8 cases. Six patients were evaluated (one patient died, another one lost sight) with a mean follow of 93 months (7-249). At the review, all patients reported a significant decrease in pain. The EVA ranged from 0 to 3 except one case with 5/10. The opposition and the mobility of the fifth finger were complete except in one case. Discussion: The technique described by Dubert can effectively relieve pain. By joining M5 with M4, it preserves length of the fifth ray and a partial motion of M5 and therefore a certain adaptability of the palm when gripping. However, it is usable only if the CMC of the 4th ray is preserved Conclusion: The stabilized arthroplasty is an effective and reliable technique for the treatment of symptomatic osteoarthritis secondary to a CMC fracture-dislocation of M5

Date: 2016-09-08

Session: Free Papers - Hand and Wrist

Time: 08:30 - 10:00

Room: Caravaggio 5-6

Abstract no.: 45322

OUTCOME OF PROXIMAL POLE SCAPHOID NON UNION TREATED WITH ANTEGRADE HEADLESS COMPRESSION SCREW AND BONE GRAFT

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Introduction: Scaphoid fractures accounts for approximately 15% of all fractures of hand and wrist. Proximal pole fractures represent 10-20% of scaphoid fractures. Non-operative treatment shows high incidence of non-union and osteonecrosis. Methods: We included 35 patients presented to our hospital from 2008-2015 with proximal pole scaphoid non-union. We treated all patients with same technique. We used compression screw fixation with bone graft except one which was dealt with k-wire and bone graft. Thirty three patients had bone graft from distal radius and two from iliac crest. Postoperatively patients were treated in plaster for 6-8 weeks followed by splint for another 4-6 weeks. All patients underwent hand physiotherapy commencing at 6-8 weeks. All the patients were analysed at the final follow-up using DASH score and x-rays. Results: Of the 35 patients, All the patients underwent surgery with bone graft . Mean age of the patients was 28 years (20-61) and M:F ratio 11:1. We lost three patients (9%) to follow up. At a mean follow up of 16 weeks (12-18) twenty three patients (66%) achieved radiological union. All patients but three (91%) achieved good functional outcome at mean follow up of 14 weeks (10-16). Conclusion: A good functional outcome can be achieved with surgical fixation and bone graft in proximal pole scaphoid fractures non-union. Pre op fragmentation of proximal pole dictates type of fixation (screw or k wire or no fixation).In our experience there was no difference in outcome whether graft was taken from distal radius or iliac crest although later is associated with increased morbidity.

Date: 2016-09-08

Session: Free Papers - Hand and Wrist

Time: 08:30 - 10:00

Room: Caravaggio 5-6

Abstract no.: 42795

WRIST ARTHROSCOPY AND MRI FOR EVALUATION OF SCAPHOLUNATE AND LUNOTRIQUETRAL LIGAMENTS TEAR IN KIENBOCK'S DISEASE

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The principle intrinsic wrist interosseous ligaments of the wrist are the scapholunate ligament (SLL) and lunotriquetral ligament (LTL). Injuries to the wrist ligaments are common and can lead to chronic wrist pain. To our knowledge, the incidence of associated intrinsic wrist ligaments pathology in Kienbock's disease has not been previously described. Herein, we used wrist arthroscopy and MRI for evaluation of SLL and/or LTL injury in 40 patients with Kienbock's disease (stage II, IIIa and IIIb), 17 females and 23 males. Their mean age at surgery was 31.5 years. MRI examination of the wrist of these patients revealed that; 11 patients had S-L ligament tear (5 patients in stage IIIa and 6 patients in stage IIIb), 3 patients had combined S-L and L-T ligaments tears (1 patient in stage IIIa and 2 patients in stage IIIb). Arthroscopic examination revealed that; 14 patients had S-L ligament tear (5 patients in stage IIIa and 9 patients in stage IIIb), 6 patients had combined S-L and L-T ligaments tears (2 patient in stage IIIa and 4 patients in stage IIIb). The incidence of isolated SLL tear and combined SLL and LTL tear of the 40 patients with Kienbock's disease included in this study was 27.5% and 7.5% as evaluated with MRI respectively, and 35% and 15% as evaluated with wrist arthroscopy respectively. This study had proved that Kienbock's disease, mainly stage IIIa and IIIb, is associated with tear of SLL and/or LTL in a significant number of patients among the study group.

Date: 2016-09-08

Session: Free Papers - Hand and Wrist

Time: 08:30 - 10:00

Room: Caravaggio 5-6

Abstract no.: 44789

TREATMENT OF TRAPEZIOMETACARPAL OSTEOARTHRITIS BY ARTHROPLASTY WITH LAST GENERATION PYROCARBON INTERPOSITION IMPLANT

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The aim of this study was to evaluate the effectiveness of interposition arthroplasty, after resurfacing of the trapeziometacarpal (TMC) joint, with free pyrocarbon implant for the treatment of TMC osteoarthritis. A number of 204 patients underwent surgical treatment for medium-advanced stage of rhizarthrosis (according to Dell classification) from 2010 to 2015. 169 of these patients were treated by arthroplasty with the last generation pyrocarbon interposition implant. 120 patients were clinically evaluated at 36 months follow-up using the VAS and DASH scores. The study showed good clinical outcomes in terms of range of motion and pain reduction, as shown by the fast return of patients to work (range 2-4 months). Pinch and grasp strength values resulted slightly below, compared to the contralateral not affected hand, only in a minimum and not clinically relevant percentage of patients. No clinical cases of implant migration or intolerance were observed. Considering the good outcomes obtained we conclude that TM arthroplasty with pyrocarbon implantation is a suitable option for the treatment of rhizarthrosis, especially in early stages. Moreover this surgical technique results to be better than traditional arthrodesis and suspension arthroplasty with trapeziectomy because it does offer several advantages such as: minimal bone cut, shorter period of immobilization and rehabilitation.

Date: 2016-09-08

Session: Free Papers - Hand and Wrist

Time: 08:30 - 10:00

Room: Caravaggio 5-6

Abstract no.: 43013

EARLY TENDON TRANSFER FOR THUMB OPPOSITION IN MEDIAN NERVE PALSY

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INTRODUCTION: Recovery after repair of nerve injuries is a long drawn process, incapacitating the patient for variable lengths of time. Since opposition of thumb is the single most important functional deficit in median nerve palsy, we attempted to provide early tendon transfer for thumb opposition for quick functional restoration following neurorrhaphy. **MATERIALS AND METHODS:** Ten patients underwent early tendon transfer for thumb opposition following a median nerve repair as and when indicated. Opponensplasty was performed with extensor indicis proprius as the motor in nine and palmaris longus in one. Range of opposition was graded Excellent, Good, Fair or Poor. Power and Precision grip were followed monthly for at least 6 months and compared with the pre-operative values. **RESULTS:** Power grip parameters showed a 124% increase, statistically significant via the Wilcoxon's test. The average increase in precision grip was 223% and 95% for tip to tip pinch and palmar pinch respectively, all statistically significant. Range of opposition was graded as excellent in 7 and good in 3 compared to 9 poor and 1 fair pre-operatively. The mean time off work (MTW) in our study was only 2.6 months. **CONCLUSION:** We recommend early tendon transfer for thumb opposition in all cases of median nerve injuries along with nerve repair. The transfer acts as an additional support, an internal splint, a substitute, or sometimes all of the three in certain cases. The transfer ensures early restoration of the hand function. It allows the patient to be splint free during the period of re-innervation.

Date: 2016-09-08

Session: Free Papers - Arthroscopy and Sports Medicine Knee

Time: 14:00 - 15:30

Room: Caravaggio 7-8

Abstract no.: 44694

THE EFFECT OF THE POSITIONS OF THE FEMORAL TUNNEL ON THE LAXITY AND CLINICAL OUTCOMES OF THE OUTSIDE-IN SINGLE BUNDLE ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

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Introduction: The purpose of this study is to evaluate whether a change in the femoral tunnel among posterior, center and anterior positions within anatomical femoral attachment site could affect the laxity and clinical outcomes. Methods: 72 patients undergoing single bundle ACL reconstruction with autologous hamstring tendon were retrospectively reviewed. To analysis the femoral tunnel, postoperative 3D-CT was evaluated by the radiographic quadrant method of Bernard et al. All patients were divided 3 groups according to relative femoral tunnel positions within anatomical femoral attachment site (posterior vs center vs anterior). At follow up 1 year, all subjects were evaluated by stress radiography, GNRB knee arthrometer, pivot shift test to exact measurements of laxity. Clinically, Subjective International Knee Documentation Committee (IKDC) score, Knee Injury and Osteoarthritis Outcome Score (KOOS), Lysholm score were evaluated. Results: In total, 15 patients in the posterior femoral tunnel group (Group A), 21 patients in the central femoral tunnel group (Group B) and 36 patients in the anterior femoral tunnel group (Group C) completed this study. At follow up 1 year, group A and B showed significantly reduced anterior laxity than group C ($p=.0171$). There were no significant differences in rotational instability among them ($p=.0718$). And we found that Group A and B was superior to group C in terms of clinical outcomes. Conclusion: We concluded that it is most ideal to be located at anatomical center, but it is good to be located posteriorly within anatomical femoral attachment site without compromising laxity and clinical outcomes.

Date: 2016-09-08

Session: Free Papers - Arthroscopy and Sports Medicine Knee

Time: 14:00 - 15:30

Room: Caravaggio 7-8

Abstract no.: 43074

TUNNEL WIDENING AFTER ACL RECONSTRUCTION: A MRI STUDY OF BTB RIGIDFIX VERSUS BTB ENDOBUTTON

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Introduction: Surgeons use variety of femoral fixation techniques to achieve secure femoral fixation during BTB ACL reconstruction. Some fixation devices are claimed to be associated with less tunnel widening compared to others. Objectives In this study we compared the amount of tunnel widening associated with Endobutton compared to Rigidfix in a cohort of 30 patients using MRI. Methods: All patients underwent ACL reconstruction using Patellar tendon BTB graft by a single surgeon using standard surgical protocol. There were two groups of patients, one group had Endobutton (Smith&Nephew) fixation of femoral graft and other group had Rigidfix (Depuy) fixation of the femoral graft. There were 15 patients in the each group who volunteered for postoperative MRI of the knee. Results: In all patients, the Graft was intact with good graft integration. Average tunnel diameter is 11 mm. There was no significant difference in the femoral tunnel widening between both groups. Conclusions: This clinical data is in contrast to the theoretical claim by the device manufacturers that transfixing is associated with lower incidence of tunnel widening. We suggest that we require more clinical data to justify that one fixation technique is associated with less tunnel widening compared to other.

Date: 2016-09-08

Session: Free Papers - Arthroscopy and Sports Medicine Knee

Time: 14:00 - 15:30

Room: Caravaggio 7-8

Abstract no.: 43744

ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION IN PATIENTS 40 YEARS OR OLDER: SURVIVORSHIP AND PATIENT-CENTERED OUTCOMES AT MINIMUM 20-YEAR FOLLOW-UP

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Introduction: The purpose of our study was to determine 20 year survivorship and outcomes in patients who underwent ACL reconstruction at the age of 40 or greater. All patients underwent a bone-patellar tendon-bone autograft ACL reconstruction by a single surgeon. A survivor was defined as not requiring total knee arthroplasty (TKA). Seventy-seven patients (80 knees)(45 males, 32 females) with a mean age of 44 years (range, 40 to 60) were included. One ACL reruptured 10 years following reconstruction. Nineteen patients required TKA (27%)(age range, 50 to 73 years at TKA). Mean survivorship was 24.6 years [95%CI: 23.5-25.7] at mean age of 69 years (range, 63 to 82 years). Survivorship was 98% at 10 years and 84% at 20 years. Knees with chondral defects had a lower survivorship (22.3 years [95%CI: 20.5-24.0 years]) compared to knees with no chondral defects (25.7 years [95%CI: 24.5-26.9 years] ($p=0.003$)). 49/54 (91%) survivors completed follow-up at mean 23.2 years (20 to 27.5 years). Mean postoperative Lysholm score was 84(range, 42 to 100). Mean postoperative WOMAC was 10(range, 0 to 30), and mean SF12 PCS was 52.3(range, 27.1 to 61.8). Median postoperative Tegner activity scale was 4(range, 2 to 8). Median patient satisfaction with outcome was 10(range, 7 to 10). Survivorship following ACL reconstruction in patients over 40 was above 80% at a minimum of 20 years. No chondral defect resulted in longer survival. Middle-aged patients undergoing ACL reconstruction have excellent outcomes that are sustained over greater than 20 years.

Date: 2016-09-08

Session: Free Papers - Arthroscopy and Sports Medicine Knee

Time: 14:00 - 15:30

Room: Caravaggio 7-8

Abstract no.: 44777

COMBINED ANTERIOR CRUCIATE LIGAMENT REVISION SURGERY WITH EXTRA-ARTICULAR LATERAL TENODESIS - PRELIMINARY RESULTS

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Introduction: The anterolateral ligament (ALL), described by Paul Segond in 1879, plays a role in anterolateral knee instability, after anterior cruciate ligament (ACL) injury. Our aim is to report the preliminary results of an ACL revision technique combined with an extra-articular lateral tenodesis in a selected group of patients. Methods: 8 patients who underwent ACL revision combined with an extra-articular lateral tenodesis were included. Indications were chronic injury / re-rupture of the neoligament, grade 3 pivot shift and / or high level athletes with knee instability. Patients were evaluated pre and postoperatively using the International Knee Documentation Committee (IKDC) score, Lysholm score and Tegner activity scale. At the last evaluation the Knee Injury and Osteoarthritis Outcome Score (KOOS) were also assessed. Complications were registered. Results: Average follow-up was 5 ± 2.9 months. No important complications occurred. At the last evaluation all patients presented a complete range of motion. Subjective and objective IKDC and Lysholm scores improved significantly ($P < .0001$). The Tegner activity scale at the last follow-up (7.1 ± 1.8) was slightly lower than the preoperative value (7.3 ± 1.7) ($P < .01$). Preoperatively, six patients had grade 2 pivot shift and two a grade 3 pivot shift. Postoperatively, all patients had negative pivot shift ($P < .0001$). Conclusions: The extra-articular tenodesis, is designed to limit the tibial rotation in ACL-deficient knees, controlling pivot-shift. Preliminary results suggest that combined a reconstruction is useful in selected cases when there is important rotational instability, without specific complications.

Date: 2016-09-08

Session: Free Papers - Arthroscopy and Sports Medicine Knee

Time: 14:00 - 15:30

Room: Caravaggio 7-8

Abstract no.: 44617

RISK FACTORS OF FALSE-NEGATIVE MAGNETIC RESONANCE IMAGING DIAGNOSIS FOR MENISCAL TEAR ASSOCIATED WITH ANTERIOR CRUCIATE LIGAMENT TEAR

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Purpose: To identify risk factors that predict false-negative MRI diagnosis for meniscal tear coincident with ACL injury using multivariate logistic regression. **Methods:** We reviewed the medical records of consecutive patients who underwent arthroscopic ACL reconstruction from January 2006 through December 2014. According to preoperative MRI diagnosis, the meniscal tears were sorted into true-positive MRI and false-negative MRI groups. Multivariate logistic regression was used to analyze risk factors including age, gender, body mass index, time from injury to MRI, knee instability, concomitant ligament injury, intra-articular effusion, bone contusion, cartilage injury, meniscal tear location and meniscal tear pattern. **Results:** Enrolled 249 meniscal tears (159 medial and 90 lateral menisci) were sorted into true-positive MRI (n = 136) and false-negative MRI (n = 113) groups. As time from injury to MRI diagnosis increased, the risk for the false-negative MRI diagnosis decreased (adjusted OR: .859, 95% CI: .802 to .921). Meniscal tear location within the posterior one-third was a significant risk factor compared to tear within the anterior one-third (adjusted OR: 11.823, 95% CI: 2.272 to 61.519). Peripheral longitudinal tear pattern was also a significant risk factor (adjusted OR: 3.522, 95% CI: 1.256 to 9.878). **Conclusions:** Significant risk factors for a false-negative MRI included short time from injury to MRI diagnosis, meniscal tear location within the posterior one-third and peripheral longitudinal tear pattern.

Date: 2016-09-08

Session: Free Papers - Arthroscopy and Sports Medicine Knee

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Room: Caravaggio 7-8

Abstract no.: 43225

RESULTS OF ARTHROSCOPIC ASSISTED REPAIR FOR ACUTE MENISCAL TEARS

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Introduction: Recently patients are offered meniscal-preserving surgery for acute tear. Most studies indicate a successful outcome in 75% to 90% cases. Menisci provide shock absorption and proprioception. Meniscal excision increases contact stress with subsequent degeneration of articular cartilage. Methods: Retrospective study was undertaken to assess the outcome of meniscal repair for acute tears. We collected data on presentation, diagnostic modalities, outcome and complications. We noticed differences in surgical preference, postoperative weight bearing status, physiotherapy and use of marrow stimulating technique amongst surgeons. We considered resurgery as failure of repair. We reviewed all case notes during 2010 to 2014. There were 121 patients with average age 27 years (16 – 47). Most patients had diagnostic MRI prior to surgery. Minimum follow was 6 months (3-24 months). 42 patients underwent repair using FasTfix (Smith & Nephew), 63 with RapidLoc (Mitek) and 16 had arthroscopic assisted inside out suturing. Majority of patients had medial meniscal tear (87/ 121). Four patients had prior ACL reconstructions and five patients had concomitant ACL rupture. Results: Repair was successful in 102 (84.4 %) patients. 19 patients underwent reoperations (11 medial and 8 lateral resections). Seven patients continue to have persistent symptoms of pain without locking. There was no correlation of outcome with associated ACL injury. Complications included two superficial infections, one stiff knee, extensor lag, massive pulmonary embolism and four haemarthrosis. Conclusion: We conclude our short-term results of meniscal preservation surgery are consistent with other published series. Meniscal repair is safe and allows early rehabilitation.

Date: 2016-09-08

Session: Free Papers - Arthroscopy and Sports Medicine Knee

Time: 14:00 - 15:30

Room: Caravaggio 7-8

Abstract no.: 43745

MENISCUS SUTURE REPAIR VS. MENISCECTOMY AT MINIMUM 5 YEARS FOLLOW-UP

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The purpose of this study was to determine if outcomes were similar in patients who underwent meniscus suture repair versus meniscectomy at early (2 year) and mid to long-term follow-up (minimum 5 year). Inclusion criteria were patients who underwent arthroscopic meniscus suture repair using an inside-out technique or arthroscopic meniscectomy by a single surgeon. There were 67 knees (48 males, 19 females) (mean age = 37 years). There were 40 (60%) knees that underwent partial meniscectomy and 27 (40%) knees that underwent meniscus suture repair. There was no significant difference in age ($p=0.866$) or gender ($p=0.195$) between cohorts. Mean follow-up time was 7 years (range 5 – 13 years). There was no significant difference in Lysholm scores between meniscectomy and repair cohorts at the 2 year postoperative time point (83 vs. 82) ($p=0.373$). The repair cohort had significantly higher Lysholm scores than the meniscectomy cohort at minimum 5 years after index surgery (87 vs. 79) ($p=0.036$). At 5 years there was no significant difference between meniscectomy and suture cohorts for WOMAC score (12 vs 10) ($p=0.795$), SF-12 PCS (52.0 vs 51.3) ($p=0.421$), Tegner activity scale (6 vs 5) ($p=0.820$) or patient satisfaction with outcome (8 vs 10) ($p=0.282$) respectively. In this study, patients who underwent meniscus suture repair or meniscectomy had the similar function at 2 years; however, Lysholm Scores were significantly higher at 5 years. Improved long-term function may be a result of retaining meniscus tissue by utilizing repair rather than resection.

Date: 2016-09-08

Session: Free Papers - Arthroscopy and Sports Medicine Knee

Time: 14:00 - 15:30

Room: Caravaggio 7-8

Abstract no.: 42991

SEGMENTAL MEDIAL MENISCUS GRAFTING RESTORES NATURAL TIBIOFEMORAL CONTACT PRESSURES

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Introduction: Balanced loading is essential to knee function preservation and osteoarthritis prevention. This in vitro, biomechanical study evaluated the efficacy of segmental meniscal grafting for restoring non-impaired medial tibiofemoral compartment pressure following partial meniscectomy. Methods: 12 porcine knees were dissected without cutting the cruciate ligaments, or lateral collateral ligament and without osteotomy. Compartment pressure magnitude and area were measured using pressure sensitive film. Using a digital force gauge, an axial compression load of 20 lbs (88.96 N) was applied for 60 sec at an approximately 22.2 N/sec loading rate at 90°, 45°, and 0° knee flexion angles. Three trials were collected for each of the following conditions: intact, post-central 1/3rd partial meniscectomy and post-segmental meniscal grafting. Kruskal-Wallis Tests were used to compare group mean differences by condition and knee flexion angle (90°, 45°, and 0°). Post hoc Mann-Whitney "U" tests identified statistically significant group differences ($P < 0.05$). Results: Knee flexion angle did not display significant group differences. The condition variable displayed highly significant differences for mean pressure, peak pressure, and peak pressure area compared to the partial meniscectomy condition ($P < 0.0001$). Segmental grafting of the central 1/3rd meniscus created a construct that closely replicated the mean (52.6 PSI versus 53.9 PSI) and peak (72.3 PSI versus 71.4 PSI) tibiofemoral compartment loading pressures and areas (27.7 mm² versus 30.7 mm²) of the intact medial meniscus. Conclusions: Segmental grafting following partial meniscectomy restored biomechanical meniscal function. In vivo testing is needed to verify these time zero study findings.

Date: 2016-09-08
Session: Free Papers - Tumours
Time: 08:30 - 10:00
Room: Bramante 3

Abstract no.: 45056

THE DEVELOPMENT OF PATHFX AND THE INTERNATIONAL BONE METASTASIS REGISTRY

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Background: We developed PATHFx, an online tool that is capable of estimating postoperative survival in patients with skeletal metastases. PATHFx is designed to help surgeons (a) decide who is likely to benefit from surgery and (b) whether a more durable implant should be considered. The object is to minimize perioperative death and implant failure. PATHFx is based on Bayesian belief network and generate a probability of survival at 1, 3, 6 and 12 months. Validation: We internally validated PATHFx using data from Memorial Sloan-Kettering Cancer Center and then performed external validation using a) Scandinavian registry data and b) Italian registry data. PATHFx performed very well even in the setting of missing data and decision analysis confirmed that the model were well suited for clinical use. Future directions: PATHFx is now in clinical use in several countries, providing real-time estimates of survival to clinicians on the global scale. The online International Bone Metastasis Registry is now constructed and will soon be available to collaborators wishing to participate in international studies of treatment of patients with skeletal metastases and to further develop the prognostic accuracy of PATHFx.

Date: 2016-09-08

Session: Free Papers - Tumours

Time: 08:30 - 10:00

Room: Bramante 3

Abstract no.: 43838

COMBINED USE OF FREE VASCULARIZED BONE GRAFT AND EXTRACORPOREALLY-IRRADIATED AUTOGRAFT FOR THE RECONSTRUCTION OF MASSIVE BONE AND JOINT DEFECTS AFTER RESECTION OF MALIGNANT TUMOR

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Combined use of extracorporeally-irradiated bone and vascularized bone seems to be the ideal graft for oncological reconstruction. To our knowledge, however, only a few clinical studies have addressed this reconstructive procedure. We present the clinical outcomes of our series and discuss the advantages and indication of this approach. We reviewed 10 patients (8 men, 2 females, mean age 33 y.o.) who had undergone curative resection for malignant musculoskeletal tumor and reconstructed with vascularized bone graft and extracorporeally-irradiated autograft in combination. The average follow up time after surgery was 58 weeks. The tumor location was the proximal humerus in one, shaft of ulna in one, acetabular in two, distal femur in one, shaft of tibia in five. 7 were used for intercalary graft and three were for osteochondral graft. Vascularized fibula graft was used in 8 patients and scapula was used in two. Nine vascularized bone grafts survived. Complications were non-union in 2, necrosis of free flap and one claw deformity in one. In 5 patients reconstructed with vascularized fibula and irradiated intercalary tibial bone graft, radiological and functional outcomes were excellent. Two patients with periacetabular reconstruction using irradiated osteochondral graft showed osteoarthritic change in the long-term but local pain remained mild. The rationale for a combined vascularized and irradiated bone autograft is the cumulative advantage provided by mechanical endurance from the latter with the biological properties of the former. This procedure is best indicated intercalary defect of the tibia. Osteoarthritic change cannot be avoided but clinical outcome was excellent.

Date: 2016-09-08
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Time: 08:30 - 10:00
Room: Bramante 3

Abstract no.: 43269

BONES SARCOMAS IN CHILDREN: RESULTS OF TREATMENT

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Introduction: advances in diagnosis and treatment of childhood cancer have dramatically increased long-term survival and it is now evident that the disease and its treatment can significantly impair long-term health. Methods: 98 children and adolescents at the mean age of 10,9 years (51 males, 47 females) with osteosarcoma (OS), Ewing,s sarcoma (ES), and other tumors were treated between 1999 and 2013 years. Histologically, 36 patients had OS, 59 - Ewing,s sarcoma. 9 patients had solitary metastases, 21 – multiple. 9 patients had distant metastases at lungs, bones were involvement in 3 cases, combine lesion were in 9 cases. Treatment consisted of neoadjuvant chemotherapy, the radiotherapy of the initial tumor and metastasis left after the induction and/or oncologic surgery and adjuvant chemotherapy. The local control of the tumor consisting of the surgical ablation of the primary lesion and metastases, if the technical opportunity of this stage is available, including limb-sparing procedures. The most common late effects we had observed were: scoliosis, muscular hypoplasia, osteopenia, limb-length discrepancy in spite of usage of growing endoprosthesis, poor joint movement, musculoskeletal deformity. 23 patients had from 5 till 11 late effects. An individual rehabilitation program consist with combined early mobilization, physical exercise, kinesiotherapy, aquatic rehabilitation and orthopaedic correction, laser therapy, massage, gait training. Results: In our research we have analyzed the 2-year disease free survival (DFS). Thus, 2-year DFS for patients with bone sarcomas were 71,5±4,7. DFS for patients with metastases were 48,7±9,3%. DFS for patients underwent limb-sparing procedures were 74,3±6,7%.

Date: 2016-09-08
Session: Free Papers - Tumours
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Room: Bramante 3

Abstract no.: 44141

ELASTOFIBROMA DORSI: CLINICAL EVALUATION OF 61 CASES AND REVIEW OF THE LITERATURE

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Introduction: Elastofibroma dorsi (ED) is a rare, benign soft tissue tumor typically located between the inferior corner of the scapula and the posterior chest wall causing mass, scapular snapping and pain. With the classical symptoms and localization it is diagnosed without biopsy and treated with marginal resection. This study retrospectively analyzed the patients operated due to ED to evaluate the presenting symptoms, tumor size, complications, and clinical results and to suggest optimum treatments. Materials and Method: This study included 51 patients operated due to ED in 2 different clinics between 2005 and 2015. The patients' age, gender, side, symptoms, average duration of symptoms, tumor sizes, and professions were investigated. The radiological examinations of the patients were evaluated. The patients with lesions bigger than 5 cm were operated. The postoperative complications, recurrences, and functional results were evaluated using Constant score. Results: A total of 61 operated lesions of 51 patients clinically and radiologically diagnosed with ED were retrospectively evaluated. The average symptom time was 11.21 months. The lesion of 19 (37.2%) patients was bilateral. However, 10 of the symptomatic patients with lesions bigger than 5 cm were operated. The average lesion diameter was 8.7 cm. The average follow-up was 26.89 months. The Constant score was 67.28 before operation and raised to 92.88 ($p < 0.05$). Seroma and hematoma were observed in 11.5% of the patients. Conclusion: Generally, good clinical results can be obtained with marginal resection without requiring a biopsy, considering the classical complaints and radiological appearance of ED.

Date: 2016-09-08

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Time: 08:30 - 10:00

Room: Bramante 3

Abstract no.: 43613

ANEURYSMAL BONE CYST (ABC) OF ILIAC BONE IN THE PERI ACETABULAR AREA

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Symptomatic aneurysmal bone cysts with an expansile lesion in ilium are a rare occurrence. A 43-year-old male presented with a swelling over her right iliac region and numbness along the medial aspect of thigh. Clinicoradiological diagnosis was aneurysmal bone cyst confirmed on fine needle aspiration cytology. Intralesional curettage in the region of acetabulum of the tumor with synthetic bone graft and simplex bone cement filled the cavity was performed in view of proximity to acetabular roof and endangered hip stability. At follow up of 18 months, he has full painless range of movements in the hip joint with no recurrence. Pelvic aneurysmal bone cysts are distinctly rare. The lesion was associated with an atypical symptom of numbness along the femoral nerve distribution. Hip stability and range of movements were major concern in this patient. Although many treatment options are described, surgical excision still remains the mainstay. In our case, we performed, with . Intralesional curettage filling the cavity with synthetic bone graft and simplex bone cement, with good outcome.

Date: 2016-09-08

Session: Free Papers - Tumours

Time: 08:30 - 10:00

Room: Bramante 3

Abstract no.: 43611

PRIMARY BONY NON-HODGKIN LYMPHOMA OF THE THORACIC SPINE: A CASE REPORT WITH A REVIEW OF THE LITERATURE

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A case of isolated primary non-Hodgkin's lymphoma of the spine is presented along with a review of previous cases reported in the literature. A 63-year-old immuno-competent woman was admitted with progressive numbness and weakness of both lower extremities of 2 weeks' duration. Magnetic resonance imaging (MRI) of the screening of spine revealed an extradural spinal mass at the T3 – T4 level, with invasion into the T4 vertebral body. The lesion was at first thought to be a metastatic tumour. Because of the manifestations of compression, the patient underwent D4 CORPECTOMY and INTERBODY PEEK CAGE. Histopathological examination revealed diffuse large B-cell non-Hodgkin's lymphoma. All other investigations (including computed tomography of the chest and abdomen, bone scan, peripheral blood examination and tumour marker examination) were negative for occult disease. This case demonstrates that spine surgeons should be aware of the occurrence of isolated primary spinal lymphoma, which should be included in the differential diagnosis of metastatic tumours. KEY WORDS: PRIMARY NON-HODGKIN'S LYMPHOMA; ISOLATED PRIMARY SPINAL LYMPHOMA; THORACIC SPINE.

Date: 2016-09-08

Session: Free Papers - Tumours

Time: 08:30 - 10:00

Room: Bramante 3

Abstract no.: 43944

**RECONSTRUCTION WITH SCAPULAR HEMIARTHROPLASTY
ENDOPROSTHESIS AFTER SCAPULECTOMY FOR MALIGNANT
TUMOR: OPERATIVE APPROACH SELECTION AND MID-TERM
OUTCOMES**

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Chengdu (CHINA)

Objective: To present and compare different operative approaches for scapular hemiarthroplasty endoprosthesis reconstruction after scapulectomy for malignant tumor involving S2 region of shoulder girdle and confirm the indications respectively. **Methods:** Seventeen cases received scapular hemiarthroplasty endoprosthesis reconstruction after scapulectomy for malignant tumor between 2011 and 2014 were retrospectively reviewed. A curved posterior approach was used in eleven cases (group A), and a curved posterior-anterior approach was used in six cases (group B). Clinical records, radiographs and MSTS score were evaluated. **Results:** Group B (mean 3.7h, 3.2-4.1h) has a significantly longer operative time than group A (mean 2.8, 2.4-3.3h). Group B (mean 460ml, 390ml-500ml) has a significantly larger volume of blood loss than group A (mean 280ml, 200ml-400ml). All 17 patients were followed up for a mean period of 22.8 months (range, 12-48 months). There was no infection and dislocation. Recurrence was seen in two patients in group A and one patient in group B respectively, with the overall recurrence rate of 17.6%. There is significant different about the MSTS score between group A (mean 26.7, 23-28) and group B (mean 23.4, 21-25). **Conclusion:** Single posterior approach is used for the tumor located in the posterior part of scapula and grows backwards, and curved posterior-anterior approach is used for the tumor located in the anterior part scapula and grows forwards. Compared with single posterior approach, the surgical skill of curved posterior-anterior approach is harder, functional reconstruction is complicated, the postoperative rehabilitation is more difficult and the prognosis is worse.

Date: 2016-09-08
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Abstract no.: 43025

ROTATIONPLASTY IN TODAY'S ERA – DOES IT HAVE A ROLE?

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Introduction: Rotationplasty is a useful option for lower limb tumors in children with growth potential and large tumors or lesions which have not been appropriately treated at index presentation where conventional limb salvage may not be possible. Materials & Methods 122 non metastatic bone tumor patients underwent rotationplasty between January 2000 to December 2013. There were 92 males and 30 females. The most common lesion was osteosarcoma (99), Ewing's sarcoma (13), 7 soft tissue sarcomas, 3 giant cell tumor and one low-grade bone sarcoma. Age was from 4 to 54 years (median 14 years). Only 38 of these patients were 10 years or younger. 9 resections were for entire femur, 91 for distal femur and 22 for proximal tibia. Results: The mean follow up was 36 months (range 12 months–12 years). There were 31 complications – 31: superficial infections – 10, deep infections – 2, vascular problems – 8, peroneal palsy – 6, malrotation – 1, fracture / loss of reduction – 4. Six patients ultimately had an amputation. 10 patients were lost to follow up and 17 patients died due to disease. The mean MSTS score in the study was 25 (range 19 – 28). Conclusions: Even in the era of metallic endoprosthesis, rotationplasty is an acceptable alternative procedure for lower limb tumors especially in children with growth potential and large tumors not amenable to conventional limb salvage.

Date: 2016-09-08
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Abstract no.: 43778

FUNCTIONAL NEURO-VASCULARIZED MUSCLE TRANSFER FOR ONCOLOGICAL RECONSTRUCTION OF EXTREMITY SARCOMA

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Functional neuro-vascularized muscle transfer (FMT) is a beneficial tool for the reconstruction of “movement” in the affected extremity. Until now, however, the clinical application of FMT was mainly limited to trauma cases. We reviewed patients who underwent wide resection for extremity sarcoma and functional reconstruction using FMT and discussed the advantages, indications and complications of the procedure. We reviewed 28 patients (16 males, 12 females) and their mean age was 48 years (range 9-70). All patients had high grade sarcoma. Reconstructed muscles were the quadriceps femoris muscle in 14 patients, hamstring in 3, triceps brachii (pedicled transfer) and tibialis anterior in 3, finger flexor in 2, finger extensor and triceps surae. Latissimus dorsi muscle was transferred in 23 patients and gracilis muscle was in 5. Three patients (11%) died of metastatic disease and local recurrence occurred in three. One case developed venous thrombus and was rescued by re-anastomosis. 27 (96%) transferred muscles showed evidence of re-innervation electrophysiologically between 4 to 7 months after surgery. Muscle power was improved to an MMT score of 2 in average after re-innervation of the transferred muscle. Conventional myocutaneous flap transfer is a beneficial tool for achieving successful soft tissue coverage, thus decreasing the infection rate. Besides these advantages, neuro-vascularized functioning muscle transfer achieves the additional benefit of restoring joint movement. The selected donor muscle should have the properties of 1) adequate strength, 2) a suitable range of motion, and 3) an adaptable shape for the recipient area.

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Session: Free Papers - WOC - Developing World

Time: 16:00 - 17:30

Room: Bramante 3

Abstract no.: 44273

A MULTIDISCIPLINARY APPROACH FOR IMPROVING PRACTICAL SKILLS OF ORTHOPEDIC SURGEONS

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Classical education of orthopedic surgeons involves lectures, self-study, workshops and cadaver dissections, and sometimes supervised practical training within surgery, which quite seldom gives the young surgeons the feeling of being unable to apply what they have learned especially in surgical practice. The purpose of this paper is to present a different approach from the classical one, which enhances the practical skills of the orthopedic trainees and prepare them for future practice. The paper presents the content of the research project 2015-1-RO01-KA202-015230, ERASMUS+ VET "Collaborative learning for enhancing practical skills for patient-focused interventions in gait rehabilitation after orthopedic surgery" which, using e learning as a basic tool , delivers to the trainees not only courses, but especially practical information through videos and case scenarios including gait analysis in order to build patient focused therapeutic plans, adapted to the characteristics of each patient. The outcome of this project is to enhance the practical skills in orthopedic surgery and the results are evaluated following the answers to the questionnaires, but especially the reactions within the case scenarios. The participants will thus follow the idea that any mistake within solving the cases might represent a failure of treating a real patient. This modern approach, besides using interactivity to evaluate the theoretical and practical knowledge of the trainee, increases the sense of responsibility, as well as the ability to react properly in real cases

Date: 2016-09-08

Session: Free Papers - WOC - Developing World

Time: 16:00 - 17:30

Room: Bramante 3

Abstract no.: 43182

SURGICAL MANAGEMENT AND RECONSTRUCTION TRAINING (SMART) COURSE FOR INTERNATIONAL ORTHOPEDIC SURGEONS: SAVING LIMBS AFTER TRAUMATIC INJURY

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Background/Purpose: The burden of complex orthopaedic trauma in low-income and middle-income countries (LMICs) is exacerbated by soft tissue injuries. The purpose of this study was to evaluate the Surgical Management and Reconstruction Training (SMART) Course to help LMIC orthopaedic surgeons manage soft tissue defects and reduce the rate of amputation. **Methods:** In this prospective observational study, orthopaedic surgeons from LMICs were recruited to attend a two-day course. A survey was given immediately and one-year post-course to evaluate quality of instructional materials and impact of the course in reducing the burden of amputation, respectively. **Results:** There were 51 surgeons from 25 countries who attended the course. Prior to the course, participants cumulatively reported 970 amputations performed each year due to soft tissue defects. Of the 34 (66.7%) orthopaedic surgeons who completed the one-year post-course survey, 34 (100%, $p < 0.01$) reported performing flaps learned at the course. Flap procedures saved 116 patients from amputation. 554 (93.3%) of the cumulative 594 flaps performed by participants one year after the course were reported to be successful. A majority (97%) of participants taught flap techniques to colleagues. **Conclusion:** The SMART Course can give orthopaedic surgeons practicing in LMICs the skills and knowledge to successfully perform flaps and reduce the self-reported incidence of amputation. Course participants were able to disseminate flap reconstructive techniques to colleagues at their home institution.

Date: 2016-09-08

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Room: Bramante 3

Abstract no.: 43633

HIGH INTERTESTER RELIABILITY OF THE “SQUAT-AND-SMILE” TEST FOR OBJECTIVE EVALUATION OF FUNCTIONAL OUTCOME IN PATIENTS WITH FEMORAL SHAFT FRACTURES

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Introduction: Since few validated functional outcome instruments exist for patients with lower extremity trauma in developing settings after intramedullary nailing, the “Squat-and-smile” test was developed by SIGN Fracture Care International. Although “Squat-and-smile” is widely used in developing countries, existing studies have yet to evaluate test reliability. This study aims to determine the inter-rater reliability of Squat-and-smile. Methods: In this prospective study, adult patients with OTA 32 femur fractures treated by intramedullary nailing at a tertiary Tanzanian hospital were enrolled. Squat-and-smile was administered at 6, 12, 24 and 52 weeks postoperatively. Two authors graded the test on a 10-point scale, combining scores of three domains: Squat depth (4), Support needed (3) and Facial Expression (3). Inter-rater reliability was assessed using kappa statistic, absolute reliability evaluated using standard error of measurement (SEM) and discrepancies determined by smallest real difference (SRD). Squat-and-smile was correlated with EQ-5D, reoperation and complications. Results: In total, 621 Squat-and-smile tests were evaluated for 231 patients. The kappa coefficient for the cumulative score and each of the three domains was ≥ 0.88 . For cumulative and domain scores, $SEM \leq 0.40$ and $SRD \leq 0.85$. Interobserver scores obtained from antero-posterior (AP) view had a higher Kappa coefficient than scores from lateral view (0.92 vs. 0.87). Squat depth and cumulative score was significantly correlated with EQ-5D (kappa 0.89). Conclusion: Inter-rater reliability for the Squat-and-smile test is high and can be enhanced by AP view.

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Session: Free Papers - WOC - Developing World

Time: 16:00 - 17:30

Room: Bramante 3

Abstract no.: 44641

WHERE ARE FEMALE ORTHOPAEDIANS? : A DEMOGRAPHIC STUDY TO EVALUATE LESS NUMBER OF FEMALE ORTHOPAEDIANS IN EASTERN INDIA

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OBJECTIVE: There is an extremely small proportion of female medical students choosing to specialize in orthopaedic surgery in India. Aim of the study was to assess medical students and interns interests and perceptions about orthopaedic surgery and explore why women are not inclined towards orthopedic surgery. **SETTING:** Questionnaire were distributed among medical students and interns assessing their interests and perceptions towards orthopaedic surgery. **PARTICIPANTS:** 300 medical students (from 2nd year to final year) interns and orthopaedic postgraduates. **Results:** Responses were obtained from 333 students including interns, Response rate was 90%. 43% of the respondents' were female and were single. 57% of the respondent were male. 30% of respondents thought physical strength is the main hindrance for lack of female inclination. 32% considered that female orthopaedician have less time for family and kids. 22% of them considered orthopaedics to be a male dominating branch. 60% of them considered availability of the female orthopaedician was a major concern at odd hours. Both male and female students perceived orthopaedics as an "action" packed, procedure-based profession, providing instant gratification, more time in the operating room, high income. Female medical students considered it boring. A greater number of the students interested in orthopaedic surgery rated time with family and a procedure-intensive profession as important factor. Most of the Female students and interns were interested in obgyn more than orthopaedics. **CONCLUSIONS:** The increasing majority of women among medical students will reshape the future of physician workforce by dictating changes in work force participation & working conditions. Orthopedic association will need to adapt these realities and work as to remove the orthodox thoughts of women and misleded medical students

Date: 2016-09-08

Session: Free Papers - WOC - Developing World

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Room: Bramante 3

Abstract no.: 44029

SITUATIONAL ANALYSIS ON THE CHALLENGES OF PROVIDING A DISTANCE E-LEARNING TRAUMA SCIENCES CURRICULUM IN MALAWI

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Introduction: Malawi is one of the world's poorest countries with a population of 16.3 million. Malawi has a surgeon density of 2/100,000 (versus 35/100,000 in UK). Non-physician clinical officers, 90% of surgical workforce, are the backbone of surgical services in Malawi but lack access to ongoing education; working in environments lacking continuous supervision and mentorship. We present a situation analysis to the introduction of a nationwide e-learning trauma curriculum. Aims: Assess the variety of trauma managed by clinical officers. Assess access to online resources. Assess suitability of introducing an e-learning trauma programme. Method: A written questionnaire was distributed to all clinical officers involved in trauma care within Malawi. Demographics including region, trauma care provided (fracture, chest injury, abdominal injury and head injury), access to internet/web browsing and electricity, as well as interest in participating in a trauma education programme were collated and analysed. Results: Total 89 responses. 71 male: 18 female; average age 37.6 years. 95% managed fractures, 51% abdominal injury, 67% chest injury, 70% head injury and 6% also managed burns. 88% had internet access (38% via institution, 76% via smartphone). All clinical officers surveyed were willing to engage in an online trauma-care teaching programme, with 74% preferring online teaching material over USB or educational DVDs (54% and 28% respectively). Conclusion: This survey highlights the technical challenges to the introduction of a standardised trauma care programme using online resources which is applicable to many low to middle income country settings and will guide the implementation of such programmes.

Date: 2016-09-08

Session: Free Papers - WOC - Developing World

Time: 16:00 - 17:30

Room: Bramante 3

Abstract no.: 43308

INDUCED MEMBRANE TECHNIQUE (MASQUELET TECHNIQUE) FOR THE TREATMENT OF BONE DEFECT USING PIECE OF DISPOSABLE SYRINGE AS A SPACER IN DEVELOPING COUNTRIES

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Introduction: Reconstruction of large segmental bone defects are challenging. Most techniques for reconstruction of significant bone loss are associated with lengthy healing or unpredictable union rates. Induced Membrane technique has shown potentiality for reconstruction in such cases. PMMA cement, which is a popular method for it, is costly and not always available in Bangladesh and in other developing countries. Methods: 12 cases of Bone defect were treated by Induced Membrane Technique in Chittagong General Hospital within the period of 2012 to 2014. 6 patients had a gap of 2-4 cm, 5 were with 5-7 cm and one with a 8 cm gap. Reconstruction was done by a two staged approach. At first with radical soft tissue and bone debridement, then implantation of Cement spacer (5 Patients), Piece of disposable syringe spacer (7 Patients) and stabilization was done. 6–8 weeks later, the spacer was removed ensuring minimal disturbance of 'Induced Membrane' and the defect is filled with cancellous bone graft. Results: Mean follow up was 20 months. For 6 patients the average rate of union was 7 month (Ranging 4-8 months) and 5 months (ranging 3-6 months) for 5 patients. One patient got non-union due to deep infection. No significant difference in outcome is seen between Cement or Disposable syringe spacer. Conclusion: The Induced Membrane technique exhibits promising early clinical and radiographic outcomes. Piece of disposable spacer can also be used instead of Cement spacer. Key words: Bone gap, Piece of disposable syringe spacer, Cement spacer, Induced Membrane.

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Session: Free Papers - WOC - Developing World

Time: 16:00 - 17:30

Room: Bramante 3

Abstract no.: 42529

DIAGNOSTIC ACCURACY OF XPRT MTB/RIF IN TISSUE SAMPLES OF CHILDREN WITH MUSCULOSKELETAL TB

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We aimed to assess the diagnostic accuracy of Xpert MTB/RIF (Xpert) in children with suspected musculoskeletal tuberculosis (TB). This prospective study tested Xpert against a reference standard of mycobacterial liquid culture or histology in 109 osteoarticular samples of children with a median age of 5.6 years (IQR 2.2 – 8.7). There were 23 samples with confirmed TB by culture or histology (21.1%); histology was positive in all of these, culture in 14 samples (12.8%) and Xpert in 17 samples (15.6%). Xpert provided a sensitivity of 73.9% (95% CI 51.6-89.8) with a specificity of 100% (95% CI 95.7 - 100) and was available at a mean of 0.8 days (0.46-1.4) compared to 21 days (19 – 30) for culture (p <0.001). Xpert therefore detected more cases of TB and was faster than culture, the current gold standard. It should therefore be recommended as the first line investigation to confirm TB of bone and joints in children. Histology remains a useful test for the diagnosis of musculoskeletal TB in children.

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Session: Free Papers - WOC - Developing World

Time: 16:00 - 17:30

Room: Bramante 3

Abstract no.: 45244

INITIATION OF DYNAMISATION IN EXTRAMEDULARY NAIL FOR TROCHANTERIC FRACTURES

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Objectives. Today there are different kinds of implants for surgical treatment of trochanteric fractures. Dynamic trochanteric fractures implants allow fracture fragments to be compressed. Dynamisation in axis of femoral neck can be realized if the axial lag screws force overcome friction force between the lag screw and body of the implant. Experimental analysis of forces that initiate sliding of lag screws in new Internal Fixator. Methods. Angle block was attached for internal fixator with lag screws oriented in vertical position. The transversal load of 5 kg was connected to lag screws. A dynamometer was in contact with tips of lag screws and it was used to measure pressing force during the movement of angle block. Results and Conclusion. Regression coefficients were $a_1=4,052$ i $b_1=0,623$ for internal fixator with 2 sliding screws with diameter of 7 mm and $a_2=4,534$ i $b_2=0,422$ for internal fixator with 1 screw with diameter of 10 mm. Coefficients of determination were: $r_1=0,470$ and $r_2=0,123$. Dynamisation of internal fixator lag screws can be realised in each body weight (50-130 kg). Higher values of body weight give higher possibility for dynamisation occurrence. Early bearing of operated leg has significant role in sliding initiation of internal fixator lag screws.

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Session: Free Papers - WOC - Developing World

Time: 16:00 - 17:30

Room: Bramante 3

Abstract no.: 45599

REPRESENTATION OF LOW AND MIDDLE INCOME COUNTRIES (LMICS) IN ORTHOPAEDIC JOURNALS: A COMPARATIVE STUDY

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Introduction: Low-and middle-income countries (LMICs) have the largest burden of musculoskeletal disease, and yet produce comparatively few publications when compared to developed countries. The purpose of this study is to identify the most prolific orthopaedic journals that publish studies conducted in LMICs and compare rates with orthopaedic journals of the highest impact factor. Methods: In this study, we retrospectively reviewed 958 orthopaedic studies conducted in LMICs. Each study was sorted by journal of publication, and the top 10 most prolific journals were ranked and grouped by country affiliation. We then identified the top 10 journals in orthopaedics based on impact factor, and these journals were grouped into categories based on geographic region. Results: Of the most prolific journals publishing LMIC studies, only two, International Orthopaedics and The Journal of Orthopaedic Surgery, have an editorial office that is based in a non-LMIC country. Of the eight remaining journals, five are based in the Middle-East, two are based in Sub-Saharan Africa, and one is based in South-Asia. Of the top 10 journals of highest impact factor, none were among the 10 most prolific journals publishing research from LMICs, and only one was in the top 50. Conclusion: The most prolific orthopaedic journals that publish research from LMICs are Journal of Ayub Medical College Abbottabad, Pakistan Journal of Medical and Health Sciences, and Kathmandu University Medical Journal. High-impact journals only publish a small proportion of studies set in LMICs and should take steps to engage more investigators from developing countries.

Date: 2016-09-08

Session: Free Papers - WOC - Developing World

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Room: Bramante 3

Abstract no.: 42527

DISTRIBUTION AND EPIDEMIOLOGY OF MUSCULOSKELETAL TUBERCULOSIS: A PROSPECTIVE EVALUATION IN AN AREA OF HIGH DISEASE BURDEN

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We aimed to assess the distribution of age and infection sites of patients with musculoskeletal tuberculosis (TB) and to determine the number of TB/HIV co-infections, as well as the rate of multidrug resistant (MDR) TB. This prospective cohort study conducted over a period of 18 months included 125 patients (44 children; 35%) with a mean age of 27 years (Range 1-78) in which TB was confirmed on tissue biopsy with PCR testing (Xpert MTB/RIF), culture or histology. Age peaks were seen at 5, 25 and 65 years, spinal disease was evident in 98 patients (78%), 66 patients (53%) were HIV negative, 29 (23%) HIV infected and in 30 (24%) the HIV status was unknown, 5 patients (4%) had multi-drug resistant TB. The epidemiology of extra-pulmonary TB and particularly musculoskeletal TB is largely unknown, especially in areas with a high burden of disease. This is the first large prospective study to confirm that age distribution is trimodal and that spinal disease is predominant. It also shows that a large portion of TB patients in our hospitals is HIV co-infected and that the MDR TB rate is high.

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Session: Free Papers - Treatment of bone infections

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 44488

ARTHROSCOPY VERSUS ARTHROTOMY AS TREATMENT OF CHOICE OF SEPTIC ARTHRITIS OF THE KNEE IN ADULT

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Introduction: Septic arthritis is a serious condition with a high mortality rate and in adults the knee is the most frequently involved joint. It is consensual that early start of treatment is essential if a good prognosis is to be achieved, although the preferred method of treatment is still unsolved. The aim of this study was to compare the results of arthroscopy and arthrotomy in patients with septic monarthritis of the knee treated in our hospital. Material and Methods: Twenty-two patients with septic monarthritis of the knee were treated in our hospital between 2009 and 2014. The medical records of the following data were collected: age, gender, type of treatment (arthroscopy vs. arthrotomy), time between first clinical symptoms and surgery, length of hospital stay, duration of follow-up, identified organism, WBC, percentage of neutrophils and CRP at the date of surgery, immunosuppression, aetiology, need and date of a second surgery and clinical evaluation according to the functional scale of Bussièrè and Beaufils. Our primary outcome was the early recurrence of infection (<3 months after surgery), wich made a second surgery necessary. Furthermore, the influence of potential confounders on treatment outcome was analysed. Results Functional evaluation was significantly better in patients who underwent arthroscopy. Conclusions: Patients with bacterial monarthritis of the knee who were treated with arthroscopy had similar re-infection rates and a slighty better functional outcome than those treated with arthrotomy. As arthroscopy is the less invasive method, it may be considered the routine treatment in in the nearby future.

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Session: Free Papers - Treatment of bone infections

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 44349

KNEE SEPTIC ARTHRITIS: IS THERE A DIFFERENCE BETWEEN PATIENTS WITH ISOLATED AND NON ISOLATED AGENTS, GRAM POSITIVE AGAINST GRAM NEGATIVE BACTERIA, AND S. AUREUS AGAINST NON-S. AUREUS INFECTIONS? A SINGLE INSTITUTION REVIEW OF 105 CASES IN 9 YEARS

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University of São Paulo, São Paulo (BRAZIL)

Purpose: Characterize both clinically and epidemiologically the population treated with a diagnosis of septic arthritis of the knee and evaluate the results from the treatment instituted. Evaluate the differences between patients with positive and negative culture results, between patients with isolated Gram positive and Gram negative bacteria and between patients infected by S. aureus and non-S. aureus related infections. **Methods:** 105 patients with knee septic arthritis were included in this study. Clinical and epidemiological data were evaluated. Statistical analysis was performed to compare patients with and without an isolated causative agent, Gram positive and Gram negative agents and S. aureus-related against non S. aureus-related cases. **Results:** Causative agents were isolated in 81 patients. Gram positive bacteria were isolated in 65 patients and Gram negative in 16 patients. The most common isolated bacteria was S. aureus. When comparing cases that have an isolated agent against cases without an isolated agent, no differences between the studied variables were found except that cases with an isolated agent stayed more time into the hospital. When comparing Gram positive bacteria against Gram negative bacteria, patients with Gram positive-related infections had more leukocytosis. Patients with S. aureus-related infections presented more cases considered to be hospital-related. **Conclusion:** S. aureus is the most common agent for knee septic arthritis. It was not possible to find major differences between infections with isolated and non-isolated agents and between Gram positive and Gram negative bacteria. Infections caused by S. aureus are more associated with provenience from a health service-related environment.

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Room: Bramante 4

Abstract no.: 44045

ANTIBIOTIC-COATED INTERLOCKING IN PATIENTS WITH INFECTED NON-UNIONS OF LOWER EXTREMITY LONG BONES

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Introduction: Tibial and femoral non-unions severely reduce patient's QOL. The persistent motion at the fracture site is commonly associated with severe pain and purulent drainage from the infected bone. Purpose: To evaluate the efficacy of antibiotic-impregnated cement nailing for management of this condition. Materials and methods: The study included 41 patients with infected non-unions of femur (23) and tibia (18) treated from 01.2009 to 09.2014. 32 (78%) patients were male and 9 (22%) patients were female. Mean age was 41.8 (range 20-78) years old. Mean time from the injury was 21.2 (range 6-91) months. Mean follow-up duration was 18 (8-36) month. 6/23 femoral and 9/18 tibial fractures were initially open. Sinuses were revealed in all patients. Pre- and intraoperative cultures revealed S.aureus in 20, S.epidermidis in 8, Klebsiella Pneumoniae in 3, Enterobacter cloacae in 2, Acinetobacter baumannii in 1 and no grows in 7 cases. Gentamycin-impregnated cement was mixed with thermostable antibiotic according to the predetermined sensitivity. After debridement, IM-nailing was performed with proximal and distal locking to improve bone stability. Patients additionally received intravenous antibiotics for two weeks. Full weight-bearing was allowed 3 months after surgery. Follow-up was performed in 6, 12, 24 and 52 weeks. Results: One year after surgery, X-ray revealed bone union in 36 (87.8%) and all 41 (100%) patients were full weight-bearing. In 5 (12.1%) cases, X-ray has not reveal consolidation, but 3 of them achieved bone union after autologus bone grafting. Open fistulas required hardware removal and debridment in 6 (14.6%) patients.

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Room: Bramante 4

Abstract no.: 44187

EFFICACY OF SINGLE DOSE VERSUS MULTIPLE DOSE INJECTABLE ANTIBIOTICS IN SURGERIES AROUND HIP JOINT

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Introduction: Antibiotic therapy for surgical prophylaxis has been a topic of debate among orthopaedic surgeons. Irrational use of antibiotics may contribute to the growing problem of antibiotic resistance. This study has been designed to determine the efficacy of surgical prophylaxis in hip fractures in a general hospital of India. Methods: We enrolled 104 consecutive patients undergoing elective implant surgery around the hip joint during September 2012 to December 2013. They were randomized into two groups. Group A (53 patients) received a single dose of injectable cefazolin 30 minutes prior to skin incision, while group B (51 patients) received additional 5 doses of cefazolin 12 hourly after the procedure. All the patients were followed up for a minimum duration of 12 months and observed for the evidence of surgical site infection. Results: None of the patients from group A had evidence of surgical site infection, while 3 out of 51 patients of group B (5.8%) developed infection. This difference was not significant statistically ($p=0.114$). Staphylococcus aureus was isolated from 2 of the 3 infected surgical sites. Evidence of a healed distant focus of infection was found in 2 of the 3 patients that developed surgical site infection. Conclusion: Five additional postoperative doses of cefazolin offer no advantage in terms of surgical site infection over its single pre-operative injection. Coexisting distant focus of infection is a risk factor for the development of surgical site infection.

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Abstract no.: 43733

ARTICULATING SPACERS IN TWO-STAGE REVISION OF THE KNEE JOINT

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Yaroslav RUKIN

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A deep knee periprosthetic infection is a serious complication that significantly reduces patient's life quality; its diagnostics and treatment require high costs and sometimes it can be life threatening. Two- or multi-staged revision of the knee joint implant, including full removal of the implant from the suppuration zone is a golden standard of treatment. We applied to articulating spacers. Articulating spacers do not require extended access to the joint, the joint mobility improves a functional result. Objectives: Analyse the results of two stage revision using articulating spacers in patients with deep periprosthetic c infection. Show the peculiarities of individual spacers in treatment of deep periprosthetic infection. Show our methods of making individual spacers. Methods: We followed up 30 patients with a periprosthetic infection of the knee joint. There were 6 patients (20%) with early infection and 24 patients (80%) with late infection. 22 patients (73%) after primary knee arthroplasty and 8 patients (27%) after revised knee arthroplasty. All of them received individual custom-made articulating spacers. Tibial part of the spacer made using silicone form, which made using 3D printing. Results: In 23 (76%) patients, we achieved good results with no signs of recurrent infection after implantation of the revision implant. In (7) 23% of cases, we achieved recurrent infection Conclusions: We come to some postoperative management peculiarities:1. Individual custom-made articulating spacers allows to increase stability, filling all existing defects, reducing scarring, and thus facilitating the second stage of revision cases.2. After the second change of spacer, it is better to switch to apparatus arthrodesis

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Abstract no.: 43807

CUSTOM-MADE CEMENT IMPREGNATED ANTIBIOTIC NAIL FOR INFECTED NON-UNIONS – A CASE SERIES

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Introduction: The primary treatment in infected unions is to eradicate the infection before achieving union. Today there are many options available for the treatment for the same. We have introduced a different type of nail for the antibiotic coating, which is easy to use and is cost-effective. Materials and Methods: Prospectively 50 patients were included in this study who had infected non unions of tibia or femur or humerus. All the patients were managed with this type of nail. The nail has different sizes and also there is a device to check the size of nail after antibiotic coating. The antibiotic coating of nail was done in the operation theatre with all aseptic precautions just before the insertion into the bone. The nail was planned to remove after 3-6 months. Results: The results were analyzed according to radiological and clinical assessment. In all patients there was infection control and in around 80% of the patients there was bone union. Conclusion: Antibiotic Nailing for the infected non-unions is the best technique for eradicating the infection and this type of nail is easy to insert, cost effective and easy to remove.

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Abstract no.: 43707

IS TWO-STAGE REIMPLANTATION EFFECTIVE FOR THE TREATMENT OF PERIPROSTHETIC KNEE INFECTION CAUSED BY RESISTANT BACTERIA?

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Introduction: The prevalence of resistant bacteria infecting total knee arthroplasties (TKAs) has increased in the last 15 years. The purpose of this study was to determine the incidence of failure, the incidence of prosthesis (or even limb) loss, and what factors influenced the failure in patients treated with a two-stage reimplantation for TKA infections caused by resistant bacteria. Methods: 29 TKAs infected by resistant bacteria in 29 patients that underwent a two-stage revision were retrospectively analyzed. Between the stages, intravenous targeted antibiotics were administered for a median period of 8 (range, 6 to 12) weeks. Median follow-up was 10 (range, 7 to 14) years. Results: Failure occurred in 5 (17%) of 29 patients. When methicillin-resistant *Staphylococcus aureus* (MRSA) and methicillin-resistant coagulase-negative *Staphylococci* (MR-CoNS) were involved failure rate was 10% (2 of 20). When vancomycin-resistant *Enterococcus* (VRE), multidrug-resistant (MDR) *Acinetobacter baumannii* and MDR *Pseudomonas aeruginosa* were involved the failure rate was 33% (3 of 9). Those 5 patients underwent two amputations, one chronic suppressive antibiotic therapy, one arthrodesis and one resection-arthroplasty; among them 4 (14% of the overall group) lost the limb or the prosthesis. No clinical factors significantly influenced the failure. Conclusion: Two-stage reimplantation resulted a valid option for patients with infections by MRSA and MR-CoNS. When highly resistant organisms were involved (VRE, MDR *Acinetobacter Baumannii* and MDR *Pseudomonas Aeruginosa*) the failure rate was much higher. In case of failure of the two-stage reimplantation, prosthesis (or even limb) loss occurred in the majority of patients.

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Room: Bramante 4

Abstract no.: 42683

A PROTOCOL FOR STAGED ARTHROPLASTY TO SALVAGE INFECTED NON-UNION OF THE FEMORAL NECK

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Background: The objective of this prospective study was to assess if a staged protocol for arthroplasty yields good results in cases of infected non-union of fracture neck of femur (NOF). Methods: Twenty seven consecutive patients who had deep hip infection with failed treatment of fracture NOF (intra-capsular in 16 cases and extra-capsular in 11) were treated between June 2007 and September 2011. Twenty six completed the planned two-stage hip arthroplasty and 1 case was lost after the first stage. The average age of patients was 48.9 years (range: 26-74) with an average follow up period of 44 months (30-72). On the acetabular side, 10 patients had cementless cups and 16 had cemented all polyethylene cups. On the femoral side, 11 patients had cemented stems and 15 had cementless stems. Regarding the bearing surfaces, 17 were metal on polyethylene, 5 were ceramic on polyethylene and 4 were ceramic on ceramic. Analysis of Harris hip score (HHS) was done using the paired t-test with $P < 0.05$ considered significant. Results: Infection was controlled in all cases that completed the treatment protocol with no recurrence at the latest follow up. The HHS for these patients improved significantly from 29 pre-operatively to 85 at the latest follow up ($P < 0.0001$). Two patients had hip dislocation with displacement of the trochanteric fragment while three other patients had fibrous union of the trochanter. Conclusion: Staged Arthroplasty procedure to salvage infected non-union of fractures of NOF is successful in eradicating infection and regaining hip function.

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Session: Free Papers - Treatment of bone infections

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 43710

**ANTIBIOTIC IMPREGNATED BONE CEMENT COATED
INTRAMEDULLARY NAIL AS A TREATMENT OF CHRONIC
OSTEOMYELITIS AND INFECTIVE NONUNION OF LONG BONES**

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Introduction: There is increasing incidence of primary fixation (internal/external) of long bone fractures due to vehicle accidents and adventurous activities. There is alarming rise of complications of postoperative osteomyelitis and infective non-union, demanding advanced technique to control infection and stabilization simultaneously. This has prompted us to do this study. Material and Methods: Fifty patients with chronic osteomyelitis and infective non-union of long bone were selected for the study. Firstly, thorough debridement (intramedullary/extramedullary) and Intramedullary device (v-nail/k-nail/flexible nail/k-wire) with coating of heat stable antibiotic (vancomycin/gentamycin) impregnated bone cement was put in the patient until infection was controlled (approx 6-8 weeks). Sensitive I.V antibiotics were given postoperatively for 15 days followed by oral antibiotics. Infection was monitored clinically and by repeated CRP. Once infection was controlled, implant was removed and assessed for union. In non-united fracture fixation was done in same sitting and followed up for union and recurrence of infection for 6-8 weeks. In chronic osteomyelitis patients, only implant was removed. Results: Mean time to infection resolution was 6.5 weeks. Average hospital stay was 2.3 weeks. Patients were discharged on oral antibiotics and followed up in OPD till 2-3 weeks after discharge stopped. We found excellent result in 38 cases, good results in 6 cases, unsatisfactory result in 3 cases. 3 patients didn't come for follow-up. Conclusion: Local delivery of concentrated antibiotic exceeds the (MIC) Minimum inhibitory concentration (200 times higher) with low systemic toxicity. With correct surgical technique the antibiotic loaded cement nail proves to be an effective modality of treatment of chronic osteomyelitis and infected non-unions of long bones.

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Abstract no.: 45262

COMPARATIVE EVALUATION OF MICRODTTECT DEVICE AND FLOCKED SWABS IN THE DIAGNOSIS OF PROSTHETIC AND ORTHOPAEDIC INFECTIONS

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The incidence of septic complications in Orthopaedic and Trauma surgery is increasing. The strategy to be adopted in choosing surgical or therapeutic treatment is based on the identification of the pathogen; knowledge of the aetiological agents is an essential element in the decision-making process. In orthopaedic surgery it is well known the role of biofilm formation that hinders bacteria and makes difficult their isolation and identification. So, sample collections appropriate approach and laboratory methods to dislodge bacteria from prosthetic surface are nowadays necessary. The main purpose of the study was to evaluate the reliability of an innovative technology (MicroDTTect), specifically applied to collect and transport explanted samples (prostheses, osteosynthetic devices, biological tissues) with the flocked swabs. The system is totally sterile and safe and contains a specific concentration of dithiotreitol (DTT) capable of dislodging bacteria from the biofilm adhering to the prosthetic surfaces. We measured the number of positive and negative samples in order to compare the MicroDTTect methodology with swabs collections in 30 procedures. The results obtained showed that MicroDDTect had a higher sensitivity if compared to swabs (77% and 46%, respectively), and it allowed to obtain 35% of positive results, while swabs only 20% of positive results. These preliminary results show a superiority of MicroDTTect in bacterial identification in orthopaedic surgery compared to swabs collection. The early identification of microorganisms, responsible of the septic condition, may improve the appropriate treatment as well as the efficacy of the therapy and as a consequence an increasing healing rate and life quality.

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Abstract no.: 44115

MULTIPLEX-PCR: A NEW RAPID AND SECURE METHOD TO DIAGNOSE AN INFECTION IN ORTHOPAEDIC PATIENTS?

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Introduction: The aim of this study is to explore the feasibility of the PCR Unyvero i60 ITI system in patients with septic arthritis (SA) or periprosthetic joint infection (PJI) under clinical conditions. Whereas conventional bacteriology only yields results within 5 to 14 days, this system is able to reduce the testing time to 5 hours. Results of both are compared and analysed. **Methods:** In this prospective study, the synovial fluid of 46 patients with a suspected SA or PJI was examined for microbiological infection. 180µl from the joint aspirate were used for microbiological analysis in the PCR Unyvero i60 ITI system. Notably, the orthopaedic surgeon himself performed all necessary processing steps. The remaining joint fluid was sent for conventional microbiological investigations. **Results:** Out of 46 samples, 19 were culture-positive, while the PCR Unyvero i60 ITI system delivered positive results in 17 cases. Consistent results were obtained in 14 (74%) cases. In 3 culture-negative and PCR Unyvero i60 ITI system positive samples, a Propionibacterium could be identified. In the SA-group, the rate of positive agreement was 100% (6/6); the rate of negative agreement 88% (14/16). A positive agreement of 67% (8/12) and a negative one of 92% (11/12) were observed in the suspected PJI group. **Conclusion:** Independently of a microbiological laboratory, the PCR Unyvero i60 ITI system provides a rapid and accurate microbiological diagnostic for infections in orthopaedic patients.

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Abstract no.: 43022

PREDICTING LOWER LIMB PERIPROSTHETIC JOINT INFECTIONS: A REVIEW OF RISK FACTORS AND THEIR CLASSIFICATION

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Background: We undertook a systematic review to determine overall predictive factors that increase a patient's risk of developing a lower limb PJI, and to assess the relative contribution of host-related and provider-related factors, and determine which postoperative factors are indicators of infection. Methods: We included studies reviewing risk factors of developing either a hip or knee PJI published from January 1998 to November 2015. These were identified through international databases, and included if they reported statistical significant calculations. Results: Twenty-seven original articles report risk factors relating to hip PJI (n=4, 14.8%), knee (n=3, 11.1%), or both (20, 74.1%). The main risk factors were the presence of a surgical site infection not involving the prosthesis (OR 35.9), preoperative high dose steroids (OR 21.0), BMI > 50 (OR 18.3), tobacco use (OR 12.76), and BMI < 20 (OR 6.00). The total number of host-related risk factors (n=34) largely exceeded those relating to the treatment provider (n=4). The main indicators of a PJI were those relating to the wound, such as a surgical site infection (OR 35.9) and discharge (OR 18.7). Conclusion: There is significant variation in the factors that places a patient at higher risk of a PJI. Host-related risk factors play the most relevant role, but the majority are non-modifiable, requiring further individualised steps and personalised care to prevent infection.

Date: 2016-09-08

Session: Free Papers - Diagnosis of bone infection

Time: 16:00 - 17:30

Room: Bramante 4

Abstract no.: 45494

BONE AND IMPLANT INFECTION WORKLOAD IN ORTHOPAEDIC PATIENTS – SERVICE EVALUATION IN A MAJOR TRAUMA CENTRE

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Background: Infection in patients with orthopaedic implants is a serious problem. It is managed with great difficulty by staff, debilitating to patients, and potentially catastrophic in terms of morbidity, mobility and mortality. Methods: The aim of this study was to assess the current workload from infection in a Level One Trauma Centre. Prospective data was collected on all patients on intravenous antibiotics over four weeks from 17/11/2015. Results: The average number of patients per day on IV antibiotics was 13 out of 52, and between 8 and 16 patients were on IV antibiotics on any given day. Of all the patients on antibiotics, 30% had prosthetic infections, 34% had native bone or joint infections, 18% had soft tissue infections in the absence of any implant, and 18% were on antibiotics for non-orthopaedic infections, such as pneumonia. The average time for one dose of IV antibiotic is 30 minutes, and the average number of doses of antibiotics for each day was 40, which equates to 20 hours of work for nursing staff. Conclusions: Antibiotic administration alone places a large burden on Trauma and Orthopaedic ward staff at this centre. Implications: All of these patients were on wards containing other patients with orthopaedic implants, posing a risk to them. These patients need regular wound checks, which with 13 patients on average on IV antibiotics presents a significant amount of work for staff, in addition to other duties. We propose a dedicated 'bone infection' unit, to optimise our management of these patients.

Date: 2016-09-08

Session: Free Papers - Diagnosis of bone infection

Time: 16:00 - 17:30

Room: Bramante 4

Abstract no.: 43867

THE SURGICAL SITE INFECTION INCIDENCE: CORRELATION AMONG AGE, DIABETES, SMOKE AND OPERATING RISK

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Surgical site infection in orthopedic surgery can be associated with increase of morbidity and social cost. Authors conducted a study to determine possible risk factors of the surgical site infection. From October 2009 and December 2011, 84 patients with a superficial and/or deep surgical site infection were identified and compared with 203 uninfected patients (control group), taken out from a series of 486 patients. Analyzed risk factors were: diabetes, BMI >30, ASA Score 3 or 4, smoke and age. Most performed operations were knee and hip prostheses (n=32, 11,14%) and open reduction of fractures (n=178, 62,02%), on the 287 examined patients. Lab exams (pre- and after surgery) on infected patients, compared to the control-group (odds ratio=8,7), showed high serum levels of glucose. It has been noticed an important incidence of infection in patients smoking from more than 20 years, (67 patients, 79,7%). Remaining variables tests (BMI, odds ratio=2,21; ASA Score, odds ratio=1,3), had no significant variation in the two groups. In addition, Authors noticed a correlation between >65 years old patients and infection of surgical site (61 patients, 72,6%). Results among diabetes, smoke and age as risk factors are correlated with development of an infection at the surgical site; while it is irrelevant the study of the ASA Score and BMI. In Authors' opinion a proper antibiotic treatment, the right glycemic control (achievable only with a careful multidisciplinary management) and a good compliance of the patient could assure a better management of the post operation results.

Date: 2016-09-08

Session: Free Papers - Diagnosis of bone infection

Time: 16:00 - 17:30

Room: Bramante 4

Abstract no.: 43913

THE EFFECT OF THE ANAESTHETIC SCREEN DRAPE ON VERTICAL LAMINAR AIR FLOW

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Introduction: Effective operating room ventilation is required to reduce the risk of surgical site infection. Vertical laminar airflow from above the surgical field provides a source of 'ultra-clean' air carrying contaminants away from the operative site. The drape often used to shield the operative site from the anaesthetic team defies the principles of vertical laminar airflow. Methods: A mock theatre set-up for a total knee replacement was constructed with and without the use of the anaesthetic screening drape. A 10x10 grid was setup within the surgical canopy and the downward air velocities were measured using a hot air anemometer. The average velocity and range of velocities at each grid point were measured. The range was used as our marker of air turbulence. Results: Within the surgical canopy the average downward air velocity was 0.33m/s. At the surgeons chest height over the anaesthetic drape the air velocity reduced from an average of 0.34m/s to 0.18m/s. We also found that turbulent air currents were produced in the areas adjacent to the drape near to the mock surgical site. The range of air velocities increased from 3.7m/s to 8.2m/s (normal range = 3.8m/s). Conclusion: The anaesthetic screen causes a disruption of normal vertical laminar airflow.

Date: 2016-09-08

Session: Free Papers - Diagnosis of bone infection

Time: 16:00 - 17:30

Room: Bramante 4

Abstract no.: 43670

A MINIMUM 4 YEARS FOLLOW-UP RESULT OF SINGLE-STAGE REVISION FOR CHRONIC PERIPROSTHETIC JOINT INFECTION OF KNEE

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Background Periprosthetic joint infection (PJI) is one of the most challenging and frequent complications after lower extremity (hip and knee) arthroplasty, it is one of the main reason of revision in China, as well. The aim of the study was to investigate the infection control and functional outcomes of chronic PJI patients who had undergone single-stage knee revision. Methods We retrospectively reviewed 43 patients (knees) with treatment of single-stage revision TKAs from April 2005 to October 2011. Latest follow up was in October 2014, minimum follow-up was 4 years (range 4-10 years). There were 27 men and 16 women, with a mean age of 65 years (37-80). Results Infection was controlled in last follow-up of 41 patients, 1 patient died with unrelated reason of infection, 1 patient with recurrence of PJI, which was eradicated by removal of prosthesis and two-stage revision; 1 patient was recurrently infected by fungus. The re-infection was controlled by intravenous vancomycin, direct intra-articular fluconazole injection and oral fluconazole. Conclusions Single-stage revision for chronic periprosthetic knee joint infection achieved a high infection control rate and acceptable functional outcomes which would be a more convenient alternative for patients without the risks of two operations and hospitalizations.

Date: 2016-09-08

Session: Free Papers - Diagnosis of bone infection

Time: 16:00 - 17:30

Room: Bramante 4

Abstract no.: 45175

TREATMENT OPTIONS AND RISK FACTORS ANALYSIS PREDISPOSING TO PERIPROSTHETIC HIP INFECTION

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Purpose of this study is to define the risk factors predisposing to infection and the most effective modality of treatment. On a base of 521 outpatients with total hip arthroplasty (THA) observed between 2012 and 2015, 27 cases affected by periprosthetic hip infection were treated. Clinical, radiographic and hematological parameters were recorded. A statistical analysis was performed to identify risk factors and to obtain indications about the most effective treatment options adopted. The risk of infection was significantly associated with: age, ASA classification, rheumatoid arthritis, diabetes, prosthetic dislocation and periprosthetic fracture. Five cases recognized as early infections were treated within the first month after surgery with open debridement and antibiotic therapy. 22 cases of late infections were treated with specific antibiotics and two-stage revision surgery. In six cases different associated procedures were necessary: debridement and substitution of antibiotic spacer, VAC Therapy, hyperbaric-therapy. In two cases Girdlestone procedure and prolonged antibiotic therapy was necessary. At a mean follow-up of 21 months after treatment any recurrence of infection or death were registered. Performing a follow-up 2-4 weeks after surgery allows to identify early infections that showed a good response to more conservative surgical debridement. The chronic infections are more unpredictable: the treatment of choice is a two-stage re implantation, supported by appropriate antibiotic therapy. It is critical to recognize the predisposing factors for proper counseling, intervention, and for implant selection. Advanced age, ASA class. III, and dislocation are the main predisposing factors to infection. The infection management requires a multidisciplinary experienced team.

Date: 2016-09-08

Session: Free Papers - Trauma Lower extremity I

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 45518

INCREASED RISK OF MORTALITY IN HIP FRACTURES WITH DEMENTIA: IS THERE A ROLE OF PALLIATIVE CARE?

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Introduction: Hip fracture care in Dementia patients has shown to contribute more to the total cost, as compared to all other conditions that co-occur with hip fractures. The NHFD report 2010 advocates palliative management in such patients, however criteria for poor health is unclear. Aim: To quantify effect of moderate /severe dementia i.e. low AMTS (≤ 5) & ASA $\Rightarrow 3$ to mortality in hip fracture as independent risk factor in mild versus moderate/severe dementia. Materials & method: 974 patients from NHFD database (1 April, 2011 to 2015) admitted to the hospital were analysed. Only patients with AMTS done at and 72 hours post admission included and matched with ASA. Mortality at 30 and 365 days in all ASA grades 1-5 in Group A patients with AMTS of >5 , and AMTS ≤ 5 group B calculated. Results: Mortality in Group A at 1 year was 21% and that in Group B, 47.42%. Fitted model was additive logistic regression with smooth term in pre-surgery AMTS. Statistical analysis showed p value $<.001$ for both 30 and 365 day mortality with no evidence of changes over time for 30 day mortality and modest evidence of changes over time for 365 day mortality. The predictive mortality rate at 30 & 365 days in Group A = 4.3 & 15.80% versus Group B 23.61 & 60.42%. Conclusion: Strong evidence moderate/severe dementia is related to significantly higher probability of death ($p < 0.001$). Is there a role of minimal cost effective fixation or perhaps just palliative care in this select group.

Date: 2016-09-08

Session: Free Papers - Trauma Lower extremity I

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 45078

OSTEOSYNTHESIS FAILURE – IT’S NOT "JUST ANOTHER TROCHANTERIC FRACTURE"

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Trochanteric fractures are amongst the most frequent, particularly in the elderly, and are the most commonly submitted to osteosynthesis. Due to its high incidence and usual population, failure occurs more often and its consequences are more meaningful. Objectives: Evaluate which factors contributed the most to trochanteric osteosynthesis failure in the authors' institution Methods: 18 cases of failure in 756 trochanteric osteosynthesis (2,4%) between 2008-2014 analyzed for initial fracture stability and anatomic reduction, implant used and its adequacy. Stability defined by intact posteromedial cortex. Implant inadequacy when dynamic hip screw used in unstable fracture; both implants adequate in stable. Results: fractures were stable (7) or unstable (11). The implants were dynamic hip screw (7) or cephalomedullary nail (11), adequate (16) or inadequate(2). Failure cause(s) was/were considered to be the initial reduction(14), incorrect screw placement(9) and implant inadequacy(2). 17 were submitted to new surgery. Discussion: Most (11) failures occurred with unstable fractures, although considerable amount (7) with stable alerts to necessity of accurate treatment, independently of stability. Correct anatomic reduction is essential – failure was the most relevant cause, at least co-responsible in 78%. "The implant doesn't reduce the fracture, it just stabilizes the achieved reduction". Incorrect screw placement contributed to failure in half (9), pointing out the necessity for precision/rigor. Implant inadequacy highlights the need for correct classification. The implant itself was not considered a cause - the surgeon must understand his errors and not to excuse them with hardware defect. Conclusions: It's imperative to treat accurately each case, keeping in mind the pre-operative anatomic reduction as a key point.

Date: 2016-09-08

Session: Free Papers - Trauma Lower extremity I

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 45008

DISTAL LOCKING IN SHORT HIP NAILS: CAUSE OR PREVENTION OF PERI-IMPLANT FRACTURES?

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Objectives: The most common cause of femoral fractures after osteosynthesis of trochanteric fractures with short nails is weakening of the femoral cortex via distal locking and stress concentrations at the tip of the nail. The aim of the study was to verify whether the incidence of peri-implant fractures is dependent upon the distal locking technique. **Methods:** We prospectively analyzed a group of 849 pertrochanteric fractures (AO/ASIF 31-A1+2) managed with short nails from 2009-2013. Unlocked nailing was performed in 70.1% and distal dynamic locking was performed in 29.9%. The mean age was 82.0 years. Peri-implant fractures were divided into 3 groups according to the height of the fracture in relation to the tip of the nail. **Results:** In total 17 fractures (2.0%) were detected. One peri-implant fracture occurred after locked nailing, whereas 16 cases occurred after unlocked nailing ($p=0.037$). Patients without distal locking had an 85.7% greater risk of peri-implant fracture. Fractures of the proximal femur (Type I) occurred significantly earlier than fractures at the tip of the nail (Type II) ($p=0.028$). **Conclusions:** Unlocked nails do not guarantee sufficient stability. Distal locking is not the cause of peri-implant femur fractures, but it rather serves to prevent postoperative peri-implant femoral fractures. We recommend the routine use of distal locking when utilizing short nails.

Date: 2016-09-08

Session: Free Papers - Trauma Lower extremity I

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 44413

EXTERNAL FIXATION OF TROCHANTERIC FRACTURES UNDER LOCAL ANAESTHESIA. OUTCOMES OF THE TREATMENT OF 200 PATIENTS WITH A LONG FOLLOW-UP OF 24 MONTHS

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Introduction: This is the first prospective study to report outcomes of external fixation in a larger patient population which includes young, healthy adults. Methods: 200 patients with intertrochanteric fractures were treated with a newly developed external fixator. All patients received local anaesthesia in form of femoral nerve and lateral cutaneous nerve blocks. 60 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: Average operative time was 26.22 minutes. No intra-operative complications were encountered. Blood loss was negligible and no patients received any blood transfusion. The mean time for union was 10.5 weeks. Post-operative complications encountered were superficial pin tract infection in 16 patients (8%) and deep pin tract infection in 7 patients (3.5%). Varus malunion occurred in 5 patients (2.5%). No implant failure was recorded. Conclusion: Our results strongly prove that this method provides a reliable and safe treatment option for trochanteric fractures and should be considered as an alternative for conventional methods of fixation in all patient populations. It offers minimal operative and anaesthetic risks, early mobilisation and a short hospital stay, with low mortality and morbidity.

Date: 2016-09-08

Session: Free Papers - Trauma Lower extremity I

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 42622

TREATMENT OF DISTAL FEMUR FRACTURES WITH METAPHYSEAL AND DIAPHYSEAL BONE LOSS - SURGICAL TACTICS USING THE ILIZAROV FRAME

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Introduction: Distal femur fractures with segmental bone loss (DFFBL) require reconstruction of the joint surface and restoration of a stable limb in anatomic alignment and length. Ilizarov frame has been shown to be a safe and effective method of treatment for long bone fractures where internal fixation is not indicated. Methods: Nineteen patients, mean age of 29,3 years were treated with circular external fixator (CEF) for DFFBL at our institutions between 2003 and 2014. Thirteen inter-intra condylar fractures were treated using limited open fixation of the condylar joint surface. Fourteen bone transport and five shortening and re-lengthening procedures were performed to treat the metaphyseal and diaphyseal bone loss. Thirteen patients had autologous bone grafting at the docking site. Results: Complete union was obtained in sixteen fractures (84%) without additional surgery. One fracture of the regenerate bone and two non-union healed using another new CEF. Average follow-up was thirty months. Average frame time was 344 days. Average distraction lengthening was 7,3 cm. Average lengthening index was 1.6 months/cm. Average range of motion was 0 to 73 degrees. Twelve patients had less than 80 degrees of flexion. Six patients required a quadricepsplasty. Four patients had minimal regenerate bending. Five patients developed a pin tract infection. Conclusion: Primary and definitive fixation with the Ilizarov frame is effective. Advantages include minimal invasive technique, reduced risk of infection, early mobilization, restoration of primary defect caused by bone loss, accurate axial alignment, versatility, and improved union rate, and range of motion in patients with DFFBL.

Date: 2016-09-08

Session: Free Papers - Trauma Lower extremity I

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 43349

THE RETROGRADE TIBIAL NAIL - A SURGICAL FEASIBILITY STUDY

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Introduction: The treatment of distal tibial fractures requires a stable fixation while preserving the soft tissues. The experimental Retrograde Tibial Nail (RTN) is currently under investigation as a minimally invasive alternative to angle stable plating and antegrade intramedullary nailing. The purpose of this study was to evaluate the surgical feasibility in a cadaver model for all types of distal tibial fracture types considered treatable by nailing. Materials: Five different fracture types (AO/OTA 43-A1/A2/A3 and 43-C1/C2) were created on separate cadaveric limbs. In simple fracture types primary nailing was performed. In fractures with intraarticular involvement reduction of the articular block and lag screw fixation was performed before nailing. Intraoperative complications, quality of reduction, fluoroscopy duration and operative time were evaluated. Results: Retrograde intramedullary nailing was possible in simple fracture types by closed manual reduction and percutaneous reduction forceps. Retrograde nailing is also feasible in fractures with simple intraarticular involvement after primary lag screw fixation. Postoperative evaluation of alignment showed an excellent reconstruction of the normal anatomy. The varus-valgus axis deviation was between 0° to 4° varus. The distance from the joint line to achieve triple distal interlocking was between 26 and 29 mm. The duration of surgery ranged from 40 to 62 min. No major complications occurred. Conclusion: The minimally invasive retrograde nail combines a minimally invasive local osteosynthesis with the ability to adequately fix extraarticular and simple intraarticular distal tibial fractures. The results suggest that retrograde tibia nailing is a promising new concept for the treatment of distal tibia fractures.

Date: 2016-09-08

Session: Free Papers - Trauma Lower extremity I

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 45233

THE 6-HOUR RULE FOR SURGICAL DEBRIDEMENT OF OPEN TIBIAL FRACTURES. A SYSTEMATIC REVIEW AND META-ANALYSIS OF INFECTION AND NON-UNION RATES

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Introduction: Traditionally it has been recommended that open tibial fractures should be debrided within 6 hours from injury to reduce the risk of infection and non-union. However, the scientific basis of this recommendation has been questioned. Aim: The aim of this study was a systematic review and meta-analysis of studies comparing early (<6 hours) versus late (>6 hours) surgical debridement of open tibial fractures, with regards to infection and non-union rates. Methods: A systematic literature search of MEDLINE, EMBASE, CINAHL, AMED and COCHRANE databases using the key words: "open", "tibial", "fractures" revealed 5849 studies. Results: Seven studies with a total of 610 patients were included for analysis. Three studies (n=365) evaluated overall infection rates that varied from 7.7% to 8.9% in the early group versus 1% to 18.5% in the late group. Three studies (n=197) evaluated deep infection rates that varied from 13% to 18.5% in the early group versus 7.1% to 18.6% in the late group. Four studies (n=245) evaluated non-union rates that varied from 13.2% to 26.1% in the early group versus 0% to 32.6% in the late group. Meta-analysis showed no statistical difference between groups with regards to overall infection, deep infection and non-union rates. Conclusions: Our results indicate that judicious delays of greater than 6 hours do not result in a significantly increased risk of infection and impaired union. A prospective cohort study with strict infection definition criteria and concentrating on deep infection and non-union rates would be of great value.

Date: 2016-09-08

Session: Free Papers - Trauma Lower extremity I

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 45020

ROTATIONAL PROFILE OF ANTEROMEDIAL SURFACE OF DISTAL TIBIA: A COMPUTERIZED TOMOGRAPHY STUDY

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Introduction: Surgical treatment of fractures by minimally invasive percutaneous plate osteosynthesis (MIPO) is prone to mal rotation. Here, we aimed to determine the transverse plane torsional axis differences of medial surface of distal tibia and tibial diaphysis, involved in anatomical plate MIPO. Materials and method: The CT images from PACS archive were reviewed retrospectively. Tibia scans of forty male cases meeting inclusion and exclusion criteria were evaluated. The inclination of the plane of the surface of the tibia was measured. Plane of the surface is defined as axis of the surface of tibia involved in distal medial plating. Results were analyzed after grouping the cases according to average stature (as below average and above average). Results: At the level of 5th cm. proximal to medial malleolus, approximately 13° of external rotation of medial surface of tibia was noted. After 11-12th cm level, external rotation exceeds 20°. At 16-19th cm, amount of rotation reaches 30°. Change in the axis occurs more proximally in cases above average stature. More proximally amount of external rotation decreases gradually. At 26th cm level, a mean of 23.21° of external rotation was measured. Amount of rotation did not differ according to stature. Conclusion: Up to 30° of external rotational plane difference was observed notably after 17-20th cm from the tip of the medial malleolus. Inadvertent leaning of proximal extension of a straight/ untwisted anatomical distal tibial plate may result with significant external rotational malalignment, especially in comminuted fractures where fixation was extended towards tibial diaphysis.

Date: 2016-09-08

Session: Free Papers - Trauma Lower extremity I

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 44304

DIAGNOSTIC ACCURACY AND RELIABILITY OF THE MALLEOLAR FRACTURES CLASSIFICATION SYSTEM FOR ANKLE SYNDESMOSIS INJURY: A PROSPECTIVE STUDY

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Objectives To evaluate the reliability and reproducibility of three classification systems (AO, Weber and LH) between independent observers. To test the diagnostic accuracy of ankle X-rays to identify syndesmotic injury. **Methods** 110 patients with an ankle fracture, indicated for surgery, were prospectively included. All patients received a preoperative ankle trauma series, which were analysed by four different observers. Three classification systems were used: Weber, AO-Müller, Lauge-Hansen and some radiographic measurements were done. The surgeons expressed, based on these parameters, an indication whether or not the placement of the syndesmotic screw. All these patients were operated by surgeons, not informed about the study, that evaluate intraoperatively the stability of the syndesmosis. Results were considered statistically significant at $P < 0.05$. Were calculated sensitivity, specificity, Positive Predictive Value, and Negative Predictive Value about the syndesmotic screw placement. **Results** In all classification systems was found moderate to good interobserver reliability (average agreement range 81-89%). Radiographic measurements have shown good to excellent interobserver reliability. Radiographic evaluation, with classification and measurement shows low sensitivity (50%) and moderate specificity (70%) in detecting syndesmotic instability, and alternative diagnostic tools should be used to evaluate the syndesmosis preoperatively. **Conclusions** Classification systems with few variables are recommended. The classification of Danis-Weber showed the best interobserver reliability. The intra-operative evaluation remains the best method (cost/reliability) in the evaluation of syndesmotic lesions. Other studies shown that the pre-operative MRI has a high degree of specificity and sensitivity, but related to an increase in expenses and hospitalization time.

Date: 2016-09-08

Session: Free Papers - Trauma Lower extremity I

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 44234

**A COMPARISON OF DIRECT ANTERIOR APPROACH AND
TRANSGLUTEAL APPROACH FOR TOTAL HIP ARTHROPLASTY IN
UNSTABLE FEMORAL NECK FRACTURES**

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Introduction: Total hip arthroplasty (THA) for femoral neck fractures is classically done through a posterolateral or transgluteal approach. Methods: We retrospectively reviewed our last fifty fractures treated through the DAA and compared them to the last fifty done through the Hardinge approach. Both clinical and radiographic parameters were analyzed. Results: Surgical time was a mean 62 minutes in the DAA group versus 70 minutes in the Hardinge group. The DAA group had one calcar fracture, versus one calcar and one trochanteric fracture in the Hardinge group. Length of stay was 5.2 days in the Hardinge and 3.1 days in the DAA group. Transfusion rate was similar for both groups (10% versus 12%). There was a better clinical outcome in the DAA group at 6 week and 3 months. There was no clinical difference at 6 months and 1 year. We had no dislocations in either group. There were no cases of HO in the DAA group versus 4 in the Hardinge group. Cup abduction angle was similar in both groups 43.3° (DAA) 43.1° (Hardinge). There were 10 outliers (<35° or >50°) in the Hardinge group and none in the DAA group. Difference in leg length was similar in both groups averaging 1mm. 15 patients had >5mm discrepancy in the Hardinge group versus 1 patient in the DAA group. Conclusion: DAA provides better implant positioning and a more consistent restoration of leg length as well as providing a quicker return to function in this elderly fragile population.

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity I

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 43229

COMPLEX HUMERAL FRACTURE TREATED BY WITH “DA VINCI SYSTEM”

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Introduction We describe the result of 127 cases of displaced proximal humeral fracture treated with a new device designed to provide good medial cortex support and report treatment outcome. **Aim** The purpose of this study was to determine the efficacy of the “da Vinci System” an open triangular prism made of titanium that is inserted in the proximal humeral cavity to stabilize the humeral head and tuberosities alone or in combination with screws or low profile humeral plate. **Methods** We conducted a retrospective review of 127 patients fixed with a “da Vinci System”. between May 2005 and February 2014. All patients were followed up at least until clinical and radiographic healing was documented. The fractures were classified based on Neer’s system: 73 (4-part) and 45 (3-part) and 9 fracture-dislocation. **Results** The results, based on the Constant-Murley score at a mean follow-up of 6 years’ (2005-2015), were excellent in 64 of 127 patients, good in 53, fair in 5, and poor in the remaining 5. Successful fracture healing was obtained in 117 of 127 pts: one case of infection, avascular necrosis occurred in four and resorption of tuberosities in one patients. Revision surgery was performed in ten patients: replating and bone graft in three, four cases of hemi and three reverse shoulder arthroplasty. **Conclusion** we examined a large cohort of patients treated with “da Vinci System”. We observe together with a good functional outcome an high rate of fracture healing and a low rate of avascular necrosis and revision surgery.

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity I

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 43243

LOCKING PLATE FIXATION - IS IT RELIABLE ENOUGH FOR PATIENTS OF ADVANCED AGE WITH PROXIMAL HUMERUS FRACTURES

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Introduction: PHFxs still have a high complication rate and unsatisfactory results with PHILOS. Objectives: To present our early results from augmentation with allo- and autografts for 3- and 4-part fractures of the proximal humerus, stabilized with locking plates. Methods For a period of 3 years 63 patients (47 female and 16 male) with mean age 69 years were operated with angularly stable plates. According to the Hertel criteria, 30% of the patients were eligible for primary arthroplasty. Proximal humeral fractures were distributed as follows: 30 patients (12 with 3-part and 18 with 4-part fractures, 10 of them with varus dislocation and medial metadiaphyseal comminution) were stabilised with additional supplementation with 3-cortical autologous bone graft. Of the rest 33 (15 with 3-part and 18 with 4-part fractures; 25 in varus and 22 with medial comminution) 20 were stabilized with additional supplementation with fibular cryoallografts, 13 – with lyophilized tibial strut allografts; 40 patients were operated with MIPO LTD approach, and 23 – with DP approach. Results 62 fractures healed. Secondary varus deformation was found in 5 patients despite the augmentation, cut-out – in 2, screw penetration in 2, impingement in 7, malrotation in 4, fixation failure in 1 and infection in 1 patient. CS 82: 3 poor, 5 acceptable, 30 good and 25 excellent results. Conclusions: The additional augmentation with autologous and allografts decreases secondary varus dislocation, especially in patients with metadiaphyseal comminution. The filling of the metaphyseal defect also has beneficial effect and decreases the risk for secondary collapse.

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity I

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 43194

MID-TERM RESULTS OF SURGICAL TREATMENT OF DISPLACED PROXIMAL HUMERAL FRACTURES IN CHILDREN

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Purpose: To analyze the clinical outcomes of 26 children treated surgically for displaced proximal humerus fracture. **Materials and methods:** From January 2008 to December 2012, 26 children/adolescents (14 boys, 12 girls) were treated surgically for displaced fractures at the proximal extremity of the humerus. Ten were grade III and 16 were grade IV according to the Neer-Horowitz classification with a mean age of 12.8 ± 4.2 years. Twenty young patients were surgically treated with a closed reduction and direct percutaneous pinning; 6 required an open approach. To obtain a proper analysis, we compared the Costant scores with the contralateral shoulder (Δ Costant). **Results:** The mean follow-up period was 34 months (range 10-55). Two grade IV patients showed a loss in the reduction after percutaneous treatment. This required open surgery with a plate and screws. On average, the treated fractures healed at 40 days. The mean Δ Costant score was 8.43 (range 2-22). There was a statistically significant improvement in the mean Δ Costant score in grade III patients. In grade IV patients, there was a significant improvement in the mean Δ Costant score in those treated with open surgery versus mini-invasive surgery. **Conclusions:** Our study shows excellent results with percutaneous k-wires. This closed surgery had success in these patients, and the excellent outcomes noted here lead us to prefer the mini-invasive surgical approach in NH grade III fractures. In grade IV, the best results were noted in patients treated with open surgery. We suggest an open approach for these patients.

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity I

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 43239

A SURGICAL TECHNIQUE TO AVOID INFRA-CLAVICULAR ANESTHESIA, AFTER PLATE-FIXATION OF FRACTURE CLAVICLE

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Introduction: Infra-clavicular hypoesthesia is a well-documented problem, after plate fixation of fracture clavicle, with an incidence of 10 to 29 %, though reversible in many within 2 years, may but become permanent in a few! (Wang L, Ang M, Indian J Ortho 2014;48;10-3). This initial study of ours, attempts to avoid this problem, by meticulous isolation of supraclavicular nerves and preserving them to the last. Methods: Twenty displaced fractures of clavicle, were fixed with Clavicle plates (locking plates in 80%), with transverse incisions (average size 4.6 inches), and average number of screws was 6. All patients were neurologically examined in detail, around clavicle, on 10th and 30th days. By meticulous dissection, medial and lateral supraclavicular nerves were isolated, and in 5 cases an intermediate (3rd) nerve was also found. All dissected supraclavicular nerves, were isolated and retracted carefully to preserve them, and then plate to be fixed slid underneath the nerves, having held, the reduced fragments with clamps. Results: In 16 cases, where the nerves were intact all along, there was no hypoesthesia in infra-clavicular area post-operatively. In 4 cases, where one of the two nerves were damaged iatrogenically, abnormal sensations including numbness was seen, lasting 6 to 9 months. In one patient, incision scar was tender medially, overlying the plate. Conclusion: In this brief study, we can conclude, that a careful dissection, preserving the supra-clavicular nerves, during clavicle plating, can avoid the bothersome infra-clavicular hypoesthesia in most of clavicle plate fixations.

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity I

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 44226

TREATMENT OF FRACTURE SHAFT HUMERUS WITH FUNCTIONAL CAST BRACE IN ADULTS

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Background: Fractures of the humeral shaft are commonly encountered by the orthopaedic surgeons; accounting for approximately 3% of all fractures. There is a wide array of good options for their treatment and controversy over the best methods for many situations. Most humeral shaft fractures can be managed non operatively with anticipated good to excellent results. Methods: This study included 15 patients (9 male and 6 female), with age range 22 to 60 years old mean (40.8) with fracture humerus treated by closed reduction and casting by functional brace. Results: 13(87%) patients united after 16 weeks of casting and get full range of elbow and shoulder after 20 weeks, 2(13%) patient non united and treated by plating. The patients that united had varus and valgus angulation less than 30° while non united fractures had varus or valgus angulation more than 30° in follow up. Our patients have a mean score 71.2 points (ranged from 92-15) according to American Shoulder and Elbow surgeon Score .Conclusion: Because of the high union rate and good to excellent functional outcome we recommend conservative treatment for fracture shaft humerus as treatment of choice and to operate only in the presence of strict indications. Keywords: Humerus, Fractures, Cast brace.

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity I

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 42880

NEWER SURGICAL TECHNIQUE FOR EXCISION ARTHROPLASTY WITH OR WITHOUT FASCIA LATA GRAFT AS A SALVAGE PROCEDURE FOR THE ELBOW

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Surgical treatment of elbow arthritis in young patients is a difficult problem. A total elbow prosthesis may not be able to withstand the functional demands placed on prosthesis by younger individuals. Resection arthroplasty with or without interposition material is often considered to be a salvage option for the treatment of severe painful elbow arthritis when total joint replacement is contraindicated. Operative technique: Posterior-Medial Exposure for the elbow. Anterior transposition of Ulnar nerve is done. The entire extensor mechanism is reflected laterally as a sleeve. .By subluxing the extensor mechanism lateral to the lateral condyle, the lateral ulnar collateral ligament and medial collateral ligament are released, allowing complete exposure of the ulnohumeral joint. After dislocating the elbow, the distal end of the humerus is prepared by excising osteophytes, removing all articular cartilage and fibrous tissue. The contours of the articulating surfaces of the humerus and ulna are prepared using a saw, or a burr anatomically similar in shape to Capitellum, Trochlea and Olecranon. Autogenous fascia lata graft harvested from thigh was used as the interpositional graft material. Complications of this procedure included bone resorption, heterotopic bone formation, triceps rupture, medial and lateral subluxation, infection, persistent pain. For patients with diminished demands, prosthetic arthroplasty is an effective and reliable treatment, but for young patients Resection arthroplasty is better as it preserves bone stock and motion and can be converted to a total elbow arthroplasty after the patient has reached a more advanced age, when less stress is anticipated on the implant. This surgical technique is designed to avoid the complications associated with the total elbow prosthesis.

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity I

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 42815

A TEN-YEAR ANALYSIS OF DISTAL BICEPS REPAIRS

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This follow up study aimed to investigate the functional outcomes of all consecutive patients who had a distal biceps repair during the last 10 years using the Manchester DASH score, representing one of the largest cohorts presented. Method: All patients who had a primary distal biceps repair from January 2004 to March 2015 were included. Statistical significance was taken as $p < 0.05$. Results: Five surgeons operated upon 65 consecutive distal bicep ruptures. We had a 91% follow up. Mean follow up was 49 months (three to 103). One patient re-ruptured; this patient was a habitual anabolic steroid abuser and therefore excluded. We found a 100% male and 61% dominant hand preponderance. Mean age 46 (± 7.34) with Mean M2 DASH score 8.45 (± 10.96). Analysis comparing patients < 45 ($n=27$) vs > 45 ($n=32$), dominant ($n=34$) vs non dominant hand ($n=25$), single ($n=57$) vs double incision ($n=2$) showed no statistical significance. However, younger patients with dominant side surgery tended to report less disability. Conclusion: Biotenodeis is a more commonly published technique for repair and our cohort were mainly repaired using a single incision, corkscrew anchor technique; our results are comparable to the already published literature further supporting this technique for repairing distal bicep rupture repair. The DASH scores were similar to that of the general population with good to excellent overall outcomes. This study shows the distal biceps repairs at our centre do extremely well and return to their social and work activities with few problems.

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity II

Time: 16:00 - 17:30

Room: Bramante 8-9

Abstract no.: 44282

OUTCOME ANALYSIS OF INTRAARTICULAR SCAPULA FRACTURE FIXATION WITH DISTAL RADIUS PLATE: A MULTICENTRE PROSPECTIVE STUDY

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Scapula fractures account for approximately 1% of all fractures and approximately 3–5% of all injuries of the shoulder girdle. Only 10% are displaced to the extent that they are considered for operative intervention. Between 2012 and 2015 we stabilised 20 scapular intra-articular fractures surgically with distal radius locking plate and studied the outcome of the surgeries using the Constant and Murley score. Both shoulders were assessed and the score on the injured side was given as a percentage of that on the uninjured side. The median score was 88% (mean 65%, range 30 to 100). The median score for strength was 21/25 (mean 19, range 0 to 25) and that for pain 11/15 (mean 11, range 5 to 15). The median functional score was 16/20 (mean 15, range 0 to 20). The mean range of active abduction of the shoulder was 135° (20 to 180), flexion 138° (20 to 180) and external rotation 38° (0 to 100). Five patients showed excellent result ; 11 patients showed Good result ; 3 patients Showed Fair result & 1 patient had poor outcome. A superficial infection settled with antibiotics after operation in one patient whose score at final follow-up was 96%. One patient with stiffness of the shoulder at six weeks underwent manipulation under anaesthesia with a follow-up score of 81%. Various fixation modalities have been described in the literature, however fixation of intra-articular fracture of glenoid with distal radius locking plate after articular reconstruction provides better stability & ensures early mobilisation and good functional outcome.

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity II

Time: 16:00 - 17:30

Room: Bramante 8-9

Abstract no.: 44271

AN INNOVATIVE TECHNIQUE, USING SINGLE INCISION TIGHTROPE AUGMENTATION IN LATERAL THIRD CLAVICLE FRACTURES

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The management of unstable lateral one-third clavicle fractures remains controversial, particularly in younger patients with clinical equipoise amongst techniques to optimise functional outcomes. Non-operative treatment is frequently chosen in elderly low demand patients with equivocal long-term outcomes, one third of cases progress to non-union and acromio-clavicular joint (ACJ) arthritis is a concern. We report an innovative surgical technique augmenting open reduction and plate fixation through a single incision. We assessed the union rate and postoperative shoulder function in patients treated acutely at our institution by the senior author. The procedure uses a pre-contoured clavicular plate and coraco-clavicular fixation using pectoralis major button, spade tip drill and cortical ring sign on intra-operative fluoroscopy. Patients adhered to a standardised rehabilitation protocol and clinical review assessing time to union, complications and Oxford Shoulder Scores. Eleven patients have been treated to date within 14 days of injury (mean 8 days). Patient aged 19 to 73 years (mean 41 years). According to Neer, 4 patients had type 2a injuries, 4 had type 2b and 3 patients had type 5 injuries. All patients went onto clinical and radiological union with no soft tissue complications or implant failures. Mean Oxford shoulder score mirrored good functional outcomes. The procedure is safe, time and cost efficient. A learning curve exists, however, upper limb surgeons will be familiar with techniques. We advocate the use of this technique as an alternative to hook plate fixation in high demand young patients or those fractures likely to progress to non-union.

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity II

Time: 16:00 - 17:30

Room: Bramante 8-9

Abstract no.: 44235

INVERTED C SIGN IN ACUTE LATERAL THIRD CLAVICLE FRACTURES AS AN INDEPENDENT PROGNOSTIC INDICATOR FOR UNION

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Introduction: The prognosis of union of lateral third clavicle fracture treated by conservative management is highly unpredictable and no definitive prognostic factors have been described till date to predict union of these fractures. The standard Anteroposterior X-rays used to identify fracture clavicle are usually obscured by scapula and ribs and actual displacement and cortical contact of the fragments is difficult to elucidate. We hereby describe a radiographic “inverted C sign” on anteroposterior X-ray produced by lateral fragment due to displacement and rotation which can serve as a prognostic indicator for union. Material and methods: Between January 2014 to December 2015 ,30 patients with mean age of 26.8 years presenting with clavicle fractures at middle third and lateral third junction were evaluated with standard anteroposterior radiographs in which we identified an inverted C sign formed by lateral fragment followed up by oblique 45 degrees cephalic tilt view to confirm the displacement .All these patients were followed up at 3 months,6 months and 1 year to evaluate for union of fracture Results: Twenty-four patients who underwent open reduction and internal fixation of the fracture had complete union of fracture site. Six patients who were managed conservatively presented with non-union. Intraoperatively, soft tissue interposition was seen in all twenty-four patients. Two of the surgically treated patients had superficial infection. Conclusion: The radiographic Inverted C sign is an excellent prognostic indicator for union in clavicle fractures involving the middle third and lateral third junction and is an indirect indicator of soft tissue interposition between the fracture surfaces

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity II

Time: 16:00 - 17:30

Room: Bramante 8-9

Abstract no.: 44253

ACUTE ACROMIO-CLAVICULAR DISLOCATION; IS CORACO-CLAVICULAR LIGAMENT RECONSTRUCTION NECESSARY?

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Introduction: Acromio-Clavicular (AC) dislocations occur in young adults following fall on outstretched hand or direct shoulder trauma. Purpose of this study is to evaluate necessity of Coraco-clavicular (CC) ligament reconstruction in acute dislocations. Patient and Methods: A retrospective study conducted on 118 patients retrieved from our records that suffered Rockwood III-V lesions of AC joint from years 2008-2014. Minimum follow-up period of 2 years after removal of temporary stabilization device. Patients were categorized into 2 groups. Group A consisted of 74 patients treated using Clavicular hook plate solely. Group B included 44 patients treated using Mersaline Tape along with tension band wiring. Patients were evaluated at final visit using Constant Shoulder (CS) score and evaluation of patients' aesthetic and functional satisfaction. AC joint width and distance between the Coracoid and Clavicle were radiologically calculated in mm Δ and compared to preoperative measurements. Results: CS score did not significantly differ between 2 groups, $p=0.056$; there was no statistical difference in the subjective parameters. All radiographic measurements were more significantly reduced in group B when compared to group A, $p=0.0034$. Group A; 18 cases of subacromial impingement improved after plate removal, mild calcification of the CC ligament with osteolysis was noted in 5% of cases. Group B, 52% of patients complained of discomfort from wire prominence that relieved on removal. No cases of recurrent subluxation were noted in either group after removal of implants. Conclusion: Our results are not supportive for CC ligament reconstruction in acute type III-V AC joint dislocations.

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity II

Time: 16:00 - 17:30

Room: Bramante 8-9

Abstract no.: 43352

RESTORATION OF ANATOMICAL LENGTH IN TREATMENT OF NONUNION OF MIDSHAFT CLAVICLE FRACTURES- A PROSPECTIVE STUDY

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Objective: To evaluate the functional outcome in relation to restoration of anatomical length in non union of midshaft clavicle treated with open reduction internal fixation by DCP with bicortical iliac bone grafting. Materials and methods: 30 patients with no radiological signs of union at six months follow-up who had been treated conservatively were taken for study. All non unions were atrophic. Non unions were stabilized by dynamic compression plate and clavicular plate with appropriate preparation of fracture ends and interposition of bicortical autogenous graft taken from ipsilateral iliac crest. Restoration of anatomical length was done as measured from templates of opposite clavicle taken preoperatively. Postoperatively arm sling protection given for 8 weeks with increasing range of movements every two weeks and full range of movements allowed after 16 weeks. All patients were followed up for 12 months. Outcome analyses included standard clinical follow-up, plain radiography, DASH (Disability of Arm, Shoulder and Hand) scoring and subjective assessment. Results: All non unions showed radiological union by average time of 4.2 months. The discrepancy in length by the time of union was +/-5mm. The mean DASH score preoperatively was 41(24-51) and post operatively was 21(11-28). No intraoperative or postoperative complications were experienced. All patients had painless range of motion of ipsilateral shoulder with good cosmetic result by 12 months. Conclusion: Operative management of non union midshaft clavicle is a challenging procedure. The evidence suggests, union with shortening is associated with poor functional outcome. Achievement of radiological union and restoration of clavicular length is advised for good functional outcome.

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity II

Time: 16:00 - 17:30

Room: Bramante 8-9

Abstract no.: 44097

ASSESSMENT OF FUNCTIONAL OUTCOMES OF ORIF WITH LOCKED PLATES, IN FOUR PART PROXIMAL HUMERUS FRACTURE: A PROSPECTIVE STUDY

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Introduction: Proximal humerus fractures account for approximately 4% to 5% of all fractures of which 4-part fractures are most severe. There lacks a consensus on optimal treatment of these fractures despite the presence of studies investigating various devices and treatment options. Locked plating has offered surgeons a biomechanical approach to stabilizing fractures and to treat a greater percentage of these fractures with open reduction and internal fixation (ORIF). This study aims at evaluating the functional and clinical outcomes of ORIF of proximal humerus 4 part fractures with locked plating. **Materials and methods:** 18 patients with four part proximal humerus fractures between august 2014 to October 2015 who underwent ORIF with a Philos plate and were prospectively followed according to a predefined protocol. Patients aged more than 20years having closed, fresh 4 part fracture on CT and radiograph were included. Functional outcomes were measured by using Constant Shoulder Scores (CSS). **Results:** All 18 patients showed radiological union at 3 months without any evidence of implant failure and no complications. CSS showed a gradual improvement with fair results at 6 weeks(mean-22.5), good results at 3months(mean-12.7) and excellent results at final follow up of 6 months (Mean 8.28). **Conclusion:** The locking proximal humerus plates is a promising implant providing rigid fixation, angular stability and good functional outcomes in 4 part fractures. It helps in early mobilization and physiotherapy to achieve a good functional outcome. Randomized multicenter trials with larger cohorts and longer follow-ups are required to define the expected outcomes of this technology.

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity II

Time: 16:00 - 17:30

Room: Bramante 8-9

Abstract no.: 44178

OUTCOME OF OPERATIVE TREATMENT OF OLECRANON FRACTURES

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Introduction: Displaced olecranon fractures are managed surgically to allow union and restore extensor function. Royal College of Surgeons of Ireland recommends tension band wiring (TBW) for Type IIA and plate osteosynthesis (ORIF) for Type IIB & III fractures based on Mayo classification. Methods: January 2011 to December 2014, 119 patients presented with 120 traumatic fractures including 11 open fractures (8 TBW, 3 ORIF). 75 patients underwent 76 TBW. (71 Type IIA and 5 Type IIB fractures). 44 patients with Type IIB fractures had plate fixation. Results: 114 fractures (95%) had successful union. Healing was confirmed at 9 weeks (6 – 24). At union, Mayo elbow performance score was used to assess outcome. There were 6 non union (three in each group). Two patients united following revision surgery. Four patients were medically unfit for revision surgery. Three TBW wires snapped, two of them subsequently united and one was revised. In plate fixation group, two cases had screw pullout (one healed and one revised). Three patients had superficial infection managed by antibiotics and two of them needed surgical debridement. Six patients had ulnar nerve symptoms (three in each group) of which five had full or partial recovery. One patient with plate fixation had transient Radial nerve symptoms. 15 TBW and five plates were removed due prominent metalwork. Conclusion: Surgical fixation is highly successful and leads to good functional results with few complications.

Date: 2016-09-08

Session: Free Papers - Trauma Upper extremity II

Time: 16:00 - 17:30

Room: Bramante 8-9

Abstract no.: 44092

OPERATIVE FIXATION OF UNSTABLE CORONOID PROCESS FRACTURES USING BUTTRESS PLATING VIA A MEDIAL APPROACH

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Introduction: Coronoid fractures often occur in one of three configurations of complex elbow fracture-dislocations: terrible triad injuries, varus posteromedial rotatory instability with an anteromedial coronoid facet fracture, or transolecranon fracture-dislocations. Of the three, the coronoid fracture in both terrible triad and varus posteromedial injuries may be addressed in a similar fashion with buttress plate fixation via a medial approach. This study looks at the clinical and radiographic outcomes of coronoid fractures surgically managed in our institution using this technique. Methods: A retrospective review of all coronoid fractures surgically fixed in our institution between Jun 2012 and Apr 2015 by the senior author was performed. Coronoid fractures associated with a transolecranon fracture pattern were excluded. A prospective telephone questionnaire was also conducted to assess patient outcomes using the DASH score and Mayo Elbow Performance Index (MEPI). Results: 12 patients with an average age of 39 years were included in the study. The average time to radiographic union was 4 months (3-7 months). 11 patients (1 lost to follow-up) displayed a functional elbow range of motion of at least 30-130 deg, with an average arc of motion of 130 deg (110-140 deg). Complications observed included heterotopic ossification (1 patient) and superficial wound infection which resolved with a course of oral antibiotics (1 patient). No reoperations were performed. The mean DASH score was 16 (2.5-43.8), and the mean MEPI score was 75 (65-100). Conclusion: Operative fixation of coronoid fractures with buttress plating via a medial approach has a predictable and satisfactory clinical outcome.

Date: 2016-09-09

Session: Free Papers - Trauma Pelvis

Time: 08:30 - 10:00

Room: Michelangelo 1

Abstract no.: 44610

A BIOMECHANICS COMPARISON TEST OF THREE DIFFERENT INTERNAL FIXATIONS IN THE TREATMENT OF THE POSTERIOR WALL FRACTURE OF THE ACETABULUM

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Introduction: The fracture of posterior wall is the most common type of the acetabular fracture. Despite plating is the standard method for this type of fracture, high failure rate of fixation had been reported. Currently, a number of specialize fixation including locking plate design had been developed. Objective: To compare the mechanical study of three different fixation technique for the fracture of posterior wall of the acetabulum. Materials and Methods: Ten saw bones of pelvis with created posterior wall fracture were used. There were three group of fixation in this study: conventional reconstruction plate plus lag screw, reconstruction locking plate plus lag screw and conventional reconstruction plate plus 2.4 mm locking plate and. Each sample was tested for compression and cyclic load using in Instron 8872 testing machine. The compression loading started at 0 N up to until fracture displacement ≥ 2 mm. and cyclic loading started at 150 N. in 500 cycles. Results: Maximum compressive were highest in 2.4 mm locking plate follow by locking reconstruction plate and conventional reconstruction consequently which show a statistically significant ($P=0.003$). But there is no statistical different among each group in cyclic loading test ($P=0.13$). Conclusion: The conventional reconstruction plate plus 2.4 mm locking plate is the strongest fixation method for the fracture of posterior wall the acetabulum. However, the further clinical study should be done to confirm this result.

Date: 2016-09-09

Session: Free Papers - Trauma Pelvis

Time: 08:30 - 10:00

Room: Michelangelo 1

Abstract no.: 43172

MANAGEMENT OF ACETABULAR FRACTURES WITH MARGINAL IMPACTION; A PROSPECTIVE CASE SERIES STUDY

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A prospective case series study including 25 patients with acetabular fractures with marginal impaction. There were 19 males and 6 females. The mean age was 36 years (18-64). ORIF by plate and screws was done through the Kocher–Langenbeck approach in all patients except 2 cases in which the ilioinguinal approach was used. The mean follow-up was 12 months (3- 24). The quality of the postoperative reduction achieved was anatomical in 18 hips (72%), imperfect in 6 (24%) and poor in one (4%). At the final follow-up, arthritis grade according to Matta's criteria was excellent in 17 hips (68%), good in 6 (24%), and poor in two (8%). The modified Merle D'Aubingne score showed excellent results in 4 patients (12%), very good in 12 (48%), good in 6 (24%), fair in 1 (4%), and poor in 1 (4%). Significant correlation was found between the quality of reduction and both the final radiological outcome and the functional score (p value <0.001). The presence of comminution was associated with less favourable radiological outcome. The immediate radiological outcome, the final radiological outcome and the functional score were not affected by the following factors: age, type of the fracture and time to surgery. Conclusion: In this case series, the quality of reduction was the most important factor that determines the functional outcome score, the final radiological outcome as well as development of post-traumatic arthritis in the treatment of acetabular fractures with marginal impaction.

Date: 2016-09-09

Session: Free Papers - Trauma Pelvis

Time: 08:30 - 10:00

Room: Michelangelo 1

Abstract no.: 45555

A COMPARATIVE STUDY OF SYMPHYSIS RE-DISPLACEMENT USING LOCKING AND NON-LOCKING PLATES IN PELVIC FRACTURE MANAGEMENT

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A retrospective comparative study of radiological outcomes in patients treated with locking or non-locking stabilisation of symphysis pubis (SP). Previous studies indicate that SP disruption treated with non-locking plates have tendency for re-displacement. This study was performed to determine if locking plates (LP) offer any advantage. Methodology: Forty consecutive patients were included from level-1 trauma centre over 5-years. Patients were treated by 2 surgeons using either LP or non-LP. Pelvic fractures were classified according to OTA and radiological measurements were made using mid pubic symphyseal distance (MPSD). MPSD was measured on earliest and latest postoperative radiographs and compared between groups to determine if there was difference between LP and non-LP groups. Results: 36M and 4F with mean age 47 years (range: 20-79), with 30 OTA type-B and 10 type-C fractures. Radiological analysis was performed for 38 patients as 2 were lost to follow-up. Twenty-eight were treated with LP and 10 with non-LP. Average length of follow-up was 18.9 months (range: 3-60). Mean pre-op MPSD was 2.7cm (range: 0 (binder)-5.6cm). Examining MPSD of LP and non-LP groups, there was no significant difference between the 2 groups achieved on early or late post-operative x-rays. Mean MPSD showed significant increase from 4.25mm to 6mm in the locked group and a non-significant increase in non-LP group from a mean of 6mm to 8.03 mm. Conclusion: this study confirms that locking plates share a tendency to radiological re-displacement of the symphysis, but final symphyseal distance has a tendency to be smaller in locking group than the non-locking.

Date: 2016-09-09

Session: Free Papers - Trauma Pelvis

Time: 08:30 - 10:00

Room: Michelangelo 1

Abstract no.: 43495

BOWEL PREPARATION PRIOR TO PERCUTANEOUS ILIO-SACRAL SCREW INSERTION: IS IT NECESSARY?

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Introduction: For accurate ilio-sacral screw placement for posterior pelvic ring fractures and avoidance of major iatrogenic injuries, the operating surgeon must ensure that the 'safe corridors' for screw insertion can be clearly visualised with intraoperative fluoroscopy. Bowel preparation may be administered prior to surgery in an attempt to clear faecal material which can obscure the field of vision. Patients with pelvic injuries are high risk of bowel preparation related complications due to their compromised physiological state. At the National Centre for Pelvic and Acetabular Surgery we have recently changed our practice and have abandoned the routine administration of bowel preparation prior to IS screw fixation. The aim of this study was to compare the outcomes of IS screw fixation with and without the use of bowel preparation, in terms of obtaining adequate visualisation, malpositioning of screw requiring revision surgery and neurovascular injury. Methods: We reviewed 74 consecutive cases of IS screw fixation performed at our institution. Two groups, one consisting of patients who underwent bowel preparation prior to surgery (Group 1) and another who had no bowel preparation (Group 2), were compared in terms of the above outcomes. Results: In Group 1 there were two procedures abandoned due to poor visualisation while none in Group 2. There were two nerve injuries in Group 1 and no nerve injuries in Group 2. Conclusion: Bowel preparation is not necessary in order to obtain adequate visualisation for safe and accurate percutaneous IS screw insertion.

Date: 2016-09-09

Session: Free Papers - Trauma Pelvis

Time: 08:30 - 10:00

Room: Michelangelo 1

Abstract no.: 43188

**PROGNOSTIC FACTORS FOR MORTALITY AFTER HIP FRACTURE:
OPERATION WITHIN 48 HOURS IS MANDATORY**

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This study assessed the association between mortality after operation for hip fracture (HF) and many variables, including surgery delay. 1558 consecutive patients were enrolled in this study (mean age 80.3 years, 75.8% female). A logistic regression was performed to evaluate the relationship between mortality rate at different follow-up (30 days, six months and one year) and different patients' or treatment variables. The mortality rate was 4% at 30-day, 14.1% at six-month, and 18.8% at one year after surgery. The logistic regression revealed an increased mortality at all the end-points in patients with two or more co-morbidities (OR30-day=2.003, OR6-month=1.8654 and OR1-year=1.5965). Male gender was associated to an increased six-month (OR=1.7158) and one-year (OR=1.9362) mortality. Patients younger than 74 years old had a decreased mortality at all end-points (OR30-day=0.0703, OR6-month=0.2191 and OR1-year=0.2486). The surgery delay influenced mortality at one-year follow-up: operating within 48 hours was associated to a decreased mortality rate (OR=0.7341; p=0.0392). In the logistic regression, operating between 48 and 72 hours was not reported as a risk factor for mortality, both compared to early surgery (within 48 hours) and to late surgery (after 72 hours). Thus, the option of operating on day 3 was not considered a valid alternative to operate within 48 hours. This study showed that age, gender and number of co-morbidities influenced both early and late mortality in patients affected by HF. Early surgery influenced late mortality, with a decreased risk in patients operated within 48 hours. A delay beyond 48 hours was considered not acceptable.

Date: 2016-09-09

Session: Free Papers - Trauma Pelvis

Time: 08:30 - 10:00

Room: Michelangelo 1

Abstract no.: 45538

UNCEMENTED HEMIARTHROPLASTY FOR NECK OF FEMUR FRACTURE

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Hemiarthroplasty is the treatment for displaced intracapsular neck of femur fractures in elderly patients with multiple co-morbidities. In this retrospective study, we share our experience of using fully coated hydroxyapatite femoral stems for treating these fractures. Between 2008 and 2014, 516 patients 538 hips, average age of 84 years underwent uncemented bipolar hemiarthroplasty for fracture neck of femur. 51% were ASA grade 3. 78% received surgery within 36 hours of admission. Radiologically, 8% were Dorr A bone, 80% B, and 12% C. The average of operating time was 75 mins. The average drop in hemoglobin was 8g/l. The average length of stay was 18 days. There were 2% (surgery related readmissions within 28 days of discharge. Mortality was 4% within 30 days and 20% in the first year. The only intraoperative complication was femoral fractures, 15 calcar and 3 greater trochanteric fractures treated with wiring. All were allowed to fully weight bear. Early complications (within 30 days) were 12 wound complications requiring surgical washouts, 4 periprosthetic fractures Vancouver Type A, 3 Type B and 6 dislocations. In the first year (late complications) there were another 4 periprosthetic fractures Type A and 5 Type B, 2 wounds requiring washout, 1 dislocation, 1 acetabular fracture and 1 revised for persistent pain. The main concern with uncemented femoral implants in this group of patients is intraoperative fractures, which occurred in 7% of patients. This study suggests that recognised intraoperative fractures treated appropriately do well but the causes of post-operative periprosthetic fractures need to be understood.

Date: 2016-09-09

Session: Free Papers - Trauma Pelvis

Time: 08:30 - 10:00

Room: Michelangelo 1

Abstract no.: 43819

DHS AND FIBULAR STRUT GRAFT FOR FIXATION OF FRESH FEMORAL NECK FRACTURE WITH POSTERIOR COMMUNITIONS

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Purpose: evaluate use of fibular grafting and dynamic hip screws for fresh femoral neck fractures with posterior comminution in young patient less than 50. Methods: Between 2011 and 2015, 35 patients aged 20 to 50, 30 men and 5 women underwent fixation using DHS and fibular strut grafts for Garden grades III (25 patients) and IV (10 patients) femoral neck fractures with posterior comminution. All fractures were reduced by closed methods. Results: mean age was, 37 years. Mean delay in presentation after injury was 1 day. Mean final follow-up for these 35 patients was 27.7 months. Healing of femoral neck was attained in 34 cases, with an average time of 4.8 months (range 4 to 8 months). One patient (Case 18) underwent arthroplasty due to failure of fixation. According to Harris hip score, outcome was good to excellent in 30 patients, fair in 4, and poor in 1. Conclusions: Posterior comminution of femoral neck fracture is a major cause of delayed and non-union owing to loss of the buttressing effect against posterior rotation. When a femoral neck fracture with posterior comminution defect is anatomically reduced, only the anterior portions of the femoral neck fracture surfaces are brought into contact. In our study, no patient developed avascular necrosis of the femoral head. This could be attributed to many factors include, closed reduction, fibular grafts and DHS fixation. Key words: Fracture neck femur with posterior comminution (G III and IV), DHS and fibular strut grafts.

Date: 2016-09-09

Session: Free Papers - Trauma Pelvis

Time: 08:30 - 10:00

Room: Michelangelo 1

Abstract no.: 43624

INCIDENCE AND CLINICAL FEATURES OF SACRAL INSUFFICIENCY FRACTURE

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INTRODUCTION: Sacral insufficiency fracture (SIF) is often manifested by low back pain or sciatica in the absence of any antecedent trauma. These fractures often remain underdiagnosed as a result of the lack of proper imaging. The purpose of this study is to clarify incidence, clinical features of SIF and to give insight an interesting finding of SIF on MRI targeting the lumbar spine. **MATERIALS AND METHODS:** Two hundred fifty patients with pelvic trauma participated in this study. There were 132 male and 118 female and their mean age was 58.6 years. Incidence, initial symptom and duration from the initial presentation to accurate diagnosis were described. **RESULTS:** There were 11 patients (4.4%) with SIF, 33 patients with pubic fracture, 23 patients with ischium fracture and 17 patients with ilium fracture. Initial symptoms of SIF were low back pain and sciatica (36.4%), gluteal pain (54.5%) and coxalgia (18.1%). Mean duration from the initial presentation to accurate diagnosis was 23.9 days. That duration of SIF was significantly longer than those of the other pelvic fractures. Four patients underwent MRI targeting the lumbar spine because of their symptom. In all 4 patients, signal intensities of T1 weighted and fat suppression images of the second sacrum were low and high, respectively. **CONCLUSION:** This study demonstrated that almost 50% of patients with SIF complained unexpected symptom at the initial presentation. Findings of the second sacrum on MRI targeting the lumbar spine may help early diagnosis of SIF in patients who complain low back pain or sciatica.

Date: 2016-09-09

Session: Free Papers - Hip Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 2

Abstract no.: 44306

A NEW METHOD OF DEFINED BONE DENSITY MEASUREMENT AFTER SHORT STEM HIP ARTHROPLASTY USING DUAL X-RAY ABSORPTIOMETRY (DXA)

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Introduction: Implantation of hip stems affects bone density of the proximal femur. Gruen zones are widely used to describe the localization of radiological changes after standard stem implantation. For Dual X-Ray Absorptiometry (DXA) the Gruen zone system was adapted in different ways. This makes it difficult to compare the DXA results, especially regarding short stem studies. Therefore, we developed a precisely defined, standardized zonal system based on 19 regions of interest (ROIs). Materials: In 50 patients (57 ± 6.1 years) the hip was replaced using the Metha stem (Aesculap, Germany). Using X-ray and DXA-investigation patients were evaluated preoperatively and after 6 and 12 months, respectively. ROIs were defined on the first postoperative DXA picture (9 ROIs laterally, 9 ROIs medially, 1 ROI tip of stem) using the implanted stem as a ruler. Defined ROIs were transferred to the other DXA-measurements. Clinical data were evaluated using the Harris Hip Score (HHS). Results: After one year, bone density significantly increased in the lateral zones 6 and 7 and the medial zone 6. In the lateral zones 3 and 4 and the medial zones 3 and 4 bone density decreased significantly. HHS improved from 46 points preoperatively to 97 after one year. Discussion: Our data confirm the results of preexisting studies using DXA and support the concept of proximal load transfer of short stems. The concept of defined ROIs gives a precise insight of load transfer of a particular implant. The method should allow a detailed comparability between short stems.

Date: 2016-09-09

Session: Free Papers - Hip Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 2

Abstract no.: 45115

CLINICAL AND RADIOGRAPHIC RESULTS OF SHORT STEMS FOR TOTAL HIP ARTHROPLASTY AT MID TERM FOLLOW-UP

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Significant results have been described about short stem reliability, but few evidences are actually available about their effectiveness at medium and long term. The aim of this study is to evaluate the clinical and radiographic results of a group of patients treated with short-stemmed hip prosthesis at medium-term follow up. 141 patients, undergone short-stemmed hip replacement, were selected from our database. Exclusion criteria adopted were BMI > 35 and severe osteoporosis. The population was composed by 75 males and 66 females with a mean age of 62.4 years. All patients were operated by the same surgeon using the same technique (posterior, minimally invasive approach) and were evaluated 1, 3, 6, 12 months and then every year after surgery by standard X-Ray and clinical outcomes (HHS, WOMAC, SF-12 and VAS). The mean follow-up (FU) was 35.2 months (Minimum 1 month, Maximum 112 months). All the implants were radiographically osseointegrated, with a failure rate of 0%. A rapid improvement of clinical outcomes including recover from pain and joint function, were observed (HHS: 92.9; VAS pain: 7,5 on a 0-100 scale) with a significant improvement in the life quality (SF-12P: 52.1; SF-12M: 56.4; WOMAC: 88.2). Short stem implants showed good clinical and radiographic results at medium term follow up. A low complications rate confirmed the effectiveness of these implants with fast pain and function recover, that are comparable with traditional stems. Bone stock saving and excellent load distribution allows to avoid stress shielding and tight pain, and to perform easier revision surgery.

Date: 2016-09-09

Session: Free Papers - Hip Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 2

Abstract no.: 45009

IS A COLLAR NECESSARY TO STABILIZE AT LONG TERM A CEMENTLESS STEM IN TOTAL HIP ARTHROPLASTY?

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The need to use a collar to stabilize a cementless stem in Total Hip Arthroplasty (THA) is discussed for a long time. His main interest is in preventing subsidence and to avoid oversizing leading several authors to recommend the systematic use of a collar stem. The objective of this study was to monitor the stability of a THA comprising a straight titanium stem, uncemented, without collar, with a self-locking quadrangular shape, undercoated titanium and hydroxyapatite layer. This is a retrospective and continuous series of 126 THA followed with a minimum of 10 years and at mean 146 months. 88 cases were analyzed radiologically at last follow up. In preoperative all femurs were classified according to the Noble index. Engh classification was used to assess bone ingrowth; subsidence of stems (relative to lesser trochanter) was investigated. Using radiological follow up of 76 months (24 to 138) no intraoperative fracture were noted; there has been no subsidence; five patients had calcar lysis which one greater than 50% of the surface. A prosthesis was suspended. None sank secondarily. The average score of Engh was 17.5 (15 to 27). Femur type, according to the Noble index, had no influence on the stem stability. At maximum clinical experience (122 months) the femur survival rate was 98.8%. In the case of a completely coated stem with a bilayer coating (titanium + Hydroxyapatite), the use of a collar is not necessary since the primary fixation and the secondary ingrowth allow a long-term stable fixation.

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Session: Free Papers - Hip Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 2

Abstract no.: 43730

SURVIVAL OF A CEMENTLESS STEM WITH COLLAR IN TOTAL HIP ARTHROPLASTY (THA) IN PATIENTS UNDER 55 YEARS OLD AFTER 10 YEARS: PROSPECTIVE STUDY OF 49 IMPLANTS

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Introduction: The use of cementless stem for primary THA is today a classic choice, but using a collar is still controversial. We use a cementless tritapered femoral stem with a collar and bi-layer extensive coating (Ta6V/HA) since 2000. The goals of this study were to evaluate the results of this implant through a continuous and prospective series of patients under 55 years. Methods: From 2002 to 2004, 36 stems were implanted in 35 patients. The average FU was 10.5 years. The acetabular component was a cementless dual mobility of second generation. All data's according to patient parameters such gender, BMI, etiology, ASA, Devane activity scores and to clinical and radiological evaluations such Harris Hip (HHS), Merle d'Aubigné (PMA), Oxford, osteolysis, Engh and ARA scores have been compared. Statistical analysis were performed by Kaplan-Meier method Survivalship rate. Results: No patients were lost to FU. With revision for stem loosening as end point, the survival rate was 100% at 10.8 years. The HHS (40 to 98) and PMA score (8.9 to 17.8) are improved at the last FU. Neither subsidence or femoral lucent line or osteolysis was observed, and also 58.82% of moderate calcar remodeling under 5 mm. The overall Engh and Massin score showed 100% of bone ingrowth. Conclusion: Our results are similar according with the literature about comparable series for cemented Charnley Kerboull or with cementless series without collar. The results at more than ten years FU of this cementless stem with collar and an extensive bi-layer coating can be considered as suitable for the young people .

Date: 2016-09-09

Session: Free Papers - Hip Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 2

Abstract no.: 43960

CLINICAL AND RADIOGRAPHIC OUTCOMES AT 25 TO 30 YEARS OF 347 THAS WITH HA-COATED STEMS

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The concept of total osteointegration of a tapered stem was introduced three decades ago to achieve durable biologic fixation while preserving normal periprosthetic bone trophicity. While numerous studies reported successful long-term outcomes of THA with bioactive fixation, little is known about the survival and fixation of these implants beyond the first 20 years. The authors evaluated clinical and radiographic outcomes, at a follow-up of 25 to 30 years, of a series of 347 THAs (320 patients) aged 64.3 ± 11.3 years. The patients were operated by a single surgeon (AM) between 1986 to 1990 using the Corail stem (DePuy, Leeds, UK). Of the initial 347 hips, 224 (64.6%) were in deceased patients, 29 (8.4%) were lost to followup, 52 (15.0%) had acetabular component revision, 13 (4.0%) had polyethylene insert revision, and 12 (3.8%) had femoral stem revision. The remaining cohort of 82 THAs (69 patients) were assessed at 26.8 ± 1.2 years (range, 25.1 - 29.4). The Kaplan-Meier survival was 93.9% (CI, 90.5 - 97.5) considering revision of the stem as endpoint, and was 62.5% (CI, 55.6 - 70.3) considering revision of any component as endpoint. Despite the incidence of acetabular osteolysis due to wear of polyethylene inserts, the femoral fixation was seldom affected beyond the proximal calcar region. Periprosthetic bone remodelling was limited, and in most cases proved natural, by comparison to the intact contralateral hip. Comparison of serial radiographs revealed great stability of stem fixation beyond 20 postoperative years with no signs of radiolucency, migration nor pedestal formation.

Date: 2016-09-09

Session: Free Papers - Hip Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 2

Abstract no.: 44174

PRIMARY TOTAL HIP ARTHROPLASTY WITH DUAL MOBILITY SOCKET TO PREVENT DISLOCATION: AN AVERAGE 24-YEAR FOLLOW-UP OF 240 HIPS

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Introduction: Thanks to a wider Range Of Motion, the Dual Mobility socket concept was designed for primary THA, to maintain intense activities without restriction and for revision THA, to compensate muscular deficits. The aim of our study was to evaluate long-term survival and dislocation rates of this concept. Methods: It was a retrospective study, on 240 hips using a PF® modular femoral stem and a Dual Mobility Novae® tripodal socket (SERF). Mean follow-up was 24 years. Mean age at the time of the surgery was 56 years. Patients were clinically evaluated using Charnley, Harris, Postel-Merle d'Aubigne, Devane and Sedel scores, and radiologically evaluated searching for osteolytic lesions and implant positioning. Results: Pre-operative mean Harris and PMA scores were respectively 53 and 10.8. Their respective last follow-up counterparts were 83.1 and 16.9. Mean Devane score stayed around 3. No thigh pain was noted. 24 year follow-up global survival rate was 74 %. No dislocation occurred, 41 hips were revised (20 cup aseptic loosening, 10 Intra Prosthetic Dislocations, 4 liner changes, 5 stem failures, 2 sepsis), 12 hips were lost to follow-up, 76 patients (100 hips) died without revision, and 87 hips were still in situ. Discussion: Dual Mobility socket global survival rate is comparable to similar cemented or uncemented series. The 0 % dislocation rate demonstrates the success of Dual Mobility concerning implant stability. Liner improvements in materials and designs, starting with an explant retrieval analysis might widen DM socket indication, traditionally suitable for patients older than 60 years.

Date: 2016-09-09

Session: Free Papers - Hip Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 2

Abstract no.: 43728

DUAL MOBILITY CUP (DMC) IN PATIENTS UNDER 55 YEARS OLD AFTER 10 YEARS FOLLOW-UP

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Introduction: We report the 10 y minimum clinical and radiological outcome of a DMC implanted in patients at less than 55 y old. The goal of this work is to study the results of a continuous and prospective series of these patients and to compare these results to those of a series in older patients operated in the same conditions. Methods: From 2000 to 2005, 116 THA with a cementless DMC of 2nd generation was implanted for 102 patients. During the same period 1014 identical DMC were used for older patients at more than 55 y old. The femoral implant was a cementless stem full coated with HA and with a collar. Results: The mean FU was 11 y (8 to 15y). There is 6 lost to FU, 4 dead patients with more male (67,65%) There is also 1 infection and 1 cup revision. At the last FU the PMA score was 17(8.6preop), and the HHS 98(39.2preop). The survival curve was 98.2% if the end point was cup revision. There is no dislocation and the DEVANE score was better with more stage 4 and 5 post op compared to the preop. Discussion: The results are the same than the series of older patients with a survival rate at 98,8% at 15 y for the oldest. These results are in the same agreement than those of the literature. Conclusion: The DMC for young patient is a relevant surgical option with no dislocation, an excellent clinical result and survival rate at mid term FU.

Date: 2016-09-09

Session: Free Papers - Hip Arthroplasty I

Time: 08:30 - 10:00

Room: Michelangelo 2

Abstract no.: 44981

PROJECTIONS OF HIP ARTHROPLASTY IN OECD COUNTRIES FROM 2015 TO 2050

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We estimated the future demand of hip arthroplasty for selected OECD countries. 20 countries out of the OECD sample have been selected using historic data (1995-2012) and multiple linear regression technics. Use of primary hip implants in OECD countries continues to grow by a CAGR of 1.2%, leading to an increase of 1.8 millions per year in 2015 to 2.8 in the year 2050. Utilization of all hip implants (primary and revision) will grow from 2.2 millions to 3.3 millions. The mean utilization rate (=incidence) of primary hip implants will increase from 145 to 275 per 100.000 total population in the same time. There are significant differences between the individual countries: Countries with declining population figures like Germany and Italy will show declining use of primary hip implants. In contrast, Australia, Ireland, Norway, Switzerland and other countries will face a significant increase of utilization of primary hip implants between 80 and 120% from 2015 to 2050. The revision burden of hip arthroplasty will increase exponentially. Primary hip arthroplasty continues to rise significantly over the next 35 years, but CAGR will decline from over 2% (1995 to 2011) to below 2% (2015-2050) in OECD countries. Nevertheless some countries will face an exponential use of primary hip arthroplasty. Revision burden will increase from 20% to an even higher value.

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Time: 08:30 - 10:00

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Abstract no.: 43298

DIFFERENT BEARING SURFACES INFLUENCE MUSCLE FATTY DEGENERATION AND MUSCLE PROGENITORS DECREASE AFTER THA

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Biological differences in wear products generated by different bearing surfaces may influence differences in the appearance of periarticular muscle after THA; however, such bearing-associated differences to our knowledge have not been studied in vivo. Methods: We retrospectively evaluated 240 patients (240 hips) who had a THA revision (98% of which, 235 of the 240, were isolated acetabular revisions) and a normal contralateral hip. All patients had received the same implants for the primary arthroplasty (32-mm head) except for bearing surfaces (80 hips with ceramic-on-ceramic, 160 with polyethylene). Before revision, osteolysis, muscle atrophy and fatty degeneration were evaluated on CT scan and compared with the contralateral side. Muscle biopsies were performed. Bone muscle progenitors were evaluated by bone marrow MSCs and satellite cells for muscle. Results: For the 80 hips with ceramic-on-ceramic, no osteolysis was detected before revision; there was no muscle fatty degeneration of the gluteus muscles on CT scan or histology. For the 160 hips with polyethylene liners, osteolytic lesions on the acetabulum and femur were observed in 100% of the hips; The increase atrophy of the gluteus muscles observed on CT scan correlated with the increase of osteolysis ($r = 0.62$; $p=0.012$). The surgical limbs in the patients with PE hips as compared with CoC hips demonstrated more severe reduced cross sectional area (respectively 11.6% compared with 3%, Odds ratio 3.82, $p < 0.001$) and radiological density (41% , 14.1/34.1 compared with 9%, Odds ratio 6.8, , $p = 0.006$) of gluteus muscles when compared with the contralateral normal side. In patients with PE hips, a decrease of bone marrow mesenchymal stem cells (MSCs) and muscle satellite cells was observed, compared to CoC hips. Conclusions: there could be a new focus in ceramic research, beyond wear and tribology to better understand the

Date: 2016-09-09

Session: Free Papers - Knee Osteotomy and UKA

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 45144

EFFICACY AND SAFETY OF ILIAC CREST ALLOGRAFT IN MEDIAL OPENING-WEDGE HIGH TIBIAL OSTEOTOMY COMPARED TO ILIAC CREST AUTOGRAFT: A RANDOMIZED CONTROLLED CLINICAL TRIAL OF 5-YEARS FOLLOW-UP

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Introduction: Medial opening-wedge high tibial osteotomy (MOW-HTO) is one of the most common procedures done around the knee. This study is a long term follow-up report of the patient population of our previously reported short-term randomized controlled clinical trial comparing allograft and autograft as void fillers in MOW-HTO. Methods: Forty-six patients with genu valgum deformity with or without medial compartment osteoarthritis, were enrolled based on specific inclusion and exclusion criteria and were randomly assigned into two groups. MOW-HTO was done using iliac crest allograft (23 patients) or autograft (23 patients) as void filler. The operation and follow-up plan was identical in both groups. All patients were followed-up to at least 5 years. Anatomical indices of proximal tibia, complications, and functional outcome scores were assessed for both groups. Results: The amount of correction (degrees), recurrence, complication rates, time to clinical or radiologic union, and knee scores was similar in both groups. Duration of operation was significantly less in allograft compared to autograft group (66.6 ± 3.6 versus 52.9 ± 5.3 minutes, $p < 0.001$). We had one case of surgical site infection in graft harvest site. No nonunion or delayed union was encountered in either group. Some patients reported more intense postoperative pain in iliac graft harvest site than tibial osteotomy site. Conclusions: According to our results, iliac crest allograft can be safely used in MOW-HTO with comparable efficacy and safety to iliac crest autograft.

Date: 2016-09-09

Session: Free Papers - Knee Osteotomy and UKA

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 43174

THE NOVEL COMBINATION OF ARTHROSCOPIC MEDIAL RELEASE AND OPEN WEDGE HIGH TIBIAL OSTEOTOMY WAS GREATLY SUCCESSFUL FOR VARUS KNEES WITH MEDIAL COMPARTMENT OA

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Background: Because of many disadvantages of closed-wedge high tibial osteotomy, the open-wedge technique (OWHTO) gained importance. But, axis correction alone did not reverse the progressive degenerative pathology, and, arthroscopic medial release (AMA) alone could not prevent recurrence of the pathology because of mal-alignment. Methods: A combined procedure targeted on AMA with elimination of the focal abrasion phenomenon followed by mini-invasive OWHTO fixed by a locked plate. Fifty-two knees of 42 patients with medial compartment osteoarthritis with knee varus were managed. There were 10 males and 32 female with a mean age of 51 years. The Knee Society score (KSS) and the knee injury and osteoarthritis outcome score (KOOS) were used for evaluation. Radiologically, the femoral-tibial angle and joint space width were evaluated. Results: The mean follow-up period was 18 months. The patients were satisfied for 47 knees (90.38%). No poor results were encountered and no patient was converted to total knee replacement. The mean Knee Society score was statistically improved from 18.2 (95% confidence interval, 16.7 to 18.5), pre-operatively to 44.6 ($p < 0.001$). The femoral-tibial angle and the joint space width improved insignificantly. The plain x-rays showed stoppage or reversal of the degenerative process in 40 knees (76.9%), while the others showed no deterioration. Conclusions: Combined AMA and OWHTO greatly improved the results of mini-invasive surgical treatment for varus knee with medial compartment OAA wide based comparative study is recommended with 2nd look arthroscopy to evaluate the possibility of cartilage regeneration.

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Session: Free Papers - Knee Osteotomy and UKA

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 44996

CARTILAGE REGENERATION IN ICRS GRADE 3 CARTILAGE LESION AFTER HIGH TIBIAL OSTEOTOMY: SECOND LOOK ARTHROSCOPIC EVALUATION

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This study was to compare the results of high tibial osteotomy with and without microfracture procedure for ICRS grade 3 osteoarthritic knees and to assess the degree of cartilage regeneration at second look arthroscopic surgery. 47 patients who underwent a second-look arthroscopic evaluation at the time of surgery of plate removal after 1 year of initial HTO were involved. Only ICRS grade 3 of medial femoral cartilage at the time of initial HTO surgery were included. HTO without any cartilage repair procedure group included 23 patients and HTO with microfracture procedure included in 25 patients. Cartilage status of initial and second arthroscopy was evaluated using the International Cartilage repair society (ICRS) grading system. KS score and mechanical tibiofemoral angle at the time of second look surgery was assessed. Results: Clinically both group had a satisfactory results. (KS score 95.3 vs 96.6). ICRS grade of medial femoral condyle was improved significantly in microfracture group. Of the 25 knee, 9 (33.3%) improved to grade 1, 13(48.1%) improved to grade 2 and 5(18.5%) showed no regenerative change. ICRS grade showed no significant difference in isolated HTO group. Of the 23 knee, 3(13%) improved to grade 1, 6(26%) improved to grade 2 and 14(61%) showed no regenerative change. Conclusion Compared to cartilage regeneration in isolated HTO surgery, cartilage regeneration was achieved more satisfactory with microfracture procedure in HTO surgery performed in patients with ICRS grade 3 degenerated medial femoral cartilages. However there is no significant difference in clinical outcomes.

Date: 2016-09-09

Session: Free Papers - Knee Osteotomy and UKA

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 42927

COMBINED BIPLANAR HIGH TIBIAL OSTEOTOMY AND ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTIN IN MEDIAL OSTEOARTHRITIS OF UNSTABLE VARUS KNEES

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We report 6 cases of combined biplanar high tibial osteotomy (HTO) and anterior cruciate ligament (ACL) reconstruction in medial osteoarthritis of unstable varus knees. Patients were 4 men and 2 women, average age at surgery was 47.2. The average time from injury of ACL to operation was 16.8 (6-41) years. Open wedge HTO and anatomic single bundle ACL reconstruction were performed in all cases. Knee Osteoarthritis Outcome Score (KOOS) and clinical findings were investigated preoperative time, and final follow-up after surgery. All KOOS subcategory score improved after surgery. (Pain: 54.4 to 76.1, Symptom: 53.5 to 70.0, ADL: 70.6 to 87.9, Sports & Recreation: 31.0 to 51.0, QOL: 20.0 to 61.3) Lachman test was negative in 5 cases, 1+ in 1case. Pivot shift test was negative in 4 cases, grade 1 in 1 case, grade 2 in 1case. In systematic review, combined HTO and ACL reconstruction provided satisfactory restoration of anterior instability, improvement of subjective evaluations, and a predictable return to recreational sports. Our results were similar to previous literature. This procedure was helpful for medial osteoarthritis with ACL deficient knees.

Date: 2016-09-09

Session: Free Papers - Knee Osteotomy and UKA

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Room: Michelangelo 3

Abstract no.: 44725

HIGH TIBIAL OSTEOTOMY VERSUS OXFORD UNICONDYLAR KNEE REPLACEMENT (COMPARATIVE STUDY)

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Aim of work: Functional assessment of two matched groups of patients with medial compartment osteoarthritis, where one group will have High tibial osteotomy (HTO) and the other group will have Unicondylar knee replacement. Introduction: Knee osteoarthritis (OA) ranks among the most common disabling conditions in adults. Characterized by persistent joint pain and limitation of function, knee OA adversely affects one's quality of life by impeding an individual's ability to work and to perform recreational and daily living activities. It has significant economic and societal impact due to the direct health care costs as well as the indirect costs from morbidity and loss of productivity. High tibial osteotomy and unicompartmental knee arthroplasty represent a "strange couple" in the treatment of medial compartment arthrosis of the knee. Even though they are very different procedures with different philosophies, in some cases they share the same indications. Therefore, some authors describe them as alternative options, while others deny any overlaps of indication. Methodology: retrospective study including 42 patients, been assessed using Oxford questionnaire at 2 events 6 weeks & 6 months postoperatively. Results: no significant statistically different result Discussion & Conclusion There is considerable overlap in the surgical indications for the two treatment options. The important issues during the selection of an appropriate surgical treatment for unicompartmental OA include the extent of the disease in the knee, the OA grading, the preoperative alignment, the age, body weight, and activity levels of the patient, the preoperative ROM, and the effects of OA on the daily activities of the patient.

Date: 2016-09-09

Session: Free Papers - Knee Osteotomy and UKA

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 43832

THE INFLUENCE OF MEDIAL TIBIAL JOINT LINE ELEVATION ON POST-OPERATIVE KNEE RANGE OF MOTION IN UNICOMPARTMENTAL KNEE ARTHROPLASTY

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Background: Joint line elevation in total knee arthroplasty (TKA) has been reported to limit postoperative range of motion (ROM). However, little is known about whether joint line elevation in unicompartmental knee arthroplasty (UKA) influences postoperative outcomes. The purpose of this study was to examine the influence of medial tibial joint line changes on postoperative ROM in UKA. Methods: Forty-five consecutive medial UKAs were enrolled in this study. All the patients received a conventional fixed bearing UKA. Medial tibial joint line was defined as polyethylene thickness minus tibial osteotomy thickness and sawblade thickness (1.27mm). Positive values indicated an elevation of tibial joint line. Component gap between the medial tibial osteotomy surface and the femoral trial prosthesis was also measured throughout the ROM using a tensor during surgery. Joint looseness, which was defined as joint component gap minus polyethylene insert thickness, was calculated. The correlation of the medial tibial joint line elevation with joint looseness and postoperative range of motion were analyzed. Results: The mean medial tibial joint line elevation was 5.0 ± 1.1 mm. The medial tibial joint line elevation was inversely correlated with the improvement in postoperative knee extension and flexion angle. The medial tibial joint line elevation was inversely correlated with joint looseness at knee extension and joint looseness at knee extension positively correlated with the improvement in postoperative flexion angle. Discussion: These results indicated that medial tibial joint line elevation tightened joint gap at knee extension, which resulted in decreasing the improvement of knee extension angle after UKA.

Date: 2016-09-09

Session: Free Papers - Knee Osteotomy and UKA

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 44774

MEDIAL UNICOMPARTMENTAL KNEE ARTHROPLASTY USING PATIENT-SPECIFIC INSTRUMENTATION – ACCURACY OF PREOPERATIVE PLANNING, TIME SAVING AND COST EFFICIENCY

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Introduction: Patient-specific instrumentations (PSI) are greatly marketed in knee endoprosthetics as to improve prosthetic accuracy, shorten surgical time, and reduce costs. Whether these proposed advantages are achieved in medial UKA remains unclear. The aim of this study was to evaluate preoperative planning accuracy, time saving, and cost effectiveness in UKA with PSI. Methods: Data from 24 knees (22 patients; mean age 61±8years) with isolated medial unicompartmental knee osteoarthritis, provided with a UKA utilizing PSI between June 2012 and October 2014, were analyzed retrospectively. The following parameters were analyzed: (1) planned vs. implanted femoral component size, (2) planned vs. implanted tibial component size, and (3) planned vs. implanted polyethylene insert size. Since UKA is a less common, technically demanding surgery, depending in large parts on the surgeon's experience, preoperative planning reliability was also evaluated with regards to surgeon experience. Actual surgical time required and PSI cost effectiveness was also evaluated. Results: Femoral component preoperative planning had to be adjusted intraoperative in 41.7% of all cases, the tibial component in 58.3%, and the polyethylene insert in 87.5%. Less experienced surgeons changed preoperative planning more often compared to more experienced surgeons. Utilizing PSI increased surgical time in both, less experienced and more experienced surgeons. PSI-planning and surgeon inexperience were the main predictors for increased surgical time. Furthermore, utilizing PSI increased surgical costs due to e.g. license fees and extraordinary expenditure for MRI-scans. Conclusion: The advertised advantages of PSI could not be fully supported in case of UKA. Additional data with larger cohorts are required.

Date: 2016-09-09

Session: Free Papers - Knee Osteotomy and UKA

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 44206

**UNICOMPARTMENTAL KNEE ARTHROPLASTY VERSUS TOTAL KNEE
IN THE SAME PATIENT. A COMPARATIVE STUDY**

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Unicompartmental knee arthroplasty (UKA) and total knee arthroplasty (TKA) are both options for surgical treatment of isolated medial compartment osteoarthritis. Few studies have compared UKA and TKA in the same patient. The purpose of this study was to compare the results of these two different procedures in a group of patients who had undergone both arthroplasties, one on each knee. We identified 22 patients (14 women's and 8 men). Average patient age was 73 years at the time of TKA and 76 at the time of UKA. Average BMI for the entire cohort was 29.17. The mean follow-up was 71 and 46 months for TKA and UKA respectively. Patients were evaluated using KSS and KOSS scores and radiographic data, including alignment measurements, were collected. Preoperatively KSS averaged 64 points in both groups. At hospital discharge, the scores averaged 82 points for UKA and 78 for TKA. The KOSS scores were 68 for UKA and 64 for TKA preoperatively, and 84 for UKA and 81 for TKA at hospital discharge. Survivorship of the unicompartmental group was 95% compared with 100% in the total knee group. For knee function and postoperative pain, UKA appeared similar to TKA at 3 years follow-up. Range of motion was better in UKA compared with TKA.

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Session: Free Papers - Knee Osteotomy and UKA

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 43704

EFFECTS OF MINOR VARUS LIMB ALIGNMENT IN MEDIAL UKA

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Introduction: Although several studies have already reported how marked ($\geq 8-10^\circ$) varus limb alignment increases the rate of UKA failure from wear or loosening, few data exist about outcome and survivorship of UKA in patients with minor varus alignment. The purpose of this study was to analyse the outcomes and survivorship of medial UKA implanted with no more than 7° of varus. Methods: 125 medial fixed-bearing UKAs with no more than 7° of varus were retrospectively analysed. At surgery, varus/valgus inclination and thickness of the bone cuts were performed according to the proximal tibial epiphyseal axis in order to restore, respectively, the correct obliquity of the joint line and the pre-degeneration limb mechanical axis. Patients were assessed through the IKS scores. Additionally, the subjects were classified into three groups according to the postoperative femoro-tibial mechanical alignment angle (group A: -2° to 1° ; group B: 2° to 4° ; group C: 5° to 7°). Results: Mean follow-up was 7.6 years. IKS knee scores increased proportionally with increasing varus ($p << 0.01$). Additionally, IKS knee scores were significantly higher in group B and still higher in group C if compared to those in group A ($p = 0.003$). A significantly higher frequency of IKS function scores > 90 points in subjects with limb alignment $\geq 4^\circ$ was found ($p = 0.009$). Final implant survivorship was 98.4%. Conclusions: Minor varus limb alignment does not compromise the mid- to long-term survivorship of a medial UKA, and gives better outcomes compared to neutral or close-to-neutral alignment.

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Session: Free Papers - Knee Osteotomy and UKA

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 45639

SURVIVAL ANALYSIS OF OXFORD UNI-COMPARTMENT KNEE REPLACEMENT

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This is a retrospective analysis to review survivorship of Oxford uni-compartment knee replacement (UKR), with revision as endpoint. Methodology: 185 patients were reviewed (December 2005-May 2014) to identify revised UKR patients. Notes of revision UKR were reviewed in detail to analyze the causes of revision. OKS was collected if completed (old OKS was used). Results: average age of UKR was 64.9. Three deceased and 1 lost follow-up. 8 (9-UKRs) had revision UKR to TKR (5%). For revision patients: Implant survival was 4-years on average. All patients had normal preoperative bloods. None had infection and this was confirmed with synovial biopsy and microbiology results. Causes of revision included loose components, lateral compartment osteoarthritis and idiopathic. None required further surgery. None of remaining patients was revised to date; average 4.4-years post UKR (range 1-8 y). OKS was available for 87 of 184 patients, including revisions. Average length follow-up was 1.8 years and 1.9 years for OKS of primary and revisions respectively. All patients showed statistically significant improvement in OKS at 6m, 1y and on last follow-up. No significant change was noted in OKS from 6m to 1y or from 6m to last follow-up. No significant difference was shown between primary and revision groups pre-operatively, at 6m, 1-year and on last follow-up OKS. Conclusion: In a medium-term follow-up of 4 years revision rate of UKR was 5%, Causes of failure included loosening, progressive OA and idiopathic. Improvement in OKS is noted in the first 6m-1year.

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Abstract no.: 45170

COMBINED ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION AND UNICOMPARTMENTAL KNEE REPLACEMENT. A SYSTEMATIC REVIEW

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Introduction: There exist limited options for treatment of patients with combined medial compartment arthritis and anterior cruciate ligament (ACL) deficiency. Ideal treatment is one that offers lasting relief of symptoms not compromising any future surgery. Unicompartmental knee arthroplasty (UKA) has shown consistently good results in the young and active population, but there is a high incidence of failure of up to 20%, if performed in the ACL deficient knees. One of the recognized treatment modality is a combined ACL reconstruction and UKA. We present a systematic review looking at the demographics, techniques, complications and outcome of combined ACL reconstruction with UKA in literature. Methods: A thorough literature search was carried out till date to identify relevant articles. A total of 7 studies met the inclusion criteria. 158 patients were treated with simultaneous ACL reconstruction and UKA. Results: The mean age was 50.5 years (range from 44 to 56) with a mean follow-up of 35.5 months (range from 24 to 60). There was an improvement in mean Oxford Score from 23.4 to 35.3 and Knee Society Score from 90.3 to 135.1. Complications reported include bearing dislocation (n=1), conversion to a total knee arthroplasty (n=1), infection requiring two stage revision (n=2), deep-vein thrombosis (n=1), stiffness requiring manipulation under anaesthesia (n=1), retropatellar pain requiring arthroscopic adhesiolysis (n=1). Conclusion: UKA combined with ACL reconstruction seems to be a valid option for treatment young and active patients, with combined medial unicompartmental knee osteoarthritis and ACL deficiency.

Date: 2016-09-09

Session: Free Papers - Revision Total Knee Arthroplasty

Time: 10:30 - 12:00

Room: Michelangelo 3

Abstract no.: 43882

REVISION RATES AFTER KNEE REPLACEMENT: CUMULATIVE RESULTS FROM WORLDWIDE CLINICAL STUDIES VERSUS JOINT REGISTERS

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We assessed revision rates after knee-arthroplasty by comparing the cumulative results from worldwide clinical studies and arthroplasty registers. We hypothesised that the revision rate of all clinical studies of a given implant and register data would not differ significantly. A systematic review of clinical studies in indexed peer-reviewed journals was performed followed by internal and external validation. Parameters for measurement of revision were applied (Revision for any reason, Revisions per 100 observed component years). Register data served as control group. Thirty-six knee-arthroplasty systems were identified to meet the inclusion criteria: 21 total knee-arthroplasty (TKA) systems, 14 unicondylar knee-arthroplasty (UKA) systems, one patello-femoral implant system. For 13 systems (36%), no published study was available that contained revision data. For 17 implants (47%), publications were available dealing with radiographic, surgical or technical details, but power was too weak to compare revision rates at a significant level. Six implant systems (17%) had a significant number of revisions published and were finally analysed. In general, developers report better results than independent users. Studies from developers represent an overproportional share of all observed component years. Register data report overall 10-year revision rates of TKA of 6.2% (range: 4.9-7.8%), rates for UKA are 16.5% (range: 9.7-19.6%). Revision rates of all clinical studies of a given implant do not differ significantly from register data. However, significant differences were found between the revision rates published by developers and register data. Therefore the different data need to be interpreted in the context of the source of the information.

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Session: Free Papers - Revision Total Knee Arthroplasty

Time: 10:30 - 12:00

Room: Michelangelo 3

Abstract no.: 43724

SEVERE METALLOSIS-RELATED OSTEOLYSIS AS A CAUSE OF FAILURE AFTER TOTAL KNEE REPLACEMENT

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Introduction: Metallosis is a syndrome of metal-induced synovitis with osteolysis due to friction between two metal surfaces that releases metal ions into the joint, thus triggering an inflammatory response. In contrast to the hip joint after resurfacing arthroplasty, metallosis of the knee is extremely rare. Materials: We describe 4 patients who underwent revision total knee replacement in our hospital because of disabling pain on top of implant loosening after a mean time of 21 (range: 13-30) years of knee replacement surgery (3 total, 1 unicompartmental). They were all females with a mean age of 79 (range: 75-82) years. Septic loosening was excluded through microbiological examination and synovial fluid analysis. Results: Direct metal-on-metal (MoM) contact in the tibiofemoral interface at sites of radiologically apparent polyethylene wear was confirmed intraoperatively in all cases. There was severe metallosis of the knee in addition to advanced osteolysis underneath the prosthetic components and pseudotumor formation in all cases. In one knee there was even a complete fracture of the tibial tray. All cases received a constrained modular revision knee system after implant removal and profound synovectomy. Long modular stems with offset adapters, wedges and/or blocks were used in all cases. Conclusion: Metallosis-associated osteolysis should be suspected in cases with radiologically evident polyethylene wear after knee replacement allowing metal-on-metal contact. Recognizing that revision arthroplasty is very technically demanding in such cases, we believe that surgeons should have a back-up with modular revision components and a ready access to reconstructive options at this revision setting.

Date: 2016-09-09

Session: Free Papers - Revision Total Knee Arthroplasty

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Room: Michelangelo 3

Abstract no.: 43336

TANTALUM CONES FOR SEVERE BONE LOSS IN REVISION TOTAL KNEE ARTHROPLASTY. A MINIMUM OF 5-YEAR FOLLOW-UP

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Introduction: The optimal management of severe tibial and/or femoral bone loss in a revision total knee arthroplasty (TKA) has not been established. Recently metaphyseal fixation using porous tantalum cones (Zimmer, Warsaw, IN) has been proposed as alternative strategy for severe bone loss. The purposes of this study were to determine the clinical and radiographic outcomes in patients who underwent revision knee arthroplasty with tantalum cones with a minimum of 5-year follow-up. **Methods:** We retrospectively reviewed 18 consecutive patients who underwent revision TKA with porous tantalum metaphyseal cones to reconstruct severe tibial and/or femoral bone loss (AORI types 2B and 3) between November 2005 and August 2008. No patients were lost to follow-up. The reasons for revision were aseptic loosening (5 cases) and deep infection (13 cases in which a two stage procedure was used). A total of 26 porous tantalum cones were implanted. All patients were followed clinically and radiographically for minimum 5 years. **Results:** Knee Society knee scores showed a statistically significant improvement compared to the preoperative scores. No radiolucent lines were seen between the cones and the adjacent tibial and femoral bone at the latest follow-up. There was no evidence of loosening or migration of any implant at the time of the final follow-up. There have been two reoperations for recurrent infection (11%). **Conclusion:** Our experience demonstrates excellent clinical and radiographic mid-term outcomes and confirms that metaphyseal fixation with porous tantalum cones can be achieved. Long-term follow up and comparative studies are necessary.

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Session: Free Papers - Revision Total Knee Arthroplasty

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Room: Michelangelo 3

Abstract no.: 43855

IS THERE STILL A ROLE FOR I&D AND LINER EXCHANGE IN ACUTE PERIPROSTHETIC JOINT INFECTION IN TOTAL KNEE ARTHROPLASTY?

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Irrigation and debridement with liner exchange (I&D) has been shown to have variable success rates in the treatment of Periprosthetic joint infection (PJI). Our purpose is to present results of a specific protocol for I&D. 67 patients from one institution undergoing I&D were retrospectively evaluated. Inclusion criteria for I&D were: 1) fewer than 3 weeks of symptoms, 2) no immunologic compromise, 3) intact soft tissue sleeve, and 4) well-fixed components. I&D consisted of extensive synovectomy, irrigation with 3 liters each of betadine, Dakin's, bacitracin, and saline solution. Postoperatively, patients were treated with intravenous antibiotics. Infection was considered eradicated if the wound healed without persistent drainage, no residual pain, and no infection recurrence. Forty-six patients (68.66%) had successful infection eradication at final follow-up (average 4.81 years). Twenty-one (31.34%) patients were failures, 18 (26.87%) failures underwent re-operation due to persistent infection, one underwent above the knee amputation, and one (1.49%) complained of persistent pain. There were 2 deaths secondary to sepsis. 26 of the successful cases were continued on oral antibiotics. The most commonly isolated bacteria were Methicillin sensitive Staphylococcus aureus, coagulase negative Staphylococcus, and Methicillin Resistant Staphylococcus aureus (MRSA). MRSA infections had an 80% failure rate. Our protocol for one-stage treatment of TKA PJI was successful in the majority of patients. This protocol has a lower success rate than two-stage resection, but is less aggressive, more palatable, and less expensive. We recommend this protocol in all acutely infected TKA with the exception of MRSA infected individuals.

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Session: Free Papers - Revision Total Knee Arthroplasty

Time: 10:30 - 12:00

Room: Michelangelo 3

Abstract no.: 45336

WHAT IS THE BEST MANAGEMENT SOLUTION OF INFECTED TOTAL KNEE ARTHROPLASTY?

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Introduction: Diagnosis and treatment of infections after total knee arthroplasty (TKA) is the most difficult and not fully resolved issue. Objectives: The purpose of our study was to create and evaluate different management protocols depending on time of occurrence and severity of infection after TKA. Methods: From 1997 to 2015, we performed 1229 TKA (1187 non-constrained/42 constrained). Age: 39–85 y.o. Male/Female: 515/714. Persistent knee pain was presented in 189 (15.4%) patients; in 81 we suspected infection. Examination: clinical, X-ray/CT, bone scanning, aspirations(3), biopsy; laboratory, synovial fluid tests; tensionfistulography, PCR. Management protocols. Early infection (<3 weeks p.o): antibiotic therapy— 18; arthroscopic debridement — 4; arthrotomy, debridement, insert exchange, drainage, prolonged antibiotictherapy— 24 patients. Late infection (>3 months): 8 patients — arthrotomy; single-stage revision - 8. Chronic infection (>3 months): single-stage revision - 11. (In favourable conditions), two-stage revision (8 patients). We implanted customized articulating spacer (using polyethylene insert) with antibiotics. Reimplantation: 8–14 weeks after surgery. Arthrodesis (20 patients). Results (62 patients): mean follow-up 4.4 years. Early infection. Conservative treatment efficiency - 9%.; arthroscopic debridement - 25%; arthrotomy - 61.6%. Late. Arthrotomy: infection recurrence - 100%, Single-stage revision: 30% (in 6 - 25 weeks). Chronic infection. Single-stage revision: infection recurrence - 37% (6–35 weeks). Two-stage: infection eradication - 100%. The arthrodesis efficiency - 93%. Conclusions: A decision of performing revision surgery could be taken after complex patient examination and finding a reason of endoprosthesis instability.

Date: 2016-09-09

Session: Free Papers - Revision Total Knee Arthroplasty

Time: 10:30 - 12:00

Room: Michelangelo 3

Abstract no.: 44752

**ERTAPENEM ARTICULATING SPACER FOR THE TREATMENT OF
POLYMICROBIAL TOTAL KNEE ARTHROPLASTY INFECTION**

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Introduction Periprosthetic joint infections (PJI) are the primary cause of early failure of the total knee arthroplasty (TKA). Two-stage revisions with articulating spacers are the most widely accepted approach in treating PJI. Polymicrobial TKA infections are often associated with a higher risk of treatment failure. **Methods** We retrospectively reviewed all the patients who underwent two-stage revisions for TKA infections. Operations were conducted at our institution during a period of 5 years (from 2010 to 2014). Polymicrobial PJIs were isolated from monomicrobial, and studied separately. Patients with polymicrobial PJI treated with ertapenem loaded articulating spacers were compared to the group of patients treated with vancomycin or ceftazidime loaded spacers. **Results** Successful reimplantation with revision implants was possible in 66.67%. Ertapenem spacers, as treatment modality for polymicrobial TKA infections, were used in 6 cases in primary second stage procedure, and in 3 cases in secondary spacer exchange. Successful infection eradication was achieved in all cases, final reimplantation with revision knee arthroplasty implants was possible in 6 cases. When vancomycin loaded spacers were used for polymicrobial PJIs, reimplantation, after one spacer exchange, was possible in 3 cases. **Conclusion** Ertapenem can be successfully used as antimicrobial addition to the cement spacers in two-stage revision. However, given the availability of less expensive antimicrobial agents, and their longer track record with cement spacers, ertapenem may not be recommended as first-line therapy for monomicrobial PJIs. Moreover, further clinical studies are required to evaluate the efficacy and safety of ertapenem spacers in the treatment of polymicrobial PJIs.

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Session: Free Papers - Revision Total Knee Arthroplasty

Time: 10:30 - 12:00

Room: Michelangelo 3

Abstract no.: 44707

"CEMENT-PEDESTAL" SPACER TECHNIQUE VERSUS CONVENTIONAL SPACER TECHNIQUE IN 2-STAGE REVISION KNEE ARTHROPLASTY – OUTCOMES AND COMPLICATIONS

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Introduction: Two stage revision is the gold standard for revision of infected Total Knee Replacement. Options include fixed and mobile spacers, both with advantages and disadvantages. Recent literature confirms that complications following mobile spacers include mal-alignment, instability and fracture. To counter this, a “cement-pedestal” technique has been developed to aid alignment, ligament balancing and stability. This involves a twin-mix intra-operative cementing technique where after the first mix, a strut of cement in the femur is chamfered to optimise soft-tissue tensioning in all planes. Objectives: To determine whether use of a pedestal technique for mobile cemented spacers results in fewer complications in infected 2 stage revision arthroplasty. Methods: A retrospective audit of 54 patients who underwent 2 stage revision arthroplasty of the knee for infection was performed. Gap sizes, spacer fracture, mal-alignment, subluxation and unplanned re-operation rates were compared. Duration to 2nd stage and repeat 1st stage was measured. Results: 54 patients underwent 2 stage revision. 6/21 fixed spacers had problems. 10/18 Conventional Spacer Technique cases had problems. 2/15 Pedestal Technique cases had problems. Use of the pedestal technique was seen to result in fewer unplanned re-operations, fewer implant failures and better alignment. There was no significant differences found in duration between First and Second stage surgeries. Conclusions: The Cement-Pedestal technique is a safer way of performing First stage revision knee arthroplasty with fewer complications compared with standard cemented mobile spacer technique.

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Session: Free Papers - Revision Total Knee Arthroplasty

Time: 10:30 - 12:00

Room: Michelangelo 3

Abstract no.: 43414

IS A SINGLE STAGE REVISION SAFE FOR INFECTED TOTAL KNEE ARTHROPLASTY? A SYSTEMATIC REVIEW

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INTRODUCTION: A two-stage revision of infected total knee arthroplasty has till now been the mainstay in the treatment protocol but recently single-stage revision of the prosthesis is gaining robust grounds. **MATERIAL AND METHODS:** An extensive search of PUBMED, MEDLINE and COCHRANE DATABASE was done using defined keywords and the filters were added. The screening was done and exclusion and inclusion criteria were defined, identifying 13 studies with level 2 evidence. **REVIEW:** All included studies were extensively reviewed. **RESULTS:** The outcome was tabulated in form of Excel sheet under headings such as total number cases in either group, total number of failures in each cluster, duration of antibiotic used in the post-operative period, variations in intra-operative procedure, amount of antibiotic used in the antibiotic loaded cement used during the surgery, level of evidence of the different studies under review, early and late functional knee scores such as Oxford knee score, knee society score, Hospital for Special Surgery score, additional cost incurred during the two-stage procedure. **STATISTICAL ANALYSIS:** Statistic thus collected were analyzed using computer based analyzing system SPSS version 22.0 and the p-value were tabulated for each of the variables. By analyzed data significance was assessed. **DISCUSSION:** Although the selection criteria are narrow for single-stage revision of infected total knee arthroplasty with robust data suggesting an inclination toward single staged procedure, nevertheless single-stage revision offers a lucrative cost-effective treatment option.

Date: 2016-09-09

Session: Free Papers - Foot & Ankle Trauma

Time: 16:00 - 17:30

Room: Michelangelo 3

Abstract no.: 42975

REPAIR OF THE DELTOID LIGAMENT COMPLEX RUPTURE ASSOCIATED WITH ANKLE FRACTURES

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Background It is controversial for operative repair of deltoid ligament in acute ankle fractures. To investigate the indication for surgical interference and the clinical outcome about repair whole deltoid ligament rupture associating with ankle fractures. Methods We performed multiple-center study in 4 clinical centers in 4 cities of China. From January 2006 to December 2011, of 1533 ankle fractures operated, 131 deltoid ligament rupture were identified and repaired operatively. They were 74 males and 57 females with a mean age of 37.2 years (range, 15-83 years). Clinical examination , radiographs, AOFAS ankle-hindfoot scores and visual analogue scale were used for outcome measurement. Results All incision healed primarily. 106 patients were followed up for 12 to 72 months , with the mean follow-up of 27 months . The mean time of fracture union was 14.5 weeks (range, 9-16 weeks). The mean AOFAS ankle-hindfoot score at last follow-up was 91.4 points (range, 83-100 points). The mean score of VAS was 1.2 points (range, 0-6 points). The mean score of SF-36 was 91.2 points (range, 80-96 points). There was no ankle instability and post-trauma osteoarthritis. Conclusion This multiple-center study demonstrated that deltoid ligament repair can benefit patients with unstable ankle after fracture fixation. A reasonable clinical evaluation and surgical repair could be done, choosing an appropriate repair technique according to the site of deltoid ligament rupture.

Date: 2016-09-09

Session: Free Papers - Foot & Ankle Trauma

Time: 16:00 - 17:30

Room: Michelangelo 3

Abstract no.: 42920

TITLE: NEW INNOVATIVE INTRA-OPERATIVE TEST FOR SYNDESMOSIS INSTABILITY DETECTION IN SUPINATION-EXTERNAL ROTATION (SER) INJURIES

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Introduction: Classical intra-operative tests for syndesmosis instability detection lack sensitivity. A new 'freer torque test' (FTT) allowing syndesmosis instability assessment through direct visualization is compared to the external rotation stress test (ERST) and lateral hook stress test (LHST) in a cadaveric study. Methods 10 fresh frozen human lower limbs are progressively sectioned at the syndesmotic level to simulate three different stages of SER injuries. Stage one corresponds to the antero inferior tibiofibular ligament sectioning. Addition of interosseous membrane sectioning corresponds to stage two. In the third stage, all three syndesmosis ligaments are sectioned. At each stage, three stress tests (LHT, ERT and FTT) are applied to the limbs. The FTT is performed by inserting a freer elevator in a window created in the syndesmosis through the lateral approach for fibular fixation. The freer tip is held against the postero-lateral tibia while the belly of the tool is forced against the fibula in a torque-like motion. Medial clear space and tibiofibular clear space are recorded on a true mortise radiograph. Direct measurements of tibiofibular diastasis are made concurrently. Results: Regardless of the test used intraoperatively, direct visualization of tibiofibular diastasis is more sensitive than fluoroscopy to detect syndesmotic instability. The FTT is more sensitive than the classical LHST and ERST. It is especially useful to detect incomplete syndesmosis rupture that requires fixation while not grossly unstable. We recommend fixation of the syndesmosis when direct visualization shows a 3mm tibiofibular diastasis with the FTT

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Session: Free Papers - Foot & Ankle Trauma

Time: 16:00 - 17:30

Room: Michelangelo 3

Abstract no.: 44612

ARTHROSCOPIC FIXATION WITH CORTICAL BONE PEGS FOR OSTEOCHONDRAL LESIONS OF THE TALUS

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Introduction: Since 2013, we have performed arthroscopic fixation with cortical bone pegs for osteochondral lesions of the talus. In this study, we introduce this technique, and report the results of treatment. Method: The subjects were 3 males and 4 females with a mean age of 23.3 years. We decide the site of bone-tunnel using a guidewire, and a bone tunnel of 8 mm in diameter was prepared in the medial malleolus. Two or three cortical bone pegs were used to fix the fragment through the bone tunnel. After surgery, casting was continued for 2 weeks, and a soft brace was attached to start ROM exercise. After 6 weeks, full weight bearing was permitted. Results: According to Berndt & Harty's clinical evaluation, they were evaluated as good in 6 cases and fair in 1. On X-ray, the postoperative evaluations were regarded as good in 5 patients and fair in 2, respectively, showing an improvement. All patients returned to sports after a mean 3.3 months. Discussion: We have performed osteotomy of the medial malleolus for fixation of the fragment with cortical bone pegs. However, this technique is invasive, and return to sports was delayed in comparison with arthroscopic bone marrow stimulation. Furthermore, complications, such as malunion of the medial malleolus, may occur. In our new method, osteotomy of the medial malleolus is not required, and there is no need to wait for union with the medial malleolus; ROM training can be started in the early phase.

Date: 2016-09-09

Session: Free Papers - Foot & Ankle Trauma

Time: 16:00 - 17:30

Room: Michelangelo 3

Abstract no.: 44465

'TUNING FORK LINES'- A NEW MEASURE TO DETERMINE TALAR SHIFT IN ANKLE FRACTURES

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Tuning fork lines (TFL) were drawn on ankle anterior-posterior radiographs to assess the talar shift in ankle fractures. A 3-D ankle joint reconstruction was prepared by mapping normal ankle joint using auto CAD in 1997. TFL were drawn using normal anatomical landmarks on sagittal, coronal and transverse planes. The ankle joint anatomical relationship with talus was studied in various rotation simulating radiographic anterior-posterior views and talar shift was studied. Between 2006 and 2012 on antero-posterior view of ankle radiographs and PACS 'Tuning Fork Lines' (TFL) were drawn. In a normal radiograph the superior-lateral dome of the talus lies medial to the handle of TFL, and in ankle with talar shift the dome of the talus crosses this line laterally. In two district hospitals 100 radiographs were observed by 4 observers in 67 males and 33 females with mean age of 49 (15-82) years. The TFL confirmed talar shift with sensitivity of 99.2 % showing talar shift and inferior tibio-fibular ankle diastasis. We conclude that in ankle anterior-posterior view it is possible to comment on the talar shift and diastasis of the ankle joint if proper ankle mortise view is not available.

Date: 2016-09-09

Session: Free Papers - Foot & Ankle Trauma

Time: 16:00 - 17:30

Room: Michelangelo 3

Abstract no.: 45521

DO CUSTOM INTRAOPERATIVE GUIDES IMPROVE TOTAL ANKLE ARTHROPLASTY? A COMPARISON OF PATIENT SPECIFIC AND EXTRAMEDULLARY INSTRUMENTATION

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Preoperative CT scan-derived patient-specific instrumentation may be used to achieve good alignment of components in Total Ankle Arthroplasty (TAA). We retrospectively compared the functional and radiological results of 24 consecutive patients treated with the INFINITY® TAA (using PROPHECY® preoperative navigation guides) and 27 consecutive patients treated with the BOX® implant (extramedullary instrumentation). We compared radiographic alignment, pre- and post-operative range of movement, and surgical time for both groups. There was no difference in age, sex, or BMI between groups. The mean surgical time was 111.5±21.5 minutes for the BOX® group and 127.5±15.3 minutes for the INFINITY® group ($p < 0.01$). However, mean surgical time for the last 10 INFINITY® implants was 121 minutes; this was not statistically different to the BOX implants. There was no significant difference in the post-operative range of movement (ROM) between groups: 40.7±8.6 degrees for the BOX® and 37.6±6.4 degrees for the INFINITY®. The post-operative varus angle was 88.9°±3.0° for BOX® patients and 89.4°±4.5° for INFINITY® patients ($p > 0.05$). Post-operative plantarflexion angle was 88.3°±3.6° for BOX® and 89.4°±3.0° for INFINITY® ($p > 0.05$). Excellent alignment of components was achieved using both custom intraoperative guides and extramedullary referencing. Postoperatively both groups had a good ROM and after an initial learning curve, operative times were similar. Pre-operative templating and custom intraoperative guides can be used to achieve excellent functional and radiological results. Further comparative studies in the setting of significant deformity are required.

Date: 2016-09-09

Session: Free Papers - Foot & Ankle Trauma

Time: 16:00 - 17:30

Room: Michelangelo 3

Abstract no.: 43279

CT CLASSIFICATION OF POSTERIOR MALLEOLUS FRACTURES

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Introduction: The aim of this study was to analyze the pathoanatomy of the posterior fragment on the basis of a comprehensive CT examination, including 3D reconstructions and to develop a clinically relevant classification. Materials and methods: Two hundred and eighty-one consecutive individuals with an ankle fracture or fracture-dislocation of types Weber-B and Weber-C and evidence of a posterior tibial fragment in standard radiographs were included in the study. In all patients, post-injury radiographs were obtained in anteroposterior, mortise and lateral views. All patients underwent CT scanning in transverse, sagittal and frontal planes, 3D CT reconstruction was performed in 220 patients. Results: We were able to classify 274 cases into one of the following four types: Type 1: extrainsisural fragment with an intact fibular notch, Type 2: posterolateral fragment extending into the fibular notch, Type 3: posteromedial two-part fragment involving the fibular notch and the medial malleolus, Type 4: large posterolateral triangular fragment carrying the posterior half of the fibular notch. Conclusion: It is impossible to assess the shape and size of the posterior malleolar fragment, involvement of the fibular notch, or the medial malleolus, on the basis of plain radiographs. The system that we propose for classification of fractures of the posterior malleolus is based on CT examination and takes into account the size, shape and location of the fragment, stability of the tibiotalar joint and the integrity of the fibular notch. It may be a useful indication for surgery and defining the optimal approach to these injuries.

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Session: Free Papers - Foot & Ankle Trauma

Time: 16:00 - 17:30

Room: Michelangelo 3

Abstract no.: 44132

SHAPE OF THE DISTAL TIBIOFIBULAR SYNDESMOSIS AND RISK OF REPEATED ANKLE SPRAIN: A CT-BASED STUDY

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Introduction: The objectives of this study were to evaluate the relationship between shape of the distal tibiofibular syndesmosis and risk of acute ankle sprain. Methods and Results: CT scans of 300 patients with normal distal tibiofibular syndesmosis were reviewed retrospectively. In 168 patients (56%) of the incisura fibularis were a " (" shape. In 76 (25%) the incisura fibularis were a " | " shape. In 56 (19%) the incisura fibularis were a " Ɔ " shape. And then, CT scans of 56 patients with repeated ankle sprain (more than two times a year) were reviewed retrospectively. In 8 patients (14%) of the incisura fibularis were a " (" shape. In 37 (66%) the incisura fibularis were a " | " shape. In 11 (20%) the incisura fibularis were a " Ɔ " shape. The " | " shape of the incisura fibularis showed significant differences between the three shape in the repeated ankle sprain patients ($p < 0.05$). Conclusions: These findings suggest that patients with the " | " shape of the distal tibiofibular syndesmosis have more risk of repeated ankle sprain.

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Session: Free Papers - Foot & Ankle Trauma

Time: 16:00 - 17:30

Room: Michelangelo 3

Abstract no.: 44771

SYNDESMOTIC INTERNALBRACE FOR ANATOMIC DISTAL TIBIOFIBULAR LIGAMENT AUGMENTATION

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Introduction: Reconstruction of unstable syndesmotic injuries is not trivial, and there are no generally accepted treatment guidelines. The TightRope-system (Arthrex) is reported to have advantages compared to classical syndesmotic screws. However, rotational instability of the distal fibula is not safely eliminated by use of 1 or even 2 TightRopes. Therefore, we developed a new syndesmotic InternalBrace technique using FiberTapes and SwiveLocks (Arthrex) for aperture fixation. The aim of this study was to analyze the accuracy of syndesmotic reconstruction using our new technique by postoperative CT-scans with special emphasis on malrotation. Methods: According to the individual injury pattern 14 patients were treated either by the new InternalBrace technique alone or in combination with one TightRope or posterolateral malleolar screw fixation. Postoperatively, we measured standard syndesmotic distances and intermalleolar angles on CT-scans according to the methods of Elgafy and Nault and compared our results to the reported normal values. Results: Postoperatively the mean anterior distance measured 2.6 ± 1.00 mm (range 1-4,5 mm) and the mean posterior distance 3.5 ± 0.75 mm (range 2-4,5 mm), compared to 2.0 ± 0.53 mm and 4.0 ± 1.19 mm respectively in uninjured syndesmosis. The mean intermalleolar angle measured $16 \pm 10^\circ$ before surgery and $10 \pm 4^\circ$ after surgery, compared to $7 \pm 4^\circ$ in uninjured syndesmosis. We found no significant differences between our results and normal values of intact ankles ($p < 0.05$). Conclusion: Anatomic reconstruction with rotational stabilization of the syndesmosis can be realized regularly by use of the new syndesmotic InternalBrace technique.

Date: 2016-09-09

Session: Free Papers - Spine Infection & Trauma

Time: 08:30 - 10:00

Room: Caravaggio 1-2

Abstract no.: 45061

COMBINED POSTEROANTERIOR FUSION WITH SHORT-SEGMENT INSTRUMENTATION VERSUS SINGLE POSTERIOR APPROACH INTERBODY FUSION WITH LONG-SEGMENT INSTRUMENTATION FOR THORACOLUMBAR FRACTURE-DISLOCATION: A PROSPECTIVE, RANDOMIZED, COMPARATIVE CLINICAL REPORT

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Objective: A prospective randomized study was conducted to compare two different techniques for thoracolumbar fracture-dislocation using either single posterior transforaminal inter. **Methods:** A consecutive series of patients with thoracolumbar fracture-dislocation were included in the study between May 2011 to June 2013 in our spine surgery center. The patients were randomized to receive either a posterior interbody fusion with long-segment instrumentation (Group A) or a combined postero anterior fusion with short-segment instrumentation (Group B). The clinical, radiologic and functional outcomes were analyzed. **Results:** All patients were followed up for a minimum of 2 years. (average: 39 months). There were 18 patients in group A and 21 patients in group B included. Operative time was significant more in Group A ($p < 0.05$) but the blood loss has no difference in two Groups ($p > 0.05$). Satisfactory reduction of the dislocation was achieved in both groups with no significant differences between the groups. A comparison of VAS scores revealed no significant difference in two groups at final follow-up ($p > 0.05$). A comparison of ODI scores indicated better outcomes in group A than group B ($p < 0.05$). The postoperative loss of correction was similar in two groups ($p > 0.05$). There were two cases of hardware failure in Group B and finally received second surgery. The morbidity associated with the surgical approach was higher in group A ($p < 0.05$). **Conclusions:** Both two surgical techniques offer safe surgical treatment, however, the one-stage combined postero anterior fusion with short-segment instrumentation may be provide a better functional outcomes.

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Session: Free Papers - Spine Infection & Trauma

Time: 08:30 - 10:00

Room: Caravaggio 1-2

Abstract no.: 43326

COMPARISON OF NEUROLOGICAL IMPROVEMENTS IN ACUTE TRAUMATIC CENTRAL CORD SYNDROME FOLLOWING SURGICAL AND NON-SURGICAL INTERVENTIONS

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Objective: To compare and evaluate functional neurological recovery between surgical and non-surgical intervention cohorts, in patients with Acute Traumatic Central Cord Syndrome. Background: Recent studies have shown encouraging neurological improvements in patients treated surgically. Methods: We reviewed 59 patients who were treated with diagnosis of ATCCS from May 2008 to April 2014. The outcome measures were American Spinal Injury Association motor score (AMS) and Neurological Level of Injury (NLI). These were obtained at admission, immediate post-op period, at time of discharge and at 12-month follow up. The surgical cohort divided into 3 subgroups: ≤ 24 hours, >24 hours till 1 week, and >1 week. Results: 38 patients in surgical cohort; 21 patients in non-surgical cohort. Of 38 patients in the surgical cohort, surgery was performed at a mean of 10.4 days (range, 0.6-150 days) following onset of injury. 63.2% were operated upon in interval of >24 hours till 1 week. Anterior approach in 18 patients (47.4%), posterior approach in 19 patients (50.0%), and combined anterior-posterior approach in 1 patient (2.6%). Mean AMS was 52.2 at presentation and 65.8 at discharge; Improvement in mean AMS was 13.6, with 11 patients (29.0%) improving at least one ASIA impairment scale grade at discharge. Non-surgical cohort had 21 patients, (mean AMS=75.9 at presentation & 85.5 at discharge); improvement in mean AMS was 9.6, with only 3 patients (14.3%). Conclusion: surgical cohort had larger improvement in mean AMS as compared to those who received medical rehabilitation alone. This study also points to potential benefits of early surgical intervention; surgery subgroup ≤ 24 hours had best neurological recovery.

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Session: Free Papers - Spine Infection & Trauma

Time: 08:30 - 10:00

Room: Caravaggio 1-2

Abstract no.: 45334

EFFECTIVENESS OF INTRAOPERATIVE ULTRASONOGRAPHY FOR AS A NEW NAVIGATION TOOL FOR ACCURATE CERVICAL ANTERIOR CORPECTOMY PROCEDURE

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Introduction: Cervical anterior procedures associate with relatively high incidence of intraoperative complications, including insufficient decompression, arterial injury, and C5 palsy. In the present study, effectiveness of intraoperative ultrasonography for as a new navigation tool for accurate cervical anterior corpectomy procedure was evaluated. **Methods:** Thirty-one cervical anterior procedures were subjected for analyses (Male 26 cases, Female 5 cases, Age 20-75). Preoperative diagnosis was CSM in 20 and OPLL in 11. In total, 66 corpectomies were performed. In 11 cases, ultrasonography was used intraoperatively in order to perform real-time observation of decompression for the spinal cord (US group). Symmetry of osseous decompression and insufficient decompression were evaluated and compared between US group and non-US group. Additionally, violation into the vertebral artery canal was checked. **Results:** There was a trend toward a lower frequency of asymmetry of osseous decompression in the US group. The US group showed less frequency of insufficient decompression ($p < 0.05$). Intraoperative perforation into the VA canal was observed in one case of non-US group, but not in the US group. **Conclusions:** The results showed that the US group showed better osseous decompression with less frequency of insufficient decompression. It can be concluded that intraoperative use of ultrasonography in cervical anterior corpectomy is effective as a new navigation tool for safe and accurate procedure.

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Session: Free Papers - Spine Infection & Trauma

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Room: Caravaggio 1-2

Abstract no.: 43275

POSTERO-LATERAL DECOMPRESSION AND RECONSTRUCTION OF THORACO LUMBAR BURST FRACTURES: A CASE SERIES

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Nineteen (19) patients with acute Thoraco lumbar Burst fractures were treated at JPN Apex Trauma Center, AIIMS, New Delhi from May 2010 to March 2015. There were Seven (7) female and Twelve (12) male patients. The mechanism of injury was a fall from height in Sixteen (16) patients, road traffic accident (RTA) in two patients and fall of heavy object on the back in one patient. All patients were treated by a posterior only approach. A complete posterior decompression (Laminectomy) was done in all patients. All patients also had, complete anterior decompression utilizing bilateral postero-lateral approach. All retropulsed fragments compressing the dural sac were removed using the postero-lateral approach bilaterally. A complete discectomy and partial corpectomy was done to decompress the dura. In Fifteen (15) patients, a partial corpectomy and complete discectomy was done using the bilateral postero-lateral approach. Anterior reconstruction was done using a TLIF cage filled with local autograft from posterior decompression, in these cases. In four patients a near total corpectomy was done, all from the posterior approach, utilizing postero-lateral decompression from both sides. Anterior Reconstruction in these cases was done using an Expandable cage in Two (2) patients and a Harms type Mesh Cage in the other Two (2) patients. Bilateral Postero lateral Decompression from a posterior only approach is a safe and adequate technique to obtain complete decompression of retro-pulsed fragments in thoraco lumbar Burst fractures. It also allows a good anterior column reconstruction without the need for additional anterior approach.

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Session: Free Papers - Spine Infection & Trauma

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Room: Caravaggio 1-2

Abstract no.: 45308

TUBERCULOSIS OF THE SPINE. OUTCOME IN A NATIONAL REFERRAL AND TEACHING HOSPITAL

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There is no universal agreement on many aspects of management of tuberculosis of the spine. We conducted a retrospective, cross-sectional, observational study on all patients with Tuberculosis of the spine who were managed at Kenyatta National Hospital Nairobi Kenya from January 2008 until December 2013. They were 120 in total, the mean age of the patients with spinal tuberculosis was 37.4 years, range of 6 to 83 Males 81(67.5%) were more affected than Females39(32.5%) giving M:F ratio of about 3 to 1. Inclusion criteria was clinicoradiological evidence of Tuberculosis of the spine. Mean Follow up was 3.2(6.8to 2.1) years The percentage of patients who had a positive histological examination was 36 % (44), AAFB were isolated in 14 %(17) of patients All patients were given chemotherapy but the duration varied between six months and eighteen months. 55(46%) were treated with Surgery combined with chemotherapy and 65 (54 %) treated conservatively The results for surgery was 23(42%) excellent 21(38%) Fair and 11(20%) poor. For conservative 21(32%) excellent, 26(40%) fair and 18(28%) poor. CONCLUSION; Diagnosis was based on clinical features and not always confirmed by isolation of the bacteria. Combined surgical and chemotherapy was superior to chemotherapy a lone. The duration of chemotherapy was varied

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Room: Caravaggio 1-2

Abstract no.: 43510

DIFFUSION TENSOR IMAGING OBSERVATIONS IN POTT'S SPINE

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Introduction: Diffusion Tensor Imaging (DTI) has been found to correlate with neural deficit and prognosticate neural recovery in cervical trauma and spondylotic myelopathy. DTI observations are not available for pott's spine with neural deficit. The correlation of DTI parameters with clinical course is analysed in TB spine with/ without paraplegia. Methods: 34 patients of spinal TB were enrolled and DTI was performed before and 6 months after treatment. Fractional anisotropy (FA), Mean diffusivity (MD) and tractography were studied. Changes in FA and MD at and below the site of lesion (SOL) were compared to above the SOL (control) using the unpaired t-test. Pre-treatment and post-treatment values were also compared using the paired t-test. Correlation of DTI parameters with neurological score was done by Pearson correlation. Subjective assessment of tractography images was done. Results: Mean FA & MD above SOL was taken as control. Mean average FA was not significantly decreased at the SOL in patients with paraplegia as compared to control. After 6 months treatment, a significant decrease ($p=0.02$) in mean average FA at the SOL compared to pre-treatment was seen. Moderate positive correlation ($r =0.49$) between mean average FA and neural score after 6 months of treatment was found. Tractography images were in consistent with severity of paraplegia. Conclusion: Unlike spondylotic myelopathy and trauma, epidural collection and its organized inflammatory tissue precludes accurate assessment of diffusion characteristics of the cord in pott's spine. Tractography was not found useful in paraplegics.

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Session: Free Papers - Spine Infection & Trauma

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Room: Caravaggio 1-2

Abstract no.: 44272

SELECTION OF SURGICAL TREATMENT APPROACHES FOR CERVICOTHORACIC SPINAL TUBERCULOSIS: 10-YEARS CASES REVIEWED

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Purpose: Cervicothoracic spinal tuberculosis is a rare occurrence disease, and its surgical treatment approach remains inconclusive. The purpose was to explore the selection of surgical treatment approaches for cervicothoracic spinal tuberculosis through a 10-years cases review. Methods: From January 2003 to January 2013, 45 patients suffering from cervicothoracic spinal tuberculosis were treated surgically. According to the relation between the tuberculosis lesion segment and the suprasternal notch on MRI. 19 patients were treated with a single-stage anterior debridement, fusion and instrumentation approach, the other 26 patients were treated with a single-stage anterior debridement, fusion and posterior fusion and instrumentation approach. The clinical efficacy was evaluated using statistical analysis based on the Cobb angle of kyphosis, NDI score and JOA score. The neurofunctional recovery was assessed by ASIA system. Results: All patients were followed up for 6.6years in average. No instrumentation loosening, migration or breakage was observed during the follow-up. The kyphosis angle, NDI score and JOA score were significantly changed from preoperatively $32.8\pm 6.7^\circ$, 39.7 ± 4.8 and 10.5 ± 2.8 to postoperatively $10.2\pm 2.1^\circ$, 23.1 ± 3.4 and 17.6 ± 2.4 , respectively ($p<0.05$). Except one recurrent patient, bone fusion was achieved in other 44 patients within 6 to 9 months (mean 7.2 months). No postoperative severe complications occurred and patients' neurologic function was improved in various degrees. Conclusion: In the surgical treatment of cervicothoracic spinal tuberculosis, single-stage cervical anterior approach with or without partial manubriotomy is capable of complete debridement for tuberculosis lesions. Selection of fixations shall be based on the anatomical relation of suprasternal notch and diseased segments revealed on sagittal MRI images.

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Room: Caravaggio 1-2

Abstract no.: 43170

DOES THE USE OF INTRAWOUND VANCOMYCIN DECREASE THE RISK OF POSTOPERATIVE INFECTION AFTER ELECTIVE SPINE SURGERY?

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INTRODUCTION: Surgical site infection (SSI) is a costly complication associated with spine surgery. The impact of intrawound vancomycin has not been strongly postulated to decrease the risk of surgical site infection after elective spine surgery. We designed study to determine whether intrawound vancomycin application reduce the risk of SSI in patients after spine surgery. **METHODS:** Patients undergoing elective spine surgery over the period of 24 to 48 months at a single center were included in the study. Patients were given standard IV antibiotics perioperatively and separated based on whether intrawound vancomycin was applied. Statistical analyses were conducted to determine the relative-risk of having a SSI and a SSI with return to the operating room (OR) within postoperative 30 days. **RESULTS:** 380 patients were included: degenerative spine pathologies and tumor 80 % (302), trauma 11% (42), and deformity 9% (34) Intrawound vancomycin was used in 51% of patients. Prevalence of SSI was 2.7% in the absence of vancomycin use vs 5.2% with intrawound vancomycin. In multivariable regression model, those with higher number of levels exposed , postoperative ICU admission and obesity and use of instrumentation more than 2 levels, had higher risk of developing SSI. **CONCLUSION:** Intrawound application of vancomycin after elective spine surgery was not associated with reduced risk of SSI and return to OR associated with SSI in our patients.

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Room: Caravaggio 1-2

Abstract no.: 43388

POSTERIOR ONLY APPROACH FOR LUMBAR PYOGENIC SPONDYLITIS WITH SHORT INSTRUMENTATION AND PROLONGED SUCTION DRAINAGE

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Introduction: Several methods of posterior surgical treatment for pyogenic spondylitis have been reported, there have been few reports regarding the efficacy of posterior only approach with short instrumentation including even inflamed segment. **Methods:** Thirty-three patients with lumbar pyogenic spondylitis who underwent posterior decompression and lumbar interbody fusion with short instrumentation including the inflamed segment and catheter drainage were enrolled. Clinically infection control (ESR and CRP normalization time) and onset of ambulation were reviewed. Also achievement of fusion and changes of sagittal alignment were investigated radiologically. **Results:** In all the 33 cases, infection was controlled successfully without any recurrence. There was no breakage of implant. Postoperative interval to normalization of ESR was average 69.4 days and CRP was 25.4 days respectively. Ambulation was started at average 5.8 postoperative days. Successful interbody fusion was confirmed radiologically in all the cases at a mean of 5.4 months. Sagittal angle of fixed segment was average 6.9 degrees of lordosis before operation, which became more lordotic to 11.5 degrees just after operation, but decreased to 4.7 degrees of lordosis at the final follow-up. Actually final sagittal alignment was almost same as preoperative status ($P=0.24$). **Conclusion:** By achieving favorable clinical and radiological results, short instrumentation and prolonged suction drainage with posterior only approach seemed to be an effective method in managing lumbar pyogenic spondylitis.

Date: 2016-09-09

Session: Clubfoot Congress - Basic Science Research

Time: 08:30 - 10:00

Room: Caravaggio 3-4

Abstract no.: 44624

**REACHING OUT TO MORE CHILDREN FOR CLUBFOOT TREATMENT:
THE PUBLIC HEALTH APPROACH**

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In a survey done by national child health programme (called RBSK) in India screening 43 million children clubfoot was found to one of the most common birth defects after congenital heart disease and cleft lip and cleft palate with clubfoot in 8% of all the defects. Estimates are that about 50,000 new babies are born every year with clubfoot. In addition there are a large number of unreached children with untreated clubfoot. Ponseti method of treating clubfoot has significantly reduced the number of surgeries done for clubfoot the problem of long term follow up remains a challenge to prevent recurrences. Bracing is required for a long period and each child needs followup until protocol age is over. Reaching out to all these children, regular followup till they are 3 – 4 years old is difficult. A programmatic public health approach using partnership with ministries of health in state governments in states of India with counsellors in each of the clinics in public hospitals could be an answer. We present our experience of last six years partnering only with 138 clinics in government hospitals in 25 states of the 29 states in India. We have been able to reach out to over 24,000 children with clubfoot across the country in the last six years. We present our lessons learnt from this looking beyond training doctors It is possible to evolve a successful partnership with public hospitals and create a programme for management of children born with clubfoot.

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Session: Clubfoot Congress - Basic Science Research

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Room: Caravaggio 3-4

Abstract no.: 43215

EARLY RADIOGRAPHIC PARAMETERS PREDICTIVE OF SURGERY-REQUIRED RELAPSE IN IDIOPATHIC CLUBFOOT TREATED USING THE PONSETI METHOD

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The introduction of the Ponseti method has improved clinical outcomes in clubfoot. Despite remarkable initial correction, relapse requiring surgery is occasionally seen during follow-up. In order to identify accurate and early predictors for the relapse, we assessed foot radiographs immediately before Achilles tenotomy. We retrospectively reviewed 36 patients who had been treated for idiopathic clubfoot with the Ponseti method between 2004 and 2013. In bilateral cases, the manipulation-resistant side of the foot was evaluated. The patients were divided into two groups, the surgery-free foot and the surgery-required foot. Ten radiographic measurements immediately before tenotomy were compared between the two groups. The mean age at tenotomy was 64.8 days (37-98) and the mean follow-up after tenotomy was 72.1 months (25-128). There were eight feet requiring extensive soft-tissue release or tibialis anterior tendon transfer. The talocalcaneal angle (L-TC), the tibiocalcaneal angle (Ti-C), and the calcaneus-first metatarsal angle (CMT1) on the maximum-dorsiflexion lateral radiograph showed significant differences between the two groups. A multivariate survival analysis demonstrated that the L-TC, Ti-C, and CMT1 showed significant hazard ratios for the surgery-required relapse. The results of univariate logistic regression analysis revealed that a patient who exhibited the $Ti-C > 100^\circ$ and $CMT1 < 0^\circ$ was 180.2 times more likely to have the surgery-required relapse than was one who exhibited the $Ti-C \leq 100^\circ$ or $CMT1 \geq 0^\circ$. Radiographic measurements of the L-TC, Ti-C, and CMT1 angles before tenotomy are early predictors for surgery-required relapse in idiopathic clubfoot treated using the Ponseti method.

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Session: Clubfoot Congress - Basic Science Research

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Room: Caravaggio 3-4

Abstract no.: 45481

WHO LOOKS FOR CLUBFOOT INFORMATION AND WHY? 10 YEARS OF A TECHNICAL WEBSITE: USER PROFILE

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Introduction: Health care was transformed with internet, and websites have contributed for increased participation of citizens in his/her health process. In the clubfoot, search for information is early due to pre natal ultrassound. This study describes a clubfoot site user profile in 10 years. Materials and Methods: Structured questionnaires were sent through Google to all users that contacted the "contact us" of a clubfoot website www.petorto.com.br from 2002 to 2012. The questions explored socioeconomic and specific aspects of website users, the knowledge about clubfoot and comprehension of clubfoot information, main difficulties encountered in treatment, and main doubts. Results: 126 questionnaires were obtained after sending about 328 questionnaires. The majority of participants were female (74%), most were married (75%). The average family income was 250 to 1000 Us dollars. Half of the users were from São Paulo área. The majority of users were searching information for their sons or daughters (96%). From all questionnaires, 76% of them were satisfied with site information. All users had diagnosed clubfoot in prenatal ultrassound. 49% consulted more than 8 specialists, 23% 3 specialists, 24% 2 specialists. 33% of patients searched for clubfoot treatment with insurance health care, 29% in the public health care and 38% with private (self pay) health care. Conclusion: The user search for clubfoot information after ultrassound diagnosis. He /she decides about treatment and compares information obtained with health professionals. Users were from private, and public sectors as well, showing the importance of internet health search information in all socioeconomic groups.

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Session: Clubfoot Congress - Basic Science Research

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Room: Caravaggio 3-4

Abstract no.: 43717

COST PER CHILD FOR MIRACLEFEET IN THE PHILIPPINES FOR A PERIOD OF 24 MONTHS

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Background: In addition to being considered the gold standard for clubfoot treatment, the Ponseti method can inexpensively prevent the deformity caused by untreated clubfoot in low and middle-income countries (LMIC). This study is designed to identify the cost of care per child for the treatment of clubfoot using the Ponseti method and miraclefeet supported clinics in the Philippines. Methods: Cost of treatment at four miraclefeet supported clubfoot clinics in the Philippines was measured from January 2014 through December 2015. Dollar expense was divided by number of patients treated per quarter. Expenses included treatment, outreach and administration costs. Results: Cost of treatment per child was found to decrease each quarter that clinics were in operation. The average cost of treatment per child was 182.65 USD in quarter 1. By quarter 8, the cost of treatment was down to 48.37 USD per child. Conclusions: The Ponseti method of clubfoot care, in addition to being highly effective and minimally invasive, is also an affordable option in LMIC where cost of treatment can be prohibitive.

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Session: Clubfoot Congress - Basic Science Research

Time: 08:30 - 10:00

Room: Caravaggio 3-4

Abstract no.: 43571

PERFUSION IS NOT MEASURABLY DECREASED IN IDIOPATHIC CLUBFOOT

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Purpose: Abnormal vasculature has been observed in as much as 85% of children with clubfoot. The purpose of this study was to compare foot perfusion between clubfeet and unaffected feet. Methods: A Masimo Radical 7 Pulse Oximeter (Masimo Corporation, Irvine, CA) was used to measure the foot perfusion index (PI) of children five years of age and younger. Patients with clubfoot undergoing non-operative treatment, and control patients undergoing treatment for orthopedic concerns not involving the foot, were tested. Exclusion criteria for patients with clubfoot were previous clubfoot surgery and non-idiopathic etiology. The PI of the affected clubfeet was compared to the PI of the unaffected feet of the controls. Results: Sixty-six patients were enrolled, 34 with clubfoot (16 bilateral and 18 unilateral), and 32 controls. No significant difference in PI was found between the affected feet and the unaffected feet (3.1 vs 2.5 ; p=0.200). Conclusion: This analysis showed no difference in PI between clubfeet and unaffected feet of controls. Significance: Although abnormal vasculature in clubfoot has been reported, the perfusion to a non-operative treated clubfoot is similar to an unaffected foot.

Date: 2016-09-09

Session: Clubfoot Congress - Basic Science Research

Time: 08:30 - 10:00

Room: Caravaggio 3-4

Abstract no.: 45062

THE PIRANI AND DIMEGLIO SCORING SYSTEMS FOR CLUBFOOT: A COMPARATIVE STUDY

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This study was conducted to determine the inter-observer variability and reliability of the Pirani and Dimeglio scoring systems for clubfoot. Three orthopaedic residents with different levels of training evaluated 163 clubfeet in 102 patients using both the Pirani and Dimeglio scoring systems. Mean difference of scores between the three examiners by ANOVA was 0.16 for Pirani system and 0.55 for Dimeglio system ($p=0.024$). Among the components of the Pirani scoring system, rigidity of equinus, and emptiness of heel were less associated with variability. Among the components of Dimeglio scoring system, equinus and heel varus were less associated with variability. Overall reliability was significantly higher using Dimeglio scoring than Pirani scoring ($p=0.018$). Patients less than 2 years old and syndromic clubfeet were associated with significantly greater inter-observer variability for both systems. A less experienced examiner is associated with significantly greater variability only for the Pirani scoring. Both scoring systems demonstrated similar inter-observer variability though Dimeglio scoring was associated with significantly greater inter-observer reliability.

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Abstract no.: 44250

SIGNIFICANCE OF PIRANI SCORE AT ONSET OF BRACING IN A CLUB FOOT

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Background: The Pirani score is the most commonly used clinical score to assess club foot severity and treatment response. By logical extension, it would be assumed that a corrected club foot will be at a Pirani 0 score. This sometimes leads clinicians to continue casting even if a club foot achieves 20 degree of dorsiflexion and 60 degree of abduction but the Pirani score is not 0. Aim of the study: To assess the Pirani scores of our patient cohort when the treatment phase of casting ended and bracing was started at the initiation of the maintenance phase Method: We reviewed our database, entered in the International Clubfoot Registry, of 531 children with 735 feet diagnosed with clubfeet and were on bracing from October 15th 2011 to 29th December, 2015. Once a child is braced the foot must have obtained at least 20 degree of dorsiflexion and 70 degree abduction. We wanted to see what the Pirani score at this point was.. SPSS was used for data analysis. Results: The range for the average Pirani score for both the feet was 1.5 to 2. Conclusion: The range shows that the affected foot needs to achieve the position in degrees to qualify as corrected and not a 0 Pirani score

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Session: Clubfoot Congress - Basic Science Research

Time: 08:30 - 10:00

Room: Caravaggio 3-4

Abstract no.: 43932

OBJECTIVE MEASUREMENTS OF BRACE ADHERENCE IN A COHORT OF IDIOPATHIC CLUBFOOT PATIENTS

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³Orthopaedic Institute for Children, Los Angeles (UNITED STATES)

Appropriate use of a post-corrective brace is believed crucial to achieving successful outcome of clubfoot treatment. We used temperature sensors to determine: brace adherence, accuracy of parent-reported use, and differences in brace wear between patients who experienced a relapsed deformity and those who did not. We monitored the brace use over a three-month period in a randomized, cross-sectional study in 48 patients using wireless sensors attached to the brace sandals in four age groups: Group 1 (6-12 months), Group 2 (1-2 years), Group 3 (2-3 years), and Group 4 (3-4 years). The number of daily hours of brace use, as measured by the sensors, was compared to both physician-recommended hours and parent-reported hours of brace use. Overall, median time duration of brace use recorded by the sensors was 62% (range: 5%-125%) of that recommended by the physician, and 77% (range: 6%-213%) of that reported by the parents. The median percentages of physician-recommended use were significantly different from measured use ($P < 0.002$), for Groups 1-3. Eight of the 44 patients who completed the study (18%) developed a relapse during the 3-month study period; the mean hourly brace wear for these patients, 4.7 hours per day (median, 3.5, SD 3.3) was significantly lower than the 8.3 hours per day of those who did not relapse, (median 9.4, SD 4.6) ($P = 0.045$). The present study objectively quantified the number of hours of post-corrective clubfoot brace wear by patients in varying age groups, and indicated the number of hours required to avoid relapse.

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Abstract no.: 44463

SOFT-TISSUE STRUCTURES (LIGAMENTS AND JOINT CAPSULES) IN RESISTANT CLUBFOOT: A MORPHOLOGIC STUDY

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The purpose of study is to examine pathomorphological features of ligaments and joint capsules in congenital clubfoot resistant to conservative treatment. Materials and method: 12 idiopathic clubfeet from 9 patients undergoing surgical mini-releases after unsuccessful conservative treatment were studied. The failed conservative treatment included serial Ponseti casting followed by Achilles tenotomy and bracing. Connective tissue fragments were taken and resected during the mini-medial and mini-Cincinnati releases. We studied fragments of calcaneofibular, tibionavicular and calcaneonavicular (spring) ligaments, medial and posterior ankle capsule. All fragments were fixed immediately in 10% formalin, buffered in phosphate (pH 7.4) and prepared for light microscopy. We used histochemical coloring with hematoxylin and eosin, toluidine blue, Van-Gieson's method, Malory's method and Weigert's method. Results: there were pronounced dystrophic changes: tissue disorganization, destruction and loss of elastic fibers, inhomogeneity of metachromasia with features of both mucoid and fibrinoid (fibrinous) swelling, the initial scarring and neovascularization. Therefore, we see different stages of degenerative process with the outcome of scar formation. Significance: morphological study demonstrates scar degeneration of connective tissue in resistant clubfeet. Inextensibility (poor or minimal extensibility) of scar tissue is the reason of unsuccessful conservative clubfoot treatment in this group of patients.

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Room: Caravaggio 3-4

Abstract no.: 43738

DELETIONS OF 5' HOXC GENES ARE ASSOCIATED WITH LOWER EXTREMITY MALFORMATIONS, INCLUDING CLUBFOOT AND VERTICAL TALUS

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BACKGROUND: Deletions of the HOXC gene cluster result in variable phenotypes in mice, but have been rarely described in humans. **OBJECTIVE:** To report chromosome 12q13.13 microdeletions ranging from 13 to 175 kb and involving the 5' HOXC genes in four families, segregating congenital lower limb malformations, including clubfoot, vertical talus and hip dysplasia. **METHODS:** Proband (N=253) with clubfoot or vertical talus were screened for point mutations and copy number variants using multiplexed direct genomic selection, a pooled BAC targeted capture approach. SNP genotyping included 1178 probands with clubfoot or vertical talus and 1775 controls. **RESULTS:** The microdeletions share a minimal non-coding region overlap upstream of HOXC13, with variable phenotypes depending upon HOXC13, HOXC12 or the HOTAIR lncRNA inclusion. SNP analysis revealed HOXC11 p.Ser191Phe segregating with clubfoot in a small family and enrichment of HOXC12 p.Asn176Lys in patients with clubfoot or vertical talus (rs189468720, p=0.0057, OR=3.8). Defects in limb morphogenesis include shortened and overlapping toes, as well as peroneus muscle hypoplasia. Finally, HOXC and HOXD gene expression is reduced in fibroblasts from a patient with a 5' HOXC deletion, consistent with previous studies demonstrating that dosage of lncRNAs alters expression of HOXD genes in trans. **CONCLUSIONS:** Because HOXD10 has been implicated in the aetiology of congenital vertical talus, variation in its expression may contribute to the lower limb phenotypes occurring with 5' HOXC microdeletions. Identification of 5' HOXC microdeletions highlights the importance of transcriptional regulators in the aetiology of severe lower limb malformations and will improve their diagnosis and management.

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Session: Clubfoot Congress - Surgical Management of Clubfoot

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 45104

DIFFERENTIAL DISTRACTION WITH JOSHI'S EXTERNAL STABILIZATION SYSTEM (JESS) IN THE MANAGEMENT OF RESISTANT CLUB FEET IN CHILDREN

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Background: Resistant Club foot not correctable by serial casting or posterior medial release pose a challenge even to the experienced orthopaedic surgeons. Materials and Methods: We present a series of such cases which were treated by differential distraction using the Joshi's External Stabilization System (JESS). 34 patients with involvement of 41 feet with a mean age of 5 years (range 3 - 8 years) who had undergone serial casting and posteromedial soft tissue release with persistent deformity were treated by differential distraction using the JESS for gradual correction of the deformities. After removal of the fixator, the feet were manipulated and a serial short leg walking casts was applied in an over corrected position for a total period of 6 weeks, following which CTEV shoes were prescribed. Results: The mean follow up period was 28 months (range 24-34 months). The mean duration of fixator application was 2.2 months (range 1.5 to 4 months). A plantigrade foot could be achieved in 37 feet with a Dimeglio score of <5 at fixator removal. Residual varus or equinus deformity persisted in 4 feet. Improvement in gait was seen in all the patients. According to Reinker and Carpenter scale a satisfactory result could be achieved in 32 feet (78%) whereas 22% had an unsatisfactory result. Conclusion: Differential distraction using JESS is a good option for correction of club feet that are not amenable to treatment by serial casting or posteromedial releases.

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Session: Clubfoot Congress - Surgical Management of Clubfoot

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 44422

USE OF SYSTEM APPROACH IN SURGICAL TREATMENT OF EQUINES DEFORMITY IN RECURRENT CLUBFEET WITH ASEPTIC NECROSIS OF TALUS

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In our study we combined 42 patients of different age with avascular necrosis of talus after surgical treatment of recurrent clubfoot. All patients had significant flattening of talus block and one patient had shortened cervix and deformed head of the talus. All patients had severe rigid equines deformity of the feet. The value of equines was 110-150°, range of motions in the ankle joint was limited and varied from 15-20°. To eliminate this deformity we used system approach based on “a la carte” principles. We calculated the degree of possible correction in ankle using determination of the talus block sphericity. To avoid posterior release - we combined achillotomy in conjunction with closed bringing down of calcaneus during casting. We used that approach for a group of patients under 3 years old. In older patients with residual deformity we used Ilizarov frame to correct equines. In cases with lack of sphericity we preferred stapling of growth plates in group of patients about 8-14 years old. In older patients we used supramalleolar osteotomy of tibia bone. In severe cases we combined this methods to achieve the best results. Among them were 24 boys (57%) and 18 females (43%). 19 patients (45%) had bilateral deformity, 13 (31%) right-sided and 10 (24%) left-sided deformity. The observation period: 5 years. 39 patients (57 feet) showed good result and 3 patients (4 feet) showed satisfactory result. Less traumatic technique allows us to correct deformity, reduce the risk of relapses and to avoid severe complications.

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Session: Clubfoot Congress - Surgical Management of Clubfoot

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Room: Caravaggio 3-4

Abstract no.: 43197

CLINICAL OUTCOME OF MANAGEMENT OF ROCKER BOTTOM DEFORMITY IN CLUBFOOT

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Introduction: Rocker bottom deformity in clubfoot is a result of forceful attempts of dorsiflexing the ankle in presence of posterior tether. The child presents with a convex plantar surface of foot. The diagnosis is easily confirmed with a stress dorsiflexion lateral view of the foot and ankle. Treatment involves a posterior soft tissue release to correct ankle equinus and stabilization of subluxed and displaced mid tarsal joints. We present our cases with rocker bottom deformity in clubfoot and our outcome following soft tissue release. Methods: 10 patients with 14 feet were treated with posterior soft tissue release. Age of patients ranged from 6months to 3yrs. All patients had pre-operative evaluation of Tibio-calcaneal, Talo-calcaneal and Talo-1st metatarsal angles. Posterior soft tissue release with capsulotomy of ankle and subtalar joint and TAL was performed. K-wire fixation of Talo-navicular and Cal-cuboid joint was done in 3 cases. 3 patients with 6 clubfoot had pre-operative casting in equinus prior to surgical release. Total duration of casting ranged from 6 weeks to 2 months. Results: All patients had improved Talo-1st MT angles compared to pre-op. One patient had residual equinus and rocker bottom deformity and underwent a circumferential release. 2yrs after posterior release one patient with 2 feet has mild mobile adductus and is under observation. Conclusion: Rocker bottom deformity is an iatrogenic problem and needs to be recognized and treated promptly. Posterior soft tissue release proved to be beneficial for the correction of deformity and is the treatment of choice in this condition.

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Session: Clubfoot Congress - Surgical Management of Clubfoot

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Room: Caravaggio 3-4

Abstract no.: 45085

NEW TREATMENT IN ARTHROGRYPOSIS BY METHOD OF ALIMKHANOVA R.S.

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Introduction: Method of Alimkhanova R.S. is innovative and highly effective treatment, which is providing absolute recovery. Casts and surgical treatment are completely excluded. Treatment out-patient and doesn't demand hospitalization, decreases financial expenses and can be used in any regions of residence. Research belongs to first fundamental developments, which radically changes views on arthrogyrosis treatment principles. Method: Studied clinic-statistical data of 20 patients (40 feet) with arthrogyrosis multiplex congenital in age of from 7 days to 2 years. Comparative evaluation was performed with patients group, who were treated by traditional methods. The basis of method as per Alimkhanova is the principle of muscular imbalance elimination. Research shows, that during dosed stretching of soft tissues, the tension inside stimulates and supports the active regeneration and redevelopment of soft tissues. Method developed since 1981. Special devices consist of cuffs, platform for feet, traction belts, pulling-fixers and special bed "besik" which are providing absolute recovery and highly effective treatment. Results: During developed method of Alimkhanova R.S., good results are achieved for 80% of children, satisfactory - 20%, there were no unsatisfactory results. Medical treatment is outpatient and is performed by parents. Doctor examination is performed once a month. Trophic disturbances are absent. Disease relapse, complications and invalidization are excluded. According to the above advantages, Alimkhanova's method is recommended for broad application not only in the Republic of Kazakhstan, but also in other countries of the world.

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Session: Clubfoot Congress - Surgical Management of Clubfoot

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 43942

OUR EXPERIENCE IN EXTERNAL FIXATION IN RECURRENT CLUBFOOT

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Recurrent clubfoot deformity is a challenging problem in paediatric orthopaedic surgery and implies a high complication rate. Treatment of relapsed clubfoot after soft tissue release in children is difficult because of the high recurrence rate and related complications. The Ilizarov technique allows: gradual correction to prevent neurovascular complications, simultaneous three-dimensional, multilevel correction and multiple levels of fixation to prevent tight soft tissues from deforming adjacent joints while correcting target joints. Our study is based on five patients (6 feet) with recurrent congenital clubfoot deformity who were treated between 2008 and 2015 using Ilizarov external fixator. The age at surgical procedure ranged from four to fourteen with an average of eight years. The total time of the correction is approximately 10 weeks (range 8-14), depending on the severity and stiffness of the deformities. Function and residual deformity were clinically graded as excellent (painless, plantigrade foot, with no functional limitations); good (plantigrade foot and mild pain); fair (mild residual deformity, and some functional limitations); and poor (significant residual deformity, pain, and activity limitations). Radiographic measures of the talocalcaneal and talo-first metatarsal angles were obtained and compared preoperatively and postoperatively. In our experience external fixation and gradual distraction is considered a valid alternative surgical option, showing satisfactory results in term of function and appearance, although it is a technically demanding procedure with several possible complications.

Date: 2016-09-09

Session: Clubfoot Congress - Surgical Management of Clubfoot

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Room: Caravaggio 3-4

Abstract no.: 45685

ILIZAROV DISTRACTION HISTOGENESIS IN RELAPSED CLUB FOOT

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Introduction and aim of the work: Conventional surgical treatment of relapsed club foot deformities is not always successful or easy to apply. In this study we evaluate the use of the distraction histogenesis technique for management of relapsed club foot deformities. Methods: fifty three cases 2- 6 years old with relapsed club foot deformities with history of average 3 previous operations (range, 1-8 operations). This thesis based on 50 consecutive cases (61 feet), of average age 4 years and 3 months (range, 2- 6 years). We used preoperative assembly of the leg construct of the apparatus but ankle and foot construct was designed according to the condition of deformity. Results: The range of operative time was 1 – 2.5 hours (average of 1.5 hours). Average time in the fixator was 18 weeks (range, 10 weeks - 30 weeks). After fixator removal cast was applied for one month, followed by night splint and special shoes for their daily activities. The average follow-up period was 42 months (range, 36 - 84 months) after fixator removal. The results were: good in 50 feet, fair in 7, bad in 4. Conclusion: Ilizarov Treatment is lengthy, difficult, fraught with complications, and a technically demanding procedure. However, we believe that minimal invasive use of distraction histogenesis in relapsed club foot using Ilizarov external fixator as nearly a bloodless technique in treating relapsed club foot deformities in the gray age zone is an effective.

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Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 42570

IS ATYPICAL CLUBFOOT IATROGENIC AND CAN IT BE CORRECTED BY PONSETI'S METHOD

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Introduction: Atypical clubfoot is a foot with rigid equinus, severe plantar flexion of all metatarsals, deep crease above heel, transverse crease in the sole of foot and hyperextended first toe and it is difficult to correct. We present, one year follow up of 22 children presenting with features suggestive of atypical club foot. Method: Clinical examination was done to exclude a syndromic clubfoot. Children with features suggestive of atypical clubfoot were included in the study .Modified Ponseti casting was used in all cases for correction of deformity. Weekly follow up and scoring was done at each visit. Tenotomy was done when mid foot deformity was corrected. A foot abduction brace was fitted in all cases. Results: Results were excellent in 17 children with Pirani score 0 and correction of all features of atypical clubfoot, good in 3 and poor in 2 cases. The longest follow up was 14 months and the shortest 5 months. Discussion: 22 cases of atypical clubfeet were seen. It was most commonly seen in children with a history of slippage of casts. Most had several weeks of casting before coming to the hospital without correction. Only modified maneuver helped correct deformities. Early recognition and modified Ponseti regime corrected all feet. Conclusion: With modified Ponseti manipulation and diagnosis at the right time, complete correction can be achieved in children with atypical clubfeet.

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Session: Clubfoot Congress - Surgical Management of Clubfoot

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Abstract no.: 43925

MANAGEMENT OF CLUBFOOT BY PONSETI TECHNIQUE – OUR EXPERIENCE

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Introduction: We report our experience of the Ponseti method for the treatment of congenital idiopathic club foot. we have treated 107 feet in 79 patients by this method with the mean follow-up time of 15 months (6 to 24). The standard protocol described by Ponseti was used except that, when necessary, percutaneous tenotomy of tendo Achillis were performed under general anaesthesia in the operation theatre and change of plaster fortnightly. The Pirani score was used for assessment. Results: The results were assessed in terms of the number of casts applied, the need for tenotomy of tendo Achillis and recurrence of the deformity. Tenotomy was required in 87 of the 107 feet. Ten feet failed to respond to the initial treatment regimen and required extensive soft-tissue release. Of the 97 feet which responded to initial casting, 35 (32.71%) had a recurrence, 19 of which were successfully treated by repeat casting and/or tenotomy and casting. The remaining 16 required extensive soft-tissue release and External Fixator application. Poor compliance with the foot-abduction orthoses (Denis Browne splint) was thought to be the main cause of failure in these patients.

Date: 2016-09-09

Session: Clubfoot Congress - Surgical Management of Clubfoot

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 44384

THE LEARNING CURVE IN THE PONSETI METHOD: EVOLUTION IN 15 YEARS

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The Ponseti Method is known as the gold standard treatment for clubfoot. To be successful it must be done by a trained orthopedic surgeon who must be going through a learning curve that aims to achieve a satisfactory correction (according to the Pirani Score) on with a reasonable time and number of casts. The Ponseti Method does not allow adjustments. This study aims to characterize the orthopedic surgeon learning curve by the number of casts, treatment time and progression of correction by the Pirani Score. The study analyzed the results of two orthopedic surgeons from 2 different Ponseti reference centers in Brazil, one with 15 years of practice and other with 5 years of practice in three 5 years intervals. The treated patients from both centers were male and female, from 14 to 180 days old, and they were all virgins of treatment. The orthopedic surgeon with 5 years of practice treated 40 patients, 56 feet. The minimum number of exchange plaster was 3 and the maximum was 16. The most experienced orthopedic surgeon in the first 5 years of practice treated 52 patients, 70 feet with a minimum number of exchange plaster of 2 and maximum of 13. All casts were exchanged weekly and all patients needed Achilles tenotomy. The initial Pirani score for both varied from 3 to 6 and the final Pirani score before tenotomy from 1,5 to 0,5. In order to treat clubfoot patients by the Ponseti Method the orthopedic surgeon must pass a learning curve

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Room: Caravaggio 3-4

Abstract no.: 42604

IS CASTING EFFECTIVE FOR RECURRENCE FOLLOWING PONSETI CLUBFOOT TREATMENT?

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Introduction: Up to one fourth of idiopathic clubfoot patients treated with the Ponseti method experience recurrence of deformity. Many of these patients receive surgery (e.g. tibialis anterior transfer). In our hospital the initial treatment for recurrent clubfoot is casting. This study evaluates the outcome of (repeat) casting in the treatment of these patients. Methods: We evaluated 163 patients with recurrent idiopathic clubfoot treated at our hospital between 2004 and 2012, of whom 61 patients (57 feet) the recurrence was treated with repeat serial casting and bracing. Demographics, age at time of treatment, number of casts and surgical intervention(s) were compared between the recurrent group and a control group of 43 randomly selected patients (65 feet) who had not recurred. Patients were deemed to have a successful outcome if they had not received surgery for a recurrence and did not require further casting in the year 2015 or at the time of follow-up. Results: A total of 86 patients with 122 clubfeet were seen. Success rates were 56% (32 feet) and 88% (57 feet) respectively for the recurrent and control group. For successfully treated clubfeet, dorsiflexion past neutral was ten degrees higher in the control group (15.22 vs. 25.97 degrees). The recurrent and control group did not differ on having a straight lateral border, hindfoot valgus and a plantigrade foot. Conclusion: Treatment of recurrent idiopathic clubfeet with casting was successful in many patients and is a good choice for (initial) treatment.

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Session: Clubfoot Congress - Surgical Management of Clubfoot

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 43256

DISTRIBUTION OF THE PONSETI METHOD IN RUSSIA

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In Russia the Ponseti method has been used since 2004, and it gains more and more adherents. On the 30th of November 2012 Russian Ponseti Association (RPA) was officially recognized by Ponseti International Association (PIA). Nowadays 2/3 of regions in Russia use the Ponseti technique as a starting method of treating clubfoot. Almost all major medical associations have orthopedists actively practising the Ponseti method. Annually, all-Russia conferences on the treatment of foot deformities are held, where the Ponseti method is popularized. All medical journals publish articles on the treatment of clubfoot and the advantages of the Ponseti method. Special sites are created, all the Internet search engines in Russian contain the information about the treatment of clubfoot with the Ponseti method. The site (ponseti.ru) unites the efforts of doctors and demonstrates the power of orthopedists in various parts of the country using the Ponseti technique in their daily practice. In order to promote the Ponseti method famous lecturers such as H. Morkuende, M. Dobbs, M. Sinclair, L. Staheli visited Russia several times. Russian braces have been created and are being constantly modernized, competing successfully with well-known international brands on the Russian market. Orthopedists united by RPA continue working on the implementation of the Ponseti method in all parts of Russia. All mentioned above makes it possible to reduce the number of large operations (releases and arthrodesis) and people with disabilities in Russia.

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Session: Clubfoot Congress - Ponseti Method

Time: 14:00 - 15:30

Room: Caravaggio 3-4

Abstract no.: 43780

**TREATMENT OF IDIOPATHIC CONGENITAL CLUBFOOT IN ITALY:
MULTICENTER STUDY**

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INTRODUCTION: Ponseti method for treatment of idiopathic congenital clubfoot has proven to be worldwide successful, finding a renewed interest among pediatric orthopedists. The aim of this multicenter study is to report the Italian experience. **METHODS:** 2207 patients affected by idiopathic congenital clubfoot (3479 feet) were treated with Ponseti method in 5 Paediatric Orthopaedics Departments (Giovanni XXIII-Bari, Tor Vergata-Rome, Buzzi- Milan, Bambin Gesù-Rome, Burlo Garofolo-Trieste), between 2001 and 2012. All the centers strictly follow the guidelines of the method: gentle manipulation, weekly application of casts, percutaneous tenotomy, and abduction foot brace. Age at treatment, gender, side, severity of initial deformity, age at tenotomy, compliance with brace and number of recurrence were recorded. **RESULTS:** The mean follow up was 49 months (range 7 to 108). The age at the beginning of treatment ranged from 4 days to 5 weeks; 1427 patients were males and 780 females (M:F = 1,82); 1272 cases were bilateral. According to Manes Classification, 12.2% of the patients were type I, 41.8% type II, and 46.0% type III. Percutaneous tenotomy was performed in 1582 patients (86.0%). Relapses was observed in 239 children (12.6%). Poor compliance with Denis Browne splint seems to be the main cause of failure. A total of minor complications: plaster/brace sore, erythema and swelling of toes, were encountered in 3.5% of cases. Good to excellent results were obtained in 1945 patients (88.1 %), following a modified Functional Ponseti Scoring System. **CONCLUSION:** We confirmed the effectiveness of Ponseti method for treatment of idiopathic congenital clubfoot.

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Session: Clubfoot Congress - Ponseti Method

Time: 14:00 - 15:30

Room: Caravaggio 3-4

Abstract no.: 44875

THE AFRICA CLUBFOOT TRAINING PROJECT - STRENGTHENING TRAINING CAPACITY FOR THE PONSETI METHOD

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Introduction: Many training programs on the Ponseti clubfoot treatment method have been developed over the past 15 – 20 years targeting health professionals in developing countries. However curriculums have not been standardized, capacity building has not been focused on trainers, and the outcomes of training have not been comprehensively evaluated. Method: The Africa Clubfoot Training Project is an initiative of CURE Clubfoot, Oxford University, the Global Clubfoot Initiative and CURE Ethiopia Children's Hospital, aiming to substantially strengthen training and delivery capacity for clubfoot treatment in sub-Saharan Africa by 2017. It is a regional response to feedback that previous training courses were too complex, did not meet the needs of professionals in many countries and did not consistently produce good Ponseti providers. The project will produce a Basic Ponseti Provider Course, an Advanced / Refresher Provider Ponseti Course and a Training The Trainer course. The Training The Trainer course aims to build a cadre of regional trainers through learning how to be an effective trainer, how to deliver the Basic and Advanced courses, and how to mentor practitioners in clinic settings. Broad, international consultation on each curriculum has been conducted. Results: Results to date from pilot courses are very positive, demonstrating acquisition of skills, knowledge and confidence. Discussion: This paper will outline the process, outcomes and next steps of the project, including curriculum development, English and French language pilot courses, resources produced and availability, and national and regional faculty development.

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Session: Clubfoot Congress - Ponseti Method

Time: 14:00 - 15:30

Room: Caravaggio 3-4

Abstract no.: 45492

A PROSPECTIVE RANDOMISED STUDY OF PONSETI CASTING BY A PHYSIOTHERAPIST AND A PAEDIATRIC ORTHOPAEDIC SURGEON

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Background: Congenital talipes equinovarus (CTEV) is a complex three-dimensional deformity with an incidence of 1-3 per 1000 live births. The Ponseti method is widely accepted and practiced, giving reliably good long-term results. There are a number of studies showing the benefits of a physiotherapy led Ponseti service with outcomes similar to a consultant led service. We present the first prospective randomised series comparing a physiotherapy led Ponseti service with a standard orthopaedic surgeon led series. Method: 16 infants with bilateral CTEV were randomised into two groups. Each infant had one foot treated by a physiotherapist and the other foot treated by an Orthopaedic Surgeon, using the Ponseti technique. Both groups had a median premanipulation Pirani score of 6. Results: All patients were followed up for a minimum of 18 months and the results demonstrated no significant difference in the post-treatment Pirani scores ($p=0.35$) and no significant difference in the success rate of the Ponseti technique ($p=0.77$) between the two groups. Conclusion: This study is the first of its kind and demonstrates the value of a Physiotherapy led Ponseti service in the management of CTEV. Although overall supervision by a paediatric orthopaedic surgeon is still necessary, our results suggest that manipulation and casting can be safely delegated to adequately trained physiotherapists. This may free up valuable financial and medical manpower resources.

Date: 2016-09-09

Session: Clubfoot Congress - Ponseti Method

Time: 14:00 - 15:30

Room: Caravaggio 3-4

Abstract no.: 45420

DESCRIPTIVE EPIDEMIOLOGY OF TALIPES EQUINOVARUS IN SOUTHERN NIGERIA

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Introduction: Talipes equinovarus (Clubfoot) is the commonest foot deformity with variable incidence across races. Exact etiology remains elusive. The objective of this study is to describe the epidemiology of clubfoot in our centre, looking for potential risk factors. Method: A descriptive clinic – based study of 106 feet belonging to 69 subjects from January 2013 – December 2015. Structured questionnaires were administered to clinically confirmed clubfoot subject’s biologic mothers. Phenotypic data from clubfoot subject were also recorded. Ethical clearance obtained. Analyses was done using IBM SPSS version 22. Results: The age range of the patients was 3 days to 9 years, with a mean age of 46.66 weeks \pm 92.03 weeks. Thirty seven (53.6%) patients had bilateral deformity while 13 (18.8%) patients had right – sided deformity, and 19 (27.5%) patients had left – sided deformity. The average maternal age was 26.35 years \pm 4.99 years. The average length/height of patients at presentation was 64.27 \pm 23.93 cm. The average shoulder span of the patients at presentation was 23.93 \pm 15.86 cm. Majority (57.9%) of the patients are the first – born children of their parents. Ten patients (14.49%) have other associated congenital anomalies with congenital amniotic band (2.89%) and umbilical hernia (2.89%) as the commonest anomalies. Only 2 (2.89%) patients are products of multiple gestations. None were smokers and none reported family history of foot deformities. Conclusion: Young maternal age, gender, first-born and multiple gestations are risk factors in development of clubfoot.

Date: 2016-09-09

Session: Clubfoot Congress - Ponseti Method

Time: 14:00 - 15:30

Room: Caravaggio 3-4

Abstract no.: 45161

PONSETI METHOD IN CHILDREN AFTER WALKING AGE: A SISTEMATIC REVIEW OF THE LITERATURE

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Sanatorio Allende, Cordoba (ARGENTINA)

Introduction: A systematic review of the literature was carried out to; 1) define the degree of scientific evidence of using Ponseti method in children over 1 year old with clubfoot, 2) assess the number of casts and associated procedures required to accomplish full correction, 3) determinate the percentage of full corrected feet, and 4) identify the rate of recurrence and complications rate method related. Methods: Papers that report the use of Ponseti method in patients over 1 year old with clubfoot were gathered up using the available informatic data base on Ovid, Pubmed, LILACS y Cochrane Library. Papers published until May 2014 in Spanish, Portuguese or English were included in the study. Papers evaluating initial correction, functional results, complications and recurrence rate in patients over a 1 year old, with o without previous treatment with a minimun follow up of an year; where analyzed. Results: Out of 449 papers founded after the data base research, 15 met the inclusion criteria. 3789 patients (5782 feet) were included in the sample. A plantigrade foot was obtained in an 83% of the sample. The complication rate was of 5.6%. Discusión: Current evidence regarding Ponseti method for patients over 1 year-old is primarily level IV. This technique allows to correct deformity in high percentage with a low complication rate. Even though requires a higher number of cast and associated procedure. Key Words: clubfoot, Ponseti, children. Evidence level: Grade III.

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Session: Clubfoot Congress - Ponseti Method

Time: 14:00 - 15:30

Room: Caravaggio 3-4

Abstract no.: 44684

MID-TERM OUTCOME IN IDIOPATHIC CLUBFOOT TREATED BY PONSETI METHOD USING SOFT CAST

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Purpose: It is our purpose to evaluate the mid-term outcome of idiopathic clubfoot treated by Ponseti method using soft cast (SC). **Methods:** There were 42 consecutive idiopathic clubfoot patients (68 feet) treated the Ponseti method using SC in five-year period. All had minimum of 3 years follow up and 12 months following removal of Denis Browne splint, which was applied for 2 years after Ponseti method. We used Dimeglio score at pretreatment and final evaluations. Percutaneous Achilles tenotomy (PAT) was performed in those with Dimeglio sagittal plane score of more than 2 points. Questionnaires for each clinic visit were collected from caretakers. Standing radiographs of the foot were taken at age two. We used independent t-test for statistical analysis with $p < 0.05$ as significant. **Results:** The final vs. initial Dimeglio scores were significantly improved. The PAT was performed in 56%. Questionnaire revealed higher scores in cast tolerance, durability, and parent satisfaction. Radiographic measurements showed significant improvement in foot correction. The recurrence rate was 12%, all had repeated Achilles tenotomy and anterior tibia tendon transfer. **Conclusion:** This study supports the use of serial SC casting for clubfoot. There was higher parent satisfaction. With less padding and skin tight soft casting, it provides better feeling of the foot in cast. Hence, a better correction may ensue. The recurrent rate was compatible with the literatures if not better. The higher correction rate and the superior midterm outcome attributed to the success of the Ponseti method by SC and families compliance.

Date: 2016-09-09

Session: Clubfoot Congress - Ponseti Method

Time: 14:00 - 15:30

Room: Caravaggio 3-4

Abstract no.: 44632

RESULTS OF THE PONSETI METHOD OF CLUBFOOT TREATMENT IN OLDER CHILDREN (> 1 YEAR OF AGE)

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Aim: Few reports are available in literature about the results of clubfoot treatment by the Ponseti method in walking children. The aim of our study was to document our results in older children. Methods: 41 patients (57 clubfeet) older than 1 year of age treated in a dedicated Clubfoot Clinic over a 4 year period (Aug 2011 – Jul 2015) were analysed for age at presentation, initial & final Pirani score, total number of casts, tenotomy rate, rate of relapse and brace compliance. Results: Mean age at presentation was 3.2 years (1 to 10 years) and average follow-up was 18 months (3 months – 3.5 years). 31 patients had been previously treated elsewhere by average of 5.7 casts (1 – 17) in 31 patients & tenotomy in 9 patients. The mean Pirani score at start of treatment was 3.5 (0.5 to 6) and 0.1 (0 – 1.5) at final review. Average number of casts was 5.5 (1 to 12) and the tenotomy rate was 73%. Compliance with foot abduction brace was good in 35 patients. Recurrences were seen in 16 patients (39%), which were treated by re-casting & bracing in all cases and tibialis anterior tendon transfer in 7 patients. Using a clinical scoring system, we could achieve excellent result in 24 patients & good result in 17 patients. Conclusion: The Ponseti method can be successfully used even in walking age children. Though the relapse rate is high (39%), good results can be achieved in all cases.

Date: 2016-09-09

Session: Clubfoot Congress - Ponseti Method

Time: 14:00 - 15:30

Room: Caravaggio 3-4

Abstract no.: 43791

THE PONSETI METHOD FOR THE TREATMENT OF CONGENITAL CLUBFOOT: THE PARENTAL OPINION

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Introduction Ponseti method is the gold standard for the treatment of congenital clubfoot. The achievement of the best results is obtained also thanks to the parents' s compliance, through high levels of education, relationship and constant use of the brace, following a rigorous, standardized protocol. We analyzes the parents' perspective and identifie the main difficulties that might compromise the outcomes. Methods A questionnaire, similar to that used in the study of Nogueira and Morcuende (JPO B 2013), has been sent by e-mail (together with a consensus for the data treatments and for the privacy) to 30 families of children affected by clubfoot (Pirani 6). These children were treated at Burlo Garofolo Children's Hospital of Trieste, between 2009 and 2014. with the classic Ponseti Method: serial long casting, percutaneous Achilles tenotomy (96.7% of cases), bracing. The 38 questions, divided in groups, were about: the relationships of the families, the cast phase, the Achilles tenotomy, the use of brace, the general impressions. Results About the cast phase families referred skin problems, as reddening and erithema in 30% of cases, about the brace phase 37% reported difficulty in the transport of the baby, 40% considered this treatment the cause of sleep disorders . 93% of families were satisfied of the treatment and they are going to suggest it in the future to other families with babies affected by clubfoot. Conclusions it's very important that orthopaedic surgeons know parental opinion about the method to improve their compliance and outcomes, thanks to education and relationship

Date: 2016-09-09

Session: Clubfoot Congress - Ponseti Method

Time: 14:00 - 15:30

Room: Caravaggio 3-4

Abstract no.: 43732

PONSETI TREATMENT OF RIGID RESIDUAL DEFORMITIES IN CONGENITAL CLUBFOOT AFTER WALKING AGE

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Introduction: There is no established treatment for rigid residual deformity of congenital clubfoot (CCF) after walking age. Soft-tissue and bony procedures as well as external fixation have been performed with controversial results. We applied the Ponseti method to this condition aiming at improving the result of treatment. Methods: We retrospectively reviewed sixty-eight CCF of forty-four patients with rigid residual deformity. The mean age at treatment was 4.8 ± 1.6 years. Residual deformities were classified, and stiffness rated by the number of casts needed for correction. Radiographic angles were measured. Ponseti manipulations and casting were performed with additional heel cord percutaneous surgery and percutaneous fasciotomy when needed. Tibialis anterior tendon transfer (TATT) was performed in patients over 3 years of age. Results were clinically and radiographically evaluated and statistically analysed. Results: Before treatment, twelve feet had two deformities; twenty-three, three deformities; eighteen, four deformities; fifteen, five deformities. All the patients had an abnormal gait. Two to four casts were applied. Stiffness was moderate in twenty-three feet (two casts), severe in thirty (three casts), very severe in fifteen (four casts). Heel cord percutaneous surgery was performed in twenty-eight CCF, open posterior release in five CCF, plantar fasciotomy in thirty, and TATT, in sixty-two. The mean length of follow-up was 4.9 ± 1.8 years: fifty-seven feet had a good result, and eleven fair. Radiographic angles had a statistically significant improvement ($p < 0.05$). Conclusions: Ponseti treatment is effective, providing 84% of good results. At follow-up, no patient showed abnormal gait, CCF were plantigrade and flexible and only two relapsed.

Date: 2016-09-09

Session: Free Papers - Trauma Miscellaneous

Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 43263

VENOUS THROMBOEMBOLISM IN THE TRAUMA AND ORTHOPAEDIC POPULATION

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INTRODUCTION: Venous thromboembolism (VTE) is a potentially life threatening complication in trauma and orthopaedic (T&O) patients. Both operative and non-operative patients are at risk owing to immobilisation and reduced weight bearing prescribed in treatment protocols. Current research reviews VTE risks for specific procedures and risk reduction strategies (including chemical and mechanical), but little data is available documenting the incidence of VTE in the general T&O patient population. We aimed to assess the overall effectiveness of VTE reduction strategies in T&O patients by determining the demographics of patients diagnosed with VTE during a 1-year period in a major trauma centre. **METHODS:** Clinical coding provided a list of all patients with a positive scan for deep vein thrombosis (DVT) or pulmonary embolism (PE). These results were cross referenced with those patients who had additional lower limb imaging over a 1 year period. Non-relevant and duplicate studies were excluded. The resulting 234 patients were reviewed via electronic patient records to identify those treated for orthopaedic indications with a subsequent VTE within 6 months. **RESULTS:** 40 patients were identified with a ratio 7:33 elective: trauma. 17 patients had a DVT, 23 a PE. 6 patients were non-operative. 15 patients had a fractured neck of femur. 5 patients had a delay of >8 weeks between admission and VTE diagnosis. **CONCLUSION:** Whilst current strategies are effective in reducing the incidence of VTE, in cases of prolonged reduced mobility, community based assessment may in certain cases reduce the ongoing risk by extending the duration of prophylaxis.

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Session: Free Papers - Trauma Miscellaneous

Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 45606

GERIATRIC TRAUMA: DOES THE PARTNERSHIP BETWEEN TRAUMASURGEON AN GERIATRIC SPECIALIST IMPROVE THE QUALITY IN THE TREATMENT OF MULTIMORBID OLDER PATIENTS?

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Luebeck (GERMANY)

The increasing number of older Patients in Trauma is one of the most challenging aspects in our daily work. One the one hand the number of multimorbid patients ist steadily increasing, one the other hand there is although a large number of healthy old patients with increased demand in mobility and quality of life. Our Question is, do we need a closer cooperation between traumasurgeon and geriatric specialist for improvement of therapy and outcome. In our university hospital we have established a cooperation with a specialised geriatric hospital in town, with weekly ward rounds in both hospitals performed by the opposing specialist. During the first 6 years of the partnership almost 3000 Patients were seen after the acute phase in the geriatric hospital leading to a change of procedures (weight bearing, second operation) in almost 24% of the cases. 12% of the changes resulted in a earlier full weight bearing for the patient, 4% needed further operative revision. The short term follow up of the patients led to a significant improvement for the patient and lowered the risk of delayed therapy. We conclude that a closer cooperation between the trauma and orthopedic surgeon and the geriatric specialist is absolutely necessary for improving the outcome of the elder patient.

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Session: Free Papers - Trauma Miscellaneous

Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 45468

FULMINANT INFECTION COMPLICATING AN OPERATED OPEN FEMUR FRACTURE – A CASE OF NECROTIZING MUCORMYCOSIS

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Introduction: Life-threatening mucormycosis infection has rarely been reported in orthopaedic patients. This report describes an operated shaft femur fracture complicated by severe mucormycosis infection over the left thigh. **Methods:** A 23 year-old male was transferred to our center with a 15-day history of fever and a non-healing wound of the left thigh. He had sustained a road traffic collision on a motorized two-wheeler with a tree. A femoral nailing had been performed at an outside facility 2 days after the accident for a Gustilo-Anderson grade-IIIA open femur shaft fracture. Postoperatively, the open wound started discharging pus and was debrided twice. He was then referred to our hospital for further management. His left thigh was grossly swollen, tender and had a large 30x40cm black-grey, necrotic mass with powdery scales exposing the underlying muscles. The patient gave a history of consuming weight gaining dietary supplements at his local gymnasium. Samples from the edge of the lesion revealed broad, branching, irregular and septae tangles of fungal hyphae of mucormycosis. Liposomal Amphoterecin-B therapy was initiated and maintained (5mg/kg/day) for 2 weeks and the patient's condition improved drastically. Thorough debridement, serial dressings and wound coverage with large split-skin graft once it started granulating on all sides was done. At three-months follow-up there was good graft take. **Conclusion:** Mucormycosis can present as a rare, life-threatening condition in an orthopaedic practice. A high-grade of clinical suspicion along with prompt medical and surgical treatment can help in reducing morbidity and mortality in these patients.

Date: 2016-09-09

Session: Free Papers - Trauma Miscellaneous

Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 44648

STUDY OF TREATMENT OF INFECTED NON UNION OF LONG BONES (FEMUR AND TIBIA) WITH LIMB RECONSTRUCTION SYSTEM (LRS)

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INTRODUCTION : Infected non-union has proven to be a challenge in orthopaedic surgical care. Open debridement of the infected non-union site, freshening of the bone ends, appropriate antibiotics and stabilization of fracture are the basic principles of treatment in a case of infected non-union. Various devices have been used in treatment of infected nonunion as Ilizarov's ring external fixator, intramedullary nails, dynamic compression plate, limb reconstruction system (LRS) etc. **METHODS:** This is a prospective study conducted in Hi-Tech Medical College, Bhubaneswar in patients with infected non-union of fracture of long bones (femur and tibia) treated with LRS. Study period was between SEPTEMBER 2013 to SEPTEMBER 2015. **RESULTS:** We evaluated the result amongst 19 patients who were treated with LRS. Bone result was given according to the protocol of the ASAMI and EXCELLENT-8(42%); GOOD-7(37%); FAIR -2(10.5%); POOR-2(10.5%). Functional result was EXCELLENT-4(21%); GOOD-11 (58%); FAIR-1(5%); POOR-3(16%). Most common complication we faced was Pin tract infection which occurred in 65% of the cases which later on subsided with proper diagnosing the stage and meticulous treatment. **CONCLUSION:** The present case series indicates that whenever possible, it is better to use the compression–distraction technique using LRS. Among various devices LRS external fixator is one of the simplest and effective device with good union rates. LRS is easy to construct, reproducible and less cumbersome for the surgeons as well as to the patient. We successfully treated 19 patients with LRS who had satisfactory results and returned to their daily activity

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Session: Free Papers - Trauma Miscellaneous

Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 45658

POST TRAUMATIC BONE DEFECTS TREATED WITH INDUCED BIOMEMBRANE TECHNIQUE – A CASE SERIES

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Background: Segmental bone defects from traumatic injuries are complicated problems with significant long term morbidity. Historically, amputation was the preferred treatment although, limb salvage by Ilizarov technique, vascularized fibular graft, and acute limb shortening were also used. The treatment regimes were long, burdensome and patient unfriendly involving multiple procedures and complications. Masquelet described the technique of antibiotic cement spacer following debridement for an induced bio-membrane, with subsequent bone-grafting within this space. However, similar results were not reported at multiple centers due to damage to the biomembrane while removal of the cement. Hence, the present study describes the technique of cementation and cement retrieval in order to prevent the damage of the bio-membrane. Objective: To study the outcome of the role of modified Masquelet technique in the management of post-traumatic (long) bone defects following trauma presenting at our centre. Method: 6 patients with mean bone defect of 8.8 cm after debridement were operated with the modified Masquelet technique. Results: The average time for bony union was 8 months since first presentation with mean follow up of 1 year. Conclusion: The technique of delayed bone grafting with definitive fixation after initial debridement and placement of a cement spacer provides excellent results for patients with large posttraumatic bone segment loss.

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Session: Free Papers - Trauma Miscellaneous

Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 44548

THE USE OF INTRAOPERATIVE LASER ANGIOGRAPHY TO PREDICT SKIN BRIDGE NECROSIS IN A MANGLED EXTREMITY

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Determining soft tissue perfusion is critical to aid in reconstruction of the mangled extremity. Fluorescence angiography (Novadaq SPY system) may provide a tool for objective evaluations of soft tissue perfusion. The SPY system uses a low-power laser coupled with a charge-coupled device camera and indocyanine green (ICG) to sequence perfusion at the surface of the skin. We present an illustrated example of the potential utility of ICG fluorescence angiography (ICGFA) to predict skin bridge necrosis in a heavily contaminated mangled extremity. ICGFA appeared to reveal demarcation between viable and nonviable tissue and real-time perfusion, specifically capillary fill. Using the laser angiography, a clear picture of specific debridement zones was possible ICGFA aided in preventing unnecessary repeated trips to the operating room.

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Session: Free Papers - Trauma Miscellaneous

Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 45504

RIB FRACTURE FIXATION IN A MAJOR TRAUMA CENTRE: OUTCOMES FOLLOWING FIXATION WITH THE MATRIXRIB CONTOURED PLATE SYSTEM

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Introduction: There is increasing evidence to support the operative management of rib fractures. We aimed to assess outcomes following surgical rib fixation using the MatrixRIB system. Methods: A retrospective analysis of prospectively collected national audit data and patient records, alongside follow-up consultations and questionnaires. Consecutive cases of surgical rib fixation using the MatrixRIB system over a three year period (September 2012 – August 2015) were identified and verified using hospital systems, and matched to rib fracture patients that had been managed non-operatively, based on Abbreviated Injury Scale for Chest, Injury Severity Score, Gender, Age and Date of Admission. The primary outcome measure was 30-day mortality. Secondary outcomes included quality of life (EuroQol-5Dimensions-5Levels – EQ-5D-5L), pain (Visual Analogue Scale – VAS), functional capacity (UCLA Activity Score), return to work and satisfaction. Results: 56 fixed patients were identified and matched to 89 non-fixed patients. There was significantly reduced 30-day mortality in the fixed patients (1/56) compared to the non-fixed patients (11/89) ($p=0.0253$). Questionnaire data was available for 36 fixed, and 24 non-fixed patients (mean follow-up 19.4 months, range 4-44 months). The mean EQ-5D-5L Index Values were 0.603 for the fixed, and 0.594 for the non-fixed patients, demonstrating no detrimental effect on quality of life, and some benefits. On VAS, 14.7% of fixed patients reported severe pain (score of 7-10), compared to 29.2% of non-fixed patients. Conclusion(s): Mortality was significantly lower in patients who underwent rib fixation surgery. Quality of life was sustained and most patients were free from major discomfort at follow-up.

Date: 2016-09-09

Session: Free Papers - Trauma Miscellaneous

Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 44720

EARLY FRACTURE FIXATION IN OPEN KNEE DISLOCATION

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Open knee dislocations account for nearly 5-17% of all knee dislocations. Vascular injury is present in 3.3% - 64% & neurological injury ranges from 14 - 40%. Associated fractures are present in 16% with infection rate as high as 43%. Surgeries are usually delayed. Incidence of post-operative stiffness and failure of reconstructed structures ranges from 21% to 61%. Such injuries in young patients account for alteration of life style, decreased function and permanent disability. Twenty six year old male came with a right-sided open fracture-dislocation of knee (KD V.3) following a road traffic accident with absent pulsations in dorsalis pedis artery (DPA) and posterior tibial artery(PTA) . Target scan showed reduced and absent flow in DPA & PTA respectively. Reduction under anaesthesia was attempted with a cardio vascular surgeon (CVT) on standby. Injuries included anterior cruciate ligament(ACL) tear, lateral collateral ligament (LCL) avulsion with a fragment of lateral femoral condyle, comminuted patella fracture, avulsion fracture of posterior cruciate ligament (PCL) & a closed ipsilateral mid-shaft tibia fracture. After reducing the knee, distal pulsations were feeble. Lateral condyle and patella were fixed. The knee and the distal tibial fracture were stabilized in an external fixator.The avulsed PCL fragment was fixed three weeks from initial injury. Five weeks after injury tibial shaft was fixed with bone grafting & fibular osteotomy. At three & ½ months range of movement was 120 degrees & patient walks without support. Early fixation of fractures in open fracture dislocations of knee improve functional outcome.

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Session: Free Papers - Trauma Miscellaneous

Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 43906

CAN A SMALL DISTRICT HOSPITAL ADHERE TO NICE GUIDELINES REGARDING TOTAL HIP REPLACEMENT FOR FRACTURED NECK OF FEMUR? A 2-YEAR RETROSPECTIVE ANALYSIS

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Background: Hip fractures have the greatest morbidity and mortality rates of all fragility fractures. The optimum management of these patients is crucial, hence in June 2011 the National Institute for Health and Care Excellence (NICE) published a document indicating the best management of this group. This study aimed to determine if a small district hospital could adhere to NICE guidelines in offering eligible patients total hip replacements for fractured neck of femur. Methods: Two years data was retrospectively collected from the hip fracture database (January 2012 to December 2013). Data was then analysed to determine if patients who had a THR matched the criteria as set out by NICE. Results: In 2012, 26 (8.4%) patients had a THR and 138 (44.8%) patients had a hemiarthroplasty for NOF fracture, compared with the data from 2013 which demonstrated that 41 (13.4%) patients had a THR and 124 (40.5%) had a hemiarthroplasty. Hence there was an increase in the proportion of patients receiving THR for fracture. However when comparing to NICE guidelines 9/26 patients in 2012 and 27/41 in 2013, who received THR did not comply with all the criteria. Data demonstrated that 50% and 48.8% of all eligible patients received THR in 2012 and 2013 respectively. Conclusion(s): There was an increased performance of THRs in patients with hip fractures between 2012-2013, with the percentage of arthroplasty patients receiving a THR rising from 15.85% to 24.85%. Yet there is still room for improvement, with only approximately 50% of eligible patients receiving THR.

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Session: Free Papers - Trauma Miscellaneous

Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 43694

DERMOTAXIS V/S LOOP SUTURE TECHNIQUE FOR CLOSURE OF FASCIOTOMY WOUNDS: A STUDY OF 50 CASES

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Introduction: Compartment syndrome is a difficult medical condition leading to ischemia and ultimately tissue loss. Fasciotomy is the only effective method for patients with compartment syndrome. However, closing the fasciotomy wound often presents a problem. Methods: We want to highlight two simple cost effective methods of wound closure using dermataxis and loop suture technique studying 25 cases of each. We closed the posteromedial incision routinely by using Vicryl no.1 and Ethilon 2-0 sutures. After this we attended to the wound on the lateral side. In dermataxis(Singh's skin traction) method two parallel kirschner wires (1.5mm) were passed through the dermis on either side of the wound margins and interconnected by compression device consisting of threaded rod having two blocks and compression knob. Gradual compression was applied daily at the rate of 1 turn/ 12hours on both the sides of the wound. The loop suture technique involves using corrugated drains and ethilon no.1. Two corrugated drains(1 & 2) are placed on the skin adjacent to the fasciotomy incision. Sutures from one end are started passing suture first through the drain(1) then through the skin, then skin on the other side of wound, then again through the corrugated drain(2) and back to the other side. The suture was tied at the point where it started. Results: . In the dermataxis group results were excellent in 15, good in 6 and poor in 4 cases. In the loop suture technique group results were excellent in 20, good in 4 and poor in 1 case.

Date: 2016-09-09

Session: Free Papers - Trauma Miscellaneous

Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 42772

VIRTUAL FRACTURE CLINICS: HELPING TO MEET CLINICAL TARGETS

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Background: Virtual fracture clinics (VFC) involve a consultant surgeon reviewing patient case notes and imaging remotely and making decisions on the treatment pathway that patient should follow: see in a consultant led face-to-face clinic, see in a nurse led clinic or be discharged following a phone call. It can be used for fast, efficient triaging of high volumes of patients without sacrificing patient satisfaction. This study aimed to measure the benefits of implementing a VFC at a district general hospital (DGH) by measuring fracture clinic performance against a national clinical practice guideline, BOAST7, which states that time from injury to fracture clinic appointment should be less than 72 hours. Method: Data was collected retrospectively using electronic hospital systems (CERNER and EPRO databases) for all fracture clinics held at a DGH over a 2 week period in November 2014. Results were presented at a departmental audit meeting and a VFC was introduced alongside standard fracture clinics in April 2015. Practice was reaudited in July 2015. Results: Median (144 hours) and mean (154 hours) times from injury to fracture clinic remained unchanged overall, but for patients seen in a VFC the mean wait was 72 hours. 10% (17/178) of new patients were seen within the 72 hour target in cycle 1, 16% (17/104) in cycle2. Conclusion: The introduction of VFCs led to a 60% improvement in practice within just 3 months. Expansion of this service is clearly a great opportunity to meet clinical targets in a healthcare system with limited resources.

Date: 2016-09-09

Session: Free Papers - Arthroscopy and Sports Medicine Shoulder

Time: 16:00 - 17:30

Room: Caravaggio 7-8

Abstract no.: 44545

CLINICAL OUTCOME AFTER ARTHROSCOPIC DOUBLE ROW REPAIR VERSUS MODIFIED MASON ALLEN SINGLE ROW REPAIR IN MEDIUM SIZED ROTATOR CUFF TEARS

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Introduction: Rotator cuff tears are disabling injuries affecting daily activities. Different techniques had been described for the restoration of the original footprint of the rotator cuff tendons. Among these techniques, the arthroscopic double row and the modified Mason Allen stitch single row repair. Aim: prospective comparison between the clinical outcome after double row versus Mason Allen single row arthroscopic repair for medium sized rotator cuff repairs. Methods: 40 patients divided into two groups. Group(A) included 20 patients who underwent single row Mason Allen repair while Group (B) 20 patients who underwent double row repair. Clinical outcome was evaluated using the Constant Murley Score(CMS). Results: The mean follow up period for Group(A) was 38.8 months while it was 36 months for group (B). The mean CMS for group (A) was 40 preoperatively and became 70 postoperatively. Regarding group (B), the CMS was 45 preoperatively and became 72 postoperatively with no statistical significance difference between the two groups postoperatively. Conclusion: Although the double row repair provides better chance for tendon to bone healing and a superior restoration of the rotator cuff footprint than the single row repair, yet, it didn't show a statistical significant difference in the clinical outcome compared to the Modified Mason Allen single row arthroscopic repair , taking in consideration the increased financial expenses in the double row repair.

Date: 2016-09-09

Session: Free Papers - Arthroscopy and Sports Medicine Shoulder

Time: 16:00 - 17:30

Room: Caravaggio 7-8

Abstract no.: 42608

**ACCURACY OF SUTURE PASSAGE DURING ARTHROSCOPIC
REMPLISSAGE: WHAT ANATOMIC LANDMARKS CAN IMPROVE IT?**

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Introduction: The purpose was to evaluate the accuracy of suture passage during remplissage and identify surface and arthroscopic landmarks to improve accuracy. **Methods:** Arthroscopic remplissage was performed on 6 cadaveric specimens. After suture passage, position was recorded in reference to the posterolateral acromion (PLA) and the location of posterior cuff penetration. Intra-articular anchor placement was measured in reference to the superior wave sign. **Results:** 24 sutures were passed in 6 specimens. 6 sutures (25.0%) were correctly passed through the infraspinatus tendon, while 12 (50%) were through the infraspinatus muscle or musculotendinous junction (MTJ). Sutures passing through the infraspinatus were an average of 25 ± 5.4 mm inferior to the PLA, while sutures passing through the teres minor were an average of 35.8 ± 5.7 mm inferior to the PLA. There was significantly higher penetration of the infraspinatus if the passes were less than 3 cm inferior to the PLA ($p<0.001$). If suture passes were greater than 1 cm lateral to the PLA, it was significantly more likely of being in tendon compared to muscle penetration ($p=0.013$). Average superior distance from the intra-articular wave sign was 7.8 ± 12.4 mm for the inferior anchor and 16.5 ± 9.6 mm for the superior anchor. None of anchors placed greater than 6mm superior to the wave sign had suture penetration of the teres minor ($p=0.002$) **Conclusion:** We found remplissage suture passage was inaccurate with only 25% of sutures penetrating the infraspinatus tendon. Passing sutures 1 cm lateral and within 3 cm inferior of the PLA improves odds of successful infraspinatus tenodesis.

Date: 2016-09-09

Session: Free Papers - Arthroscopy and Sports Medicine Shoulder

Time: 16:00 - 17:30

Room: Caravaggio 7-8

Abstract no.: 44200

PRELIMINARY CLINICAL EFFECT OF ARTHROSCOPIC ASSISTED TREATMENT OF RECURRENT SHOULDER DISLOCATION WITH TENDON ALLOGRAFT RECONSTRUCTING ANTERIOR INFERIOR PORTION OF LABRUM AND GLENOHUMERAL LIGAMENT

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Objective: Investigate the preliminary clinical effect of arthroscopic assisted treatment of shoulder dislocation with tendon allograft reconstructing anterior inferior portion of labrum and glenohumeral ligament. Method: From February 2012 to August 2015, 11 cases of recurrent shoulder dislocation (5 left, 6 right) . There were 7 males and 4 females with an average of 46.5 years (range 34-64 years). Preoperative MRI and arthroscopic examination confirmed the diagnosis. During the operation, we used one tendon allograft, which length was 15-20cm, and braided sutured the two sides. We pulled the tendon into the joint, and used suture anchor to fix the middle section of the tendon to reconstruct labrum. Besides, the two sides of the tendon were used to repair superior and middle glenohumeral ligament. Results: All the incisions were healed at first intention without infection. All patients were followed up for 6-24 months (average 16 months). One patient recurred dislocation, and the Latarjet method was used to rebuilt it. Three months after operation, there were 3 cases with mild limitation of abduction and six months after operation. The American Shoulder and Elbow Surgeons and University of California at Los Angeles scores were 16.03 ± 1.03 and 32.65 ± 4.83 . Eight cases were excellent, two were good, one were fair and the excellent and good rate was 90.9%. Conclusion: For recurrent shoulder dislocation, the treatment of recurrent shoulder dislocation with tendon allograft reconstructing anterior inferior portion of labrum and glenohumeral ligament is a safe and mini-invasive operative method with satisfying therapeutic effect.

Date: 2016-09-09

Session: Free Papers - Arthroscopy and Sports Medicine Shoulder

Time: 16:00 - 17:30

Room: Caravaggio 7-8

Abstract no.: 45620

MIDTERM RESULTS OF ARTHROSCOPIC TIGHTROPE TECHNIQUE FOR THE ACUTE ACROMIOCLAVICULAR JOINT DISLOCATION

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Objective - To assess the result of arthroscopically assisted treatment of acute acromioclavicular joint dislocations using tightrope (Arthrex, Naples). Method and material – 23 patients of acromioclavicular joint dislocation were treated by arthroscopic tightrope technique between January 2010 and January 2014 and retrospectively reviewed. Functional assessment was done by Constant score. Results- 15 cases were Rockwood type V, two cases were type IV and 6 cases were Rockwood type III. All patients were managed by arthroscopic TightRope™ (Arthrex, Naples, USA) fixation. Average follow-up was 18 months. All patients were satisfied with the result of surgery till last follow-up except one patient in whom implant failed after 6 months. Average constant score of all patients was 81.72 at final follow-up. All patients except 3 patients were happy with their cosmetic appearance of operated shoulder. In all these three patients subluxation occurred after initial reduction. Average time from surgery to get back to work was 3.9 months. Partial loss of reduction occurred in 5 patients. Conclusion- Our results suggest that it is a reproducible and easy technique which gives good result but may require improvement in biomechanics to prevent early loss of reduction. Increase in size of button or strengthening with autogenous ligaments may be suggested Key words – Acromioclavicular joint dislocation, arthroscopy, Tightrope.

Date: 2016-09-09

Session: Free Papers - Arthroscopy and Sports Medicine Shoulder

Time: 16:00 - 17:30

Room: Caravaggio 7-8

Abstract no.: 44623

WHEN DOES PATIENTS' IMPROVEMENT PLATEAU AFTER ARTHROSCOPIC ROTATOR CUFF REPAIR

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There are over a thousand studies on rotator cuff repair in the current literature, reporting clinical outcomes at varying time point after surgery. This study aimed to investigate when does patients' improvement plateau after arthroscopic rotator cuff repair, thereby establishing the minimal follow up period required after surgery for accurate reporting of clinical shoulder scores. Between April 2010 and February 2014, 300 patients underwent arthroscopic double-row rotator cuff repair by a fellowship-trained shoulder surgeon. They were prospectively followed up at 3, 6, 12 and 24 months after surgery. The one-way ANOVA with repeated measures was used for statistical analysis. The Visual Analog Scale for pain had significant improvement till 12 months to reach 1 (95% CI 1,1) (all $p < 0.05$), then remained at 1 (95% CI 1,1) at 24 months ($p = 1.000$). The Constant Shoulder Score (CSS) improved from 40 (95% CI 37,42) preoperatively to 42 (95% CI 40,44), 58 (95% CI 56,60), 68 (95% CI 66,70) and 72 (95% CI 70,74) at 3, 6, 12 and 24 months respectively (all $p < 0.05$). Similarly, the Oxford Shoulder Score (OSS) improved from 32 (95% CI 31,34) preoperatively to 27 (95% CI 26,29), 20 (95% CI 19,21), 16 (95% CI 15,17) and 15 (95% CI 15,16) respectively (all $p < 0.05$). Using the reported minimally clinically important difference (MCID) of 10 and 6 points for CSS and OSS respectively, the authors recommend a minimum follow up of at least 12 months after surgery for accurate reporting of clinical shoulder scores.

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Session: Free Papers - Arthroscopy and Sports Medicine Shoulder

Time: 16:00 - 17:30

Room: Caravaggio 7-8

Abstract no.: 45664

**SURGICAL DRAPING FOR SHOULDER ARTHROSCOPY –
IMPLICATIONS OF SIMPLIFICATION**

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Over the last 30 years, healthcare spending per capita in the United States has risen at an alarming, unsustainable rate. The Centers for Medicare and Medicaid Services has found that healthcare spending has grown at twice the rate of GDP. Several factors are responsible, but one small aspect has been selected, in this paper, for a safe but cost effective modification, surgical draping for shoulder arthroscopy. Methods: We prepared patients undergoing arthroscopic shoulder repair with a simplified draping method. We compared the time and cost of the new draping method, to more traditional draping. Results: We found that utilizing our new draping method resulted in no nosocomial infections or wound related infections. The new method reduced draping time by over 7 minutes, per case, of operating room time ($p < 0.0001$). The cost of drapes compared to the standard method, more than halved the cost per case. Conclusions: By applying this new method to all arthroscopic shoulder procedures, we can save approximately \$327 million annually in North America alone.

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Abstract no.: 44554

“THE LABRAL BRIDGE“ A NOVEL TECHNIQUE FOR ARTHROSCOPIC ANATOMIC KNOTLESS BANKART REPAIR

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Arthroscopic Bankart repair is widely considered a mainstay for surgical treatment of anterior shoulder instability following recurrent dislocations. Traditionally, the displaced capsulolabral complex is restored and firmly attached to the glenoid by placing multiple suture anchors individually from a 5 to 3 o'clock position. However, these techniques result in a concentrated point load of the reduced labrum to the glenoid at each suture anchor, leaving tissue between the suture anchors that is not firmly attached to the bone. Technique: The following technique, developed by the first author, describes a method using the 1.5 mm LabralTape (Arthrex) in combination with knotless suture anchors (3.5mm PEEK PushLock anchors; Arthrex). The LabralTape is utilized to secure the torn labrum to the glenoid between each suture anchor creating some kind of seal, thus potentially providing a more even pressure distribution. This technique avoids the direct labral fixation in a horizontal way, thus potentially preventing from interruption of the blood supply to the labrum and capsule, since the supplying vessels in that area are running vertical to the rim of the glenoid. Since tissue to bone healing is what one wants to achieve, one could expect that this is achieved to a superior grade, if the tissue was attached to the bone over a larger total length. Furthermore, since no suture material is running perpendicular to the newly created capsulolabral bump, the suction cup effect of the glenoid and labrum might be less compromised. Besides the suture material is placed away from the articular cartilage.

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Session: Free Papers - Arthroscopy and Sports Medicine Shoulder

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Room: Caravaggio 7-8

Abstract no.: 44899

THE MANAGEMENT OF THE LONG HEAD OF BICEPS IN ROTATOR CUFF REPAIR: PROSPECTIVE COHORT STUDY OF HIGH VERSUS SUBPECTORAL TENODESIS

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Long head of biceps diseases are common causes of pre- and postoperative pain in patients undergoing arthroscopic rotator cuff repair. Therefore, the management of the LHB is a key-point in shoulder arthroscopy. The purpose of this study is to compare the clinical results of arthroscopic high tenodesis versus open subpectoral tenodesis of the LHB. Forty patients with a rotator cuff tear and associated LHB lesion were divided in two groups. Twenty patients underwent arthroscopic high tenodesis and twenty underwent open subpectoral tenodesis. Postoperative evaluation included VAS, Constant score, the Simple Shoulder Test (SST) score, the LHB score and the cosmetic results with a minimum follow up of 12 months. At early (3 months), intermediate (12 months) and final follow up (24 months) both groups showed a significant improvement in Constant score and SST score. At 24 months, Constant score improvement was better in the second group 70 vs. 81.5, $p < 0.05$, especially considering the Pain subscale (7 vs. 13, $p < 0.05$). No statistical significance was achieved for the SST score, while LHB score was statistically better in the subpectoral tenodesis group (75 vs. 90, $p < 0.05$). Moreover, the open subpectoral group showed better cosmetic results, with one Popeye deformity in the high tenodesis group. Immediate post-operative pain assessed by the VAS scale was comparable in the two groups. The open subpectoral tenodesis is an easy and reproducible technique, leading to better clinical and cosmetic results when compared to the high arthroscopic tenodesis.

Date: 2016-09-09

Session: Free Papers - Arthroscopy and Sports Medicine Shoulder

Time: 16:00 - 17:30

Room: Caravaggio 7-8

Abstract no.: 45285

INFLUENCE OF SAFETY EQUIPMENT ADVANCES ON KITESURFING INJURIES

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Introduction: Kitesurfing (KS) has gained much popularity over the last decade as technological advances have made it an easier and safer sport. The aim of this study was to validate the effect of different kite designs and safety equipment on the injury rate. Methods: A retrospective epidemiological study based on an anonymous face-to-face survey was conducted amongst active kitesurfers. The questionnaire consisted of 66 questions focusing on the equipment used, injury rates, overuse injuries and gender differences. A stepwise Poisson-Model was used to identify injury-associated factors. Results: A total of 202 kitesurfers with a mean age of 31.8 ± 9.1 years and 698.2 ± 931.5 hours of KS experience were included in the survey. 2,613 injuries were recorded. Almost 50% were haematomas, bruises or cuts and the overall injury rate was 18.5/1000 hours KS. Female kitesurfers had a significantly greater injury rate (female: 41.7/1000 hours; male 16.4 / 1000 hours; $p < 0.001$), were less experienced (female: 265.0 ± 394.8 hours KS, male: 818.9 ± 1000.5 hours KS; $p < 0.001$) and fewer of them used C-Kites (female: 22.7%; male: 39.9%). Height, weight, primary kite spot, experience, physical activity, warm-up/stretching, the type of kite and control bar used, and the use of a board leash were independent factors associated to injury rate. The lower extremity as well as the elbow, thorax and abdomen were at risk for overuse injuries. Technological advances in kitesurfing equipment over the last decade have not resulted in a decrease in the overall injury rate.

Date: 2016-09-09

Session: Free Papers - Infections Tuberculosis

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 44845

PRIMARY TUBERCULOSIS OF CLAVICLE - DIAGNOSIS, RADIOLOGY AND TREATMENT

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Introduction: Primary tuberculosis osteomyelitis of clavicle is rare. The lesion has varied presentation ranging from dull to severe pain, swelling, discharging sinus or a non healing ulcer. Due to the rarity, varied presentation and striking resemblance to other common cystic lesions like benign tumors on radiographs the lesion is very difficult to diagnose. We here present one of the series of 17 tubercular osteomyelitis of clavicle. **Materials and Methods:** A prospective study of clavicle tuberculosis was performed from January 2007 to December 2011. Cases which showed lesions in clavicular area in radiological investigation were subjected to tru cut needle biopsy. Patients with histo-pathological or culture proven tuberculosis were started on anti-tubercular therapy for 18 months. **Results:** In our study most patients belonged to 10-30 years of age. The most common and earliest clinical feature was pain and swelling in clavicular region. The erythrocyte sedimentation rate (ESR) was elevated (mean: 68 mm/h) in all patients. X-rays show either diffuse thickening and honey combing, or eccentric expansile lytic lesions with surrounding osteopenia. The most common site of presentation was medial end of clavicle. The results were uniformly good with conservative management on Anti tubercular treatment for 18 months. **Conclusion:** Tubercular osteomyelitis of clavicle is very rare and often mimics other lesions primarily benign tumors. Clinicians should be aware of the varied presentation seen in tubercular osteomyelitis of the clavicle. In an endemic region, it is necessary to maintain a high index of suspicion, especially with the worldwide resurgence of tuberculosis.

Date: 2016-09-09

Session: Free Papers - Infections Tuberculosis

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 44762

COMPARISON OF EFFICACY OF ANTI TUBERCULAR TREATMENT IN SINGLE LEVEL AND MULTILEVEL POTT'S SPINE

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AIM---The aim of the study is to compare the effectiveness of Anti Tuberculat Treatment (ATT) in single level and multilevel Potts spine. **MATERIAL AND METHODS**---56 patients of Potts spine diagnosed clinically and radiologically were included in the study. They were divided into two groups based on their MRI finding of extent of involvement. Group A consisting of single level involvement and group B of multilevel involvement. Both groups received ATT daily for 1 year (3 HRZE, 3 HRE and 6 HR). They were examined clinically and with serial blood investigations at every follow up visit. Contrast MRI was done at the end of 1 year. Patients were categorised as healed and non-healed in each group on the basis of clinical, radiological and MRI based evidence of healing. **RESULTS**---56 patients were included in the study. Group A and B consisted of 35 and 21 patients respectively. At the end of 1 year 48.7% (17) patients were healed in group A and 47.62% (11) patients were healed in group B. **CONCLUSION**---Our study suggests no significant difference between the two groups at the end of 1 year in terms of healing.

Date: 2016-09-09

Session: Free Papers - Infections Tuberculosis

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 44751

EFFICACY OF 1 YEAR ANTI TUBERCULAR TREATMENT IN SPINAL TUBERCULOSIS

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Introduction: Anti Tubercular Treatment (ATT) remains the mainstay of therapy for spinal TB. However, the duration of treatment remains controversial. In various studies, the duration has varied widely from 6 months to 18 months. The aim of the study is to evaluate the efficacy of ATT in Potts spine at the end of 1 year. Material and Methods: 56 patients of Potts spine diagnosed clinically and radiologically were included in the study. They received ATT daily for 1 year (3 HRZE, 3 HRE and 6 HR). They were examined clinically and with serial blood investigations at every follow up visit. Contrast MRI was done at the end of 1 year. Patients were categorised as healed and non-healed on the basis of clinical and radiological evidence of healing. ATT was stopped in patients who were healed at 1 year. Results: 56 patients were included in the study. At the end of 1 year, only 51% showed complete absence of activity based on clinical, radiographic and MRI findings. Conclusion: Our study suggests that in a significant proportion of patients, longer duration of treatment may be required as the MRI scan showed activity even at end of 1 year.

Date: 2016-09-09

Session: Free Papers - Infections Tuberculosis

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 43498

STUDY OF 200 CASES OF TUBERCULOSIS OF HIP JOINT

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As well known Hip involvement in tuberculosis next to spine. Hip involved in 10 to 15% in different series. Presentation vary from simple synovial to extensive destruction of joint where biological recovery impossible despite advance investigations & surgery. Disease seen in advanced stage in majority even now in countries where endemic. 40 cases diagnosed in pre destructive stage. Rest were either advance arthritis, with deformities like dislocation, wandering Acetabulum & one after THR(implantation tuberculosis). One seen first time in world was bilateral pathological fracture dislocation hips and part of multifocal tuberculosis as cutaneous tuberculosis which remained undiagnosed after such complication. Patient in pre destructive stage responded to functional treatment and none took bed rest and continued working normally with ATT and no complication like collapse of head etc which shows that in early stage rest may not be given. Corrective osteotomy in children and adults. Girdlestone excision,THR in adults after epiphseal closure. None opted for Arthrodesis. Five presented like tumour on MRI&Bone scan and biopsy could not decide despite 3rd effort and therapeutic trial only option& patient responded with ATT. Strong suspicion, timely biopsy avoids lifelong complication and surgery. Spending on investigations in pre destructive stage than on surgery worth. THR cannot replace biology achieved by conservative treatment in cases detected early. Long follow up needed for THR in active disease as local manifestation of generalised disease .Its better wait for active disease to settle and pain also takes about 6 months to settle after conservative treatment.

Date: 2016-09-09

Session: Free Papers - Infections Tuberculosis

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 43306

MUSCULOSKELETAL TUBERCULOSIS IN PLANES AND MOUNTAINS

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The incidence of musculoskeletal tuberculosis in urban areas of planes and mountains is different due to multiple factors. Uttarakhand is a mountain state of India with an approximate population of 10.8 million people. Eighty six % of its area is mountainous. Many patients come down to planes for treatment of musculoskeletal tuberculosis. We analysed a pilot data of 101 patients- 51 M 49F who reported to us for musculoskeletal tb from 2013-2015. There was a predominance of patients from the planes with just 17 patients from the mountain areas. Most case presented for lack of a definitive diagnosis at the local place or a complication. One female patient presented with relapse after 18 months of ATT for tb foot. Children and young adults up to 25 years of age formed a distinct group in both planes and mountains. Two cases of pediatric acetabular tuberculosis were treated indoors due to severe symptoms and slow response to ATT. Only one case with age above 60 years was treated from the mountains while eleven cases of that age group were from the planes. Spinal tb was seen in 3 out of 7 cases of children and young adults from mountains whereas 20 cases of the same age group out of 34 were from the planes. Literature from other countries shows an increased incidence of tb from the mountain townships in certain tribes. This is contrary to our findings.

Date: 2016-09-09

Session: Free Papers - Infections Tuberculosis

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 45647

HYDATID CYST OF FEMUR MANAGED WITH CURRETTAGE AND K-NAILING

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Introduction: Hydatidosis of bone is rare accounting for only 0.5-2.5% of human Hydatidosis. It represents one of the most severe forms of this infection. anatomic and clinical changes are peculiar to this location. From the onset, the incisions are extensive and their treatment is close to oncologic therapy than to the usual surgical treatment of visceral hydatid cyst. Osseous Hydatidosis is an aysmptomatic disease. The pain is often well borne by the patient evoloving intermittently and becoming strong only at the late stage. Tumefaction in relation to the abscess may be seen: it is a cold migratory abscess without a fistula that may however infect simulating a hot abscess. These two symptoms are seldom alarming and Hydatidosis of bone is usually detected only after a complication. Pathological fractures may also occur. Case report: A 45 year old female presented to the OPD with swelling left thigh. After X-ray and MRI patient was posted for biopsy of the swelling with the provisional diagnosis of a tumor leading to pathological fracture. During surgery typical brood capsules came out under pressure from the tissue giving the appearance of hydatid cysts. We thoroughly curetted the medullary cavity of upper femur and washed it with normal saline. Fracture was fixed with nail and bone grafting was done. Patient was put in four cycles of Albendazole. The patient was followed up for 3 years, is totally infection free and fracture has united.

Date: 2016-09-09

Session: Free Papers - Infections Tuberculosis

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 44767

COMPARISON OF RESPONSE TO ANTI TUBERCULAR TREATMENT IN CONTIGUOUS AND NONCONTIGUOUS MULTILEVEL POTT'S SPINE

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INTRODUCTION: The incidence of Multilevel Pott's spine, an atypical form of spinal tuberculosis, has been reported to be 7 to 25% in different studies. It may occur as continuous involvement (contiguous) or may affect different levels in different parts of the spine (non-contiguous). **Aim:** The aim of the study is to compare the response to Anti tubercular treatment in contiguous and non-contiguous multilevel spinal tuberculosis. **Materials and Methods:** 41 patients who were treated for multilevel Pott's spine were reviewed retrospectively. They were divided into two groups based on their radiological finding of extent of involvement. Group A consisting of multilevel continuous involvement (contiguous) and group B of multilevel involvement with intervening normal vertebrae (non contiguous). The activity status of disease was determined at the end of 1 year in each group. **Results:** Group A and B consisted of 32 and 9 patients respectively. At the end of 1 year disease activity was present in 24 patients and absent in 8 patients in group A. In group B, 4 patients were declared healed while disease was present in 5 patients at the end of 1 year. **Conclusion:** Our study suggests no significant difference between the two groups at the end of 1 year in terms of healing.

Date: 2016-09-09

Session: Free Papers - Infections Tuberculosis

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 45265

ARE WE MISSING SEPTIC ARTHRITIS IN PATIENTS WITH CRYSTAL ARTHROPATHY?

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Background: A small subgroup of patients have a combination of crystal arthropathy and sepsis. The aim of our study was to see if we are we missing sepsis as a result of a negative gram stain but later positive culture and an early crystal diagnosis? Find out the mortality rate in this subgroup? Find out if they been managed appropriately? Methods: This was a retrospective study. Inclusion criteria included all patients on telepath system (no age restriction) from 2009 -2013 coded for Sodium urate AND/OR calcium pyrophosphate crystals AND/OR gram stain positive AND/OR culture positive. Both inpatient and outpatient samples were used. Outcomes measures included date of diagnosis as date of aspirate sample demonstrating above criteria. Mortality figures related to those coded as septic arthritis for 1a on the death certificate. Results: 16 cases were identified over 4 years. 2/16 (13%) had crystals, gram stain -ve but growth on culture. Management was appropriate here. 2/16 (13%) died on that admission from septic arthritis (as coded on death certificate), 3/16 (81%) had a washout in the operating room, 2/16 (13%) had antibiotics, 1/16 (6%) had no treatment Conclusion: The clinical presentation of a hot, swollen joint is common and has wide differential diagnosis. The most serious is septic arthritis, with a case fatality of 13%. Delayed or inadequate treatment leads to joint damage.

Date: 2016-09-09

Session: Free Papers - Osteoporosis & Metabolic Disorders

Time: 16:00 - 17:30

Room: Bramante 4

Abstract no.: 43501

OSTEOPOROTIC DISTAL RADIUS FRACTURES: CAN DAILY TEN MINUTES OF HAND GRIP EXERCISE PREVENT THEM?

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INTRODUCTION: Osteoporosis has been operationally defined on the basis of bone mineral density (BMD) assessment. Osteoporosis cause more than 8.9 million fractures worldwide, mostly in elderly patients. Physical activity (PA) is recognized as a potentially important modifiable factor affecting bone mineral density (BMD), bone accrual and loss, and the risk of fracture. Aim of this study is to evaluate the role of hand gripping exercises in improving osteoporosis of distal radius. **MATERIALS AND METHOD:** 28 Post-menopausal women were included in the study. The left wrist was used for experimental intervention of hand gripping exercise five minutes twice daily for one year, with the use of hand griper of strength 5 kg. Right wrist received no intervention. Bone Mineral Density (BMD) of distal radius of all cases was evaluated every third month. The average T scores of both distal radius were calculated and results analyzed. **RESULTS:** The average BMD was -2.5 SD before the study in both wrist. All the 28 (100%) left wrist(Experimental) had an increment in BMD values at some point of time during the study, which was on an average 3 months, that was sustained and progressive, as compared to right wrist (control) which showed a decrease in BMD values, over time. **CONCLUSION:** BMD of distal radius increase with consistent hand gripping exercise daily ten minutes for a year and thus the fracture of distal radius can be prevented with this simple intervention.

Date: 2016-09-09

Session: Free Papers - Osteoporosis & Metabolic Disorders

Time: 16:00 - 17:30

Room: Bramante 4

Abstract no.: 45332

CHOLECALCIFEROL SUPPLEMENTATION FOR GERIATRIC HIP FRACTURE PATIENTS

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Introduction: Vitamin D deficiency is highly prevalent in elderly patients and almost endemic in osteoporotic hip fracture patients. Vitamin D supplementation is recommended and normal levels are associated with many positive outcomes, including decreasing fall risk and increase in fracture consolidation. The aim of this study was to evaluate the efficacy of cholecalciferol loading dose for 8 weeks for geriatric hip fracture patients. **Methods:** From a prospective series of surgically treated elderly hip fracture patients, those with hypovitaminosis D were treated with Cholecalciferol 50.000 U.I weekly for 8 weeks plus different prescriptions of daily doses of calcium + 400-800UI vitamin D. Adherence to treatment and vitamin D levels at 3 month follow-up were documented. Sample size (25 patients) was calculated assuming 70% treatment success and 50% loss of patients. The relationship between vitamin D difference and the factors including age, gender and previous vitamin D levels were examined using t-test or ANOVA. **Results:** From 72 patients with hypovitaminosis D (74 tested), 35 agreed to participate. 28 patients referred to have followed the 8-dose prescription, with 19 having normal levels and 10 insufficiency levels after treatment. One patient reached higher than desired levels (85mg/dL). We found no relation of age, gender or previous vitamin D levels with success of treatment. **Conclusion:** The 50.000UI vitamin D load dose was effective and safe reaching normal vitamin D levels. Future research is needed to evaluate the optimal dose to maintain desired levels in geriatric hip fracture patients.

Date: 2016-09-09

Session: Free Papers - Osteoporosis & Metabolic Disorders

Time: 16:00 - 17:30

Room: Bramante 4

Abstract no.: 45123

REVERSE SHOULDER ARTHROPLASTY FOR PROXIMAL HUMERUS FRAGILITY FRACTURES

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Fragility fractures including injuries to the proximal humerus are rising in the aging population. Though conservative management remains the most common treatment for proximal humerus fractures, several fractures require surgical intervention. Intramedullary nailing with minimally invasive technique is a good option in osteoporotic fractures but anatomical reduction not always is possible. Open reduction and internal fixation can be achieved also with locking plates, but failures are not uncommon. Hemiarthroplasty has been used in proximal humeral fractures but while providing good pain control, functional results have demonstrated poor shoulder motion due to tuberosity malposition or poor healing. Reverse shoulder arthroplasty, developed for rotator cuff arthropathy, has been used in acute proximal humeral fragility fractures. Eighteen osteoporotic patients (13 were female; mean age of 77 years, range 72-87) presenting with acute, closed and unstable 3- and 4-part or comminuted proximal humerus fragility fracture which required surgical option, were treated with reverse shoulder arthroplasty (Zimmer - Biomet). Radiographic and clinical follow up with Constant and American Shoulder and Elbow Surgeons Shoulder Score system for shoulder functional grading was performed at 1, 3, 6 and 12 months. Reverse shoulder arthroplasty has shown promising results with early functional recovery and very low complication rates specially for short-term follow up. Long-term follow up and comparison to hemiarthroplasty and internal fixation are needed. We underline the need of a global approach to the osteoporotic patients: the best treatment remains early diagnosis and risk fracture assessment to produce the most precise therapy as specific as possible.

Date: 2016-09-09

Session: Free Papers - Osteoporosis & Metabolic Disorders

Time: 16:00 - 17:30

Room: Bramante 4

Abstract no.: 44218

EFFECT OF AN INTENSIVE CONSERVATIVE THERAPY WITH DAILY TERIPARATIDE ADMINISTRATION AND REHABILITATION FOR OSTEOPOROTIC DELAYED VERTEBRAL COLLAPSE AND PARALYSIS

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Objective To investigate the effectiveness and limitation of further intensive conservative treatment for patients with osteoporotic delayed vertebral collapse and paralysis (ODVC). **Methods.** Patients treated for ODVCs from 2011 to 2014 with a follow-up period of more than 1 year, were eligible. The fundamental treatment strategy consisted of a surgical treatment following an intensive conservative treatment with daily Teriparatide and rehabilitation for 3 months. We suggested a surgical treatment for patients with paralysis or intolerable back pain afterward. We performed a logistic regression model in which the surgical treatment was set as an objective variables and other relating factors including sex, age, the level of affected vertebrae, the quality of paralysis, changing rate (δ) of spinal canal encroachment, local kyphotic angle, mobility of collapsed vertebrae, EQ5D, NRS, and Frankel grade as an explanatory variables. **Results.** 30 patients (6 male and 24 female, mean age 76.7 years) were enrolled in this study. Eventually 12 out of 30 patients avoided surgical treatment. Logistic regression showed that change ratio of local kyphotic angle (OR:1.072, $p=0.01$), mobility of collapsed vertebrae (1.063,0.01), EQ5D(0.98, 0.04), NRS(1.113, 0.01) were significantly correlated with the need of surgical treatments. **Discussion.** The results that factors associated with pain or paralysis influenced the need of surgical treatment were reasonable, and patients with instability of the collapsed vertebrae and progression of kyphosis were likely to need further surgical treatment. The fact that 40% of patients with ODVCs did not need a surgical treatment eventually is interesting.

Date: 2016-09-09

Session: Free Papers - Osteoporosis & Metabolic Disorders

Time: 16:00 - 17:30

Room: Bramante 4

Abstract no.: 43447

HEMIARTHROPLASTY IN THE HIP FRACTURE PATIENT WITH RENAL IMPAIRMENT: TO CEMENT OR NOT TO CEMENT

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Objectives: The incidence of hip fractures has increased due to an aging population. The aim of this study was to evaluate the rate of aseptic loosening in patients with renal impairment who underwent hip hemiarthroplasty after a traumatic neck of femur fracture, and to evaluate if there was a difference in the rate of aseptic loosening between cemented and uncemented prosthesis. **Materials and Methods:** A retrospective study was performed over a 10 year period on all patients with renal impairment, defined as eGFR of <90, who underwent hip hemiarthroplasty. Patients who had a minimum of 2 years follow up were included. Serial radiographs were evaluated for prosthesis loosening. **Results:** 1666 patients underwent hip hemiarthroplasty during the study period. A total of 119 patients were included in the study, 71 patients had cemented prosthesis and 48 patients had uncemented prosthesis. There were 21 male patients and 50 female patients in the cemented group, and 16 male patients and 32 female patients in the uncemented group. There were 7 (9.86%) cases of loosening in the cemented group and 4 (8.33%) cases in the uncemented group. The difference was not statistically significant. (Fischer exact p value = 1.00, chi square test, p value > 0.05). All cases of loosening were associated with increased severity of renal impairment. **Conclusion:** Cementing of prosthesis does not confer additional stability to the fixation of hip hemiarthroplasty. Different strategies may be employed to treat patients with severe renal impairment to ensure implant longevity.

Date: 2016-09-09

Session: Free Papers - Osteoporosis & Metabolic Disorders

Time: 16:00 - 17:30

Room: Bramante 4

Abstract no.: 43804

CO-RELATION OF DIABETES WITH OSTEOPOROTIC FRACTURES

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Introduction: Diabetes and osteoporosis are both common diseases with increasing prevalence in the aging population. Decreased bone mineral density (BMD) and increased fracture risk have fairly consistently been observed in type I diabetes mellitus patients. Nevertheless, several lines of evidence arising from meta-analytical efforts suggest that individuals with type II diabetes have generally higher BMD levels at the femoral neck, hip, and spine than persons without diabetes, independently of gender or body mass index. Materials and Methods: 200 patients prospectively for 2 years were included in the study conducted at Department of Orthopaedics, J.N.M.C., Sawangi, Wardha. All the patients of either gender of age 50 or above with hip, wrist or vertebral fractures caused by trivial trauma with glycosylated Hb 48mmol/mol or more or known case of diabetes were included in the study. Those with fractures other than trivial trauma or with pathological fractures other than osteoporosis or Compound fractures were excluded. All the patients were divided into two groups Type I Diabetes and Type II Diabetes. All the patient's BMD was done by CT scan Lumbosacral spine. Results: Average age of patients was 67.69 years with female preponderance. Type I diabetes patients were more than type II diabetes patients. Type I diabetes patients had low BMD than Type II diabetes patients and Glycosylated Hb was not related statistically to the bone mineral density. Conclusion: It can be concluded that fracture risk is more in type I diabetes patients group and less in type II diabetes group patients.

Date: 2016-09-09

Session: Free Papers - Osteoporosis & Metabolic Disorders

Time: 16:00 - 17:30

Room: Bramante 4

Abstract no.: 43289

WHAT'S THE IMPACT ON AN ORTHOPAEDIC DEPARTMENT OF PROXIMAL FEMUR FRACTURES IN THE ELDERLY POPULATION? A RETROSPECTIVE STUDY WITH AN AVERAGE 84 MONTHS OF FOLLOW-UP

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The elderly population suffers from bone loss and has a greater risk of falls, and both factors increase the probability of having an osteoporotic fracture. Proximal femur fractures (PFF) are of major consideration, for causing a significant impact on mortality and morbidity, worsening quality of life and autonomy, and increasing greatly the work load of an orthopedic department and health costs. We studied all PFF submitted to surgical treatment in our department, during a 6 year period, in patients with age 65 and older. We excluded pathological or peri-prosthetic fractures, politrauma patients and a contralateral fracture during the study period. We surgically treated 897 PFF, 262 were excluded due to criteria, resulting in 635 cases. There was predominance for female gender; the mean age was 81. The mean diagnosis-surgery time was 2,5 days, and more than 70% were operated in the first 48 hours. The mean hospital post-operative stay was 10,5 days. The 30-day complication rate was 11%. The 30-day mortality rate was 5,3%, 12-months was 14,2% and at time of data analysis 53%. We noticed delay in hospital post-operative stay was strongly influenced by medical complications and by delay in referral to post-acute care services. Patients who experience an osteoporotic fracture have a significant risk increase of having a second fracture. Generally the first contact with the orthopedic surgeon occurs after the first episode of fracture. Thus, it is important a multidisciplinary approach, with primary prevention by general practitioners, and acute treatment and secondary prevention by the orthopedic surgeons.

Date: 2016-09-09

Session: Free Papers - Osteoporosis & Metabolic Disorders

Time: 16:00 - 17:30

Room: Bramante 4

Abstract no.: 43002

TOTAL HIP REPLACEMENT POSTOPERATIVE DEXA EVALUATION IN DIFFERENT TYPES OF FEMORAL STEMS

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With an increasing demand for arthroplasty in old and osteoporotic patient populations, surgeons should be prepared to safely treat this challenging group. Bone density (BD) assessment using dual-energy X-ray absorptiometry (DEXA) has been used to monitor bone remodeling changes after total hip arthroplasty. DEXA evaluations can predict the initial phase of stem loosening. We assessed the value of DXA after cementless primary total hip arthroplasty in two groups, patients with pure distal fixation femoral stems and relatively proximal fixation stems. We present a retrospective study of 123 patient with middle follow up with DEXA for 3 years. All the patients undergo total hip arthroplasty with uncemented implants. 90 patients were operated with distal fixation Zimmer Alloclassic® Zweymüller® Stem (group A) and 33 patients with relatively proximal fixation Zimmer Fitmore® Hip Stem (Group B). All patients were treated with bisphosphonates and calcium for one year. We evaluate the DEXA results prior to the surgery, 6 months, 1 year and 3 years after surgery. The most dramatic increase in both groups was in Gruen zone 3, 4 and 5. The least increase of BMD was in Gruen zone 7 in both groups. There was a great increase of BMD and BMC in Gruen zone 4, especially in group A and relatively in Gruen zone 1 in group B. Together with an X-ray DEXA investigation is encouraging to have more reliable information about bone remodeling around the femoral stems.

Date: 2016-09-09

Session: Free Papers - Osteoporosis & Metabolic Disorders

Time: 16:00 - 17:30

Room: Bramante 4

Abstract no.: 44867

COMPARISON OF BONE FORMATION MAKER PINP BETWEEN BONE UNION GROUP AND DELAYED UNION GROUP IN THORACO-LUMBAR VERTEBRAL COMPRESSION FRACTURES WITH CONSERVATIVE TREATMENT UNDERWENT ADMINISTRATION OF DAILY TERIPARATIDE

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INTRODUCTION: The purpose of this study is to reveal the effect of daily Teriparatide on fresh vertebral compression fracture treated non-operatively. **MATERIALS AND METHODS:** The patients with fresh vertebral compression fracture underwent administration of daily Teriparatide within 1 week after development of the fracture. There were 22 patients and their mean age was 81.8 years old. The patients were divided into two groups: union group in 16 patients (1 males and 15 females), and non-union group in 6 (1 males and 5 females). We evaluated the non-union rate, the semi-quantitative score and serum value of PINP between two groups using the Wilcoxon test. **RESULTS:** The non-union rate was 27.3%. The mean SQ grade of non-union group at last follow-up period was higher than union group (2.60 vs. 1.78, $p < 0.1$). The PINP of union group were higher than non-union group throughout the whole follow-up period, especially there was significant difference at 4~6 months ($P < 0.05$). **DISCUSSION AND CONCLUSION:** The high value of the PINP in union group shows daily Teriparatide can promote bone healing in vertebral fracture as extremities, whereas the union rate of this series was not lower than previous reports. The high mean SQ grade of the non-union group suggests that instability of the fracture site existed. Therefore more rigid immobilization by surgery or hard brace should be considered in the compression fracture with instability due to severe fracture type, low bone mineral density, kyphotic alignment and early collapse after injury.

Date: 2016-09-09

Session: Free Papers - Trauma Lower extremity II

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 43200

TIP APEX DISTANCE IN DYNAMIC HIP SCREW SURGERY

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Aim: To see results of surgical treatment of trochanteric hip fractures treated with DHS implant fixation. To evaluate screw position. To find out tip apex distance for all patients operated last year. TAD was calculated as per Baumgaertner et al paper from Nov 1997. The distance from tip of the screw to the femoral head was calculated in both hip X ray views. All patients were recorded for age, sex, surgeon grade, supervision status, intra operative radiographs and TAD. $TAD = (X_{ap} \times D_{true} / D_{ap}) + (X_{lat} \times D_{true} / D_{lat})$ it should be under 25 mm. Total patients were 54, Percentage implant position in AP was superior third 24, middle third 50 and inferior third 26. In lateral was anterior third 13, middle third 61 and posterior third 26. Surgeon grade was Consultant 18% Associate specialist 13%, SPR 57%, Staff grade 4% and SHO 7%. Supervision status was supervised 33%, non supervised 49% and Consultant 2 %. TAD less than 25 mm was 91% and more than 25 mm was 12 %. Conclusion: There are five variables to determine strength of fragment assembly as follows - bone quality, fragment geometry, fracture reduction, implant design and finally choice of implant. Latter three are in control of the surgeon. Correct fracture reduction on AP/ Lateral radiographs is associated with reduced risk of cutout. Varus fixation had increased cutout rate. Superior screw placement on AP or peripheral in lateral increases failure risk.

Date: 2016-09-09

Session: Free Papers - Trauma Lower extremity II

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 42936

SCIATIC NERVE PALSY FOLLOWING TRANSCATHETER ARTERIAL EMBOLIZATION FOR AN ACETABULAR FRACTURE: A CASE REPORT

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Introduction: A severe complication associated with pelvic fractures is neurological disorders. We report a case of sciatic nerve palsy that occurred after transcatheter arterial embolization (TAE) for acetabular fracture. **Case:** A 77-year-old man was struck by a car and transferred to our hospital. He could move his ankles on arrival. He was diagnosed with a left acetabular fracture with retroperitoneal bleeding. Emergent TAE identified both the superior gluteal and inferior gluteal artery as the source of bleeding, and their main trunks were embolized. Six hours after TAE, a left foot drop was noted. Neurological examination showed weakness of both flexors and extensors, and sensory disturbance in the left lower thigh. Nerve conduction velocity testing revealed diminished and delayed conduction in the tibial nerve and absence of conduction in the peroneal nerve. We diagnosed sciatic nerve palsy. No neurological recovery was seen after 3 months. **Discussion:** Several neurological complications associated with pelvic fracture have been reported such as nerve root injury at the sacral fracture site, sciatic nerve injury due to posterior hip dislocation, and intraoperative nerve injuries. Sciatic nerve palsy following TAE, however, is not well recognized. Some cases of palsy after TAE for an arteriovenous malformation, tumour, or gynaecologic bleeding in the pelvis have been reported. In pelvic fractures, lower limb palsy tends to be thought of as the direct result of traumatic or intraoperative injury; however, some cases may be caused by TAE. **Conclusion:** Sciatic nerve palsy due to TAE should be kept in mind in pelvic trauma.

Date: 2016-09-09

Session: Free Papers - Trauma Lower extremity II

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 42680

TRAUMATOLOGICAL APPLICATION OF THREE-DIMENSIONAL RECONSTRUCTION AND RAPID PROTOTYPING TECHNOLOGY IN COMPLEX ACETABULAR FRACTURES

Concetto BATTIATO, Luca BASIGLINI, Dante BATTISTA, Alessio CIUFFOLETTI, Francesca GIOVANNINI, Dimitri MARSEGLIA, Alain MULAP, Marcella RIZZO

Ospedale Mazzoni, Ascoli Piceno (ITALY)

Three-dimensional reconstruction (3D) and rapid prototyping (RPT), starting from computed tomographic (CT) examinations, is a promising technology in traumatology in order to facilitate the planning and surgical results of complex fractures. We decided to use it to help us for the assessment of the injury type and improving knowledge of the fracture fragments for a complex bilateral acetabulum fracture in a forty-five years old male patient. The solid model allowed an accurate preoperative and intraoperative planning during which was facilitated surgical approach and the creation of dedicated pre-modeled plates; with the aid of the 3D model have been reduced surgical times thanks to the perfect knowledge of the shape of the fracture and its reduction. Furthermore, the damage of soft tissues, the blood loss and the risk of infections were limited. Fluoroscopic imaging was also minimized. Traumatological application of three-dimensional reconstruction and rapid prototyping technology is extremely useful in the management of complex acetabular fractures.

Date: 2016-09-09

Session: Free Papers - Trauma Lower extremity II

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 43444

MISSED/MISDIAGNOSED PELVIC INJURIES ON CT SCAN WITH PELVIC BINDER IN-SITU

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Introduction: Early application of pelvic binder can stop intra-pelvic haemorrhage and close the "open book" pelvis. CT scan performed in pelvic binder can underdiagnose pelvic injury. There is dearth of literature addressing this issue. Aims/Objectives: To evaluate concealment of unstable pelvic injuries when CT evaluation is done with pelvic binders in-situ. Method: All patients referred to "Northwest Pelvic and Acetabular service" during 2014 - 2015 were considered for the study. 33 patients with unstable pelvic injuries were identified. Retrospective review of their clinical and radiological evidence was undertaken. The CT scans, x-ray images, communication between the pelvic team & referring hospitals and outcomes were analysed. Results: Mean age at the time of injury was 45 years (16 - 77). Out of 33 patients 25 had CT scans done with binder in-situ, 7 did not have binder on and 1 scan could not be accessed. Out of 25 patients with binders, 12 patients (48%) could potentially have been misdiagnosed as pubic diastases were not evident on their scans. Mean separation of pubic bones on CT scans with binders for these 12 patients was 5mm whereas on x-rays without binders it was 27.42mm. 1 patient (4%) with unstable pelvic injury was completely missed only to be identified 1 month later. Discussion/Conclusion: CT scan in binders poses potential risk of classifying unstable pelvic injuries as low grade injuries, delayed referral and hence inappropriate management. Therefore it is vital to have pelvic x-ray without binder as soon as the patient is stable.

Date: 2016-09-09

Session: Free Papers - Trauma Lower extremity II

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 42472

**QUADRILATERAL PLATE FRACTURES OF THE ACETABULUM:
SUGGESTED NOVEL CLASSIFICATION**

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Objective: As there is no currently any classification for quadrilateral plate (QLP) fractures of the acetabulum; our aim was to anatomically and radiologically characterise the QLP, propose a definition and classify QLP fractures. Methods: The QLP was defined using four articulating bony pelvis specimens. A titanium mesh was placed on the quadrilateral surface on the specimen; standard anteroposterior and oblique views were obtained, together with axial CT images, to determine the radiological landmarks. The QLP was identified in 470 out of 609 consecutive patients with acetabular fractures from a level I trauma center. Results: We considered QLP fractures as fractures wherein the QLP is separated from both columns of the acetabulum; this was found in 16.09% of the cases (98 cases). QLP fractures were mostly encountered with associated both columns fractures (61.22%), Separation of the QLP could be classified as complete or incomplete, or as simple or comminuted, based on which QLP fractures were divided into three types: QLP1, simple with incomplete separation; QLP2, comminuted with incomplete separation; QLP3, comminuted with complete separation. Conclusion: The QLP was characterised, and a definition and classification system was proposed for these fractures. We believe that this classification may prove useful in the future for the identification and treatment of these fractures.

Date: 2016-09-09

Session: Free Papers - Trauma Lower extremity II

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 45065

CLINICAL OUTCOME OF BILATERAL SACRAL INSUFFICIENCY FRACTURES BY BISEGMENTAL TRANSSACRAL FIXATION VERSUS LUMBOPELVIC STABILIZATION

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Introduction: Bilateral sacral insufficiency-fractures (BIF) represent an increasing entity in geriatrics often combined with immobilization. Lumbopelvic stabilization (LP) is known to be a highly stable osteosynthesis. However, it acquires transfixation of lumbosacral junction. Bisegmental-transsacral bar fixation (BTS) at S1/S2 level gets an alternative counteracting nutational movement within fracture lines. Methods: 43 patients (Ø79a, m=4, f=39) treated with LP (n=25) or BTS (n=18) were prospectively studied. Inclusion criterion was BIF with a walking distance of <30 m. In a 6days/6months followup both methods were compared. Outcome was captured by Oswestry-Disability-Index (ODI). Objective variables were fracture healing (CT) and mobility (steps/d) using a pedometer (Fitbit®). OR-time and hospitalisation were evaluated. Results: To date, 19 patients were examined (LP=9, BTS=10). OR time (LP: Ø102±31; BTS: Ø78±30 min; p=0,02) and hospitalisation (LP: Ø11±4; BTS: Ø8±3 d; p=0,03) were significantly longer in LP. 6d followup mobility amounted LP Ø478 and BTS Ø656 steps/d, increasing after 6 months in both groups. However, mobility was restricted in LP (Ø3179) compared to BTS (Ø3312 steps/d). ODI showed restrictions for LP (37±21) versus BTS (24±18 pt; p=0,04) after 6 months. Fracture healing occurred in all cases. Adjacent lumbar fractures (ALF) were recognised in 2 LP and 1 BTS patients. Discussion: Both constructs allow BIF-patients for immediate full weight bearing reaching sufficient fracture healing. Patients treated with BTS faster regain mobility with a better outcome after 6 months and show a shorter OR time and hospitalisation compared to LP. BTS avoids lumbosacral transfixation and therefore may reduce ALF risk.

Date: 2016-09-09

Session: Free Papers - Trauma Lower extremity II

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 44702

SEXUAL DYSFUNCTIONS AFTER PELVIC FRACTURES

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Introduction: Sexual dysfunction after fracture of the pelvis is more common than expected when the complaint is specifically sought. Because of the intimate relationship of the soft tissues and the bony pelvis, associated local injury will be more. Objectives: To evaluate sexual dysfunctions occurring in operated cases of pelvic fractures. Methods: From 2007 to 2014, 175 patients were operated for pelvic injuries. 60 patients were consented for the study with complete follow up. The following parameters were recorded from the records: age, sex, mechanism of injury, fracture pattern, timing, sequence of fixation, method of fixation, complications and specifically on Sexual parameters like Erectile dysfunction, ejaculatory dysfunction, frequency and interest of intercourse, dyspareunia were analysed. Functional outcome was assessed with Majeed score. Results: The average age was 34 years. 90% of patients were male and remaining 10% were females. The mean follow up was 22 months (12-52 months). All fractures united by average 4.2 months. Urethral injury was noted in 10% of patients. Erectile dysfunction was noted in 80% of male patients which gradually improved in 60% of cases over a period of 1 year. Dyspareunia, ejaculatory dysfunction and loss of sexual interest in 40%, 10% and 72% of cases respectively. Overall, the Average Majeed score was 87 indicating good outcome. Conclusions: Sexual dysfunctions should be expected in pelvic injuries and proper counselling regarding sexual recovery should be emphasised. The anatomical reduction and fixation enhances early recovery of sexual activities

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Session: Free Papers - Trauma Lower extremity II

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 44015

POST OPERATIVE CT EVALUATION AND DEFINITION OF SAFE CORRIDORS IN THE ANTERIOR COLUMN FRACTURES OF ACETABULUM FIXED USING IN OUT IN TECHNIQUE

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A prospective study was done on 21 patients with acetabular fractures involving anterior column, fixed using lag screw by in out in technique, during September 2014 to December 2015. In our study, we evaluated parameters never studied before and attempted to delineate the safe corridors by measuring the distance of the implant from the joint, by measuring the angle of the implant, distance of screw from the anterior inferior iliac spine (AIIS). We divided the superior pubic ramus into three zones; superior, middle and inferior & assessed which zone was penetrated by the screw when inserted at a specific angle. Posterior screws had a mean of 1.56 cm and posterosuperior screws were at a mean distance of 2.08 cm from the AIIS. The angle subtended by screws in relation to the ilium was calculated and we obtained a mean of 129.83 degrees for screws with posterior entry point and 138.32 degrees for screws with posterosuperior entry point. The mean distance between acetabular margin and screw nearest to the joint was 5.46 mm. We clearly noted that none of the 33 screws penetrated the joint margin. 21 screws (65.6%) were in the superior zone of ramus. 79% of the cases had a congruence of grade I. Only 2 cases (10%) had poor reduction. There are plenty of cadaveric studies to determine the ideal entry point and angulation of screws. In our study, we tried to retrospectively analyse our screw placement through CT guidance and analyse the safe zone configuration of anterior column.

Date: 2016-09-09

Session: Free Papers - Trauma Lower extremity II

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 43365

FUNCTIONAL AND RADIOLOGICAL OUTCOMES OF SURGICALLY TREATED LATERAL COMPRESSION TYPE II PELVIC INJURIES

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Introduction: Lateral compression (LC) type II pelvic injuries constitute a diverse group of fracture-dislocations that occur after application of laterally directed forces to the pelvis resulting in either a portion of iliac wing to hinge outwards, or to an oblique fracture of posterior ileum, extending laterally from sacroiliac joint. The purpose of this study is to evaluate surgical results of these injuries.**Objectives:**To evaluate the fracture pattern, sequence and type of fracture fixation, functional outcome of patients with LC type II injuries.**Methods:**From 2007 to 2014, 35 patients with LC type II injuries were operatively treated.30 patients were available with complete follow up. The following parameters were recorded from the records: age, sex, mechanism, fracture pattern, timing, sequence of fixation, method of fixation and complications were analysed.**Functional outcome** was assessed with Majeed score.**Results:** The average age was 32.06 years.88% of patients were male and remaining 12 % were females. The subtype fracture pattern I, II and III were noted in 30%, 50%, 20% cases respectively. The mean time between injury and follow up was 22 months (12-60 months). All fractures united by average 4.2 months.The fixation methods used were anterior iliac plating(29%), posterior iliac plating(12%), anterior iliosacral plating(54%), ilioiliac screw fixation(10%), iliosacral screw fixation(20%) and combination of above.anatomical reduction was obtained in most cases.**Complications** noted were infection, limping, sexual dysfunction and implant loosening. Overall, the Average Majeed score was 85 indicating good outcome. **Conclusions:** LC type II pelvic injuries represent different fracture patterns, proper reduction and rehabilitation will helps to achieve better results

Date: 2016-09-09

Session: Free Papers - Trauma Lower extremity II

Time: 14:00 - 15:30

Room: Bramante 8-9

Abstract no.: 45565

LOCKING VERSUS NON-LOCKING PLATE IN THE MANAGEMENT OF SYMPHYSIS PUBIS FRACTURE: DOES IT REALLY MAKE A DIFFERENCE?

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Retrospective analysis aiming to review incidence of sacroiliac (SI) joint failure following fixation with non-locking plates as opposed to locking plates (LP). Methodology: Forty patients were treated over 5-years in level-1 trauma centre with either LP or non-LP. Fractures were classified according to OTA. Earliest and latest postoperative radiographs were compared between groups to determine difference between LP and non-LP. Primary outcome measure was defined by failure of metal work at SI joint. Secondary measure included SI joint re-diastasis. Results: 36M and 4F with mean age 47 years, with 30 OTA type-B and 10 type-C injuries. Radiological analysis was done in 38 patients, as 2 were lost to follow-up. Average length follow-up was 18.9months (range: 3-60). All patients had traumatic SP disruption with mean pre-operative pubic diastasis 2.7cm. Twenty-eight were treated with LP and 10 with non-LP. Twenty-three of the 38 had SI joint fixation, of which 4 with LP had metal work failure on their latest x-rays (17.4%): 1 with bilateral SI joint fixation showed diastasis 8mm (from 4mm). Remaining 3 had unilateral SI fixation with single screw; one of which showed diastasis from 1.7-3.9mm, 1 had a broken screw with <5mm diastasis and 1 had the screw backing out with no diastasis. Six of 23 patients (30.4%) had associated anterior fixation failure. Logistic-regression analysis showed that SI joint fixation failure cannot be predicted by OTA or plate type. Conclusion: incidence of SI joint fixation failure was 17.4%, failure of SI joint fixation cannot be predicted by plate type

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Session: Free Papers - Trauma Lower extremity II

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Room: Bramante 8-9

Abstract no.: 44979

SHORT-TERM COMPLICATIONS IN HIV PATIENTS WITH FEMUR FRACTURE: MATCHED PAIR STUDY

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Innovation in therapies has led to an increase in duration and quality of life of people living with human immunodeficiency virus (HIV), which increases the likelihood that these patients incur traumatic events. In literature, however, there are very few works related to outcome and complications in HIV + patients undergoing surgery for fracture. The aim of the study is to present the experience in the treatment of femoral fractures in HIV + patients treated at the Orthopaedics and Traumatology Unit, L. Sacco Hospital of Milan, assessing outcomes and short-term complications. From January 1, 2001 to September 30th 2015 we treated 32 femoral fractures in as many HIV-infected patients. Individual cases were matched controls based on: type of fracture, surgery, sex, comorbidity index, and social status. We then analyzed perioperative complications occurred in the first 3 months after surgery. Results: only 3 patients of the group A patients (HIV +: mean age 53) presented infection of surgical site, while 1 patient reports positive blood culture 1 month after surgery. Only one case has undergone reoperation for new fracture. All patients examined taking the prescribed therapy. In group B (HIV -), there was only one case of surgical site infection. The study highlights the young age of the subjects in question, who presents in 75% of cases typical elder fractures as a possible consequence of osteopenia induced by antiretroviral therapies. Second does not denote a significant difference in the incidence of acute infections in the postoperative of HIV-infected patients.

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Room: Bramante 2

Abstract no.: 45426

HOW DO ORTHOPAEDIC TRAINEES LEARN CLINICAL EXAMINATION SKILLS (CESS)? THE EGYPTIAN FELLOWSHIP IN ORTHOPAEDICS AND TRAUMA (EFOT) EXPERIENCE

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Introduction: Several modalities are used to train EFOT residents in CESSs (direct observation and instruction in clinic; independent structured clinical examination courses "ISCECs"; and time spent in ward rounds, regular teaching days & intensive review course). We administered a questionnaire to evaluate trainees' attitude towards the value of each modality in learning CESSs and compared responses to their results in the EFOT final exit exam. Methods: Forty candidates sat the final EFOT exam comprising structured viva, clinical and recently validated OSCE components. Component results and frequency of CESSs direct observation in clinic were correlated (Pearson & multiple regression). Eleven out-of 39 candidates who responded to the questionnaire attended an ISCEC. The two groups (ISCEC or not) were compared in terms of frequency of direct observation (F-test) and component scores (t-Test). Results: There was strong ($R= 0.71$) correlation between viva/clinical scores and moderate ($R= 0.54$ & 0.53) correlation between OSCE/clinical and OSCE/viva respectively. Frequency of direct observation correlated significantly ($P= 0.008$) with OSCE results and not with the other two components. The ISCEC group showed no significant difference from the other group in frequency of direct observation, total or component exam scores. Although average OSCE score in both groups was above the pass mark, more candidates (91 vs. 68%) from the ISCEC group passed this component. Of the eight candidates who attempted this exam before, at least 50% thought that ISCEC improved their exam performance and clinical skills. Conclusions: Direct observation in clinic and ISCECs are valuable in learning CESSs.

Date: 2016-09-09

Session: Free Papers - Clinical Research

Time: 08:30 - 10:00

Room: Bramante 2

Abstract no.: 43622

A CLINICAL RESEARCH COURSE FOR INTERNATIONAL ORTHOPAEDIC TRAUMA SURGEONS: TWO-YEAR OUTCOMES

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Introduction: Few initiatives exist to promote orthopaedic research in low-to-middle income countries (LMICs). The purpose of this study was to implement a course to teach orthopaedic surgeons practicing in LMICs how to conduct clinical research. Methods: In this prospective observational study, orthopaedic trauma surgeons from LMICs with no formal research training were recruited to attend the International Research Symposium. The one-day course combined didactics with “break-out sessions,” where participants were divided into teams to design a research proposal and present to the class. Participants reported research competency and productivity pre-course. A survey was also given immediately and two-years post-course to evaluate instructional materials and impact on research productivity, respectively. Results: Thirty-three participants representing 10 different LMICs attended the 2013 course. They rated 7/10 instructional quality criteria to be a mean ≥ 4 on a Likert scale of 5 (Excellent). Post-course participants were significantly more confident in their ability to “Develop a Feasible Research Question” (3.8vs.3.1; $p=0.04$) and “Write a Research Grant” (3.4vs.2.8; $p=0.04$) than before the course. At two-years post-course, participants reported starting 25 research projects, authored 6 “accepted or published manuscripts” (vs. 1 pre-course; $p<0.01$) and were selected for 12 podium or poster presentations (vs. 3 pre-course; $p<0.01$). Two attendees received “Top International Forum Paper” at the 2015 Orthopaedic Trauma Association Annual Meeting. Conclusion: The International Research Symposium enables LMIC orthopaedic surgeons to hone research skills and increase productivity. Future investigation into how clinical research skills can be further disseminated in resource-limited settings is warranted.

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Room: Bramante 2

Abstract no.: 45642

PLATELET RICH PLASMA: A NOVEL GROWTH FACTOR-BASED TREATMENT STRATEGY IN PLANTAR FASCIITIS

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Plantar fasciitis is a chronic intractable disorder and one of the commonest causes of heel pain. Treatment of chronic plantar fasciitis has eluded surgeons for a long time. Healing properties of Platelet rich plasma (PRP) has been attributed to presence of various growth factors. Aim of this study was to evaluate the efficacy of a single injection of leukocyte free PRP in plantar fasciitis. 120 consecutive age, sex and BMI-matched patients of bilateral chronic plantar fasciitis were enrolled for this prospective randomized controlled double blinded clinical trial. 60 patients received local infiltration of leukocyte-free Platelet-rich plasma bilaterally with 60 as controls. Functional outcome and level of satisfaction were measured by Visual Analogue Scale, AOFAS Foot Scale, WHO Quality of Life (WHOQOL) questionnaire, Short-Form 36 Health status questionnaire (SF-36). There was a significant decrease in VAS score in PRP group ($p=0.000$) with increase in placebo group ($p=0.030$) after 6months. Functional outcome scores (AOFAS, WHOQOL, SF-36) improved significantly in PRP group. 24.12%, 32.08%, 37.05% and 20.10% improvement were observed in AOFAS scores, WHOQOL, PCS scores and MCS scores respectively in PRP group at 6 months follow up. There was no improvement in functional status with normal saline injection, the improvement obtained with PRP was greater in magnitude and sustained over time. Thus single injection of PRP was more efficacious than placebo in chronic cases of plantar fasciitis for improving the pain and functional status of the patients.

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Room: Bramante 2

Abstract no.: 42696

CROSS-SECTIONAL AND LONGITUDINAL ASSOCIATIONS BETWEEN SERUM INFLAMMATORY CYTOKINES AND KNEE BONE MARROW LESIONS IN PATIENTS WITH KNEE OSTEOARTHRITIS

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Objective: To describe cross-sectional and longitudinal associations between serum levels of interleukin (IL) - 6, IL-17A, IL-17F, IL-23 and knee bone marrow lesions (BMLs) in patients with knee osteoarthritis (OA). Methods: Patients (n=192) with symptomatic knee OA (mean 63 years, range 50-79, female 53%) were assessed at baseline and after 24 months. At each time point, serum IL-6, IL-17A, IL-17F and IL-23 were measured using Bio-Plex® Multiplex Immunoassays with Luminex xMAP technology. Knee BMLs were scored using the modified whole organ MRI score (WORMS) from T2 weighted fat-suppressed fast spin echo magnetic resonance imaging (MRI). Multivariable linear regression and log binomial regression were used to determine the associations between cytokines and BMLs. Results: Baseline IL-6 (quartiles) were significantly associated with total knee BMLs ($p < 0.01$ for the trend) as well as associated with an increase in BML score ($p = 0.05$ for the trend), after adjustment for confounders. Baseline IL-17F and IL-23 (highest quartile vs others) was associated with an increase in BML score in females ($p = 0.04$ for IL-17F; $p = 0.01$ for IL-23), but not in males, in multivariable analyses. In contrast, IL-17A was not significantly associated with BMLs in either females or males. Conclusion: IL-6 is associated with increased knee BMLs in both females and males with OA. Serum IL-17F and IL-23 predicted increased knee BMLs in females only, suggesting that inflammation is involved in BML pathogenesis in knee OA, especially in women.

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Room: Bramante 2

Abstract no.: 45270

PROPRIOCEPTION POTENTIAL OF THE INJURED ACL STUMPS AND ITS SIGNIFICANCE

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INTRODUCTION: Proprioception is a specialized sensory modality encompassing the movement of the joint and its position. The presence of mechanoreceptors in the ACL has been well documented in the past by various authors which has led to the conclusion that the ACL remnant is a possible source of neural innervations in the autografts. Thus it is common practice now days to spare the native ACL stump during the surgery. However it has its own disadvantages such as high risk of arthrofibrosis, formation of Cyclops lesion. Thus there has to be a delineation about the time period from the date of injury where restoring the native ACL stump would prove beneficial. **MATERIAL AND METHOD:** We conducted a study in the department of orthopaedics, AIIMS, New Delhi, India over a period of 2 years from 2012 to 2014 where we harvested the native ACL stump of 38 patients and subjected it to mononuclear antibodies to neurofilament protein (NFree Papers -) staining, looked for its viability and correlated its presence with the duration under light microscopy. **RESULTS:** We found a relationship between increasing duration and decreasing number of proprioceptive fibers in the ACL stump, and we did not find any proprioceptive fibers 14 weeks after the injury. **CONCLUSION:** Our result suggest that it is better to shave off the ACL stump if the duration of the injury has exceeded 14 weeks as there may be a high risk of arthrofibrosis and formation of Cyclops lesion.

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Room: Bramante 2

Abstract no.: 45169

PREVENTING LATERAL FRACTURE WITH OPEN MEDIAL HIGH TIBIAL OSTEOTOMY

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Purpose: The aim of this study is to find a safe zone in lateral cortex in accordance with level of the osteotomy and analyze lateral structures that support the elasticity of lateral region of the tibia. **Methods:** The medial opening of the high tibial osteotomy performed in twelve fresh-frozen human cadavers (24 knee). The left and right legs of each sample were randomly assigned to two groups: A - osteotomy was performed in the area between the upper end and the fibula's head circle line and B - distal head fibula circumference line under X-ray. The lateral cortical layers crack and fracture gap after osteotomy measured using a bone spreader Tomofix. We dissected region side crack and analyzed structure of soft tissue, which correlates fracture and the fracture line level studied. **Results:** In the group A, there was no fracture of the lateral cortical and tear. In Group B, nine of the twelve knees (75%) developed a fracture of the lateral cortical layer and the fracture gap found in eight of the nine cases where the height of the osteotomy exceeded 20 mm. The whole part of the fracture gap and extensor were found in area not in the side pod. The results showed fractures of the lateral cortical bone fragments displacement in group B were significantly more than group A. **Conclusions:** The level of the lateral part of the osteotomy with the opening of the high tibial osteotomy affects the lateral cortical fractures and displacement of bone fragments.

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Room: Bramante 2

Abstract no.: 43857

THE RELATIONSHIPS BETWEEN BONE TURNOVER MARKERS IN THE SYNOVIAL FLUID AND PROGRESSION OF OSTEOARTHRITIS

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Although the serum level of bone turnover markers (BTMs) in the patients with knee OA were well studied, BTMs in the “synovial fluid” were merely studied. We hypothesized that bone metabolisms in subchondral bone would be related to the pathology of knee OA, and analyzed BTMs in synovial fluid in 142 knees (125 patients) with knee OA (male/female: 37/105, mean age: 71.4 yrs). We measured the levels of TRAcP5b as bone resorption marker and P1NP as bone formation marker both in the serum and synovial fluid. We also analyzed joint space width (JSW) in standing radiograph and MRI based OA scoring system (WORMS). In the result, in the patients with advanced-stage knee OA (Kellgren-Lawrence grade 4, N=79), the levels of TRAcP5b in synovial fluid significantly correlated with WORMS bone marrow abnormalities (BMA) score ($r=0.28$, $p=0.014$, Spearman's Rank correlation) and articular cartilage loss score ($r=0.29$, $p=0.011$). However, in the patients with early-middle stage knee OA (KL 1,2,3, N=63), only TRAcP5b in synovial fluid in male patients correlated with cartilage loss ($r=0.57$, $p=0.010$) and it also negatively correlated with JSW ($r=-0.68$, $p=0.002$). These observations indicated that high bone turnover state in periarticular lesion would contribute to the acceleration of articular cartilage loss, but it depends on the stage of knee OA, sex, and age. In addition, anti-bone resorptive drugs such as bisphosphonates could prevent cartilage loss in the patients with high turnover subchondral bone remodeling. Further investigation will elucidate unknown relations between the progression of knee OA and bone metabolism.

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Abstract no.: 44895

LOW-INTENSITY PULSED ULTRASOUND DOES NOT INFLUENCE BONE HEALING BY DISTRACTION OSTEOGENESIS: A MULTICENTRE DOUBLE BLIND RANDOMISED CONTROL TRIAL

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Introduction: There is conflicting evidence regarding the low-intensity pulsed ultrasound and accelerated bone healing. **Methods:** A multicentre two arm double blind randomised controlled trial was conducted to assess efficacy of pulsed ultrasound for accelerating the rate of bone healing. Sixty-two skeletally mature adults undergoing limb lengthening by distraction osteogenesis at the proximal tibia were randomised to either an active or a placebo (control) ultrasound device. Primary outcome measure was time ready for removal of frame after adjusting for distraction length (days/cm) for both intention to treat (ITT) and per protocol (PP) patients. The time at which the frame was removed was determined by the maturation of the regenerate bone. Secondary outcomes were return to weight bearing and covariates affecting time to frame removal. **Results:** The baseline characteristics of the two groups were well balanced, and 90% of patients were managed and followed up as PP. There was no difference in the time to frame removal between the two groups for the ITT (5.0days/cm, $p=0.23$) or the PP (10.1days/cm, $p=0.054$). There was no difference in return to weight bearing between the two groups, after adjusting for distraction length, for the ITT or PP patients ($p>0.5$). Smoking was the only covariate identified to increase the frame removal time (hazard ratio 0.46, 95% confidence interval 0.22 to 0.96; $p=0.04$). **Conclusion:** This trial demonstrated no difference in bone healing between those who underwent pulsed ultrasound and those who did not. Smoking was observed to have a significant inhibitory effect on bone healing.

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Session: Free Papers - Research: Biomaterials/Biomechanics

Time: 10:30 - 12:00

Room: Bramante 2

Abstract no.: 42807

BIOMECHANICAL COMPARISON OF DOUBLE VERSUS TRIPLE ENDOBUTTON RECONSTRUCTION TECHNIQUES IN PATIENTS WITH ACROMIOCLAVICULAR JOINT DISLOCATION

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Acromioclavicular (AC) joint dislocations are among the most common injuries of the upper extremity. Although many techniques are used to treat AC joint dislocations, minimal invasive or arthroscopic coracoclavicular ligament reconstructions became popular recently. In the literature different studies reported their results by using different number of buttons. In this study the authors compared the results of double(conoid only) versus triple(both conoid and trapezoid) endobutton reconstruction techniques with respect to AC joint stability and reaction forces during the abduction and anterior flexion of glenohumeral (GH) joint. Three-dimensional solid modeling of the shoulder girdle was carried out using virtual finite element modeling. AC joint dislocation was applied to the reference model obtained in a computer environment and these models were repaired by double and triple button techniques respectively. Dynamic and nonlinear analysis was performed. Maximum equivalent stresses on buttons and sutures as well as displacements and reaction forces on AC joint were evaluated. There were no statistically significant differences between the models during the abduction while displacements of AC joint on double button technique model were higher than the others during the flexion of GH joint. The results of the study showed that, conoid ligament has a crucial mission more particularly against resistance during frontal plane actions, but the absence of the trapezoid ligament causes increasing the posterior displacement of the distal clavicle during the flexion of GH joint. This may reduce the success of the surgical fixation, causing an increase in the reaction force that occurs on the AC joint.

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Session: Free Papers - Research: Biomaterials/Biomechanics

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Room: Bramante 2

Abstract no.: 43231

DOES THE GAP SHAPE INFLUENCE ON BIOMECHANICAL PROPERTIES OF DISTAL HUMERAL FRACTURE? FINITE ELEMENT STUDY

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The aim of the presented study is to assess influence of gap shape on biomechanical results in extraarticular distal humeral fracture: with contact on the posterior part (by anterior gap) and contact on ulnar column (by radial gap). The goal was to examine if and to what extent the displacements decreased in comparison with previously examined parallel gap without bony contact. The finite element analysis on the three different plate constructs was performed, namely parallel, perpendicular and newly designed Y shape plate were considered. Displacements are measured on articular surface and gap point. The most visible decrease of maximum displacements in distal part of the model have been detected in the Y plate model with axial loading: in case of anterior gap (58.5%) and especially at radially formed gap (60.9%). Similarly, at axial loading, the displacement at analyzed point on fracture gap most significantly decreases in Y plate model for (49.4%) at posterior bony contact. Moreover, latter reports displacements decrease of 68.5% at ulnar bone contact. Furthermore, if a longer radial plate then the ulnar one was used varus stress could be order to avoid. Results provided an information that sufficient stability can be ensured with newly designed Y-shaped plate.

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Session: Free Papers - Research: Biomaterials/Biomechanics

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Room: Bramante 2

Abstract no.: 45478

ALTERNATIVE TENSION BAND TECHNIQUE FOR OLECRANON FRACTURES; A BIOMECHANICAL STUDY

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We investigated whether an alternative tension band wire technique will produce greater compression and less displacement at olecranon (elbow) fracture sites compared to a standard figure of eight tension band technique. Olecranon fractures are commonly treated with tension band wiring using stainless steel wire in a figure of eight configuration. However recently published studies have raised doubts over the validity of the tension band concept proving that the standard figure of eight configuration does not provide fracture compression when the elbow is flexed. We propose an alternative tension band technique where the figure of eight is applied in a modified configuration producing greater compression across the fracture. An artificial elbow joint was simulated using artificial forearm (ulna) and arm (humerus) bones. The design simulated the action of the muscles around the elbow joint to produce flexion and extension. There were two arms to this investigation. (1) Standard tension band wire configuration with stainless steel. (2) Modified tension band wire configuration with stainless steel. The simulated elbow was put through a range of movement and sensors measured the compression and displacement at the fixed fracture site. Measurements were taken for compression with three different weights applied to challenge both the techniques of tension band wiring. The alternative tension band wiring technique proved superior in providing greater compression over the fracture site and smaller displacement.

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Room: Bramante 2

Abstract no.: 42824

BONE MORPHOGENETIC PROTEIN-2 ANTAGONIZES INTERLEUKIN-18-INDUCED HUMAN INTERVERTEBRAL DISC DEGENERATION

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Introduction. Interleukin 18 (IL-18) is a regulatory cytokine that degrades the disc matrix. Bone morphogenetic protein-2 (BMP-2) stimulates synthesis of the disc extracellular matrix. However, the combined effects of BMP-2 and IL-18 on human intervertebral disc degeneration have not been clearly elucidated. The aim of this study was to investigate the effects of the anabolic cytokine BMP-2 and the catabolic cytokine IL-18 on human nucleus pulposus and annulus fibrosus cells (NPAFCs) and potential therapy and clinical benefits of rhBMP-2 in intervertebral disc degeneration. Methods: Levels of IL-18 were measured in the blood of patients with intervertebral disc degenerative disease and control subjects. Human NPAFCs were cultured in NPCM medium, and treated with IL-18 or IL-18 plus BMP-2. mRNA levels of target genes were measured by real-time polymerase chain reaction, and protein levels of aggrecan, type II collagen, SOX6, and matrix metalloproteinase 13 (MMP13) were assessed by western blot analysis. Results: IL-18 induced up-regulation of the catabolic regulator MMP13 and down-regulation of the anabolic regulators aggrecan, type II collagen, and SOX6 at 24 hours, contributing to degradation of disc matrix enzymes. However, BMP-2 antagonized the IL-18 induced up-regulation of aggrecan, type II collagen, and SOX6, resulting in reversal of IL-18 mediated disc degeneration. Conclusions: BMP-2 is anti-catabolic in human nucleus pulposus and annulus fibrosus cells, which is partially mediated through antagonization of the catabolic effect of IL-18, indicating that BMP-2 is a unique therapeutic target for prevention and reversal of disc degeneration.

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Session: Free Papers - Research: Biomaterials/Biomechanics

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Room: Bramante 2

Abstract no.: 44575

THE ROLE OF NITRIC OXIDE IN BONE HEALING

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With stable fixation of bone fragments, even with the use of various methods of bone formation stimulation, the frequency of malunion and nonunion may be varied from 6.4% to 9.4%. Objective: Improvement of surgical treatment of the patients with different fractures, malunions and nonunions of the bones by creating conditions for the local blood supply restoration. Materials and Methods: We developed a method of local application of bone marrow and nitroglycerin mixture for fracture healing stimulation by injecting 5 ml of bone marrow and 2 ml of nitroglycerin (10 mg) between the damaged bone fragments. The study was conducted in 41 patients with different fractures: 19 of them were men between 29 to 62 years old, 22 of the patients were women aged 25 to 76 years old. The femoral neck fractures (47.5%) were the most frequent ones. Results and Discussion: The mixture of the bone marrow with nitric oxide has a stimulating effect on the bone formation by improving the local vascular conditions in the fracture zone. This mixture also has a clinically significant osteogenic potential, suppresses the proliferative response of smooth muscle cells of the vascular wall and blocks a platelet aggregation and adhesion of the inflammatory molecules on the endothelial cells. Conclusion Usage of this method resulted in reparative activation in the fracture zone, acceleration of the bone fragments unions (by 1.5 times) and reduction of the frequency of nonunion from 14.5% to 5%.

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Room: Bramante 2

Abstract no.: 42821

ENHANCED EFFECTS OF EXFOLIATED CARBON NANOFIBERS WITH BONE MORPHOGENETIC PROTEIN IN A RAT FEMORAL FRACTURE MODEL

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Exfoliated carbon nanofibers (ExCNFs) was found to have unique morphology such as nano-meter sized fibril and mainly meso-pores, and have good dispersibility and large edge area. Therefore, it is expected that ExCNFs to be scaffolds to promote and guide bone-tissue regeneration. We aimed to enhanced effects of ExCNFs with BMP and examine its feasibility and safety in clinical application by using a rat femoral fracture model. Sixty-three male rats were divided into 4 groups. Group I (n = 16) animals were implanted with control MedGEL. Group II (n = 17) animals were implanted with MedGEL containing ExCNFs. Group III (n = 15) animals were implanted with MedGEL containing 1- μ g rhBMP-2. Group IV (n = 15) animals were implanted with MedGEL containing 1- μ g rhBMP-2 and ExCNFs. The rats were euthanized after 6 weeks and their fractured femurs were explanted and assessed by manual palpation, radiographs, and micro-CT and were subjected to biomechanical and histological analysis. The fusion rates in Group IV (73.3%) were considerably higher than those in Groups I (25.0%), II (52.9%), III (46.7%). In micro-CT analysis, the tissue volume (TV) and the bone volume (BV) of the callus was higher in Group IV than in Groups I ($p < 0.05$). In biomechanical analysis, the ultimate loads at failure and the energy absorption in Groups IV were on average higher than those in Groups I, II, III ($p < 0.05$). The enhanced effects of ExCNFs with BMP for bone fracture repair in a rat femoral fracture model were demonstrated.

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Room: Bramante 2

Abstract no.: 43031

THE EFFECT OF IMPLANT POSITION ON TIBIAL BONE STRAIN FOLLOWING LATERAL UNICOMPARTMENTAL KNEE REPLACEMENT: A BIOMECHANICAL MODEL USING DIGITAL IMAGE CORRELATION

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Introduction: Unicompartmental Knee Replacement (UKR) is a demanding procedure, with tibial component subsidence or pain from high tibial strain both being causes of revision. While Medial UKR has been extensively studied, the optimal position in terms of load transfer has not been documented for Lateral UKR. Methods: Sixteen composite tibiae were implanted with an Oxford Domed Lateral Partial Knee implant using cutting guides to define tibial slope and depth of resection. Four implant positions were assessed: standard (5° posterior slope), 10° posterior slope, 5° reversed tibial slope and 4mm increased tibial resection. Using an electrodynamic axial-torsional materials testing machine (Instron 5565 materials testing machine, Instron Co., High Wycombe, UK), a compressive load of 1.5kN was applied at 60 N/s at the meniscal bearing via a matching femoral component. Tibial strain beneath the implant was measured using a calibrated Digital Image Correlation (DIC) system. Results: The standard implant position delivered load out onto the lateral cortex, with a trend to higher lateral cortical strain values. Increased tibial slope generated significantly greater posterior bone strain than the standard implant position ($p=0.027$). The 4mm increased resection group delivered the highest mean strains in the anterior cortex. Conclusions: Posterior slope and increased resection depth both significantly affect tibial cortical strain and may result in pain or subsidence or both. Implications: The position and orientation of the tibial component in lateral UKR has a significant impact on the bone quality and its ability to resist load, and thus on the risk of revision surgery.

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Session: Free Papers - Research: Cartilage/Tissue Engineering

Time: 14:00 - 15:30

Room: Bramante 2

Abstract no.: 43093

A NOVEL DUAL-CHAMBER CULTURE SYSTEM WITH BIOMIMETIC TRIPHASIC SCAFFOLD FOR OSTEOCHONDRAL TISSUE ENGINEERING

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In this study, a biomimetic triphasic scaffold was constructed to mimic the native cartilage-subchondral bone tissue structure. This scaffold contained chondral layer, calcified zone of cartilage (CZC) and subchondral bone layer. The chondral layer was type II collagen sponge, the CZC and the subchondral bone layer were derived from normal pig knee by decellularization. In order to build separate microenvironment for chondral layer and subchondral bone layer, a dual-chamber bioreactor was designed by computer aided design, manufactured by 3D printer using Poly Lactic Acid, with CZC as the barrier of these two chambers. Culture medium in these two chambers was circulated separately by peristaltic pumps. Amniotic mesenchymal stem cells were seeded in this scaffold, fluorescence labeling was used for cell tracking, total DNA content analysis was used to indicate cell proliferation, and inducing medium was used to direct stem cells differentiation. After 7 days culture, the cells regularly distributed in the scaffold, cell adhesion and proliferation was not affected. No cell migration across CZC occurred. Total DNA content analysis showed that cells in scaffold increased in a time-dependent manner. Chondrogenic and osteogenic medium could induce stem cells in these two chambers to differentiate into chondrocytes and osteocytes, respectively. Our pilot study showed that the dual-chamber culture system with biomimetic triphasic scaffold was feasible, therefore this system will be further modified and tested in vivo.

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Room: Bramante 2

Abstract no.: 44730

TRANEXAMIN ACID DOES NOT HARM CHONDROCYTES

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Introduction: Tranexamic Acid (TA) is routinely used intravenously for prevention of bleeding in surgical procedures. The intrarticular use of TA in procedures such as ACL reconstruction has not been used yet, because of concerns on TA toxicity on chondrocytes. Materials and methods: In this study, minced articular cartilage from 10 patients was cultured for 6 weeks in a specific medium for chondrocytes under exposition to TA. Migration and growth of chondrocytes in the constructs were assessed by histological analysis by light microscopy, and immunofluorescence analysis for chondrocyte markers. At the end of the 6 weeks of culture, the constructs were subjected to biochemical analysis, using the colorimetric assay of quantification for s-GAG for DNA content. Results: The use of TA (concentration 7mg/ml) did not influence the chondrocyte outgrowth: the number of migrating cells after 6 weeks did not show any statistically significant difference between cultures with and without TA (p value $<0,05$). The immunofluorescence analysis did not show any significant difference in the level of chondrogenic markers expression, SOX9 and collagen type II (p value $<0,05$), as well as the proliferative marker, beta-catenin and PCNA (p value $<0,05$). Finally, the ratio s-GAG/DNA remained unchanged after 6 weeks in cultures with and without TA (p value $<0,05$). Conclusions: Tranexamic acid did not hamper the ability and the mechanisms by which chondrocytes migrate from cartilage fragments, proliferate in culture and produce cartilage matrix. This can help to validate the intra-articular TA administration as a prophylactic measure during orthopedic procedures at high risk of haemarthrosis

Date: 2016-09-09

Session: Free Papers - Research: Cartilage/Tissue Engineering

Time: 14:00 - 15:30

Room: Bramante 2

Abstract no.: 44142

TREATMENT OF FULL THICKNESS CARTILAGE DEFECTS WITH PEDUNCULATED AND FREE SYNOVIAL GRAFTS: A COMPARATIVE STUDY IN AN ANIMAL MODEL

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In the literature, the gold standard treatment method for the focal articular cartilage defects is still a matter of discussion. Hence, the purpose of this experimental study is to evaluate the effectiveness of pedunculated and free synovial grafts for the integrative repair of focal cartilage defects in an animal model. Twenty four New Zealand white rabbits were divided into two equal study groups. After creating 3 mm full thickness cartilage defects in the load-bearing medial condyles, Group 1 and Group 2 were treated with pedunculated and free synovial grafts, respectively. The contralateral knees were accepted as the control group. At the fourth and eighth weeks, 6 rabbits from each group were sacrificed and the repair tissue was analyzed macroscopically with the International Cartilage Repair Society (ICRS) macroscopic evaluation scoring system and microscopically with modified ICRS Score. As a result, all cartilage repair scores were significantly better for both study groups compared with the controls. The fourth week comparisons revealed that Group 1 had significantly better healing scores compared with Group 2. While the comparative results of the study groups from the fourth week were statistically significant, this significance was not observed at the eight week. In conclusion, synovium has a great potential for cartilage healing. Although pedunculated synovial grafts had faster healing capacity at the first month, both pedunculated and free grafts had the same positive effect on integrative cartilage repair after eight weeks of follow-up. Future studies with different study parameters are needed to have more precise conclusions.

Date: 2016-09-09

Session: Free Papers - Research: Cartilage/Tissue Engineering

Time: 14:00 - 15:30

Room: Bramante 2

Abstract no.: 42651

IL-17A PROMOTES INTERVERTEBRAL DISC DEGENERATION BY INHIBITING AUTOPHAGY LEVELS VIA PI3K-GSK3B-BCL2 SIGNALING PATHWAY

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This research aimed to investigate the underlying functions of IL-17A in promoting cervical intervertebral disc degeneration. We found that activation of IL-17A signaling promotes expression levels catabolic proteins such as MMPs (matrix metalloproteinases) and ADAMTs (a disintegrin and metalloproteinase with thrombospondin motifs), which correlates with decreased expressional levels of collagen II and aggrecan. With this basis, we further studied autophagy levels of intervertebral disc cells treated with IL-17A. RT-PCT analysis exhibited depressed expressions of autophagy-related genes: LC-3 (0.2 fold); cathepsin B (0.2 fold), Bcl-2 (0.4 fold). In addition, fluorescent microscopy study showed significantly decreased numbers of autophagosomes within cytoplasm. Taken these finding together, we further investigated if IL-17A inhibits cellular autophagy via phosphoinositide 3-kinase(PI3K)-glycogen synthase kinase 3 B(GSK3B) signaling cascade. We found that IL-17A activates PI3K, which results in elevated phosphorylation of GSK3B. Decreased interactions between GSK3B and Bcl-2 result in the inhibition of autophagy levels. Depressed autophagic levels lead to impaired capabilities of eliminating intra- and extra- cellular metabolic fragments in intervertebral discs, which contributes to intervertebral disc degeneration. This study gives insight into the roles and possible signaling pathways of IL-17A in promoting intervertebral disc degeneration.

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Session: Free Papers - Research: Cartilage/Tissue Engineering

Time: 14:00 - 15:30

Room: Bramante 2

Abstract no.: 42557

BIOSAFETY OF THE NOVEL VANCOMYCIN LOADED BONE-LIKE HYDROXYAPATITE/POLY-AMINO ACID BONY SCAFFOLD

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Background: Vancomycin loaded bone-like hydroxyapatite/poly-amino acid bony scaffold (V-BHA/PAA) was successfully fabricated with loaded vancomycin poly lactic-co-glycolic acid (PLGA) microspheres and BHA/PAA, which has been demonstrated with porosity and perfect biodegradability. In this study, to systematically evaluate the biosafety of this novel scaffold, toxicity tests in vitro and in vivo were conducted. Methods: According to the rules of ISO about medical implants biosafety, in vitro tests, this scaffold was co-incubated with L929 fibroblasts or rabbit noncoagulant blood, simultaneously positive control group (PC group) and negative control group (NC group) were set. The growth situation of L929 cells or hemolytic rate were evaluated respectively after various incubation duration. In vivo tests the chronic osteomyelitis models of New Zealand white rabbit in right proximal tibia was established at first. After bacterial identification this scaffold, unloaded drug BHA/PAA or PMMA were implanted, also BC group was set, finally blood drug concentration was measured, as well as kidney and liver function were evaluated. Results: in vitro tests, cytotoxicity Gradings of V-BHA/PAA and BHA/PAA based on RGR was found all below 1 level. And hemolysis ratio of V-BHA/PAA and BHA/PAA scaffolds was 2.27% and 1.42% respectively, both below 5%. In vivo tests, blood concentration of Vancomycin after implantation of V-BHA/PAA was measured far below its toxicity concentration (60mg/L), moreover the function and histomorphology of liver and kidney all showed normal. Conclusion: According to ISO standards, the V-BHA/PAA scaffold should be considered to have enough safety to clinical utilization.

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Room: Bramante 2

Abstract no.: 42965

TISSUE ENGINEERING THE TITANIUM IMPLANT HOST INTERFACE USING DENTAL FOLLICLE STEM CELLS

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We aimed to demonstrate that dental follicle (DF) stem cells isolated from the follicular sac harvested from an impacted canine, can induce bone regeneration at the titanium implant host interface. Isolated cells from the harvested DF tissue, expressed stem cells markers. DF stem cells were seeded and cultivated on titanium implant surfaces. The influence of titanium implants with different bioactive coatings, hydroxyapatite (TiHA) silicitanate (TiSiO₂), and porous implants as control (TiCtrl), was studied in terms of cell adhesion and viability. Ti HA implants proved to be the most favourable for adhesion and proliferation of DF stem cells in the first days of cultivation. We also assessed the influence of different osteogenic differentiation media with or without growth factors. Additional BMP-2 in the medium did not allow DF stem cells to develop a more mature phenotype, leaving them in a pre-osteogenic stage. The best sustained mineralization process evaluated by immunocytochemical staining, scanning electron microscopy and Ca²⁺ quantification was observed for TiHA implants with a higher expression of (alkaline phosphatase)ALP, collagen and Ca²⁺ deposition. Long term culturing (70 days) on titanium surfaces of DF stem cells in standard medium without soluble osteogenic inducers, indicated that HA coating is more favourable, with the acquisition of a more mature osteoblastic phenotype as shown by immunocytochemical staining. Our research demonstrated that DF stem cells have a spontaneous tendency for osteogenic differentiation and can be used for bone engineering the titanium implant host interface.

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Time: 14:00 - 15:30

Room: Bramante 2

Abstract no.: 43398

ACOUSTIC-FREQUENCY VIBRATORY STIMULATION REGULATES THE BALANCE BETWEEN OSTEOGENESIS AND ADIPOGENESIS OF HUMAN BONE MARROW-DERIVED MESENCHYMAL STEM CELLS

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Osteoporosis can be associated with the disordered balance between osteogenesis and adipogenesis of bone marrow-derived mesenchymal stem cells (BM-MSCs). Although low-frequency mechanical vibration has been demonstrated to promote osteogenesis, little is known about the influence of acoustic-frequency vibratory stimulation (AFVS). BM-MSCs were subjected to AFVS at frequencies of 0, 30, 400, and 800Hz and induced toward osteogenic or adipogenic-specific lineage. Extracellular matrix mineralization was determined by Alizarin Red S staining and lipid accumulation was assessed by Oil Red O staining. Transcript levels of osteogenic and adipogenic marker genes were evaluated by real-time reverse transcription-polymerase chain reaction. Cell proliferation of BM-MSCs was promoted following exposure to AFVS at 800Hz. Vibration at 800Hz induced the highest level of calcium deposition and significantly increased mRNA expression of COL1A1, ALP, RUNX2, and SPP1. The 800Hz group downregulated lipid accumulation and levels of adipogenic genes, including FABP4, CEBPA, PPARG, and LEP, while vibration at 30Hz supported adipogenesis. BM-MSCs showed a frequency-dependent response to acoustic vibration. AFVS at 800Hz was the most favorable for osteogenic differentiation and simultaneously suppressed adipogenesis. Thus, acoustic vibration could potentially become a novel means to prevent and treat osteoporosis.

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Room: Bramante 2

Abstract no.: 44109

HUMAN URINE DERIVED STEM CELLS IN COMBINATION WITH HYPOXIA AND 3D NANOFIBROUS SCAFFOLD CAN BE APPLIED FOR NUCLEUS PULPOSUS REGENERATION

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Nucleus pulposus grafts require highly proliferative stem cells that are easy to isolate. Human urine stem cells (USCs) are abundant and can be easily harvested without using an invasive procedure. In addition, USCs have been proved to be able to differentiate into osteoblasts, chondrocytes, and adipocytes. However, there are no published studies that describe the interactions between USCs and biomaterials and applications of USCs for nucleus pulposus tissue engineering. In this study, three-dimensional (3D) nanofibrous poly (l-lactide) (PLLA) scaffolds were seeded with human USCs and the constructs were induced along nucleus pulposus development routes in a hypoxia chamber (2% O₂). It was found that nanofibrous scaffold could support the differentiation of human USCs towards a nucleus pulposus-like phenotype in vitro, as evidenced by upregulated expression of a few important nucleus pulposus-associated genes (aggrecan, type II collagen and Sox-9), abundant deposition of extracellular matrix (glycosaminoglycan (GAG) and type II collagen), and the continuous expression of the nucleus pulposus-specific marker, hypoxia-inducible factor (HIF)-1 α . The subcutaneous implantation results confirmed that hypoxic induction before implantation could help the constructs to retain their phenotype and resist calcification in vivo. Therefore, the above data showed the promise of using human USCs in combination with 3D nanofibrous scaffold and hypoxic induction to regenerate functional nucleus pulposus grafts for intervertebral disc replacement.

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Time: 16:00 - 17:30

Room: Bramante 2

Abstract no.: 44393

SIMULATED PATIENTS AND PROFESSIONAL ACTORS VERSUS REAL PATIENTS AS LEARNING RESOURCES IN THE MUSCULOSKELETAL CLINICAL SKILL TRAINING OF MEDICAL STUDENTS - A PILOT RANDOMISED CONTROL TRIAL

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Introduction: Medical Students learn clinical skills in a number of ways. Medical training must at some point use live patients to hone the skills of health professionals, however there is also an obligation to provide optimal treatment and to ensure patients' safety and well-being. The aim of this study was to conduct a pilot randomised control trial with simulated patients(SP), professional actors(PA) and real patients(RP) as learning resources in training of undergraduate medical students in musculoskeletal (MSK) clinical skills. Methods: We conducted a three-arm Randomised Control Trial with two scenarios - hip osteoarthritis or rotator cuff injury. Participants were randomised to one of the two scenarios for training and assessment. For each pathology, participants were divided amongst the three educational interventions, RP, PA or SP. Third Year medical students in the RCSI were invited to participate in the study. The primary outcome of this study was participants' final OSCE performance. Results In this pilot study there was no evidence of a significant difference in OSCE scores between each educational intervention (real patients, professional actors and simulated patients) for either pathology. However, the number of students, trained by SPs, who had an improved OSCE score (from baseline) was marginally higher than that for PAs or RPs. Conclusion: Trained SP were found to be as valuable a teaching resource in the MSK training of medical students as RP and PA increasing the appeal of integrating simulated patients into the training syllabus of medical students.

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Room: Bramante 2

Abstract no.: 44385

A RANDOMISED CONTROL TRIAL COMPARING THE EFFECT OF BEDSIDE TEACHING AND CASE BASED TEACHING ON OSCE PERFORMANCE IN THIRD YEAR MEDICAL STUDENTS

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Introduction: Ireland produces a high number of medical graduates per capita. This is coupled with health cutbacks impinging on publicly performed elective orthopaedic procedures, and a decrease of years spent in medical school. Innovation is required to produce graduates with the clinical acumen to become practising physicians. Case based teaching (CBT) is mooted as a means to accelerate progress. We designed a randomised control trial to compare CBT to traditional bedside tutorial. Methods: Students are randomised into bedside tutorials or CBT. All students are assessed via OSCE format in history taking and examination of the hip. The CBT group receive a clinical vignette based tutorial on hip osteoarthritis accompanied with demonstration of clinical exam of the hip, the control group receiving a bedside tutorial. An OSCE assessment by an external examiner is performed two days later. A post study satisfaction survey is obtained. Results: Interim results demonstrate no significant difference between average increase in OSCE scores (CBT = 24.9 (SD: 11.58); bedside = 27.2 (SD: 9.38) $p > 0.05$). From our survey, 70% of students enjoyed the bedside teaching the most, 10% preferred case based and 20% had no preference. 90% of students felt that case based teaching played an important role in their learning. Conclusion: CBT was found to be equable to bedside teaching as assessed by OSCE format. In reality we accept the two means of teaching should exist in tandem, but our study shows CBT to be a valid approach to improving students' clinical skills.

Date: 2016-09-09

Session: Free Papers - Research: Miscellaneous

Time: 16:00 - 17:30

Room: Bramante 2

Abstract no.: 45423

FINANCIAL IMPACT OF DAMAGED STERILE WRAPPING IN ORTHOPAEDICS AND ITS EFFECT ON PATIENT CARE

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Introduction Orthopedics relies strict sterilization procedure to prevent infections. A lot of this depends upon the inspection of sterile wraps and detection of damages in the wraps. Even though, there have been studies on detection rates and financial impact of training staff, nothing has been financial impact of damaged wraps and their impact on the delivery of patient care. Aim Our aim was to investigate the incidence of damaged wrappings of sterilized sets in trauma and orthopaedics, to estimate the financial burden caused by damaged wrappings and to estimate the loss of theatre time and suggest changes to prevent the losses Methods We collected a retrospective data of damaged wrappings from October 2014 to September 2015. The data was collected about the number of sets with damaged wraps, type of sets, frequency of damage to sterile wrappings, loss of theatre time due to damaged wraps, cancellations and financial impact. After the initial evaluation, we suggested changes which had significant in the incidence Results We found that there were 616 incidences of damaged sterile wrappings throughout the trust, out of which orthopaedics accounted for 61.8% of damaged wrappings. There were 14 operations, which were cancelled due to damaged wraps alone. The cumulative loss of theatre time was 1,869 minutes. Above all the average financial loss incurred was 20,709 £.(Max 33,533 £) Conclusion There is a need for staff training in handling, detection and reporting of sterile wrappings. Loan kits, heavy kits and kits without backup should be stored in containers.

Date: 2016-09-09

Session: Free Papers - Research: Miscellaneous

Time: 16:00 - 17:30

Room: Bramante 2

Abstract no.: 44336

X-RAY WAITING TIMES AFFECT THE EFFICIENT RUNNING OF THE TRAUMA AND ORTHOPAEDIC CLINIC: A STRATEGY TO OVERCOME THIS CHALLENGING PROBLEM

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Introduction: The Royal Australian College of Radiologists recommends that an entire X-ray procedure should take less than 15 minutes. The waiting time for X-ray is a significant hindrance to the effective running of clinic. The aim of this study was to evaluate the reasons and impact of the X-ray waiting times on the efficient running of the Trauma and Orthopaedic clinic and how a simple strategy can help to overcome this challenging problem. Methods: A prospective observational study was conducted at the Royal Free Hospital, the associated teaching hospital of University College London (UCL). Consecutive clinic patients undergoing radiography in June 2016 were included in the study. The time taken between leaving the clinic for radiography and return following this (the waiting time) was recorded. A simple strategy to reduce waiting times included better communication with the radiology department, three extra clinic-specific x-ray suites and a reinforcement of waiting time monitoring. This process was then repeated in August 2016. Results: In June, data was obtained for 121 patients. The mean waiting time was 49 minutes (range 15-140), with a morning mean of 52 minutes and an afternoon mean of 46 minutes. In August, following the intervention, 108 patients were observed. The mean waiting time was 43 minutes (range 10-90), with a morning mean of 42 minutes and an afternoon mean of 46 minutes. Conclusion: This study has revealed that a dedicated and simple strategy can reduce x-rays waiting times, which helps to run Trauma and Orthopaedic outpatient clinics efficiently.

Date: 2016-09-09

Session: Free Papers - Research: Miscellaneous

Time: 16:00 - 17:30

Room: Bramante 2

Abstract no.: 43372

TGF- β RESCUES EXTRACELLULAR MATRIX TURNOVER IN LHB IN ROTATOR CUFF PATHOLOGY

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Introduction: Long head of biceps has been a source of investigation for its association with pain in the rotator cuff pathology. Our aim was to identify the biological changes of LHB in RC disease. Methods: RC disease patients submitted to LHB tenotomy were evaluated using a clinical protocol to retrieve information regarding shoulder pain and function. Tendon was studied by histology and immunohistochemistry and for the presence of substance P and calcitonin gene-related peptide. Tendon cell cultures were used to determine the gene expression of several extracellular matrix genes with and without stimulation with TGF- β , TNF, IL-10 and dexamethasone. Comparison was made with cadaveric LHB without shoulder pathology. Results: Histologically, LHB tendon from patients and cadaver had similar characteristics. RC patients had a significantly higher CGRP immunohistochemistry score ($p=0.010$) than cadaveric controls but there was no correlation with patient complaints. Substance P immunohistochemistry score showed no differences but a correlation with shoulder pain ($r=0.828$, $p=0.021$) was identified. A downregulation of the extracellular matrix genes type-I collagen and thrombospondin 4, vascular endothelial growth factor (VEGF) and nerve growth factor (NGF) in RC patients occurred as compared to control samples. However, in vitro stimulation of RC tenocytes with TGF- β rescued their ability to produce type-I collagen and VEGF. Conclusion: LHB tendon had neurotransmitter disturbances that could be related to shoulder pain. Moreover LHB from RC patients had a downregulation of extracellular matrix genes, as well as VEGF and NGF genes. We showed TGF- β can partially normalize the expression of these genes.

Date: 2016-09-09

Session: Free Papers - Research: Miscellaneous

Time: 16:00 - 17:30

Room: Bramante 2

Abstract no.: 45044

THE EFFECT OF ANGIOTENSIN CONVERTING ENZYME INHIBITORS AND ANGIOTENSIN RECEPTOR BLOCKERS ON TENDON HEALING: AN EXPERIMENTAL STUDY

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Bulent Ecevit University, Zonguldak (TURKEY)

Introduction:Renin-Angiotensin System (RAS) inhibition shows antifibrotic features. This antifibrotic effect was shown for renoprotectivity and cardioprotectivityas well as extravisceral fibrosis. In this study, we aimed to investigate the effect of RAS inhibition with ACE inhibitor and ARB blocker on rat tenotomy- repair model. Materials-method: In a rat tenotomy and repair model the study was planned as three groups (ACEi, ARB, Control). Following surgical achilles tenotomy and repair, subjects were exposed to invesitgational drugs (Enalapril 10mg/kg oral for ACEi group, Losarthan 10 mg/kg oral for ARB group). Rats were sacrificed at week 5, followed by histological evaluation by routine histology and immunohistochemistry for TGF beta and collagen. Results: Inflammation and neovascularization was both suppressed on ACEi and ARB groups. TGF beta and collagen expression was also suppressed in ACEi and ARB groups but more effectively suppressed in ACEi group. Conclusion: Local renin-angiotensin system inhibition resulted with suppressed fibrogenesis. Further clinical studies are necessary to confirm this effect on human.

Date: 2016-09-09

Session: Free Papers - Research: Miscellaneous

Time: 16:00 - 17:30

Room: Bramante 2

Abstract no.: 45057

LEVELS OF EVIDENCE IN PELVIC TRAUMA: A BIBLIOMETRIC ANALYSIS OF THE TOP 50 CITED PAPERS.

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Introduction: Scientific research is an essential aspect in the ongoing development of medical education and improved patient care. Dissemination of findings is a pivotal goal of any health research. The number of citations a published article receives is reflective of the importance of that paper. Currently, it is unknown which journals are most frequently cited as influencing the management of pelvic trauma. Aims&Methods: To identify the top 50 publications relating to the management of pelvic trauma. The database of the Science Citation Index of the Institute for Scientific Information (1945 to 2016) was reviewed to identify the 50 papers most commonly cited. Results: 1535 papers were included, of these, 31 papers were cited over 100 times. The top 50 were subjected to further analysis to identify the authors and institutions involved. The majority of these publications originated in the United States, followed by Canada. The most cited paper is "pelvic ring fractures – should they be fixed", published by Tile in 1988. The institutions producing the most cited papers included the University of Louisville with 4 publications. The journal with the largest number of cited publications was the Journal of trauma- injury, infection, critical care. Conclusion: We have identified and analysed the publications that have contributed most to the assessment and management of pelvic trauma over the past fifty years. We have also identified the researchers and institutions which have most influenced the evidence based approach currently employed in the management of pelvic trauma.

Date: 2016-09-09

Session: Free Papers - Research: Miscellaneous

Time: 16:00 - 17:30

Room: Bramante 2

Abstract no.: 44873

THE SYSTEMIC NEUTROPHIL RESPONSE TO LONG BONE FRACTURES AND INTRAMEDULLARY NAILING IN RATS

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INTRODUCTION Polymorphonuclear neutrophils (PMNs) are key effector cells in the development of ARDS after trauma. It has been shown that intramedullary nailing (IMN) for the treatment of femur fractures (FF) leads to an increased risk at these complications in trauma patients. However it is unclear how IMN + FF alters neutrophil activation in blood and the tissue compartment. **METHODS** Female Whistar rats were subjected to IMN + FF. Groups (N=5) were sacrificed after 3,7 and 14 days of observation. Neutrophils were isolated from peripheral blood and bone marrow and analyzed by flowcytometry. The membrane receptor expression of Mac-1 (CD11b), LFA-1 (CD11a), L-selectin (CD62L) and VLA-4 (CD49D) were measured and compared between groups. **RESULTS** FF/IMN is associated with statistically significantly reduced neutrophil numbers in blood ($p < 0.01$) after 72 hours of observation. Furthermore, the membrane receptor expression levels of CD11b and CD62L demonstrated a more activated status of the blood neutrophil pool. Moreover changes in neutrophil subpopulations in the bone marrow following trauma were observed as well. Furthermore, neutrophil activation reduced significantly after 7 days of observation. **CONCLUSION** This study demonstrates that intramedullary nailing and a femur fracture in rats triggers the cellular innate immune system, and affects the blood neutrophil pool for more than 3 days after intervention. The post-interventional neutropenia and activation of the blood neutrophil pool may play a role in the development of ARDS. These new insights can form the basis for new therapeutic interventions to prevent systemic inflammatory complications after trauma and fracture stabilization.

Date: 2016-09-09

Session: Free Papers - Research: Miscellaneous

Time: 16:00 - 17:30

Room: Bramante 2

Abstract no.: 42492

AN ATTEMPT TO SPEED UP THE FRACTURE HEALING

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Purpose: Multi trauma patients suffering from brain damage may exhibit a faster fracture healing time and excessive callus formation. We aimed to investigate the effect of head trauma on the femur healing response in rats subjected to different brain zone injuries. Methods: Thirty-one adult Sprague-Dawley male rats were assigned into 3 groups as; 1) non brain damage-left femur fracture group (n=9), 2) right brain motor cortex injury with left femur fracture group (n=11), 3) right brain somatosensorial cortex injury with left femur fracture group (n=11). Fracture lines were performed with Bonnaren-Einhorn model to provide a standard mid-shaft transverse fracture line, while specific brain area damages were performed via craniostomy in guidance of Paxinos rat brain atlas. Healing responses were measured via radiographs at 1st day, 1st 2nd 3rd and 6th weeks. Callus/diaphysis ratios were calculated with Shapiro-Wilk, Levene, Kruskal-Wallis, Wilcoxon, and Friedman tests. Results: P values among the 3 groups were 0,685 in 3rd week, and 0,314 in 6th week. This results may lead us to ;1) the amount of damaged neurons and/or mediators released from the neurons was not enough to speed up the process 2) motor and somatosensorial areas are not involved in healing 3) hypothalamus and sympathetic system are not stimulated and thus faster healing is not ignited. Conclusion: Sympathetic discharge is the most possible explanation to enhanced fracture healing. If the exact mechanism could be clarified and any local pharmacological agent inducing osteoblastic beta adrenoceptor activity could be achieved, then decreasing the duration of fracture healing would be easier.

Date: 2016-09-10

Session: Free Papers - Paediatrics I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 43157

THE TRIGONOMETRIC PLANNING METHOD FOR FEMORAL LENGTHENING ALONG THE ANATOMICAL AXIS WITH OR WITHOUT DEFORMITY CORRECTION (A NEW METHOD)

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Introduction: Lengthening with (or along) intramedullary nails require that all deformity correction except lengthening be performed intraoperatively. Subsequent lengthening will occur along the axis of the nail (bone anatomic axis). In the femur particularly, such lengthening affects the mechanical axis of the entire limb. Thus, the planning for lengthening of the femur with or without deformity correction using intramedullary nails requires completely different planning strategies than using external fixators for such reconstructions. The reverse planning method proposed by Baumgart R., aims at determining the trajectory for nail insertion (& hence the reamers) in the lower femoral fragment. By aligning bone fragments & lengthening with IMN along this axis, both the deformity that may be present & that which results from lengthening with (or along) nails would be accounted for thus achieving normal alignment after completion of lengthening. Method: The author identified another method to determine the trajectory of the nail in that lower femoral fragment based on trigonometry laws. Done by calculating the angle enclosed between this (new) anatomical axis line & the mechanical axis, also known as the anatomical-mechanical angle (AMA). Results: This new planning method has been tried by the author on a number of cases & followed up till completion of lengthening to check final limb alignment. It proved accuracy. Conclusion: the author believes this new planning method could be an alternative to the reverse planning method for femoral lengthening with or without deformity correction with (or along) IMN to achieve normal limb alignment at lengthening completion.

Date: 2016-09-10

Session: Free Papers - Paediatrics I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 43409

GAIT ANALYSIS OF ACHONDROPLASTIC PATIENTS WHO HAVE UNDERGONE LOWER LIMB LENGTHENING USING THE ILIZAROV METHOD: A 5-19 YEAR FOLLOW UP STUDY

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Material & Methods: Nineteen (19) achondroplastic patients, 12 males and 7 females, with a mean age of 27.3 years, who have undergone tibia and femur lengthening, using the Ilizarov method, at a mean age of 12.6 years, were evaluated 10.1 years after their last surgery, using gait analysis. A comparison was made between the achondroplastic group and 19 normal controls. **Results:** Walking velocity, step length and stride length were statistically significant decreased ($p < 0.05$) in achondroplastic patients compared to normal population values. The achondroplastic group presented with excessive anterior pelvic tilt (mean 21.90 ± 7.3), excessive pelvic rotation (range 28.70 ± 7.8), decreased hip extension (mean 1.80 ± 10.1) and decreased plantar flexion (mean 17.10 ± 5.1) when compared to normal controls. There was no statistically significant difference in the knee kinematics between the operated achondroplastic patients and normal controls. **Conclusion:** The Ilizarov method provides functional height gain and substantially corrects the three-dimensional lower limb deformities of achondroplastic patients especially around the knee joint but more planning needs to be implemented when the system is applied to correct the disease specific deformities of the hip and pelvis. Gait analysis is an objective tool that can be used to address these design issues.

Date: 2016-09-10

Session: Free Papers - Paediatrics I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 42646

DEGA OSTEOTOMY FOR THE MANAGEMENT OF DEVELOPMENTAL DYSPLASIA OF THE HIP IN CHILDREN AGED 2–8 YEARS: RESULTS OF 58 CONSECUTIVE OSTEOTOMIES AFTER 13–25 YEARS OF FOLLOW-UP

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Purpose Developmental dysplasia of the hip (DDH) is a term used to cover a broad spectrum of anomalies ranging from mild dysplasia to high-riding dislocations. We report the management of DDH in children using the Dega osteotomy and their long-term follow-up. **Methods** Fifty-eight hips from 48 children younger than 8 years treated using the Dega osteotomy between January 1988 and October 2000 were included in this multicenter study. Both prospective (41 hips) and retrospective (17 hips) cases were included, and follow-up was for a minimum of 13 years. Radiographs were made preoperatively, immediately postoperatively, after 6 weeks or at removal of the spica cast if any, at 6-month intervals and/or as indicated for 3 years postoperatively and then on annual basis until the last follow-up. A single-cut computed tomographic scan was performed for all prospective patients. Special attention was paid to the predictive measures of hip arthrosis and the survival of the hip after Dega osteotomy. **Results** The final clinical outcome was favorable in 44 hips (75.9 %). Eleven hips needed a second surgery (acetabuloplasty and/or arthroplasty) during the follow-up period. **Conclusions** In our pediatric patient population the Dega osteotomy proved to be an adequate measure for the management of this complex condition. The worst complication was avascular necrosis, and all of the affected hips ended with failure (pain, another surgery, or both).

Date: 2016-09-10

Session: Free Papers - Paediatrics I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 44695

POSTERIOR ROTATIONAL FEMUR OSTEOTOMY IN TREATMENT OF II TYPE KALAMCHI DEFORMITIES IN CHILDREN AFTER AVN

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Growth disturbance of proximal femur after avascular necrosis (AVN) is a dreaded problem in young children. We have formulated a new approach to surgical treatment this pathology. We are unable to restore normal function of growth zone of the femoral head, but can transposition plane forming deformation from the most important in a plane less significant where its formation is not accompanied by significant variations in anatomy and biomechanics of hip joint. We used posterior rotational osteotomy of the proximal part of femur with turn 90° proposed by Anatoly Sakalouski. This osteotomy was performed in 5 children (5 hips) between the ages of 3 to 5 years (average - 4 years and 7 months). The results were studied with the mean follow-up of 6 years 6 months (from 4 to 13 years). The result of operation was to improve joint stability and recovery centration of femoral head. Wiberg angle has increased an average of 16,4 (from 9 to 24°) to 25,2 (from 22 to 28°). In all cases, achieved during operation relationships continue throughout the period of observation. According to Severin assessment system by modified Ziots excellent results were obtained in 4, good - in 1 cases. So, posterior rotational osteotomy allows changing femoral head position in three dimensions and can use in young children with type II deformation by Kalamchi.

Date: 2016-09-10

Session: Free Papers - Paediatrics I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 43609

COMPARING THE STRENGTH OF HIP SPICA CASTS APPLIED WITH TWO DIFFERENT TECHNIQUES

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Introduction: We modified the conventional technique of hip spica application described by Kumar in 1981 to reduce the rate of breakage across the hip joint. The modified technique involved creation of 3 slabs, instead of 18 slabs as described by Kumar. We designed this study to compare the strength of the conventional and modified techniques. **Methods:** We created 12 hip spica casts models with 24 hips for each type of cast application technique, using exactly the same amount of cast material. They undergo mechanical testing (Instron 3365 series) with compression loading to failure in 4 directions: flexion, extension, abduction and adduction. Comparison of force to failure and stiffness were analysed with independent T-test for normally distributed data, and Mann-Whitney test for skewed data. **Results:** The loads to failure for hip spica cast applied according to the modified technique were higher than those applied according to Kumar's technique, and the differences were statistically significant. The stiffness were also higher in spica casts applied with the modified technique, although this was not statistically significant under extension force. **Conclusion:** Hip spica applied with the modified technique was stronger than the one applied according to Kumar's technique based on load to failure testing across the hip. This would potentially reduce the risk of cast breakage during the management of DDH and femur fracture in children.

Date: 2016-09-10

Session: Free Papers - Paediatrics I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 43131

**DISTAL FEMORAL EXTENSION OSTEOTOMY & PATELLAR TENDON
ADVANCEMENT IN THE MANAGEMENT OF CROUCH GAIT IN
CEREBRAL PALSY**

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Purpose: To measure the effectiveness of distal femoral extension osteotomy (DFEO) and patellar tendon advancement (PTA) in improvement of crouch gait in cerebral palsy. **Methodology:** 15 patients (30 knees) with crouch gait were studied prospectively over a 2 year period. There were 7 males & 8 females with a mean age of 14.67 years (11 – 20 years). All patients underwent bilateral DFEO & PTA as described by Stout et al. Patients were analyzed using clinical, radiological and functional parameters and followed-up at 6, 12 & 18 months. Clinical measurements included degree of knee FFD, tone by Ashworth score and spasticity by Tardieu scale, muscle strength by MMT, radiologically by Koshino index and functionally by measuring FMS and GMFM. **Results:** The results of study showed an improvement in all outcome measures post operatively, with improved function & independence. Average knee FFD improved from 16.670 to 0, Tardieu scale improved from preop R1 77.33 and R2 53.33 to postop R1 54.00 and R2 22.67, Mean muscle strength improved from 1.47 to 2.93, mean GMFM improved from 20.13 to 32.60, mean Koshino index improved from 1.4880 to 1.227, mean FMS for 50 meter from 2.33 to 3.47, for 500 meter 2.07 to 3.13. All results were statistically significant. **Conclusion:** The combined procedure can restore knee ROM within typical limits and function is improved as evidenced by restoration or improvement in level of strength, improvement in walking level, and improvement in skill that require more complex knee function.

Date: 2016-09-10

Session: Free Papers - Paediatrics I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 44449

RISK FACTORS OF HIP LUXATION IN CEREBRAL PALSY

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The progressive spastic hip luxation occurs in almost 50% of patients with cerebral palsy, in whom low extremities are involved and leads to rapid destruction of articular cartilage and painful osteoarthritis. Methods. Retrospective analysis of 126 patients (224 joints) with cerebral palsy, in whom low extremities are involved. The age of patients ranged from 2 to 18 years old. We defined next X-ray indicators: migration index, neck- shaft angle, angle of the femoral anteversion, acetabular angle. The average value of each indicator was determined by using linear regression analysis ($p < 0.001$). Staging of sexual development was determined using modified Oxford method. Results. Defined each X-ray indicator in patients with cerebral palsy according to GMFCS and installed that risk factors of spastic hip luxation are the migration index ($p < 0.01$) and NSA ($p < 0.05$). Found that there is no statistically significant dependence of progression of spastic hip luxation in patients with cerebral palsy and acetabular angle and the angle of femoral anteversion ($p > 0.05$). Change the level of GMFCS for higher is a risk factor of progression of spastic hip luxation which is accompanied by increasing of the migration index and NSA. Risk factors of the progression of spastic hip luxation in patients with cerebral palsy are the prepuberty (Tanner stage 1-2) and abduction in the hip less than 20 degrees. Conclusion. Determined risk factors of hip luxation in cerebral palsy are increasing of migration index and NSA, Tanner stage 1-2 and hip abduction less than 20 degrees.

Date: 2016-09-10

Session: Free Papers - Paediatrics I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 44561

GAIT PATTERN RECOGNITION IN CEREBRAL PALSY PATIENTS USING NEURAL NETWORK MODELLING

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Introduction: Cerebral palsy is caused by injury to the brain during birth and has multiple effects on body causing hemiplegia, diplegia or quadriplegia. 3D gait analysis has a vital role in assessment, decision making and measuring the outcome after treatment. However, interpretation of data from 3D gait analysis is a challenging and time consuming task. The aim of this study was to create neural network models which can simplify this task. Neural network can predict the unknown by applying the knowledge learned through exposure. Methods: Twenty-nine patients with cerebral palsy were recruited as subjects whose gait was analysed in pre and post-treatment. A group of twenty-six normal subjects also participated in this study as control group. All subjects' gait was analysed using Vicon Nexus® to obtain the gait parameters and kinetic and kinematic parameters of hip, knee and ankle joints in three planes. The gait data was used as input to create neural network models. Approximately 300 trials were split into 70% and 30% to train and test the models, respectively. Different models were created using different parameters. Results: The results showed that the models using all parameters or using the joint angles and moments could predict the gait patterns with approximately 95% accuracy. Some of the models e.g., the models using joint power and moments only, had lower rate in recognition of gait patterns with approximately 70 – 90% accuracy. Conclusions: Neural network models can be used in clinical practice to recognise the gait pattern for cerebral palsy patients.

Date: 2016-09-10

Session: Free Papers - Paediatrics I

Time: 08:30 - 10:00

Room: Michelangelo 3

Abstract no.: 43450

MODIFIED GRICE–GREEN SUBTALAR ARTHRODESIS PERFORMED USING A PARTIAL FIBULAR GRAFT YIELDS SATISFACTORY RESULTS IN PATIENTS WITH CEREBRAL PALSY

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Introduction: Grice-Green subtalar arthrodesis is a valid surgical method in children with pes planovalgus deformity. The fibula is one of the main graft sources in this procedure. However, late ankle valgus deformity may occur because of failure of full regeneration when the graft is obtained from the fibula completely. Purpose: We aimed to report our experience with the use of a modified technique, which was performed using a partial subperiosteal fibular bone graft in children with cerebral palsy. Methods: Modified procedure was performed on 15 feet of 11 patients. Three patients were spastic quadriplegics (5 feet), six were spastic diplegics (8 feet) and two were spastic hemiplegics. Average age of the patients at surgery was 10.7 (6-15) years. Partial subperiosteal semitubular bone graft was taken from the middle-distal third of the ipsilateral fibula by respecting the periosteum and it was placed in sinus tarsi extraarticularly without using any fixation material. All patients were evaluated on the basis of the foot appearance, clinical symptoms and radiographic measurements. Results: After an average follow-up period of 24 (9-39) months, all feet showed satisfactory clinical and radiological results. Solid fusion and sustained correction took place in all feet. No donor-site morbidity was detected and the gap at the donor site was bridged with new bone in all cases. Conclusion: This modification of Grice-Green procedure can eliminate graft-site morbidity and related complications caused by bone taken from the fibula completely and can be used easily and effectively in the correction of spastic planovalgus foot deformity.

Date: 2016-09-10

Session: Free Papers - Paediatrics II

Time: 10:30 - 12:00

Room: Michelangelo 3

Abstract no.: 45213

OUTCOME OF HUMERAL SHAFT FRACTURE IN CHILDREN AND ADOLESCENT: COMPARISON BETWEEN NON-OPERATIVE TREATMENT (DESAULT'S BANDAGE), EXTERNAL FIXATION AND ELASTIC STABLE INTRAMEDULLARY NAILING

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Background: The main objective of this study was to retrospectively evaluate the outcomes of displaced humeral shaft fractures in children treated by Desault's bandage (DB), external fixation (EF) and elastic stable intramedullary nailing (ESIN). Methods: 36 consecutive children with displaced humeral shaft fracture were treated by DB (Group A), EF (Group B) or ESIN (Group C). All the patients underwent regular clinic and radiographic follow-up. One year after the index surgery, patients were asked to answer the short version of the Disabilities of the Arm, Shoulder and Hand outcome questionnaire (Quick DASH®). Results: Ten patients (27.8%) were in Group A, 11 (30%) in Group B and 15 (41.7%) in Group C. Mean age at the time of injury was 10.8 years (range 8–15.2), 11.7 years (range 6.8–15.9) and 12.7 years (range 6.9–15.3) in Groups A, B and C respectively ($p = 0.08$). Surgical treatment provided a better radiological outcome than conservative treatment ($p = 0.05$). Mean Quick DASH® score was 3 (range 0–27.3), 1.4 (range 0–9) and 1.2 (range 0–18.2) in Groups A, B and C, respectively. All the patients were able to resume previous physical and sport activities 4–6 months after the last fracture reduction procedure. Conclusions: EF and ESIN provide a better radiological outcome, less post-treatment pain and faster mobilization than DB. However, numerical differences, although statistically significant, were not clinically relevant. Conservative treatment was as efficacious as surgical treatment apart from the length of time for immobilization.

Date: 2016-09-10

Session: Free Papers - Paediatrics II

Time: 10:30 - 12:00

Room: Michelangelo 3

Abstract no.: 43844

OPERATIVE TREATMENT OF MISSED TYPE I MONTEGGIA FRACTURE OF CHILDREN

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The purpose of this study is to evaluate the results of open reduction and ulnar osteotomy on missed type I Monteggia fracture in children. Fifteen neglected type I Monteggia fracture were treated by open reduction and angular osteotomy of the ulnar posteriorly with or without annular ligament reconstruction. All locking compression plates were fixed on the dorsal side of the ulnar. Recurrence of radial head dislocation occurred in a nine years old boy in our present series. Nonunion of the ulnar happened in an 8 years old boy without recurrence of the radial head. A broken screw was also found in the same patient. We performed another surgery by resection the pseudarthrosis, autogenous bone grafting and intramedullar nailing of the ulnar. Arthritis of the radial head was showed in one fourteen years old girl preoperatively, who had a limited range of motion of the elbow postoperatively. Totally 14 cases succeed in reduction of the radial head, even if in patients without annular ligament reconstruction. No neurological injury was found in all 15 cases. Good results could be expected by open reduction and angular osteotomy of the ulnar with locking compression plate on the dorsal side, even if without annular ligament reconstruction.

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Room: Michelangelo 3

Abstract no.: 44361

MANAGING DISPLACED PAEDIATRIC SUPRACONDYLAR FRACTURES IN A DISTRICT GENERAL HOSPITAL. IS REFERRAL TO SPECIALISED CENTRES NECESSARY?

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In United Kingdom displaced paediatric supracondylar fractures are managed as per the British Orthopaedic Association Standards for Trauma (BOAST 11) guidelines, published in December 2014. In many countries these injuries are referred to pediatric orthopedic units or trauma centres. The aim of our study was to look into the management of these injuries in a District General Hospital setting. Thirty cases of displaced supracondylar (10 Gartland II and 20 Gartland III) requiring manipulation and fixation with Kirschner wires, were treated in our unit from January 2015 until December 2015. Kids presenting with open injuries or vascular deficits were transferred to the local trauma centre. Average age was 4 years and 10 months (2-10 years) and male: female ratio (2:1). Sixteen patients had one medial and one lateral K wire configuration, seven had two lateral wires, five patients had two lateral and one medial. All the patients were observed for 12-24 hours post operatively. They were followed up at one week for repeat radiographs, had removal of Kirschner wires at three to four weeks, and mobilized thereafter. The quality of reduction was assessed radiographically and clinically. Twenty seven patients had very good outcome. Two patients required reoperation as a result of loss of position and both these had fixation with two lateral k wires. One child had anterior Interosseous nerve injury at the time of injury. We conclude that closed displaced supracondylar fractures can be treated in District General Hospitals provided certain guidelines and treatment standards are followed.

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Abstract no.: 44416

EARLY VERSUS LATE HIP SPICA APPLICATION FOR PEDIATRIC FEMORAL SHAFT FRACTURES

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Background: This study evaluates the effectiveness of treating pediatric femoral shaft fractures by early (less than 48 hours) versus late hip spica application. Methods: A retrospective review of 29 patients with femoral shaft fracture treated either by early or late hip spica application with at least 9-month follow-up was undertaken. The late hip spica group had skin traction applied before the application of a hip spica. The outcomes involved both clinical (Pediatric Outcomes Questionnaire (POQ) and Activities Scale for Kids (ASK)) and radiological outcomes. Complications were noted. Results: 29 patients with a mean age of 2.9 years (range, 1 to 6) were evaluated. Twelve patients underwent early and 17 had late hip spica application. Both groups were comparable with regard to age, sex, number of radiographs, location of fracture, initial shortening, mechanism of injury and follow-up period. At follow-up, the ASK was similar amongst the two groups (87.7 versus 81.2, $p=0.12$). However, the POQ was better in the early group (67.3 versus 82.2, $p= 0.021$). Length of hospital stay and immobilization in the hip spica was significantly shorter in the early group ($p< 0.01$). There were no differences in leg length, lateral distal femoral angle and medial proximal tibia angle between the fractured and non-fractured limbs in both groups. Conclusions: Early hip spica application is a safe procedure for pediatric femoral shaft fractures and was associated with less time in hospital and the hip spica with better POQ score. At follow-up, radiological parameters were similar in both groups.

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Time: 10:30 - 12:00

Room: Michelangelo 3

Abstract no.: 45190

ELASTIC STABLE INTRAMEDULLARY NAILING IN DISPLACED FEMUR FRACTURE. RESULTS AND COMPLICATIONS IN CHILDREN WEIGHING 50 KG (110 LB) OR MORE

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Objective: The main objective of this study was to retrospectively evaluate the clinical and radiographic outcomes of displaced femur shaft fractures in children weighting 50 kg and over treated by ESIN. **Material and Methods** 20 consecutive children weighting 50 kg and over surgically treated by ESIN for closed fracture of the femoral shaft were included in the study. All patients underwent regular clinical and radiographic follow-up for at least 1 year after their index surgery. **Results:** The average patient age at the time of injury was 13.1 years (range: 10.3 to 15.6). The mean follow-up was 29.4 months (range: 13 to 57). Overall, nine (45%) adverse events were observed. Five were classified as minor and four as major complications. The rate of complications was higher in children weighting 55 kg and over (67%) than in children weighting between 50 and 54 kg (28%) and in children aged 13 years old or older (72%), than in children younger than 13 years old (11%). Furthermore, patients, older than 13 years of age and weighting more than 55 kg showed an increased risk of developing major complications ($p < 0.01$). **Conclusion** The study demonstrated that femoral shaft fractures in children and adolescents weighting 50 kg (110 pounds) and over have an increased rate of complications. In particular, there is evidence that patients older (≥ 13 years old) and heavier (≥ 55 Kg) patients should preferably be treated with rigid fixation systems due to a greater complication rate.

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Session: Free Papers - Paediatrics II

Time: 10:30 - 12:00

Room: Michelangelo 3

Abstract no.: 43573

LONG-TERM SEQUELAE OF NEONATAL SEPTIC ARTHRITIS OF THE SHOULDER

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The authors reviewed eight children (nine shoulders) who had suffered Neonatal septic arthritis of the shoulder with a mean follow-up time of 9,3 years. Five neonates were female and three were male. We analyzed five right side shoulders and four left side shoulders, in which one had bilateral infection. The delay between the onset of symptoms and diagnosis was two to three days. The most common clinical presentation was fever, food refusal and diminished range of movements. Two neonates were treated in another institution, and another was only sent to our institution already older. In one of the neonates there was a misdiagnosis, being only sent to Pediatric Orthopedics department at 4 years of age. Thus four children underwent arthrotomy and the other four do not. The antibiotic therapy initially established was triple (EV) for a period not less than 3 weeks. The shoulders were examined functional and radiologically. Partial loss Anterior flexion and abduction was seen in three patients. X-ray deformities were found in all shoulders, except one, and limb shortening (compared to the contralateral side) ranged from 1.7 cm to 16 cm. Shoulder infection and late diagnosis (>3 days) in neonates were statistically correlated with long-term upper limb deformity ($p=0,016$). Late diagnosis of septic arthritis of the shoulder can cause damage to the physis and growth of secondary ossification centers of the proximal humerus, resulting in shortened upper limbs, deformation of the humeral head, major cosmetic changes but usually without significant functional deficits.

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Session: Free Papers - Paediatrics II

Time: 10:30 - 12:00

Room: Michelangelo 3

Abstract no.: 44928

NATURAL HISTORY OF 200 RACHITIC KNEE DEFORMITIES

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Introduction: Defective mineralisation of osteoid matrix of bones prior to their physal closure causes rickets. The recent literature has seen an increase in the incidence of the disease not only in developing but also in developed nations. We here present our experience of 137 patients with 200 lower limb deformities due to rickets, effect of conservative treatment and bracing, and finally the surgical management of cases not responding to conservative management. Materials and Methods: Prospective study of nutritional rachitic knee deformities was performed from January 2009 to December 2011. 200 deformities of rickets with coronal plane knee deformities were enrolled in this study. They were evaluated clinically and radiologically, treated for vitamin- D deficiency and followed for resolution. Those who failed to resolve were managed surgically with growth modulation, illizarov or osteotomy. Results:67 genu varum were observed in our study. Most children with genu varum were under 4 years except two. Of 65 deformities 7 (10.7%) were regarded as failure which either did not show any improvement. Rest 58 genu varum got corrected completely obtaining a average of 5 degree of valgum in an average of 6.3 months.133 deformities in our study had genu valgum. The average valgum was 21 degrees and average age group was 7.3 years. It was observed that valgum did not correct as rapidly as genu varum after vitamin D administration Conclusion: The study concludes that most rachitic deformities get corrected with age with Genu varum having better chances of correction compared to genu valgum. .

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Time: 10:30 - 12:00

Room: Michelangelo 3

Abstract no.: 44381

INTRAMEDULLARY SKELETAL KINETIC DISTRACTOR: RETROSEPTIVE SERIES

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Purpose: The Intramedullary Skeletal Kinetic Distractor (ISKD) is an intramedullary nail device designed for lengthening by rotational oscillation between two telescoping sections. We present our experience of ISKD lengthening done between 2003 and 2014. **Methods:** We retrospectively reviewed nine femoral lengthening in seven (3 Female, 4 Male) patients with mean age of 28(range: 17-54); mean desired lengthening of 50mm (range: 25-80). Indications for lengthening included short stature (four), post traumatic leg length discrepancies (four) and fixed pelvic obliquity secondary to fixed spine resulting from spinal instrumentation (one). All femoral osteotomy were done by multiple drill hole methods (Paley's technique), 100-120mm proximal to telescopic part of the nail. There were no angular or rotational deformities to correct. The distraction was started on the third day with early weekly follow up. **Results:** All nine femurs had successful lengthening. Eight nails were removed (one patient was lost to follow up). There were no long-term complications, with all patients reaching the desired lengthening. However, one superficial infection required wash out, three early distractions occurred, out of which one patient needing admission for pain control. Two early-accelerated consolidation necessitated re-osteotomy and exchange nailing. We also had three-delayed union requiring bone graft and exchange nailing after lengthening to a standard intra-medullary nail. In our series we did not have any deep infection, implant failure, non-union, DVT or joint contracture requiring prolonged physiotherapy. **Conclusion:** We had satisfactory outcomes from femoral ISKD lengthening in our series.

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Room: Michelangelo 3

Abstract no.: 44973

LIMB RECONSTRUCTION PROCEDURES IN TIBIAL HEMIMELIA

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Introduction: It is a longitudinal deficiency of the tibia which is either complete or partial. Its prevalence is 1 per million live birth. 30% of the cases are bilateral. It may present as an isolated anomaly of the assessed with variety of skeletal or extraskeletal. Aim: The treatment is to 1. Reconstruct weight bearing bone with controlled knee bone function 2. To equalize the LLD 3. To correct any ankle and foot deformity and make the foot plantigrade Materials and Methods: 12 cases of different tibial hemimelia, 8 boys and 4 girls were treated from 1995 to 2013 at NITOR and Bari-Ilizarov Orthopaedic Centre. In 9 cases the right side was affected, the left side in 2 cases and bilateral affection in 1 case. The procedure that was used is the surgical technique (Brown procedure) to centralize the fibula at the knee and ankle with stabilization by Ilizarov technique. Sometimes reconstruction of knee extensor mechanism and deficient ligament reconstruction in ankle is needed. Ilizarov technique is absolutely needed to correct the knee, ankle and foot deformities and to overcome the LLD. Results: We obtained were very much satisfactory in all cases. Complications are a fact of life that every orthopaedic surgeon has to face. In my series 1 refracture was observed and that was treated by reapplication of Ilizarov and union was achieved. Conclusion: Ilizarov technique is a reliable and adaptable technique by which we can correct deformity and gain limb length simultaneously by intelligent meticulous follow up.

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Abstract no.: 42993

LIMB-LENGTHENING FOR DEFORMITIES OF THE FOREARM IN MULTIPLE EXOSTOSES

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Multiple cartilaginous exostoses cause various deformities of the epiphysis and growth disturbance. In the case of exostoses of the forearm, such deformity is usually caused by a combination of shortening of the ulna, and bowing of the radius, that result in ulnar deviation of the wrist, and occasionally, radial head dislocation. We retrospectively investigated 17 patients (17 forearms) who were performed exostoses resection in our department between 1989 and 2015. All patients also underwent corrective procedures (lengthening of the ulna and/or corrective osteotomy of the radius) for functional and cosmetic improvement. In this study, we assessed pre and postoperative clinical outcomes including the pain, the ranges of motion and complication. The radiographic parameters that were assessed by ulnar variance, radial articular angle and carpal slip. The mean duration of follow-up was 36 months (range, 5 to 71 months). The mean age at the time of the initial procedure was 10 years old (range, 3 to 19 years). The mean diameter of bone lengthening was 2.18 cm (range, 0.8 to 3.7 cm). Radiographic parameters were initially improved; however, the deformities in several cases had again progressed. All complications were associated with ulnar lengthening including infection (1 case), fracture of callus at the site of lengthening (1 case), nonunion (1 case), and limitation of forearm supination (7 cases). Lengthening of ulna and/or corrective osteotomy improved cosmetic appearance and reasonable function in this study, although final range of motion of forearm did not change.

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Abstract no.: 42840

GUIDED GROWTH AS A PART OF COMPLEX MANAGEMENT OF KNEE FLEXION CONTRACTURES IN PATIENTS WITH AMC

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Decision of optimal surgery of knee flexion contractures in patients with AMC is the great challenge for the orthopedic surgeon. Soft-tissue release with Ilizarov ex-fix or without it often leads to relapse. High risk of recurrent deformity in young skeletal immature patients makes distal femoral osteotomy impossible to be performed. Anterior distal femoral hemiepiphysiodesis is an effective option, but it is valued for moderate contractures (less than 45°). The aim of this study was to evaluate results of anterior distal femoral hemiepiphysiodesis combined with additional methods of correction of knee flexion deformity. 20 knees in 12 patients with AMC were evaluated. Mean age was 6.3 years (range 4-9). Clinical and radiographic methods were used. Mean flexion contracture before treatment was 61.5° (range 50°-80°). Depending on contracture severity serial casting with extension devise was used before or soft-tissue release was performed simultaneously with hemiepiphysiodesis. Technique of hemiepiphysiodesis considered application of two 8-plates via parapatellar incisions. Additional methods of correction of knee flexion deformity in all cases allowed to decrease contractures. Mean flexion contracture before anterior distal femoral hemiepiphysiodesis was 35.5° (range 20°-40°). At follow-up period (8-30 months) a mean correction using 8-plate was 1.6 degree per month. Distal femoral hemiepiphysiodesis is effective, safe and reproducible surgical option for knee flexion contractures in AMC patients with sufficient growth remaining. This method in case of incomplete deformity correction can prevent progression of the flexion contracture in skeletal immature patients. Combination with additional methods allows eliminating lower limb deformity and improve ambulatory capacity promptly.

Date: 2016-09-10
Session: Free Papers - Spine
Time: 08:30 - 10:00
Room: Caravaggio 1-2

Abstract no.: 43467

TITLE: CAN HALO GRAVITY TRACTION (HGT) WITH POSTERIOR SPINAL FUSION AND POSTERIOR COLUMN OSTEOTOMY (PCO) AND RIB RESECTIONS ACHIEVE SIMILAR AND SAFER CORRECTION OF COMPLEX SPINE DEFORMITY AS VERTEBRAL COLUMN RESECTION (VCR)

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Introduction: VCR is gaining popularity for correction of severe spinal deformity. However, it is a highly technically demanding procedure with potential risk of significant complications and neurological injury. Methods: 72 consecutive pts with spinal deformity > 100 degrees were reviewed. The patients underwent HGT followed by PSF, PCO, concave rib osteotomies. Conventional radiographic measurements in addition to coronal and sagittal Harrington Factor (HF) were obtained pre op, post traction and at follow up. Results: There were 72 pts, 40F/38M. The etiology was: cong (25), idiopathic (47), neurofibromatosis(2) and neuromuscular(4). The avg age (17.8yrs), HGT (102.55 days); Pre op coronal Cobb 131.51deg vs 92 deg. in HGT (30.01% corr) and 72.80 deg post op (47%corr); Major Curve HF (17.66) vs (12.17) in HGT (30% change); Preop kyphosis 134.68 deg vs 97.11deg in HGT and 74 deg post op; There were 48 pts with complications (66.6%), 10 medical, 1 wound infection and 45 intraop monitoring (IOM) alerts (62.5%) with 3 post op (4.2%) neuro deficits all of whom recovered at follow up. There was 1 (1.3%) death. Conclusion: HGT, PSF, PCO, and rib resections without VCR achieved satisfactory correction of rigid complex spine deformity with minimum neurological complications.

Date: 2016-09-10
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Room: Caravaggio 1-2

Abstract no.: 44460

REDUCTION OF CONGENITAL KYPHOSCOLIOSIS BY AN ANTERIOR CONCAVE OSTEOTOMY AND POSTERIOR INSTRUMENTATION

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Introduction The clinical impact of congenital vertebral malformations is variable and depends mainly on the type of spinal malformation and the location of this (McMaster & Ohtsuka, 1982). Location of the hemivertebra in transitional, thoracolumbar junction determines a greater trunk imbalance and clinically visible deformities of the vertebrae. The goals of surgical treatment are to achieve a solid fusion to stop the progression of the curve, and reach the end of growth with a spine properly aligned and well balanced. Clinical data there were 3 females with age 13- 14- 16 years old who had presented congenital kyphoscoliosis in thoracolumbar junction with 5 vertebrae involving malformation were hemivertebrae for 2 cases and 1 case of hemivertebra and longitudinal control lateral bar. Sagittal Cobb angles were 31° 50° 56° with a little coronal Cobb angle for 2 patients and 30° for the third. Method the patients had undergone the antero-posterior fusion using for the reduction of the deformity by the concave anterior vertebra osteotomy and reduction stabilization by posterior instrumentation. Results Deformity in both coronal and sagittal planes was analyzed for correction and maintenance of the correction in preoperative, postoperative, and follow-up radiographs. We have for the 3 patients a good correction of cosmetic aspects and an improvement of sagittal and coronal Cobb angle. Discussion the anterior concave osteotomy fusion with the posterior pedicles instrumentation in congenital kyphoscoliosis is the main and the best method to correct the deformity.

Date: 2016-09-10
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Abstract no.: 44722

NON DISCOGENIC SCIATICA SYNDROME: A REPORT ON 35 PATIENTS

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Sciatica is a common syndrome all over the globe, usually it is due to prolapsed intervertebral disc and what complicates the situation is the finding of false position MRI of disc prolapsed so treating the false positive MRI will lead to bad sequale. The clinical feature for the discogenic and non discogenic sciatica is almost identical so a thorough search is mandatory to avoid falling in the trap of misdiagnosis. During my last thirty years of experience I have collected thirty five cases of non discogenic sciatica syndrome, which was related to malignancy, primary or secondary, infection and systemic pathology presented like sciatica. The cases will be presented with remarks on how to avoid missing the diagnosis and offering the ideal treatment.

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Room: Caravaggio 1-2

Abstract no.: 43077

ANALYSIS OF FACTORS AFFECTING POSTOPERATIVE LOSS OF REDUCTION IN UNSTABLE THORACOLUMBAR FRACTURES PERFORMED POSTERIOR SURGERY

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Introduction: Unstable thoracolumbar fractures require surgical intervention to achieve adequate reduction and restore spinal stability. However, loss of reduction can cause the kyphotic deformity, which results in several complications. The authors studied the factors influencing the postoperative loss of reduction. Materials and methods: Of fifty-two patients who were treated by posterior surgery and had completed a minimum follow-up of 1 year, we excluded nine patients who had multiple level fractures or underwent combined anterior-posterior surgery, which yielded forty-one patients. Postoperative loss of reduction was defined as 30% or more loss of vertebral body height as measured on lateral radiography at 1-year follow-up compared to lateral radiograph taken immediately after surgery. The associations between the patients' gender, age, level of fracture, injury of posterior column, initial loss of fractured vertebral body height, the load-sharing score, TLICS score, number of fixed segments above and below the fracture, type of pedicle screws, the degree of postoperative reduction, the degree of postoperative corrected kyphotic angle, the changes in insertion angle of the upper and lower pedicle screws of the fractured vertebral body at 1 year follow-up and postoperative loss of reduction were analyzed. The SPSS 14.0 was used for analysis of data. Results: Among forty-one patients, seven patients had postoperative loss of reduction. The number of fixed segments above and below the fracture ($p=0.045$), initial loss of fractured vertebral body height ($p=0.013$), the changes in insertion angles of the lower pedicle screws ($p=0.007$) were significantly associated with postoperative loss of reduction.

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Abstract no.: 45672

AN EVALUATION OF THE FUNCTIONAL AND RADIOLOGICAL RESULTS OF PERCUTANEOUS VERTEBROPLASTY VERSUS CONSERVATIVE TREATMENT FOR ACUTE SYMPTOMATIC OSTEOPOROTIC SPINAL FRACTURES

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This study aimed to compare the results of the two different treatment regimens (percutaneous vertebroplasty (PV) and conservative treatment (CT)) regarding to efficacy, quality of life, functional and radiological results in patients with acute osteoporotic vertebral compression fractures (OVF). 83 patients who presented with complaints of OVF associated with osteoporosis and were treated with CT (37) or PV (46). All patients were evaluated according to preoperative and postoperative visual analogue scale (VAS), Oswestry disability index (ODI) and plain radiographs. All patients in VP group reported a significant decrease in pain at 1st day postoperative. While pain relief and functional outcomes were significantly better in PV group than CT at 1st and 3rd months, there were no statistically significant differences between the groups at 6th months follow-up. The mean preoperative local sagittal Cobb angle (LSCA) and the mean vertebra corpus mid-level height (MVCH) were 42.3° and 14.6 mm in the PV group, while they were measured as 39.8° and 15.7 mm in CT group respectively. 15.6° decreasing the LSCA and 10.2 mm increasing MVCH were noted in the PV group at the 6th month follow-up. While LSCA increased 19.1° and MVCH decreased 7.6mm in CT group at same time period (p<0.001). Compared to the CT group, PV provides a rapid decrease of pain and an early return to daily life activities. Although improvement was observed on the radiological findings following treatment in the PV group, PV may not enhance the quality of life in patients with acute OVF at 6th months follow up.

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Abstract no.: 44075

EVALUATION OF CERVICAL CORD COMPRESSION ON T2-WEIGHTED SEQUENCES IN PATIENTS WITH CERVICAL SPONDYLOTIC MYELOPATHY USING FLEXION-EXTENSION MRI

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Introduction: Degenerative cervical spondylotic myelopathy(CSM) is among the most common condition affecting individuals of older age. Kinematic magnetic resonance imaging (MRI) studies have gained importance to define the physiological changes that occur in the subarachnoid space and cervical cord and dynamic alterations occurring in the cervical canal and cord during flexion and extension of neck in patients with cervical spondylosis. This study aims at evaluating cervical canal stenosis(CCS) at each level on neutral, flexion, and extension MRI's of cervical spine and to determine the percentage of levels which show cord impingement in extension MRI. **Materials & Methods:** 102 consecutive patients presenting to a single centre, with CSM between April 2013 and September 2015 were evaluated with neutral, flexion and extension MRI's of the cervical spine. CCS at each level from C3-C4 to C7-T1 were evaluated and classified according to Muhle et al classification of cervical stenosis. **Results:** 510 levels were evaluated in positions of flexion, neutral and extension. At all levels except C7-T1, the stages of CCS in extension were higher than that in neutral and flexion ($p<0.05$). The most common level of compression noticed on extension was at C5-C6 and C4-C5 levels. C7-T1 level showed no significant difference in stages of CCS in either flexion, neutral and extension. **Conclusion:** Extension MRI helps to identify significant CCS that is partially or completely absent on neutral and flexion MRI. This further helps to determine the exact number of levels one needs to decompress surgically.

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Room: Caravaggio 1-2

Abstract no.: 43512

THE OCCURRENCE FREQUENCY AND RISK FACTORS FOR DELIRIUM AFTER SPINAL SURGERY IN ELDERLY PATIENTS

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Introduction : As the number of surgery among elderly patients has increased in Japan, there has been increasing interest in postoperative delirium. In this retrospective study, we evaluated the occurrence frequency and risk factors for delirium after spinal surgery in elderly patients. Methods : Two hundred seven patients (101 males and 106 females) more than 64 years (age, 65–94 years; average, 75.6 years) who underwent spine surgery at our hospital were included in this study. We diagnosed delirium based on DSM-IV diagnostic criteria. As candidate factors of delirium, we select sex, age, level of surgery (cervical spine, thoracic spine, lumbar spine), type of surgical procedure, operative time, blood loss, smoking, alcohol, past history, internal medicines, preoperative laboratory data. We evaluated the occurrence frequency and risk factors for delirium after spine surgery using multivariate logistic regression analysis. Results : The occurrence frequency of delirium was 12.6% in all patients, 7.5% in the patients from 65 to 74 years, 14.7% in the patients from 75 to 84 years and 33.3% in the patients elder than 84 years. Result of multivariate logistic regression analysis showed that risk factors for delirium were past history of mental disease (Odds ratio : 12.4), internal medicines of antipsychotic or anti-anxiety drug (Odds ratio : 4.1), and internal medicine of H2 blocker (Odds ratio : 4.6). Conclusion : The occurrence frequency of delirium was 12.6% and risk factors were past history of mental disease, internal medicines of antipsychotic or anti-anxiety drug, and internal medicine of H2 blocker.

Date: 2016-09-10
Session: Free Papers - Spine
Time: 08:30 - 10:00
Room: Caravaggio 1-2

Abstract no.: 45355

COMPARISON OF STAGED RECONSTRUCTION WITH EXTREME LATERAL INTERBODY FUSION (XLIF) AND MULTILEVEL CORRECTIVE PLIF/TLIF WITH PONTE OSTEOTOMY FOR ADULT THORACOLUMBAR KYPHOSCOLIOTIC DEFORMITY

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Background: We compared radiological and clinical outcomes between multilevel XLIF (group X) and multilevel corrective PLIF/TLIF (group P) for degenerative adult deformities. Methods: A consecutive series of 42 patients fulfilled the following criteria: age >65 years; scoliosis >30° or >20° and lumbar lordosis (LL) <20°; and reconstruction surgery from the lower thoracic spine to the pelvis. The group P (n = 18) underwent one-stage posterior fusion with multilevel corrective PLIF/TLIF with Ponte osteotomy. The group X (n = 24) underwent a first-stage multilevel XLIF and a second-stage posterior fixation. The symptoms were evaluated using the JOA score and the JOABPEQ. Radiologic parameters included coronal Cobb angle (CC), sagittal vertical axis (SVA), pelvic tilt, pelvic incidence, and LL. Results: No significant differences were observed in the recovery rate of the JOA score or improvement of JOABPEQ. In radiologic parameters, the mean change of LL (20.1° vs 36.5°) and SVA (35.4mm vs 66.7mm) were significantly higher in the group X (p < 0.05), however, there was no significant differences in the mean change of CC (26.4° vs 25.1°), and PT (7.9° vs 12.9°) between the groups. The average total operative times were similar; however, in the group P, the mean EBL (3515 ml vs 1196 ml), and the perioperative medical complication rate (55.5% vs 12.5%) were significantly greater compared with those in the group X (p < 0.05). Conclusions: Staged reconstruction with the multilevel XLIF for adult degenerative deformities is a reasonable approach, and affords effective correction with acceptable complication rates.

Date: 2016-09-10
Session: Free Papers - Spine
Time: 08:30 - 10:00
Room: Caravaggio 1-2

Abstract no.: 43747

MEP IN PREVENTION OF MOTOR-DEFICIT DURING PEDIATRIC SPINE SURGERIES

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Correction of pediatric spine deformities is challenging surgical procedure in this fragile group of patients with many risk factors. Therefore, prevention of most fearing complication - paraplegia is extremely important. Monitorisation of transmission of neurophysiologic impulses (through motor and sensor pathways of spinal cord) gives us an insight into cord's function, and predict postoperative neurological status. Aim of this work is to present our experiences in monitoring of spinal cord motor function (MEP- motor evoked potentials) during surgical corrections of the hardest pediatric spine deformities, pointing on the most dangerous aspects. We analyzed incidence of MEP changes and postoperative neurological status in patients who had major spine correcting surgery in period April '11- Jan '16 on our Spine department. Three of 67 patients, or 4,5% in our group experienced significant MEP changes during their major spine reconstructive surgeries. We promptly reduced distractive forces, and MEPs normalized, and there were no postoperative neurological deficit. Neuromonitorisation is reliable method which allows us to "catch" early signs of neurological deficits, when they are still in reversible phase. Although IONM cannot provide complete protection of neurodeficit (it reduces risk of paraplegia about 75%), it at least afford a comfort to the surgeon being fear-free that his patient is neurologically intact during long-lasting procedures.

Date: 2016-09-10

Session: Free Papers - Spine II

Time: 10:30 - 12:00

Room: Caravaggio 1-2

Abstract no.: 44656

SEGMENTAL CORRECTION IN SURGICAL TREATMENT OF IDIOPATHIC SCOLIOSIS IN ADOLESCENTS

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Introduction: Derotation maneuver proposed by Cotrel-Dubousse for surgical correction of scoliosis, remains one of the basic principles of treatment of scoliosis. Using a screw system has brought positive results. Performing simultaneous derotation may lead to increased costal hump, according to the deformation. Therefore, in certain types of deformations we prefer to perform segmental derotation. Methods: In the adolescent department of Orthopedics Research Institute of Traumatology and Orthopaedics, Ministry of Health of the Republic of Uzbekistan from 2013 to 2015 were operated 74 patients with idiopathic scoliosis IV degree on at the age of 10 to 22 years (37 girls, 37 boys). Most children - with thoracic scoliosis (44.2%), the majority of which (from the total number of adolescents) with right-side thoracic scoliosis (34.6%). Combined scoliosis are present in 23.8% of adolescents. «S»-shaped scoliosis - in 17.2%. The angle of deformations before and after surgery was measured by the Cobb's method. In surgical treatment at the stage of derotation maneuver we performed to 54 patients one-stage correction of thoracolumbar spine. This maneuver gave us good correction, but because of vertebral torsion the spinal hump has been increased. Considering this, in other patients we mobilized spinal-rib joints and derotation maneuver performed by segments. Because of this we have reached a good correction of spinal axis and vertebral torsion also been corrected. Results: Thus, to achieve a good clinical and cosmetic effect in idiopathic scoliosis we recommend thorough mobilization and segmental derotation maneuver.

Date: 2016-09-10
Session: Free Papers - Spine II
Time: 10:30 - 12:00
Room: Caravaggio 1-2

Abstract no.: 45269

FORMATION FEATURES OF ANATOMIC TYPE IN PATIENTS WITH COMBINED SCOLIOSIS SPINE DEFORMITIES

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Study included 1204 patients with scoliosis; 85.8% were females, and only 14.2% were males, the ratio was 6:1. During combined types of scoliotic spine deformities investigation it was found that they occur in more than half of patients undergoing brace therapy: 644 patients, or 53.5%. It should be noted that the right-sided thoracic deformity arc had the most unfavorable prognosis, cause in this patients the second arc (left-sided) was formed in 72.4% of cases. Left-sided lumbar arcs were followed by secondary arcs in 46.8% of cases, left-sided thoracic arcs – in 42.9%, while the left-sided thoracolumbar – in 44.1%. Much less the formation of the secondary arc was observed in primary right-sided thoracolumbar level - 12.5% and in right-sided lumbar level - 24.3%. It should be noted that secondary arc formation appeared more in girls and women (55.6%) than in boys and young men (40.7%). Girls with right-sided thoracic arc had secondary arc formation in 72.8% of cases, with left-sided thoracic level - 62.0%, with right lumbar level - 29.6%, with right thoracolumbar level - 12.5%, while the left-sided thoracolumbar level - 44.8% and left-sided lumbar level - 46.8%. For boys secondary arc formation noticed more in arcs with right thoracic level - in 61.3% of cases and with left-sided lumbar level - in 46.4% of cases. Revealed scoliosis deformity anatomic type formation features are reasonable to take into account during brace treatment use and prognosis making.

Date: 2016-09-10
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Time: 10:30 - 12:00
Room: Caravaggio 1-2

Abstract no.: 42799

AN INVESTIGATION INTO THE PREVALENCE AND CORRELATION OF SPINE AND HIP PAIN IN ATHLETES

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Introduction: To investigate the prevalence and correlation between back and hip pain in athletes. Methods: Sample group (n=102), young elite Alpine and Mogul skiers (n=75) and non-athletic population (n=27). Skiers and controls completed a three-part questionnaire, consisting of back and hip pain, Oswestry Disability Index and EuroQoL to evaluate general health, activity level and prevalence of hip and low back pain. Results: Significant difference was shown with increased levels of back pain VAS levels for the skiers 5.3 (SD 3.1) compared with controls 2.4 (SD 1.9, p=0.025). Lifetime prevalence of LBP, in skiers was 50% compared with 44% non-athletes and radiating pain for skiers 24% compared with 9% non-athletes. 30% of skiers had LBP for one year whilst 46% had LBP more than 5 years. No significant differences were shown for lifetime prevalence (p=0.174) duration (p=0.21) onset (p=0.16) of back pain, or lifetime prevalence of hip pain (p=0.127), stratified by group. No significant differences were shown for the correlation between back and hip pain between groups, similar for Oswestry Disability Index (p=0.66) and EuroQoL (p=0.68). Conclusion: Elite young skiers are shown to have significantly greater levels of back pain measured with VAS compared with controls. A greater duration of back pain was present in the skiers. There were no significant differences in terms of the prevalence of back or hip pain and disability or for a correlation between back and hip pain in elite young skiers compared with age-matched non-athletes. Key words: Athletes, back, hip, pain, skiers, spine

Date: 2016-09-10
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Time: 10:30 - 12:00
Room: Caravaggio 1-2

Abstract no.: 45105

FACTORS INFLUENCING OUTCOMES DURING AND POST HOSPITALIZATION IN CERVICAL SPINE INJURIES IN YOUNG AND OLD ELDERLY

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Purpose of study: Our aim was to evaluate the outcomes of geriatric cervical spine injuries in terms of morbidity, mortality, and factors influencing it during and post hospitalization. Methods: Hospital records of 62 patients over 65yrs with cervical spine injuries from were retrospectively reviewed. Patients were divided into young (65- 74yrs) and old (>74yrs) elderly groups. Demographics, mechanism and level of injury, duration of stay (ward/ICU), radiographic findings, neurological deficits, comorbidities, type of management, mortality, factors influencing mortality and complications rates were studied. Results: 45 patients were young elderly and 17 old elderly. Mean age was 70.46 years. 39 sustained high velocity injury and 23 low velocity. C4-5 was the most common injured level. 34 patients had preexisting co-morbid conditions. 34 patients underwent surgery. Mean ICU stay was 16.93 days and ward stay 43.94 days. Pulmonary complications were most common in elderly. Tracheostomy was required in 20 patients and ventilator support in 24 patients. 28 patients had complete deficit, 27 had incomplete neurology and 7 were intact. Mean duration of follow up was 3.2 years. 13 patients died in our series. 10 patients had returned to preinjury functional level. Mortality was more common in old elderly patients, patients with higher level of neurological deficit, multiple co morbidities, and ventilator dependency. Conclusion: Differences exist between young and elderly with cervical spine injuries, and there are high morbidity, mortality rates. Efforts should be made to reduce pulmonary complications in this age group of patients. Surgical management can be performed safely when indicated.

Date: 2016-09-10
Session: Free Papers - Spine II
Time: 10:30 - 12:00
Room: Caravaggio 1-2

Abstract no.: 43118

EVALUATION OF INFLUENCING FACTORS FOR BLOOD LOSS AND TRANSFUSION REQUIREMENT IN SPINAL TUMOUR SURGERY

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Background: Spinal tumour surgery (STS) can be associated with significant blood loss. Previous studies did not provide comprehensive data on blood loss in STS. We aimed to investigate the estimated blood loss and transfusion requirement associated with various surgical approaches and operated vertebral levels for different types of spinal tumours. Methods: We retrospectively evaluated 255 patients who underwent surgery for primary or metastatic spine tumours in our institution during 2005-2014. Estimated intraoperative blood loss and transfusion requirement were assessed for different tumour types namely lung, breast, prostate, gastrointestinal, renal, liver, thyroid, myeloma/lymphoma, others and primary spine tumours; types of surgical procedure (cervical corpectomy±stabilization; thoracolumbar posterior decompression±instrumentation; thoracolumbar corpectomy; minimally invasive surgery), levels of instrumentation and decompression. Multivariate linear regression was attempted to investigate the factors influencing blood loss and transfusion requirement. Results: Mean blood loss was 942ml±865ml and average blood transfusion was 1.6±2.1 units. The mean blood loss was 1222ml in patients who received blood transfusion and 596ml in those who did not. Multivariate analysis revealed that significant factors influencing blood loss were tumour type, type of surgery and prolonged operative time. As for blood transfusion, tumour type, type of surgery, preoperative Hb and prolonged operative time were influencing factors. Conclusions: There were significant variations in blood loss and transfusion requirement based on primary tumours, surgical approaches and operative time. This will help us in preoperative planning to address the problem of blood loss during STS.

Date: 2016-09-10
Session: Free Papers - Spine II
Time: 10:30 - 12:00
Room: Caravaggio 1-2

Abstract no.: 44559

**EFFECTIVENESS OF TRAINING OF PEDICLE SCREW INSERTION
TECHNIQUE USING A REAL-SIZE 3D PRINTED MODEL FOR
REDUCTION OF LEARNING CURVE**

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Introduction: The purpose of the study was to evaluate the effectiveness of using a real-sized 3D-printed spinal model for training of the free-hand pedicle screw insertion technique in improving screw insertion accuracy and procedure time. Methods: Twenty real-sized 3D-printed lumbar spinal models were made from 10 volunteers (2 models for each volunteer). Two novice surgeons who had no experience of free-hand pedicle screw insertion were instructed of the technique by an experienced surgeon and each surgeon inserted 10 pedicle screws for each lumbar spinal model. CT scans of the spinal models were taken to evaluate the accuracy of the screw insertion. Time to complete the procedure was recorded. The results of the latter 10 spinal models were compared with that of the former 10 models to evaluate if there is a learning effect. Results: A total of 37/200 screws (18.5%) were not placed within the pedicle with an average of 1.7 mm (range, 1.2 to 3.3 mm) violation. However, the latter half of the models had significantly less violation rate than the former half (10/100 vs 27/100, $p < 0.05$). The mean procedure time to complete screw insertion was 42.78 minutes for the former 10 spinal models and 35.60 minutes for the latter 10 spinal models. The latter 10 spinal models took significantly less time than the former 10 models ($p < 0.05$). Conclusion: A real-sized 3D-printed spinal model can be an excellent tool for training of the free-hand pedicle screw insertion. Keywords: 3D-printed spinal model, Pedicle screw insertion, Beginners, Training

Date: 2016-09-10
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Room: Caravaggio 1-2

Abstract no.: 45147

ANTERIOR CERVICAL DECOMPRESSION, FUSION AND STABILIZATION BY CERVICAL PLATE & SCREW FOR TRAUMATIC LOWER CERVICAL SPINAL INJURY- A SERIES OF 78 PATIENTS

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Acute injury to the cervical spine and spinal cord are one of the most common causes of severe disability and death after trauma. Though treatment of cervical spine injury is controversial but anterior cervical surgery has still a better outcome than any other method. It was a prospective study from July 2009 to November 2015. Discectomy or corpectomy was done for decompression, tricortical bone graft or cage with bone graft was used for fusion. Cervical plate was used in all cases. Total operated cases were 78 & mean follow up time was 36 Months. Out of 78 patients, in pre operative period 6 patients had ASIA scale A, 35 patients had ASIA scale B, 34 patients had ASIA scale C & 3 patients had ASIA scale D. At follow up, 32 patients of ASIA scale B changed to ASIA scale D, 3 patients of ASIA scale B changed to ASIA scale E, 21 patients of ASIA scale C changed to ASIA scale D, 13 patients of ASIA scale C changed to ASIA scale E, 3 patients of ASIA scale D changed to ASIA scale E & 6 patients of ASIA scale A remain unchanged. In the current series none of the patients had worsening of neurological deficit. For better outcome, proper selection of cases is very important. As because, no neurological recovery occurs in complete lesions but for early mobilization and prevention of further complications surgery may be considered. Meanwhile, satisfactory to excellent results can be obtained in incomplete lesions.

Date: 2016-09-10
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Room: Caravaggio 1-2

Abstract no.: 43508

RETROSPECTIVE EVALUATION OF INDICATIONS AND OUTCOME OF SURGERY IN TB SPINE

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Introduction: The present study is a retrospective analysis of the indication of surgery and outcome in TB spine. Methods: 156 surgically intervened patients (112 adults, 44 children) of spinal tuberculosis from 2004-2014 were followed up. The indications, type of surgery and outcome for neural improvement and spinal deformity were documented. RESULTS: 49.7% patients were operated for neurological deficit, 35.3% kyphotic deformity correction. 20 (12.8%) patients had more than one indications of surgery. 59 pts operated for severe neural deficit were followed up for 19.1 months. Out of them 49 recovered completely and 10 partially. 107 patients with kyphosis were available for follow-up 16.8 months. Mean preoperative, immediate postoperative and final kyphus was 30° (0° – 90°), 19.2° (0° – 80°) and 22.5° (0° – 82°) respectively with 3.30 loss of correction. Hartshill fixation was used (n=61) for dorsal and dorsolumbar spine while Pedicle screw fixation for lumbar spine (n=11). Grade I & II neural deficit patients were operated for panvertebral lesions, unstable spine and long segment disease. CONCLUSION – Severe Neurological deficit was the indication of surgery in 33% cases. Patients with mild neurological deficit were operated for indications i.e. panvertebral disease, unstable spine, failure of conservative management and long segment disease. 75% (n=33) children were operated for spinal deformity. Dorsal and dorsolumbar spine was most commonly operated segment of spine. Hartshill fixation was used for deformity correction in dorsal, dorsolumbar spine, while pedicle screw fixation for lumbar spine. All patients had significant loss of correction at final follow up.

Date: 2016-09-10
Session: Free Papers - Spine II
Time: 10:30 - 12:00
Room: Caravaggio 1-2

Abstract no.: 44514

SCHEUREMANN KYPHOSIS: COMPARISON OF TWO STAGE ANTERIOR/POSTERIOR FUSION AND POSTERIOR FUSION ONLY

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Introduction Scheuremann kyphosis deformity (SKD) can be treated with either a two stage anterior posterior fusion (APF) or a single stage posterior fusion only (PFO). Methods 62 patients with SKD: 30 patients underwent POF and 32 underwent APF. Followed for mean 2.9y consecutively between 2006-2014 from 4720 deformity procedures. The 2 groups were well matched according to average age (APF 18.84, POF 18.77), preoperative kyphosis (T4-12) APF 88.3°, POF 83.5°, flexibility index (APF 34%, POF 35%), posterior fusion levels (APF 13.25, POF 12.47) and pre-operative spinal height (APF 457.05, POF 457.14). Results operating time POF group 207.7 min vs 302min;P<0.05. no difference in residual kyphosis PFO group 42.3° versus APF (39.6°) APF returned to normal kyphosis. Correction rate POF group 45.86% versus the APF group (52.97%, p<0.05). Post-operative spinal height greater in the APF 539.66mm vs POF 517.13mm (p<0.05) and as percentage height gain 17.14% (APF) vs 12.58% (POF). There's a high incidence of radiographic proximal junctional kyphosis (PJK) 80% (POF) vs 71.9% (APF) and distal junctional kyphosis (DJK) 16.7% (POF) vs 28.1% (APF). POF revision rate was 24.3% (PJK 10%, DJK 3.3% Pseudoarthrosis 6.7%, infection 3.3%) vs APF=18.7% (Pseudoarthrosis 3.1%, infection 9.4%, hardware 6.3%). Conclusion APF achieved normal kyphosis with a better CR. The APF group resulted in greater post-operative spinal height both percentage height gained and actual. Interestingly there is a high incidence of radiographic PJK and DJK. However only PFO group required surgical revision for PJK (10%) or DJK (3.3%)

Date: 2016-09-10

Session: Free Papers - Hip Arthroplasty II

Time: 08:30 - 10:00

Room: Caravaggio 3-4

Abstract no.: 45682

PATIENT-SPECIFIC INSTRUMENTATION LEADS TO ACCURATE ACETABULAR COMPONENT PLACEMENT IN TOTAL HIP ARTHROPLASTY

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Introduction Appropriate acetabular cup orientation is an important factor in reducing instability and maximising performance of the bearing after THA. There is no consensus as to what inclination and anteversion angles should be targeted. **Methods;** One-hundred consecutive THA patients were sent for acetabular planning (Optimized Ortho, Sydney), which is a preoperative, dynamic analysis of each patient performing in functional activity. Multiple cup orientations were modelled. Unique patient specific guides were 3D printed based upon selected target orientation and used intra-operatively with a laser guided system to achieve planned alignment. All patients received post-operative CT scan; radiographic cup inclination and anteversion was measured. **Results;** Mean planned supine target for inclination and anteversion was 40.2° (32.3° to 45.4°) and 24.1° (13.0° to 29.6°) respectively. Mean post-operative supine inclination and anteversion was 41.8° (29.6° to 58.1°) and 25.1° (9.6° to 36.3°). Mean absolute deviation from planned patient-specific inclination and anteversion was 3.9° (0.0° to 13.6°) and 3.6° (0.0° to 12.9°) respectively. In 54% of cases, patient-specific target for both inclination and anteversion was achieved to within $\pm 5^\circ$. In 91% cases, patient-specific target $\pm 10^\circ$ was achieved for both inclination and anteversion. **Conclusions;** This study reports early clinical results of new technology for planning and delivering a customised, functional acetabular cup orientation with continuing development for improved accuracy. Results suggest that the Corin OPS is a simple way to achieve a patient-specific cup orientation, with accuracy comparable to imageless navigation.

Date: 2016-09-10

Session: Free Papers - Hip Arthroplasty II

Time: 08:30 - 10:00

Room: Caravaggio 3-4

Abstract no.: 43529

HIP DISLOCATION PREVENTION IN OBESE PATIENTS: DUAL MOBILITY LINER AND CONSTRAINED LINERS VERSUS PREOPERATIVE BARIATRIC SURGERY

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Obesity is recognized as an independent risk factor for post-operative hip dislocation. Bariatric surgery is an option for morbidly obese THA candidates to decrease the risk of dislocation. Double-mobility (DM) acetabular cups or constrained cups also prevent dislocation. We asked: what is the cumulative risk of dislocation in obese patients after THA as compared with non-obese patients? Does bariatric surgery decrease dislocation's risk? Are dual mobility and constrained liner efficient in obese patients? Methods: Group 1 consisted of all the 200 THA in patients operated between 1990 and 2000 defined as obese (BMI > 30 kg/m² on the day of surgery) and receiving standard implants; Group 2 consisted of 600 THA (matched with THA of Group 1) in patients operated between 1990 and 2000 and defined as non-obese (BMI < 30 kg/m on the day of surgery) and receiving standard implants; Group 3 consisted of 85 THA in patients having bariatric surgery prior THA and receiving standard implants; Group 4 consisted of obese patients who received dual mobility (85 THA) or constrained liners (130 implants). Results: With standard liners more hips in obese patients dislocated than did hips in non-obese patients (18% compared with 2% odds ratio [OR], 17.5; 95% confidence interval [CI], 2.3363-130.9100; p = 0.005). Bariatric surgery performed before THA did not decrease the risk of dislocation (20% compared with 18% p = 0.5). Hips of obese patients receiving constrained or dual mobility cup demonstrated reduction of dislocations (respectively, 2% and 1%; p < 0.001). Conclusions: Reduction of BMI with bariatric surgery resulted probably in an increased soft-tissue laxity and was associated with paradoxical increase of dislocation. Therefore, bariatric surgery did not prevent the risk of dislocation with standard liners. Dual mobility or constrained liners in these obese patients is an effective technique to

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Session: Free Papers - Hip Arthroplasty II

Time: 08:30 - 10:00

Room: Caravaggio 3-4

Abstract no.: 43922

IMPACTION BONE GRAFTING IN REVISION HIP ARTHROPLASTY FOR ASEPTIC LOOSENING: DOES STEM LENGTH REALLY MATTER?

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Introduction: The choice of stem length in total hip revision with impaction bone grafting of femur is essentially based upon the grade of cavitation of femur and surgeon's preference. The standard length stem has been often critiqued for the apprehension of peri-prosthetic fracture. Our study highlights the importance of proximal bone stock rather than distal cavitation in determining the length of femoral stem. **Methodology:** 161 total hip revisions with impaction bone grafting and cemented standard C-stem (done with standardized technique) between 1994 and 2008 at a tertiary referral center were included. Serial radiographs were retrospectively analysed using Endoklinic classification, Gruen zones, postero-medial calcar involvement, Barrack's cementing, stem alignment, fate of bone graft and complications. **Results:** Mean follow-up of the 161 revision hips was 9.11 years (range 5 - 17.3 years). 12 patients (7.45%) were re-revised, reasons being, persistent deep infection (0.62%), repeated dislocations (1.24%), cup loosening (4.35%), stem loosening (3.11%) and acetabular graft failure (0.62%). Only 2 patients (1.24%) were re-revised due to stem loosening alone. No peri-prosthetic fractures were identified. **Conclusion:** Use of standard stem length in hip revisions with impaction bone grafting doesn't increase the risk of peri-prosthetic fractures even during moderate to long term follow up period. This questions the principle of bypassing the distal cavitation of femur by 2 cortical diameters with the use of long stem. In our experience, a good postero-medial calcar support aids in the performance of standard length cemented stems in revision for aseptic loosening irrespective of grade of distal cavitation.

Date: 2016-09-10

Session: Free Papers - Hip Arthroplasty II

Time: 08:30 - 10:00

Room: Caravaggio 3-4

Abstract no.: 43588

DUAL MOBILITY CUP FOR PREVENTION OF EARLY TOTAL HIP ARTHROPLASTY DISLOCATION IN PATIENTS WITH NEUROLOGICAL DISORDERS

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Introduction: Patients with neurologic disorders are at a higher risk for hip arthroplasty dislocation. This can be attributed to hip muscle weakness, especially the abductor group. We inquired into the use of dual mobility acetabular component for the prevention of early hip dislocation in these patients. Methods: Thirty patients with documented neurological disorders and muscle weakness affecting the operated side underwent dual mobility total hip arthroplasty in the period between December 2012 and January 2014. The neurological disorders were cerebrovascular stroke, weakness due to brain tumors, Parkinsonism, old poliomyelitis, and multiple sclerosis. Twelve cases underwent primary dual mobility cup total hip arthroplasty as a treatment for proximal femoral fractures. Eighteen patients were revision to dual mobility total hip arthroplasty either due to failure of proximal femoral fracture fixation or failure of previous arthroplasty. All patients were ambulant before the primary incident. All patients were operated upon through the lateral approach. All the cups used were cemented. Results: The mean age group of the patients was 64.6 yearsold. No definite postoperative infection occurred. The mean follow-up period was 13.2 months. One case died 6 months postoperative due to another cerebrovascular stroke. Functionally, all our patients could ambulate postoperatively. No dislocation was recorded during the follow-up period. Conclusion: The dual mobility cup is effective in the prevention of early dislocation in patients with muscle weakness due to neurological disorders. Long-term follow-up is needed for the assessment of late dislocation, as well as the rate of loosening in this group of patients.

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Session: Free Papers - Hip Arthroplasty II

Time: 08:30 - 10:00

Room: Caravaggio 3-4

Abstract no.: 44183

TOTAL HIP ARTHROPLASTY WITH TRIPODAL DUAL MOBILITY SOCKET TO PREVENT DISLOCATION A PROSPECTIVE FOLLOW-UP OF 303 HIPS

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Introduction: For difficult primary cases and revision surgery, we usually use a tripodal fixation with Dual Mobility socket. The aim of our prospective study was to evaluate survival and dislocation rates of the Dual Mobility tripodal cup. Methods: It was prospective continuous study from 2010 to 2013, on 303 hips using a Dual Mobility Novae® tripodal socket (SERF). Mean follow-up was 38 months. The indications were: 110 primary surgery for arthrosis, 68 THA for neck fractures and 125 revision surgery. Patients were clinically evaluated and radiologically evaluated searching for osteolytic lesions and implant positioning. Results: 24 patients died during follow up, all were in the neck fracture subgroup. Pre-operative mean PMA scores was 10.8. The last follow up PMA was 17.2. Mean Devane score stayed around 3. No thigh pain was noted. On the subgroups of primary and revision surgery no dislocation occurred. 4 dislocations occurs in the neck fracture subgroup. In the third groups 5 patients were revised for a deep infection, 4 for a periprosthetic fracture, one for an aseptic loosening. Discussion: Dual Mobility socket global survival rate is comparable to similar cemented or uncemented series. The very low dislocation rate demonstrates the success of Dual Mobility concerning implant stability and thus whatever the indication of the arthroplasty. The dual mobility cup fixation, was improved by the use of macrostructures and titanium-HA coating. The tripodal fixation provides a good primary fixation and the possibility to graft the roof or the backside if necessary.

Date: 2016-09-10

Session: Free Papers - Hip Arthroplasty II

Time: 08:30 - 10:00

Room: Caravaggio 3-4

Abstract no.: 43065

SURVIVAL OF A SECOND-GENERATION DUAL MOBILITY CUP AFTER 14 YEARS: PROSPECTIVE STUDY OF 490 IMPLANTS

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Introduction: Although dual mobility cups were initially used only in elderly and high-risk patients, they have become more widely used in France and also throughout Europe. Objective: The purpose was to show that a second-generation dual mobility cup has survival characteristics that are equal to that of standard cups. Methods: It was a prospective, continuous study of patients operated between October 2000 and December 2002. The implanted stainless steel dual mobility cup was coated with hydroxyapatite. The liner was made of standard PE. A cementless femoral stem with collar was used in all patients. 490 arthroplasty procedures were performed in 472 patients (average age 70 years; 60% women). All patients were evaluated clinically and radiologically. Statistical analysis were performed by Kaplan-Meier method Survivalship rate. Patients were reviewed again between October 2012 and May 2015. Results: 177 patients had died (36.1%) and 39 were lost to FU (7.9%). Four cups had been revised due to aseptic loosening. The survival rate for any type of revision to the femoral or acetabular components was 97.1% at 14.3 years, for cup-related revision was 98.6%. No dislocations were observed. Osteolysis was present at the calcar in 9 cases (4.7%), proximal femur in 1 case (0.52%), acetabular scalloping in 6 cases (3.1%), acetabular rim in 1 case (0.52%) and both the femur and acetabulum in 6 cases (3.1%). Conclusion: Survival of our series is better than that reported for cementless ceramic-PE cups in European arthroplasty registers and equivalent to that of hard-hard bearings.

Date: 2016-09-10

Session: Free Papers - Hip Arthroplasty II

Time: 08:30 - 10:00

Room: Caravaggio 3-4

Abstract no.: 42868

OUTCOMES OF CERAMIC BEARINGS AFTER REVISION THA IN THE MEDICARE POPULATION

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Introduction: The purpose of this study was to analyze the utilization and outcomes of ceramic bearings used in revision total hip arthroplasty (R-THA) in the Medicare population. Methods: A total of 31,809 Medicare patients older than 65 years at time of revision surgery who underwent R-THA between 2005 and 2013 were identified. Outcomes of interest included relative risk of readmission (90 days) or infection, dislocation, rerevision, or mortality at any time point after revision. Propensity scores were developed to adjust for selection bias in the choice of bearing type at revision surgery. Results: The utilization of C-PE and COC bearings in RHA increased from 5.3% to 26.6% and from 1.8% to 2.5% in between 2005 and 2013, respectively. For R-THA patients treated with C-PE bearings, there was reduced risk of 90-day readmission (Hazard Ratio, HR: 0.90, p=0.007). We also observed a trend for reduced risk of infection with C-PE (HR: 0.88) that did not reach statistical significance (p = 0.14). For R-THA patients treated with COC, there was reduced risk of dislocation (Hazard Ratio, HR: 0.76, p=0.04). There was no significant difference in risk of rerevision or mortality for either the C-PE or COC bearing cohorts when compared with M-PE. Discussion: Medicare patients treated in a revision scenario with ceramic bearings exhibit similar risk of rerevision, infection, or mortality as those treated with M-PE bearings. Conversely, we found an association between the use of specific ceramic bearings in R-THA and reduced risk of readmission (C-PE) and dislocation (COC).

Date: 2016-09-10

Session: Free Papers - Hip Arthroplasty II

Time: 08:30 - 10:00

Room: Caravaggio 3-4

Abstract no.: 43216

SYMPTOMATIC IMPAIRED FIXATION IN HIGH OFFSET FEMORAL STEMS: INCIDENCE AND RISK FACTORS

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Introduction: We observed a higher rate of hip pain with radiologic abnormalities in lateralised femoral stems. The objectives of our study were to identify the risk factors associated with symptomatic femoral impaired fixation. Material and methods: All primary total hip arthroplasties (THA) using a lateralized stem were retrospectively included between 2006 and 2012 (Corail High Offset). Demographic parameters were collected. The bone fixation and stability of the implants were assessed (Engh-Massin and ARA score). Offset values were determined. Survival was estimated using the Kaplan-Meier method for the “symptomatic femoral impaired fixation” event and for surgical revision for aseptic loosening. Results: 212 THA (mean age 67.6 years \pm 12.6 (20–95)) were included (Mean follow-up 5.3 years \pm 2(0.3-12.4)). 15 patients (17 THA, 8%) presented the studied event (“pathological group”) vs. 183 patients (195 THA, 92%) (“control group”). Revision rate for aseptic loosening was significantly higher in the pathological group (7 cases, 41% vs. 0)($p < 0.001$). PMA score was significantly lower in the pathological group (16,6 \pm 1.5) vs.(17,6 \pm 1.6) ($p < 0.01$). Both Engh&Massin and ARA scores were significantly lower in pathologic group (-1.2 \pm 11.5 vs. 22.3 \pm 4.8 and -2.0 \pm 4 vs 5.6 \pm 0.82). No association between the change of femoral offset and the onset of the event was shown. Age $>$ 70 was a protective factor (HR=0.74 95%IC [0.62-0.87]) ($p < 0.002$) and so was the increased size of the stem (HR=0.62 95%IC [0.42-0.92]) ($p < 0.012$) for the studied event. Discussion :Lateralized stems showed a high rate of symptomatic impaired fixation. Age $<$ 70 and the small size of the stem were identified as risk factors.

Date: 2016-09-10

Session: Free Papers - Hip Arthroplasty II

Time: 08:30 - 10:00

Room: Caravaggio 3-4

Abstract no.: 44145

**NOISE AFTER CERAMIC- ON- CERAMIC TOTAL HIP ARTHROPLASTY:
DOES COMPUTER NAVIGATION HELP REDUCE THE INCIDENCE?**

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Background: Noises like squeaks and clicks have a reported incidence from <1% to over 20% after ceramic- on- ceramic (CoC) total hip arthroplasty (THA). Computer navigation can help control factors like cup orientation, global anteversion, centre of rotation, limb lengths, and femoral offset which may reduce the incidence of hip noise after CoC THA. Thus, we aimed to compare the incidence of hip noise between navigated and conventional CoC THA. Materials and methods: In this prospective study, hip noise and its likely causative factors were compared between 202 hips in the navigated group and 128 hips in the conventional group that underwent uncemented CoC THA with a minimum follow up of one year. Results: Incidence of any hip noise was significantly greater in conventional group (28/128 hips, 21.9%) as compared to navigated group (13/202 hips, 6.4%; $p < 0.0001$). Squeaking specifically, was also significantly greater in the conventional group as compared to navigated group (14/128 hips, 10.9% vs. 8/202 hips, 4%; $p = 0.02$). The mean (\pm standard deviation) cup inclination was $42.2^\circ \pm 7.3^\circ$ and $39.4^\circ \pm 4.8^\circ$, cup anteversion was $15.7^\circ \pm 5.1^\circ$ and $19.8^\circ \pm 7.9^\circ$, hip offset was $87.9^\circ \pm 9.9^\circ$ and $83^\circ \pm 7.3^\circ$, and femoral offset was $52.1^\circ \pm 8.3^\circ$ and $48.5^\circ \pm 6.2^\circ$ in the conventional and navigated groups respectively; these differences were statistically significant ($p \leq 0.0001$). Odds ratios for squeak and any noise in the conventional vs. navigated groups were 3 ($p = 0.02$) and 4.1 ($p = 0.0001$) respectively. Conclusion: Navigated CoC THAs are 3 times less likely to squeak and 4 times less likely to have any hip noise as compared to conventional CoC THAs.

Date: 2016-09-10

Session: Free Papers - Hip Arthroplasty II

Time: 08:30 - 10:00

Room: Caravaggio 3-4

Abstract no.: 43329

**MID-TERM RESULTS OF A CONSECUTIVE SERIES OF 153 BIOLOX®
DELTA CERAMIC-ON-CERAMIC TOTAL HIP ARTHROPLASTY**

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Henri FESSY

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Composite alumina-on-alumina (Ceramtac BioloX® Delta) bearings is an option in total hip arthroplasty (THA) in young and active patient since 2004. The purpose of this retrospective study is to report the mid-term results of a series of 160 consecutive delta ceramic THA performed from September 2006 to December 2008 for OA (82%) and ON (9%) using a postero lateral approach. The mean age of the patients at surgery was 57 years (range, 19 – 76). Noncemented components (Depuy™ Corail/Pinnacle®) were used with a 36-mm composite alumina bearing for 144 patients, 16 patients had a 32-mm head. Two patients died of unrelated cause and 5 were lost to follow up. At an average of 74 month follow up (51 – 98) 153 patient were evaluated. The mean Oxford Hip score was 12.9 (range, 12 - 19). No osteolysis was observed. Nine hips had been revised (3 for femoral loosening, 3 for instability, 2 for infection, one insert fracture). The insert fracture occurred 7 months after the surgery in a 30 years old patient who presented pain after a car accident, the diagnosis being made ten days later on standard X rays. There was no per operative fracture and no femoral head fracture. Two patients reported a squeaking occurring every day, twelve patient reported it once a month. There was no correlation with patient or implant related factors, all noise generating occurred in 36-mm bearings. With revision as the end point, the rate of survival was 94.5% at 7.9 years.

Date: 2016-09-10

Session: Free Papers - Hip Arthroplasty III

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 43833

TOTAL HIP ARTHROPLASTY IN SICKLE CELL ANEMIA

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The Sickle Cell Disease (SCD) is an autosomal recessive genetic condition resulting from defects in the hemoglobin. The incidence of avascular osteonecrosis of the femoral head in these patients varies between 3% and 50%. Total Hip Arthroplasty (THA) is the treatment of choice for articular collapse, found in the late stages of osteonecrosis. The purpose of this study was to evaluate the clinical and radiographic outcomes of THA in sickle cell patients. We assessed the implant survivorship, complication rates and the functional Harris hip score. We performed a longitudinal, prospective, descriptive study. We performed 41 hips in 31 patients. The mean follow-up was of 9.6 years. Fifteen (48.3%) were male and the average age of 34.5 years (18-55 years). Regarding the type of implant, uncemented was used in 87.9% of THA, 7.3%, hybrid and 4.8%, cemented total. The mean score of Functional Harris was 29.01 preoperatively and 93.09 postoperatively. The overall rate of reoperation was 17.9%, and periprosthetic infection was the most common reason (10.2%). Revision for aseptic loosening was performed in two hips (4.8%) and one (2.4%) patient required septic review. The overall survival of implants in nine years was 92.8%. Our results were similar to those found in recent studies, especially in the rate of reoperation for periprosthetic infection. Although the clinical and surgical management has improved, there are still few studies on this topic. Although complications are more frequent, these results confirm the good prognosis and survival of THA in these patients.

Date: 2016-09-10

Session: Free Papers - Hip Arthroplasty III

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 45311

SMOKING IS ASSOCIATED WITH WORSE PATIENT-REPORTED OUTCOMES AFTER TOTAL HIP REPLACEMENT

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Introduction: Smoking is a well-established risk factor for adverse effects following most surgical interventions including total hip replacement (THR). The effect of smoking on pain reduction and functional improvement after THR has less documentation. In 2013, the Swedish Hip Arthroplasty Register introduced a smoking status question in the pre-operative routine PROMs program intentionally presented to all elective patients having THR in Sweden. The objective of this study was to investigate the relationship between smoking and patient-reported outcomes after one year. **Methods:** We obtained preoperative and one-year postoperative from the Swedish Hip Arthroplasty Register on patients with osteoarthritis operated with THR in 2013. Apart from a question on preoperative smoking status, the routine follow-up program includes the EQ-5D, a visual analogue scale (VAS) on hip pain, and a VAS addressing satisfaction with the outcome. **Results:** During 2013, 9855 patients with osteoarthritis were electively operated with THR in Sweden. 90% (n=8947) and 87% (n=7786) responded to the pre- and one-year postoperative PROMs questionnaire, respectively. 6.4% reported they were smokers before the operation, 161 did not respond to this question. Multivariable regression analyses showed that smokers had less improvement in EQ-5D index (B=-0.05, p<0.001) and less pain reduction (B=2.41, p=0.002) compared to those who reported they were not smoking. **Conclusions:** Smoking is a significant risk factor for worse patient-reported outcomes. These findings suggest that smoking status should be addressed when considering an individuals' capacity to benefit from THR. It is yet to be determined if perioperative smoking cessation improves patient-reported outcomes.

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Session: Free Papers - Hip Arthroplasty III

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Room: Caravaggio 3-4

Abstract no.: 43321

LONG-TERM CLINICAL AND RADIOGRAPHIC OUTCOMES OF A TITANIUM PROXIMALLY POROUS-COATED TAPERED STEM IN PRIMARY HIP ARTHROPLASTY. A MINIMUM OF 15-YEAR FOLLOW-UP

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Introduction: The Synergy femoral component was introduced in 1996 as a second generation titanium proximally porous-coated tapered stem. The purpose of this study was to evaluate the clinical and radiographic outcomes for this femoral stem with a minimum 15-year follow-up. **Methods:** We retrospectively reviewed 102 consecutive patients (112 hips) who underwent primary THA with the Synergy femoral component between November 1996 and October 1998. Seventeen patients were lost at follow-up leaving 85 patients (94 hips) for the analysis. Clinical results were assessed using validate tools (SF12, WOMAC and HHS). Thigh pain frequency and intensity were also recorded. The mean follow-up was 16.3 years (15-17 years). **Results:** All clinical evaluation tools showed a statistically significant improvement compared to the preoperative scores. We observed a not constant thigh pain in 5 hips. Nine stems were revised due to polyethylene wear (3 cases), late periprosthetic fracture (2 cases), infection (2 cases), subsidence (1 case) and instability (1 case). Stem related revision was a case of subsidence, related to occult intraoperative calcar crack and early revised (within 1 year); cumulative stem-related survival rate at 15 years was 99%. Radiolucent lines were uncommon, non progressive, less than 2 mm, in Gruen zones 2 and 6. Severe stress-shielding was present as cortical reaction in 6 femurs. Fifteen cases of HO were observed. **Conclusions:** The Synergy stem demonstrated excellent clinical and radiographic long term results with a 99% survivorship with stem revision as end point was at 15 years.

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Abstract no.: 44067

SAGITTAL ALIGNMENT OF SHORT-TAPERED COMPARED TO STANDARD TAPERED FEMORAL STEM

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Introduction: The use of short-tapered femoral stems in total hip arthroplasty is increasing. However, few data have been published regarding the risk of sagittal mal-alignment of these stems. Our hypothesis was that a short-tapered stem is more prone to sagittal mal-positioning than a standard tapered femoral stems. A secondary aim was to assess the cause of this malalignment. Methods: We retrospectively reviewed the immediate post-operative radiographs of 190 hips (95 on each group) that underwent a total hip arthroplasty by a single surgeon through a direct lateral approach. A standard tapered femoral stem (Corial, Depuy Synthes) or short-tapered stem (Tri-Lock BPS, Depuy Synthes) was inserted on either group. The femoral stem position was assessed in the sagittal view using the computer-assisted EBRA-FCA (EinzelBildRontgenAnalyse-Femoral Component Analysis) method. All radiographic measurements were performed twice with a time interval of at least 3 weeks by a single independent observer who was not involved in the management of these cases. Results: There was a significant difference between the two stems in the sagittal stem orientation ($p=0.01$). The short stem was significantly more prone to sagittal mal-alignment. This possibly was due to the loss of guiding effect of the femoral shaft when using a short stem. Conclusion: Our results illustrate that a neutral stem tip position in THA is significantly more difficult to obtain with a short tapered stem, when compared to a long standard tapered stem. Further studies are required to assess any effect on the functional outcomes and survival of these stems.

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Session: Free Papers - Hip Arthroplasty III

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 45350

HIP ARTHROPLASTY IN CHILDREN WITH STAGE III COXARTHROSIS

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The group of children with deforming coxarthrosis stage III was selected, in which the function of the lower limb was restored by means of total hip arthroplasty. The Research Pediatric Orthopedic Institute named after G.I.Turner performed 234 operations of total hip arthroplasty in 213 patients aged 14 to 18 with deforming coxarthrosis of various nature. In 231 cases, the implanted prosthesis was of prof. Tsvaymyuller's design with cementless fixation of components. In 3 cases a hybrid method of fixation was used: a cement cup and a cementless leg. As a friction pair a plastic liner and a head made of metal, ceramic or OXINIUM, were used. All our patients are monitored by means of our mandatory inspection including X-ray inspection 3 months after the surgery, and then at least once a year. Monitoring of patients is carried out for up to 7 years. In 227 cases (97%) good results of treatment were obtained. In 7 patients (3%) complications in the form of neurological disorders were registered which arose in the early postoperative period. Long observation periods and no complications in the long-term perspective suggest that total hip replacement is adequate and modern treatment for adolescents with stage III coxarthrosis, and allows during 3 - 6 months to rid the child of pain, physical and social limitations.

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Session: Free Papers - Hip Arthroplasty III

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 43348

VITAMIN E STABILISED POLYETHYLENES FOR TOTAL KNEE ARTHROPLASTY EVALUATED UNDER HIGHLY DEMANDING DAILY ACTIVITIES IN VITRO

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Introduction: To analyse optimised polyethylenes for total knee arthroplasty (TKA) in vitro today is difficult, due to the fact that ISO 14243 wear testing creates only abrasive-adhesive wear due to level walking test conditions and does not reflect "delamination" as an essential clinical failure mode [1-4]. The objective was to use a highly demanding daily activities (HDA) wear simulation to evaluate the delamination risk of polyethylene materials for TKA. Methods and Materials: A TKA fixed design (Columbus®CR) with artificially aged (70°C, pure oxygen, 14 days) polyethylene gliding surfaces blended with and without 0.1% vitamin E was used. Oxidation index measurements were performed by FTIR and the oxidation index was calculated for three different polyethylene materials. Daily patient activities measured in vivo [5], were applied for 5 million wear cycles in a combination of 80% stairs up and down, 10% level walking, 8% chair raising and 2% squatting to 100° flexion [6]. Gravimetric wear of the gliding surfaces and abrasive-adhesive and subsurface delamination wear modes were analysed. Results: Combining artificial ageing and HDA knee wear simulation leads to visible signs of delamination in the standard polyethylene inserts. Delamination began after 2 million test cycles, but did not occur in the Vitamin E stabilised gliding surfaces. The total amount of gliding surface wear was 28.7±1.9 mg for the vitamin E stabilised polyethylene, compared to 355.9±119.8 mg for the standard material. References: 1 Walker 2000 2 Grupp 2009 3 Burnett 2007 4 Battaglia 2014 5 Bergmann 2014 6 Schwiesau 2014

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Session: Free Papers - Hip Arthroplasty III

Time: 10:30 - 12:00

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Abstract no.: 46032

BILATERAL TOTAL HIP ARTHROPLASTY IN FEMORAL HEAD AVASCULAR NECROSIS: FUNCTIONAL OUTCOMES AND COMPLICATIONS

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³Bone, Joint and related tissues research center, Akhtar hospital, Shahid Beheshti University of medical sciences, Tehran (IRAN)

Introduction: Total hip arthroplasty (THA) is one of the successful and cost-benefit surgical treatments. One-stage bilateral THA (BTHA) offers many benefits. However, there are concerns about the safety of the procedure and higher complications. We aimed to evaluate the complications and outcomes of one-stage BTHA with Hardinge approach for femoral head avascular necrosis patients. **Methods:** A total of 60 patients from April 2009 and May 2013, were underwent one-stage bilateral total hip arthroplasty (BTHA) in Milad and Erfan hospitals, Tehran, Iran. A prospective analysis of the functional outcomes and complications of one-stage BTHA through Hardinge approach in patients with femoral head avascular necrosis (AVN) performed. We evaluated all patients clinically and radiologically with serial follow-ups. A clinical hip score based upon the modified Harris Hip Score (MHHS) was performed preoperatively and again postoperatively. **Results:** During period of study 44 men (73.3%) and 16 women (26.6%) with a mean age of 31.40±4.08 years (range 25 to 36 years) at the time of presentation were entered. The mean surgical time was 2.6±0.38 hrs. The mean hospital stay was 3.50±0.72 days. Hemoglobin level decreased significantly after operation (P= 0.046). There was no reported patient with perioperative death, deep venous thrombosis, pulmonary embolism, infection, dislocation, periprosthetic fracture or heterotrophic ossification. The mean preoperative MHHS score was 47.93±7.33 in patients. MHHS score improved to 95.06±3.47 in the last follow-up (P=0.0001). **Conclusion:** Our results recommend the use of one-stage BTHA through Hardinge approach in femoral head avascular necrosis patients. **Keywords:** One stage bilateral total hip arthroplasty, clinical outcome, complication, avascular necrosis

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Abstract no.: 44952

QUALITY OF LIFE FOLLOWING TOTAL HIP ARTHROPLASTY IN PATIENTS IN NORTH INDIA WITH ACETABULAR FRACTURES, PREVIOUSLY MANAGED BY OPEN REDUCTION AND INTERNAL FIXATION-OUR EXPERIENCE AT A TERTIARY CARE HOSPITAL

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Acetabulum fractures managed either conservatively or operatively by fixation tend to present later with secondary joint changes that often require Total Hip Replacement (THR). This retrospective study includes patients who underwent THR during past 6 years, for sequelae of acetabulum fractures that were primarily managed by open reduction and fixation. A total of 32 patients with mean age of 46.08 years formed the cohort and were evaluated for quality of life using scoring techniques of short musculoskeletal functional assessment and SF-12. Functional outcome was assessed using Standard Harris Hip score. The mean Harris Hip score of the patients was 84.3 and the Short musculoskeletal functional assessment score (SMFA) 13.3. The SF 12 score averaged 49.1. The correlation of the Harris Hip score with SF 12 gave a positive result with a p value of .001 while with SMFA there is a negative correlation, and is also statistically significant. Henceforth, it is inferred that the functional outcome of total hip replacement in patients who had acetabulum fractures and were initially managed by open reduction and fixation is good. The quality of life in such patients is good and both these outcomes are correlated. Patients with good functional outcome, should also have a good quality of life.

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Room: Caravaggio 3-4

Abstract no.: 44112

THE ROLE OF PREOPERATIVE ASYMPTOMATIC BACTERIURIA IN THE DEVELOPMENT OF PERIPROSTHETIC JOINT INFECTION OF THE HIP

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Aim: Despite of all the important improvements emerged in recent years, periprosthetic joint infection (PJI) still remains one of the most challenging complications in joint arthroplasty. Preoperative screening for active infection is considered to be important, however the role of asymptomatic bacteriuria in the development of PJI is controversial. Our aim was to investigate any existing correlation between PJI and asymptomatic bacteriuria. **Material and methods:** A retrospective, monocentric study was conducted at our Clinic. The charts of 990 patients operated with total hip arthroplasty between 2011 and 2012 were reviewed. Occurrent preoperative asymptomatic bacteriuria, the causing bacteria, the treatment and its outcome were recorded. Any existing correlation between PJI and the above data were investigated. **Results:** Of our patients 236 had asymptomatic bacteriuria, which was treated successfully in 200 cases, leaving 36 patients having total hip arthroplasty with urinary tract infection. Fifteen patients developed PJI, 5 of them with unsuccessfully treated urinary tract infection, in the remaining 10 patients the asymptomatic bacteriuria was treated successfully. Abortively treated asymptomatic bacteriuria proved to be an independent risk factor for PJI (odds ratio: 3.22, 95% CI 0,9814 - 9,5695) There was no correspondence between the bacteria found in the urinary tract and those causing PJI. **Conclusions:** Based on our results, asymptomatic bacteriuria proved to be an independent risk factor in the development of PJI. Its role is still controversial, since correspondence between the bacteria causing UTI and PJI could not be observed.

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Session: Free Papers - Hip Arthroplasty III

Time: 10:30 - 12:00

Room: Caravaggio 3-4

Abstract no.: 45137

INFLUENCE OF THE PASSIVE SMOKING ON THE DEVELOPMENT OF LEGG-CALVE-PERTHES: META-ANALYSIS

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Introduction: Legg-Calve-Perthes disease is defined as an ischemic or avascular necrosis of the femoral head in children can occur from 2 to 16 years. Possible etiological causes is an obstructive phenomenon caused by smoking justify infarction or arterial venous drainage of abnormal vascular pathology. This is a hot topic among researchers in order to prove the veracity of the influence of passive smoking in the development of Legg-Calve-Perthes. Methods: To identify relevant studies, search in the databases, BIREME, Google Scholar, EMBASE and PUBMED analyzing the relationship between passive smoking and Legg-Calve-Perthes disease. A systematic review of the literature with meta-analysis of case-control studies that evaluated the association between passive smoking and Legg-Calve-Perthes disease. The odds ratio (OR) was used as outcome variable in the analysis of results, and also the primary studies using this variable. Results: We identified 10 potentially relevant articles in the search and review of the literature of these, five did not fit the inclusion criteria and were discarded, leaving five suitable studies, all in English, for final evaluation with a total of 5818 patients. The pooled OR was 2.35 with 95% CI ranging from 1.446 to 3.802 and $p = 0.0001$. Was also tested heterogeneity using the same method, $p = 0.25$ for the test Conchran-Q and $I^2 = 83.4\%$. Conclusion: The present study indicates that there is a statistically significant correlation between passive smoking and disease Leeg-Calve-Perthes disease.

Date: 2016-09-10

Session: Free Papers - Trauma Upper Extremity - Miscellaneous

Time: 08:30 - 10:00

Room: Caravaggio 5-6

Abstract no.: 44065

**FUNCTIONAL OUTCOME OF ELBOW FOLLOWING EXCISION OF
COMMUNUTED CAPITELLAR FRACTURES.**

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Controversy exists regarding the optimal treatment of isolated fractures of the capitellum that are not amenable to open reduction and internal fixation. Limited clinical or laboratory evidence exists regarding outcomes of capitellum excision. The purpose of this study was to determine mid-term functional outcomes, instability, elbow range of motion for patients treated with capitellum excision. A retrospective review was performed to identify patients with an isolated capitellum fracture, who underwent excision as a definitive form of treatment at our institution. Mechanism of injury, type of capitellum fracture and postoperative outcomes including final elbow range of motion (ROM), Varus- Valgus instability, Antero-Posterior instability and functional outcomes with DASH score and MAYO Elbow score were recorded. 11(4 males, 7 females) patients met the criteria of this study. The average age of 58.27 years (range 34-69). The average clinical follow-up was 4.6 years (range 3-8). Final examination demonstrated mean elbow extension of 7° (range 0–10), mean elbow flexion 129° (range 120-140). All patients had full forearm rotation, and there was no clinical evidence of elbow instability. The mean MAYO elbow score was 81.33 (range 65-100) and mean DASH score was 15.8 (12.5–24.2) at final follow-up. Excision of the capitellum is a safe and reliable procedure with good functional outcomes, results in no significant instability, acceptable elbow range of motion in patients with capitellum fractures that are not amenable to open reduction and stable internal fixation.

Date: 2016-09-10

Session: Free Papers - Trauma Upper Extremity - Miscellaneous

Time: 08:30 - 10:00

Room: Caravaggio 5-6

Abstract no.: 44004

DUAL LOCKING PLATE OVER PROXIMAL HUMERUS FRACTURES WITH SEVERE METAPHYSEAL COMMUNITION

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Severely comminuted proximal humerus fracture has been challenge for many orthopaedic surgeons. The purpose of this study is to evaluate radiological results, clinical results, and complication rates of dual plate fixation for severely comminuted fracture of proximal humerus. 21 patients with severely comminuted meta-diaphyseal proximal humerus fractures (AO 11-A3.3 & 11-B1.2) with loss of posteromedial buttress were enrolled. Fractures were treated with dual plate technique with Proximal Humeral Plate and VA-LCP for distal radius. Clinical outcomes were evaluated via Constant score, the UCLA rating scale. Radiographic results were analyzed based on the duration of union, neck shaft angle on the anteroposterior using Paavolainen method. Anterior-posterior angulation was measured on axial view 3D-CT images in preoperative state. Average Postoperative UCLA scale and constant score was 23 points and 90.4 points respectively. Degree of anatomic reduction measured by Paavolainen method was good in 17 patients (80.95%), fair in 3 patients (14.28%), poor in 1 patient (4.77%). Average preoperative AP angulation was 12.4 degrees which was corrected to 3.7 at final follow up. Mean bone union time was 11.8 weeks and union rate was 95%. 1 case of impingement, 1 case of frozen shoulder, 1 case of screw pull-out, and 1 case of avascular necrosis were note. Dual locking plate technique provides stable fixation and satisfactory clinical and radiological results while preventing complications for severely comminuted fracture of the proximal humerus in relatively young patient with well preserved rotator cuff.

Date: 2016-09-10

Session: Free Papers - Trauma Upper Extremity - Miscellaneous

Time: 08:30 - 10:00

Room: Caravaggio 5-6

Abstract no.: 43841

ANTEROMEDIAL CORONOID PROCESS FIXATION USING A FIGURE-EIGHT SUTURE PATTERN WITH KIRSCHNER WIRES

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Introduction: Sufficient fixation of an anterior or anteromedial facet fracture of the coronoid process in fracture-dislocation of elbow is important to maintain joint stability. The purpose of this study was to report our experience with 11 patients who were managed with an original fixation technique using a "figure-eight" suture pattern. Methods: Eleven cases with a fracture of the anterior or anteromedial facet of the coronoid process were treated by coronoid fixation using a figure-eight suture pattern. For cases with comminuted fractures, to prevent a suture from sliding into the fracture line, a 3- or 4-hole phalanx plate was enclosed in the suture loop to compress multiple fragments. Accompanying injuries, such as a radial head fracture or olecranon fracture, were fixed with repair of lateral collateral ligament injuries. Results: On final evaluations at an average of 18 months after injury, all fractures were united with an average postoperative score according to the Mayo Elbow Performance Index of 91 points. All patients achieved satisfactory scores (seven excellent, four good). All 11 fractures were united at final follow-up with no joint incongruity, dislocation, or subluxation of the injured elbow. Conclusions: The figure-eight suture pattern technique is an easy and effective technique to fix anterior or anteromedial facet fractures of the coronoid process.

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Session: Free Papers - Trauma Upper Extremity - Miscellaneous

Time: 08:30 - 10:00

Room: Caravaggio 5-6

Abstract no.: 43185

COMPLICATION FOLLOWING SURGICAL TREATMENT OF PROXIMAL HUMERUS FRACTURE FIXATION THREE YEARS FOLLOW-UP

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This study evaluates the medium term complications of three different types of fixation in correlation with the age of the patients, the mechanism of injury, the fracture type and the fixation method. Methods: Between January 2012 and December 2014, twenty men and twenty-five women with mean age 50.38 ± 13.31 years developed complications following surgical treatment for displaced proximal humeral fracture. The mean follow-up was 24 months (18-36 months). There were 21 patients treated with percutaneous K-wire fixation (46.7%), 18 patients had fixation with PHILOS plate (40%) and 6 patients had fixation using T-plate (13.3%). Results: Three patients acquired avascular necrosis (6.7%). Non-union developed in twelve cases (26.7%) and malunion was observed in thirteen cases (28.8%). Implant failure occurred in ten patients (22.2%). Heterotopic ossification developed in three cases (6.7%). Three patients had deep wound infection (6.7%) and there was one patient who sustained axillary nerve palsy (2.22%). The overall frozen shoulder incidence was (6.7%). The mean Constant-Murley score for k-wires group was 66.81 ± 12.52 , for Philos plate group was 78.0 ± 9.76 and T-plate group was 52.83 ± 14.96 . Overall good results were encountered in 14 patients (31%), satisfactory results in 11 patients (24.4%), adequate results in 14 patients (31.1%), poor results in six patients (13.3%). Conclusion: The T-plate group was associated with the worst functional results followed by the K-wire group while the PHILOS group had the least complications. There was statistically significant relation between method of fixation and final outcome score ($p = 0.001$).

Date: 2016-09-10

Session: Free Papers - Trauma Upper Extremity - Miscellaneous

Time: 08:30 - 10:00

Room: Caravaggio 5-6

Abstract no.: 43059

NON-OPERATIVE MANAGEMENT OF UNRECONSTRUCTIBLE DISTAL HUMERUS FRACTURES IN THE ELDERLY

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Comminuted distal humerus fractures in the elderly have traditionally been managed by ORIF or total elbow arthroplasty (TEA). Surgical management poses a treatment dilemma in elderly patients where anaesthetic and surgical risks combine with poor bone and wound healing. We aimed to assess the functional outcomes in patients managed non-operatively, with TEA being used as the salvage procedure. A retrospective analysis of patients aged over 65 years presenting to our unit from 2005-2015 with isolated, comminuted distal humeral fractures was undertaken. 67 patients were identified, 7 had immediate TEA, 41 had died and 5 were lost to follow up leaving 14 available for review. Mean Follow up was 55 months (range17-131) Patient functional outcomes were measured using VAS scores for pain at rest and during activity, and the Oxford Elbow Score (OES). Need for conversion to TEA and complications were also recorded. The mean age at injury was 76 years (range65-90) of which 79%(11/14) were females. The mean score on the OES was 46 (range29 – 48). The mean VAS score at rest was 0.4(range0-6) and the mean VAS score during activity was 1.3(range 0-9). 93%(13/14) of patients reported no pain (0 out of 10 on the numeric scale for pain) in their injured elbow at rest and 79%(11/14) reported no pain during activity. No patients converted to TEA and there were no complications. Non-operative management of comminuted distal humerus fractures should be considered for elderly patients, avoiding surgical risks whilst giving satisfactory functional outcomes in this low demand group.

Date: 2016-09-10

Session: Free Papers - Trauma Upper Extremity - Miscellaneous

Time: 08:30 - 10:00

Room: Caravaggio 5-6

Abstract no.: 42754

MANAGEMENT OF DISPLACED DIAPHYSEAL FRACTURES OF HUMERUS BY INTRAMEDULLARY INTERTERLOCKING (IMIL) AND LCDCP- A COMPARATIVE STUDY

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OBJECTIVE: The best method of treatment for displaced diaphyseal fractures of humerus is still a controversy. To study the difference in the functional outcome following treatment of fractures shaft of humerus with closed reduction internal fixation with IMIL nail & open reduction with limited contact dynamic compression plate (LC-DCP). To study the difference in the duration of union & complications of fractures treated with IMIL & LC-DCP. **METHODS:** It is a prospective randomised comparative study which was carried out from June 2015 to January 2016 in Bapuji Hospital and Chigateri General Hospital attached to J.J.M. Medical College, Davangere. In this study period 20 cases of fracture shaft of the humerus were treated by ORIF using LC-DCP & CRIF using IMIL Nail (10 cases in each group). **RESULTS:** The results were evaluated on the basis of fracture union, range of movements & subjective complaints according to ROMMENS et al SERIES GRADING. The mean time of union for the humerus fixed with IMIL nail was found to be 14.16 weeks (range 8-21 weeks) in comparison to 16.27 weeks (range 10-26 weeks) for the LC-DCP group. (P=0.63, unpaired t test). **CONCLUSION:** IMIL group has functionally better outcome [8(80%) patients had excellent results, 1(20%) patients had good results] as compared to LC-DCP group [7(70%) patients had excellent results, 3(30%) patients had good results]. IMIL is an effective treatment option for fractures shaft of humerus, with a small operative scar, less chances of radial nerve damage, Infections, reduced periosteal stripping & preservation of Fracture hematoma.

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Session: Free Papers - Trauma Upper Extremity - Miscellaneous

Time: 08:30 - 10:00

Room: Caravaggio 5-6

Abstract no.: 43368

PHOSPHATE BETA-TRICALCIUM MONOBLOCK AS AN ADJUVANT ON PROXIMAL HUMERAL FRACTURES

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INTRODUCTION: Introduction of synthetic bone grafts of phosphate beta-tricalcium may decrease complications treating proximal humeral fractures. **MATERIAL AND METHODS:** Proximal humerus fractures fixed with locked screw plate and in which phosphate beta-tricalcium bone graft was used were evaluated by cephalo-diaphyseal angle, the presence of necrosis and collapse and the perforation of the humeral head by screws. Functional assessment was done by measured the shoulder range of motion in all planes. **RESULTS:** 19 patients met the inclusion criteria, with similar gender distribution, mean age 60 years (22-84). At final follow up (53 months) achieved a cephalo- diaphyseal angle of 136° (110-153°). There was no osteonecrosis. Perforation of the humeral head occurred in 3 patients. All bone grafts were osteointegrated. Range of motion in abduction was 140° (60-180°), forward flexion 142° (50-180°), external rotation 37° (0-90°) and internal rotation hand to L3 level (T7- SI). **DISCUSSION:** The main cause of collapse of humeral head (varus) is the inability to maintain the medial calcar by osteosynthesis. We use synthetic bone graft in fractures with medial comminution and with greater difficulty in maintaining the height of medial calcar. We got an arc of mobility with average acceptable forward flexion and abduction of 140°, with external rotation of 35° and internal rotation with hand at L3 level for an average angle of 135°. **CONCLUSION:** Phosphate beta-tricalcium synthetic bone graft appears as an auxiliary therapy to fix proximal humeral fractures. It seems useful in fractures with greater involvement of medial calcar where maintaining reduction and height is difficult.

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Abstract no.: 42716

SURGICAL STRATEGY FOR THE TREATMENT OF DISTAL RADIUS FRACTURES

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Distal radius fractures are one of the most commonly encountered types of fractures of the upper extremity. Although conservative treatment is still recommended for most fractures about this area, there has been an increase in the use of surgical protocol for the treatment of distal radius fractures over the past 15 years. We retrospectively evaluated 147 patients treated at Traumatology Department of Moscow City Hospital #29 between 2013 and 2016. This study included patients with comminuted unstable intra-articular and extra-articular distal radius fractures treated by a single surgeon's crew. Fractures were classified according to the AO/ASIF classification system as 23-A2 (n = 37), 23-A3 (n = 12), 23-B2 (n = 31), 23-B3 (n = 24), 23-C2 (n = 30) and 23-C3 (n = 13). 46 patients had open fractures and were treated by closed reduction and external fixation as a first step with subsequent usage of volar locking plates, this tactics had provided more comfortable conditions for wound care at the pre-operation period. Primary osteosynthesis was performed on 101 patients with closed distal radius fractures. Mobilization was started immediately after the surgical procedure. Primary union was achieved in all cases. We checked range of motion (ROM) and Disabilities of the Arm, Shoulder and Hand (DASH) score. The surgical strategy can provide favorable results in the treatment of distal radius fractures. Using volar locking plates provides stable fixation of the fracture, less soft-tissue irritation thus allowing early postsurgical wrist motion.

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Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 43975

POSTEROLATERAL APPROACH FOR TREATMENT OF POSTERIOR MALLEOLUS FRACTURE OF THE ANKLE – AN ANATOMICAL AND SAFE APPROACH

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The treatment of posterior malleolus fractures of the ankle has been a subject of debate among Orthopedic Surgeons. The standard indication for fixing a posterior malleolar fracture is a displaced fragment that involves more than 25%–35% of the articular surface of the distal tibia. More recently, it has increased the popularity of the posterolateral approach for treatment of posterior malleolus fracture, although it is still poorly documented in the “peer-reviewed” literature. The aim of this work is, in connection with a clinical case, to describe and critically analyze the posterolateral approach for the osteosynthesis of fractures involving the posterior malleolus. We present the case of a 50-year-old man who had an accidental fall in the street. A fracture of the proximal fibular third and of the posterior malleolus (about $\frac{1}{4}$ of the articular surface) was diagnosed with radiographic stress tests suggesting syndesmosis injury. We made the fixation with a transindesmotoc screw and the posterior malleolus osteosynthesis with screws through the posterolateral approach. We document the case with intra-operative images and a brief description of the of the approach as well pre and postoperative X-ray and CT images. One year after surgery, the patient is asymptomatic and without any functional limitations. The AOFAS score is 100. The posterolateral approach has several advantages. The main advantage is to allow a direct inspection and subsequent reduction of the posterior fragment. It is postulated that fixing even small malleolar fragments can prevent further subluxation of the talus and stabilize the syndesmosis, thus facilitating early rehabilitation.

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Room: Caravaggio 5-6

Abstract no.: 43583

EXTERNAL FIXATOR AS A PRIMARY AND DEFINITIVE TREATMENT FOR OPEN TIBIA FRACTURES –SYRIAN WAR EXPERIENCE

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Background:War injuries occur as a result of high energy trauma and may be caused by heavy weaponry or explosions. During these circumstances, most of the injuries occur in the musculoskeletal system, especially tibia shaft fracture. The first line of treatment of tibial shaft fracture is intramedullary nailing, but external fixation is also indicated as damage control. In situations of conflict, poor countries, healthcare systems can be forced to use the external fixator as a primary and definitive treatment. We report our experience in using external fixation as a primary and definitive treatment for open tibia fractures.

Methods:A retrospective chart review of one field hospital between 2011 and 2015.

Result:(462) patient presented with open tibia fracture, average age (27.9 years),(91.3%)male. There were according to Gustilo classification 133(29.8%) type one,158 (35.5%) type two,155 (34.7%)type three, and 143 (31%) with vascular injury. Most of the cases273 (59.1%)managed by AO external fixator,115(24.9%) orthofix, 49(10.6%)Syrian,24(5.1%) Hoffman. The external fixator was a definitive method of treatment in143 (31%), with average 2.5months to achieve full union. Using external fixator as only treatment methods in open tibia fracture was statistically not significant regarding the classification of the fracture p-value (0.061) or type of external fixator p-value (0.235). The main complication was the pin tract infection with 93 (20.1%) cases deep infection.

Conclusion: Satisfactory results can be obtained using definitive external fixation of open tibia shaft if a stable fixation is achieved. Pin tract infections are not a major problem and can be treated with local wound care.

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Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 43453

COMPLICATIONS FOLLOWING UNILATERAL FASCIOTOMY FOR COMPARTMENT SYNDROME OF THE LOWER LEG

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Introduction: Unilateral fasciotomy for the Treatment of compartment Syndrome is a Standard procedure but requires experience and can lead to severe complications. Different from the bilateral fasciotomy, all compartments are opened from lateral side using one Long incision. Aim of this retrospective study was to evaluate the results of this procedure and to identify risk factors for complications. Methods: 204 patients (173 males, 28 females) were included in this study with a mean Age of 40 years (10 - 91) who developed a compartment Syndrome of the lower leg following an open or closed lower leg fracture, ankle fracture, contusion of the lower leg or without Trauma. Patients were evaluated clinically until discharge in case of no complications or up to one year in the case of complications. Results: 201 patients were evaluated. 84 Patients (41.8%) developed complications, mostly wound healing Problems (46.4%), partial muscle necrosis (36.9%), disturbance of sensitivity (32.1%), pain (20.2%) and peroneal nerve lesion (19%). Two revisions (1 - 11) were needed until wound closure was reached, including scheduled Change or removal of vacuum assisted closure Dressing. Unilateral fasciotomy is a limb preserving procedure in the case of manifest compartment Syndrome of the lower leg. Although the lower leg injury can cause nerve injury itself, the unilateral technique contains the risk of iatrogenic nerve injury. Evaluating our results, the bilateral fasciotomy using smaller incisions on the lateral side might prevent nerve injuries.

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Room: Caravaggio 5-6

Abstract no.: 44738

CLINICAL BENEFIT OF ASIATIC GAMMA 3 NAIL IN THE TREATMENT OF TROCHANTERIC FRACTURES IN KOREA

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Purpose : This study was performed to show the radiologic and clinical results of Asian type gamma 3 nail in the treatment of trochanteric fractures in Korea. **Materials and Methods :** The patients with gamma 3 nail were taken from operations between January 2010 and July 2014. 211 patients were operated and 63 patients were enrolled because of at least 12 months follow up. For the radiologic evaluation, we analyzed bone quality, fracture pattern, reduction quality, union period, position of lag screw {tip apex distance (TAD), Cleveland index}. For the clinical evaluation, we analyzed mobility score of Palmer and Parker and Jensen's functional score. **Results :** The mean union was taken 16.8 weeks (12~24 weeks). The reoperation was 5 cases (2.3%) due to the cutting out of the four hip screws and one periimplantar fracture. The clinical outcomes of Parker and Palmer's average mobility score was changed from 7.3 to 5.8 (79%), Jensen's functional score was 1.3 to 1.8 (72%). **Conclusions :** We gained excellent clinical and radiological outcomes, so Asian type gamma 3 nail is effective in the treatment of trochanteric fractures of the femurs in Korea.

Date: 2016-09-10

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Room: Caravaggio 5-6

Abstract no.: 44317

A NEW ELASTIC MINI-INVASIVE OSTEOSYNTHESIS FOR PERTROCHANTERIC FRACTURES

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Introduction: It is introduced a new divergent locked screws plate system for the treatment of pertrochanteric fractures (AO/OTA 31A1 and 31A2). Objective: Aim of this paper is to evaluate the new system and compare its results with the current literature. Methods: From July 2009 to November 2015, 273 proximal femoral fracture (AO/OTA 31.A1 and 31.A2) were treated. One hundred forty-seven of them (88 women and 59 men) have been included in the follow-up terms of two, five, thirteen weeks, and then at six, twelve and thirty-six months. Results: objective and subjective scores were used. Objective scores were assessed by orthopaedic surgeons on the basis of clinical and radiographical assessment, intra- and post-operative blood loss, operative time, intraoperative x-ray exposition, rate of complications and failure, time to the full weight bearing. Subjective scores were assessed by surgeons and patients on the basis of restored function, restored quality of life and overall satisfaction. Conclusions: the divergent locked screws system showed to be a powerful and cost-effective alternative in the treatment of stable (AO/OTA 31.A1) and unstable (AO/OTA 31.A2) pertrochanteric femoral fractures. It showed easy intraoperative management of fracture fragments, good stability, and rapid bone healing. Extraarticular proximal femoral fractures are very common and related to high to life and to life quality, as well as social and economic costs. With population aging they are going to be more and more frequent, and reducing their risks and costs is a real priority for orthopaedic surgery.

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Session: Free Papers - Trauma Lower Extremity Miscellaneous

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Room: Caravaggio 5-6

Abstract no.: 42831

FACTORS INFLUENCING OUTCOME IN IPSILATERAL FEMUR NECK AND FEMUR SHAFT FRACTURES - AN ANALYSIS OF 35 CASES

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Introduction: To evaluate the factors influencing outcome in 35 cases of Ipsilateral neck with shaft femur fractures , operated in our hospital between January 2011 to December 2013 using single implant. Materials and methods: We analysed patient's age, time delay from Injury to Surgery, fracture pattern and associated Injuries and medical comorbidities. 31 fractures were closed and 4 fractures were open. 12 out of 35 cases had delayed surgery more than 48 hrs due to polytrauma. Surgical technique : Using fracture table, neck fracture was reduced indirectly by derotating femur shaft fracture using 4 mm steinmann pin and aligning femur shaft with neck and secured with Steinmann pin placed anteriorly in neck. Then PFN was inserted. Results: Average follow up is 18.2 months (12 to 30 months). One AVN in our series. Average union time for shaft was 20.4 weeks. 2 patients had infective nonunion requiring nail removal and LRS application. Harris Hip Score was calculated 21 patients scored excellent, 6 had good, 6 had fair and 2 poor results. Conclusion: Factors influencing good outcome are intra operative reduction of femur neck and alignment of shaft fractures. Factors influencing poor outcome are varus reduction of neck and comminution of femur shaft fracture and association with diabetes. Age of patient ,time delay for surgery and displacement of femur neck did not have significant bearing on the outcome. Hence, single implant is safe and can be recommended as an effective technique for ipsilateral neck with femur shaft fractures.

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Session: Free Papers - Trauma Lower Extremity Miscellaneous

Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 43995

MANAGEMENT AND OUTCOMES OF OPEN TIBIAL FRACTURES AT A UK LEVEL 1 ADULT TRAUMA CENTRE

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The BOA/BAPRAS standards for the management of open fractures of the lower limb were introduced in 2009. We present the management and outcomes of open tibial fractures managed in an adult level 1 trauma centre. All patients with open tibial fractures between October 2012-2014 were identified from the TARN database. Data was collected from the notes, electronic records and radiographs. The clinical outcomes recorded were time to union, non-union, infection rates and re-operation rates. Injuries were classified using the Gustilo-Anderson system. We identified 51 open fractures with a mean age of 45.9 years (range 16-99). The Gustilo Anderson grading are as follows: 3.9% grade 1, 23.5% grade 2, 37.3% grade 3a, 23.5% grade 3b, and 2.0% grade 3c. There were 32 males and 19 females. Our results found 45.5% of patients had antibiotics within 3 hours with 73.7% having received the correct antibiotics. The mean time to definitive fracture coverage is 3.3 days with 92% of patients had skin coverage within 7 days. Unplanned re-operations were observed in 15.7% of the cases. Definitive fixation was by intramedullary nailing (37.0%), circular external fixation (30.4%), plating (19.6%) and other techniques (13.1%). Union was 97.1% whereas infection was observed in 7.9% of our patients. Our amputation rate was 2.6%. We have found a high union and low infection rate amongst our patients. Our findings support the use of the BOA/BAPRAS standards. We have developed a standardised proforma for all open tibial fractures to help facilitate more streamlined use of the current standards.

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Session: Free Papers - Trauma Lower Extremity Miscellaneous

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Room: Caravaggio 5-6

Abstract no.: 44162

ASPIRATION PNEUMONIA POST HIP FRACTURE IN AN ELDERLY POPULATION; A DEADLY COMPLICATION

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Introduction: Fracture neck of femur is a serious problem in aging population. 64,838 people had hip fracture per year in the UK. Mortality within one year of Fracture neck of femur (NOF) was reported between 20%-35%. The purpose of this study was to investigate the commonest causes of death within one year following NOF. Materials and Methods: We have retrospectively analysed all deaths after NOF admitted in Royal Albert Edward Infirmary Hospital between Jan 2014- Jan 2015. 23 cases have been identified however we could retrieve 18 case notes. Nottingham hip score was used as a predictor of one year mortality. The mean age was 81.2 (50-94) years. Eleven (61.1%) were females. Results: The mean score of Abbreviated Mental Examination was 5.7 (0-10). Nottingham hip score had a mean of 5.1(2-8). Nine cases (50%) had intra-capsular NOF, and nine (50%) had Extra-capsular type of fracture. Nine (50%) had managed operatively by cemented hemiarthroplasty of the hip, Six (30%) had Dynamic Hip Screw, one (5.6%) had Intra-medullary nail and 2 managed conservatively. All deaths were in hospital deaths. The mean length of hospital stay was 18.5 (2-48) days. 12 (66.7%) had Aspiration pneumonia post NOF, 11 (61.7%) of them died. Conclusion: we had identified aspiration pneumonia as the commonest preventable cause of death after NOF. Dementia and post-operative confusion are suggested as the main risk factors. We have introduced a prevention program of aspiration pneumonia in our unit, aiming to reduce mortality and morbidity post NOF.

Date: 2016-09-10

Session: Free Papers - Trauma Lower Extremity Miscellaneous

Time: 10:30 - 12:00

Room: Caravaggio 5-6

Abstract no.: 44251

AN AUDIT OF POST-OPERATIVE BLOOD TRANSFUSION IN PATIENTS WITH FRACTURED NECK OF FEMUR IN A UK DISTRICT GENERAL HOSPITAL

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Introduction: By 2020, estimates indicate that the UK will have 101,000 hip fractures per year. Many of these patients suffer severe anaemia in the postoperative period. The National Institute of Clinical Excellence (NICE) recommends restrictive thresholds for red blood cell transfusion, using a haemoglobin (Hb) of 70g/L unless there is acute coronary syndrome (ACS) or major haemorrhage when the threshold is 80g/L. Cochrane review suggests good outcomes for restrictive transfusion practices in these patients. The aim of this study was to investigate if patients with fractured neck of femur were transfused appropriately post-operatively, according to NICE guidance. Methods: We carried out a retrospective cohort study of 337 patients admitted to a District General Hospital between November 2014 and January 2016. Data was collected using the National Hip Fracture Database and the Hospital Transfusion Database (MOLIS). Number of units transfused per patient was recorded. Pre or Intra-operative transfusions were excluded. Serial Troponin-I rise, and patient notes were used to assess for ACS or major haemorrhage. Results: 84 patients, (25%) received transfusion. 99 transfusions occurred totalling 198 units of packed red cells used. 73.7% of transfusions were not indicated. 80.4% exceeded recommended post-transfusion Hb range. 159 units, £19,398 worth of packed red cells were transfused against NICE guidance during this period. Conclusion: A significant proportion of patients with fractured neck of femur patients received transfusion. The majority were non-compliant with NICE recommendations. This is costly and adds extra burden on demand for red cells, a limited resource.

Date: 2016-09-10

Session: Free Papers - Ligaments Knee

Time: 10:30 - 12:00

Room: Bramante 3

Abstract no.: 44323

BIOMECHANICAL STUDY OF STRENGTH AND STIFFNESS OF THE KNEE ANTEROLATERAL LIGAMENT

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Purpose: Recent studies clearly characterize the anatomical parameters of the knee anterolateral ligament (ALL). The potential clinical importance of this ligament is exemplified by some patients with combined Anterior Cruciate Ligament (ACL) and ALL rupture who do not progress satisfactorily following isolated ACL reconstruction. Previous biomechanical studies have assessed the resistance parameters of the ALL in order to inform potential reconstruction strategies, however these have reported conflicting results. Thus, this study aimed to evaluate the linear resistance of the ALL by means of a biomechanical study in cadaveric knees. Methods: fourteen cadaveric knees were used. The ALL was dissected, and all structures that connect the femur and the tibia, except for the ALL, were sectioned. The ALL was subjected to a tensile test with the knee around 30 to 40 degrees, in a way that the ALL was aligned with the machine. The strength at the maximum resistance limit, deformation and stiffness of the ALL were evaluated. Results: The mean maximum strength of the ALL in the cases studied was 204.8 +/- 114.9 N. The stiffness was 41.9 +/- 25.7 N/mm and the deformation 10.3 +/- 3.5mm. Conclusion: The ALL has a mean resistance of 204.8 N. Simple bands of all autologous and homologous grafts frequently used in clinical practice for ligament reconstruction around the knee would be suitable for its reconstruction.

Date: 2016-09-10

Session: Free Papers - Ligaments Knee

Time: 10:30 - 12:00

Room: Bramante 3

Abstract no.: 45576

ANTEROLATERAL LIGAMENT OF THE KNEE: CADAVERIC STUDY OF ANATOMICAL VARIATIONS.

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The anterolateral ligament (ALL) of the knee is a structure that's had been described to be important on rotational stability of the knee. Recent studies has discrepancy on the anatomical description of this ligament in the lateral region of the Knee. Our aim was to describe the incidence of ALL as independent anatomical structure, characteristics and its anatomical variations. Were performed dissections in 30 fresh frozen cadaver knees, with standardized technique. Caliper meseasurement were made and also digital photographs were taken of each knee analyzed using Image J. The ALL was identified as an independent anatomical structure in all specimens. It cross a shallow oblique plane, with a ribbon shape and average width of 6.2 mm (\pm 2.1 mm) and an average length of 54.8 mm (\pm 9 mm). Its origin was observed relative to the lateral femoral epicondyle superficial and anterior (18) or posterior (12) to the LCL origin. At joint line, fibers of the ALL bond to lateral meniscus between the anterior an medium third. Distal insertion, it was observed in the proximal anterolateral portion of tibia 11 mm (\pm 3 mm) distal to joint line and 12,5 mm (\pm 2 mm) posterior to the Gerdy's tubercle. Further, in 12 cases the fibers distally continuous to the proximal tibiofibular joint and toward the fascia of the tibialis anterior. Conclusions: The ALL is an independent ribbon shaped structure in all specimens dissected. We observed in a variable way it's origin we postulate this to be just anatomical variability.

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Session: Free Papers - Ligaments Knee

Time: 10:30 - 12:00

Room: Bramante 3

Abstract no.: 42856

THE IMPACT OF SOCIOECONOMIC STATUS ON CHOICE OF TREATMENT FOR PATIENTS WITH CRUCIATE LIGAMENT INJURIES IN THE KNEE: A POPULATION-BASED COHORT STUDY

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Introduction: The socioeconomic status (SES) of patients has been widely recognized as playing an important role in many health related conditions, including orthopaedics, where higher SES has been associated with a higher utilization of more advanced medical treatments. However, the association between SES and cruciate ligament (CL) surgery has not been thoroughly investigated. This population-based cohort study aims to evaluate the association between SES and choice of treatment in patients with a CL injury. **Methods:** All patients with a diagnosed CL injury between 1989 and 2010 (n=98,349) were identified in The National Swedish Patient Register. The exposure was the SES of patients as determined by household income and educational level, provided by the Longitudinal Integration Database for Health Insurance and Labor Market Studies; the main outcome measure was treatment choice (operative versus non-operative). Poisson regression model estimated the association. **Results:** A total of 52,566 patients were included in the study, from those 20,660 (39%) were treated operatively. Patients within the highest quartile of household income had significantly higher likelihood of being operated than those within the lowest (Relative risk [RR] 1.16; 95% Confidence Interval [CI] 1.11-1.20). Patients classified as highly educated had significantly increased likelihood of being treated operatively compared with those with low education (RR 1.29; 95% CI 1.19-1.39). **Conclusion:** Our study provides a population-based validation that having a higher SES determined by household income and/or level of education increased the likelihood of undergoing operative treatment after a CL injury.

Date: 2016-09-10

Session: Free Papers - Ligaments Knee

Time: 10:30 - 12:00

Room: Bramante 3

Abstract no.: 44124

COMBINED ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION AND ANTERIOR-LATERAL LIGAMENT RECONSTRUCTION

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Introduction: It is common to observe residual pivot shift in patient receiving anterior cruciate ligament reconstruction (ACLR) despite successful control of anterior-posterior laxity. It is believed that failure to reconstruct anterior-lateral ligament (ALL) is a possible reason. However, it is not known whether combined ACLR and ALLR will produce superior results when compared with isolated ACLR alone. Method: To answer this question, a prospective case-control study comparing (i) combined ACLR and ALLR (ACLR-ALLR), (ii) double bundle ACLR (DBACLR) and (iii) single bundle ACLR (SBACLR) was conducted from January 2012 to June 2014 for 85 Chinese male patients receiving primary ACLR with hamstring autograft. The patients were followed up prospectively till one year after operation. Failure was defined as (i) graft re-rupture or (ii) significant pivot shift test at grade 2 or above at one year after index operation. Result: There were 20 ACLR-ALLRs, 36 DBACLRs and 29 SBACLRs. The rate of one-year follow-up was 90%, 92 % and 100% respectively. There was no difference in the pre-operative demographic data between the three groups. At one-year follow-up, there were no graft re-rupture for ACLR-ALLR (0%), two graft re-ruptures for DBACLR (6%) and one graft re-rupture for SBACLR (4%). For those patients with intact graft at one-year follow-up, the incidence of significant pivot shift was 5% (ACLR-ALLR), 3% (DBACLR) and 25% (SBACLR) respectively. When failure was defined as re-rupture and significant pivot shift, less failure was found in patients receiving combined ACLR and ALLR (5%) than DBACLR (10%) and SBACLR (29%). There was no difference in the one-year IKDC (83, 84 and 84), Tegner activity score (4.9, 4.2 and 4) and KT-1000 (1.1 mm, 2 mm and 2.7 mm). Conclusion: Patients receiving combined ACLR and ALLR had significantly less failure at one-year follow-up than patients receiving isolated ACLR (DBACLR)

Date: 2016-09-10

Session: Free Papers - Ligaments Knee

Time: 10:30 - 12:00

Room: Bramante 3

Abstract no.: 43615

ARTHROSCOPIC REDUCTION AND INTERNAL FIXATION OF POSTERIOR CRUCIATE LIGAMENT AVULSION USING AN ADJUSTABLE-LENGTH LOOP DEVICE

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A displaced avulsion fracture at the tibial attachment of posterior cruciate ligament (PCL) is an indication for surgical reduction and internal fixation. The major means for treating a PCL avulsion fracture are open reduction through the direct posterior approach, or the arthroscopic internal fixation, using a retrograde cannulated screw. The open technique is relatively invasive despite its limited operative field, while it is technically demanding to reduce and apply compression to the fragment by the arthroscopic approach. We devised a new arthroscopic pull-out technique to address these problems, utilizing an adjustable-length loop device to fix the fragment. The purpose of this study is to report the short-term outcomes of the new arthroscopic technique. Six PCL avulsion fractures in six patients (four males and two females, mean age 46.2 ± 18.9 years) were treated arthroscopically using the TightRope (Arthrex) device. The fragment was reduced in anatomical position under fluoroscopic guidance using an ACL guide inserted from the posteromedial portal, and a TightRope device was used to fix the fragment in an anterograde fashion. All fractures had PCL attachment fragments displaced more than 5 mm, and the mean time from injury to surgery was 13.5 ± 3 days. Every patient was followed at least two months after surgery. In all cases the reduction of the fragment was excellent and free gait was obtained in approximately 5 weeks in average. The novel arthroscopic pull-out technique is minimally invasive, relatively easy, and is useful for internal fixation of displaced PCL avulsion fractures.

Date: 2016-09-10

Session: Free Papers - Ligaments Knee

Time: 10:30 - 12:00

Room: Bramante 3

Abstract no.: 43669

MIDTERM OUTCOME OF BPTB GRAFT, FREE STG GRAFT AND STG GRAFT WITH PRESERVED INSERTIONS IN ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION SURGERY IN PROFESSIONAL SPORTSPERSONS: A PROSPECTIVE RANDOMIZED CONTROL STUDY

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Although bone patellar tendon bone (BPTB) graft has lower rerupture rates in elite players, the debate on the choice of graft is still not resolved due to higher post-surgery morbidity with BPTB graft. The present study is a randomized control trial of 175 elite players who underwent ACL reconstruction surgery between 2005 to 2013 with BPTB graft (55 patients), free STG graft (60 patients) and STG graft with preserved insertions (STGPI) (60 patients).. 161 patients (available for a minimum follow-up of two years) were assessed with clinical tests, one-leg hop test, Lysholm knee score, arthrometer (KT 1000TM) and Tegner's activity scale. Mean follow-up was 66.13±27.3. Average age of patients was 25.5±5.1 with 150 males and 11 females. At final follow-up, side to side difference by KT 1000TM was 1.95±2.1 mm in BPTB group, 2.56±2.0 mm in free STG group & 1.94±2.2 mm in STGPI (p-value 0.218); Lysholm knee score was 89.2±9.3 in BPTB group, 91.2±10.3 in free STG group & 93.2±7.0 in STGPI group (p-value 0.148); Single leg hop test Limb symmetry index (LSI) was 88.3% in STG group, 87.7% in free STG & 94.9% in STGPI (p-value 0.965); difference in pre-injury and post-surgery level of Tegner's activity scale was 2.29±2.3 in BPTB graft, 2.09±2.9 in free STG group & 1.98±2.5 in STGPI (p-value 0.82). There were 4 graft failures in free STG group and none in the other two groups (p-value 0.017). Thus BPTB and STGPI grafts have lower re rupture rates than free STG graft in sportspersons.

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Session: Free Papers - Ligaments Knee

Time: 10:30 - 12:00

Room: Bramante 3

Abstract no.: 42854

EFFICACY OF THE STAR EXCURSION BALANCE TESTS IN DETECTING POSTURAL DEFICITS IN ANTERIOR CRUCIATE LIGAMENT DEFICIENCY

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Introduction: Postural instability due to ACL injury has been shown to cause balance deficits during quiet standing. Although static balance assessment in those with ACL Deficient knees has been thoroughly examined in the literature, few researchers have studied performance on more dynamic tasks **Objectives:** Our purpose was to determine if the Star Excursion Balance Tests (SEBTs), lower extremity reach tests, can detect deficits in subjects with ACL deficient knees. **Methods:** As per the criteria, 54 subjects were assessed and divided into two groups first group who had 27 patients having ACL deficient knees and were matched with the subjects having no ACL deficiency in second group. The age of the subjects treated was ranged between 18 and 50 years, average being 30 years. This group represents the active working class. Those less than 25 years of age were comprised mainly of students. The gender distribution of cases was eccentric, with 94.5% percent (n=42) males, and 4.5% (n=2) females in the study. Proprioception was assessed using sebt and excursion distances in eight different directions were measured. **Results:** The group with ACL deficient knees demonstrated significantly decreased reach while standing on the injured limb compared with the matched limb of the uninjured group (71.6 cm versus 83.5 cm). Additionally, subjects reached significantly less when standing on their injured limbs as compared with their uninjured limbs (72.6 cm versus 79.2cm). **Conclusions :** The SEBTs appear to be an effective means for determining reach deficits both between and within subjects with ACL deficient knees.

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Time: 10:30 - 12:00

Room: Bramante 3

Abstract no.: 44195

PREVALENCE AND PATTERNS OF INJURIES OF ANTERO-LATERAL LIGAMENT IN ACUTE ACL TEARS

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Recent studies have focused on the ligaments of the lateral aspects of the knee acting as secondary restraints of the ACL-deficient knee, whose deficiency could result in a persistent rotatory instability. The aim of the study was to report on the prevalence and patterns of injuries of the lateral compartment in apparently isolated acute ACL tears. Sixty patients operated on for an acute apparently isolated ACL tear were prospectively selected. The lateral compartment was exposed and injuries recorded and repaired. The pivot shift test was repeated after repair of lateral tears before the ACL reconstruction was completed. Macroscopic tears of the lateral capsule were clearly identified in 54/60 pts (90%). Lesions were classified as follows: Type I (multilevel rupture in which individual layers are torn at different level with macroscopic hemorrhage involving Antero Lateral Ligament (ALL) and extended to Antero Lateral capsule only):19/60 patients. Type II (multilevel rupture in which individual layers are torn at different level with macroscopic hemorrhage extended from ALL and capsule to PL corner):16/60 patients. Type III (complete transverse tear involving ALL and capsule near its insertion to the lateral tibial plateau): 13 /60 patients. Type IV bony avulsion (Segond's fracture):6/60 patients In all cases the repair resulted in a disappearance of the pivot shift phenomenon. As injuries of secondary restraints often occur in cases of acute ACL tears, recognition and repair of such lesions could be considered in order to help ACL reconstruction to better control rotational stability.

Date: 2016-09-10

Session: Free Papers - Foot & Ankle

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 42517

USE OF THE TENDOSCOPIC MODIFIED DAS DE PROCEDURE FOR RECURRENT PERONEAL TENDON DISLOCATION

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Introduction: One of the most popular operative procedures for the treatment of recurrent peroneal tendon dislocation (RPTD) is the modified Das De procedure, which is the superior peroneal retinaculum (SPR) repair. This study is a preliminary report on the tendoscopic modified Das De procedure. **Methods:** We performed surgery for RPTD in 5 consecutive patients (4 men and 1 woman, mean age 21.4 years). All the patients were injured during sports activities. The tendoscopic modified Das De procedure was performed with the patient in the lateral decubitus position. Two portals were made. Three anchors were inserted in the fibula via the portal. An 18-gauge needle, into which a shuttle relay had been looped (2-0 Prolene), was used to thread through the SPR. Six passes were made, and the sutures were tightened by sliding the knot in order to reattach the SPR to the fibula. A knotless anchor was screwed into the lateral aspect of the fibula to allow for suturing by using the bridge technique. Evaluation parameters included the operation time, complications, return to regular sports activities, and recurrence. **Results:** The mean operation time was 88.8 minutes. However, compared with the initial cases, recent cases tended to have shorter surgical times. No complications occurred. All the patients could return to regular sports activities within 4 months after surgery. No recurrence was observed. **Conclusion:** This procedure is an attractive option because it is less invasive and has achieved similar results as those in open procedures.

Date: 2016-09-10

Session: Free Papers - Foot & Ankle

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 45559

USE OF 2 K WIRES VS 1 K WIRE FOR FIXATION OF PIPJ FIXATION

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o Background: This is a retrospective cases series review of PIPJ fusion carried out by 2 parallel K wires per toe by the senior author. Although this is contrary to common practice where a single wire is used, but this technique offers biomechanical advantage by providing rotational control, which is not possible with single wire. This review was undertaken to assess if rate of complications is increased by using 2 wires, especially infection as there are potentially 2 portals in skin instead of one. o Methods: Retrospective review of 14 toes where double pin technique was used. Similar case sample was taken from the department during same time period where single pin technique was used by other surgeons. Patients case notes were reviewed for loss of position and incidence of infection in both groups. Radiographs were reviewed of all patients in both groups and radiological union rates were documented. o Results: The age range for these 14 toes was 48-77 years in double pin group. Majority of patients undergoing PIPJ fusion were women. Infection rate in both groups were similar for both superficial and deep infection. No loss of position especially rotation occurred in double pin group. o Conclusion(s): Using 2 K Wires per toe does not increase risk of superficial infection or deep bony infection. o Implications: 2 K Wires provide better rotational control and hence is biomechanically superior to 1 wire.

Date: 2016-09-10

Session: Free Papers - Foot & Ankle

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 42967

CORRECTION OF FLATFOOT DEFORMITY BY DOUBLE JOINT ARTHRODESIS THROUGH SINGLE MEDIAL APPROACH

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Objective: To study the clinical results using isolate medial approach to correct flatfoot deformity with hindfoot valgus in two-joint arthrodesis. Methods: 12 patients with flatfoot deformity were treated using an isolated medial incisional approach for subtalar and talonavicular joint arthrodesis from May 2009 to May 2012. There were 5 males and 7 females with an average age of 53.33 years (ranged from 21 to 78 years). They included 11 cases of posterior tibial tendon dysfunctions, 1 of Johnson and Strom 1 of tarsal coalition. Results: The mean duration of surgery was 134.58 minutes (range, 115-180 minutes). 11 patients were followed up for 19.36 months in average (range from 13 to 30 months). All of the cases have healed well, and the mean time of bone union was 9.82 weeks (ranged from 7 to 18 weeks). No infection was found in any cases. A complication was observed in 2 of the patients, including 1 each of the following: painful calcaneal-cuboid joint and painful fixation. None of the patients experienced a nonunion or an adverse event related to the medial neurovascular structures. The mean Kitaoka score increased from 48.75 to 81.36 Conclusion: Based on our experience with the procedure, the single medial-incision subtalar and talonavicular joint arthrodesis is a useful alternative to triple arthrodesis for the correction of flatfoot deformity with hindfoot valgus.

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Session: Free Papers - Foot & Ankle

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 43895

THE LEARNING CURVE FOR TOTAL ANKLE REPLACEMENT USING A MOBILE BEARING PROSTHESIS

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Background: Total ankle arthroplasty remains a technically demanding surgery highly influenced by the operator experience. However, no consensus exists regarding the ideal number of cases that need to be performed before a surgeon is considered proficient. The aim of this study was to identify the learning curve of a specific replacement system focusing on intraoperative and postoperative outcomes. Methods: The first 31 patients undergoing TAA were examined. No additional procedures were performed at the time of the TAA. Intraoperative characteristics, postoperative complications, as well as clinical and radiologic outcomes were assessed with 24-month follow-up. Learning curves, examining the relationship between surgeon experience and patient outcomes, were determined using the Moving Average Method. Results: The Operatory Time, and the risk of intraoperative fractures decreased with increasing surgeon experience with the learning curve stabilizing after the 14th and 24th patient, respectively. Furthermore, there appeared to be a learning curve associated with most of the important clinical and radiological outcomes. The number of patients required to stabilize the learning curve for the VAS, ROM, and AOFAS was 11, 14 and 28, respectively. Radiographically, there appeared to be a learning curve of 22 patients required to stabilize the tibio-talar ratio. There was no learning curve associated with the SF-12 PCS and MCS as well as the α -, β -, and γ -angle. Conclusion: This study demonstrates that a surgical learning curve does exist when performing TAA. Most of the operative variables as well as clinical and radiological outcomes stabilize after a surgeon has performed 28 cases.

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Room: Bramante 4

Abstract no.: 44608

CONGENITAL CLUBFOOT IN TOGO: FIVE YEARS RESULTS OF TREATMENT USING THE PONSETI METHOD IN A NATIONAL SCALE

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Introduction: The treatment of clubfoot has long been controversial because of the complexity of the lesion. Currently it is accepted that non-operative treatment, especially the Ponseti method provides better long-term results. The purpose of this study was to clinically evaluate the results of the treatment of the clubfoot by the method of Ponseti and to raise the advantages of using this method in a broad national support program. **Methods:** It was about a retrospective study from January 2011 to December 2015 carried out within 08 club-foot treatment centers across the country. We chose 286 records concerning children with unilateral or bilateral club-foot that were observed at birth. We have excluded benign strains, varus feet and metatarsus adductus. Feet were classified according to the new version of Pirani score; Evaluation was made by the same score. **Results:** we retained 286 children or 443 clubfoot, ranging in age from 07 days to 02 years. Sixty-seven percent (67%) of the feet were very severe. Arthrogyrosis was the most frequently malformation associated with 5.7% of the cases. 73.6% of feet had benefitted from 4 to 7 plaster sessions before tenotomy. We obtained 89% excellent and good results (intermediate and final), with national coverage estimated at 70%. **Conclusion:** The Ponseti technique gives good results for a long period, it is inexpensive and very practical in our communities, thus making it possible to eliminate the handicap related to the clubfoot. **Key word:** Clubfoot, non-operative treatment, Method of Ponseti.

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Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 43574

SUPRAMALLEOLAR OSTEOTOMY FOR TREATMENT OF ASYMMETRIC ANKLE OSTEOARTHRITIS

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Joint-preserving surgery for asymmetric ankle osteoarthritis is a well-known treatment method. Supramalleolar osteotomy is a surgical procedure used to improve the biomechanics of the ankle. The purpose of this study is to evaluate the clinical and radiographic efficacy of supramalleolar osteotomy in the treatment of ankle osteoarthritis. We retrospectively reviewed a cohort of patients with ankle osteoarthritis treated with supramalleolar osteotomy. 10 patients (median age 48.5) with asymmetric osteoarthritis of the ankle joint were identified. Preoperative radiographs of the ankle and at follow-up were used to assess ankle joint alignment. A functional preoperative evaluation and at the final follow-up were performed using the American Orthopedic Foot and Ankle Society (AOFAS) ankle-hind foot scale. The median preoperative American Orthopaedic Foot and Ankle Society score was 35.5 (inter-quartile range 25.25 to 45.75). The score improved significantly to 75 (inter-quartile range 74.25 to 75) postoperatively (Wilcoxon signed-rank test, $p < 0.001$). The median preoperative tibial–anterior surface angle and talar tilt angle were 83 (IQR 79 to 86) and 4 (IQR 2.25 to 13.75), respectively. At the most recent follow-up visit, the corresponding values were 86 (IQR 84 to 87.8) and 2 (IQR 1 to 5.25), respectively (Wilcoxon signed-rank test, $p < 0.001$). Supramalleolar osteotomy is a conservative therapeutic surgical option for the management of arthritis of the ankle associated with varus or valgus deformities as well as sagittal deformities. It provides good clinical and radiographic outcomes.

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Session: Free Papers - Foot & Ankle

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 43561

AGE OF RECURRENCE IN IDIOPATHIC CLUBFOOT TREATED WITH THE PONSETI METHOD

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Purpose: Patients undergoing the Ponseti method for idiopathic clubfoot can have a recurrence in up to one-third of cases. The purpose of this study was to analyze the age at which recurrence typically occurs, and determine whether age at discontinuation of the foot abduction orthosis (FAO) is an associated factor. **Methods:** Patients with idiopathic clubfoot treated initially with Ponseti method, with greater than three years of follow-up, were evaluated. Age at presentation, need for percutaneous Achilles tenotomy, age of initiation of FAO, compliance with FAO, and need for additional treatment were recorded. Dimeglio/Bensahel and Catterall/Pirani scores were recorded at initial presentation, and yearly throughout follow-up. **Results:** 110 patients were followed for an average of 5.9 years, and 32 patients required surgical intervention. Patients who had surgery had slightly higher Dimeglio/Bensahel and Catterall/Pirani scores at presentation and throughout the follow-up period, but became demonstrably higher after three years of age. There was a significant difference in the age at which the FAO was stopped in those patients who eventually required surgery versus those who did not (2.2 years versus 2.8 years). **Conclusions:** Many patients with recurrence after initially successful Ponseti treatment become distinguishable by our current classification systems after three years of age, and FAO wear should continue until at least that point. **Significance:** FAO use should be continued until at least three years of age in patients undergoing Ponseti treatment for idiopathic clubfoot to minimize the risk of recurrence.

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Session: Free Papers - Foot & Ankle

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 43629

MANAGEMENT AND EVALUATION OF CLUB FEET WITH ULTRASONOGRAPHIC METHOD IN INDIAN PAEDIATRIC POPULATION; A PROSPECTIVE STUDY

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Objectives: Use of ultrasound to classify, compare and correct the deformity of club foot and tool for prognostication of treatment and plaster correction of club feet. **Methods:**The study was done in 60 feet of unilateral clubfoot patients with normal feet (control group) and the clubfeet (study group). These were grouped according to their age (0-2 months, 2-4 months, 4-6 months, 6-8 months and 8-12 months). All the patients assessed and examined systemically for any associated congenital deformity followed by examination of foot, first normal and then clubfoot. The severity of foot was graded using Pirani scoring system. The patients, who were above one year of age, did not have the deformity since birth, had taken the treatment before admission, had any associated congenital deformity and had bilateral involvement, were excluded from study. feet were graded into mild, moderate and severe forms with Pirani scores of 1-4, 4-7 and 7-10 respectively. **Results:**In study with sex ratio of M:F:: 2.2:1, severity distribution was mild: 35%, moderate: 45% & severe: 20%. **Conclusions:**We arbitrarily grouped the numerical values of the feet into three identifiable severity classes i.e. mild, moderate and severe, proven by statistical evaluation, which can be used for management, prognostication of treatment and evaluate need of surgeries in club feet patient. Study is a combination of clinical evaluation and ultrasound measurement. The statistical evaluation proves that the gradation system of the present study is true and reproducible.

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Session: Free Papers - Foot & Ankle

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Abstract no.: 44452

MINIMALLY INVASIVE LATERAL LIGAMENTS RECONSTRUCTION WITH AUTOGRAFT IN PATIENTS WITH CHRONIC ANKLE INSTABILITY

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Background: Incidence of persistent instability following a lateral ankle sprain is reported to vary from 15% to 48%. Several surgical procedures are described to reestablish lateral ankle stability, varying from direct in situ repair of anterior talofibular ligament (ATFL) and calcaneofibular ligament (CFL) to augmented reconstructions with autograft or allograft tissue. Anatomic reconstructions utilizing tissue augmentation have gained popularity. The purpose of this retrospective study was to assess the results of a novel surgical percutaneous technique that consists in an anatomical reconstruction of ATFL and CFL with free semitendinosus tendon transfer through 4 mini-approaches (<1 cm) and fixation with interference screw. Methods: Between November 2011 and January 2014, 18 patients underwent the procedure described for chronic ankle instability. Patients were clinically assessed preoperatively and at 6 and 12 months postoperatively and annually thereafter (range, 12-49 months). Imaging studies included preoperative MRI and weight-bearing plain radiographs and postoperative weight-bearing plain radiographs 3 months after surgery. Outcomes were assessed by comparison of preoperative and postoperative range of motion (ROM) and Halasi ankle activity and AOFAS scores. Results: All the patients had a significant improvement of AOFAS score and they returned to the same level of Halasi ankle activity scale as before the onset of the symptoms, in absence of major complications. ROM was minimally affected by the procedure. Conclusion: Lateral ankle reconstruction with free semitendinosus tendon graft augmentation performed percutaneously resulted in a high percentage of successful results, excellent stability with minimal loss of ROM at a minimum follow-up of 12 months.

Date: 2016-09-10

Session: Free Papers - Foot & Ankle

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 42823

ULTRASONOGRAPHIC EVALUATION OF ENTHESEAL THICKNESS IN THE PLANTAR APONEUROSIS AND THE ACHILLES TENDON WITHIN A COHORT OF JAPANESE PATIENTS WITH HEEL ENTHESITIS

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Objectives: We investigated a thickness threshold for the plantar aponeurosis and the Achilles tendon at the enthesis within a cohort of Japanese patients with heel enthesitis. **Methods:** Twenty-six patients who experienced pain because of a pressure of 4 kg/cm² at the enthesis and were diagnosed with enthesitis participated in this study. Eleven patients (15 feet in total) had plantar fasciitis (PF group), whereas the remaining 15 patients (21 feet in total) had Achilles enthesitis (AE group). Thirty-six additional patients with asymptomatic feet (72 feet in total) formed a control group. The enthesis thickness of the plantar aponeurosis and the Achilles tendon were measured using ultrasound at the point of maximal thickness proximal to the bony insertion. **Results:** Plantar aponeurosis was significantly thicker in the PF group than in the control group (3.5 mm vs. 2.8 mm; $P < 0.01$), whereas the Achilles tendon was significantly thicker in the AE group than in the control group (4.8 mm vs. 4.2 mm; $P < 0.05$). ROC curve analysis showed that the threshold value of enthesitis was 3.0 mm on the plantar aponeurosis (AUC: 0.74; specificity: 70%; sensitivity: 73%) and 4.5 mm on the Achilles tendon (AUC: 0.61; specificity: 64%; sensitivity: 57%). **Conclusion:** The deduced thickness thresholds for the enthesis of plantar fasciitis and Achilles enthesitis within a cohort of Japanese patients were 3.0 mm and 4.5 mm, respectively.

Date: 2016-09-10

Session: Free Papers - Foot & Ankle

Time: 08:30 - 10:00

Room: Bramante 4

Abstract no.: 43865

TREATMENT OF DIABETIC FOOT: FROM CONSERVATIVE TREATMENT TO MINOR AND MAJOR AMPUTATIONS

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The World Health Organization expects that in 2025 the number of diabetics will increase even more than 300 million. 20% of diabetic patients suffers from foot lesions. In case of diabetic ulcer there could be the risk of a major amputation. 48 cases of neuro-ischemic foot with infection were treated. The anatomical-pathologic context was based on "UT Wound Classification System of Diabetic Foot Ulcers" and on Wagner's Classification analysis. Each patient was subjected to ecocolordoppler, wound culture and antibiotic therapy. The patients treated were divided in 5 groups having the following ulcers locations: 10 malleolar, 5 perimalleolar, 4 plantar, 11 calcaneal, 18 inter-phalangeal. Bacterial culture tests highlighted the existence of the following micro-organisms: Pseudomonas Aeruginosa (13); Staphylococcus aureus (25); Enterococcus faecalis (7); Acinetobacter baumannii (3). 15 patients were treated with an accurate debridement and serial cycles of advanced medications: 2 of them healed (1 calcaneal ulcer, 1 inter-phalangeal), eleven (5 inter-phalangeal ulcers, 2 perimalleolar, 2 calcaneal, 2 plantars) received an improvement of the ulcer, 2 patients refused the treatment. In 33 cases it was decided to perform an amputation: 14 phalangeal, 6 metatarsal, 5 Chopart, 8 trans-tibial. Authors suggest that an integrated multidisciplinary approach, made up of a team of specialists (Orthopedist, diabetes specialist Physician, infectious disease Physician, Psychiatrist), together with the adoption of a shared diagnostic-therapeutic protocol, could be the Gold Standard for the management of this disease, trying to attempt to reduce the risk of amputation or the expansion of it.

Date: 2016-09-10

Session: Free Papers - Conservative Treatment

Time: 10:30 - 12:00

Room: Bramante 4

Abstract no.: 44643

DEMOGRAPHIC AND CLINICAL PROFILE ANALYSIS IN SYMPTOMATIC JOINT HYPERMOBILITY SYNDROME IN A TERTIARY CARE INSTITUTION OF EASTERN INDIA

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INTRODUCTION :Benign joint hypermobility syndrome is defined as the presence of musculoskeletal symptoms in subjects with hypermobility in the absence of demonstrable systemic rheumatic disease.Joint hypermobility (JH) or 'ligamentous laxity' is now considered to be an underlying risk factor for many types of musculoskeletal presentation in adolescents as well as in adults, JHS describes such disorders where symptoms become chronic, often more generalized and associated with functional impairment of varying severity. **Methods:** We define the clinical characteristics of all patients with joint hypermobility-related presentations seen from June 2013-2015 in the Orthopaedic Department of Hi-Tech Medical College,India.102 Patients were identified and recruited from OPD. Data was collected prospectively.Specifically,historical details of trauma, excessive workload,occupation and significant congenital or past medical history were recorded. Examination features included measurements of joint (MCP/ELBOW/KNEE) and soft tissue laxity by following Beightons scoring system,and screening as well as examination of associated conditions such as scoliosis,pes planus,hallux valgus,recurrent dislocations,genu valgum/varum or recurvatum or any other musculoskeletal disorder. **Diagnosis:** Made by The Modified Beightons criteria. **Results :** It showed Diagnosed Benign hypermobile joint syndrome patients had complaints which were not correlating with history and were not related to any traumatic/degenerative or infectious pathology (even if associated with trauma the symptoms were out of proportion from the severity of trauma).**Management:** Proper counselling is the key to treatment of patients with hypermobile joints. Orthopaedist should be aware of this entity in their clinical practice and hence should treat the patient with symptomatic care and muscle strengthening exercises

Date: 2016-09-10

Session: Free Papers - Conservative Treatment

Time: 10:30 - 12:00

Room: Bramante 4

Abstract no.: 45338

CONSERVATIVE TREATMENT OF TUBERCULAR PERI-PROSTHETIC INFECTION IN A PATIENT WITH ANKYLOSING SPONDYLITIS

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Introduction: Peri-prosthetic infection following Total Hip Arthroplasty (THA) is a painful and debilitating condition often presenting with diagnostic difficulties. There is no previous report of conservatively managed periprosthetic hip infection. M. Tuberculosis in a young patient with revision total hip prosthesis in situ can be catastrophic and another surgery for attempted cure can be associated with high morbidity and mortality. Case report: We present a peri-prosthetic M.tuberculosis infection in a 45 year old male with diagnosed Ankylosing Spondylitis who had undergone bilateral revision total hip arthroplasty 7 years back in our institute. He presented with a discharging sinus over left thigh and inability to bear weight over the left lower limb two months following a short intravenous course of Infliximab. After investigations and on strong clinical suspicion, anti-tubercular multidrug therapy was started and within 6 months patient had significant improvement At the latest follow-up of 18 months, his sinus had healed, he was pain free and was walking without support with no radiographic evidence of implant loosening. Conclusion: Our clinical experience suggests that the orthopaedicians should be suspicious of Mycobacterium tuberculosis peri-prosthetic infection in cases with sterile standard cultures and negative tests and those who fail to respond to empirical broad spectrum antibiotics. Early start of Anti tubercular drug therapy can save the patient multiple surgeries and associated morbidities. We also suggest that immunosuppressive agents like Infliximab should be cautiously started in a patient with Ankylosing Spondylitis who already have a high risk of tuberculosis due to primary disease.

Date: 2016-09-10

Session: Free Papers - Conservative Treatment

Time: 10:30 - 12:00

Room: Bramante 4

Abstract no.: 43184

PAIN REDUCTION IN SEVERE OSTEOARTHRITIS OF THE KNEE WITH INTRAARTICULAR ACP

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Knee osteoarthritis is a major problem in the European population. Surgical treatment implicates a long absence from work. Alternative treatments postponing major surgery to the age of retirement from work would be beneficial. Patients with severe knee osteoarthritis qualifying for knee replacement but not yet ready for major surgery are treated by four intraarticular injections of ACP (Arthrex). Lequesne and VAS score before and four weeks after treatment are evaluated. Two years after treatment patients are contacted via telephone. Those not having had a knee replacement in the meantime and not requiring pain killers in daily living are considered as mid term success. Results: As far 131 patients were treated, 60 men and 71 women aged 64.1 +/- 10.7 years. 19 (14.5%) showed no effect. Lequesne score was 11.8 +/- 4.0 before and 3.9 +/- 2.7 ($p < 0.001$) after treatment. Regarding the Lequesne classes 87 patients were classified to the extremely severe and severe group before treatment whereas after treatment 119 patients were classified as mild or moderate ($p < 0.001$). Consequently, the VAS score dropped from 6.6 +/- 1.9 before to 2.2 +/- 1.5 after treatment ($p < 0.001$). Two years after treatment 90 patients were contacted (no one lost for follow up). 53 (59%) of them being classified as mid term success. Intraarticular ACP therapy shows excellent short term results reducing significantly the Lequesne score and class as well as the VAS pain score. Furthermore the majority of the patients does not require major surgery for another two years.

Date: 2016-09-10

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Time: 10:30 - 12:00

Room: Bramante 4

Abstract no.: 42918

PROSPECTIVE STUDY OF EFFECTIVENESS OF PLATELET RICH PLASMA IN TREATMENT OF EARLY OSTEOARTHRITIS OF KNEE

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Introduction: Current trend of osteoarthritis has been shown to involve patients as early as 40 years of age, in this group the treatment options are further limited. Most treatment options provide only symptomatic relief and do not address disease process. The aim of our study was to prospectively monitor the therapeutic role of PRP in early osteoarthritis as a disease modifying modality. **Methods:** In this study fifteen patients of either sex, aged 35–70 years diagnosed with Kellgren Lawrence Grade 1 or 2 OA knee were included in the study and were selected according to inclusion and exclusion criteria. The baseline details of all patients were noted on a pre-designed performa. Patients were given single autologous PRP injection (prepared by in-house centrifugation method) intraarticularly in the knee under strict aseptic precautions. The patients were then followed up at a period of 1 month for 6 months and patients were analyzed on the basis of WOMAC Knee score. **Results:** The analysis revealed that a significant and continuous improvement in all parameters of WOMAC score in the patients injected with PRP and showed dramatic improvement during 1st month which continued to improve till 3 months followed by some recurrence or worsening till 6 months but it never reverted to pre injection level. **Conclusion:** The result supports the effectiveness of PRP injection for relieving pain and improving knee function in OA knee. Our method of PRP preparation using an in-house centrifugation machine is a cost effective method of PRP injection.

Date: 2016-09-10

Session: Free Papers - Conservative Treatment

Time: 10:30 - 12:00

Room: Bramante 4

Abstract no.: 43592

RIGO SYSTEM CHENEAU BRACE PROVIDES BETTER IN-BRACE CORRECTION THAN TRADITIONAL TLSO BRACE

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Summary: Compared to a traditional thoracolumbar sacral orthosis (TLSO) brace, the Rigo System Cheneau (RSC) brace is associated with increased in-brace spinal curvature correction at 6 weeks. Introduction: Adequate force application by a patient's brace is vital to the efficacy and success of this non-surgical treatment. The purpose of our study was to compare immediate in-brace major coronal curve correction at six weeks between patients who received Rigo System Cheneau (RSC) brace and thoracolumbar sacral orthosis brace (TLSO) brace. Method: This is a retrospective cohort study of patients with idiopathic scoliosis who underwent brace treatment between 2013-2015 at a major Cobb angle of 25

RSC greater, and
brace or the TLSO brace prescription was based on a host of factors including patient preference, provider preference, and insurance coverage. The percent in-brace correction of the major coronal curve at 6 weeks was calculated as an outcome. Results: 27 patients who received RSC and 25 patients who received TLSO were identified. Baseline degree of coronal curvature, age, Risser scores or Sanders Scores, and gender were similar. The RSC brace achieved significantly greater in-brace correction (49%) compared to the TLSO brace (27%) with mean difference of 22% (95% CI: 6%-38%, p=0.010). Conclusion: Compared to the traditional TLSO brace, the RSC brace is associated with increased in-brace spinal curvature correction at 6 weeks.

Date: 2016-09-10

Session: Free Papers - Conservative Treatment

Time: 10:30 - 12:00

Room: Bramante 4

Abstract no.: 43155

OUTCOME OF EARLY SURGICAL MANAGEMENT VERSUS CONSERVATIVE MANAGEMENT AFTER ACUTE THORACOLUMBAR INJURIES OF SPINE IN A TERTIARY CARE HOSPITAL OF NORTH INDIA

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Spinal injury is one of the most disabling catastrophes that an individual can sustain in his lifetime. This study was conducted to compare the Outcome of Early Surgical Management versus Conservative Management after Acute Thoracolumbar Injuries of Spine in a tertiary care hospital of north India. A longitudinal study was conducted over a period of 3 years from May 2011 to May 2014. Overall 80 cases, in the age group of 16 to 70 years with thoracolumbar spinal injury between D6 and L3 level with neurological deficit were included. Participants were divided into two groups of 40 cases each, for surgical intervention and conservative management. The results were analyzed according to neurological improvement as per Frankel's grading (A, B, C, D, and E). Most of the participants presented with complete neurological deficit with bladder and bowel involvement. Initially in conservative group, 67.5 % (n=28) of the participants and in surgical group 85% (n=34) had presented with grade A. Proportion of the participants presenting with grade C were 30% (n=12) in conservative group, and 10% (n=4) in surgical group. Wilcoxon sign rank test was applied to both the groups to observe statistical difference prior to treatment and at the time of follow up. Participants who improved from motor useless power (grade: A+C) to motor useful power (grade: D+E) was 42.50% in conservative group and 42.10% in surgical group. Findings of our study have shown that both the treatment modalities are equally effective in the management of thoracolumbar injuries of spine.

Date: 2016-09-10

Session: Free Papers - Conservative Treatment

Time: 10:30 - 12:00

Room: Bramante 4

Abstract no.: 42867

**TREATMENT OF CARPAL TUNNEL SYNDROME WITH
PALMITOYLETHANOLAMIDE (PEA)**

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The carpal tunnel syndrome (CTS) can be treated conservatively in the initial stages of the disease by several methods. Palmitoylethanolamide (PEA) has been studied as a neurotrophic agent. We have conducted a double blinded prospective study comparing PEA against placebo in cases of low grade or mild CTS. During 2 months, 68 patients were given 300mg of PEA twice a day or two tablets of placebo looking exactly the same. 61 finally completed the study, which included 30 patients in the first group and 31 in the second. A clinical study was recorded for each patient before and after treatment, together with an EMG study. The statistical study showed no differences between both groups regarding demographic data and data related to carpal tunnel syndrome. The results showed an improvement of clinical data in both groups without statistical significance between them except in the functional part of the Boston questionnaire favouring treatment with PEA ($p=0,038$). Conigliaro noted an improvement of the median nerve motor latency time with a 1200mg per day treatment in moderate CTS. This is attributed to the ability of PEA to reduce edema and pain intensity in pathological conditions. This effect was also noted in a group of diabetic patients suffering from CTS, associated to statistically significant clinical improvement. Our results show there is a mild but not significant improvement in CTS after treatment with a low dose of PEA for 2 months. In contrast, a higher dose during one month has provided better clinical and EMG results.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty III

Time: 08:30 - 10:00

Room: Bramante 6-7

Abstract no.: 43839

PATELLAR HEIGHT ASSESSMENT IN TKA A NEW METHOD

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Introduction: we described in 1981 a method to evaluate patellar height in normal and symptomatic knee on sagittal X-rays view. This index is an often used method but not suitable after a TKA. Material and methods: the original method measures distance between the distal margin of the articular surface of the patella (point A) and the antero-superior angle of the tibial plateau (point T), then the length of the patellar articular surface (AP). The index is AT/AP ratio (normal values range from 0.8 to 1.2). After TKA, the T landmark is no longer available. So we define a new T' landmark. This point is situated at the crossing between the line perpendicular to tibial posterior cortex elevated at the tip of the fibular head and the tibial anterior cortex. This remarkable landmark can be identified before and after TKA, with a new relative index AT'/AP ratio. This modified method allows comparing patella height before and after TKA. Results: we have used this modified index with several authors during different model of TKA with an accurate reproducibility. Discussion: patella height measurement has to be assess with the original method (AT/AP) to detect patella infera that could influence the surgical approach. Correlation between original and modified index has to be assess. Modification of patella height after TKA could be evaluated through the modified index, and compared to functional results.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty III

Time: 08:30 - 10:00

Room: Bramante 6-7

Abstract no.: 43873

HOW PATELLA HEIGHT IS MODIFIED AFTER TOTAL KNEE ARTHROPLASTY?

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Introduction, purpose : several methods exist to measure patella height on sagittal plane X-ray. Landmarks used to calculate those index can be modified after total Knee Arthroplasty (TKA). We have modified an often used index to determine patella height before after TKA. Main purpose of the study is to evaluate how much the patella height is modified after TKA. Second objective is to correlate patella height modification to knee function and range of motion. Material, methods : sixty consecutive TKA have been collected between april 2014 to april 2015. Patella height was measured pre and post operatively using original and modified index. Pre op, post op IKS score and range of motion have been recorded. Results : post op modified index is lowered by 1,9 compare to pre op. Three categories can be identified : <1,9 (20 cases), 0 to 1,9 (29 cases) > (0 11 cases). No statistical clinical differences were found between the three categories. Original index and modified index are statistically correlated. Discussion: patella height after TKA is correlated to modifications of the prosthetic joint line. Those modifications are linked to distal femoral cut, proximal tibial cut and thickness of the polyethylene.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty III

Time: 08:30 - 10:00

Room: Bramante 6-7

Abstract no.: 43892

**LONG TERM STUDY WITH TISSUE SPARING SURGERY AND
COMPUTER ASSISTANCE IN KNEE REPLACEMENT: BI-UNI VS TOTAL
AT 12 YEARS MINIMUM FOLLOW-STUDY**

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Introduction: At a minimum 12 years follow-up the Authors present the results of a matched paired study between 2 groups: Bi-Unicompartmental (femoro-tibial) versus Total Knee Replacements, both navigated, for the treatment of isolated bicompartimental tibio-femoral knee arthritis with an asymptomatic patello-femoral joint . Materials and Methods: 19 patients with bicompartimental tibio-femoral knee arthritis who underwent to BI-UKR from 1999 to 2003 were included in the study. At a minimum follow-up of 12 years, every single patients in group A was matched with a patient who had undergone to a navigated TKR between in the same period. The clinical outcome was evaluated using the Knee Society Score and the WOMAC Arthritis Index. Radiographically the HKA angle and the Frontal Tibial Component angle (FTC) were assessed twice at the latest follow-up. Statistical analysis with non-parametric test of the results was performed because of a not normal distribution of the data. Kaplan-Meier survival rate was assessed in both the groups. Results: At a minimum 12 years follow-up no statistically significant difference was seen in the Knee Society, and Functional scores. Statistically significant better WOMAC Function and Stiffness indexes were registered for the Bi-UKR group despite a statistically significant worse alignment. The Kaplan-Meier survival rate was respectively 89.9% and 91.1% respectively for group A and B without statistical significant differences Discussion: This is the longest follow-up study in literature to our knowledge and it suggests that Bi-UKR is a viable option for bicompartimental tibio-femoral arthritis as well as TKR over time.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty III

Time: 08:30 - 10:00

Room: Bramante 6-7

Abstract no.: 45215

PATELLA RECONSTRUCTION- AN IMPORTANT STEP IN PATELLECTOMIZED CANDIDATE UNDERGOING A PRIMARY TOTAL KNEE ARTHROPLASTY

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Patella increases the moment arm of extensor mechanism and improves the efficiency of quadriceps. Patellectomy is known to cause extensor lag and quadriceps weakness. Results of total knee arthroplasty in patients with previous patellectomy are less successful than in patients with intact patella. Knee biomechanics can be restored with patellar reconstruction. Patella can be reconstructed with either autografts or allografts. Review of literature revealed few cases reported on the different techniques of patellar reconstruction. We report a case of a 66 year male patient who had undergone total patellectomy 10 years back for comminuted fracture and presented with knee pain. Preoperative knee society score was 50(poor) and function score was 45(poor). Cruciate Retaining Total Knee Arthroplasty was done for osteoarthritis of knee where patella was reconstructed with distal medial femoral resection autograft. Result was excellent during 12 month follow up. Accelerated knee rehabilitation started with assisted ambulation on first postoperative day. Post operative recovery was uneventful. Radiographs revealed good position of patella. At 12 months, his quadriceps was 5/5 on MRC grade with range of motion from 0-130 degrees. His postoperative knee society score was 85(excellent) and function score was 90(excellent). This report stresses the importance of planning a patellar reconstruction as a preoperative step of total knee arthroplasty in a patellectomized patient.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty III

Time: 08:30 - 10:00

Room: Bramante 6-7

Abstract no.: 43424

THE IMPACT OF INTRAVENOUS TRANEXAMIC ACID (TXA) IN REDUCING BLOOD LOSS AFTER TOTAL KNEE ARTHROPLASTY (TKA) - A CASE-CONTROL ANALYSIS

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Introduction: bleeding and anemia are common complications of TKA. Blood transfusion is often needed but has high costs and increased risk of infection or systemic complications. The use of antifibrinolytic drugs is becoming widespread, as it is a safe and cost-effective measure. The use of drains is still controversial. Our aim was to assess the impact on blood loss of TXA and non-usage of blood drainage in TKA, with further analysis on safety profile. Methods: since March 2014 we used a protocol of iv TXA and non-placement of drain in TKA. Patients were characterized by age, gender, BMI, ASA score, preop and postop haemoglobin, need for transfusion, surgical site complications, pain, length of stay and thromboembolic events; the control group consisted of patients with drains and no TXA. Results: 25 patients in the study group and 50 patients in the control group. No statistical difference in age, gender, BMI or preop haemoglobin between groups. Blood loss was significantly lower in the study group. 8 patients in the control group required blood transfusion vs none in the study group. Mean length of stay was shorter in the study group. 5 patients in the control group and 2 patients in the study group had complications. No thromboembolic events. Conclusions: antifibrinolytic drugs are an effective method for preventing postoperative blood loss. Drainage may increase postop anemia. The use of TXA and non-use of drains significantly decreased blood loss and need for transfusion without increasing the number of complications or impaired functional recover

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty III

Time: 08:30 - 10:00

Room: Bramante 6-7

Abstract no.: 43823

INTRAARTICULAR TRANEXAMIC ACID IN TOTAL KNEE ARTHROPLASTY: ZERO BLOOD TRANSFUSION, MARKED DECREASE IN COST

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Introduction: Primary Total Knee replacement(TKR) is one of the most common orthopedic procedures. Although it is a bloodless surgery with a tourniquet, post-operative blood transfusion needs have been reported as a considerable problem. It has been reported that the use of tranexamic acid intraarticular during TKR decreases blood loss and need for blood transfusion postoperatively. We decided to investigate the use of tranexamic acid sprayed topically intraarticular and resulting post-operative demand for blood transfusion
Methods: We studied all the primary unilateral TKR performed during 2015, in which intraarticular tranexamic acid was used. The primary outcome was postoperative need of blood transfusion and cost. Secondary outcomes were postoperative drain blood loss, hemoglobin levels, the length of stay, adverse reactions and local pain evaluated with the visual Wong-Baker scale. Results: 95 patients had a TKR with the use of intraarticular tranexamic acid. Medium blood drain loss at 24 hours post op was 125 cc (50-150). Hemoglobin decreased 1 g/dl (0,75 - 3) at 48h post operative with a final medium level at 5 days post-op of 11 g/dl(9,8 - 12,3). Visual pain assessment during stay demonstrated a medium of 3 (2- 6). The length of stay was 4 days (2-6). No reported cases of anemia symptoms or adverse reactions during the post-operative stay. No patient required a blood transfusion
Conclusion: Patients undergoing TKA with intra-articular tranexamic acid have no need for blood transfusion, with no apparent risk, and up to 47500 euros in total were saved.

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Session: Free Papers - Total Knee Arthroplasty III

Time: 08:30 - 10:00

Room: Bramante 6-7

Abstract no.: 45375

INTRA-ARTICULAR VERSUS INTRAVENOUS TRANEXAMIC ACID IN TOTAL KNEE ARTHROPLASTY WITHOUT USING DRAIN: A RANDOMIZED CLINICAL TRIAL

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Introduction: Perioperative blood loss has been a major problem after total knee arthroplasty (TKA). The use of tranexamic acid (TXA) has revolutionized the care of patients undergoing TKA. We conducted this randomized trial to compare the efficacy and safety of intravenous (IV) versus intra-articular (IA) TXA injection in TKA. Methods: Eighty-nine patients were allocated to two groups taking IA or IV injection of TXA using strict inclusion and exclusion criteria. The TKA was done under tourniquet control. In 42 patients, 1.5 gr of TXA was only injected intravenously before inflation of tourniquet. After the procedure the capsule was closed in a watertight fashion. No suction drains were used. In 47 patients, the 1.5 gr dose of TXA was only injected after capsular closure intra-articularly. The blood loss was calculated based on serial hemoglobin levels during postoperative admission. Any complications or side effects were recorded. Results: The mean preoperative level of hemoglobin (Hgb) did not significantly differ between the two groups. The Hgb level at third postoperative day was 10.621.18 mg/dl in IA group and 10.791.28 in IV group ($p=0.54$). The amount of calculated blood loss was 81.04 ml and 82.07 ml in IA and IV groups, respectively ($p=.914$). we did not encounter any complications from either IV or IA usage of TXA. Conclusion: The use of TXA during TKA is safe and effective in patients in whom no suction drain is used. The route of injection (IV or IA) does not alter the beneficial effect or complications of TXA.

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Room: Bramante 6-7

Abstract no.: 45135

CLINICAL COURSE OF RESIDUAL FLEXION CONTRACTURE AFTER TOTAL KNEE ARTHROPLASTY IN PATIENTS WITH HEMOPHILIC ARTHROPATHY

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Introduction: Flexion contracture (FC) is a commonly encountered deformity in patient undergoing total knee arthroplasty (TKA) due to hemophilic arthropathy (HA). Clinical course of FC after replacement of an osteoarthritic knee is well reported in the literature. However, to our experience in a high volume referral center, the course may be different in HA. Methods: Between April 2010 and April 2014, 65 patients with hemophilic arthropathy and flexion contracture were enrolled and underwent TKA. Preoperative and follow-up status of range of motion, knee society score, WOMAC and SF36 quality of life scores was recorded. The amount of flexion deformity was also observed immediately after wound closure and before termination of anesthesia. All patients were followed for at least 12 months. Results: Of 76 patients undergoing TKA, 65 (85.5%) had flexion deformity preoperatively. The knee scores had been significantly improved at 12th month post-surgery. The mean preoperative flexion contracture (27.6 ± 11.2) was significantly corrected (14.2 ± 6.2) at the end of the procedure ($p < 0.000$). At 12th month, the flexion contracture decreased in all patients (mean 2.2 ± 3.2) with respect to immediate postoperative values, largest part of the correction being during the first 6 months ($p < 0.05$). Conclusion: According to our data, residual on-table flexion contracture after TKA in HA can significantly improve over time. Our findings, is in contrast to most studies on osteoarthritic patients where flexion contracture tend to persist and complete intraoperative correction of the deformity is advised.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty III

Time: 08:30 - 10:00

Room: Bramante 6-7

Abstract no.: 45288

COMPARATIVE ANALYSIS OF MEDIAL AND LATERAL PARAPATELLAR APPROACH FOR TOTAL KNEE ARTHROPLASTY WITH VALGUS DEFORMITY

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Introduction: Arthroplasty in Valgus Knees tend to present a greater challenge as compared to varus counterparts. Attaining ligament balance and restoring the mechanical axis are the most important determinants for a successful surgical outcome and longevity of implant. Objectives: A study was conducted to compare the medial and lateral parapatellar approaches in case of moderate to severe valgus knees undergoing arthroplasty. Methods: A single centre study examining pre-operative outcomes in a series of 40 patients who underwent primary knee replacement for OA between June 2013 and December 2014. Patients were divided into two groups on basis of the surgical approach used. Patients were standardized for demographics, valgus deformity >10 degrees, no previous history of knee surgery. The pre and post operative assessment was carried on by comparing radiographs, alignment and post operative knee function. The statistical analysis was performed using SPSS for Mac. P values were calculated with independent samples t-test; values of $p < 0.05$ were considered as significant. Results: Patient demographics ($p > 0.05$) and valgus correctability were comparable in the two groups. There was also no difference between the mean postoperative valgus angle ($p > 0.05$). Three patients developed complication, 2 had superficial skin infection and one had transient common peroneal injury. However, till this date the joints are stable and no revisions have been carried out. Conclusion: The use of a lateral-parapatellar approach, appropriate soft tissue release, yielded in all cases a stable, well aligned knee arthroplasty. This represents a viable alternative to the medial-parapatellar approach in patients with moderate and severe genu-valgum.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty III

Time: 08:30 - 10:00

Room: Bramante 6-7

Abstract no.: 43546

ANALYSIS OF DIFFERENT POLYETHYLENE INSERT CONGRUENCIES IN MOBILE BEARING TOTAL KNEE ARTHROPLASTY DURING DAILY ACTIVITIES

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Introduction Several types of insert congruency are currently available for mobile bearing (MB) implants. Our clinical experience has reported that asymmetric lateral-sliding (LS) inserts enable better and more natural knee motion compared to standard congruency (SC) design. However, the correlation between clinical output and insert congruency has not been biomechanically proven. Therefore, two MB solutions were clinically and experimentally evaluated during daily activities. **Methods** In 2012-15, 303 patients were retrospectively analyzed (151 with SC design, 152 with LS design). PCL was preserved for all patients. Additionally, a patient-specific model of a lower leg, resurfaced with both designs, was analyzed during walking and squat. Implants movement and bone stress were investigated. **Results** preoperatively, patients had average flexion of 105° (extension deficit 5°); at the latest follow-up LS group reported 120° average flexion with no extension deficit; SC group showed a lower average flexion. A better self-confidence during the movements and no pain affected the patient in the LS group, while antero-lateral pain was reported in some patients of the SC group. **Biomechanical analysis** shows that the SC insert induces higher bone stresses. LS design has lower shear stress, improving implant stability and lifetime. Both designs replicate similar kinematics. However, the motion is differently achieved by the two solutions. SC design rotates more on the tray than LS, but with less relative motion between femoral and insert. **Conclusions** The biomechanical analysis justify the clinical output. Kinematics is similar for the two designs; LS solutions shows less bone stress and inducing less pain.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty IV

Time: 10:30 - 12:00

Room: Bramante 6-7

Abstract no.: 43788

PROSPECTIVE STUDY OF 100 TOTAL KNEE ARTHROPLASTY USING PSI: REAL ADVANTAGES AND DISADVANTAGES OF A STILL EVOLVING TECHNIQUE

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Introduction: Authors emphasize importance of prosthesis alignment to ensure a long survivorship of implants. Aim was to prove advantages and disadvantages using PSI in TKR, examining axes and prosthetic components position. Materials: 100 patients, affected by osteoarthritis with axial deviation exceeding 3°, underwent to TKR (Wright). TC-scan was performed during pre-operative following strict protocol. Each planning has been revised. Protocol included: pre-operative lower limb teleradiography and staging (KSS), after 3 months teleradiography and after 2 years restaging with KSS. Post operative axes were compared to the planed ones and examined: between anatomical and mechanical femoral axis (α AAM), femoral flexion shield (FSF), tibial slope (ST) and frontal angle of tibial component (α CT). Negative outcome was considered as axial deviations \pm 2. Moreover blood loss in 40 consecutive patients was examined: 20 subjects underwent PSI and 20 traditional TKR (using Mercuriali algorithm). Results: Patients achieved excellent clinical and functional results. In 2 cases we changed femoral size. Flexion was always more than 105°; 8 errors of tibial component and 1 of the femoral were observed; there were 2 errors of final α AAM. Blood loss was significantly lower among patients who underwent PSI. Conclusion: PSI allows to perform a TSS surgery with less transfusions and to obtain optimal and reproducible alignments. This technique requires an adequate learning curve. Weakness is that doesn't allow to evaluate stability of knee: there are errors of tibial component above all the tibial slope and this aspect may be improved changing the tibial jig.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty IV

Time: 10:30 - 12:00

Room: Bramante 6-7

Abstract no.: 43926

ANTERIOR V/S POSTERIOR REFERENCING IN TOTAL KNEE ARTHROPLASTY: A PERSONAL PREFERENCE OR ANY OBJECTIVE EVIDENCE?

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Introduction: Despite the advent of computer navigated flexion gap method, the conventional measured resection method continues to remain the most commonly practiced method worldwide. The use of anterior or posterior femoral referencing while making the femoral cuts is still the subject of surgeon's preference and there is very little evidence in literature to suggest superiority of one method over another. Methods: This study evaluates data of 56 patients operated by single surgeon at a tertiary care centre who were retrospectively assessed into anterior referencing or posterior referencing groups. Functional evaluation of patients using SF-12, WOMAC & Knee Society Scores and serial radiographic assessment for any complications was carried out over a period of 3 years. Results: The differences found in operative times, blood loss, lengths of hospital stay were not statistically significant. However, posterior referencing group had better outcomes in terms of patient satisfaction and early knee range of motion. There was no evidence of notching or supra-condylar fracture in the posterior referenced group. Conclusion: Anterior referencing has obvious benefits of prevention of anterior cortical notching but with the current availability of implant with narrow intervals in sizes, notching is a rare possibility with posterior referenced implants as well. Anterior referencing has definite concerns when dealing with in-between sizes. Under-sizing the implant may elevate the joint line in flexion or whereas oversizing may contribute to over-hang or flexion deformity. There is decreased trend to oversize the implants in posterior referenced patients, thereby eluding chances of patello-femoral overstuffing.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty IV

Time: 10:30 - 12:00

Room: Bramante 6-7

Abstract no.: 43220

RADIOGRAPHIC ANALYSIS OF KINEMATIC VERSUS MECHANICAL ALIGNED TOTAL KNEE ARTHROPLASTY

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Background: Recently, kinematic aligned total knee arthroplasty (TKA) has gained interest for achieving better clinical outcomes over mechanical aligned TKA. However, superiority of kinematic to mechanical aligned TKA is debatable still now. The main purpose of the present study was therefore to compare postoperative radiography following kinematic and mechanical aligned TKA. Methods: Sixty cruciate-retaining (CR) TKAs -30 kinematic and 30 mechanical aligned - were performed in patients with varus-type osteoarthritis using a navigation system. Using postoperative two-leg and one-leg standing long leg radiographs, joint line orientation angle to the floor, conventional mechanical axis (cMA), and true mechanical axis (tMA; line from hip center to the lowest point of the calcaneus) were compared between the two groups. Results: Joint line orientation angles were $1.3 \pm 1.8^\circ$ varus in kinematic and $3.2 \pm 2.7^\circ$ valgus in mechanical aligned group with two-leg standing condition ($p < 0.05$), which were shifted to $0.7 \pm 1.7^\circ$ valgus and $4.3 \pm 1.9^\circ$ valgus with one-leg standing condition, respectively. In two-leg standing condition, cMAs passed through $43.8 \pm 10.2\%$ in kinematic and $48.7 \pm 7.6\%$ in mechanical aligned group ($p < 0.05$), which were shifted to $49.2 \pm 12.2\%$ and $53.7 \pm 7.5\%$ in tMA assessment, respectively. Conclusions: Kinematic aligned TKA exhibited parallel joint line to the floor during one-leg and two-leg standing (gait cycle) and neutral weight-bearing in tMA assessment when compared with mechanical aligned TKA, which may influence clinical outcomes.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty IV

Time: 10:30 - 12:00

Room: Bramante 6-7

Abstract no.: 43923

EXPECTATIONS OF YOUNGER PATIENTS CONCERNING ACTIVITIES AFTER KNEE ARTHROPLASTY: ARE WE ASKING THE RIGHT QUESTIONS?

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Introduction: Indications for total and unicompartmental knee arthroplasty (KA) have expanded to younger patients, in which Patient Reported Outcome Measures (PROMs) show ceiling effects. This might be due to higher expectation. Our aims were to explore expectations of younger patients concerning activities in daily life, work and leisure time after KA and to assess to what extent PROMs meet and evaluate these activities of importance. Methods: Six focus groups were performed among 37 osteoarthritis (OA) patients <65 years awaiting KA. Patients indicated what activities they expected to perform better in daily life, work and leisure time after KA. Additionally, 28 activities of daily life, 17 of work, and 27 of leisure time were depicted from seven PROMs, which were rated on importance, frequency, and bother. A total score, representing motivation for surgery, was also calculated. Results: Younger OA patients expect 16 activities after KA to perform better, including high-impact leisure time activities. From the PROMs, daily life and work activities were rated high in both importance and motivation for surgery, but for leisure time activities this varied highly between patients. All seven PROMs score activities of importance, but no single PROM incorporates all activities rated important. Conclusion: Younger patients expect to perform better on many activities of daily life, work and leisure time after KA, and often at demanding levels. To measure outcomes of younger patients, we suggest using PROMs that include work- and leisure time activities besides daily life activities, in which preferably scored activities can be individualized.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty IV

Time: 10:30 - 12:00

Room: Bramante 6-7

Abstract no.: 45395

A COHORT STUDY COMPARING THE FUNCTIONAL AND GENERAL HEALTH OUTCOMES OF STAGED VS. SIMULTANEOUS BILATERAL PRIMARY TOTAL KNEE REPLACEMENTS

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Background: Bilateral primary total knee replacements can be performed simultaneously (under the same anaesthetic) or in a staged fashion. Simultaneous TKRs can be favourable for the patient as it limits the surgery to a single event, and is associated with reduced total rehabilitation time and length of hospital stay. Studies, thus far, have examined morbidity and mortality, but none have looked at longer-term function or satisfaction scores. Methods: We undertook a retrospective cohort study to compare the functional and general health outcomes of staged vs. simultaneous bilateral primary total knee arthroplasties. All patients who underwent a bilateral total knee arthroplasty in our centre from 2012 - 2014 and met defined inclusion criteria were included. Oxford Knee, EuroQol and satisfaction scores (visual analogue scale 0-100) were assessed at baseline and 1-year. Results: 82 simultaneous bilateral knees and 86 staged bilateral knees were identified that met the inclusion criteria. The patients were age and sex matched. There was no significant difference in the change in Oxford Knee (20.1 vs. 18.1 $p=0.170$) and EuroQol scores (0.41 vs. 0.48 $p=0.350$) between simultaneous and staged operations at 1-year respectively. Satisfaction was comparable between the two groups (88.8 vs. 86.2, $p=0.52$). Total length of stay (days) was longer for cumulative staged operations than simultaneous operations (5.92 vs. 9.23 $p=0.00$). Conclusion(s): Endpoint and change in Oxford Knee, EuroQol and satisfaction scores are similar between simultaneous and staged bilateral TKRs but there is reduced rehabilitation time, total length of hospital stay and cost-saving benefits with simultaneous bilateral TKRs.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty IV

Time: 10:30 - 12:00

Room: Bramante 6-7

Abstract no.: 43465

HAS THE INTRODUCTION OF AN ENHANCED RECOVERY PROGRAMME IMPROVED PATIENT REPORTED OUTCOME MEASURES FOR PATIENTS UNDERGOING A TOTAL KNEE REPLACEMENT?

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Introduction: In August 2014 an Enhanced Recovery After Surgery (ERAS) programme was introduced for Total Knee Replacement (TKR) patients at our hospital; involving a multimodal multidisciplinary approach for the initial post-operative care. The aim of our investigation was to see whether ERAS improved patient reported outcome measures (PROMs) at 6 months post-op, as to the best of our knowledge this longer-term endpoint has not been published in the literature. **Methods:** We enrolled 80 patients undergoing a TKR into each arm pre (n = 75) and post-ERAS (n = 66), 19 patients were removed due to incomplete data. Both cohorts were asked to complete Oxford Knee (OKS) and EQ-5D scores pre-op and at 6 months post-op. This prospectively gathered data was analysed to ascertain whether introducing ERAS has impacted upon PROMs at 6 months post-op. Pre-op scores were analysed to prove both cohorts were analogous. **Results:** Our results showed there was no significant difference between the patient cohorts (p = 0.13). Before the ERAS programme was introduced the mean OKS pre/post-op difference was +14.96, however afterwards the difference was +13.70, which gave a minimal overall change of -1.26 (p = 0.44). Additionally, between pre and post-ERAS cohorts there was a non-significant trend observed within EQ-5D Index and VAS scores with a mean difference of +0.08 (p = 0.18) and +2.53 (p = 0.48), respectively. **Conclusion:** Despite the immediate post-operative benefit of ERAS being well reported in the literature, we have demonstrated that this has not been maintained by 6 months post-op.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty IV

Time: 10:30 - 12:00

Room: Bramante 6-7

Abstract no.: 43186

SHORT-TERM CLINICAL OUTCOMES OF MEASURED RESECTION AND GAP BALANCING TECHNIQUES USING ATTUNE TKR IMPLANT

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Background: Attune implant was developed based on the concept of multiple radius which addresses the mid-flexion instability. The technique of gap balancing also serves to optimize the flexion stability. The aim of this study is to compare short-term clinical outcomes of measured resection and gap balancing techniques using Attune TKR implant. Method: This is a randomized prospective clinical trial of patients with end-stage osteoarthritis who underwent knee arthroplasty surgery using Attune implant from January 2014 to June 2015. There were 36 patients in group 1 who underwent measured resection technique. There were 25 patients in group 2 who underwent gap balancing techniques. Clinical outcomes scores were measured pre-operatively and 6 months post-operatively. Result: Both groups were similar in term of demographics and pre-operative clinical scores. Both groups showed significant improvement in majority post-operative scores. Mean Range of motion at 6 months (group 1: 117.2 SD 18 to 109.9 SD 15 vs group 2: 117.2 SD 17 to 108.4 SD 16, $p=0.953$ vs 0.7). Mean oxford knee score were similar (group 1: 19.4 vs group 2: 19.5, $p=0.976$). Mean AP score (group 1: 9.19 to 8.06 vs group 2: 8.54 to 9.16, $p=0.32$ vs 0.239.) Mean ML score (group 1: 11.9 to 12.25 vs group 2: 12.9 to 13.54, $p=0.37$ vs 0.26). Conclusion: Our current study showed clinical outcomes between these two techniques are similar at 6 months post-operatively. Further prospective studies are needed to assess the long-term outcomes of Attune implant.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty IV

Time: 10:30 - 12:00

Room: Bramante 6-7

Abstract no.: 44227

QUALITY OF LIFE FOLLOWING TKR IN 3 DISTINCT PATIENT POPULATIONS

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Introduction: Despite the large number of patients undergoing TKR there remains a 10 - 15% dissatisfaction rate. Objectives: To see if patient satisfaction following TKR varied between different continents with different cultures and ethnicities. Methods: We studied a consecutive sample of 60 TKRs performed in dedicated joint replacement centers in 3 continents; USA, Europe and Asia. All patients had a minimum of 2 years follow up. All 3 groups were matched in terms of age, sex and indication for surgery. All patients were followed prospectively with preoperative and postoperative quality of life questionnaires, including SF-36, KOOS and Knee Society Scores (KSS). Our null hypothesis was that results of TKR showed no difference between the continents. Analysis of Variance (ANOVA) was used to test for difference between the patient cohorts. Results: All 3 cohorts of patients reported significant ($P<0.05$) improvements in their quality of life scores. Patients from Asia had significantly lower ($P<0.05$) pre-operative function scores which improved to match their western counterparts post operatively. Patients from Holland had significantly lower improvement in their function scores ($P<0.05$) compared with their US and Asian counterparts. Conclusions: Total Knee Replacement provided similar benefits and improvement in quality of life to patient populations in all 3 continents as measured by SF-36, KSS and KOOS. Asian patients were found to have worse pain scores on presentation possibly related to their cultural reluctance to undergo surgery. Patients in Europe had lower post operative functional scores possibly due to their higher expectations from the knee replacement surgery.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty IV

Time: 10:30 - 12:00

Room: Bramante 6-7

Abstract no.: 44797

THE CLINICAL OUTCOMES OF TIBIAL DETACHMENT OF MEDIAL COLLATERAL LIGAMENT DURING LIGAMENT BALANCING IN PRIMARY TOTAL KNEE ARTHROPLASTY -MINIMUM FOLLOW UP OF 5 YEARS -

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Objective: The aim of our study is to compare the clinical and radiological outcomes between both total knee arthroplasties with complete tibial detachment of medial collateral ligament (MCL) in one knee and intact MCL in contra-lateral knee in same patients. **Methods:** 24 patients had experienced bilateral posterior-stabilised total knee arthroplasty with complete release of superficial MCL in one knee and intact superficial MCL in contra-lateral knee from January 2010 to December 2013. The average age at the time of operation were 74.2(58-85) and 75.2(58-85) years, and all patients were followed up for minimum 5 years. **Results:** At last follow-up, knee score and function score, WOMAC, high flexion score, subjective satisfaction, the range of motion, limb alignment were not different significantly among both knees. The mean value of medial joint opening gap in TKAs with tibial detachment of MCL on valgus stress radiography with telos at 30° flexed position was not significantly different ($p=0.286$) and a difference of more than 5° of medial opening gap compared with the contra-lateral knee was not observed in all patients. Of 24 patients, 6 patients preferred the side of complete release of superficial MCL among her knees, whereas 4 patients preferred the side of intact superficial MCL, and 10 patients did not feel the difference among both knees. No revision was performed in all patients until last follow-up. **Conclusions:** Complete detachment of superficial MCL at tibial attachment site did not decrease the clinical and radiological outcomes until mid-term to long term follow up.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty IV

Time: 10:30 - 12:00

Room: Bramante 6-7

Abstract no.: 43328

PATIENT EXPECTATIONS AND SATISFACTION AFTER COMPUTER ASSISTED TOTAL KNEE ARTHROPLASTY

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Introduction: The purpose of this study was to determine which factors contribute to patient expectations and satisfaction after total knee arthroplasty (TKA). **Methods:** A total of 147 patients (182 knees) with knee osteoarthritis who underwent primary TKA with navigation and were determined to have intraoperative laxity were studied. After implantation of all components, varus / valgus laxity of the knee was measured manually with the knee at 0°, 30°, 60°, 90°, and 120° guided by a navigation system. Intraoperative medio-lateral laxity was defined as the absolute difference between varus stress and valgus stress. The factors that affected patient expectations and satisfaction were evaluated using the 2011 Knee Society score. A multivariate analysis was performed. **Results:** The mean medio-lateral laxities with the knee at 0°, 30°, 60°, 90°, and 120° were 2.7°, 2.9°, 2.3°, 3.4°, and 5.1°, respectively. Patient expectations after TKA correlated with ROM ($p=0.007$), symptoms ($p=0.021$), and functional activities ($p<0.001$). Satisfaction after TKA correlated with symptoms ($p<0.001$) and functional activities ($p=0.016$). Medio-lateral laxity had no correlation with expectations and satisfaction. **Conclusion:** Symptoms and functional activities are correlated with patient expectations and satisfaction after TKA. Higher ROM after TKA resulted in better patient expectations. Medio-lateral laxity did not affect patient expectations and satisfaction in the present study using gap technique with navigation. The surgeons should perform TKA to obtain better ROM and better function after surgery.

Date: 2016-09-10

Session: Free Papers - Total Knee Arthroplasty IV

Time: 10:30 - 12:00

Room: Bramante 6-7

Abstract no.: 42538

FAILURE MECHANISMS, RADIOGRAPHIC AND CLINICAL FEATURES OF TIBIAL COMPONENT FAILURE IN KINEMATICALLY ALIGNED TKA

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Background: Kinematically aligned (KA) TKA aligns the tibial component in varus, creating concern that varus overload might result in early catastrophic failure. Methods: Out of 3418 knees requiring a primary TKA treated with KA TKA, eight patients presented with tibial component failure. Radiographic and clinical features of the group of patients with a failed tibial component (FG) were compared to a control group (CG) that was randomly selected and matched 1:3. Results: Six patients presented with instability at a mean of 34 ± 12 months, and two patients presented with pain at a mean of 11 ± 6 months. The only radiographic feature (FG vs CG) associated with tibial component failure was a greater sagittal tibial component angle (- posterior slope; $-11^\circ \pm 3^\circ$ vs $-6^\circ \pm 3^\circ$, $p = 0.0009$) (excluding one patient with reverse slope), and not the coronal tibial component angle (-vaurs; $-4^\circ \pm 2^\circ$ vs $-2^\circ \pm 3^\circ$, $p = 0.3564$), or the coronal hip-knee-ankle angle ($0^\circ \pm 3^\circ$ vs $-1^\circ \pm 2^\circ$, $p = 0.5481$). The clinical features (FG vs CG) associated with tibial component failure were less preoperative flexion ($99^\circ \pm 16^\circ$ vs $111^\circ \pm 11^\circ$, $p = 0.0234$), and a trend towards a higher body-mass-index (36 ± 5 vs 31 ± 6 kg/m², $p = 0.0615$). Conclusion: Because patients with isolated tibial component failure have a less than optimum posterior slope, there is a suggestion that the mechanism of failure is posterior and not varus overload in the KA TKA.

Date: 2016-09-10

Session: Free Papers - Pain Management

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 44284

A PROSPECTIVE RANDOMIZED CONTROLLED STUDY COMPARING THE PAIN RELIEF IN PATIENTS WITH OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURES WITH THE USE OF VERTEBROPLASTY OR FACET BLOCKING

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Purpose To compare the clinical and radiological outcomes of patients undergoing percutaneous vertebroplasty (PVP) versus those undergoing facet blocking (FB) for severe pain due to osteoporotic vertebral compression fractures (OVCFs). **Methods** 206 patients who had OVCFs on spine radiography and intractable back pain for ≤ 8 weeks were recruited between January 2009 and January 2013 (165 females and 41 males, age ≥ 55 years). Patients were randomly assigned to the PVP group (100 patients) or the FB group (106 patients). VAS, ODI, RMD scores, scores on the Standardized Physical Component of the SF-36 form (SPC) and scores on the Standardized Mental Component of the SF-36 form (SMC) were determined preoperatively and at each follow-up time (1 day, 1 week, 1, 3, 6, and 12 months). In addition, plain radiographs were obtained at 3, 6, and 12 months postoperatively to detect new fractures. **Results** Significantly lower VAS, ODI, and RMD scores for patients in the PVP group compared to those in the FB group were observed at follow-up of 1 day and 1 week ($P < 0.05$). However, differences in the VAS, ODI, RMD and SPC/MCS (SF-36) scores between the two groups at follow-ups of more than 1 month were statistically insignificant ($P > 0.05$). Difference in numbers of new fractures at the follow-up of 12 month was also statistically insignificant. **Conclusions** PVP produced better pain relief than FB in the short term (≤ 1 week). However, the difference in pain-relief between these two techniques was insignificant in the long term (follow-up between 1 month and 12 months).

Date: 2016-09-10

Session: Free Papers - Pain Management

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 44330

REGIONAL ANALGESIA IN TRAUMA: THE FUTURE OF PRE-OPERATIVE ANALGESIA

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Introduction: The management of pain in trauma patients is often reported as inadequate. Conventionally, systemic opiate-based analgesia is used for these patients, but this can bring side effects such as confusion and respiratory depression. Are emergency room peripheral nerve blocks an effective alternative? Method: A critical systematic review was conducted using the PubMed, Medline and Cochrane databases. Discussion: Peripheral nerve blocks have been shown in femoral fractures to be an effective alternative form of analgesia. Commonly used during surgery to reduce post-operative pain, evidence shows that they can also provide pain relief in the acute phase, with efficacy superior to that of conventional analgesics. Recent studies have also shown development in distal blocks. Selective posterior tibial nerve blocks have been shown to aid in acute calcaneal fractures, although studies are limited. In upper limb trauma ultrasound guided forearm blocks are being shown to be effective in paediatric hand injuries. There is limited evidence on the use of interscalene brachial plexus blocks in the acute trauma setting, however with improving ultrasound technology and skills in regional anaesthesia, this could be a potential route to provide preoperative analgesia in upper limb trauma. Conclusion: The increased availability of technology, such as ultrasound, has increased the safety of peripheral blocks, and has improved the accessibility in the emergency setting. Evidence shows peripheral nerve blocks to be a safe, effective technique in providing pain relief in trauma and should be considered as a potential alternative to conventional systemic analgesia.

Date: 2016-09-10

Session: Free Papers - Pain Management

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 44400

SHOULD WE BE USING NON PARTICULATE STEROIDS IN TRANSFORAMINAL EPIDURAL STEROID INJECTIONS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Transforaminal epidural steroid injections (TFESIs) are widely used to ease radicular pain for spinal pathologies. Concern has been articulated regarding use of particulate steroids for TFESIs, given reports linking particulates to post procedural paralysis. Non-particulate, or soluble steroids, are mooted as an alternative; however their effectiveness relative to particulate steroids has not been conclusively proven. Methods: We performed a systematic review of the literature, in line with PRISMA guidelines, utilising four databases (Pubmed, EMBASE, Web of Science and the Cochrane library). We used a broad search term [epidural (and) steroid] to ensure a wide capture of articles. Our studies of interest were level one trials comparing particulate and non particulate steroid injections, with pain scores (visual analogue scales, numerical pain scores) and disability (the Oswestry Disability Index) being the outcomes of interest. Results: A total of 11,353 titles were reviewed. Following full review, four of these were suitable for quantitative synthesis, with a total of 300 participants, 147 in the particulate group and 153 in the non particulate group. Using a random effects model, the pooled standard mean difference of VAS score diminution was not significant (0.31 in favour of particulates, 95% CI -0.68 - 1.30). Conclusion: Particulate steroids are not demonstrably better in relieving pain compared to their non particulate counterparts. In view of the concerns over the safety profile of particulate steroids, it may be prudent to switch to non particulates.

Date: 2016-09-10

Session: Free Papers - Pain Management

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 45537

PAIN MANAGEMENT IN NECK OF FEMUR PATIENTS: DOES IT MAKE A DIFFERENCE?

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Introduction: Neck of femur (NOF) fractures are associated with significant morbidity and mortality, associated with poor functional recovery and subsequent cost in long-term rehabilitation. In the UK, NICE Guidance CG124 recommends that patient pain is assessed immediately upon hospital presentation and that immediate analgesia is offered. Our aim was to assess the role of pain management in mortality outcome, time to surgery from admission, and length of stay (LOS) in NOF patients. Methods: Data on pain score assessment and analgesia administration to NOF patients within 60 minutes of arrival was collected from hospitals within the North West Deanery via Advancing Quality North West between October 2014 and June 2015. The primary outcome measure was inpatient all-cause mortality; time to surgery and LOS were secondary outcome measures. Results: 54% of 3583 NOF patients had their pain score assessed and analgesia administered whilst 46% failed this criteria. Mortality rate was significantly lower at 6.6% in patients who were well managed with analgesia compared to 8.4% of patients who failed this criteria ($p=0.044$). This same group of patients who received analgesia also had a significant reduction in average time to surgery: 34.7 vs 42.3 hours ($p=0.032$). Average LOS was 22.3 vs 21.8 days ($p = 0.410$). Conclusions: We have been able to demonstrate a significant correlation between good initial pain management and improved mortality rate as well as time to surgery. This highlights the importance of assessing and providing immediate pain relief in NOF patients as part of standard care pathways.

Date: 2016-09-10

Session: Free Papers - Pain Management

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 43386

HYLAN G-F 20 VERSUS LOW MOLECULAR HYALURONIC ACIDS FOR KNEE OSTEOARTHRITIS: A META-ANALYSIS

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Objective: The objective of current study was to compare the effectiveness and safety of intraarticular injection of Hylan G-F 20 and lower molecular hyaluronan acids (LMHA) in treatment of knee osteoarthritis. **Methods:** A comprehensive search of multiple databases and review references was done. The pain relative outcomes and treatment relative advance events (TRAE) from intent-to-treat analyzed studies were pooled for meta-analysis. **Results:** Nineteen trials with a total of 2970 patients and with 3089 knees were included, with a pooled dropout rate of 7.9%. The pooled pain relative outcomes from 5 to 12 weeks reached a favors of Hylan G-F 20 ($I^2=88%$, Random effects, $p=0.005$); and the significance still exist while excluded the three most favored Hylan G-F 20 studies to eliminate the heterogeneity ($I^2=0%$, Fixed effect, $p=0.03$). No significant difference was reached for other group and subgroup comparisons. No significant difference was reached in comparing the TRAE patients ($I^2=0%$, risk difference [RD] 0.02, 95% confidence interval [95%CI] -0.01 to 0.05, $p=0.12$) and TRAEs ($I^2=9%$, RD 0.03, 95%CI -0.01 to 0.07, $p=0.17$). **Conclusions:** Current results indicated that Hylan G-F 20 has almost the same pain relieving effect for knee osteoarthritis while comparing with LMHAs, although limited evidence showed a superior effect favor Hylan G-F 20 on a period from 5 to 12 week post injections; and no evidence in increase the risk of TRAEs. We advocated the use of intraarticular Hylan G-F 20 injection as well as LMHAs in patients with knee osteoarthritis.

Date: 2016-09-10

Session: Free Papers - Pain Management

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 44997

LOCAL INFILTRATIVE ANALGESIA (LIA) TECHNIQUE FOR PAIN CONTROL AFTER SIMULTANEOUS BILATERAL TOTAL KNEE ARTHROPLASTY

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Introduction: Various forms of postoperative analgesia can be used after bilateral total knee arthroplasty. There are many trials supporting effectiveness of local infiltrative analgesia (LIA) in unilateral total knee arthroplasty, whereas the role of LIA in simultaneous bilateral total knee arthroplasty is evaluated by very few studies. In our study we have used a mixture of ropivacaine, clonidine, adrenalin, ketorolac and normal saline for infiltration into the tissue around the surgical field to achieve pain control in post-operative period. Methods: Thirty two patients underwent primary bilateral total knee arthroplasty from 1st August 2015 till 31st December 2015 and all of them were included in the study. Patients were divided into two groups; group A included patients with body weight less than 70 kilogram whereas group B included patients with body weight more than 70 kilogram. Local infiltration of analgesic mixture was prepared according to patients body weight. Evaluation of effectiveness of LIA was done using a numerical rating scale for pain from 0-10. Other methods used for evaluation included time required for independent mobilisation and patients satisfaction recorded at the end of 24 hours. Results: Pain control was very satisfactory with average NRS score of less than 1 at 6 hours, 1.8 at 12 hours and 2.2 at 18 hours. Independent mobilisation was achieved 36 to 48 hours after surgery and 87.5 % of patients were satisfied with this method. Conclusion: Local infiltrative analgesia is simple, safe, and effective method for pain management after simultaneous bilateral total knee arthroplasty.

Date: 2016-09-10

Session: Free Papers - Pain Management

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 44252

COMPARISON OF ANTERIOR KNEE PAIN FOLLOWING PATELLAR DENERVATION VERSUS NON-DENERVATION IN UNILATERAL TOTAL KNEE ARTHROPLASTY-A RANDOMIZED CONTROLLED TRIAL WITH 12 MONTHS FOLLOW UP

Balaraju MENEGE, Krishna Kiran ECHAMPATI, Sukeshrao SANKINEANI, Chiranjeevi TAYA, Guravareddy ANNAPAREDDY VEKKATA², Balaraju MENEGE

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Introduction and Aim:Knee arthroplasty for primary osteoarthritis has proven to provide excellent pain relief and improved postoperative functional outcome.However, approximately 20% of patients undergoing knee arthroplasty present with residual pain, especially anterior knee pain, resulting in significant patient dissatisfaction and inferior clinical outcome.The origin of this pain is postulated to be patellar in location and patellar denervation has been proposed to be helpful in such patients. However, no randomized trials have been conducted till date to provide evidence regarding the same,Therefore we have conducted a randomized control trial comparing the anterior knee pain in patients undergoing patellar denervation versus non-denervation in patients undergoing unilateral total knee arthroplasty.Material and Methods:A prospective randomized controlled trial conducted in our institution from January 2015 to June 2015 in which 130 patients undergoing primary unilateral total knee arthroplasty underwent either patellar denervation (n=65) or non-denervation (n=65) and were assessed for anterior knee pain using Visual analogue scale (VAS), Kujala score pre-operatively and post-operatively at 3,6,12 months.Results:Preoperative scores analyzed and there were no statistically significant differences between two groups with Kujala score(p =.270) and VAS score (p =.071). Post operatively anterior knee pain scores with Visual Analogue Scale (VAS) were significantly better in the denervation group at 3 months(P=0.003) and at 6 months(P=.0001) but not at 12 months(P=0.760) and Kujala scores for anterior knee pain were significantly better in the denervation group at 3 months(P=0.003) and at 6 months(P=0.001) but not at 12 months(P=0.088).No perioperative complications were noted in all the patients in the study group.

Date: 2016-09-10

Session: Free Papers - Pain Management

Time: 10:30 - 12:00

Room: Bramante 8-9

Abstract no.: 43954

ROLE OF VISCO SUPPLEMENTATION FOR PAIN RELIEF IN PRIMARY OSTEOARTHRITIS OF KNEE JOINT

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Introduction: Osteoarthritis the most common chronic human joint disease. Age is the most important risk factors for Osteoarthritis. Osteoarthritis is an imbalance between synthesis and degradation occurring in the joints. It is characterized by disturbance of smooth property of cartilage resulting in formation of subchondral cysts and marginal osteophytes. These processes continue until full thickness of the cartilage is lost and bone is left exposed. Viscosupplementation i.e. intra-articular injection of Hyaluronic acid is one of the method to treat early osteo-arthritis. Aims: To evaluate the results of use of intra-articular injection of hyaluronic acid in primary osteoarthritis of knee joint with reference to relief of pain. Materials and Methods: 30 patients having mild to moderate osteoarthritis that reported to the Department of Orthopedics, Dr. D.Y. Patil Medical College and Research Centre were included in the present study. Patients were assessed as per Kellgren and Lawrence grading for osteoarthritis of knee joint. Patients with grades 1-3 were selected for the present study. Total of 5 injections of hyaluronic acid were given at weekly intervals. Results: The outcome for above 30 cases according to visual analogue score 11 patients (37%) showed excellent result, 11 patients (37%) showed good results, 7 patients (23%) showed fair results and 1 patient (3%) showed poor result. Conclusion: Viscosupplementation is a very safe, simple and out door procedure and helps in relieving the pain in almost all the cases. The magnitude of pain relief is inversely proportional to the severity of the problem.

Date: 2016-09-08

Session: CAOS - Knee Symposium

Time: 08:30 - 10:00

Room: Bramante 6-7

Abstract no.: 44670

TECHNOLOGY OPTIMISED ENHANCED RECOVERY SOLUTIONS IMPROVE OUTCOMES IN TOTAL HIP (THA) AND KNEE ARTHROPLASTY (TKA)

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Introduction: Outcomes of enhanced recovery programs (ERAS) can be optimised by technology. A solution integrating health service components (joint school, standardized clinical protocols, accelerated physical therapy plus novel outreach support) with multimedia features (interactive patient and staff web-sites, paper-based packs including general health, recovery and exercise information, and a patient workflow management system) was assessed. Methods: 2126 consecutive primary THA (n=1063) and TKA (n=1063) patients were divided into a pre-solution (n=1036) and post-solution group (n=1090) of comparable demographics. The latter were subdivided by eligibility for outreach support (OS). Results: Overall medical complexity was relatively high (ASA grade 3+ in 25.5% THA; 32% TKA; Charlson co-morbidity index, mean 3.2 +/- 2.27 (sd) THA; mean 4.1 +/- 1.96 (sd) TKA). Mean LOS (geometric) was significantly reduced (4.8d to 3.4 (OS) 4.2 (Non-OS) in THA; 5.6d to 4.0 (OS) 5.0 (Non-OS) in TKA, p<0.001). There were no associated negative trends in 30d and 6-month readmission rates, nor complication, reoperation and re-attendance rates (not statistically significant). OHS, OKS, EQ5D-5L and general health ratings were improved in some sub-groups compared to UK national averages. Patients reported significantly higher experience (education, confidence, expectation management, recommendation, satisfaction) (p<0.001 to p=0.003) compared to standard care at up to 6 months follow-up. Conclusions: A technology enhanced ERAS program demonstrated consistent, universal reduction in LOS by 40% in THA and 31% in TKA in a medically complex patient population. Clinically effective, patient-focused technology-based solutions can drive efficiency in lower limb arthroplasty as well as improved patient experience and activation.

Date: 2016-09-08
Session: CAOS - Hip Symposium
Time: 10:30 - 12:00
Room: Bramante 6-7

Abstract no.: 43667

**ROBOT-ASSISTED HIP REPLACEMENT SURGERY (MAKOPLASTY):
ADVANTAGES AND PRELIMINARY RESULTS**

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In the last few years, on the basis of favorable scientific results obtained in clinical trials, the use of robotic devices in orthopedic surgery has considerably developed. Between December 2012 and December 2015, at the San Francesco Clinic in Verona (Italy), Dr. Perazzini and his team have performed 255 hip arthroplasties (mean age 65 years: 125 men ,10 two-step bilateral cases ; 112 women, 8 two-step bilateral) using the robotic Mako-Rio System, which allows, in an average time of 51.4 min, a high degree of reproducibility and reliability in the positioning of the prosthetic implant. We observed the following complications: 2 infections, 1 paralysis and 1 neurapraxia of the SPE ,4 fractures of the greater trochanter, 1 dislocation and 1 aseptic loosening. Blind-collected data of 40 randomized patients (average hospitalization:14 days) revealed: a Barthel Index increased by an average of 60 to 93.19; a mean Harris Hip Score of 35.75 at the entrance, of 77 at discharge, of 86,94 at the 2 months-follow up and of 94,75 after 1 year. In our opinion the MAKO-RIO robot-assisted system is an effective procedure, enabling surgeons to avoid misplacement of the components of prosthetic joints thanks to the precise and continuous intraoperative control of predefined prosthetic position. The method is also reliable and reproducible, although it does have a long learning curve. Our initial data on the hip function at 2 years follow-up seem to confirm the effectiveness of this technique.

Date: 2016-09-08

Session: CAOS - Other uses of CAOS Technology

Time: 16:00 - 17:30

Room: Bramante 6-7

Abstract no.: 43103

ASSESSMENT OF NERVE FIBER TRANSACTION IN ACUTE SPINAL CORD INJURY USING TRACTOGRAPHIC 3D RECONSTRUCTION

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Spinal trauma is commonly associated with spinal cord injury. Severe disabilities of various grades and durations result as a sequelae to the cord injury. Imaging plays a pivotal role in assessment of vertebra-spinal trauma and is of help in planning the management protocol, surgical approach and long term follow up. The existing modalities though quite sophisticated however provide sub-optimal information regarding microtrauma to spinal cord. Diffusion tensor imaging (DTI) and tractography are novel MRI based techniques which show promise in this regard. The aim of presented study is to elaborate our experience in depiction of cord microtrauma in a subset of 43 patients presenting with acute traumatic spinal cord injury. Inline assessment of traumatized organ was done using standard MRI sequences and diffusion weighted imaging. Post processing of DTI data to generate fractional anisotropy (FA) maps and tractography was done to assess fiber continuity at the suspected site of transaction and evidences of microtrauma adjacent to it. Our results indicate towards a positive role of DTI and tractography in confirming or excluding structural discontinuity of nerve fibers/tracts following spinal cord injury. Further a combination of above with FA proximal and distal to trauma site may be helpful in long term prognostication. In conclusion, diffusion tensor imaging with tractography shows its superior efficacy for qualitative evaluation of cord fibers integrity in cord trauma of various types /grades. Further tractography is also a semiquantitative tool for evaluation of residual cord fibers adjacent to the site of maximum damage.

Date: 2016-09-08

Session: CAOS - Other uses of CAOS Technology

Time: 16:00 - 17:30

Room: Bramante 6-7

Abstract no.: 44654

E HEALTH: TRANSFORMING HEALTH CARE SERVICES

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There is an ongoing increase in use of electronic media globally including healthcare(1). With advances in the use of electronic health records among providers, patient and physician access to health information and communication develop new avenues for transforming healthcare services(13). In a randomized controlled trial study, 120 cases evaluated by using three user interface clinical informatics, telemedicine and consumer informatics from January 2014 to June 2015 . All three interventions were interpreted by using questionnaire method to fulfil four parameters by answering 'yes' or 'no'. The study summarized from data analysis by using chi-square test, shows that in clinical informatics a main application is computer based medical records used for decision making(100%), quality (100%), cost effectiveness(80%), time(90%). For the doctors and paramedics interface like telemedicine helps in decision making(84%),quality of treatment(80%), cost effectiveness(69%) and time(78%) improved. Consumer informatics using web portals and internet to get information of disease and its management helps them to make decision making(79%), improved quality of life(58%) with cost effectiveness(80%) by reducing time(58%). Use of single platform like this on application will help to reduce time and increase cost effectiveness to reduce mortality, morbidity and increase functional productivity of an individual and nation.

Date: 2016-09-08

Session: CAOS - Other uses of CAOS Technology

Time: 16:00 - 17:30

Room: Bramante 6-7

Abstract no.: 44316

E-LEARNING IN TEACHING ORTHOPAEDIC SURGEONS

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The purpose of this paper is to present a modality of using e-learning as an alternative to classical instructional systems of orthopedic trainees, in order to enhance the practical skills of the future specialist, so to respond to the request of modern orthopedic practice. We present our experience expanding the results of the Leonardo da Vinci project (transfer of innovation), named "A Web-based E-Training Platform for Extended Human Motion Investigation in Orthopedics", addressed to skeletal trauma surgeons, with interdisciplinary approaches. The main result of the project is a Virtual Training & Communication Center ORTHO-eMAN for innovative education and the unique feature of this e-learning platform is that it contains not only courses, but also interactive training material with real clinical case studies. The trainees analyze the given clinical or imagistic information, regarding the patient, and establish, within an interactive process, the diagnosis and treatment. As in real situations, each step of the algorithm must be followed, otherwise the outcome of the patient is negative. Modern medicine requires complex training of the physicians, including the latest methods of diagnosis and treatment, in order to face the rapid changes of pathology and therapeutic means. The tool presented by this paper consistently improves the diagnostic skills of the orthopedic trainees, which were not at all targeted by the standard means of teaching.

Date: 2016-09-08

Session: CAOS - Other uses of CAOS Technology

Time: 16:00 - 17:30

Room: Bramante 6-7

Abstract no.: 44860

E-LEARNING IN TRAUMA EDUCATION: MOTIVATION IS SIGNIFICANTLY INCREASED BY MOOCS

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Introduction: Massive open online courses (MOOCs) were proposed as effective teaching tools with a maximum multiplier effect. They are ubiquitous available and free of costs and allow knowledge transfer and allow education of basic trauma skills. However, it remains unclear if the critical knowledge transfer KT is comparable to classical frontal lecture. Hence, the aim of this study was to quantify the KT for the first time within a prospective, randomized, controlled study on medical students going through a polytrauma teaching session. Moreover, substantial learning parameters, such as motivation, interaction etc. were analysed. Material & Methods: 22 students were randomized either to a frontal lecture on polytrauma management of identical 45 min or a MOOCS, respectively. The amount of knowledge transfer was quantified by a standardized multiple choice questionnaire before and after the teaching unit. Results are given as [%] of correct answers in mean \pm sd. After the session, the students went through a standardized questionnaire on learning motivation and the results were compared between both groups. Chi-square and fisher's exact test were calculated at a significance level of $p < 0.05$. Results: The amount of correct answers increased identical in both groups (frontal lecture group 40 \pm 10[%] to 75 \pm 17[%], MOOCS 40 \pm 17 [%] to 75 \pm 17[%], $p > 0.3$) whereas intrinsic motivation was significantly increased in the MOOCS group. Conclusion: We demonstrate for the first time a proof of principle that knowledge transfer is identical using modern e-learning tools. Hence, MOOCS are now ready to use as an effective teaching tool for basic knowledge in medical teaching.

Date: 2016-09-10

Session: Symposium Road Trauma

Time: 08:30 - 10:00

Room: Bramante 3

Abstract no.: 44443

**PATTERN OF MORTALITY IN SEVERELY INJURED TRAUMA PATIENTS:
A SYSTEMATIC REVIEW OF AUTOPSY STUDIES**

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Introduction: The majority (up to 60%) of patients who die due to trauma deceased prior admission to the hospital. Autopsy studies provide important information about the causes of death and possible preventability of death. Several authors hypothesized that the pattern of mortality has changed over the years. In this systemic literature review, we aimed to prove the consistency and value of data in autopsy studies using a systematic review of literature. Methods: A literature research via PubMed/Medline database was performed. References from available studies were searched as well. The following search terms were used: "multiple trauma", "epidemiology", "patterns of mortality", "trauma deaths", and "autopsy". Inclusion criteria: literature in English or German language published within the last four decades (1980-2015). Due to the differences in studies a meta-analysis could not be performed. Results: We have identified marked differences in demographic parameters and injury severity between studies included in to this analysis. In addition, the incidence of penetrating injuries was significantly different in studies (between 4% and 38%). Both unimodal and bimodal concepts of trauma mortality were mainly favoured. Leading causes of death (brain injury and haemorrhagic shock) did not change over the last decades. Conclusion: According to our systematic analysis the distribution of mortality after trauma appear to have changed over decades. Bimodal or unimodal distribution was mainly described in studies. However, we have identified marked differences between the publications. We would like to encourage investigators to choose the inclusion criteria more critically and to consider factors affecting the pattern of mortality

Date: 2016-09-10

Session: Symposium Road Trauma

Time: 08:30 - 10:00

Room: Bramante 3

Abstract no.: 43658

STUDY OF STERNAL FRACTURES: ASSOCIATION WITH VERTEBRAL BODY FRACTURES

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Background: Sternal fractures are often associated with vertebral body fractures. This retrospective study was designed to analyze the correlation between the location of fractures and frequency of injuries. Methods: The subjects were patients with a sternal fracture who were initially admitted to our tertiary emergency center between July 2006 and December 2015. Sternal fractures and other injuries were diagnosed with whole-body computed tomography. Information about the patients such as mechanisms of injury was obtained from their medical records. Correlations between the location of fractures and concomitant vertebral body fractures were analyzed using chi-square tests. A p value of <0.05 was considered statistically significant. Results: A total of 43 patients with sternal fracture were enrolled, of which, 14 had fractures of the manubrium sterni and 29, those of the corpus sterni. Twenty-five patients had complications of vertebral body fractures, whereas 18 did not. Regarding the mechanisms of injury, 15 patients were injured by falls, 25 by traffic accidents, and 3 by other reasons. Among the fractures caused by traffic accidents, those of the manubrium sterni (7/9 cases) were frequently associated with vertebral body fractures, compared with those of the corpus sterni (4/16 cases). Conclusions: For fractures of the manubrium sterni caused by traffic accidents, further clinical and radiologic studies of the whole spine are necessary.

Date: 2016-09-10

Session: Symposium Road Trauma

Time: 08:30 - 10:00

Room: Bramante 3

Abstract no.: 45122

ROLE OF UNILATERAL EXTERNAL FIXATION AS A PRIMARY AND DEFINITIVE TREATMENT FOR OPEN TIBIA FRACTURES

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Introduction: Treatment of open fractures of tibia comprises of debridement of the wound, skeletal stabilization and soft tissue cover if needed. Skeletal fixation can be primary fixation or initial external then converting to definitive fixation, what we called as staged reconstruction. It is always a dilemma whether to continue the external fixation or to convert it to internal fixation, if reduction and alignment is good. Aims of the study: 1. To analyze the efficacy of unilateral external fixation in maintaining alignment, stable fixation and union. 2. To study the post operative complications and functional outcome. Materials and methods: Between Jan 2013 to Dec 2014, 248 patients were selectively analyzed from a consecutive group of 891 open tibia fractures treated with debridement and external fixation application. Inclusion criteria were open tibia fractures treated with external fixation with good radiological alignment (varus/valgus < 5 degrees and posterior/anterior angulation < 10 degrees). Results: The average time for the patient to bear weight with walker was 13.5 weeks, average time to union was 21 weeks and external fixator removal was 14 weeks. They were followed for a minimum period of one year. Summary of outcome is as follows - union rate - 69.3%, aseptic non union rate - 26.2%, septic non union rate - 4.4%, mal-union rate - 18% and infection rate 15.7%. Conclusion: External fixation can only be used as a definitive treatment if alignment, reduction and circumferential contact is perfect. Followup with high vigilance is extremely important. We should be proactive to intervene if there is delay in callus formation and progressive mal-alignment.

Date: 2016-09-10

Session: Free Papers - Hand & Rheumatology

Time: 08:30 - 10:00

Room: Bramante 8-9

Abstract no.: 43400

CLINICAL AND FUNCTIONAL EFFICIENCY OF LARGE JOINT ARTHROPLASTY IN PATIENTS WITH HIGHLY ACTIVE RHEUMATOID ARTHRITIS

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Currently, the possibility of joint replacement in patients with high rheumatoid arthritis (RA) activity is debatable and requires serious study. The aim - To evaluate the results of knee and hip joints replacement in patients with highly active RA Materials and methods. Arthroplasty was performed in 24 patients (mean age - 56,5 ± 9,6 years) with high RA activity (DAS28 5,51 ± 0,63). At the time of surgery 16 (66.7%) patients received methotrexate, 3 (12.5%) - leflunomide. 7 (29.2%) patients received biologics. DMARDS did not change before and after surgery. VAS, DAS28, index HAQ were assessed before the operation, after 1, 6 and 12 months Results. VAS - initially 70,6 ± 14,3 mm, the first month after the surgery (47,3 ± 18,6 mm), at 6 month - up to 48,0 ± 10,9 mm (p <0.05,) after 12 months - up to 30,1 ± 10,0 mm (p <0.05). 6 months after the surgery DAS28 significantly (p <0.05) reduced from 5,51 ± 1,63 to 3,83 ± 0,55; in 12 months DAS28 - 3,26 ± 0,62,2. HAQ index: before surgery - 1,72 ± 0,22, a month after - 1,58 ± 0,26, after 6 months - 1,22 ± 0,28 (p <0.05), at 1 year - 1,03 ± 0,18 (p <0.05). Conclusion. Arthroplasty in patients with highly active RA may be considered quite reasonable and effective in improving functional ability and pain relief. Removal of abnormal joint tissues also reduces RA activity, increases the overall response to basic therapy after surgery.

Date: 2016-09-10

Session: Free Papers - Hand & Rheumatology

Time: 08:30 - 10:00

Room: Bramante 8-9

Abstract no.: 44733

PLATELET ASSOCIATED IGG IN PATIENTS WITH RHEUMATOID ARTHRITIS

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[Objectives] Thrombocytopenia was sometimes shown in rheumatoid arthritis (RA). Increased levels of platelet associated IgG (PAIgG) found in idiopathic thrombocytopenia. We evaluated clinical significance of PAIgG in RA. [Methods] PAIgG in 266 RA patients were examined. We evaluated age at onset of RA, age of PAIgG test, disease duration of RA, platelet number (PN), platelet bindable IgG, C-reactive protein (CRP), erythrocyte sedimentation rate, rheumatoid factor (RF), anti-cyclic citrullinated peptide antibody, matrix metalloproteinase-3, Disease activity score including a 28-joint count (DAS28)-CRP, DAS28-ESR, simplified disease activity index, clinical disease activity index, and methotrexate dose between PAIgG(+) and (-) groups. [Results] PAIgG were positive in 60.9%. There were significant differences only in RF and PN between 2 groups. RF were higher in PAIgG(+) than those in (-) significantly (126.4IU/mL vs. 84.4IU/mL, p=0.03). RF(+) rate were also higher in PAIgG(+) than those in (-) significantly (75.3% vs. 61.5%, p=0.02). PN were lower in PAIgG(+) than those in (-) significantly (207,000/218,000/ L vs. L) whose PN were under normal limit (NL) were only 11.1%. There was no significant difference compared with PAIgG(-) patients whose PN were under NL (8.7%). [Conclusions] We found high PAIgG(+) rate in RA which usually shows thrombocytosis. Although PN in PAIgG(+) were lower significantly, the mean value was within NL. The rates under NL between 2 groups were not different significantly. Although PAIgG had small effect on PN in RA, RF were higher in PAIgG(+) significantly. Further investigation is needed to evaluate clinical significance of PAIgG in RA.

Date: 2016-09-10

Session: Free Papers - Hand & Rheumatology

Time: 08:30 - 10:00

Room: Bramante 8-9

Abstract no.: 44847

**DISEASE ACTIVITY IN PATIENTS WITH RHEUMATOID ARTHRITIS
ACCORDING VITAMIN D STATUS**

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The aim of the study was to evaluate the association between 25(OH)D level and disease activity in patients with rheumatoid arthritis. Materials and methods. The study included 61 patients with rheumatoid arthritis, 73.8 % were women, 70.4 patients were younger 60 yrs. old. Subjects suffering from liver and kidney insufficiency and those who had received vitamin D in the previous 3 months have been excluded. Disease activity was assessed by DAS-28 score, joint pain degree, morning stiffness time and laboratory measures including Hb and ESR. The level of 25(OH)D_{total} was evaluated by electrochemiluminescence method (Elecsys 2010, Roche). Vitamin D deficiency was defined as a 25(OH)D below 20 ng/ml, and vitamin D insufficiency as 25(OH)D of 21–29 ng/ml. Results. In patients with rheumatoid arthritis the frequency of vitamin D insufficiency and deficiency was 32.8 and 55.7 % accordingly. 14.7 % subjects with rheumatoid arthritis had severe vitamin D deficiency. 25(OH)D was associated with morning stiffness ($r=-0.35$; $p=0.04$), ESR level ($r=-0.36$; $p=0.05$), DAS-28 ($r=-0.24$; $p=0.05$), Hb ($r=0.27$; $p=0.01$). Conclusion. Vitamin D deficiency can be an important factor in worsening of disease activity in patients with rheumatoid arthritis.

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Session: Free Papers - Hand & Rheumatology

Time: 08:30 - 10:00

Room: Bramante 8-9

Abstract no.: 42843

COMPARATIVE ANALYSIS OF LOCAL COMPLICATIONS OF HIP AND KNEE ARTHROPLASTY IN PATIENTS WITH RHEUMATOID ARTHRITIS AND OSTEOARTHRITIS

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Introduction: Surgical treatment of patients with rheumatoid arthritis (RA) is associated with an increased risk of complications. It is caused presence of an inflammatory process, osteoporosis, the reduced physical activity, the severity of functional impairment, long-term glucocorticoid therapy, biologic and disease-modifying antirheumatic drugs. All this provides elongated wound healing period, the development of infectious complications, increased risk of periprosthetic fractures. Objective: to provide a comparative analysis of local complications of total hip (THA) and knee (TKA) arthroplasty in RA and osteoarthritis (OA) patients. Materials and methods: We analyzed 2142 THA (n = 1177) and TKA (n = 965), which were performed to RA (n = 1118) and OA (n = 1024) patients between 1998 and 2015. Results: We identified 199 (7.21%) local complications: 96 (8.59%) in RA patients, 59 (5.76%) - OA. It was performed 1651 THA, including 467 operations in RA patients, 710 operations in OA patients. Local complications after THA - 120 (7.27%): 48 (10.29%) in RA and 37 (5.21%) in OA patients. It was performed 1110 TKA, including 651 operations in RA patients and 314 operations in OA patients. Local complications after TKA 79 (7.18%): 48 (7.37%) in RA and 22 (7.00%) in OA patients. Conclusions: Local complications after THA and TKA in RA patients (8.59%) more than in OA patients (5.76%) in 1.5 times. It shows that the operative treatment of patients with RA requires a special approach and special management of patients with RA and careful treatment of the bone and surrounding tissues during surgery.

Date: 2016-09-10

Session: Free Papers - Hand & Rheumatology

Time: 08:30 - 10:00

Room: Bramante 8-9

Abstract no.: 42842

STRATEGY FOR PREVENTION OF VENOUS THROMBOEMBOLISM (VTE) IN PATIENTS WITH RHEUMATOID ARTHRITIS UNDERGOING JOINT ARTHROPLASTY

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Introduction: in this study, we analyzed incidences of VTE in patients with rheumatoid arthritis (RA) and osteoarthritis (OA) after total knee or hip arthroplasty, compared different strategies for prevention of VTE. Methods: we studied 370 patients. 131 (35.4%) patients with RA, 239 (64.6%) patients with OA. Each patient group was divided into 4 subgroups by type of drug therapy. The first - nadroparin calcium, the second - dabigatran etexilate; the third - nadroparin calcium with transfer to dabigatran etexilate; the fourth group - without medication (include patients with RA that constantly received NSAIDs and basis therapy with a minimum risk factors for VTE; in this group of patients was carried out non-drug prevention VTE methods. Doppler ultrasonography (DUS) was routinely performed preoperatively and on postoperative day 7, 14, then 1 time a month for diagnosing a DVT. Time of observation was 1 year. Results: VTE cases were reported in 16 (4.3%) patients, 2 of them (0.5%) with RA and 14 (3.8%) with OA. The first patient with RA received dabigatran etexilate. The second patient with RA from the fourth subgroup. Of the 16 cases of VTE 10 (62.5%) were asymptomatic and 6 (37.5%) - symptomatic. Both cases of thrombosis in a group of RA were asymptomatic. Major bleeding was documented in 6 (1.6%) patients with OA and 2 (0.5%) patients with RA. Conclusion: Cases of VTE in patients with RA was lower than patients with OA. The number of asymptomatic deep vein thrombosis prevails over symptomatic in both groups. In patients with RA and OA who were on monotherapy nadroparin calcium or dabigatran etexilate, have reported cases of VTE. Combined drug VTE prevention in patients with RA and OA has been the most effective and safe, no cases of VTE has not been registered.

Date: 2016-09-08

Session: Free Papers - Arthroscopy and Sports Medicine Miscellaneous

Time: 16:00 - 17:30

Room: Caravaggio 7-8

Abstract no.: 45361

**CLASSIFICATION OF THE ACETABULAR-LABRAL-PINCER COMPLEX:
AN ARTHROSCOPIC AND RADIOLOGICAL STUDY INTO VARIANCE OF
THE ACETABULAR LABRUM IN RELATION TO PINCER LESIONS**

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Introduction: The anatomy of the ALP complex (ALPC) has not been fully understood both in terms of its morphology and its aetiology. Objectives: To assess the anatomy and morphology of variants of the acetabular-labral-pincer complex (ALPC) and to consider the significance of these in treating pincer lesions. Methods: Between January 2010 and December 2011 hip arthroscopy was performed on 254 patients. At the time of surgery detailed observation was made of the acetabular-labral –pincer complex. MRI scans of the patients were reviewed and coronal images correlated with the arthroscopic morphological findings. Results: We identified and described three distinct types of acetabular-labral-pincer complexes and discuss the techniques employed to treat them. An additional group were identified, Type 0 in which no pincer was identified (9% of patients). Type I is defined as a pincer lesion formed immediately behind but distinct from the labrum. (9%) Type II is where the pincer lesion has developed within the body of the acetabular labrum and is therefore indistinct from the surrounding labral tissue. (79%) Type III is where the pincer develops inferior to the labral tissue and is also distinct from it. (3%) Conclusions: We propose that ALPC Type I and Type III should be treated with pincer excision without labral take-down and reattachment if the labrum is intact. ALPC Type II require pincer excision, labral take-down, repair and reattachment or pincer excision and partial labrectomy depending on the condition of the labrum.

Date: 2016-09-08

Session: Free Papers - Arthroscopy and Sports Medicine Miscellaneous

Time: 16:00 - 17:30

Room: Caravaggio 7-8

Abstract no.: 45210

ARTHROSCOPIC ACETABULOPLASTY WITHOUT LABRAL DETACHMENT FOR THE TREATMENT OF PINCER-TYPE FEMOROACETABULAR IMPINGEMENT

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Although arthroscopic and open acetabuloplasty were initially described with labral detachment, we aimed to evaluate the outcome of patients treated with arthroscopic acetabuloplasty without labral detachment. We retrospectively analyzed 44 patients who underwent a hip arthroscopy with pincer-type or combined impingement with an intact chondrolabral junction. Clinical evaluation consisted of preoperative and postoperative modified Harris Hip Score (mHHS) and WOMAC as well as postoperative Visual Analogue Scale (VAS) of pain and satisfaction. Mean preoperative anterior and lateral center-edge angles were 35° and 29°, respectively. Crossover sign was found in 82% of cases. At an average follow-up of 32 months (range: 27-38) mHHS changed from 51.06 (SD 4.81) preoperatively to 84.97 (SD 12.79) postoperatively. Preoperative WOMAC was 29.18 (SD 8) and postoperative, 13.10 (SD 11). Postoperative VAS was 7.5 and 2.27 for satisfaction and pain. When comparing patients with Tönnis 0 to those with Tönnis 1, the former showed better results regarding postoperative mHHS (89.90 vs 77.85, $p=0.03$), pain VAS (1.5 vs 6.3, $p=0.03$) and satisfaction VAS (8.2 vs 6.3, $p=0.01$). Postoperative WOMAC was slightly better for Tönnis 0 patients (8.31 vs 19.3, $p=0.05$). No differences were found in preoperative WOMAC and mHHS. Three of 44 patients required a second surgical procedure and were considered failures. Survival was 100% at 24 months and 76% at last follow-up (95%CI: 35%-98%). Arthroscopic acetabuloplasty without labral detachment achieved good clinical outcomes in all the evaluated scores. Slight degenerative changes correlated with poorer clinical outcomes, exhibiting better results in patients without osteoarthritis.

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Session: Free Papers - Arthroscopy and Sports Medicine Miscellaneous

Time: 16:00 - 17:30

Room: Caravaggio 7-8

Abstract no.: 42906

ARTHROSCOPIC TREATMENT OF ACETABULAR CARTILAGE LESIONS IN CAM-TYPE HIP IMPINGEMENT WITH MEMBRANE INDUCED CHONDROGENESIS VERSUS MICROFRACTURING

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We report on a consecutive series of patients with cam type FAI (femoro-acetabular impingement) with acetabular cartilage rim lesions larger than 150 mm² that were treated with an arthroscopic Autologous Matrix Induced Chondrogenesis (AMIC) procedure and compared these patients to a matched cohort of patients who underwent an arthroscopic microfracturing. Average defect size was 298 mm² (range 200-425) in group A vs 267 mm² (150-450) in group B (p=0,38). Mean follow-up in group A was 38 months (30-45) and 41 months (28-53 months) in group B (standard deviation 8.39-4.09; p=0.257). We report 2 failures in the AMIC group with conversion to THR at 8 and 36 months respectively, and 3 failures after 12, 14 and 24 months in the control group. Oxford Score was 96/100 in group A (range 90-100) and 91/100 (range 79-100) in group B (p=0,25). Preoperative HHS was 83 in both groups and improved significantly with surgery in both groups to 94 (group A) and 93 (group B) (p<0,01) at 2 years. At final FU there was further improvement in group A to HHS 96.5. Preoperative UCLA score was 6 in both groups and improved significantly to 9 in both groups (p<0,01) at 2 years. UCLA activity score remained high at a mean of 8.9 at final FU. Although clinical scores were higher in group A, statistically no differences were found in comparing both postoperative HHS and UCLA score in between both groups (HHS p=0.07; UCLA p=0.150). Clinical results improved up to 3 years after surgery.

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Session: Free Papers - Arthroscopy and Sports Medicine Miscellaneous

Time: 16:00 - 17:30

Room: Caravaggio 7-8

Abstract no.: 44823

RESULTS OF ARTHROSCOPIC TREATMENT FOR POSTERIOR ANKLE IMPINGEMENT

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Introduction: Endoscopy of the hindfoot or ankle has various indications in the treatment of posterior ankle pain, we focus on the treatment of pain caused by friction at the posterior ankle. Our goal is to provide short-medium term clinical results for posterior ankle arthroscopy in the treatment of posterior ankle impingement syndrome (PAI). Methods: Retrospective evaluation of clinical outcomes of posterior ankle arthroscopy in a series of patients with posterior ankle pain. 21 patients that underwent arthroscopy for PAI, between July of 2010 and October of 2013, were included. 12 female and 9 male. The average age was 22.6 years (16-41 years) and the average follow-up was of 30 months (7.4-65 months). Results were assessed using the Portuguese version of the American Orthopaedic Foot & Ankle Society Score (AOFAS) and the Visual Analogue Scale (VAS). Results: The average time to return to previous activity was 7 weeks (3-13) and 10 weeks for sport activities (3-24). Eighteen patients returned to their previous levels of activity. VAS improved from 7.2 points to 1.4 points. AOFAS score increased from 67.44 (46-91) pre-operatively to 98.02 (83-100) at follow-up. No complications were reported. Conclusions: The PAI syndrome is a common cause of posterior ankle pain. After failure of conservative treatment, the cause of friction may be removed by posterior ankle arthroscopy. This review demonstrates that this procedure is reproducible, safe and effective in symptomatic relief and early return to work, with no reported complications to date.

Date: 2016-09-08

Session: Free Papers - Arthroscopy and Sports Medicine Miscellaneous

Time: 16:00 - 17:30

Room: Caravaggio 7-8

Abstract no.: 44325

A NEW TECHNIQUE OF ARTHROSCOPIC REMOVAL OF DORSAL WRIST GANGLION

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Dorsal wrist ganglion (DWG) is the most common soft-tissue tumor in the hand. Arthroscopic resection of DWG has been described as the procedure of choice and involves establishing 6R or ulnar-midcarpal portals to introduce the arthroscope. Ganglionectomy is performed through shaver inserted directly through the ganglion which deprives opportunity to probe the adjoining structures in intact state. We created a volar radial portal using inside-out technique which provided best view of the DWG. 4/5 or ulnar-midcarpal portal was used as working portal to insert probe and shaver to decompress ganglion, excise its base, part of the sac, adjoining dorsal capsule and the hypertrophied synovium. Working portal away from the ganglion than through it allows better delineation of the ganglion and its sac due to the intactness of the surrounding anatomy. The study comprised of 21 patients of DWG with an average of 5.2 months duration. There were 5 male and 16 females with an average age of 26 years. Six patients had undergone multiple aspirations while two had recurrent ganglion following prior surgical excision. The associated pathologies detected were grade 1 scapholunate instability in 3, asymptomatic TFCC perforation in two with positive ulnar variance in one patient. No stalk could be seen in any patient despite an end on visualization. The mean follow up was of 9.3 months with no recurrence seen. There was significant improvement in wrist range of motion and the grip strength while mean time off work was 12 days.

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Session: Free Papers - Arthroscopy and Sports Medicine Miscellaneous

Time: 16:00 - 17:30

Room: Caravaggio 7-8

Abstract no.: 45251

INJURIES IN ROLLER HOCKEY

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Introduction: Roller Hockey or Quad Hockey is a hockey discipline played on roller skates. Despite its popularity in more than 60 countries, injury patterns are not well studied in this sport. Methods: Roller Hockey players were interviewed by a 6-page questionnaire on injury patterns, incidence and safety equipment. Results: 108 players were interviewed. 65.7% of these played the 1st national league. The average age was 22.9 ± 5.3 years with a body height of 175.3 ± 9.9 cm and a body weight of 74.1 ± 14.5 kg. An average of 27.3 ± 33.8 injuries occurred per player in an average career length of 14.0 ± 5.4 years. Most injuries occurred in training (53.3%). "Ball Contact" was named as a leading cause of serious injury (28.7%), followed by "Team Contact" (26.6%), "Bat Contact" (19.1%) and "falls" (13.8%). The injuries occurred mainly in the regions of hand (19.5%), shoulder or arm (7.8%), the elbow (6.8%) and pelvis or thighs (13.9%). 64 fractures were reported. 85,8% of players had to visit a doctor due to an injury. Overall, 26.9% of players were treated by cast, 20.6% of the players underwent surgery due to roller hockey. Conclusion: This retrospective study of injuries firstly presents epidemiological data of Roller Hockey, showing that most injuries are minor. Severe injuries are comparable to field hockey.

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Session: Free Papers - Arthroscopy and Sports Medicine Miscellaneous

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Room: Caravaggio 7-8

Abstract no.: 44354

ORTHOPAEDIC INJURIES IN MARTIAL ARTS - AN EPIDEMIOLOGICAL PERSPECTIVE

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Introductions: Martial arts are practice of combat developed into systems of training. Over a thousand styles exist worldwide and they are becoming more popular since the advent of mixed martial arts. The nature of contact striking martial arts infers an inherent risk of injury with this sport. Following a systematic review, few studies demonstrate the prevalence of specifically musculoskeletal injuries in this population. Most studies review injuries at one elite level events. This study aimed to identify a one year period prevalence of orthopaedic injuries in contact striking martial arts in participants 16 years and older. **Methods:** An anonymised survey was disseminated to martial artists at grading, competition and training events between February - May 2016. As well as calculation of a one year period prevalence, it aims to identify the common injuries in these martial arts and correlate the injuries with grade/years of experience and setting such as class, competition or grading. **Results:** The results of the survey will be presented at 37th SICOT Orthopaedic World Congress. **Conclusions:** this will identify whether certain injuries are more common at different grades/years of experience and different settings. The implications of these results will be to guide the ringside physician and orthopaedic surgeon this population presets to, as to what injuries to expect and plan optimal management.

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Session: Free Papers - Arthroscopy and Sports Medicine Miscellaneous

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Abstract no.: 44090

NEEDLE ARTHROSCOPY - PROMISING DIAGNOSTIC TOOL

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Introduction: The needle arthroscopy is a novel, technologically sound diagnostic option, that helps enormously in the early phase of the orthopedic diagnosis and treatment process. It can facilitate and speed up the most common knee and shoulder injury and postoperative visualization, not to mention saving the cost of an MRI. Further to this, samples can be collected at the same time, transforming the needle arthroscopy to a cost-effective way of diagnosing various non-traumatic conditions. Method: 92 patients with suspected meniscal pathology were evaluated clinically, ultrasonographically, through an MRI scan and with a needle scope assisted direct visualization. The postoperative results were again verified through needle scope visualization and where appropriate - MRI scans. False negative and false positive results were compared and the final estimate was made based on the result findings from the arthroscopic examination. Results: For ACL tears, the needle scope missed 4 of 32 tears (87% sensitivity, 93% specificity, 91% accuracy) and gave 2 false positive result (98% specificity). The evaluation for tears of the medial and lateral menisci, chondral lesions and/or identifying loose bodies had similar results for the optical system and the conventional arthroscopy: 25-67% sensitivity, 96-99% specificity. The use of the needle scope in the knee, in the office setting may result in visual acuity compromise, resulting in missed and incorrect diagnoses when comparing MRI scan technique and direct scope results.

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Session: Free Papers - Arthroscopy and Sports Medicine Miscellaneous

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Abstract no.: 43177

**THE USE OF PROPHYLACTIC ANTIBIOTICS MAY NOT BE NECESSARY
IN ROUTINE KNEE ARTHROSCOPY**

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Introduction: The use of prophylactic antibiotics in routine knee arthroscopy remains prevalent despite previous evidence suggesting that it may not be necessary, and may indeed carry more risks than benefits. This study aims to determine incidence of post-operative infection in patients undergoing routine knee arthroscopy without prophylactic antibiotics. Materials and methods: This is a retrospective review of 553 consecutive patients who underwent routine knee arthroscopy from 2004 to 2013 by a single fellowship-trained sports surgeon in a single institution. The spectrum of cases included arthroscopic meniscectomy, meniscal repair, microfracture, chondroplasty, removal of loose bodies and lateral retinacular release. No patient received any prophylactic antibiotics. Patient demographics and co-morbidities were reviewed and all patients were followed up post-operatively for a minimum of 2 years. All post-operative complications were recorded. Results: There were 349 male and 204 female patients. The mean age was 41.8 years, mean operative time was 30.4 minutes and mean BMI was 27. Two healthy young patients developed post-operative superficial wound infection within one week after surgery, but recovered with outpatient oral antibiotic. Overall infection rate was 0.36%. No deep knee infections were reported. One patient was readmitted within 30 days post-operation due to ipsilateral lower limb distal deep vein thrombosis. Conclusion: Our study showed a very low rate of post-operative infection, comparable with known rates following such operations. This suggests prophylactic antibiotics may not be necessary, and avoids the known risks associated with their use. Larger, randomized studies would be useful for further validation.

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Abstract no.: 44732

ARTHROSCOPIC DEBRIDEMENT OF THE DEGENERATIVE KNEE – IS THERE STILL A ROLE?

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The role of arthroscopic debridement in the painful degenerative knee remains controversial. Studies have shown that arthroscopic surgery for osteoarthritis of the knee provides no additional benefit to optimized physical and medical therapy. There is however, limited studies on the management of the subgroup of significantly symptomatic patients who remain refractory to maximal conservative treatment and are poor candidates for knee replacement surgery. We propose that with careful selection of patients within this population, arthroscopic debridement can provide good symptomatic relief with sustainable benefits. We performed a retrospective study of 167 patients, aged 40 years or greater, who had symptoms affecting their daily lives and underwent arthroscopic debridement after failure of a minimum 2 months of conservative management. Patients with intraoperative findings of crystal arthropathy were excluded from the study. Functional and satisfaction scores were assessed using Oxford Knee Score, Koos Knee Survey, Short Form-36 (Physical Function) and questions adapted from the North American Spine Society Questionnaire. We report good functional outcomes and patient satisfaction in the majority of patients over a follow up period of 2-6 years after surgery. Of the 167 patients, only 7 patients underwent knee replacement surgeries at a mean of 20.57months (range 7-67months) after arthroscopic debridement. In conclusion, arthroscopic knee debridement can provide good symptomatic relief and sustained benefits in significantly symptomatic patients with degenerative knees who have failed conservative management. This is most useful in patients with symptomatic degenerative meniscal tears with mechanical symptoms and / or patellofemoral osteoarthritis.