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MADRID · SPAIN

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ABSTRACT BOOK – FREE PAPERS

Wednesday, 3 September

Hip 1
08:30 - 08:35

607 Gluteus Medius Repair With Bioinductive Implant: A Prospective Cohort. Mid-Term Results

Dante Rafael Parodi Sanguesa[1], **Jose Felix Castillo Saenz**[2], Daniela Seidel Carrera[3], Emilio Jose Tufiño Carrera[2]

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Abstract
Gluteus medius tendon tears, whether partial or complete, are a common cause of lateral hip pain, with some patients showing poor response to conservative treatments. In these cases, surgical intervention is necessary. This study presents mid-term results of a novel approach to repairing gluteus medius tendon tears using endoscopic surgery combined with a bioinductive implant. A prospective cohort of 33 female patients (mean age 56.7 years) with partial thickness gluteus medius tendon tears, unresponsive to at least 6 months of conservative treatment, underwent endoscopic repair between 2019 and 2024. The procedure involved repairing the tendon with a bioinductive implant, creating microperforations of the greater trochanter, and performing a proximal release of the gluteus maximus insertion. Postoperatively, patients were evaluated using the Modified Harris Hip Score (mHHS), International Hip Outcomes Tool-12 (iHOT-12), Visual Analog Scale (VAS), patient satisfaction surveys, and control MRI at 6 months to assess tendon healing. At a mean follow-up of 12 months (6–36), results showed significant improvements: median mHHS increased from 68 to 84 ($p=0.001$), median iHOT-12 improved from 70 to 83 ($p=0.001$), and VAS decreased from 6 to 2 ($p<0.001$). MRI at 6 months confirmed tendon healing in all patients. All patients reported high satisfaction with the outcome, and no complications were observed. This study demonstrates that endoscopic repair with bioinductive implants offers promising mid-term results, reduces re-ruptures, and enhances patient and surgeon satisfaction.

09:33 - 09:38

1099 Impact Of 'Joint School' On The Rehabilitation Pathway Of Primary Total Hip And Knee Arthroplasties.

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Abstract

I. Introduction
In England and Wales, between 150,000 and 200,000 primary hip and knee replacements are performed yearly, with projections indicating this number will surge to 268,107 by 2060. UK hospital trusts are actively enhancing perioperative patient services to meet this growing demand. An effective strategy for improving recovery is by the implementation of preoperative 'Joint Schools.' This study compares the outcomes of patients who attended the Joint School to those who did not.

II. Methods
This non-randomised study analysed two groups of 53 adult patients in each group, scheduled for elective primary hip or knee Arthroplasties. Patients with revision surgeries, significant mobility issues, or delayed physiotherapy were excluded. The first group underwent surgery without the Joint School service, while the second group received the service before surgery. Comprehensive data was collected on demographics, with the primary outcome focused on the time taken to achieve Physiotherapy goals.

III. Results
The first group (mean age 65.23 years, BMI 30.78, ASA 1.94) required an average of 1.87 days to meet their physiotherapy goals. In contrast, the second group (mean age 68.74 years, BMI 29.58, ASA 1.96) achieved their goals in an average of just 1.38 days ($P < 0.001$).

IV. Conclusion
Patients who received the Joint School service experienced significantly quicker recovery times and felt better prepared for surgery. This study advocates for the widespread implementation of Joint Schools as an essential component of prehabilitation, playing a crucial role in reducing post-operative hospital stays.

Keywords: Joint school, prehabilitation, length of stay.

References

08:45 - 08:50

1451 The Impact Of Total Hip Arthroplasty On Lower Extremity Biomechanics In Unilateral Developmental Dysplasia Of The Hip-Associated Secondary Coxarthrosis: The Course Of Valgus Alignment In The Knee Joint

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Abstract
Aim: This study aimed to evaluate the medium-to-long-term-effects of unilateral THA performed for secondary coxarthrosis due to unilateral DDH on lower extremity biomechanics, and the course of valgus alignment in the knee joint.
Methods: 74 patients(15 males,59 females) with unilateral THA(74 hips) were included. The mean patient age was 44.6 years, with an average-follow-up period of 45.42 months. 49 hips were Crowe 1-2(Group A) and 25 hips Crowe 3-4(Group B). Femoral stems were 13 conical, 19 wedge, and 40 rectangular designs. Standardized measurements were performed on preoperative and final follow-up leg-length-radiographs and clinical assesment with universal scores were completed.
Results: In Group B, postoperative mMPTA(p=0.016), HKA angle(p=0.002), and knee MAD(p=0.029) were significantly higher, while postoperative valgus cut angle(VCA)(p=0.001) was significantly lower. In Group B, postoperative JLCA, HKA angle, knee-MAD increased, while in Group A, HKA angle, knee-MAD decreased. Postoperative VCA decreased in Group B but increased in Group A. In Group B, valgus alignment in the knee joint increased postoperatively, whereas in Group A decreased. Among patients with conical femoral stems, postoperative VCA and mLDFA values were significantly lower than in other stem types(p=0.002;p=0.009), and the reduction in VCA was significantly greater(p=0.037). The postoperative hip-knee-scores were similar.
Conclusion: These findings indicate that in medium-to-long-term follow-up after THA, valgus alignment in the knee joint increased in Crowe 3-4 hips but improved in Crowe 1-2 hips, although this difference did not demonstrate clinical implication. Additionally, the use of conical femoral stems resulted in significant changes in the mechanical axis of the femur.

08:40 - 08:45

1714 Comparison Of Intertrochanteric And Subcapital Osteotomy For SCFE - Long-Term Follow-Up

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Abstract
Introduction: Slipped capital femoral epiphysis (SCFE) is a pediatric hip condition requiring surgical intervention. Treatment options for higher degree slips include intertrochanteric and subcapital osteotomy. Despite surgical treatment, femoroacetabular impingement (FAI) and early-onset hip arthrosis are known long-term complications.
Aims and objectives: To assess the prevalence of FAI and hip arthrosis in a cohort of SCFE patients treated with intertrochanteric or subcapital osteotomy.
Methods: We performed long-term follow-up (35.1±8.6 years) for patients who underwent intertrochanteric (N=20) or subcapital (N=23) osteotomy for SCFE between 1970 and 2001. The history of total hip arthroplasty (THA) was recorded in both groups. Pelvic and hip radiographs were obtained at follow-up, along with clinical measurements of ROM and impingement tests. Harris Hip Score (HHS) was recorded in non-THA patients.
Results: 5/20 (25%) intertrochanteric osteotomy patients and 7/23 (30.4%) subcapital osteotomy patients had undergone THA (mean age 41.2±9.0 vs 40.7±10.4 years). Joint space width of surviving hips (4.8±1.5 mm vs 4.7±1.2 mm) and Kellgren-Lawrence scores showed no significant difference. Alpha angle (75.4±27.0° vs 67.6±21.0°), LCE angle (30.6±9.8° vs 28.9±9.5°) and impingement tests showed no difference. Flexion (105.4±10.0° vs 104.7±10.0°), internal rotation (26.0±15.1° vs 22.8±11.1°) and external rotation (30.3±8.8° vs 27.8±11.2°) were similar. HHS of non-THA patients was 86.7±11.5 and 89.2±13.2 respectively.
Conclusion: Both groups exhibited high prevalence of early THA. Long-term follow-up shows relatively good results in terms of ROM and HHS scores in non-THA patients. Femoroacetabular impingement was rare and did not correlate with surgery type.
Keywords: SCFE, intertrochanteric osteotomy, subcapital osteotomy, FAI, early-onset arthrosis

08:54 - 08:59

2171 MSCT-Assisted Acetabular Bone Stock Quantification During DDH: Implications To THR

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Abstract
Background. Precised quantative assessment of medial wall bone stock in site of the planned acetabular component's (AC) bony bed during DDH is required due to the risks of medial wall perforation and neuvascular complications.
Objectives: to conduct quantative assessment of acetabular medial wall bone stock in projection of the planned acetabular component's bony bed centre according to the proposed MSCT-measuring technique
Study Design & Methods. Complex comparative MSCT-mophometric investigation of 32 normal hips and 65 hips with DDH Crowe I - III was performed. There were assessed medial wall bone width (MBW) in projection of lig. teres bed and planned acetabular component's bony bed centre according to the proposed MSCT-measuring technique; their correlation with femoral head's cranial migration (FHCM), acetabular horizontal sphericity angle (HSAA) and centre-edge (CE) angle. Mann-Whitney test and one-way analysis, Spearman's rank correlation coefficient were applied. A p value < 0.05 was considered significant.
Results. MWW in projection of the lig.teres / AC bony bed centre was defined as: 4,3 mm/7,2 mm for normal hips, 9,95 mm/11,85 mm for Crowe I hips, 15 mm/15,7 mm for Crowe II hips and 15,45 mm/16,05 mm for Crowe III hips, respectively. Correlation of MWW in projection of AC bony bed centre with FHCM, HSAA and CE was defined as r=0,36 (p=0,006); r=0,36 (p=0,007); r=-0,47 (p=0,0007), respectively.
Conclusion. Weak correlation of acetabular medial wall bone stock in projection of acetabular component's bony bed centre with femoral head's cranial migration indicates the invalidity of the Crowe's DDH staging for THR needs

09:04 - 09:09

1341 Latitud Total Hip Replacement System In Younger And Older Patients: A Comprehensive Two-Year Multi-Center Assessment Of Survivorship, Functional Outcomes, And Revision Rates From Latitud 180 Study

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Abstract

Introduction/Aims and Objectives: Total Hip Arthroplasty (THA) is a standard treatment for hip disorders, but patient satisfaction and functional recovery remains the concern especially for novel implants. We evaluated early implant survivorship, functional outcomes, and revision rates of the Latitud Hip Replacement System (HRS) in younger (≤40 years) and older (>40 years) patients undergoing unilateral and bilateral THA.

Study Design and Methods: A prospective, multi-center study was conducted across 11 centers in India with follow-ups at 6 weeks, 6 months, 1 year, and 2 years. Primary outcomes: implant survivorship and revision rates, secondary outcomes: functional scores Harris Hip Score (HHS), Oxford Hip Score (OHS) and adverse events. Statistical analysis involved t-tests and non-parametric tests ($p<0.05$).

Results: Among 192 enrolled patients, 67 were ≤40 years (55 unilateral, 12 bilateral THA) and 125 were >40 years (119 unilateral, 6 bilateral THA). Avascular necrosis was the primary indication in younger patients, while osteoarthritis predominated in older patients. At 2 years, OHS improved significantly in younger unilateral (10.18±3.39 to 43.76±4.8; $p<0.0001$) and bilateral patients (8.75±2.83 to 43.08±4.01; $p<0.0001$). Similarly, older unilateral (8.06±4.67 to 43.69±4.68; $p<0.0001$) and bilateral (10.83±0.98 to 44.67±5.82; $p<0.0001$) patients showed significant improvements. HHS also increased notably across groups. Implant survivorship was 100% in younger patients and 99.15% in older unilateral patients, with one revision due to liner breakage.

Conclusion: The Latitud total HRS demonstrated excellent early survivorship and significant functional improvements in both age groups, supporting its safety and durability for THA.

Keywords: Avascular Necrosis; Functional Outcomes; Latitud total Hip Replacement System, Osteoarthritis.

09:18 - 09:23

2001 Higher Cup Placement With Decreased Inclination And Anteversion In THA Following Chiari Pelvic Osteotomy: A Comparative Study

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Abstract

Introduction

Total hip arthroplasty (THA) after pelvic osteotomy presents challenges due to abnormalities like osteophyte formation and medialization of the femoral head center. Few reports describe cup placement in THA following Chiari pelvic osteotomy (CO). This study aimed to evaluate cup placement in THA after CO.

Aims & Objectives

To evaluate the characteristics of cup placement in THA following CO and compare it with primary THA cases.

Methods

We retrospectively analyzed 27 hips that underwent THA after CO (CO group) between 2018 and 2022. As a control, 27 hips with secondary osteoarthritis without prior osteotomy (P group) were selected using propensity score matching based on age, sex, and surgical approach. Parameters included operative time, blood loss, complications, and cup position: vertical and horizontal distances from the teardrop line to the femoral head center (V-COR, H-COR), inclination (CI), and anteversion (CA). Postoperative range of motion and Japanese Orthopaedic Association (JOA) hip scores were assessed using 3D templating software (Zed Hip).

Results

There were no significant differences in postoperative JOA hip scores. The CO group had significantly longer operative times and greater blood loss. V-COR and H-COR were significantly larger in the CO group ($p<0.0001$, $p=0.007$). CI and CA were smaller in the CO group ($p=0.034$, $p=0.006$). Despite the higher cup placement and decreased anteversion, no dislocations occurred in either group.

Conclusion

THA following CO resulted in higher cup placement and decreased anteversion, contributing to limited motion. While cup positioning is constrained by bony coverage and soft tissue adhesions, no dislocations were observed. Surgeons should be mindful of these factors.

09:42 - 09:47

1314 Personalized Acetabular Implants In Revision Hip Replacement Surgery

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National Medical Research Center of Traumatology and Orthopedics N.N. Priorov, Moscow, Russia

Abstract
BACKGROUND: 3D-printed implants have emerged as a viable option for acetabulum reconstruction, with their use growing in popularity each year.
AIM: This study aimed to assess the early clinical, radiological, and functional outcomes of revision arthroplasty using custom acetabular components in patients with acetabular bone defects.
MATERIALS AND METHODS: Revision arthroplasty was performed on 89 patients, including 66 females and 23 males, with an average age of 60.4±13.4 years (range: 23–89). Based on the Paprosky classification, acetabular defects were categorized as type IIC in 1 case, type IIIA in 21 cases, and type IIIB in 67 cases, with 14 of these cases involving acetabular discontinuity. Functional outcomes were evaluated using the Harris Hip Score (HHS), pain levels were measured using the Visual Analogue Scale (VAS), and social adjustment was assessed using the Western Ontario and McMaster Universities Arthritis Index (WOMAC).
RESULTS: Significant improvements were observed across all assessment scales. The average HHS score increased from 33.6 to 87.1 points, the VAS score decreased from 78.1 to 4.7 points, and the WOMAC score improved from 75.8 to 11.6 points. Complications occurred in 8 cases (12.5%), including one instance of sciatic bone migration from the lower flange of the implant in a patient with acetabular discontinuity.
CONCLUSION: The findings suggest that acetabulum reconstruction using individually designed acetabular components yields promising results.

09:47 - 09:52

2282 3D-Printed Patient-Specific Implants In Hip Revision Arthroplasties With Severe Periacetabular Bone Loss

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Abstract
Keywords: 3D-print, PSI, HRA, Bone loss

Introduction: In hip revision arthroplasties (RHA), we often encounter significant periacetabular bone loss, particularly in cases with Paprosky type IIIa+b, which poses a complex challenge to manage. For severe cases, patient-specific implants (PSI) offer a promising new solution.

Methods: Between 2022 and 2024, our department successfully performed 18 RHA using 3D-printed PSI. These included two cases of severe pelvic destruction due to chronic femoral head necrosis, two cases of conservatively treated central acetabular fractures progressing to chronic nonunion, and 14 cases of RHA related to chronic mechanical failure of total hip arthroplasties with associated periacetabular bone loss. Our industrial partner provided preoperative planning and engineering support for the implants. We evaluated implantation accuracy by comparing data from preoperative planning with postoperative X-rays and assessed implant osteointegration through follow-up imaging.

Results: No early complications were observed in our patients, and implantation accuracy was deemed satisfactory. Follow-up X-rays indicated good osteointegration in 17 cases, with no signs of loosening. However, in one case, mechanical failure due to osteointegration loosening occurred after five months.

Conclusion: The use of PSI to address periacetabular bone loss in RHA is a transformative method, particularly for cases previously deemed inoperable by other surgical teams. Despite the availability of various technical solutions, the biological condition of the patient and the 3D implant designer's expertise are critical factors that significantly influence implant survival rates and surgeon satisfaction. These findings underscore the importance of personalized approaches and interdisciplinary collaboration in enhancing surgical outcomes.

08:59 - 09:04

1092 Total Hip Arthroplasty Improves Global Spinal Sagittal Imbalance – A Prospective Radiographic Cohort Study

Ka Chun Thomas Leung

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Abstract

Introduction

Hip osteoarthritis (OA) can cause abnormal kinematics in the spine-pelvis-hip complex. Hip-spine syndrome often involves global spinal sagittal imbalance. This study aims to evaluate the changes in global spinal sagittal alignment in patients following THA, and assess its associations with spinopelvic parameters.

Methods

This is an institutional review board-approved prospective cohort study in patients who underwent THA at our tertiary referral center between January 2017 and June 2024. The inclusion criteria were adult patients who underwent primary THA. The exclusion criteria were patients with prior hip operation, conversion or revision hip arthroplasty, or surgical spinal fusion. Standardized preoperative and postoperative EOS whole spine and postural spinopelvic radiographs were analysed. Primary outcomes are SVA changes. Secondary outcomes were postoperative changes in spinopelvic parameters including pelvic tilt(PT), lumbar lordosis(LL), pelvic incidence(PI), PI-LL mismatch(PI-LL), sacral slope(SS) and pelvic femoral angle(PFA). Global spinal sagittal imbalance was defined as SVA>/=50mm. Flatback deformity was defined as PI-LL>10°. Comparison between balanced and imbalanced groups were performed using the Mann-Whitney-U test.

Results

124 subjects were included, with a mean follow-up time of 23.8±21.2 months. Postoperatively, mean SVA was reduced from 40.1±36.4 to 35.0±36.3 mm (p=.038). Among the 48 patients (38%) in the imbalanced group, SVA was significantly reduced from 78.1±22.8 to 57.9±38.3mm (p<.001). Compared to the balanced group, imbalanced patients had higher PI-LL mismatch, smaller PFA while standing, and more spinal stiffness in terms of LL postural change.

Conclusion

THA could significantly improve preoperative global spinal sagittal imbalance. This finding is critical in management of hip-spine syndrome.

09:09 - 09:14

1118 Early Discharge In Patients Undergone To Total Hip Arthroplasty: Is Necessary Keeping Overnight Hospitalization? Our Experience

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Abstract
Background
Total hip arthroplasty (THA) is one of the most commonly performed surgical procedures. THA outpatients receive few, if any, medical interventions before discharge, but the type and quantity of interventions is unknown
Purpose of this study is to quantified the nature, frequency, and outcome of interventions occurring overnight after primary THA.

Objectives
Purpose of this study is to quantified the nature, frequency, and outcome of interventions occurring overnight after primary THA.

Study Design & Methods
From February 2020 until July 2024 we performed 419 THA. Among them 253 patients apply to a single-day discharge program. We recollect different datas (gender, age, ASA , IMC, comorbidity, night in the hospital, destination, HBag pre and post, Complications), if they recibes any medical or nurses intervention and, if yes, which type of procedures

Results
206 patients (81,4%) don’t recibe any kind of intervention. 47 (18,6%) recibes different actions (8% opioid drugs, 4% antiemetic drugs, 2% normal ev pain killers, 1% hypnotic drugs, 1% wound dressing change, 1 % urinary catheterization, 1% desaturation) Besides, there are no significative differences or no statistics relationship between interventions during the first 24 hours stay and other variables like age, gender, BMI etc etc. There are neither increasing complications nor readmission rate

Conclusions
Most patients received no overnight interventions, so they could be included in outpatient pathway without significantly increase of complication and readmission reate and with a acceptable safeties conditions.

09:23 - 09:28

378 Application Of A Modernized Plate With Bicortical Screw Fixation And Serclage Integration Through Transverse Foramen In The Treatment Of Periprosthetic Fractures Of The Proximal Femur Type B2 Of The Vancouver Classification

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Abstract
Introduction: The choice of surgical treatment of periprosthetic fractures of the proximal femur type B2 remains controversial. Revision endoprosthesis is not always indicated, while the use of plates shows good clinical results. Standard plates are not always anatomically shaped, only monocortical fixation is possible, and they do not provide reliable fixation of serclages. Therefore, we have developed a plate that takes into account these nuances.
Methods: A prospective randomized study included 30 patients divided into two equal groups. The main group underwent osteosynthesis of the fracture of the proximal femur type B2 with the developed plate, and the control group underwent osteosynthesis with the standard plate. Hip joint function was assessed at 1, 3, 6, 12 months after surgery using Harris Hip Score (HHS) and Oxford Hip Score (OHS) scales and the Timed up-and-go test. Fracture healing was assessed radiographically.
Results: The follow-up period was 12 months. The main group showed significantly better HHS at 3 ($p=0.038$) and 12 months ($p=0.044$), and OHS at 3 ($p=0.026$) and 6 months ($p=0.17$). Surgery time was reduced by 17.5 minutes ($p=0.005$) and blood loss was 71 ml lower ($p=0.003$) in the main group. Infection occurred in one patient per group. Delayed fracture healing was observed in two control patients and one in the main group.
Conclusions: The use of the developed plate can improve the function of the hip, reduce the duration of surgery and the amount of blood loss and better consolidation of the fracture.

09:28 - 09:33

1408 Retrograde Nail/Plate Combination For Interprosthetic Femoral Fractures: Technical Note And Case Series

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Abstract
Objectives:
To report the clinical results of a series of patients who underwent fixation of an interprosthetic femoral fracture (IFF) with a retrograde intramedullary nail (rIMN)/lateral locked plate (LLP) combination.
Methods:
This was a retrospective chart review conducted at a single, academic, level-1 trauma center. Patients who sustained an IFF who underwent fixation with a rIMN and LLP with at least 3 month follow-up were included. The primary outcome measurement was fracture healing. Secondary outcomes included reoperation or failure of treatment.
Results:
Thirteen patients were included. There were 8 females (62%) with an average age of 80 years (range 62 – 95). The median nail diameter was 12 mm (range 10 – 13 mm). The median nail length was 200 mm (range 130 -260 mm). There was an average of 6 screws (range 3- 7 screws) in the femoral condyles and an average of 4 screws (range 3-5 screws) in the femoral shaft proximal to the fracture. All fractures were healed at final follow-up. All patients healed at final follow-up with no instances of implant failure. There were no infections and no revision surgeries for any reason.
Conclusions:
Overall, this is one of the largest cohorts in the literature undergoing rIMN and LLP of an IFF. This treatment strategy is effective at achieving fracture union.

09:52 - 09:57

2843 Shear Wave Elastography Assessment Of Femoral Nerve During Hip Flexors Flexibility Evaluation In The Half-Kneeling Position In Neutral And Posterior Pelvic Tilt: A Cross-Sectional Study

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Abstract
Introduction: The biomechanical properties of the femoral nerve during orthopedic assessments, such as the half-kneeling position with neutral and posterior pelvic tilt, remain underexplored. Although this position is commonly used to evaluate hip flexor flexibility, its potential impact on neural tissue mechanics has not been thoroughly investigated.

Aim: This study aimed to assess the intra and inter-examiner reliability of femoral nerve stiffness and shear wave velocity (SWV) using Shear Wave Elastography (SWE) across various femoral nerves in the half-kneeling positions.

Methods: A cross-sectional study was conducted involving 20 healthy participants. SWE was used to evaluate femoral nerve stiffness (kPa) and SWV (m/s) in three positions: supine, half-kneeling in neutral and posterior pelvic tilt. Intra and inter-examiner reliability was determined using intraclass correlation coefficient (ICC), standard error of measurement (SEM), and minimum detectable change (MDC). One-way ANOVA or Kruskal-Wallis tests were applied to analyze differences between positions.

Results: SWE demonstrated excellent intra-examiner reliability (ICC range: 0.966–0.986) and good inter-examiner reliability (ICC range: 0.651-0.681). Statistically significant differences in femoral nerve stiffness and SWV were observed across positions ($p < 0.001$, $\eta_p^2 = 0.802$ and 0.792, respectively). A progressive increase in stiffness and SWV was noted from supine to half-kneeling position with posterior pelvic tilt.

Conclusion: SWE reliably assessed femoral nerve stiffness and SWV, revealing significant differences between positions.

Keywords: Femoral nerve, Shear Wave Elastography, hip flexor flexibility, half-kneeling position, stiffness, shear wave velocity.

Wednesday, 3 September

Knee 1
08:54 - 08:59

939 Mechanical And Kinematic Alignment In Robotic Total Knee Arthroplasty: A Randomized Comparative Study

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Abstract
To improve the results of total knee arthroplasty, we compared the mechanical and kinematic concepts of limb axis alignment.
Methods: We randomly assigned fifty patients into two groups: the first group underwent robotic total knee arthroplasty (RoTKA) with restricted kinematic alignment (rKA), the second group - (RoTKA) with mechanical alignment (MA). We compared the results at 3 and 6 months in range of motion and on the KSS, OKS scales, and after one year on the SF-36 and FJS-12. RoTKA was performed by one group of three surgeons in equal shares, using an autonomous robot and the same endoprostheses with preservation of the posterior cruciate ligament and a cement fixation system. It was planned to have an HKA angle of 180° for the MA axis of the limb, and HKA=177° for rKA.
Results: When comparing the range of motion in the three months after surgery, the rKA group was statistically significantly 4% higher than the MA group, according to the KSS (rKA=81.6±4.3 and MA=77.8±3.5) OKS (rKA=41.8±3.6 and MA=39.6±2.1) scales, after a year according to the physical component of the SF-36 scale (rKA=65.6±8.6 and MA=61.8±6.4, at $p<0.05$) and according to the FJS-12 (rKA=92.8±5.3, MA=90.0±4.9, ($p=0.010$).
Conclusions: rKA allowed to increase the range of motion in the operated knee joint by 4.1% by three months after surgery and improve the average KSS values by 4.7%, OKS by 5.3%, compared with patients with MA, and quality of life by one year after surgery improved by 5.8% according to SF-36, and by 2.9% according to FJS-12.

09:28 - 09:33

311 Impact Of Centrifugation Parameters On Platelet-Rich Plasma Injection For Patella Tendinopathy: A Systematic Review And Meta-Analysis

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Abstract
Patellar tendinopathy (PT) is a chronic, degenerative form of tendinitis commonly affecting active individuals. Numerous nonsurgical treatments exist, such as platelet-rich plasma (PRP). However, heterogeneity among various PRP preparation techniques results in a large variation in treatment efficacy. This study aims to investigate the effect of PRP centrifugation factors, specifically centrifuge speed and duration, on functional outcomes in patients with PT.

A systematic search of the literature was performed. Articles involving the use of PRP in the treatment of PT were included. Comparative meta-analysis between the different centrifugation speeds and the different centrifugation durations was performed on articles reporting Victorian Institute of Sports Assessment - Patellar (VISA-P) and visual analogue scale (VAS).

17 studies consisting of 360 participants were included in the analysis. The mean follow-up duration was 13.2 months (95% CI: 8.81 to 17.7). The mean VAS reduction was 3.85 (95% CI: -4.63 to -3.08; $P < 0.01$). VISA-P scores improved by 32.03 (95% CI: 24.29 to 39.78; $P < 0.01$). There were no significant differences between centrifuge speeds for VAS ($P = 0.17$) and VISA-P ($P = 0.18$) and between centrifuge durations for VAS ($P = 0.25$) and VISA-P ($P = 0.27$). Centrifuge speed and duration and number of centrifuge cycles did not show any significant differences in patient outcomes.

There were no significant differences observed in outcomes for different preparations of PRP. There remains a need for further high-quality RCTs using standardized preparations with long-term follow-up for the development of a consensus method of PRP preparation.

08:40 - 08:45

890 Reconstruction Of Extensor Mechanism Following Total Knee Arthroplasty- A Systematic Review And Meta-Analysis Of Success Of Mesh Versus Allograft.

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2. University Of Pittsburgh Medical Centre, Cumberland, United States
3. Atrium Wake Forest Baptist Health Medical Centre, Winston-Salem, North Carolina, United States

Abstract

Introduction:

Extensor mechanism disruption following total knee arthroplasty (TKA) remains a devastating complication that requires reconstruction. The purpose of this systematic review and meta-analysis was to assess the overall failure rates of extensor mechanism reconstruction techniques using mesh versus allografts.

Methods:

A comprehensive search of 4 databases was completed to identify all studies published from 2015 to 2025 on extensor mechanism disruption after TKA. A total of 14 studies were included in this review.

Results:

A total of 514 extensor mechanism cases were included in this meta-analysis (n = 278 mesh and 236 allograft). Mesh had a lower risk of failure (RR, 0.79; 95% CI, 0.62 to 0.99; p = 0.02) and no difference in the risk of prosthetic joint infection (RR, 0.68; 95% CI, 0.39 to 1.19; p = 0.09). There was substantial heterogeneity among the studies.

Discussion:

Mesh and allograft both can be safely used for extensor mechanism reconstruction in those following TKA. However, the success of mesh reconstruction may be slightly better. Mesh has lower risk of failure and has no increased risk of prosthetic joint infection. With proper surgical training, we recommend using mesh over allograft for extensor reconstruction post total knee arthroplasties.

09:04 - 09:09

1229 Increased Involvement Of ‘Difficult To Treat’ Microorganism Profile In Periprosthetic Joint Infections Following Erysipelas

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Abstract

Background

Erysipelas is a skin infection primarily affecting the lower extremities.It is well established that individuals with pre-existing prosthetic joints are at an increased risk of developing secondary periprosthetic joint infections (PJI) following an episode of erysipelas.However, there is a lack of evidence regarding the difference in microorganism profiles following the onset of erysipelas.

Methods

We retrospectively analyzed medical records from April 2014 to July 2021 at a tertiary center.Among 1,093 erysipelas cases, 36 patients with prior one-stage septic knee revision who later required re-revision procedures were included.Erysipelas was diagnosed based on clinical features, while PJI was confirmed using 2018 International Consensus Meeting criteria.Data included demographics and intraoperative culture results from both prior and re-revision septic procedures, categorized by gram stain characteristics, mono or poly-microbial infection, and ‘difficult to treat’ microorganism.

Results

The incidence of mixed (gram-negative and gram-positive) culture results was significantly increased in re-revision septic procedures after erysipelas($p<0.001$).Furthermore, a statistically significant difference was observed in polymicrobial culture outcomes when comparing prior septic revisions to re-revision septic exchange procedures following erysipelas($p=0.001$).Additionally, the prevalence of 'difficult to treat' microorganisms was found to be significantly higher in re-revision procedures following erysipelas($p<0.001$).

Conclusion

Our findings highlight that the management of PJI within the context of erysipelas may pose even greater challenges than those typically encountered.It is essential for surgeons to be aware of this significant consideration and to develop individualized management strategies for this high-risk patient population.Further research employing a multicenter, prospective, and comparative design is required to validate our findings.

09:09 - 09:14

1006 Factors Affecting Difficulty For Midvastus Approach For Total Knee Arthroplasty: A Prospective Cohort Study In An Asian Population

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Abstract

Introduction

Total knee arthroplasty (TKA) via the Mid-vastus (MV) approach has shown superior early straight leg raise (SLR), better pain and function but requires conscientious patient selection to avoid difficulties intraoperatively. This study aims to identify factors influencing surgical difficulty via the MV approach.

Methods

A prospective analysis of primary TKA via the MV approach assessed preoperative Body mass index(BMI), Coronal alignment, and range of motion(ROM). Intraoperative measures included patella subluxation, MV tear, and Likert scores. Patella height was recorded pre- and intraoperatively, and implant positioning was radiographically evaluated postoperatively.

Results

25 patients underwent primary TKA via the MV approach by two surgeons over two months (Aug13–Oct15,2024). BMI (2.2±1.1vs.28.7±5.0,p=0.04) and preoperative patella X-ray measurement (2.2±1.1vs23.2±4.3,p=0.01) were significantly associated with Likert scores, while other preoperative factors were not. Ordinal logistic analysis showed non-monotonic Likert score transitions, despite a significant increase in prepatellar XR length between Likert 1–2 (p=0.03) and 1–4 (p=0.0) via a Tukey test. Hence exact cut-offs remain inconclusive and the results are likely due to sample size. Patella subluxation was significantly associated with intraoperative MV tear (4.9± 0.7vs.1.2±0.4,p=0.02). Implant positioning was satisfactory in 20 cases; among five unsatisfactory cases. MV tear significantly affected implant positioning (p=0.03), while other factors were not significant.

Conclusion

This study concludes that the greater the BMI and the pre-operative patella height measured on skyline X-ray the more difficult the MV approach may be and the amount of patella subluxation may result in greater MV tear which can affect implant positioning.

09:18 - 09:23

2812 Does Robotic Assistance For Kinematic Alignment Total Knee Arthroplasty Improve CPAK Restoration?

Jeremy Tze En Lim[1], Yong Ng[2], Audrey Xinyun Han[1], Eric Xuan Liu[1], Seng Jin Yeo[1], Darren Keng Jin Tay[1], Hee Nee Pang[1], Ren Yi Kow[3], Ming Han Lincoln Liow[1]

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3. International Islamic University Malaysia, Kuantan, Malaysia

Abstract

Background

The Coronal Plane Alignment of the Knee (CPAK) classification provides a structured framework for evaluating alignment strategies in total knee arthroplasty (TKA). While kinematic alignment (KA) aims to replicate native anatomy, the comparative ability of robotic-assisted versus conventional KA to restore CPAK remains unclear.

Objective

To assess whether robotic assistance improves CPAK restoration compared to conventional KA in TKA.

Methods

We retrospectively reviewed 319 KA-TKAs (192 conventional, 127 robotic). Postoperative CPAK was classified into four groups: (1) CPAK restoration, where pre- and postoperative phenotypes matched; (2) minor deviation, defined as a horizontal row CPAK change due to arithmetic hip-knee-ankle (HKA) shift within ±4° without joint line obliquity (JLO) change; (3) JLO-driven CPAK change, defined as a vertical column shift with >3° deviation from the 180° JLO axis; and (4) non-favourable CPAK change, defined as a phenotype shift to the opposite CPAK column. Chi-square tests with Yates' correction were used for comparison.

Results

CPAK restoration occurred in 52.8% of robotic vs. 52.6% of conventional cases ($p = 1.000$). Minor deviations were 19.7% vs. 24.0% ($p = 0.4468$), JLO-driven changes 18.1% vs. 13.0% ($p = 0.2781$), and non-favourable changes 0.8% vs. 2.1% ($p = 0.652$). Overall distribution was not significantly different ($p = 0.43$).

Conclusion

Manual instruments and robotic assistance resulted in 98% of CPAK restoration and preoperative HKA alignment, with very low rates of non-favourable CPAK changes. The postoperative outcomes of KA-TKA in these alignment categories should be further studied.

Keywords: Kinematic Alignment, CPAK, Robotic

09:42 - 09:47

1987 Ninety-Day And Ten-Year Outcomes Of Unicompartmental Knee Arthroplasty Based On Surgical Indication In Patients Under 50 Years Of Age

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Abstract
Background: Unicompartmental knee arthroplasty (UKA) is less commonly performed in patients under 50 years, with prior studies suggesting inferior outcomes. The impact of surgical indication on these outcomes remains unclear.

Methods: Patients under 50 undergoing UKA were identified from the 2010–Q1 2023 PearlDiver M170Ortho database and stratified by indication: primary osteoarthritis (OA), post-traumatic osteoarthritis (PTOA), and avascular necrosis (AVN). Multivariable logistic regression compared 90-day and 10-year outcomes for PTOA and AVN relative to primary OA.

Results: Among 21,443 UKA patients, indications were primary OA (12,929, 60.3%), PTOA (7,816, 36.5%), and AVN (698, 3.3%). PTOA had higher odds of 90-day surgical site infection (SSI) (odds ratio [OR] 1.32, $p=0.036$), venous thromboembolism (VTE) (OR 1.49, $p<0.001$), and wound complications (OR 1.65, $p=0.004$). At 10 years, PTOA was associated with higher odds of periprosthetic joint infection (OR 1.36, $p=0.003$), aseptic loosening (OR 1.54, $p<0.001$), stiffness (OR 1.41, $p<0.001$), and revision (OR 1.29, $p<0.001$). AVN had higher odds of 90-day SSI (OR 1.81, $p=0.037$), VTE (OR 1.49, $p=0.029$), and transfusion (OR 3.59, $p=0.002$), with increased 10-year aseptic loosening risk (OR 1.61, $p=0.002$).

Conclusions: In this large cohort of UKA patients under 50, PTOA and AVN were associated with inferior 90-day and 10-year outcomes relative to primary OA, emphasizing the importance of indication in patient counseling and care pathway optimization.

09:47 - 09:52

1024 Metaphyseal Fixation In Revision Total Knee Arthroplasty: A Systematic Review And Meta-Analysis Of Cones And Sleeves

Evangelos Solovos[1], Sathya Lakpriya[1], Sravan Kumar Sanka[1], Muhammad Tahir[1], Chitanjit De[1], Todd Pierce[2]

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Abstract

Introduction

Revision total knee arthroplasty (TKA) remains a growing burden on healthcare and has been estimated that it will nearly triple from 2014 to 2030. A key challenge is managing metaphyseal tibial and femoral bone loss commonly addressed with cones or sleeves. While both options show excellent outcomes no clear preference exists in current guidelines. The purpose of this meta-analysis was to evaluate the failure rate of metaphyseal cones and sleeves in revision TKA. Secondarily, we will evaluate and compare the etiology of failure between cones and sleeves.

Methods

A comprehensive search of PubMed, CINAHL plus, EMBASE, and SCOPUS was performed (January 2010-January 2025). Our search resulted in 270 studies. After applying exclusion criteria, 31 studies were included.

Results

A total of 2,574 revisions were analyzed: 1,637 with cones and 937 with sleeves. The most common defect was type IIB (47.5%; n = 1,147). Re-revision rates were 10.9% for cones and 7.4% for sleeves. Re-operation risk was 17.5% for cones and 12.2% for sleeves. The risk of prosthetic joint infection (PJI) was 7.5% for cones and 5% for sleeves, and extensor mechanism injury was 1% for cones and 0.1% for sleeves.

Discussion

Despite the limitations, this meta-analysis provides an updated review of success rate and complications associated with cones and sleeves. Future research may analyze the proper use of both cones and sleeves and how their survivorship may be affected by the classification of bone loss found when performing revision TKA.

09:23 - 09:28

510 ROTATIONAL ALIGNMENT IN TKA – WHICH METHODS OF PREOPERATIVE EVALUATION DO WE REALLY NEED?

Evgeny Malyshev, Mohammad Elqaseer

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Abstract
Introduction
Total knee arthroplasty (TKA) is a common procedure for end-stage knee osteoarthritis and other degenerative joint diseases, aimed at restoring function and improving quality of life. Conventional radiographic evaluation often fails to accurately assess rotational alignment, potentially leading to suboptimal implant positioning and poor outcomes. This study investigates the role and necessity of advanced imaging techniques, specifically MRI and CT, in refining preoperative assessment of rotational alignment.
Aim
To evaluate the correlation between conventional preoperative radiographic and CT/MRI-derived parameters, and postoperative rotational alignment in TKA.
Methods
A total of 104 patients (average age: 57.9 ± 13.7 years) with grade 4 knee osteoarthritis undergoing primary TKA were included. Preoperative MRI and CT scans were used to measure key angles, including the PCA-aTEA, PCA-sTEA, FAT-aTEA, and FAT-sTEA. Standard radiographic parameters (FTA, MPTA, LDFA) were also measured. Patellar indexes were recorded (Insall-Salvati index, modified Insall-Salvati index, Blackburne-Peel index, Caton-Deschamps index)
Results
Statistical analyses (correlation and regression) assessed the relationship between these major parameters and rotational deviation (>3°). Significant correlations were found.
Conclusion
Our study shows the critical indicators of conventional radiological parameters for obligatory preoperative assessment of rotational alignment in TKA. Preoperative planning should prioritize these parameters to optimize implant positioning and reduce complications. MRI an CT are the valuable tool for accurate assessment and should be considered in complex cases.

08:35 - 08:40

2348 Deep Vein Thrombosis, Age, And Body Mass Index Are Significant Risk Factors For Arthrofibrosis Following Total Knee Arthroplasty.

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3. Indiana Orthopedic Institute, Fort Wayne, United States

Abstract

Purpose

Arthrofibrosis, occurring in 3.7% to 10% of total knee arthroplasty (TKA) cases, causes pain and restricted motion. Its treatment is complex and time-consuming. This study aimed to identify patient-related risk factors for arthrofibrosis following primary TKA.

Methods

This retrospective case-control study analyzed 1,033 arthrofibrosis cases following primary TKA (1996–2021) compared to 39,572 non-revision TKA patients with ≥3 years of follow-up. Bivariate and binary logistic regression analyses, adjusting for age, gender, BMI, and Charlson Comorbidity Index (CCI), were performed. Odds ratios (OR) and 95% confidence intervals (CI) were reported.

Results

Patients with arthrofibrosis were younger ($p < 0.001$), had lower BMIs ($p = 0.044$), and lower CCI scores ($p < 0.001$), with no gender differences. Logistic regression showed deep vein thrombosis (DVT) post-TKA significantly increased arthrofibrosis risk ($p < 0.001$; OR = 2.21; 95% CI 1.64-2.98), while rheumatoid arthritis (RA) was linked to a decreased risk ($p = 0.016$; OR = 0.25; 95% CI 0.08-0.77).

Conclusions

DVT following TKA increases arthrofibrosis risk, while RA decreases it. Arthrofibrosis patients tend to be younger, thinner, and healthier, with no gender differences. Preventing DVT is crucial, and TKA should be approached cautiously in young, low-BMI patients with few comorbidities.

09:33 - 09:38

2010 A PROSPECTIVE STUDY OF FUNCTIONAL OUTCOME OF AUTOLOGUS MINCED CARTILAGE IMPLANTATION WITH BMAC THERAPY FOR POST TRAUMATIC OSTEOCHONDRAL DEFECTS IN YOUNGER POPULATION

UMESHA Chowdaiah

NARAYANA HEALTH MULTISPECIALITY HOSPITAL, Mysore, India

Abstract
INTRODUCTION: Cartilage defects in the knee are being diagnosed with increased frequency and are treated with a variety of techniques.The aim of any cartilage repair procedure is to generate the highest tissue quality, which correlate with improved Clinical outcomes, return-to-sport, and long-term durability. The major concern is the progression of osteochondral defects to osteoarthritis.
Aims&Objectives:To assess pain relief in patients with Grade 4 osteochondral defects by using visual analogue scale (VAS) system and functional outcome by Western Ontario and McMaster universities Arthritis index (WOMAC).
Methods: A total number of 15 (n=15) patients who fulfilled the inclusion criteria were included. Patients included were those who presented with Knee pain and crepitus with MRI concluding grade 4 osteochondral defect in the patellar articular facet with 4 weeks of failed conservative management in the form of quadriceps exercises, analgesics. They were subjected to Arthroscopy knee healthy cartilage harvested from the edges of defective site later Cartilage minced with autologous bone marrow aspirate concentrate and implanted the same to the defective site by mini open arthrotomy using fibrin glue.
Results: The VAS score reflected highly significant improvement in the pain of the knee and functional outcome was assessed by WOMAC index with a significant p value, it was noted that when the pre-procedure VAS score was compared with the score of most recent follow up shows a significant improvement in pain.
Conclusion: Minced cartilage has a strong biologic potential since autologous, activated, non-dedifferentiated chondrocytes are utilized.

09:52 - 09:57

2805 Type C3 Distal Femoral Fracture With Incarceration Of The Patella: Can Fixing All The Fragments With Multiple Headless Screws Be A Solution?

Naveen Lokikere, Sameer Khateeb Mohammed

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Abstract
Introduction: AO Muller C3 type of distal femoral fracture with patellar incarceration are most grievous injuries. Even AO recommends salvage procedures such as spanning external fixator, double plating or arthroplasty. A viable alternative to restore joint congruency and functionality is desirable.

Aims & Objectives: We are reporting the outcomes of ORIF with intra-articular placement of multiple Herbert's screws in a young 31 year old patient.

Study Design & Methods: A 31 year old male with AO type C3 distal femur fracture with patellar incarceration. His CT scan revealed an incarcerated patella with 6 large and multiple small fragments of the distal femoral articular surface. With a midline approach we released the patella from incarceration. The intra-articular fracture was meticulously fixed like a jigsaw with 11 Herberts screws. The joint line alignment was achieved to <5mm accuracy. Patient was managed non-weight bearing for the first 6 weeks followed by partial weight for 4 weeks.

Results: Patient achieved full ROM of the knee by 4 weeks. He was able to walk without any pain and resume his daily activities once allowed to do so by 10 weeks. A revisit arthroscopy and implant removal after 8 months revealed a healthy condition of the joint with cartilage being well preserved.

Conclusion: The intra-articular approach with the Headless screws restores the joint congruency and mobility. It can be a viable and effective solution instead of salvage procedures in young patients. Large scale studies are desirable.

Keywords:
Distal femur fracture, Patellar incarceration, headless screw fixation, Joint congruency.

08:45 - 08:50

826 The Correlation Between The Kellgren-Lawrence Classification Of Knee Osteoarthritis And The Knee Injury Osteoarthritis Outcome Score (KOOS)

Abdullah Bader Aljaffar[1], Ali Alshahrani[2], Zaid Dajani[1], Mohammad Altabash[1], Ali Al Amer[1], Abdulaziz Alwazad[1], Baqer Albin Ahmed[1], Fawaz Al Anii[2]

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2. King Fahad Hospital of university, Dammam, Saudi Arabia

Abstract

Introduction: Osteoarthritis (OA) is a common degenerative joint disease that considerably affects the quality of life, especially in the elderly. The Kellgren-Lawrence (K&L) grading system assesses OA severity through radiographic evaluation, whereas the Knee Injury and Osteoarthritis Outcome Score (KOOS) measures clinical symptoms and functional status. This study analyzed the relationship between K&L grades and KOOS to elucidate the association between radiographic severity and clinical manifestations of knee OA.

Materials and Methods: A cross-sectional study was performed at King Fahd Hospital of the University, involving 164 adult patients diagnosed with knee OA. Patients were evaluated using the K&L system based on standing knee X-rays within the last six months. The KOOS questionnaire assessed five domains: pain, symptoms, activities of daily living, sport and recreation function, and knee-related quality of life. ANOVA examined variations in KOOS scores among different patient variables. Correlations between KOOS domains were determined using Pearson's correlation.

Results: KOOS scores significantly declined with elevated K&L grades, with Grade 4 exhibiting the lowest scores and Grade 1 the highest ($p<0.001$). Pain strongly correlated with activities of daily living ($r=0.871$, $p<0.001$) and knee-related quality of life ($r=0.754$, $p<0.001$). Older patients (≥60 years) reported poorer pain and functional outcomes. Gender differences appeared in symptoms, with females scoring lower than males ($p=0.022$).

Conclusion: The substantial correlation between K&L grading and KOOS highlights the necessity for comprehensive assessments integrating radiographic and clinical evaluations to guide individualized therapy for OA patients.

Wednesday, 3 September

Spine 1
09:52 - 09:57

887 Satisfactory Immediate Spontaneous Correction May Not Mean Satisfactory Final Results For Moderate TL/L Curves After Selective Thoracic Fusion In AIS Patients

Yanbin Zhang

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Abstract
Background: Few studies have focused on the chronic spontaneous behavior of the unfused TL/L curve during follow-up. The purpose of the present study was to explore the behavior of the unfused TL/L curve during a long-term follow-up to identify the risk factors for correction loss.
Methods: Sixty-four age-matched female AIS patients undergoing selective thoracic fusion were enrolled. Patients were divided into 2 groups according to whether there was correction loss. Risk factors for correction loss of the unfused TL/L curves were analyzed. The relationship and difference between the immediate postoperative thoracic and TL/L Cobb angles were explored.
Results: The TL/L Cobb angle was 28.17° before surgery, 8.60° after surgery, and 10.74° at the final follow-up, with a correction loss of 2.14°. Each subgroup contained 32 cases. A smaller postoperative TL/L Cobb angle was the only risk factor that was independently associated with TL/L correction loss. In the LOSS group, there was a significant difference and no correlation between the immediate postoperative TL/L and the thoracic Cobb angle. In the NO-LOSS group, there was a moderate correlation and no difference between them.
Conclusion: A smaller immediate postoperative TL/L Cobb angle may have been associated with TL/L correction loss during the long-term follow-up. Thus, good immediate postoperative spontaneous correction may not mean a satisfactory outcome at the final follow-up after STF. Mismatch between thoracic and TL/L Cobb angles immediately after surgery may also be related to correction loss of the unfused TL/L curves. Close attention should be paid in case of deterioration.

08:35 - 08:40

1221 Sleep Quality Among Surgical Patients With Idiopathic Scoliosis; A Retrospective Study In Saudi Arabia

Faisal Alkhunein, Abdulmajeed Alzakri, Mishari Alanezi, Mohammad Aljarba, Azzam Alotaibi, Hisham Alhathloul, Habib Chaudhary

King Saud University, Riyadh, Saudi Arabia

Abstract

Introduction:

Idiopathic Scoliosis (IS) is a structural spinal deformity that can impact sleep quality due to pain, respiratory issues, and discomfort. This study evaluates changes in sleep quality following surgical correction of IS.

Objectives:
1. Assess the prevalence and severity of sleep disturbances in IS patients.
2. Evaluate the impact of surgical intervention on sleep quality.

Methods:

A retrospective cohort study of 70 IS patients (≥10 years) who underwent surgery (2019–2024) at a tertiary center in Riyadh, Saudi Arabia. Sleep quality was assessed pre-operatively and six months post-operatively using the Pittsburgh Sleep Quality Index (PSQI). Statistical analysis included Wilcoxon Signed Rank, Mann-Whitney, and Chi-square tests ($p<0.05$ significant).

Results:

Postoperatively, the prevalence of poor sleep quality decreased from 64.29% to 44.29% ($p=0.018$). Significant improvements were observed in sleep latency ($p=0.031$), sleep duration ($p=0.002$), sleep efficiency ($p=0.004$), and daytime dysfunction ($p=0.002$). The mean PSQI global score significantly improved postoperatively ($p=0.033$). Additionally, symptoms associated with sleep disturbances, such as loud snoring, apnea events, and leg twitching, significantly decreased ($p<0.001$). There were no significant differences in sleep quality improvement between genders or age groups.

Conclusion:

Surgical correction of IS leads to significant improvements in sleep quality, reducing sleep disturbances and enhancing overall restfulness. These findings highlight the importance of addressing sleep quality in IS management. Future research should incorporate objective sleep assessments to further validate these findings.

Keywords:
Idiopathic scoliosis (IS), sleep quality, Pittsburgh Sleep Quality Index (PSQI)

09:28 - 09:33

1598 The Effect Of Absorbable Gelatin Sponge Compared With Thrombin-Gelatin Matrix On Intraoperative Hemostasis In Unilateral Open-Door Laminoplasty: A Randomized Controlled Trial

Chengyi Huang, Hao Liu

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Abstract
Abstract
Purpose
The aim of this prospective, randomized, parallel-controlled trial was to determine whether TGM combined with an AGS (TGM-AGS) could more greatly reduce IBL in unilateral open-door laminoplasty than the sole use of an AGS could.
Methods
A total of 80 consecutive patients who underwent unilateral open-door laminoplasty, were enrolled from September 2020 to March 2022. Patients were randomized into two groups, the TGM-AGS group and the AGS group, with 40 patients in each group. The primary outcome was intraoperative blood loss (IBL). Other outcomes included the duration of operation, duration of hemostasis, duration of drainage, maximum decrease in hemoglobin (Hb), length of hospital stay, volume of drainage, number of drainage days, occurrence of adverse events, coagulation indicators and patient-reported outcome measures (PROMs). Outcomes of all the patients were collected, analyses and compared.
Results
The mean IBL for patients in the TGM group (75.22 ±21.83) mL was significantly lower than that for patients in the AGS group (252.43±57.39) mL; the duration of hemostasis, volume of drainage, days of drainage in the TGM group and maximum decrease in Hb were also significantly less than those in the AGS group ($p<0.01$). The PROMs at discharge in the two groups were notably better than those preoperatively ($p<0.05$).
Conclusion
The hemostatic efficacy of TGM-AGS is better than that of an AGS alone in IBL. TGM-AGS is also superior to an AGS alone in the evaluation of hemostatic efficiency and postoperative bleeding.
Keywords: Hemostasis; Cervical laminoplasty; Intraoperative blood loss; Hemostatic agents; Randomized controlled trial

09:23 - 09:28

1701 Halo Gravity Traction In Pediatric Scoliosis: Optimizing Protocols For Success

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Abstract

Introduction

Halo gravity traction (HGT) is an adjunctive treatment for severe pediatric scoliosis aimed at gradually increasing spinal flexibility before definitive surgery, particularly in curves >90°. However, standardized protocols remain lacking. This study presents our experience with HGT and proposes recommendations to optimize its safety and efficacy.

Objectives

Evaluate the clinical outcomes of HGT in pediatric scoliosis and establish a protocol that prioritizes gradual correction, patient safety, and surgical optimization.

Study Design & Methods

A retrospective review of six patients (mean age: 13.2 years; 2 males, 4 females) with scoliosis secondary to neuromuscular, congenital, or idiopathic causes. The mean pre-traction Cobb angle was 97°, with an average treatment duration of 36 days and traction weight progressively adjusted to 30% of body weight.

Results

HGT resulted in a mean correction of 27° (27.8%) before surgery and 48° (49.4%) postoperatively. No patient discontinued treatment. Complications included one cranial pin dislodgement and one case of cranial nerve V traction neuritis, both resolved with weight adjustments.

Conclusion

HGT is an effective and safe technique for managing severe scoliosis. Our protocol, extending traction to five weeks with gradual weight increments, prioritizes patient tolerance, optimizes pre-surgical preparation, and reduces complications. Multidisciplinary care, including patient and caregiver education, enhances outcomes and treatment adherence.

Keywords

Halo traction, scoliosis, spinal correction, pediatric spine, preoperative optimization

08:54 - 08:59

2031 Giant Solitary Osteochondroma Of The Cervical Spine With An Unusual Presentation: A Rare Case For Diagnosis And Treatment

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Abstract
Purpose: Osteochondroma involving the axial skeleton is a very rare presentation(1.3-4.1%). Spinal osteochondromas are generally easy to diagnose as they present with pain and rarely with features of neural compression. Herein, we present an interesting case of spinal osteochondroma with an atypical presentation which was diagnosed and managed successfully with a favorable surgical outcome.
Materials and methods: We describe an otherwise normal, 12-year-old female who presented with complaints of restriction of neck extension. A meticulous clinical examination revealed a bony hard swelling on the posterior aspect of the mid-cervical spine. Neurological examination was unremarkable. Plain radiographs revealed a giant exophytic lesion arising from the posterior elements of middle cervical vertebra. Magnetic resonance imaging (MRI) and computed tomography (CT) scan were used to identify the specific vertebra of origin. Surgical resection of the lesion with preservation of the posterior neural arch to prevent instability was done. Histopathological examination confirmed the diagnosis of osteochondroma.
Results: The VAS scores for neck pain showed significant improvement in the early post-operative period. At 28 months follow-up, the patient had good clinical and functional outcomes. There was no recurrence or complications during last follow-up.
Conclusion: Preoperative planning with a CT scan and MRI is mandatory to identify the exact vertebra of origin to do a complete surgical excision of the lesion to prevent recurrence, without destabilizing the spine. A high index of suspicion accompanied by a meticulous clinical examination and a detailed radiological evaluation is essential in all cases of persistent neck pain and stiffness.

08:45 - 08:50

2650 Orthopaedic Treatment Of Chronic C1-C2 Rotatory Dislocations With Halo-HOGIP In Children In A Sub-Saharan Hospital

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Abstract
Introduction : Rotatory C1-C2 dislocations are rare lesions, most frequently observed in children. They often progress to chronicity in our developing countries, due to delayed consultation. The aim of our work was to present the results of halo-HOGIP treatment of these lesions.
Materials and methods : We conducted a retrospective study from January 1, 2019, to December 31, 2022, in the orthopedic traumatology department of a teaching hospital. Children with chronic (≥ 3 months) C1-C2 rotational dislocation were treated with the Halo-HOGIP, which consists of a cranial halo, Ilizarov external fixator hardware, and a cast vest. Reduction was achieved by progressive distraction followed by derotation. Once the dislocation was reduced, a cervical collar immobilisation was applied for 2 weeks, followed by rehabilitation.
Results : We reassessed four children (three girls and one boy), with a mean age of 6.75 years [5-10 years]. The causes were traumatic in three children. The mean duration of symptoms was 7.5 months [3-12 months]. According to the Fielding and Hawkins classification, three children had a type 2 lesion and one had a type 3 dislocation. The mean duration of set-up was 31.75 days [15-58 days]. Reduction was achieved in three children. The mean follow-up was 21.26 months. Cervical spine mobility was normal in three children.
Conclusion : Halo-HOGIP retains its indications for the orthopaedic treatment of chronic C1-C2 rotatory dislocations. It provides good anatomical and functional results. However, it cannot reduce vertebral ptosis.
Key words : Cervical spine - Dislocation – Ilizarov - Halojacket

09:18 - 09:23

968 SURGICAL TREATMENT OF PATIENTS WITH SPINAL DEFORMITY ASSOCIATED WITH SPINAL CORD COMPRESSION

Sergei Makarov, Antony Nazarenko, Alexander Kuleshov, Igor Nikolaevich Militsa

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Abstract

Objective

Surgical techniques for treating spinal deformities with cord compression have advanced, the optimal approach for neurologically complicated cases remains debated.

This study aimed to evaluate the efficacy of surgical methods and determine the optimal treatment strategies for spinal deformities associated with neurologic deficits.

Materials and Methods

A retrospective analysis was conducted on 51 patients with spinal deformities and neurologic deficits, categorized into three groups based on decompression methods: ventral decompression (n=18), indirect decompression via instrumental correction (n=12), and posterior/posterolateral decompression (n=21). Neurologic status was assessed using Frankel, ASIA, and FIM scales. Preoperative 3D modeling of the spine and spinal cord was performed in 26 patients (51%). Laser Doppler flowmetry (LDF) with spectral wavelet analysis was applied in 20 patients to assess microcirculation.

Results

Surgical intervention based on the proposed algorithm significantly improved neurologic outcomes across all groups ($p<0.001$). Correlation analysis revealed a positive relationship between decompression extent and motor function recovery ($r=0.63$, $p=0.005$), while negative correlations were observed with patient age ($r=-0.52$, $p=0.026$) and deficit duration ($r=-0.58$, $p=0.012$). Preoperative 3D modeling facilitated surgical planning in complex cases. LDF demonstrated a significant correlation between microcirculation parameters and motor recovery ($r=-0.68$ at 12 months).

Conclusions

Differentiated approach to spinal cord decompression, considering anatomical compression features and deformity type, was developed. Utility of 3D modeling in complex deformities was validated, and a therapeutic-diagnostic algorithm for optimizing surgical tactics was proposed.

09:47 - 09:52

883 Conducting Three-Column Osteotomies Of The Spine — High Risk Of Complications Or Has Anything Changed?

Arkadii Kazmin[1], Sergey Kolesov[1], Vladimir Pereverzev[1], Ivan Domrachev[1], Natalia Morozova[1], Darya Tesakova[1,2], Vladimir Shvets[1]

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2. Russian Medical Academy of Continuous Professional Education, Moscow, Russia

Abstract

Introduction

PSO (Schwab 3-4) and VCR (Schwab 5-6) are complex three-column osteotomies used to correct severe rigid spinal deformities with 59% complication rate and careful risk assessment and surgical planning necessarity.

Materials and Methods

Three-column osteotomies results retrospective analysis in patients from 2012 to 2024 was conducted with min 1 year follow-up (ranging 1-12 yy). The I group included 74 patients operated before 2018. The II group included 26 patients from 2018 operated with additive technologies and ultrasonic scalpels.

Results

In the I PSO group (74 patients) the complication rate was 36.8%. The complication rate for primary interventions was 29.2%, for revision surgeries it was 55.2%. The rate of reoperations was significantly higher in the revision group (24.1%), and the frequency of cerebrospinal fluid leaks was similar in both groups. Rod fractures during revision surgeries were less frequent (6.9% compared to 12.5%). Pseudoarthrosis and Neurological complications was more commonly observed in revision surgeries (24.1 and 20.7%)

In the II VCR group, consisting of 28 patients, the overall complication rate reached 53.6%. No significant differences were found between the patient groups. A slightly higher complication rate was noted in the VCR group after 2018 (57.1%). When analyzing age groups, a lower complication rate was observed in patients under 18 years old (46.1%).

Conclusion

Considering the heterogeneity and severity of the deformities for which PSO and VCR are performed, it is important to advance technologies, improve surgical and anesthetic assistance, learn curve contribute, enhance safety and treatment effectiveness.

08:59 - 09:04

1342 Use Of Additive Technologies In Ventral Dynamic Correction Of Idiopathic Scoliosis

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Abstract
Introduction
Ventral dynamic correction of scoliosis is a modern technique that combines spinal stabilization with preservation of segmental mobility. However, implant positioning is complicated by vertebral torsion, which increases the risk of malposition. Additive technologies (3D models, guide templates) make it possible to optimize preoperative planning and improve the accuracy of screw placement, reducing intraoperative risks.
Materials and Methods
The study included 96 patients with idiopathic scoliosis divided into three groups. There were no statistically significant differences in sex, age, body mass index (BMI) ($p > 0.05$).
Group I (30 patients): Standard planning (X-ray, MSCT, MRI). Group II (34 patients): 3D models of the spine with Kirschner spoke trajectories. Group III (32 patients): Customized guide templates. Models and templates were sterilized by gas sterilization. Screw insertion time, positioning accuracy (PT) and complications were evaluated.
Results
Position accuracy: Group I: 81.6% (385/472) correct positions (type A, N), 18.6% deviations (B: 14.2%, C: 3.18%, D: 1.27%). Group II: 98.9% (515/521) of correct positions, 1.15% of deviations (type B only). Group III: 100% (503/503) of correct positions.
Time to install one screw reduced from 3.7±0.6 min (I) to 1.9±0.2 min (III) ($p < 0.05$).
Classification of abnormalities:
Types: A (correct), B (<2 mm), C (2-4 mm), D (>4 mm).
Prefixes: "+" (effacement >2 mm), "-" (perforation), N (≤2 mm).
Conclusions
The use of 3D prototypes and guide templates in preoperative planning and intraoperative support, during ventral dynamic correction of scoliosis are an important tool for improving the safety and efficiency of surgical treatment of spinal deformities.

08:30 - 08:35

143 A Prospective Study On Modulation Of The Apical Vertebrae By Active Apex Correction (APC) Technique For Early Onset Scoliosis

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2. All India Institute of Medical Sciences, New Delhi, India
3. Palestine Polytechnic University, Hebron, Palestine

Abstract
Introduction: Active apex correction (APC) is posterior tethering technique with guided growth for correction of early onset scoliosis. APC involves inserting tethering pedicle screws at convex side of apex proximal (A1) and distal (A3) to most wedged vertebra (A2) allowing modulation of apex according to Hueter-Volkmann law. The aim was to assess whether APC allows modulation of apical vertebrae of scoliotic curvature.
Methods: Prospective study including 11 patients with early onset scoliosis treated by APC and evaluated by EOS imaging technique preoperatively and postoperatively to measure concave and convex heights. Excluded patients with follow-up <2years, missing data on apex modulation, and APC was not primary surgical intervention.
Results: Mean age 8.18 ± 2.27 years, 90% congenital scoliosis and mean follow-up post-surgery 2.36 ± 0.51 years. concave/convex height ratio at final follow up increased for A1 (0.75 to 0.85, P=0.04), A2 (0.71 to 0.78, P=0.04), A3 (0.78 to 0.82, P=0.16) but decreased for the untethered vertebra (1.00 to 0.97, P=0.06). The statistically significant change at A1 and A2 compared to untethered vertebrae indicates persistent growth in convex and concave sides with difference in growth rate following APC and thus modulation of the segment of tethered apical vertebrae, and not solely the most wedged vertebra. Compared to preoperatively, there was significant change in Cobb angle, apical vertebral translation, spinal length T1-T12 and T1-L5 at immediate and maintained at final follow-up.
Conclusion: APC allows modulation of most wedged and adjacent vertebrae at apex of curvature, while preserving whole spine correction through growth guidance.

09:33 - 09:38

1462 Role And Impact Of Telemedicine In Spine Surgery: A Systematic Review

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2. Imperial College London, London, United Kingdom

Abstract
Purpose: Telemedicine has emerged as a valuable tool in spinal surgery, enabling remote consultations, preoperative assessments, and postoperative care. This systematic review evaluates its impact on clinical outcomes, patient satisfaction, and healthcare resource use from 2020 to 2024, highlighting key benefits, challenges, and future research directions.

Methods: A systematic search of PubMed/MedLine, Scopus, Web of Science, and Embase identified studies assessing telemedicine in patients undergoing spinal surgery. Covidence (Covidence, Melbourne, Australia) was used for screening and selection. Risk of bias was evaluated, and a qualitative synthesis was conducted following SWiM guidelines due to study heterogeneity. Data were standardised to one decimal place, except for reported p-values.

Results: Thirty-seven studies comprising 91,139 patients met inclusion criteria. Telemedicine demonstrated high diagnostic accuracy, with concordance rates exceeding 90% in most studies. Patient satisfaction remained consistently high (86.9%–96.4%). It improved treatment adherence, pain management, and functional outcomes. Key advantages included cost-effectiveness and increased accessibility, though challenges such as bias and technological limitations persist.

Conclusion: Telemedicine plays a significant role in spinal surgery, offering high diagnostic accuracy, patient satisfaction, and improved clinical outcomes, including reduced pain and disability. It enhances compliance, reduces costs, and improves access to care. However, technological barriers, regulatory concerns, and study heterogeneity underscore the need for further research. Telemedicine holds promise for transforming spinal surgery care.

08:40 - 08:45

2390 Robot-Assisted Intravertebral Precision Bone Grafting Combined With Percutaneous Pedicle Screw Fixation For The Treatment Of Thoracolumbar Fractures

Jianquan Chen, Wanpeng Liu, Rongbin Chen, Yong Li, Lin Chen

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Abstract
Objective:
To evaluate the clinical efficacy of robot-assisted versus conventional percutaneous pedicle screw fixation for thoracolumbar fractures.
Methods:
We retrospectively analyzed the clinical data of 72 patients treated with percutaneous pedicle screw fixation combined with injured bone graft for thoracolumbar spine fracture, of which 35 cases were treated with robotic-assisted treatment and 37 cases were treated with conventional treatment.To evaluate the clinical and imaging outcome of both groups.
Results:
1.There were no significant differences in operation time, incision length and hospital stay between the two groups (P>0.05).
2.The number of intraoperative fluoroscopy, the amount of intraoperative blood loss and the grade of incision healing in the robotic group were better than those in the conventional group (P<0.05). All the patients were followed up for more than 1 year. Over time.The VAS and ODI scores at 3d after surgery in the robotic group were better than those in the conventional group (P <0.05).
3.In terms of imaging, Badu rating, nail GRS rating, vertebral cavity sign and bone graft score of the robotic group were better than those of the conventional group (P<0.05).
4.The correction of local kyphosis Angle and anterior edge height of injured vertebrae in the robotic group were better than those in the conventional group at 3 months (P<0.05).
Conclusion:
Robot-assisted minimally invasive screw implantation and bone grafting for the treatment of thoracolumbar vertebral fractures improves the accuracy of screw implantation, effectively corrects kyphosis, and restores vertebral body height, and achieves a satisfactory therapeutic effect.

09:04 - 09:09

1005 Risk Factors For Surgical Complications In Patients With Early-Onset Scoliosis: Minimum 5-Year Follow-Up

Ziquan Li, Jianle Yang, Nan Wu, Jianguo Zhang

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Abstract
Background: Operative treatment of Early-onset scoliosis (EOS) can be challenging. This study aims to characterize the prevalence of complications associated with surgical treatment for EOS and potential risk factors contributing to these complications. Methods: Patients with EOS with a minimum follow-up of 5 years after initial surgery were included as part of the Deciphering disorders Involving Scoliosis and COmorbidities (DISCO) study. Potential risk factors were identified by univariate analysis, and multivariate logistic regression was used to evaluate independent risk factors for surgical complications. Results: The study involved 299 patients. The surgeries performed were 231 posterior spinal fusions and 68 growing-rod implantations. The etiology of scoliosis was congenital in 252 patients, syndromic in 41, idiopathic in 4, and neuromuscular in 2. Notably, patients with syndromic EOS had pathogenic variants in 29 genes. A total of 73 (24.4%) patients developed postoperative complications. Multivariate analysis identified age, syndromic EOS due to chondrogenesis-related genes, fusion levels, curvature number, and surgical procedure as independent risk factors for complications. Subgroup analysis showed a higher incidence of complications in syndromic EOS group than in non-syndromic group. Conclusion: Through integrative analysis of clinical and genetic information, we found that younger age at index surgery, a diagnosis of syndromic EOS due to chondrogenesis-related genes, >4 fusion levels, growing-rod implantation, and >2 curvatures were independent risk factors for complications in patients with EOS. Our findings indicate that patients with syndromic EOS experience a higher rate of complications, underscoring the importance of comprehensive genetic analysis in clinical care of EOS.

09:42 - 09:47

1573 Understanding The Impact Of Low-Density Lipoprotein Levels And Lipid-Lowering Agents On Rates Of Pseudarthrosis After Anterior Cervical Discectomy And Fusion

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Abstract
Introduction:
Anterior cervical discectomy and fusion (ACDF) treats cervical degenerative disease and injuries causing neck pain, myelopathy, and radiculopathy. Pseudarthrosis occurs in up to 20% of single-level and 50% of multi-level ACDF cases. The link between LDL levels and pseudarthrosis is unstudied. This study examines whether preoperative LDL levels and lipid-lowering agents affect pseudarthrosis rates in single- and multi-level ACDF.

Methods:
A retrospective cohort study using TriNetX (100M+ patients) compared pseudarthrosis rates at 6 months, 1 year, and 2 years post-ACDF between patients with LDL >142 mg/dL and <66 mg/dL within a year pre-surgery based on statin, fish oil, ezetimibe, or niacin use 6 months pre-surgery. LDL levels were collected at all time points for those on or off lipid-lowering agents. Propensity score matching (1:1) accounted for demographics and health factors. Significance: $P<0.01$.

Results:
In multi-level ACDF, patients with LDL >142 mg/dL had higher pseudarthrosis rates at all time points than those with LDL <66 mg/dL. Non-statin users also had higher rates. No significant associations were found in single-level ACDF. Statin users had lower LDL levels in both groups. Fish oil users had lower pseudarthrosis rates in multi-level ACDF, but LDL levels were unchanged. Fish oil, ezetimibe, and niacin had no significant impact on pseudarthrosis or LDL levels in single-level ACDF.

Conclusion:
Low LDL levels, statins, and fish oil reduce pseudarthrosis rates in multi-level but not single-level ACDF. These findings aid pre-operative planning, patient optimization, and risk stratification to improve outcomes and reduce revisions.

Keywords:
• ACDF, LDL, pseudarthrosis

Wednesday, 3 September

Sports Medicine 1
09:23 - 09:28

472 Comparative Outcomes Of Bankart Repair With And Without Remplissage In Patients With Anterior Shoulder Instability And Hill-Sachs Lesions: A One-Year Follow-Up Study

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Abstract
Anterior shoulder instability with an associated Hill-Sachs lesion presents a significant challenge in surgical decision-making. While Bankart repair is the standard treatment, remplissage is often added to reduce recurrence risk in cases with engaging or borderline-engaging Hill-Sachs defects. This study compares clinical outcomes between patients undergoing Bankart repair alone versus Bankart repair with remplissage at a one-year follow-up. Our findings suggest that remplissage reduces recurrent instability but is associated with mild external rotation loss.

Materials and Methods

Study Design and Patient SelectionProspective comparative study of 40 patients treated for anterior shoulder instability.

Follow-Up and Outcome Measures

Patients were assessed at 3, 6, and 12 months postoperatively. Outcomes included: Re-dislocation or subluxation rate. Functional scores were included. Range of motion (ROM) were tested.

Results

Group 1 (Bankart + Remplissage): 2/20 patients (10%) experienced recurrent instability.
Group 2 (Bankart Only): 7/20 patients (35%) experienced recurrent instability.
Relative risk reduction: 71.4% in the remplissage group.

Discussion
Lower recurrence rates in the remplissage group suggest that addressing Hill-Sachs lesions reduces instability. Mild external rotation loss (5-9°) in the remplissage group is consistent with previous studies but may be clinically insignificant for most patients.

Conclusion

At one-year follow-up, Bankart repair with remplissage demonstrated a significantly lower recurrence rate (10% vs. 35%) compared to Bankart repair alone. While remplissage led to a minor loss of external rotation (5-9°), this did not appear to impact overall functional scores. These findings support the use of remplissage in patients with Hill-Sachs lesions at risk of engagement.

08:35 - 08:40

1615 Exploring ALPSA Lesion Variability: Impact Of Lesion Location And Tear Characteristics On Redislocation Risk After Labrum Repair

Toygun Kagan Eren[1], Ethem Burak Oklaz[1], **Furkan Aral**[2], Ahmet Emin Okutan[3], Baran Sarikaya[4], Asim Ahmadov[1], Ulunay Kanatli[1]

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4. Ankara City Hospital; Orthopedics and Traumatology Department, Ankara, Turkey

Abstract
Background: Evaluate the incidence of various ALPSA lesion patterns and their impact on redislocation rate after alpsa repair.

Method: Patients diagnosed with ALPSA lesion and managed arthroscopic surgery between February 2015 and August 2022 were evaluated. In the study group, labrum tears were categorized into specific quadrants based on their positional characteristics: 3-5 o'clock (isolated ALPSA lesions), 1-5 o'clock (ALPSA lesions with tears extending to the 1 o'clock position) , or other locations (ALPSA lesions with tears extending into other quadrants). In addition, transverse tears that disrupted the circular continuity of the labrum were defined as radial tears and patients with these tears were identified. Patients were categorized into two groups based on their history of postoperative dislocation: stable and redislocated. The demographic characteristics of the groups, the presence of labral tear extensions accompanying the ALPSA lesion, and the presence of radial tears were evaluated.

Results: The study included 178 patients, 35 of whom experienced redislocation. The mean follow-up: 69.4±27.2 months. In stable patients, 43% of lesions were located in the 1–5 position, 36% in the 3–5 position, and 21% in other areas; in patients with redislocation, 60% of lesions were observed in the 3–5 position, 29% in the 1–5 position, and 11% in other areas (p=0.004). Regression analysis demonstrated that presence of radial tears (OR= 4.67) and labral lesion from the 3 to 5 o’clock position (OR= 3.65) were significantly associated with redislocation after surgery.

Conclusion: Redislocation is higher in isolated 3–5 o’clock ALPSA lesions and radial tears.

08:40 - 08:45

1624 Partial Thickness Rotator Cuff Tears Treated With Full Thickness Repair For Articular Sided Tears And Bursal Repair For Bursal/Intrasubstance Tears Using Arthroscopic Double-Row Technique Provides Successful Clinical Outcomes At A Minimum 10-Year Follow-Up

Murat Ciceklidag[1], Ethem Burak Oklaz[2], **Furkan Aral**[2], Asim Ahmadov[2], Muhammed Furkan Tosun[1], Ulunay Kanatli[2]

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2. Gazi University Hospital; Orthopedics and Traumatology, Ankara, Türkiye

Abstract

Purpose

To evaluate long-term outcomes in patients who underwent arthroscopic repair for partial-thickness rotator cuff tears (PTRCTs) with a minimum 10-year follow-up.

Methods

Patients who underwent arthroscopic surgery for PTRCTs between 2006 and 2014 were retrospectively analyzed. Articular-sided tears were converted to full-thickness repairs, bursal-sided tears were repaired on the tear side, and intratendinous tears were repaired by converting to bursal-sided tears. Outcome measures included the American Shoulder and Elbow Surgeons (ASES) score, Subjective Shoulder Value (SSV), and Visual Analog Scale (VAS). The proportion of patients achieving Minimal Clinically Important Difference (MCID), Substantial Clinical Benefit (SCB), and Patient Acceptable Symptom State (PASS) for each measure was determined. Patients were classified by tear type and compared based on demographics and patient-reported outcome measures (PROMs).

Results

Of 89 eligible patients, 72 were included with a mean age of 51.1 years and a follow-up period of 12 years. Significant improvements were observed in ASES (28.6 to 87.2), SSV (35.6 to 90.3), and VAS (8.2 to 1.5), with all p-values < 0.001. The rates of achieving MCID, PASS, and SCB were high for ASES (89%, 92%, 90%), SSV (92%, 92%, 89%), and VAS (92%, 94%, 88%). Subgroup analysis revealed significant improvements across all tear types, with the highest improvements seen in bursal- and articular-sided tears.

Conclusions

Arthroscopic double-row repair for PTRCTs results in significant long-term improvements in PROMs, achieving clinically meaningful outcomes at a minimum 10-year follow-up.

08:45 - 08:50

1635 Inferior Labrum Tears Can Accompany SLAP Lesions And Inferior Labrum Repair With SLAP Lesion Treatment Results In Satisfactory Clinical Outcomes At A Minimum 2-Year Follow-Up

Ethem Burak Oklaz[1], Asim Ahmadov[1], **Furkan Aral**[1], Inci Hazal Ayas[2], Ulunay Kanatli[1]

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2. Gazi University; Faculty of Health Sciences, Ankara, Turkey

Abstract

Introduction

This study aimed to determine the prevalence of concomitant inferior labrum tears in patients with superior labrum anterior posterior (SLAP) lesions and evaluate the clinical outcomes of concurrent arthroscopic inferior labrum repair during SLAP lesion management.

Materials and Methods

A retrospective case series was conducted on patients who underwent shoulder arthroscopy for SLAP lesions between 2017 and 2022. Patients treated for SLAP lesions (tenotomy, tenodesis, or repair) with concomitant inferior labrum tear repair and a minimum follow-up of 24 months were included. Demographic data and clinical characteristics were assessed, and outcomes were evaluated using the Oxford Shoulder Score (OSS), Subjective Shoulder Value (SSV), and Visual Analogue Scale (VAS). The proportions of patients achieving Minimal Clinically Important Difference (MCID), Substantial Clinical Benefit (SCB), and Patient Acceptable Symptom State (PASS) thresholds for patient-reported outcome measures (PROMs) were determined.

Results

Concomitant inferior labrum tears were identified in 11% (n=32) of 278 patients undergoing SLAP lesion surgery. Among the 26 patients (mean age 43.6 years; 50% male/female), 17 (65%) had a history of sudden arm traction during heavy lifting. Significant improvements in PROMs were observed at the final follow-up ($p<0.001$ for all). The rates of achieving MCID, PASS, and SCB were, respectively, OSS (96%, 81%, 84%), SSV (100%, 77%, 84%), and VAS (88%, 81%, 81%).

Conclusions

Inferior labrum tears commonly accompany SLAP lesions, often following traction-related injuries. Successful clinical outcomes can be achieved with patient-specific management of SLAP lesions and concurrent inferior labrum repair.

09:28 - 09:33

2438 Outcomes Of Operative Versus Non-Operative Management For Posterior Shoulder Instability: A Systematic Review

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Abstract
Posterior shoulder instability (PSI), which accounts for 2-5% of all shoulder dislocations and subluxations, primarily affects young athletes who participate in contact or throwing sports. Initial management typically involves conservative treatment, focusing primarily on rehabilitative exercises, with surgical intervention considered in select cases. However, there is currently no consensus on the gold-standard treatment for PSI. This review aims to compare the clinical and patient-reported outcomes (PROs) of operative versus non-operative management of posterior shoulder instability in adults. A literature search was conducted using the PubMed, MEDLINE, and Scopus databases. Prospective and retrospective comparative studies, as well as case-control studies with a minimum follow-up period of 12 months, were included in the review. Seven studies (levels of evidence II to III) with a total of 781 patients were included. Surgical interventions comprised arthroscopic stabilisation (4 studies), bone block (3 studies), and capsular plication (4 studies). PROs were reported in five studies and showed significant improvement following both operative and non-operative treatments. Overall rates of recurrent instability were 14% for operative and 44% for non-operative cases. Surgical management also resulted in higher rates of return to sport at the same level (61%) compared to conservative treatments (20%). Revision procedures were poorly reported, with only two studies describing rates ranging from 1.4% to 6%. Post-intervention PROs support the efficacy of surgical management for PSI. Surgical intervention also demonstrated lower recurrence rates compared to conservative approaches. Limited number of studies reported PROs for non-operative PSI management highlighting the need for further research.

09:04 - 09:09

2556 Tuberculous Arthritis Of The Ankle: A Case Report Dr Ali EL KOHEN, Orthopaedic Surgeon Casablanca – Morocco

ALI El Kohen

Cabinet medical, Casablanca, Morocco

Abstract
This presentation details the case of a 38-year-old male who experienced significant left ankle pain without any history of trauma. Clinical examination revealed diffuse ankle inflammation and pain during ambulation. Laboratory tests showed elevated inflammatory markers (ESR and CRP), while initial radiographs appeared normal. An ankle arthroscopy was performed in May 2024, during which synovial biopsies and a total synovectomy were conducted. Histological analysis confirmed articular tuberculosis. The patient underwent a six-month course of anti-tuberculous therapy, complemented by early initiation of physiotherapy and rehabilitation exercises. At the one-year follow-up, the patient reported complete resolution of pain and had returned to his regular sports activities.
Tuberculous arthritis, although rare, can affect any joint, with a predilection for weight-bearing joints such as the knee, hip, and ankle. The insidious onset and nonspecific symptoms often lead to delayed diagnosis. Magnetic resonance imaging (MRI) is a valuable tool for early detection, revealing synovial hypertrophy, joint effusion, and bone marrow edema. Definitive diagnosis relies on histological examination and cultures from synovial tissue. Prompt initiation of anti-tuberculous therapy, combined with surgical intervention, when necessary, is essential to prevent joint destruction and ensure optimal functional recovery and favorable outcomes.

09:18 - 09:23

2080 Functional Outcomes Of Arthroscopic Rotator Cuff Repair In Patients Aged 65 Years Or Older.

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Woodend Hospital, Aberdeen, United Kingdom

Abstract

Background

This study aimed to evaluate functional outcomes of arthroscopic rotator cuff repair in patients aged 65 years and older.

Methods

A retrospective cohort study was conducted on patients who underwent arthroscopic rotator cuff repair between 2015 and 2023 by a single surgeon. Patient demographics, symptom duration, repair type (partial or complete), post-operative range of motion gains, and failure rates were analyzed. Clinical outcomes were assessed using the Oxford Shoulder Score (OSS), with subgroup analysis based on tear size and repair type.

Results

A total of 52 patients (29 males, 22 females) were included, with a mean age of 70.1 years and a follow-up of 54.2 months. The mean OSS was 38.6, with small tears scoring highest (45.0) and large tears lowest (35.8), though not statistically significant ($p = 0.316$). Males had slightly higher OSS (39.2 vs. 37.9, $p = 0.654$). Significant improvements in range of motion were observed post-operatively ($p < 0.001$), with forward elevation increasing to 130.9° (from 97.3°), abduction to 128.4° (from 96.5°), and external rotation to 41.2° (from 27.2°). Complete repairs (40/52) showed better functional outcomes (OSS 39.98 vs. 33.73, $p = 0.088$) and greater range of motion improvements. Three patients experienced repair failure, requiring either revision surgery, reverse arthroplasty, or conservative management.

Conclusion

Arthroscopic rotator cuff repair in patients over 65 provides significant functional improvements with acceptable failure rates. Despite the increasing use of reverse shoulder arthroplasty, rotator cuff repair remains a viable option with sustainable long-term outcomes.

09:33 - 09:38

2329 Arthroscopic-Assisted Lower Trapezius Tendon Transfer With Achilles Allograft For Irreparable Posterosuperior Rotator Cuff Tears: A Systematic Review And Clinical Analysis

Athanasios Kalogeropoulos[1], Mohamed Abdo Khalafallah[2], Alexander Hunt[1], Al Acraf Khoriati[1], Tony Antonios[1], Ali Narvani[1], Mohamed Imam[1]

1. Ashford And St Peter's Hospitals, Chertsey, United Kingdom
2. Faculty of Medicine Alexandria University, Alexandria, Egypt

Abstract

Introduction

Irreparable posterosuperior rotator cuff tears (PSRCTs) present a significant surgical challenge. Lower trapezius tendon transfer (LTT) using an Achilles allograft is emerging as a promising alternative to latissimus dorsi transfer. This study evaluates LTT's biomechanical advantages, clinical effectiveness, and associated complications.

Methods

A systematic review was conducted, incorporating biomechanical, clinical, and surgical studies. Data on patient demographics, surgical techniques, and functional outcomes were analyzed. Additionally, a retrospective review of 32 patients who underwent arthroscopic-assisted LTT was performed. Functional assessments included the Oxford Shoulder Score (OSS), Disabilities of the Arm, Shoulder, and Hand (DASH), EuroQol-5D (EQ-5D), and Visual Analog Scale (VAS) for pain, recorded preoperatively and at 3- and 6-month follow-ups.

Results

Literature findings indicate that LTT effectively restores external rotation and enhances shoulder biomechanics by replicating the infraspinatus' force vector. Clinical outcomes demonstrated significant improvements in forward elevation (85° to 135°), abduction (50° to 98°), and external rotation (18° to 52°). In the retrospective cohort (n=32, mean age 62.8 years), VAS pain scores decreased (8.05 to 2.6, $p<0.001$), OSS improved (16.64 to 40.36, $p=0.297$), EQ-5D increased (0.41 to 0.85, $p=0.241$), and DASH decreased (64.85 to 24.2, $p=0.641$). The overall complication rate was 18%, primarily due to seroma formation.

Conclusion

Arthroscopic-assisted LTT with Achilles allograft provides substantial pain relief and functional recovery for irreparable PSRCTs. While mid-term results are promising, further randomized controlled trials are required to establish long-term efficacy and compare LTT with alternative tendon transfer and superior capsular reconstruction techniques.

09:47 - 09:52

2354 Spinoglenoid Notch Cyst Decompression And Labral Repair: Clinical Follow Up With In Office Serial Ultrasound Assessments

Felix M. Rivera Troia, **Carlos J. Perez Lopez**

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Abstract
Purpose:
This study sought to assess muscle function and the role of ultrasound as a tool for monitoring cyst recurrence in patients who underwent spinoglenoid notch cyst decompression with concurrent labrum repair.

Methods:
A retrospective record review was performed. The study cohort encompassed 16 shoulders in 15 patients who underwent surgery between April 2016 and November 2024, with an average follow-up of 50.6 months. All patients had preoperative weakness in external rotation due to a posterior labral tear and spinoglenoid notch cyst. Functional outcomes were assessed using the Constant score, American Shoulder and Elbow Surgeons (ASES) score, and Visual Analogue Scale (VAS). Serial ultrasound was used to monitor cyst recurrence.

Results:
The mean patient age was 36.2 ± 8.9 years. The mean preoperative cyst size was 2.4 cm. Postoperatively, 31.2% of cysts persisted but fully resolved following aspiration. Wilcoxon analysis confirmed significant functional and pain improvements ($p < 0.001$). The mean ASES score increased from 23.3 to 77.3, and the Constant score improved from 31.2 to 80.8. VAS pain scores decreased from 9.0 to 2.8. No major complications occurred.

Conclusion:
Arthroscopic labral repair with spinoglenoid notch cyst decompression significantly improved pain and function. While most cysts resolved intraoperatively, larger ones required ultrasound-guided aspiration. Serial ultrasound proved useful for postoperative monitoring, supporting its role in ongoing patient care.

09:52 - 09:57

2047 A Rare Case Of Osteochondral Articular Humeral Head Fracture Fixation By All Arthroscopic Technique Using Bioabsorbable Screws - A Novel Method

Rohit Prasad Varkey, Prasad Varkey

St. James Hospital, Chalakudy, India

Abstract

AIM

To describe a novel arthroscopic approach to manage a purely osteochondral fracture of the posterior facet of the humeral head.

METHOD

A patient with a 10-day-old right shoulder injury underwent imaging (X-rays, CT, and MRI) confirming the fracture. A structured surgical plan was devised. Shoulderscopy was performed using posterior, postero-lateral, antero-lateral, and anterior portals, with flat and curved instruments aiding visualization. The fractured fragment with cartilage was repositioned and fixed with two Bio-compression screws made of poly-L-lactic acid, offering stepped pitch and taper. Post-surgery, the patient was immobilized for three weeks, after which elbow movements began. Serial X-rays were conducted at 3, 6, and 12 weeks, with a CT scan at three months.

RESULT

The procedure successfully navigated the limited space between the Glenoid and humeral head remnant. Despite minor cartilage loss, the fragment was well-reduced and secured. Postoperative imaging at three months showed good consolidation and a range of motion (ROM) improvement to 150/140/30/L5, enabling regular activities. Rehabilitation continues to further improve ROM and strengthen rotator cuff muscles.

CONCLUSION

This rare posterior osteochondral fracture was managed using an arthroscopic approach, offering better access and stability without the extensive soft tissue manipulation of open surgery. The technique ensured minimal scarring, optimal screw trajectory (70 degrees), and stable fixation, as confirmed by imaging. Functional recovery has been promising, making this a viable, cosmetic, and tissue-sparing option for such injuries.

09:42 - 09:47

833 Outcome Of Arthroscopic Repair Of Rotator Cuff Tear With Single Row Repair Construct And Bone Marrow Vents.

Utkarsh Mittal, Ashish Gohiya

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Abstract
Background: Rotator cuff tears are a leading cause of shoulder pain in adults, yet the effectiveness of arthroscopic rotator cuff repair (ARCR) using a single-row repair with double-loaded suture anchors and bone marrow vents remains insufficiently studied. This study aims to evaluate the clinical and radiological outcomes of this technique in patients with full-thickness rotator cuff tears.

Methods: A prospective analysis was conducted on 22 patients who underwent ARCR using a single-row repair construct with bone marrow vents. Preoperative assessment included clinical examination and radiological evaluation via X-ray and MRI. Functional outcomes were measured using the American Shoulder and Elbow Surgeons (ASES) score at baseline, 3 months, and 6 months postoperatively. A follow-up MRI was performed at 6 months to assess tendon integrity. Statistical analysis explored correlations between clinical outcomes and demographic or lifestyle factors.

Results: The mean age of participants was 55.18 ± 12.86 years. Among them, 18.18% consumed alcohol, 22.7% were smokers, and 81.8% had a traumatic etiology, with the dominant shoulder involved in 72.7% of cases. The ASES score significantly improved from 28.12 preoperatively to 82.68 at 6 months ($p < 0.05$), indicating substantial functional recovery. MRI at 6 months revealed intact tendon integrity in 95.2% of cases, while 4.8% showed radiological failure. No significant correlation was found between clinical-radiological improvement and age, gender, etiology, alcohol consumption, smoking, injury side, or tendon involvement on MRI.

Conclusion: Arthroscopic rotator cuff repair using a double-loaded suture anchor, single-row repair construct with bone marrow vents achieved a achieved a high healing rate

08:59 - 09:04

1356 Single Row Load Sharing Rip-Stop (SLRS) Versus Double Row Repair With Or Without Knotting Of Medial Row For Large And Massive Cuff Tears- A Three Arm Randomised Trial

Terence Dsouza, Sundararajan S R, Rajagopalakrishnan Ramakanth, Pushpa B T, Palanisamy Arumugam, Shanmuganathan Rajasekeran

Ganga Hospital, Coimbatore, India

Abstract
Introduction: Though Single row load sharing rip-stop (SLRS) technique was advocated for medially retracted chronic cuff tears, this has been extrapolated for repairing cuff tears in acute settings also, owing to its load sharing properties. To the best of our knowledge, there is no level-1 study comparing this technique to the standard double row techniques with medial row knotted(KD) or knotless medial row(KL). The aim of this study was to compare the clinical outcomes and retear rates of SLRS, KD and KL techniques for large – massive tears. We hypothesized that all three techniques would result in equivalent improvement of clinical outcomes with comparable retear rates.
Methodology: This was a randomized study including 90 patients undergoing arthroscopic repair of large(3-5cm) and massive (>5cm) cuff tears. Patients were followed up clinically with range of movement(ROM) assessment with American shoulder and Elbow society(ASES), Constant and UCLA scores. Structural integrity of the cuff was assessed using 3T MRI at 1 year follow-up.
Results: Patients in all groups-SLRS(n=26), KD(n=26) & KL(n=24) had a significant clinical improvement post-operatively with respect to ROM, ASES, Constant, UCLA and VAS scores at a mean follow-up of 20.8(SD-3.3),21(SD-3.4) &20.4(SD-3) months respectively. Though there was no statistically significant difference between the groups clinically, the retear rates were significantly higher with SLRS(38%) than KD(9.5%) and KL(11.7%)(p=0.04).
Conclusion: The SLRS construct showed satisfactory improvement in ROM and functional outcomes. However, clinicians should be cautious on implementing this technique for repairing acute large-massive tears owing to its higher retear rates compared to double row techniques.

09:09 - 09:14

131 Measuring The Effect Of Hyaluronic Acid On Tendon Healing After Arthroscopic Rotator Cuff Repair: A Prospective Randomized Clinical Trial

Ilian Dominiq Eusebio[1], Lauro Kordel Gonzales[2], Juan Gabriel De Leon[3], Warren Kuo[4], Simon Tan[4]

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3. Quirino Memorial Medical Center, Quezon City, Philippines
4. St Vincent's SportsMed, Sydney, Australia

Abstract
Arthroscopic rotator cuff repair typically leads to favourable clinical outcomes, but post-operative cuff re-tear remains a significant concern. This prospective randomized control trial investigated the potential healing effects of hyaluronic acid (HA) as an adjunct after cuff repair. Patients who had undergone arthroscopic rotator cuff repair from March 2019 to September 2020 were included in the study. Participants were randomly assigned to receive either HA injection or a placebo post-operatively. Assessments were conducted at 2 weeks, 3 months, 6 months, and 12 months post-surgery. Outcomes measured included VAS pain scores, ASES, CONSTANT scores, range of motion, and strength. The integrity of cuff tendons was also evaluated through MRI, utilizing the Sugaya classification system. Administration of HA did not result in any significant differences in the VAS, ASES and CONSTANT scores, and manual strength , compared to placebo. No differences in complications and adverse events were seen between hyaluronic acid and placebo. More patients in the HA group attained full abduction, internal rotation, and external rotation by the 6th (53% vs. 40%) and 12th (73% vs. 60%) month compared to placebo . Both treatment groups consistently showed improvement on all outcome scores at final follow-up ($p<0.001$). MRI-assessed re-tear rates at final follow-up were lower in the HA arm (n=5, 14.4%) than placebo (n=8, 26.7%). This study suggests that immediate HA administration following arthroscopic rotator cuff repair may contribute to faster recovery of range of motion, and may reduce re-tear rates.

08:54 - 08:59

379 Arthroscopic Excision Of Symptomatic Os-Acromiale , Short Term Results

Maysra Abdelhalim Bayoumy[1], Mohamed Mosa Mohamed[2], Abdelaziz Monsef Aly[3]

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Abstract
Introduction: Os acromiale is a failure of fusion of any of the primary ossification centres of the acromion with basi-acromion. It is usually asymptomatic and discovered accidently . A painful os acromiale can be both a diagnostic challenge, and difficult to manage. There are a wide variety of surgical interventions with variable outcomes.
Aim and objectives: to evaluate the clinical outcomes after arthroscopic excision of symptomatic pre and meso-acromion. Study design and method:This case series study includes 5 patients mean age 43 years old presenting with shoulder pain resistant to a mean 4.2 months of conservative treatment. Pain followed trauma in two cases. All had pain during palpation of the superior aspect of the acromion. The diagnosis was confirmed in all patients with plain X-ray and MRI after exclusion of other causes. The mean preoperative Constant score was 57. The procedure included Arthroscopic subtotal excision of the loose fragment of os-acromiale. Results: The mean follow-up was 21.6months. Pain was relieved in all cases and all patients had improved and were satisfied. The mean Constant score was 87.6.Conclusion :Investigating unstable os-acromiale is a key element in the clinical evaluation of subacromial impingement. In the presence of mobile and painful os-acromiale without involvement of the rotator cuffs, surgical treatment by arthroscopic excision is an option that results in good outcome with preservation of deltoid attachment and strength.
Keywords: acromion , arthroscopic excision

08:30 - 08:35

2268 Evaluation Of Risk Of Radial And Interosseous Nerve Injury With Anterolateral And Posterolateral Portals In Elbow Arthroscopy - A Cadaveric Surgery

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Abstract
Background: Neurological injuries are most common complication refraining many surgeons from opting elbow arthoscopy for indicated surgeries. The objective of this study was to evaluate the safety of anterolateral (AL) and posterolateral (PL) portals and chances of injury to the radial nerve and posterior interosseous nerve around the elbow joint during elbow arthroscopy. Material & Methods: A cadaveric study was conducted on 16 non dissected cadavers (32 elbow specimens) between the period of January 2021 to June 2022. Four portals were established using 4 mm Steinmann pins which are Proximal AL Portal, Mid-AL Portal, Distal AL Portal and PL Portal. The measurements of each portal were taken for each nerve and compared with each other. Results: Inour study, the mean age was 56.5 years. Proximal AL Portal was found to be at an average distanceof 12.03 mm from radial nerve, 9.48 mm from the PIN and 9.35 mm from the PACN (PosteriorAntebrachial Cutaneous Nerve). Distal AL Portal was at an average distance of 7.95 mm away fromthe radial nerve which closest to radial nerve amongst all portals. The radial nerve had the most riskof being injured out of all the nerves in the AL and PL portals followed by PIN and PACN in ALportal. Ulnar nerve was found safe in the PL portal. Conclusion: The PL portal was safer than the ALportal for conducting elbow arthroscopy. Care should be taken specially to protect radial nerve while performing elbow arthroscopy

Wednesday, 3 September

Trauma 1
09:09 - 09:14

1098 Effective Care Model For Emergency Operations On Hip Fractures In The Geriatric Population.

Saurabh Sarkar, Manish Divekar, Iulia Stoian, Ilona Babich, Rory Middleton

Royal Cornwall Hospital NHS Trust, Truro, United Kingdom

Abstract
I. Background
Human life expectancy has been increasing in recent decades, leading to a rise in the number of Geriatric patients. Hip fractures are a common cause of emergency admissions in this population. Improving outcomes for neck of Femur (NOF) fractures is crucial, as surgery involves complex management, and any delays can severely impact their prognosis. Approximately 75000 NOF fractures are reported annually in the UK.

II. Methods
This observational study analysed 878 geriatric patients with NOF fractures in 2024, closely monitoring their management and outcomes from presentation of injury until discharge. The primary outcome of the study was to assess whether surgery was performed within the critical 36-hour window following presentation.

III. Results
Among 834 patients requiring surgery, only 275 (32.97%) received it within this timeframe (mean age 82.05, ASA 2.99, time to surgery 52.25 hours). The delays were mainly attributed to: (i) incompatibility with the operating team’s skill set or equipment (n=30), (ii) awaiting essential medical reviews and stabilisation (n=102), and (iii) insufficient theatre capacity, particularly during weekends (n=423).

IV. Conclusion
The staggering results demonstrate an urgent need to overhaul our institution's management practices for NOF fractures. Increasing the theatre capacity and transitioning to a Geriatric-led care model would improve the time to surgery. This revised approach would involve establishing a dedicated specialist team that includes Anaesthetic and Orthopaedic support. The objective is to ensure timely diagnosis, implement early interventions, shorten hospital stays, and significantly improve patient outcomes.

Keywords: Neck of Femur fracture, care model, time to surgery.

References

08:54 - 08:59

1720 Effect Of Granulocyte Colony-Stimulating Factor (G-CSF) In Functional Outcome Of Acute Spinal Cord Injury Patients: A Single-Blinded Randomized Controlled Trial

Madhan Jeyaraman, Naveen Jeyaraman

ACS Medical College and Hospital, Dr MGR Educational and Research Institute, Chennai, India

Abstract
Introduction: Spinal Cord Injury (SCI) is a major public health issue causing significant disability and economic burden. Current treatments primarily focus on mitigating secondary injury, with limited effective therapies available. This study explores the efficacy of the Granulocyte Colony-Stimulating Factor (G-CSF) in improving functional outcomes in acute SCI patients. Materials and methods: This single-blinded randomized control trial was conducted at JIPMER's orthopedic department. Patients with acute spinal cord injury (SCI) were enrolled based on specific inclusion and exclusion criteria. Participants were divided into two groups: Group A (n = 16) received a G-CSF injection whereas Group B (n = 18) received a placebo (normal saline) injection. The primary evaluation was based on the changes in the ASIA impairment scale at 1-, 3-, and 6-months post-injury. Results: The study involved 34 participants, predominantly male. Initial assessments showed significant differences in ASIA scores between the groups. Group A demonstrated marked improvement in neurological status at 1, 3, and 6 months post-treatment compared to Group B. The frequency of adverse events was comparable between the two groups. Conclusion: G-CSF showed significant improvement in ASIA scores at various time points post-administration compared to placebo. These findings suggest G-CSF as a potential therapeutic agent in acute SCI treatment. However, due to the small sample size, further research is necessary to confirm these results

Keywords: Spinal cord injury; Granulocyte colony-stimulating factor; Randomized controlled trial; ASIA impairment scale

09:47 - 09:52

3017 Challenges Of Neck Of Femur Fracture Care In Rural Hospitals- "The Scottish Highland Experience"

Rajkumar Thangaraj, Hushil Sindhu, Abdul Muhaymin Khan, Sam Singh, William Macleod, Craig Reston

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Abstract
Scottish hip fracture guidelines recommend surgical intervention for neck of femur fracture within 36 hours. Transfer of elderly patients in remote location to the hospital is often delayed due to logistical constraints.
Aim of the study is to assess if the surgical time was more than 36 hours for the remotely located patients versus patients from local area and to compare the surgical outcomes between patient groups of surgery done within 36 hours and beyond 36 hours.
A retrospective study of prospective data was collected from January 2024 to date from local hip fracture database. All demographic data, operative management, mortality, clinical frailty score, length of hospital stay and other variables were collected from the electronic patient records.
Our study included 220 patients with a median age of 81 +/- 14.5 years. 177 patients were local and 53 were from periphery. There was statistically significant difference (40 out of 53, 75.4%patients) delay in surgery to more than 36 hours for remotely located patients. The length of stay was higher among the patients with surgery done beyond 36 hours. Between the cohorts, we found no difference in outcome in terms of mortality and morbidity including infection, revision surgery, and dislocation when the surgery was performed after 36 hours.
This study draws attention to the challenges in providing care for remotely located patients with neck of femur fracture. The length of stay of these patients is prolonged which has cost implications. surprisingly, the delay in surgery does not seem to affect outcome.

08:30 - 08:35

1196 Intramedullary Nailing Systems In Proximal Femoral Fractures – A Review Of Failure Rates Within A District General Hospital

Moneet Gill[1], Philip Mccarthy[2], Lee David[3], Osama Tawfiq[3]

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2. Hastings Hospital, Hastings, United Kingdom
3. Maidstone and Tunbridge Wells NHS Trust, Tunbridge Wells, United Kingdom

Abstract
Intramedullary nails (IM nails) are widely used for fixation of both subtrochanteric and unstable peri-trochanteric femoral fractures. There remains a high failure rate despite improved technique through implant modification. This study assessed the failure rates of IM nails used for fixation of proximal femoral fractures at a district general hospital.

Methods
Retrospective data was collected for those who underwent IM nailing for proximal femoral fractures between January 2019 and September 2023. 607 patients were identified, 293 (48%) had a PFNA and 314 (52%) a TFNA. Patient data collected included demographics, age, fracture type, date of operation and any complications. Nail failure was defined as nail breakage, blade cutout or blade backing out beyond that expected with a dynamized technique.

Results
There was a higher failure rate in TFNAs when compared to PFNAs (2.0% vs 3.5%). Odds ratio 1.74 (95% CI 0.63 to 4.76) with a p value of 0.28. TFNA system failures were more likely due to a fracture through the blade nail interface (36% vs 17%) or by backing out of the blade (54% vs 33%). The differences between the systems were not statistically significant.

Conclusion
In literature, the TFNA system has higher failure rates when comparing nail breakage, blade cut out and backing out of the blade when compared to the PFNA system. The overall failure rates and nail fracture rates of the TFNA fell within previously documented ranges. In previous studies on failure rates, there was no standardisation by initial fracture patterns of the cases included.

08:59 - 09:04

721 Validation Of Open Injury Scores In Predicting Limb Salvageability In Type IIIB Open Tibial Fractures

Devarshi Rastogi

King George's Medical University, Lucknow, India

Abstract

Background: Severe open tibial fractures pose a major challenge in orthopedic trauma care. The decision to salvage or amputate a limb requires objective assessment tools. The Mangled Extremity Severity Score (MESS), Limb Salvage Index (LSI), and Ganga Hospital Open Injury Severity Score (GHOISS) are widely used, but their accuracy in Type IIIB open tibial fractures remains under evaluation. This study aims to validate these scoring systems and determine the most reliable predictor of limb salvageability.

Methods: A prospective observational study was conducted on 303 patients with Type IIIB open tibial fractures at the Department of Orthopaedic Surgery, KGMU. Patients were assessed using MESS, LSI, and GHOISS at presentation. Limb salvageability was defined as limb retention at six months. Statistical analysis included chi-square tests and receiver operating characteristic (ROC) curve analysis.

Results: The majority of patients were male (84.8%), with a mean age of 27.3 ± 8.1 years. Road traffic accidents (71.9%) were the most common cause of injury. Limb salvage was achieved in 93.4% of cases, while 6.6% underwent amputation. Higher MESS, LSI, and GHOISS scores were significantly associated with amputation ($p<0.001$). ROC analysis showed GHOISS (AUC = 0.997) had superior predictive accuracy compared to MESS (AUC = 0.958) and LSI (AUC = 0.953), particularly in cases within the gray zone (scores 15-16).

Conclusion: GHOISS demonstrated the highest accuracy and specificity in predicting limb salvageability, making it the most reliable tool for clinical decision-making in Type IIIB open tibial fractures.

Keyword(s): Type IIIB Open Tibial Fracture, Limb salvage, MESS, LSI, GHOISS.

09:33 - 09:38

1332 Perioperative Considerations For Operative Management Of Distal Femoral Fractures: Distal Femoral Replacement (DFR) Versus Open Reduction Internal Fixation (ORIF)

Perry Liu, Matthew Baker, Mustafa Alnaib, Sherif El Shafie, Craig Zhao, Lee David

Maidstone and Tunbridge Wells NHS Trust, Royal Tunbridge Wells, United Kingdom

Abstract

Introduction
Both native and periprosthetic distal femoral fractures can be treated with either Distal Femoral Replacement (DFR) or Open Reduction Internal Fixation (ORIF). The literature shows little difference between the two in terms of long-term outcomes (complications and mortality), but less is known about any differences perioperatively.

Aims
The study aim was to compare perioperative outcomes (including time to operation, overall length of stay, operation time and estimated blood loss) between the two interventions. Mortality data were also collected.

Methods
A retrospective analysis of all patients who underwent DFR or ORIF (using bridge plating) for native (AO/OTA33 Types A3 to C3) or periprosthetic distal femoral fracture over seven years (01/01/2016 to 30/12/2022) at a high-volume NHS Trust. Independent-samples T-test analysis was performed using SPSS.

Results
113 patients (mean age 83 years, 87% female) were included (37 DFR, 76 ORIF). When compared to the ORIF group, the DFR patients had a longer mean time to operation (7 vs 3 days, p= 0.001). Mean length of stay (24 vs 26 days, p= 0.387), operation time (122mins vs 120mins, p= 0.442), percentage blood loss (11.0 vs 13.7%, p= 0.108) and one-year mortality rates (16.2% vs 18.4%, p=0.388) were all similar between the two groups.

Conclusion
Patients having DFR waited longer for their procedure. Factors influencing this would have been the availability of kit and specialist surgeon. Other perioperative parameters assessed showed no statistically significant differences between the two groups. More research is needed to help guide which treatment option may be more advantageous.

08:35 - 08:40

2823 Comparative Prognostic Value Of Preoperative Serum Markers In Geriatric Hip Fracture Patients: Troponin I, Brain Natriuretic Peptide, And Neutrophil-Lymphocyte Ratio

Chris Hurry[1], Tiana Phi[1], Pierre Guy[1], Arissa Torrie[2], David Stockton[1], Kelly Lefaivre[1], Henry Broekhuyse[1], Jeffrey Potter[1], Philip Hache[1], Chloe Chong[1], Aresh Sepehri[1]

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2. University of Maryland School of Medicine, Baltimore, United States

Abstract

Background

Accurate risk stratification for older adults with hip fractures is needed to identify patients at highest risk for adverse outcomes and optimize resource allocation. Preoperative serum biomarkers, including Troponin I (TnI), brain natriuretic peptide (BNP), and neutrophil-lymphocyte ratio (NLR) have individually demonstrated associations with postoperative complications and mortality, but their comparative prognostic value remains unclear.

The primary aim of this study was to compare the prognostic performance of TnI, BNP and NLR for postoperative outcomes in older adults with hip fractures. The exploratory aim was to develop a predictive model combining select biomarkers with clinical variables.

Methods

A retrospective review of 820 hip fractures in patients ≥60 years treated surgically at a level 1 Trauma Centre was conducted. The primary outcome was inpatient mortality or major adverse event. Prognostic performance was assessed using Area Under the Receiver Operating Characteristic (AUROC) curve. Multivariate logistic regression analysis identified variables for a predictive model.

Results

Final analysis included 496 patients with a mean age of 83.1 years (SD 9.0). Major adverse event or inpatient mortality occurred in 6.3% (n=31) of patients. The AUROC for TnI, BNP, and NLR were 0.66, 0.65, and 0.55, respectively, with optimal cutoff values of 15 ng/L, 666 pg/mL, and 13.3. Final regression model included age, BNP and NLR. BNP was most strongly associated with postoperative outcomes with an OR of 2.99 (95% CI 1.19-9.14; p=0.018).

Conclusion

BNP demonstrated the strongest prognostic performance among three serum markers for predicting postoperative inpatient outcomes in older adult hip fracture patients.

09:18 - 09:23

1604 Sarcopenia Predicts Delayed Ambulation In Geriatric Fragility Fractures Of The Pelvic Ring Treated Nonoperatively

Vishvas Shetty, Chris Hurry, Kelly Lefaivre, Pierre Guy, David Stockton, Jeffrey Potter, Henry Broekhuyse, Philip Hache, Aresh Sepehri

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Abstract

Aims and Introduction:
Fragility fractures of the pelvic ring are linked to high morbidity and mortality. There is no clear consensus on the role of operative management for these fractures. Failure to mobilise is often used as an indication for surgery. This study aims to identify the factors associated with failure of early mobilisation in patients with pelvic ring fragility fractures treated non-operatively.

Methods:
This retrospective cohort study assessed patients aged over 60 years treated non-operatively for a low energy pelvic ring fragility fracture between 2022–2024. We collected data on age, sex, pre-injury ambulatory status, fracture severity, and sarcopenia (using TPA/L3 method). The primary outcome was failure to stand by post-injury day three. Multivariable logistic regression analysed the relationship between patient and injury variables and failure to stand. The diagnostic accuracy of predictive variables was assessed using Receiver Operating Characteristics (ROC) analysis.

Results:
Seventy patients (median age 86, IQR 78.5–91, 79% female) were included. Fifty percent (n=35) failed to stand by day three post-injury. Multivariable logistic regression modelling was performed evaluating age, sex, Beckman classification, sarcopenia and pre-injury ambulatory status. Sarcopenia was significantly associated with failure to stand ($p=0.002$). The area under the ROC curve for sarcopenia predicting failure to stand was 0.718, indicating moderate accuracy.

Conclusion:
Sarcopenia is strongly associated with failure to stand within three days following a pelvic ring fragility fracture. This may help identify patients who could benefit from surgical intervention. Further research is needed to determine a threshold value for surgical intervention.

09:23 - 09:28

1508 Metabolomics After Polytrauma – A Biobank Analysis Of 97 Patients Over The Time Course Of 10 Days

Felix Karl-Ludwig Klingebiel[1], Yannik Kalbas[1], Sascha Halvachizadeh[1], Michel Teuben[1], Bergita Ganse[2], Paolo Cinelli[1], Hans-Christoph Pape[1], Roman Pfeifer[1]

1. University Hospital Zürich, Zürich, Switzerland
2. Saarland University, Homburg, Germany

Abstract

Introduction

Severe injury is known to have systemic effects at multiple levels, with the inflammatory response being a major focus of research in recent years. However, little is known about the perturbation of metabolic pathways after polytrauma.

Aims & Objective

A metabolomic analysis of patients from our in-hospital polytrauma biobank was performed.

Study Design and Methods

Patients from the in-house polytrauma biobank with signed ethical consent were utilized. Sample time points were baseline (hospital admission), 8h, 24h, 48h, 5d and 10 days post trauma. Untargeted mass spectrometry was performed. Metabolic changes were identified to detect pathways that were particularly affected. Additionally, cluster analyses were performed and metabolite dynamics over time were assessed.

Results

97 severely injured patients (79.4% male / 20.6% female) were included in the study. The median ISS of this cohort was 29 (IQR=19). 46 metabolites were reliably identified. The immediate response (0-8h) shows increased activation of hemostasis and inflammation along with excessive corticosteroid production. In the 8-24h period, there is an excessive catabolic state. At 24-48 hours, detoxification, immune regulation and metabolic adjustments are primarily active. In the 5-10 day period, energy requirements are reduced compared to the previous time points.

Conclusions

Severe trauma causes a major disruption in the metabolism and, the body activates life-saving pathways and begins to mobilize excessive energy for ATP production. Initial treatment and intensive care should take this excessive energy demand into account and assess the extent to which organ-protective treatment (e.g. liver) may be beneficial to the patient.

09:28 - 09:33

2636 A New Percutaneous Technique Of Valgus Intertrochanteric Osteotomy With Locked Nail Fixation

Alexander Chelnokov

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Abstract
Introduction Nonunions and malunions of the proximal femur can be difficult to manage. Typical varus deformity prevents normal functioning of the affected hip joint and causes leg length discrepancy. Conventional treatment option is valgus intertrochanteric osteotomy with lateral wedge removal fixed by blade plate. Percutaneous osteotomy and closed nailing look promising for this purpose.
Aim of our study was development of the technique of closed intramedullary nailing in valgus intertrochanteric osteotomy.
Methods 49 patients (age 18-75) with nonunions or malunions of proximal femur were treated. The suggested surgical technique included nailing with the use of joystick into the head-neck segment. The osteotomy was performed percutaneously. Acute correction was possible in 42/49 cases, in 7/49 gradual alignment and lengthening was performed using Ilizarov or hexapod frame. After open wedge correction the final position was fixed by either reconstruction (8/49) or proximal femoral nails (41/49).
Results Varus deformity was corrected in all cases. The average correction was 38,2±5,6 degrees. Low invasiveness and minimal blood loss with high stability of fixation provided rapid functional recovery and short hospital stay. 35/49 (71,4%) patients reached full weight-bearing at 3 month postoperatively. In 42/49 (86%) cases union with restoration of length and proper alignment was reached. In 7/49 (14%) total hip replacement was necessary because of cut-out and/or avascular necrosis of the femoral head.
Conclusions Mini-access without bone stripping combined with high stability of intramedullary fixation allows not to excise a lateral bone wedge

09:42 - 09:47

1204 PFNA-II: The Complication Of Protrusion Of The Proximal Tip Of Nail Over The Greater Trochanter In Indian Population.

Faisal Younis Shah[1], Muzaffar Mushtaq[2]

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2. Manchester NHS Trust, Manchester, United Kingdom

Abstract
Background: PFNA-II is a widely used implant for intertrochanteric fracture fixation in India, with good outcomes. However, complications arise due to implant-anatomy mismatch in the Asian population. This study evaluates outcomes and complications of PFNA-II in North-Indian patients, focusing on proximal nail protrusion.

Materials and Methods: A single-centre, prospective study was conducted at a teaching hospital in North India. Of 116 patients treated between July 2017 and December 2021, 105 were included in the final analysis. Patients were divided into two groups based on proximal nail tip protrusion in early postoperative radiographs: Group A (protrusion, n=65, 62%) and Group B (no protrusion, n=40, 38%). Clinical and radiographic outcomes were compared.

Results: The average protrusion length in Group A was 12.6 ± 3.9 mm (range: 3.8–19.4), with a marginal male-female difference (6.7 vs 8.3mm, p=0.0537). At one-year follow-up, 40% (42/105) had greater trochanteric pain, significantly higher in Group A (52%, 34/65) than in Group B (20%, 8/40) ($p<0.0021$). The mean Harris Hip Score was 78.6 (range: 63–100), classified as good-excellent in 92.4% (97/105) and poor in 7.6% (8/105), with no significant group difference (78.1 vs 79.4, p=0.1630).

Conclusion: PFNA-II is effective, but implant-bone mismatch may cause nail protrusion and proximal thigh pain. Modifying the implant by shortening the proximal end by 5–10mm may better suit Indian and other Asian populations.

09:52 - 09:57

1922 Negative Pressure Wound Therapy Combined With Polyhexanide Solution Instillation For Treating Posttraumatic Infections And Osteomyelitis – Our Long-Term Outcome

Yina Zhao, Flurina Frei, Yannik Kalbas, Hans-Christoph Pape, Gerrolt N. Jukema

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Abstract
Aims & Objectives: This retrospective study evaluated the effectiveness of Negative Pressure Wound Therapy with Instillation (NPWT-I) using polyhexanide 0.2% for managing infected chronic trauma-related wounds, open fractures, and posttraumatic osteomyelitis focusing on the reduction of bacterial load and reinfection rates.
Study Design & Methods: Patients, who received NPWT-I from 2011 – 2024 at a single level-one trauma center were retrospectively analyzed. The therapy combined surgical debridement, NPWT-I with polyhexanide 0.2%, foam dressings changings every 3–4 days, and antibiotic therapy.
Results: A total of 67 patients were included, categorized into posttraumatic osteomyelitis (N=27), open fractures (N=23), and chronic traumatic wounds (N=17). Statistical analysis showed a significant reduction in bacterial specimens (99 to 20, $p < 0.001$) compared to standard care (debridement, lavage, antibiotic-loaded beads) and relative low reinfection rates of 10,2% in patients with osteomyelitis and open fractures (for standard care reported regularly > 50%). The average treatment duration was 12.6 days (14.6 days in open fractures vs. 8.1 days in chronic traumatic wounds), with 3.22 dressing changes (3.3 changes in osteomyelitis vs. 2.35 changes in chronic traumatic wounds). CRP levels decreased significantly ($p=0.014$). More than half of the cases achieved delayed primary closure. Patients with osteomyelitis needed a longer antibiotic therapy. There was no difference in comorbidity risk factors between the patient groups.
Conclusion: Although limited by its retrospective design and small sample size, this study supports NPWT-I as effective in reducing bacterial load, promoting wound closure, and reducing infection recurrence, especially in osteomyelitis and orthopedic implant infections.

09:04 - 09:09

542 Outcomes Of Acetabular Fractures Treated With Acute Fix And Replace Versus Open Reduction And Internal Fixation In Elderly Population: A Multicentric Retrospective Study

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Abstract

Introduction:The optimal operative treatment for displaced acetabular fractures in elderly population is still object of debate. Acute fix and replace procedure, the so called "combined hip procedure" (CHP), was introduced because of the poor results of the open reduction and internal fixation (ORIF) alone.

Aims & Objectives: The aim of the study is to compare clinical outcomes of CHP and ORIF alone for the treatment of acetabular fractures in elderly patients.

Study Design & Methods: This is the largest multicentric retrospective analytical study, with a case-control design on the issue. Hospital records and clinical notes were reviewed to collect demographic, peri-operative, and clinical data.

Results: A total of 45 patients met the inclusion criteria: 24 patients entered the CHP group whereas 21 entered the ORIF control group. The most frequent traumatic mechanism was the fall from same level in both groups. Operating time was significantly lower in the CHP group compared to the ORIF group. Moreover, full weight-bearing was allowed significantly earlier in the CHP group compared to ORIF alone. Among the clinician-completed scores, the HHS at three months was higher in the CHP group (66.3 + - 1.83 ORIF;73.6 + - 2.09 CHP; $p < 0.05$). All the other clinical outcomes were similar in both study groups.

Conclusion: CHP is desirable treatment option in elderly patients with acetabular fracture when there are poor expected outcomes in terms of joint survival with ORIF alone.

08:45 - 08:50

687 A Comparative Clinical Study Of The Effect Of Titanium Rod Contour On The Overaland Local Sagittal Sequence Reconstruction Ofsingle Segment Percutaneous Nail Placement MIS-TLIF

Jun Cheng

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Abstract
Objective: To analyze the effect of rod contouring on spinal-pelvic sagittal parameters and 2-year clinical outcomes in single-segment MIS-TLIF.
Methods: A retrospective study of 94 patients (2016–2018) divided into contouring rod (n=51) and non-contouring rod (n=43) groups. Radiological parameters (SVA, TK, TLJ, LL, PI, PT, SS, DH, FSA) and clinical outcomes (operation time, blood loss, VAS, ODI) were evaluated.
Results: LL, SS, and PT improved significantly in both groups ($P<0.05$), while SVA, TK, and TLJ showed no significant changes ($P>0.05$). DH and FSA increased significantly ($P<0.05$). VAS and ODI improved in both groups ($P<0.05$), with no significant differences in operation time, blood loss, or global parameters between groups ($P>0.05$). The contouring rod group showed greater FSA recovery (4.62±3.47 vs. 2.63±3.12, $P=0.005$).
Conclusion: MIS-TLIF effectively reconstructs lumbar lordosis and reduces pelvic tilt compensation. Pre-bending titanium rods are necessary for better FSA reconstruction in single-segment MIS-TLIF.

08:40 - 08:45

2962 Non-Union Humerus– Treated With Onlay & Inlay Grafting

Pritam Biswas

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Abstract
Non-union in postoperative cases of osteosyntheses , less common in Western world but not that much uncommon in India, is challenging .Freshening bone ends with plate osteosyntheses requires bone grafting except treatment with Illizarov Method. Onlay , inlay grafting with maximum contact of fracture fragments are primary objective . Onlay grafting of unicortical iliac crest cancellous surface in contact with decorticated bones at non-union site increases effective area of bridging callous formation, with plate fixation using DCP / LCDCP , increases - chance of union was hypotheses. Retrospective study conducted with cases of non-union humerus after fixation of failure treated from 2009 t0 2024 , were undertaken . Out of 30 cases of non-union humerus with non-union after osteosyntheses , 27 cases were treated with plating and onlay grafting & inlay grafting . All cases united @ 5 months.DASH , Constant scores iImproved significantly in all cases with excellent result in 24% , good 69% poor 7% cases. Therefore it’s a good predictable method .While studies on onlay grafting with tibial graft or allograft are there , but this grafting wih less adverse effect is infrequent and unique with great scope of its application

Wednesday, 3 September

Paediatrics 1
11:28 - 11:33

2238 Lateral Condyle Fractures Of The Humerus In Children: Busting The 6 Week Myth

Praveen Prahlad Gopinath, Musammad Rashida Begum, Essa Mohamed-Zarook, Manjula Mallikage, Sangeet Gangadharan, Helen Emily Chase, Anish Pradip Sanghrajka

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Abstract
Background
It Is Commonly Accepted That Humeral Lateral Condylar Fractures (HLCF) In Children, Because Of Their Intra-Articular Nature, Require 6 Weeks In Plaster In Order To Avoid Complications Such As Non-Union.

Aim
To Investigate Whether Shortened Periods Of Plaster Immobilisation Are Associated With More Complications When Managing HLCF.

Methods
A Retrospective Review Of A Consecutive Series Of HLCF In Children (Age<16 Years), Managed Over A 6-Year Period At A University Hospital. Patient Demographics, Management Details (Non-Operative Or Operative, Open/Closed Reduction, K-Wire, Screw), Duration Of Plaster Treatment & Complications Were Recorded. The Cohort Was Divided Into Two Groups Based On Duration Of Plaster Treatment (Group 1: <35 Days, Group 2: =/>35 Days). X2 Analysis Was Performed To Compare The Two Groups.

Results
114 Patients Were Identified, (Age 2-15y, Mean 5). In Group 1, (72 Patients, Mean Age 5.2), Median Plaster Duration Was 28 Days. 28 Patients Were Treated Operatively (66% Open-Reduction; 57% Fixed With K-Wires, 43% With Screws). In Group 2, (42 Patients, Mean Age 5.5y), Median Plaster Duration Was 41 Days. 21 Patients Were Managed Operatively, (81% Open Reduction; 67% Fixed With K-Wires, 33% With Screws). X2 Analysis Showed No Significant Differences Between The Two Groups In Terms Of Proportion Of Open Vs Closed, Or Screw Vs K-Wires. There Was One Case Of Fixed Flexion In Each Group, But No Cases Of Non-Union.

Conclusions
Whether Managed Operatively Or Not, With Screw Or K-Wires, 28 Days' Plaster Is As Effective As The Conventional 6 Weeks For HLCF In Children.

10:54 - 10:59

2074 Uency Of Vitamin D Deficiency In Pediatric Fractures Presenting To A Tertiary Care Hospital

Pervez Ali

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Abstract
Introduction: Majority of childhood fractures occur due to high impact trauma and immediate fracture management is crucial for future healing process. While treating fractures in children it is often a missed opportunity to assess osteopenia risk factors such as poor calcium intake, vitamin D deficiency, and sedentary life style. However, . This study aims to estimate the burden of vitamin D deficiency (VDD) in pediatric population with fracture, so that timely intervention and strategy to replace vitamin D can be taken. Methods: This study was conducted at Department of Orthopedic and Accident and Emergency Department, Jinnah postgraduate medical center, Karachi, from July 2019 to June 2020. Three hundred and forty five pediatric patients with fracture confirmed by X-ray were included to observe the vitamin D deficiency. Blood sample was taken from the accessible peripheral vein in vacutainer without additives. Serum 25(OH) D was measured and all the information were recorded in predesigned proforma.
Results: The average age of the children was 9.10±3.76 years317 (91.88%) were boys and 28 (8.12%) girls. Frequency of vitamin D deficiency in pediatric fractures was observed in 34.20% (118/345). Rate of VDD was significantly high in those children whose BMI was less and equal to 20 kg/m2. Duration of fracture, cause of fracture and traumatic cause were also stratified for VDD but insignificant difference was observed.Conclusion: The results of this study concluded that, vitamin D deficiency in pediatric population presenting with bone fractures is very high. Physicians who treat such

11:52 - 11:57

3097 Congenital Spinal Deformity: Outcomes And Insights From A Single-Center Experience

Ana Correia, Filipe Rodrigues, Armando Campos, Filipa Adan Silva, Diogo Rodrigues

Centro Hospitalar Universitário de Santo Antonio, Porto, Portugal

Abstract
Introduction: Congenital scoliosis represents a challenging spinal deformity caused by vertebral formation and segmentation anomalies during embryonic development. Unlike idiopathic forms, these structural curves often progress rapidly during growth, necessitating early surgical intervention.
Methods: We conducted a retrospective study of 10 patients with congenital scoliosis treated surgically at our institution between 2008 and 2021. The cohort included patients ranging from 4 to 18 years of age (mean age: 11.2 years). Seven patients underwent in situ fusion, while three were treated with hemivertebra excision. Radiographic parameters were evaluated through measurement of Cobb angles preoperatively and postoperatively.
Results: The mean preoperative Cobb angle was 43.9° (range: 19.4° to 79.6°). Following surgical intervention, the mean Cobb angle improved to 18.4° (range: 2.2° to 37.3°), representing an average correction of 58.1%. One major complication was observed: a case of postoperative paraplegia secondary to epidural hematoma, which was successfully resolved with prompt drainage. No other significant complications were reported in our series.
Conclusion: Our institutional experience demonstrates that both in situ fusion and hemivertebra excision can achieve satisfactory correction of congenital scoliosis with an acceptable complication rate. The substantial improvement in Cobb angles (58.1% correction) indicates the effectiveness of these surgical approaches in managing congenital spinal deformities. The single neurological complication highlights the importance of vigilant postoperative monitoring and rapid intervention when necessary. This case series provides valuable insights for surgical decision-making and patient counseling regarding the management of this challenging spinal condition.

11:33 - 11:38

271 Closed Reduction Of Rotated Humerus Lateral Condyle Fractures In Children

Fei Qiao

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Abstract
Background:In recent years, a few studies have mentioned closed reduction and percutaneous pinning (CRPP) of rotated lateral condyle fractures of the humerus in children. In this prospective investigation, the radiographic and clinical results of patients with these fractures that were initially managed with CRPP were newly classified.
Methods:A total of 35 pediatric patients with rotated lateral condyle fractures were identified between Sep. 2021 and Oct. 2024.We classified these fractures into two types according to the degree and pattern of fracture displacement as identified on four radiographic images. In Degree Ⅰ(single rotated type), the fracture is unstable with single rotation of distal fragment; In Degree Ⅱ (rotated and flexible type) with rotation of distal fragment and antero-proximal displacement. We also designed an algorithm for closed reduction of these fractures according to this new classification.
Results:We retrospectively analyzed the radiographic and clinical results of 35 unstable rotated fractures (in 22 boys and 13 girls) that were treated with closed reduction. 17 of 19(89.5%) Degreee Ⅰ fractures, which could have been reduced to within 2 mm of residual displacement, were treated with closed reduction and pinning with 2 or 3 Kirschner wires (K wires). 15 of 16 (90.7%) Degree Ⅱ fractures were treated with CRPP. There were no complications, such as nonunion, superficial or deep infection, malunion, or early physeal arrest.
Conclusion:This prospective study showed that lateral humeral condyle fractures with rotation can be initially treated with CRPP to achieve satisfactory recovery of the elbow.

11:47 - 11:52

2377 Risk Factors For Reoperations After Soft Tissue Release For Spastic Hip Displacement

Joshua Chia Hsieh Chang

Chang Gung Memorial Hospital, Taoyuan, Taiwan

Abstract
Introduction: Soft tissue release (STR) is a well-established treatment for spastic hip displacement; however, factors contributing to reoperations after STR remain poorly understood. This study aimed to analyze factors associated with reoperations for residual displacement with migration percentage (MP) >40%.

Methods: This retrospective cohort study included 51 patients who underwent release of adductors, psoas, and hamstrings for hip MP 30%-60% to survey reoperations in postoperative 5 years. The primary outcome measure was the occurrence of reoperation. Binary logistic regression was employed to analyze risk factors for reoperations, including age, motor function level, windblown deformity, worse-side MP, and acetabular index (AI).

Results: Twenty-three patients underwent reoperations an average of 2.7 years after STR, while 28 patients had no reoperation within 5 years postoperatively. Patients who required reoperations had significantly higher preoperative AI (29.5° vs. 25°, $p = 0.002$) and preoperative MP (49.1% vs. 41.4%, $p = 0.008$) compared to those without reoperations. ROC curve analysis determined cut-off values of AI at 25° and MP at 44% to differentiate the two groups. Regression analysis identified AI as the sole significant predictor of reoperation. Using AI < 25° and MP < 44% as the reference, the odds ratios for reoperation were 5.4x for AI > 25° and MP > 44%, 3.6x for AI > 25° and MP < 44%, and non-significant for AI < 25° and MP > 44%.

Conclusions: Preoperative AI was a more reliable predictor of reoperations than MP. A new treatment protocol based on AI and MP is suggested.

11:18 - 11:23

1460 Validating Virtual World Simulation To Assess Decision-Making Of Managing An Open Lower Limb Fracture: A Cognitive Task Analysis In A Prospective Observational Longitudinal Cohort Study

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1. Royal National Orthopaedic Hospital, Stanmore, United Kingdom
2. Imperial College, London, United Kingdom

Abstract
Background: A novel immersive online Virtual World (VW) simulation was developed to cover the management of an open fracture of the lower limb according to the British Orthopaedic Association Standards for Trauma (BOAST) and Advanced Trauma Life support (ATLS) guidelines.

Aim: Primary outcome was to demonstrate construct validity with objective performance scoring and secondary outcomes assessed acceptability, face and content validity.

Methods: 30 orthopaedic surgeons were divided into three cohorts according to years of postgraduate (PG) training: Novice (PG 1-2 years, n=10), Intermediate (PG 3-4 years, n=10) and Expert (PG > 5 years, n=10). Participants had one attempt on the VW that generated an objective performance score, before completing subjective questionnaires using a 7-point Likert scale and a 6-minute semi-structured interview. The median scores ± median absolute deviation and 95% Bonett-Price confidence intervals were calculated. Statistical significance was calculated using 2-tail unpaired t-test test between two cohorts and one-way ANOVA between all three cohorts ($p<0.05$).

Results: Median objective scores between Novices (75%) vs. Intermediates (80%) and vs. Experts (81%) were significant ($p=0.03$). There was also a significant difference between all three cohorts ($p=0.03$). Participants who had either completed ATLS ($p=0.006$) training, or had familiarised themselves with BOAST guidelines ($p=0.004$) scored significantly higher than those who had not. Face and content validity had highest ratings with Novice and Intermediate cohorts.

Interpretation: Construct validity for novice orthopaedic trainees, and those ATLS trained or familiar with BOAST guidelines was confirmed. Acceptability, face and content validity were also demonstrated for this multimedia interactive tool.

10:40 - 10:45

188 Long-Term Success Of The Calcaneum Stop Procedure In Managing Flat Foot: A 12-Year Clinical Experience

Sakti Prasad Das

LALIT HOSPITAL, Cuttack, India

Abstract
Introduction: Flatfoot deformity is a common condition that can lead to pain, functional limitation, and decreased quality of life. Calcaneum stop is a procedure used to correct this deformity by stabilizing the subtalar joint by applying a screw in the subtalar space. This study aims to evaluate the outcomes of subtalar extraarticular screw arthroereisis (Calcaneum stop) in 56 cases of flat feet and its impact on foot function and radiological alignment and pedobarographic assessment over a 12-year follow-up period. Materials and Methods: A total of 56 patients (35 males, 21 females) with flat feet were included in this retrospective study. Standard weight-bearing anteroposterior and lateral radiographs of the foot were used for radiographic analyses. All parameters were measured at pre , post operatively and at final follow-up. Electronic foot sensor pressure mapping system (Podiastat) was used for dynamic foot pressure measurement. American Orthopaedic Foot and Ankle Society (AOFAS) score were assessed at the time of study and at final follow up. A follow-up period of 12 years was used to assess the long-term outcomes of the procedure. Results: The radiographic and Pedobarographic measurements were analysed which shows improvement. The average preoperative AOFAS score was significantly low and improved at final follow up. At 12 years of follow-up, 90% of patients reported significant relief of symptoms, improved foot function, and increased satisfaction with the surgical results. Conclusion: Calcaneum stop procedure is a safe and effective procedure for the correction of symptomatic severe flatfoot deformities, providing long-term improvements.

11:23 - 11:28

189 Ulnarization Of The Wrist: A Successful And Complication-Free Approach For Radial Club Hand Deformity Correction

Sakti Prasad Das

LALIT HOSPITAL, Cuttack, India

Abstract
Introduction- Radial club hand is a congenital deformity characterized by malformation of the radius and associated deformities of the wrist and hand. Previous methods of ulnarization aimed at correcting the wrist alignment in radial club hand patients have resulted in cosmetic and functional improvements but were often associated with complications. This issue led to the development of a third-generation ulnarization technique (Paley), designed to keep the ulnar head contained and maintaining proper wrist and forearm alignment.Materials and Methods-Between 2015 and 2023, 42 radial club hands in 32 patients were treated using the third-generation ulnarization technique. The surgical procedure aimed at correcting wrist and forearm alignment without destroying the ulnar epiphysis. Pré- and postoperative measurements of the hand-forearm angle (HFA) and functional outcomes were assessed through hand function scales.Results-The mean correction of the hand-forearm angle (HFA) was 68.5° (range: 12.2°–88.7°), indicating a significant improvement in forearm and wrist alignment. Functional outcomes demonstrated improvement in wrist and forearm movement, with the majority of patients achieving a cosmetically acceptable appearance and favourable hand function. Discussion-The third-generation ulnarization technique has proven to be an effective solution for addressing the prominent ulnar bump seen in previous generations of ulnarization and recurrent instability of wrist. By maintaining the ulnar head's containment and improving wrist alignment, this approach provides promising cosmetic and functional results.Conclusions-The new version of ulnarization (Paley)offers a viable treatment for radial club hand with improved wrist and forearm alignment and function

10:35 - 10:40

535 Minimally-Invasive Dega Osteotomy In Ambulatory Pediatric Patients With Resistant Developmental Dysplasia Of The Hips – A Technique And Prospective Case Series

SALEH Alsaifi

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Abstract
Purpose: This study describes a minimally-invasive Dega osteotomy (MIDO) for treating resistant acetabular dysplasia in ambulatory pediatric as well as patients with cerebral palsy. The focus is on assessing the safety, feasibility, and outcomes of this minimally invasive technique.
Methods: A prospective series was conducted in a single tertiary orthopedic center. The procedure involved an initial examination of hip joint stability using intraoperative arthrography. The surgical procedure involved a small transverse incision distal and lateral to the anterior superior iliac spine, followed by a Dega osteotomy and bone grafting. Variables such as operative time, blood loss, incision length and acetabular index were measured.
Results: In healthy ambulatory patients, 16 osteotomies were performed on 12 patients with an average age of 32 months. The mean incision length was 2.3cm, average blood loss was 17ml, and mean operative time was 21 minutes. Preoperative and postoperative acetabular indices averaged 40.3 and 18.6 degrees respectively. No complications were seen in this series. In addition, 5 osteotomies were performed in patients with cerebral palsy using the same technique. No complications were documented with regards to the surgical procedure.
Conclusions: The MIDO technique is a safe and effective method for treating resistant acetabular dysplasia in ambulatory patients. It offers advantages of minimal invasiveness, reduced operative time, and less blood loss, with outcomes comparable to conventional methods. However, further studies with larger cohorts and longer follow-up are necessary to fully establish its efficacy and safety profile.

10:45 - 10:50

2102 Guided Growth For Genu Valgum In Mucopolysaccharidoses: Beware The Rebound

Deborah M Eastwood, Zakir Haider

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Abstract
Genu valgum is common in mucopolysaccharidoses patients. This study assesses outcomes of guided growth for coronal plane knee deformities including correction rates, complications and rebound deformity.
Methods
A retrospective review was undertaken. Standardised long leg alignment radiographs were assessed for mechanical axis deviation (MAD), genu valgum angle, mechanical lateral distal femoral angle (mLFDA) and medial proximal tibial angle (MPTA). All patients underwent tension band plating. Statistical analysis used Prism software (Graphpad software inc, San Diego, USA).
Results
Since 2010, of 103 patients referred, 69 knees in 35 patients required surgery for genu valgum deformity. Mean radiographic follow up was 5.5 years. 50 limbs (82%) corrected to a normal zone 1 MAD from a mean pre-operative genu valgum of 19.5° (11.1°-34.1°). Plate removal occurred at a mean 34 months with a mean 2.1° valgus ($p<0.0001$). 44% of corrected knees exhibited rebound deformity (mean15.2°, range 12.1°- 25.4°) at a mean 17.2 months (range 6-33 months) following plate removal. In eight knees, correction is ongoing. Early age at initial surgery predicted recurrence ($p<0.002$). 11 knees (18%) failed to correct fully. Type 4 MPS ($p<0.016$) and a higher pre-operative genu valgum ($p<0.005$) were risk factors for failure. There were no infections. In three limbs, screw loosening occurred.
Conclusions
This study demonstrates high correction rates with few complications. Surgery should be undertaken when genu valgum is <20°, especially in type 4 MPS. Recurrence is common and surgery may be repeated. Overcorrection of the mechanical axis into varus with close follow up may be preferable.

11:09 - 11:14

644 ACL Repair In Children And Adolescents. First Results.

Ayrat Syundyukov, Evgeny Komarov, Pavel Kornykov

Federal Center for Traumatology, Orthopedics and Arthroplasty (Cheboksary), Russian Federation, Cheboksary, Russia

Abstract
Introduction. The anterior cruciate ligament repair in children is of increasing interest. The technique allows to save own ligament, avoid graft collection, and eliminate problems associated with damage of open physes.
Purpose. To evaluate the results of proximal ACL repair in children and adolescents.
Materials and methods. A retrospective analysis of the treatment of 17 patients with ACL injury (n=17). Gender distribution: 11 boys (64.7%) and 6 girls (35.3%). The average time after injury before surgery. The follow-up period is 11.4 months (CI=95%); SD=5.5-14.5). The average age is 15.1 years (CI=95%); SD=14.1-15.9). Patients with distal ACL injuries were excluded from the study. The survival rate, the fixed ligament, and the return to sports were evaluated. Patient satisfaction was assessed on the Lysholm–Gillquist and IKDS scales.
Results. According to MRI data, the ligament at the stages of catamnesis can be traced in 15 patients. Two patients had a repeated injuries associated with repeated trauma, and primary ACL reconstraction surgery was performed. The Lysholm–Gillquist score is 89.1 (CI=95%); SD=84.4-95.6). The IKDS score is 90.4 (CI=95%; SD=91.8-103.6) Out of 10 patients who were engaged, 7 (70%) returned to sports.
Conclusion. ACL repair is a safe and secure procedure with excellent results in the early follow-up.

10:59 - 11:04

1381 Management Of Difficult Nonunion Of Neck Femur In Children With Bone Loss In Neck Of Femur With Transosseous Nonvascularised Fibula Grafting And Abduction Osteotomy.

Taral Nagda, Jaideep Dhamele

Institute of Paediatric Orthopaedic disorders, Mumbai, India

Abstract
Introduction: Management of non-union of the femoral neck fractures in children specially in presence of bone gap represents a challenge. We present a new technique for management of these conditions with transosseous nonvascularised fibula grafting and abduction osteotomy.

Material and Methods: 10 children (8 M 2 F) with nonunion of neck femur in children with bone loss with an average age of 8.5 years (5-15 years) were treated .

Technique : All were treated with transosseous nonvascularised fibula strut graft (1/2 struts) used to fill the gap from trochanter to subchondral bone of femoral head. The fracture site was not opened. Subtrochantric abduction osteotomy was fixed with Pediatric dynamic hip screw (PDHS), Pediatric proximal femoral LCP or Locking reconstruction plate.

Result: The average post-operative follow period was 18.6 months (12-24 months). Healing was achieved in the fracture site and osteotomy site in all cases (100%). The femoral head remained spherical in all. Healing was achieved both clinically and radiologically. In both cases with AVN the cysts healed and spherical head was achieved. Radiological neck shortening was observed in 3 cases with no clinical signs and their average LLD was 1cm.

Discussion: Addition of transosseous nonvascularised fibula grafting along with abduction osteotomy is an effective technique to achieve union and to bridge the bone gap. The osteotomy produces a favorable biomechanical condition simultaneously correcting limb length discrepancy and coxa vara.

10:30 - 10:35

446 Endosinotarsal Vs. Exosinotarsal Subtalar Arthroereisis In Treating Pediatric Flexible Flat Feet

Ahmed Sabry[1], **Amr Abdelgawad**[2], Mohamed Genedy[3], Mohamed Taha[3], Merna Arid[3], Maziad Hennidi[3], Ahmed Zaky[3], Osama Almohani[3], Osama Selim[3], Menna Shebl[3], Mohamed Shebl[3]

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2. Maimondes Medical Center, New York City, United States
3. Cairo university hospital, Cairo, Egypt

Abstract
Background: Pediatric flexible flatfoot (FFF) is a common condition characterized by the collapse of the medial longitudinal arch, which can lead to pain and functional impairment in a subset of patients. Subtalar arthroereisis (AR) is a minimally invasive procedure that corrects FFF by limiting excessive pronation of the subtalar joint. Two main techniques exist: endosinotarsal AR, which involves placing an implant in the sinus tarsi, and exosinotarsal AR, which uses a screw external to the sinus tarsi. This systematic review and meta-analysis compares the clinical outcomes and complication rates of these 2 techniques.

Methods: A comprehensive literature search was conducted in Scopus, Web of Science, and PubMed. Only comparative clinical studies comparing endosinotarsal and exosinotarsal AR in pediatric patients with FFF were included.

Results: A total of six studies involving 791 feet were analyzed. The exosinotarsal group showed a statistically significant improvement in talocalcaneal (Kite) angle (MD = -1.14; P = 0.04), although the difference may not be clinically significant. Calcaneal pitch angle analysis revealed no significant difference, but sensitivity analysis favored the exosinotarsal technique when one study was excluded (MD = -2.21; P = 0.004). Post-operative pain was reported with higher rates in the exosinotarsal group, as well as screw breakage, while the endosinotarsal group had higher rates of implant dislocation.

Conclusion: Both techniques effectively treat pediatric FFF, but exosinotarsal AR may offer better structural correction. However, it may be associated with higher rates of pain that tend to recede after 6 months from the operation.

Wednesday, 3 September

Trauma 2
14:28 - 14:33

565 A Comparative Study Of Distal Tibia Fractures Treated With Intramedullary Interlocking Nailing With Or Without Poller Screws.

Sushant Sudhir Srivastava[1], Sachin Yashwant Kale[2]

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2. Dr. D.Y.Pati Medical College, Mumbai, India

Abstract
Introduction: Poller screws, also known as blocking screws, are used with intramedullary (IM) nails to guide central positioning in large medullary canal particularly in the tibia. In common terms poller screws are used as a fulcrum to redirect intramedullary nails in correct anatomical centrocentral position in both the planes. They are especially useful in distal tibia fractures.Poller screws augment fracture healing, counteracting deforming forces causing mal-union in IM nail treatments. Clinical studies confirm that Poller screws significantly improve fracture healing, reduce malunion rates, and decrease the necessity for secondary surgeries in distal tibia fractures. Materials & Methods: A total of 30 patients were studied and assessed who had distal tibia fractures . The total OT time , number of C-ARM shoots and Foot and Ankle Outcome Scores (FAOS) were used to assess the fractures treated with and without poller scores. Results: The group where poller screws were used had more OT time , more number of C-ARM shoots and far better Foot and Ankle Outcome Scores than the group where fractures were treated without poller screws.Poller screws used with IM nails in distal tibia fractures lead to better union rates and reduced malunion and non-union.The Radiographic Union Score in Tibia (RUST) is significantly higher in patients receiving Poller screws. Conclusion: The group treated with poller screws have higher therapeutic response rates, better ankle joint function, higher fracture healing rates, shorter healing times, less blood loss, shorter hospital stays, and fewer complications.

14:05 - 14:10

2567 Effect Of Quality Of Reduction On Clinical Outcome In Cases Of Acetabular Fractures Associated With Pelvic Ring Disruption

Islam Sameeh Abdelfattah

Zagazig university hospitals, Zagazig, Egypt

Abstract
Associated fractures of the acetabulum and pelvic ring represent considerable percentage of polytrauma victims. These types of injuries are different from isolated acetabular or pelvic injuries regarding protocol of management. Clinical outcome at the final follow up is affected by many variables including associated injuries, preoperative delay, mode of fixation and quality of reduction. This research aims at studying the effect of quality of reduction on clinical outcome. It is a retrospective study among 24 patients performed in Zagazig university hospitals between May 2017 and February 2019. Matta scoring system was used to quantify radiological outcome of both acetabular and pelvic components while, both Majeed and Merle d'Aubigné were used for clinical scoring at the final follow up. Quality of reduction was found to affect clinical outcome significantly

14:23 - 14:28

1903 Modified Rotator Interval Approach With A Seldinger Technique For Intramedullary Nailing Of Humeral Shaft Fractures

Don Thong Siang Koh, Zongxian Li, William Zhan Xia

Singapore General Hospital, Singapore, Singapore

Abstract
Background: Intramedullary nailing (IMN) is a common technique for the treatment of humeral shaft fractures. It minimises disruption to the soft tissue envelope surrounding the fracture and allows early post-operative rehabilitation. The violation and irritation of rotator cuff muscles remains a technical concern. The authors propose a novel rotator interval approach to IMN aided by a Seldinger technique in the management of humeral shaft fractures.

Methods: The patient is positioned lateral on a radiolucent operating table. A longitudinal incision is made over the rotator interval between the anterior acromial edge and the coracoid. The anterior fibres of the deltoid are split, exposing the rotator interval. The entry point is identified using a guide-wire and confirmed with the aid of an image intensifier. Once the entry point is identified, a Seldinger technique is employed to displace regional soft tissue structures as well as to introduce the reamer. Once the humeral canal is reamed to size, a corresponding humeral nail is introduced.

Results: There are many benefits with this IMN technique. The lateral position allows for orthogonal radiographs to be taken intraoperatively with minimal manipulation of the humerus. Rotator interval approach minimizes the damage to rotator cuff and avoids detachment of anterior deltoid. The employment of the Seldinger technique protects the underlying LHBT. Finally, the distal locking screws are introduced in a PA fashion, conferring better protection of the radial nerve.

Conclusions: The authors propose this novel technique to mitigate the common challenges faced in conventional IMN of humeral shaft fractures.

14:36 - 14:41

2799 Posterior Minimally Invasive Plating Osteosynthesis (MIPO) In Extra-Articular Distal Humeral Shaft Fractures

Patrícia Pires, Marco Pato, Nuno Mendonça

Hospital Professor Doutor Fernando Fonseca, Lisboa, Portugal

Abstract

Introduction

The humeral shaft fractures comprise about 3-5% of all fractures being frequently treated with an hanging-cast but when surgery is needed there are several options available. The minimally invasive plating osteosynthesis (MIPO) is becoming popular and between all the approaches the anterior ones are the most used.

Objectives

We aim to report our experience with the MIPO posterior approach and show its advantages in terms of minimal soft tissue dissection, usage of indirect reduction techniques to restore anatomic alignment, minimal complications with good functional outcome and less blood loss.

Methods and Results

We describe the outcome of two patients treated to mid-distal right humeral shaft fractures with segmental isolation of the radial nerve. The material used was LCP 4.5 mm extra-articular plates with 10 and 12 screws. In this series are included two right-handed patients (1 female - AO 12 B1, 1 male - AO 12 B2). The median age was 51 years-old, the mean fracture union time was 21 weeks, the MEPS and DASH scores were 100/2.5 and 95/5, respectively. The minimum follow-up was 6 months. There were no reported complications.

Discussion

Since MIPO requires less soft tissue dissection and avoids the disruption of periosteal blood supply there is low risk of iatrogenic radial nerve palsies and nonunion. For extraarticular fractures, the control of the entire fracture plane is not necessary. Nevertheless, obtaining closed reduction under image guidance is crucial to sucess.

Conclusion

The MIPO technique for the treatment of distal diaphyseal humeral fractures presents low rates of complications with good functional outcome.

14:46 - 14:51

848 HALDER HUMERUS NAIL- VERSATILE IMPLANT OF THE MILLINEUM -A SINGLE SOLUTION FOR PROXIMAL HUMERUS & SHAFT FRACTURES

SATHISH Kumar Thangamani

GOVERNMENT STANLEY MEDICAL COLLEGE HOSPITAL, Chennai, India

Abstract
Introduction: Surgical treatment of proximal humerus fracture with philos plate or antegrade intramedullary nails may result in poor rotator cuff function because of direct injury to the cuff at the time of the surgery. Axillary nerve function may also be at risk with philos plating system and radial nerve may be at risk when posterior approach is used for approaching the humeral shaft fractures. To circumvent these problems, the Halder humeral nail with unique tri wire was used for the first time in South East Asia. Methodology: A Prospective study with 54 cases of fractures of the humerus have been treated using the Halder humeral nail from Jan 2020 till Dec 2024.Out of these (26) had displaced two part fractures of the surgical neck of humerus,(20) were shaft of humerus and (8) were three part fractures. Results :Out of the 54 cases operated,52 patients could perform the majority of daily tasks @ 6weeks. There was 1case with delayed-union & iatrogenic fracture of shaft of humerus distal third .Average age of the patients was 66.42 years. There were 20 females and 34 males. Patients were followed up at 3, 6, 12, 24 and 52 weeks. Halder nail is a viable alternative with minimal soft tissue dissection and good functional outcome for both shaft as well as proximal humerus fractures. Conclusion : The Novel tri wire concept and uniqueness of the retrograde Halder nail makes it the versatile implant of this millennium. Key words :Halder Nail, Tri wire

14:51 - 14:56

1616 Treatment Of The Distal Forearm Fracture By Modified Volar Dual Window Approach

WeiTing Wang

Far Eastern Memorial Hospital, New Taipei City, Taiwan

Abstract
Distal forearm fractures(DFF) were defined as distal radius fractures with concomitant distal ulna fractures, except ulna styloid fractures. They are common among geriatric populations, particularly those with osteoporosis. Conventionally, DFF are reduced by a double incision approach; however, malreduction and instability of the distal radioulnar joint were not uncommon. We introduced a modified volar dual window approach to treat the DFF and evaluate the functional outcomes and complications. From January 2020 to June 2023, 13 patients with DFF underwent ORIF using the modified dual-window approach. The mean follow-up period was 12.1 months, and the mean age was 52.3 years. The average wrist flexion was 67◦, extension 69◦, pronation 81◦, and supination 79◦. Grip strength was 28.3 ± 11.5 kg, 88% of the uninjured opposite side. The Visual Analog Scale score during activities was recorded as 0.5 ± 0.9. The mean Q-DASH score was 14 ± 11.5. The postoperative radiographic parameters were as follows: radial height: 10.8 ± 1.7 mm, radial inclination: 22.6 ± 3.7◦, volar tilting: 4.0 ± 3.9◦, and ulnar variance: −0.4 ± 1.4 mm. All the patients achieved bone union at the final follow-up. Two patients underwent ulnar implant removal due to irritation symptoms. Neither infection, neurovascular injury, nor malreduction developed in these patients. The modified volar dual window approach can achieve good wrist function and DFF reduction without increasing neurovascular or wound healing complications. This method is an alternative for distal forearm fracture, especially in comminuted distal ulna or distal radioulnar joint incongruity.

14:18 - 14:23

2257 Does Soft Tissue Envelope Affect Rates Of Union In Functional Brace Treatment Of Humeral Shaft Fractures?

Martha Kebeh, Gwyneth Maloy, **Gregory Roytman**, Erin Stockwell, Christopher Schneble, Brianna Fram

Yale School of Medicine, New Haven, United States

Abstract
Introduction/Aims: Soft tissue envelope thickness (STT) has been speculated to limit success of functional bracing for humeral shaft fractures. We aimed to evaluate the relationship between STT and progression to union with functional bracing. We hypothesized that there would be no association between STT and progression to union.

Objectives/Study Design: Demographics, injury characteristics, and treatment outcomes were collected from records of patients with humeral shaft fractures who underwent at least 6 weeks of functional bracing. Radiographic STT (total, muscle, and fat) was measured at the surgical neck and deltoid tuberosity immediately post-reduction and at two, four, and six weeks post-injury. Statistical analysis consisted of Chi-square or Fisher exact tests for categorical variables and one-way analysis of variance (ANOVA) or Kruskal-Wallis testing for continuous variables, with significance level α=0.05.

Methods/Results/Conclusion: Among 58 included patients, 35 (60.3%) progressed to union with functional brace treatment. Twenty-three (39.7%) underwent surgery for nonunion or had a final outcome of nonunion. Union outcome was not associated with age, sex, body mass index, endocrine disease, injury mechanism, or AO/OTA classification ($p>0.05$). Patients progressing to union with bracing had lower muscle thickness at the deltoid tuberosity at four weeks post-injury (median 12.8 mm (IQR 10.3-17.9)) when compared with those who were diagnosed with non-union (22.5 mm (18.6-23.7)) ($p=0.024$). Union outcome was not associated with STT measurements at other time points ($p>0.05$). No association was found between increasing STT and rate of progression to union among our study population.

Keywords: humerus shaft fracture, soft tissue thickness, functional bracing, non-union

14:00 - 14:05

538 Functional Outcomes Of Displaced Midshaft Clavicular Fractures Treated With Precontoured Locked Plates: A Prospective Study In Yemen

Abdullah Ali Al-Moaish, Anwar Mahyoub Mughalles, Mosleh Saleh Salman, Jamal Abdulraheem Algabarty

Sana’a university, Sana’a, Yemen

Abstract

Background: Displaced midshaft clavicular fractures are common injuries. AlthoughWhile traditionally managed nonoperativelynon-operatively, recent evidence suggests that surgical intervention, particularly with locked plates, may improve outcomes. This study evaluated the functional outcomes and complications of open reduction and internal fixation (ORIF) usingwith recontouredprecontoured superior clavicle locking plates for these fractures.

Methods: This prospective singleA prospective, single-center study was conducted at Al-Thawra Modern General Hospital, Sana'a, Yemen, betweenfrom January 2018 andto September 2019. ORIF was used inon 65 patients (≥18 years) who had closed, displaced midshaft clavicular fractures (displacement >2 cm, shortening >2 cm, comminution, or skin tenting). We assessed functional outcomes using the University of California, Los Angeles (UCLA) shoulder rating score at 6 months postoperativelypost-surgery. SPSS version 26.0 was used to analyze the data.

Results: The mean patient age was 32.09 years (n=54, 83.1% male). Road traffic accidentswere the most common injury mechanism (n=43, 66.2%). The mean UCLA score at 6 months was 32.46 ± 2.54 (mean ± SD). Sixty-four patients (98.5%) achieved good/excellent outcomes (UCLA ≥27), and one patient (1.5%) had a fair/poor outcome. Complications included hardware irritation (n=1, 1.5%), hardware failure (n=2, 3.1%), and superficial infection (n=1, 1.5%). All patients reported satisfaction with the surgical outcome. Significant differences in UCLA scores were observed according tobased on the mechanism of injury and sidethe side of injury. Older patients also tended to have lower UCLA scores.

Conclusion: Locked plate fixation for displaced midshaft clavicular fractures in this single-center study demonstrated favorable functional outcomes and high patient satisfaction, as well as a relatively low rate of complications.

14:10 - 14:15

2258 Comparative Outcomes Of Volar Vs. Dual Plating In Comminuted Distal Radius Fractures

ASJAD Mahmood, **Rajat Rathore**

AIIMS, New Delhi, New Delhi, India

Abstract
Introduction : Distal radius fractures can significantly impact hand function and quality of life. The surgical management of comminuted distal radius fractures has evolved over time, with volar and dorsal plating emerging as primary fixation techniques.
Aims and Objectives: To identify the most effective, safe, and efficient surgical strategy for maximizing functional recovery and minimizing morbidity in patients with complex distal radius fractures (2R3C3.1 and 2R3C3.2) through a comparison of volar and combined plating techniques.
Study design and methods: A single-center, open-label RCT was conducted from September 2022 to May 2024 on 40 patients aged 18–65 years with comminuted distal radius fractures (AO 2R3C3.1 and 2R3C3.2) who presented within 14 days of injury. Twenty patients were randomized into each group and followed for six months, comparing radiological parameters and functional outcomes, including Mayo Wrist, QuickDASH, PRWE, and VAS scores.
Result: NCCT measurements of radial inclination, volar tilt, radial height, ulnar variance, and articular step-off at preoperative, postoperative, and six-month follow-ups showed no significant difference between volar and dual plating, indicating comparable stabilization and alignment. At three and six months, functional assessment via Mayo Wrist Score, PRWE, QuickDASH, and VAS showed significantly better outcomes with volar plating, except for PRWE, where the difference was not significant.
Conclusion: Both volar and dual plating effectively stabilize distal radius fractures, but volar plating offers significantly better functional outcomes with comparable radiological results.

14:41 - 14:46

2323 Anatomical Reduction Of Osteocartilaginous Lesions, The Source Of Functional Sequelae, In Thalamic Fractures Of The Calcaneus Remains Unpredictable. Apropos Of 472 Cases

Rabah Atia

Université Badji Mokhtar - Faculté de Médecine de Annaba - Algérie. CHU Annaba - Service d'Orthopédie - Hôpital Ibn Rochd - Annaba - Algérie., Annaba, Algeria

Abstract
Introduction: Calcaneal fractures suffer from insufficient anatomopathological analysis of subtalar mirror lesions
Materials and Methods: Retrospective study 472 Fractures Age 34.4 years; 89.79% Men; 18.36% Bilateral; 73.23% without history, 62.21% urban dwellers; 30.61% poly fractured with 14.28% of the spine Skin assessment, Standard radiology both feet Classification Bohler (2 and 3) Duparc and de la Caffinière (3 and 4), Utheza and Sanders (3 and 4) Functional treatment by walking plaster 81.08%; Closed surgery under fluoroscopy, reduction-nailing, cast-casting, walking
Results: 24.36% Bohler type II, 76.63% type III, 12.57% Duparc type IV, 12.57% type III Sepsis, 2 open fractures; 5 severe algodystrophies; 84.25% Return to full weight-bearing walking at six weeks Morning pain and stiffness All 81.32% Tolerance or resignation at one year Refusal of additional surgery
Discussion: Standard radiography remains the basis for diagnosis and treatment decision-making and analysis of the surgical outcome. CT and even MRI had no influence on the therapist's decision but certainly gave us a better analysis of the joint lesions without changing the decision made based on the standard assessment. However, the chances of reconstruction and age may point towards closed surgery. Surgery has a negative impact on the return to walking. Associated lesions influence the return to walking and the quality of the final result.
Conclusion: The tolerance of malunions is a decision-making factor in orthopedic treatment.

Thursday, 4 September

Free papers on clubfoot
08:40 - 08:45

322 Predictors For Tenotomy Of The Tendoachilles In The Treatment Of Idiopathic Clubfoot By The Ponseti Method: A Single-Center Study

Gennielene Garcia Lazaro

Ilocos Training Regional and Medical Center, San Fernando City, La Union, Philippines

Abstract
Introduction. Ponseti method is the gold standard for treating idiopathic clubfoot, guided by Pirani scoring to tailor treatment and monitor outcomes. Percutaneous tenotomy is performed for persistent equinus after correction. Identifying the predictors of tenotomy can help clinicians optimize treatment and implement preventive measures.
Objective. This study aims to determine the prevalence and predictors of tenotomy in children under 2 years with idiopathic clubfoot treated using the Ponseti method in a single-center tertiary hospital.
Methodology. A retrospective study was conducted with records of 54 idiopathic clubfeet treated by the Ponseti method and scored by the Pirani system between April 2019 and April 2024. The demographic profile and clinical factors were compared between the tenotomy and non-tenotomy groups, including their association with tenotomy.
Results. Of the 54 feet studied, 33 (61%) required tenotomy. A high initial Pirani score (>4.5) and hindfoot score (≥2.5) showed increased odds for tenotomy but were statistically insignificant ($p>0.05$). Although a midfoot score >1 was significantly associated with tenotomy ($p=0.012$), logistic regression did not confirm this association ($p>0.05$). Cast requirements, cast slips, and follow-up compliance similarly showed higher odds but no statistically significant associations with the need for tenotomy ($p>0.05$).
Conclusion. Patients with higher midfoot scores (≥1) were more likely to undergo tenotomy ($p=0.012$). Other factors, including initial Pirani score, hindfoot score, cast slips, cast requirements, and follow-up compliance, showed no significant differences between the tenotomy and non-tenotomy groups.

Keywords: Idiopathic clubfoot, Pirani score, Ponseti method, Predictors, Tenotomy

09:18 - 09:23

2055 Is Congenital Talipes Equinovarus A Risk Factor For Developmental Dysplasia Of The Hip?

Durmus Ekin Dincer[1], Nusret Kose[2]

1. Eskisehir City Hospital, Eskisehir, Türkiye
2. Eskisehir Osmangazi University, Eskisehir, Turkey

Abstract
Introduction:

The association between pes equinovarus (PEV) and developmental dysplasia of the hip(DDH) remains controversial. Some studies recommend routine hip screening in infants diagnosed with PEV, while others consider it unnecessary. This study investigates whether PEV is a risk factor for DDH.

Objectives:

To evaluate the relationship between DDH and PEV.

Methods:

In this cross-sectional study, we evaluated the patients diagnosed with DDH and PEV between 2010-2024. 4372 infants underwent ultrasound screening using Graf method. A total of 897 newborns had abnormal results (Graf types other than type 1). Additionally, 463 infants were diagnosed with PEV. Only 10 patients had both diagnoses. Six initially abnormal hips spontaneously improved to Graf type 1 without treatment. Four patients (all female) required treatment for both conditions.

Results:

Among the four patients treated for both conditions:
• One patient had a metabolic disorder (protein-energy malnutrition).
• Three patients had neurological conditions or syndromes.

Discussion:

Previous studies debated about screening infants with PEV for DDH. Our national screening program performs routine hip ultrasonography on all newborns regardless of the presence risk factors. All cases with combined DDH and PEV in this study were females with underlying neurological/metabolic/syndromic conditions.

Conclusion:

No association between DDH and PEV has been observed in infants without any underlying metabolic or neurological disorders.

clubfoot, pes eqinovarus, developmental dysplasia of the hip

08:54 - 08:59

902 THE ARTERIAL SUPPLY TO THE FOOT AND ITS CORRELATION WITH RETURN OF CAPILLARY FILLING POST-ACHILLES TENOTOMY IN CONGENITAL CLUBFOOT

Khaled Loutfy El Adwar, Tamer Mohamed Shehata, Karim Mohamed Elsharkawi, Mena Micheal Mosa

Hadra Orthopaedic University Hospital, Alexandria, Egypt

Abstract
Background: Vascular deficiencies have been suggested as one of the underlying etiologies of clubfoot. "Is the return of capillary filling to the foot post-Achilles tenotomy correlated with the foot's arterial supply and degree of ankle equinus"?
Methods: This study included 30 unilateral idiopathic clubfeet. All patients were treated using Ponseti technique followed by examination of the infra-genicular arterial system using Doppler ultrasound in both the affected and the normal control limbs. After Achilles tenotomy and reaching 10 to 20 degrees of dorsiflexion, the time lapse till complete return of capillary filling to the foot was recorded. Both the radiologist and the surgeon were blinded to each other's assessment.
Results: The mean postoperative time lapse to complete return of capillary filling to the toes, after maintenance of dorsiflexion was 3.53±5.56 minutes (range, 0 to 26.59). The anterior tibial artery (ATA) on the affected side was found to be completely attenuated distally in 24 out of 30 feet (80%), while the mean caliber of the posterior tibial artery (PTA) on the affected side was found to be increased compared to the normal side ($p=0.042$). Cases with hypoplastic PTAs needed more time for return of postoperative capillary filling ($p=0.007$).
Conclusion: Delay of postoperative complete return of capillary filling to the foot after maximum dorsiflexion post Achilles tenotomy is related to both the degree of pre-operative equinus ($p<0.001$) and hypoplasia of the posterior tibial artery. This delay should not rush surgeons to remove the cast before the lapse of 30 minutes.

09:23 - 09:28

2118 Early Results Of Modified Ponseti Method Of Manipulation For Management Of Atypical Clubfoot Cases In India.

Anand Ajmera[1], **Malay Kumar**[2]

1. MGM Medical College, Indore, India
2. Sarvodaya Hospital and Research Centre, Faridabad, India

Abstract
Introduction:
Atypical clubfoot forms a small subset of idiopathic clubfoot, features of which are more severe, is difficult to treat using normal Ponseti casting, and treatment often requires modifications. We therefore undertook this study to evaluate the role of modified Ponseti method of manipulation in management of atypical clubfoot. Material and Methods:
We evaluated 30 atypical clubfeet in a prospective, interventional study conducted at a tertiary care centre in central india and used modified Ponseti casting for its management. Achilles tenotomy was performed in all patients, followed by the use of a foot abduction brace. All children of age less than 3 years, presenting with features of atypical clubfoot were included in the study. Children with typical or having secondary clubfoot or with history of previous surgical treatment were excluded from the study. Children were followed up for minimum of 6 months after tenotomy. Severity assessment was done using Pirani score. Results: Our study included 30 feet in 18 children (12 bilateral and 6 unilateral) and Male to Female ratio was 2:1 (12:6). On an average 9.44 casts were required for correction in each foot and mean treatment duration was 11.44 weeks. 3 patients had excellent results, 25 had good and 2 had poor results. Second tenotomy was required in two cases. Complications included pressure sores in 8 patients, cast slippage in 13/267 casts and relapses in 2 patients. Conclusion: Early identification and treatment with modified Ponseti technique provides good to excellent results and reduces need for surgical intervention.

08:30 - 08:35

794 Neglected Severe Clubfeet Management In Adults.

Ghassan Salameh

Salamehfix Limb Lengthening @ Reconstruction Center., Tartous, Syria

Abstract
Introduction: delayed untreated club feet or unsuccessful treated club feet in childhood varies from slight to severe deformities and cause disability in everyday life also emotional stress, and traditional surgical methods of treatment like just tipple arthrodesis can cause foot shortness and patient discomfort, for this reason to have normal foot size, shape and stable foot, I modified a small simple external hinge fixation system. Method ; SLDF./ Salamehfix 2 / consists of just three small arcs which can fit the size of every patient and can fix main foot elements , with performing tipple arthrodesis after two weeks we can perform gradual lengthening and correction of main foot components in different direction using various fixator hinges and rods until the foot achieve normal shape and size then the fixator fixed until consolidation usually 4 months , stable fixation and comfortable system can allow patient for walking with partial wight bearing later on external fixation removed and a plaster applied on the foot and ankle joint for one month , results ; we have 15 cases of clubfeet treated using this system , 9 had excellent results 4 good , 2 fair as there was some collapse after correction due to patient who interrupted treatment. complications mainly superficial pin infection which treated locally, conclusion; mini external fixation system can help to achieve excellent results in treatment severe to moderate clubfeet deformities.
Key words; club feet , triple arthrodesis , Salamehfix 2 , fixator hinges.

09:28 - 09:33

2339 Burden Of Disease For Adult Congenital Clubfoot Patients

Monica Paschoal Nogueira[1], **José Renato Saback Fonseca**[2], Davi Haje[3], Elizabeth Alvarenga Fonseca[4]

1. Hospital do Servidor Público Estadual, Spaulo, Brazil
2. Hospital do Servidor Público Estadual- Hospital A Einstein, Spaulo, Brazil
3. Hospital de base, Brasilia Df, Brazil
4. Hospital do Servidor Público Estadual, S Paulo, Brazil

Abstract
INTRODUCTION: Background: Congenital clubfoot is a musculoskeletal anomaly affecting between 0.39 and 7 per 1000
live births worldwide. Despite its prevalence, there is a scarcity of literature on the association between this condition and
its impact on the quality of life of affected individuals. This study aims to determine the quality of life of adults with
untreated congenital clubfoot in Brazil, using the SF-36, EQ-5D questionnaires, and condition-specific questions.
METHODS: Methods: Patients over 18 years old with untreated congenital clubfoot, without previous Ponseti or surgical
treatment, were recruited and invited to complete the generic quality of life questionnaires SF-36 and EQ-5D, as well as
condition-specific questions. The results were compared with available quality of life data from the Brazilian population.
RESULTS: Results: The questionnaires were completed by 17 participants. The average age of participants was 42.6
years (standard deviation: 11), with 9 (53%) being women, and 12 (71%) having bilateral clubfoot. The quality of life of
participants was below the reference for the general population by 70.6% for the Physical Component Summary and
47.1% for the Mental Component Summary of the SF-36. The mean responses for the EQ-5D components were:
3.18±0.64 for Mobility; 1.47±0.87 for Self-care; 2.53±1.01 for Usual Activities; 2.71±1.05 for Pain/Discomfort; and
2.18±0.95 for Anxiety/Depression. Additionally, 16 (94%) reported difficulties wearing shoes, 16 (94%) experienced
bullying/prejudice, 14 (71%) had relationship issues, 12 (71%) faced employability challenges, 6 (35%) depended on state
financial aid, and 17 (100%) believed treatment would change their lives.
CONCLUSION: The results obtained using the SF-36 are unprecedented for untreated adults in the
Brazilian population, despite the small sample

08:59 - 09:04

1096 Is It Better To Start Ponseti Method For The Treatment Of Congenital Idiopathic Clubfoot In The First 4 Weeks Of Life? A Systematic Review And Meta Analysis.

Turki Saleh Alotaibi, Abdullah Ibrahim Alturki, **Yazeed Abdullah Alsanad**, Abdullah Addar

College of medicine King Saud University, Riyadh, Saudi Arabia

Abstract

Introduction:
The Ponseti method has been the main treatment for idiopathic clubfoot since the early 2000s.,Controversies persist regarding the optimal age to start treatment.This systematic review and meta-analysis investigate the optimal age for initiating management and its effects on the number of casts, tenotomy needs, and relapse rates.

Methods:
Conducted in accordance with PRISMA guidelines and registered in PROSPERO, this systematic review utilized databases, Google Scholar, MEDLINE, and EMBASE. Inclusion criteria involved studies determining age of initiation (more or less than 4 weeks) and reporting the number of casts, relapse rates, and tenotomy needs.Two co-authors independently evaluated the literature, resolving disagreements with a third reviewer. The risk of bias was assessed using the Methodological Index for Non-Randomized Studies (MINORS).

Result:
A thorough search identified 2825 studies, with 2273 examined after removing duplicates, 6 included articles after 14 full-text evaluations. 467 individuals, comprising 689 feet, were enrolled in the study; 137 of them were under 4 weeks old, and 280 were over 4 weeks old. Each study had a low bias based on MINORS. Although younger patients needed considerably more casts (MD: 0.72, 95% CI [0.33, 1.10], P = 0.0002), the meta-analysis found no significant difference in mean casts between age groups (MD: 0.06, 95% CI [-1.08, 1.21], P = 0.91). The rate of recurrence following tenotomy did not significantly correlate with any other factor.

conclusion:
Initiating Ponseti treatment in newborns under 4 weeks of age requires more casts, which indicate no need to start earlier to improve overall outcomes.

09:09 - 09:14

1545 Accelerated Ponseti Method: Daily Manipulation & Casting: Medium To Long Term Results

Yasser Elbatrawy

Al-Azhar university, Cairo, Egypt

Abstract
Introduction: It is well known that Ponseti method became the gold standard for club foot treatment. During the last decade, there were some published studies about doing it twice or 3 times per week instead of once per week with a promising results.
Alaa Azmy from Palastine published a report of excellent short term results after daily manipulation and casting.
As in our university hospital, we face the problem of having patients coming from away cities with limited finance to bear the cost of transport weekly. So, we decided to admit them in the hospital and use the daily technique before doing the tenotomy and discharge them after a week to go back home.
Patients & Results:
75 feet in 51 babies were done since 2019 till now.
We had 22 feet in 15 babies (6 Female and 9 Male) were followed up at least for 3 years.
19 feet had P = 0
While three feet had P = 0.5
Conclusion: After a three-year follow-up, our accelerated PONSETI method (daily manipulation and casting) found to be both safe and effective same as the weekly technique we used to do for our patients in our 20 years old Ponseti clinic in Cairo.
It is very valuable for the patients coming from remote area with no resources to come back and forth.

09:04 - 09:09

1516 Approach For Relapse Clubfoot

Ihsan Oudah Alsahar, Murtadha Mutasher Alaskri

Iraqi minstry of health, Dhiqar, Iraq

Abstract
Pathology of relapse
Ala carte approach for relapsed clubfoot

08:45 - 08:50

2341 From A Training Program To A Health Policy: Evaluation Of The Implementation Of 90 Ponseti Reference Clinics In The Public Health System In Brazil

Monica Paschoal Nogueira[1], Elizabeth Alvarenga Fonseca[1], **Tatiana Guershman**[2]

1. Hospital do Servidor Público Estadual, Spaulo, Brazil
2. Hospital Sabará, Spaulo, Brazil

Abstract
Since 2016 the combined alliance of PIA (Ponseti International Association) Brazil and Rotary International trained orthopaedic surgeons aiming to increase the public treatment network in Brazil for children with clubfoot. The training took place in 5 stages, one in each region of Brazil. All trainers had online theoretical classes before arriving at the practical training site. The practical mentorship consisted of workshop on plastic models, live interaction with patients in a model called megaclinics and case discussions. 73% of the trained orthopaedic surgeons established Ponseti reference clinics in the public system. The network is decentralized, standardized, connected, with nationwide coverage. It is supported by the parent's association, local Rotary clubs and communities. The next step will be to access treatment costs and disease burden (cost-effectiveness) in Brazil and raise awareness of the Ministery of Health for a unified public policy for clubfoot treatment.

08:35 - 08:40

2340 Ponseti Method In Arthrogrypotic Clubfoot- A Brazilian Experience

Monica Paschoal Nogueira, Elizabeth Alvarenga Fonseca

Hospital do Servidor Público Estadual, Spaulo, Brazil

Abstract
Arthrogrypotic equinovarus feet offer a challenge to the orthopedist, due to their rigidity, higher incidence of complex feet, higher rate of recurrences and associated deformities.
Patients and Methods
All children consecutively with arthrogrypotic clubfoot followed in two services were included. Results of twenty-three patients (43 feet) with arthrogriposis were followed prospectively in two services, treated by the same professional. Fourteen out of 39 (36%) had previous treatment, presenting with incomplete or recurring corrections. Age ranged from 4 days to 5 years at the beginning of treatment, averaging 1 year. 5 patients had amyoplasia, and distal arthrogryposis 5 patients. The others are associated with syndromes with varying severity. The average number of plasters was 4, ranging from 2 to 8 plasters. Complete and percutaneous Achillis tenotomy was performed in 100% of the patients. All used the abduction brace protocol for 3 months, and then until the age of 4 at night. Two patients underwent anterior tibial transfer. All but 1 child were corrected 95% initially. The child who did not correct started treatment at 1 year and 4 months, had 5 relapses and was operated (posteromedial release) bilaterally, with mild relapse and good functionality at the time. One child died from severe seizures (association with Sd West).
Conclusion
The Ponseti Method is effective in correcting arthrogrypotic equinovarus feet and should be an indication of initial treatment in these patients. Relapses are more frequent in these patients.

Thursday, 4 September

Best papers
14:53 - 14:58

334 Dual-Crosslinked Magnetic Hydrogel With Programmed Release Of PTH Promotes Bone Healing

Yitian Wang

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Abstract
Introduction: Intermittent delivery of parathyroid hormone (PTH) could effectively promote bone regeneration, but daily injection administration has limited its further clinical application. Exposure to magnetic stimulation could regulate cell fate to promote osteogenesis.
Method: A magnetised scaffold was developed to provide programmed PTH release and simultaneously magnetic actuation to promote osteogenic commitment. A dual-crosslinked hydrogel was formulated as GelMA-PVA (GP) biphasic reservoir with magnetic nanoparticles (GPM) and PTH (GPMP).
Results: In vitro release assessment verified the programmable release of PTH with a pulsatile profile primed by magnetisation in the first four days and a sustained release controlled by the optimised GP matrix over one month. Stimulated by an alternating magnetic field (AMF), the scaffolds displayed a zigzag-shaped pulsatile release profile and the cumulative release was enhanced by 8%, 28%, and 18% in In40, Ab40 and In20Ab20 formulations respectively compared to the same formulations without magnetic stimulation. In vitro cytocompatibility test shows that all formulations were biocompatible and PTH addition significantly promoted the proliferation of MC3T3-E1 pre-osteoblasts. In vivo studies presented enhanced new bone regeneration with bone volume and bone mineral density significantly improved in GPM and GPMP groups (increased 120% and 251% compared with Blank), confirming its osteogenic effects and accelerated bone healing.
Conclusion: This newly developed GPMP system supported the future clinical application with simultaneous effects from the programmed release of PTH and magnetic activation, holding promise to enhance osteogenesis and treat various conditions of delayed/non-unions without the burden of daily injection.

15:16 - 15:21

811 Changes In Spinopelvic Alignment After Total Hip Arthroplasty In Different Stages Of Osteonecrosis Of The Femoral Head

Hiroaki Ido, Yasuhiko Takegami, Yusuke Osawa, Hiroto Funahashi, Hiroyuki Yokoi, Hiroki Iida, Yuto Ozawa, Shiro Imagama

Nagoya university, Nagoya, Japan

Abstract

Purpose

This study aims to investigate the changes in spinopelvic alignment (SPA) as the stages of osteonecrosis of the femoral head (ONFH) progressed and to evaluate the effects of total hip arthroplasty (THA) on SPA and low back pain (LBP), in patients undergoing THA at early and late stages of ONFH.

Methods

This retrospective study included 85 ONFH patients who underwent THA. Patients were classified into three groups by ONFH stage (Stage 2–4) using the Japanese Investigation Committee classification into three groups: stage 2 and 3A, stage 3B, and stage 4. Pre- and postoperative SPA parameters (pelvic incidence, lumbar lordosis [LL], sacral slope [SS], pelvic tilt [PT], thoracic kyphosis and sagittal vertical axis [SVA]) and LBP Visual Analog Scale) were compared between stages. SPA was investigated preoperatively and at two years postoperatively.

Results

Preoperative SPA analysis revealed increased SS and SVA with stage progression. Postoperatively, THA significantly reduced LL, SS, and SVA while increasing PT, with similar trends across all stages. However, Stage 4 patients exhibited significantly greater increases in posterior pelvic tilt. LBP improved significantly postoperatively in all stages, with no significant differences in improvement degrees between stages.

Conclusion

THA effectively improves compensatory SPA changes in ONFH patients, regardless of ONFH stage. However, advanced-stage patients may experience further progression of posterior pelvic tilt postoperatively, highlighting the importance of preoperative SPA evaluation in late-stage cases. This study provides a detailed analysis of SPA changes in ONFH patients undergoing THA.

14:58 - 15:03

956 Posterior Approach To Elbow: Is Olecranon Osteotomy Essential?

Gautam Dattatraya Salunkhe

nirmala memorial hospital, Pune, India

Abstract
The recommended approach for the fixation of an intercondylar fracture of the humerus has been by the posterior approach, using an olecranon osteotomy. This involves creating an iatrogenic fracture & its subsequent fixation. Complications do occur at the osteotomy site, which are embarrassing to explain.
I have been using the Brian-Morrey approach, which involves reflecting the extensor mechanism as a single musculo-tendino-periosteal unit. This gives adequate exposure for the surgery. Repair of the extensor mechanism is by a single stitch, using no implants.
Materials & methods: 20 cases requiring elbow surgery by the posterior approach were selected. They were of fracture fixations & malunions. After taking the posterior incision, the ulnar nerve was isolated. The triceps was reflected off the lower humerus, its tendinous insertion erased off the olecranon and periosteum of upper ulna in continuity. The extensor mechanism was retracted laterally, exposing the lower humerus and intra-articular elements. After the required surgery, the extensor mechanism was repositioned, and fixed to the upper ulna by a single intra osseous stitch.
Observations: adequate exposure to the lower end of humerus could be obtained. Access for fixation of the lateral column, if difficult to retract, could be done using a separate soft-tissue portal. No additional hardware was required. Complications of olecranon osteotomy and subcutaneous implants were non-existent. The extensor mechanism regained function quickly.
Conclusions: The surgical exposure as recommended by Brian & Morrey is an excellent and uncomplicated approach for surgery of the elbow by the posterior approach.
Keywords: triceps, olecranon, periosteum

14:35 - 14:40

1504 Improving Surgical Technical Skills For Emergency Fixation Of Unstable Pelvic Ring Fractures: An Experimental Study Using A Pelvic Ring Fracture Simulator

Felix Karl-Ludwig Klingebiel[1], Kenichi Sawauchi[1], Anne Mittlmeier[1], Yannik Kalbas[1], Till Berk[1], Sascha Halvachizadeh[1], Michel Teuben[1], Valentin Neuhaus[1], Cyril Mauffrey[2], Hans-Christoph Pape[1], Roman Pfeifer[1]

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Abstract

Introduction
The management of hemodynamically unstable pelvic ring injuries necessitates surgical intervention, often involving procedures such as external fixation and percutaneous screw placement for which regular training is imperative to ensure readiness for emergencies.

Aims & Objective
Our study aimed to adapt and validate a realistic simulation model for stabilizing unstable pelvic ring injuries.

Study Design and Methods
A standardized simulator of an unstable pelvic ring utilizing synthetic pelvic bones featuring complete disruption of the symphysis and sacroiliac joint, with simulated soft tissue coverage, was developed. Trauma surgeons were invited to perform external fixation and emergency sacroiliac screw application under C-arm guidance. Prior to and following the simulation session, participants completed a subjective questionnaire assessing their confidence in emergency interventions on a 10-point Likert scale (10-LS). Objective parameters, such as intraoperative imaging quality, reduction accuracy, and the positioning of screws, wires, and external fixators, were also evaluated.

Results
Fifteen trauma surgeons (10 residents, 5 consultants) participated in the simulation. The confidence for emergency SI-Screw placement increased significantly after the simulator (10-LS: Before=3.8±3.08 vs. After=5.67±2.35; p=0.002) as well as after external fixation (10-LS: Before=3.93±2.79 vs. After=6.07±2.52; p=0.002). In addition, confidence in (intraoperative) pelvic imaging increased significantly (10-LS: Before=4.60±3.0 vs. After=6.53±2.39; p=0.011). Overall, the model was rated as a realistic simulation of clinical practice (10-LS=7.87±1.13).

Conclusions
Our unstable pelvis fracture model is a tool to practice emergency interventions such as external fixation and percutaneous techniques. Participants benefitted from this in terms of technical instrumentation as well as intraoperative imaging.

14:48 - 14:53

1886 The Impact Of A Lateral Decubitus Open Reduction Versus A Minimally Invasive Traction Table Reduction On Surgical Outcomes In Atypical Femoral Fractures

Vijayaragavan Selvaraj[1], Xinyao Oliver Huang[2], Don Koh[2], Yew Lok Woo[2]

1. National University of Singapore Yong Loo Lin School of Medicine, Singapore, Singapore
2. Singapore General Hospital, Singapore, Singapore

Abstract

Purpose

Atypical femoral fractures are associated with prolonged bisphosphonate use. With increased antiresorptive use to combat the growing global burden of osteoporosis, atypical femoral fractures will become more common. In addition to fixation techniques, we hope to explore how the reduction technique can impact quality of reduction and surgical outcomes.

Methods

We conducted a retrospective cohort study including 40 patients with atypical femoral fractures who underwent surgical fixation, with 14 undergoing a lateral decubitus open reduction and 26 going through a minimally invasive (MIS) traction table reduction. Baseline demographic characteristics, clinical indicators, post operative functional and radiological outcomes were collected.

Results

Adequate reduction (<4mm cortical displacement) was achieved in 25% of the open reduction group versus 12% of the MIS group. However, 96% of the MIS reduction group had a favorable fracture line angle (<10°) compared to 66.7% in the open group (mean angles: 4.08° vs. 7.5°, p=0.03). MIS reduction was linked to a shorter hospital stay (p = 0.008). Other outcomes—operative duration, blood loss, cortical displacement, time to union, and days to full weight-bearing—showed no statistically significant differences. In the open group, there was 3 non unions, and 2 implant failures, while the MIS group had none.

Conclusion

The open and MIS reduction techniques are similar for most postoperative outcomes. However, MIS reduction is associated with better post reduction fracture angle, and shorter hospital stay. Open reduction is associated with a lower tip-apex distance, reducing the risk of implant cut out.

15:06 - 15:11

1913 Predictors Of Surgical Management And Mortality For Combined Traumatic C1-C2 Fractures: National Registry Study

Kristin Salottolo[1], William Tyler Crawley[1], Peter Syre[1], Alejandro Betancourt[2], Darryl Auston[3], Kaysie Banton[1], David Acuna[4], David Bar-Or[1]

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2. STHS McAllen, Mcallen, United States
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4. Wesley Medical Center, Wichita, United States

Abstract
Introduction: Combined C1-C2 fractures are associated with high morbidity and mortality, yet criteria for surgical intervention remain undefined.
Objectives: This study examines predictors of surgical management and its impact on outcomes for trauma patients aged <80 years with C1-C2 fractures.
Methods: A retrospective analysis of the US National Trauma Data Bank (2017–2020) included patients aged <80 years diagnosed with C1-C2 fractures admitted to level I/II trauma centers. Multivariate regression identified predictors of surgical intervention. A propensity-matched analysis (1:1) compared outcomes of in-hospital mortality, ICU admission, complications, and length of stay (LOS) between operative and nonoperative groups.
Results: Among 5,066 patients, 1,294 (25.5%) underwent surgery. Factors increasing surgical likelihood included age <50 years, ED GCS 13-15, partial spinal cord injury (SCI), cervical ligamentous injury, odontoid type II fracture, and displaced C2 fracture. Mortality was 3.4% with surgery, 5.0% for nonoperative intervention, and 15.5% without intervention. The adjusted odds of mortality were significantly reduced with surgery (OR: 0.16, $p<0.001$); severe head and cord injuries were the strongest predictors of mortality. Propensity matching resulted in 2,302 well-matched patients (1,151 operative, 1,151 nonoperative). After matching, surgical intervention remained associated with significantly lower mortality (3.1% vs. 12.1%, $p<0.001$) despite higher ICU admission rates, longer ICU and hospital LOS, and increased complications.
Conclusion: Surgical management was more common in younger patients with mild neurologic deficits and unstable fractures. In both adjusted and propensity matched analyses, surgical intervention was associated with a significant survival benefit, emphasizing its role in select patients with combined C1-C2 fractures.

14:30 - 14:35

2328 The Triple Anatomical Technique (TAT) For Acromioclavicular Joint Reconstruction: A Biomechanically Optimized Approach

Zienalabdin Fozo, **Athanasios Kalogeropoulos**, Al Acraf Khoriati, Tony Antonios, Ali Narvani, Mohamed Imam

Ashford And St Peter's Hospitals, Chertsey, United Kingdom

Abstract

Introduction

Acromioclavicular (AC) joint injuries are prevalent in athletes and individuals engaged in high-demand activities. Conventional reconstruction techniques frequently fail to restore native biomechanics, resulting in persistent instability and functional impairment. The Triple Anatomical Technique (TAT) is an innovative approach that integrates synthetic LARS ligament reinforcement for coracoclavicular (CC) reconstruction, coracoacromial (CA) ligament transfer for AC stabilization, and delto-trapezial fascia (DTF) repair. This method aims to restore three-dimensional stability, facilitating early rehabilitation and return to activity.

Methods

A retrospective review was performed on patients who underwent TAT for AC joint reconstruction. The procedure involved anatomical reduction, LARS ligament placement at isometric CC points with titanium screw fixation, CA ligament transfer for AC reconstruction, and DTF repair via reefing suture technique. Postoperative rehabilitation was standardized, and functional outcomes were evaluated using the Constant-Murley Score (CMS) and Oxford Shoulder Score (OSS).

Results

Among 22 patients with Rockwood Grade III-V dislocations, mean follow-up was 12 months. OSS improved from 34 to 46 ($p < 0.001$), and CMS increased from 48 to 90 ($p < 0.001$). No implant failures, infections, or neurovascular complications were noted. Return to activity timelines varied, with contact sports resuming in 3-4 months and overhead athletes in 6-9 months.

Conclusion

TAT provides a biomechanically superior and clinically effective solution for AC joint reconstruction, restoring stability and minimizing complications. Further prospective studies are warranted to validate its long-term benefits.

15:11 - 15:16

2645 Defining Safe Zones For Arthroscopic Suprascapular Nerve Decompression: A Cadaveric Study

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Abstract
Introduction: Arthroscopic suprascapular nerve (SSN) decompression has emerged as a minimally invasive alternative for treating nerve entrapment, associated with massive rotator cuff tears. This procedure involves lateral surgical approaches to the suprascapular notch to reach SSN, risking adjacent neurovasculature. However, anatomical guidelines for safe dissection remain limited. Aim: To quantify the proximity of SSN and suprascapular artery (SSA) to the lateral superior transverse scapular ligament (STSL) attachment at the suprascapular notch and delineate arthroscopic distances from the lateral acromion and acromioclavicular (AC) joint to lateral STSL, factoring patient scapular dimensions (height, spine length and width). Methods: Twenty cadaveric shoulders were dissected. Distances from SSN and SSA to lateral STSL were recorded. Distances from lateral STSL to lateral acromion and AC joint were correlated with scapular dimensions. Results: The SSN was 7.0 ± 2.7 mm (range: 2.6–11.8 mm) and SSA was 4.2 ± 2.5 mm (1.4–9.5 mm) medial to the lateral STSL. The lateral STSL was 76.9 ± 9.9 mm (61.6–91.9 mm) from lateral acromion and 53.2 ± 8.2 mm (37.8–70.1 mm) from AC joint, both distances correlating with scapular dimensions ($R = 0.45–0.65$; $p < 0.05$). Conclusion: The SSA and SSN may lie as close as 1.4 mm and 2.6 mm from lateral STSL, defining a new "lateral danger zone." Safe blunt dissection may occur 3.5 cm medial to AC joint and 6.0 cm medial to lateral acromion, but factoring patient-specific scapular dimensions may enhance pre-operative planning, patient safety and surgical training.

Keywords: Arthroscopy; decompression; suprascapular nerve; suprascapular artery; cadaveric

15:21 - 15:26

751 Comparative Study Of Clinical Outcomes Of Transforaminal Nerve Root Block With And Without Caudal Epidural Block

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JIS School of Medical Science & Research, Kolkata, India

Abstract
Introduction: There are three types of nerve root injection or infiltration- transforaminal, interlaminar and caudal epidural. This study was aimed to compare the effectiveness of transforaminal nerve root block (TNRB) with caudal epidural steroid injection (CESI) and only transforaminal nerve root block (TNRB) in managing pain and disability in patients with chronic lumbar radiculopathy through a prospective randomised study.
Materials and methods: A total of 88 patients diagnosed with chronic lumbar radiculopathy due to spinal stenosis at lower lumbar spine (L3 to S1) were evenly divided into two groups using a random allocation computer software. Group A received transforaminal epidural injection of depot steroid (Methylprednisolone acetate 80 mg) mixed with Bupivacaine. Group B received transforaminal plus caudal epidural injection of depot steroid (Methylprednisolone acetate 80 mg) mixed with Bupivacaine. Pain relief and reduction in disability were assessed in both groups at immediate post injection, two weeks, 1,3 and 6 months after the injection with VAS, RMDQ and SLR.
Result: Improvement in all three parameters were better in group B (TNRB+CESI) than group A (TNRB only) and is statistically significant at immediate post injection, 2 weeks, 1 and 3 months follow ups but insignificant at six months. There was one case of allergic reaction in group B.
Conclusion: Transforaminal epidural nerve root block is effective form of treatment in selective cases of mild to moderate spinal stenosis which gives short term relief. It is more effective when caudal epidural steroid injection (CESI) is added to the procedure.

14:40 - 14:45

1374 Comparative Analysis Of Long And Short PFNA 2 In The Management Of Intertrochanteric Fractures: Surgeon Preference And Patient Outcomes In An Indian Cohort"

Santosh Somayya Jeevannavar, Keshav S Shenoy, Prasanna P Baindoor, Shreyas S Kulkarni, Steve V Fernandes

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Abstract
Introduction:-Intertrochanteric fractures in the elderly, due to compromised bone strength, are often treated operatively to promote rapid mobilization. The choice of implant has evolved from extramedullary (DHS) to intramedullary (IM) nails, with a recent shift toward intramedullary implants. PFNA 2 is available in long and short versions, suited for specific fracture patterns..
Aims and Objectives:
To evaluate surgeon preference for implant selection (short vs. long PFNA 2) pre- and intra-operatively and its impact on functional and radiological outcomes..
Study Design and Methods:This study included 100 consecutive patients treated with short and long PFNA 2 who met the inclusion criteria. Factors influencing implant selection, operative time, C-arm exposure, and blood loss were recorded. Functional and radiological outcomes were assessed at 1 year using Harris Hip Score and X-rays. Data were analyzed using R version 4.4.0. Continuous variables were expressed as Mean ± SD / Median (Min, Max). Chi-square and Mann Whitney U tests were used to analyze associations and compare distributions.
Results:
A total of 34 patients with long PFNA 2 and 66 with short PFNA 2 were followed up. A significant difference was found in operative time and blood loss ($p < 0.05$), with short PFNA 2 having lower values. There was no significant difference in functional and radiological outcomes between the two implants ($p > 0.05$).
Conclusion:
Both short and long PFNA 2 showed similar functional and radiological outcomes. However, short PFNA 2 had advantages in operative time, blood loss, and C-arm exposure. Surgeons preferred the short PFNA 2 based on fracture patterns.

Thursday, 4 September

Hand & Wrist 3
16:40 - 16:45

267 Dorsal Spanning Plate Fixation For Carpometacarpal Fracture-Dislocations: The Impact Of Early Surgical Intervention On Functional Outcomes

Chun-Yu Chen

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Abstract
Introduction
The optimal surgical approach for treating carpometacarpal (CMC) fracture dislocations remains debatable. Dorsal spanning plate (DSP) fixation has been increasingly utilized among various fixation methods. However, its long-term functional outcomes and optimal management strategies, including the timing of surgery and implant removal, remain unclear.
Study Design & Methods
A retrospective review was conducted on patients who underwent DSP fixation for CMC fracture dislocations between January 2018 and July 2024. Clinical outcomes were assessed using Quick-DASH, FIHOA scores, and grip strength. Statistical analyses included the Mann-Whitney U test for continuous variables and Fisher's exact test for categorical data, with significance set at $p < 0.05$.
Results
Among 14 cases, 12 involved dorsal dislocations of the 4th and 5th CMC joints. Multiple-finger involvement was observed in 57.1% of cases. Demographic analysis showed that Finger 5 was the most frequently affected (52.4%), followed by Finger 4 (23.8%), with multiple-finger involvement observed in 57.1% of cases. Patients receiving surgery within 7 days (acute group, n=9) showed significantly better outcomes, with lower Quick-DASH (4.5 vs. 18.2, p=0.019), lower FIHOA scores (0 vs. 5, p=0.012), and more excellent grip strength recovery (80% vs. 50%, p=0.029). Most patients underwent implant removal within 5 months postoperatively, with only two cases of implant breakage due to specific mechanical factors.
Conclusion
DSP fixation provides favorable outcomes for CMC fracture dislocations. Early intervention (≤7 days) improves functional recovery, and implant removal within 5 months could reduce implant-related failures.

17:11 - 17:16

965 Treatment Of The Proximal Interphalangeal Fracture-Dislocation Injuries With Dynamic Distraction Apparatus

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2. Department of Orthopaedic Surgery, Kobe Rosai Hospital, Kobe, Japan
3. Department of Orthopaedic Surgery, Kobe University of Medicine, Kobe, Japan

Abstract
Introduction
Intra-articular dorsal fracture-dislocations of the proximal interphalangeal (PIP) joint can be challenging to treat and often present a formidable management dilemma of pain and stiffness. We investigated the clinical outcomes of the PIP fracture-dislocation injuries using dynamic distraction apparatus (DDA).
Materials and Methods
DDA were performed in 16 cases (5 males and 9 females). 2 females had multiple injuries. The mean age was 49.6 years. The affected fingers were 11 ring fingers and 5 little fingers. C-wires were inserted percutaneously to fix the fragments after the reduction of the joint surface. Then, DDA was placed for traction. On the following day of the surgery, the range of motion (ROM) exercises started. The period to obtain the bone union and the ROM at the final follow up were analyzed.
Results
All fractures united at an average of postoperative 43.5 days. The final mean ROM (extension /flexion degrees) of PIP joints was -3.3 / 76.7.
Conclusions
DDA is a recommendable treatment for intra-articular dorsal fracture-dislocation injuries of the PIP joint.

17:16 - 17:21

1055 The Use Of A Vascularized Medial Femoral Condyle Graft For Primary Reconstruction Of The First Metatarsophalangeal Joint After Recalcitrant Osteomyelitis: A Case Report And Technical Note

Marcus Wei Ping Tan, Rui Xiang Toh, Kizher Shajahan Mohamed Buhary, Zong Xian Li, Allen Wei Jiat Wong, Kae Sian Tay

Singapore General Hospital, Singapore, Singapore

Abstract

Introduction:
The medial femoral condyle vascularized bone flap has demonstrated high success rates in treating nonunions and avascular necrosis due to its reliable vascular supply, structural support, and minimal donor-site morbidity. Its application is increasingly described in complex foot reconstructions, especially in revision scenarios.

Methods:
We present a unique technical approach to reconstruct a critical 3 x 1 cm bone defect at the first metatarsophalangeal joint in a 77-year-old patient with recalcitrant osteomyelitis. The patient previously underwent multiple debridements and antibiotic-loaded cement spacer placement. Our technique involved removing the spacer and inserting a cortico-cancellous medial femoral condyle graft pedicled on the descending geniculate artery. The graft provided structural integrity and was securely fixed using a lateral bridge plate. Microsurgical vascular anastomosis was performed between the descending geniculate artery and the dorsalis pedis artery, alongside venous anastomosis. Simultaneously, a fasciocutaneous free flap was employed for durable soft tissue coverage. Postoperative management included toe-touch weight-bearing with progression to full weight-bearing by six weeks.

Results:
No early postoperative complications were observed. By two months, the patient ambulated independently without assistance. Radiographic evidence of bony union began at three months postoperatively, with complete consolidation by 12 months. The free flap successfully integrated, resulting in pain-free mobility and high patient satisfaction with a return to normal activities.

Conclusion:
The vascularized medial femoral condyle graft is an effective, reliable approach for foot reconstruction involving bony defects. It offers structural stability, consistent vascular supply, accelerated rehabilitation, early weight-bearing capabilities, and predictable bony healing outcomes.

17:06 - 17:11

1089 A Less Invasive Modified Technique For Radial Nerve Palsy Tendon Transfer.

Mahmoud Elsayed Salama

Aswan, Aswan, Egypt

Abstract
Background: Radial nerve palsy tendon transfer considered one of the most effective and reliable surgical interventions in peripheral nerve surgeries with no clear significant advantage of nerve transfer over the tendon transfer regarding the functional results has been reported.
Material and methods: a retrospective study. Including 12 patients: 5 of high radial nerve palsy and 7 of posterior interosseous nerve palsy. single radial incision about 10 cm was done to the 5 cases of high radial nerve palsy and mini open approach of 2 cm volar incision, 3 cm transverse dorsal incision over the 4th compartment and 2 cm incision over the 1st compartment. For wrist extension, PT was used as a donor in all the 5 patients with high radial nerve palsy cases. For finger extension, FCR to EDC and PL to EPB was used for thumb reconstruction in all cases. Mean follow up 16 months.
Results: Wrist extension mean 33.5. No finger extension lag >10 degrees. Mean of thumb radial abduction 53.5 and 57 degrees for palmer abduction. mean of kapandji scale 8.5. excellent patient satisfaction in 10 cases, good in 2 patients. No radial wrist deviation reported in any case. Bicanz score was 9 in 10 patients and 8 in 2 patients.
Conclusion: We reported a reliable results of radial nerve palsy tendon transfer with a less invasive approach (single incision in high radial nerve injury or mini open 3 small incisions in PIN injury) modifying the classic recipient for thumb extension (targeting the EPB instead of EPL).

16:30 - 16:35

1301 Application Of Radial Collateral Artery Perforator Flap On Reconstruction Of Thumb Web Constructure

Fang Yu

Xiangya Hospital,CSU, Changsha, China

Abstract
Objective: To explore efficiency of radial collateral artery perforator flap to reconstruct defects of the thumb web release.
Methods: From September 2018 to September 2022, 8 cases with skin defects after the thumb web release were reconstructed with radial collateral artery perforator flap, including: 7 males and 1 females. The width of thumb web was 20mm~38mm (average 26.9cm), and the angle was 22°~36° (average 27.4°) before surgery. 5 hands were classified as severe thumb web constructure, and 3 hands were moderate. The sizes of perforator flap were from 13cm×6.5cm～5.5cm×3.5cm. All the donor sites were closed directly.
Results: 8 skin flaps survived totally. Postoperative follow-up ranged from 6 months to 2.5 years (average 13.6 months). The width of thumb web was 48mm~63mm (average 57.1mm), and the angle was 40°~52° (average 44.8°) post operation. Thumb web function evaluation: excellent in 5 cases and good in 3 cases. All patients were satisfied with the thumb web. Sensory recovered to S3 in 3 case, S2 in 4 cases and S1 in 1 case.
Conclusion: The radial collateral artery perforator flap has reliable blood supply, relatively simple operation and the appearance and function of thumb web restored well postoperatively. The application of radial collateral artery perforator flap is an effective procedure to repair the thumb web constructure.

17:21 - 17:26

1305 Application Of Neurovascular Island Flap With Nail Bed For Reconstruction Of Wassel IV-D Radial Polydactyly

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Xiangya Hospital,CSU, Changsha, China

Abstract
Reconstruction of Wassel IV-D radial polydactyly is challenging and requires a custom strategy. Herein, we describe a technique using a neurovascular island flap transfer with nail bed to correct small nail, asymmetric nailfold and small finger body. From January 2021 to November 2024, 42 children with Wassel IV-D radial polydactyly were treated in Xiangya Hospital of Central South University, including 28 males and 14 females, aged from 8 months to 48 months, 16 left-handed and 26 right-handed; If the width of nail bed of neurovascular island flap is ≥ 2mm, we carried inferior phalanx and perform distal phalanx splicing, otherwise performed nail bed splicing. Among the 42 cases of radial polydactyly, 14 cases had neurovascular island flaps spliced with distal phalanx and nail bed, and 30 cases only spliced with nail bed. All flaps were free of infection and necrosis. The postoperative follow-up ranged from 3 to 36 months, with an average of 8.36 months. The height and size of the reconstructed nail fold of all children were basically symmetrical, and the size and circumference of the nail were basically the same as those of the contralateral thumb. The ASS score of 32 cases was excellent, 10 cases were good, and the overall satisfaction score of parents was 8-10 points, with an average score of 9.2 points. The transfer of neurovascular island flap with nail bed could well correct the small nail, asymmetric nail fold and small finger body in Wassel IV-D radial polydactyly.

16:53 - 16:58

1709 Analysis Of Functional Outcomes Following The Use Of Hemi-Hamate Arthroplasty For The Management Of Chronic Proximal Interphalangeal Joint Fracture-Dislocations

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2. Seth GS Medical College & KEM Hospital, Mumbai, India

Abstract

Introduction:
Chronic proximal interphalangeal joint fracture-dislocations are defined as injuries over six weeks old.

Aims & Objectives:
This study aimed to determine the functional outcomes following the use of hemihamate arthroplasty (HHA) for the management of chronic dorsal PIP fracture-dislocations.

Study Design & Methods:
The present study was a retrospective analysis that included 21 patients.

Results:
The average articular surface involvement was 64%. Union and graft incorporation was seen in all cases. The average Quick DASH (Disabilities of Shoulder and Hand) score at four weeks post-surgery was 66 and it improved to eight at one year (p-value<0.05). The average VAS (Visual Analog Scale) score at four weeks post-surgery was 7.66 and it improved to 2.09 at one year (p-value<0.05). The mean flexion of the MCP (metacarpophalangeal) joint improved from 52.85° at the end of four weeks to 72.38° at one year (p-value<0.05). The average flexion at the PIP (proximal interphalangeal) joint improved from 10.47° at the end of four weeks to 70.47° at one year (p-value <0.05). The average DIP (distal interphalangeal) joint flexion improved from 38.33° at the end of four weeks to 62.38° at one year (p-value<0.05). The average hand grip strength was 85% of the normal side.

Conclusion:
Hemi-hamate arthroplasty is an excellent technique for the management of chronic PIP fracture-dislocations involving more than 50% of the articular surface.

Keywords:
Chronic, proximal interphalangeal joint, fracture-dislocation, hemihamate arthroplasty

16:48 - 16:53

2939 Functional And Radiological Outcomes Of Distal Ulna Fractures: Evaluating Conservative And Surgical Approaches

Ahmed Gamal Abdelazim Ali Nouh

Helwan university, Cairo, Egypt

Abstract
Introduction
Distal ulna fractures, though less frequent than distal radius fractures, play a crucial role in wrist function and forearm stability. The management of these fractures, particularly in deciding between conservative and surgical treatment options, remains a subject of debate. This prospective study compares the clinical and radiological outcomes of conservative versus surgical management of distal ulna fractures, aiming to provide insights into optimal treatment strategies

Aim:
To evaluate and compare the functional and radiological outcomes of conservative and surgical treatments for distal ulna fractures

Materials & Methods:
This prospective study included 60 patients with distal ulna fractures, classified according to the AO/OTA system, excluding styloid fractures. The cohort was divided into two groups: 24 patients undergoing surgical treatment and 36 managed conservatively. Surgical options included internal fixation with plates and screws, and radiological union, functional recovery, and complication rates were assessed at 6 and 12 months. Functional outcomes were evaluated using the Patient-Rated Wrist Evaluation (PRWE) and Mayo Wrist Score (MWS). Range of motion, grip strength, and union rates were also analyzed.
Results:
Of the 60 fractures, 60% were treated conservatively, with a 78% success rate in non-displaced cases. Surgical treatment resulted in a 92% union rate, with volar plating used in 75% of cases and external fixation in 25%. Complications were noted in 5% of surgically treated cases, including three non-unions (10%) and one hardware failure. The average union time was 12.7 weeks (range: 8–24 weeks).

16:58 - 17:03

3102 ASSESSMENT OF THE QUALITY OF LIFE OF PATIENTS WITH CONGENITAL ANOMALIES OF THE HAND IN THE AGE GROUP 0-2 YEARS BEFORE AND AFTER SURGERY

Alexandra Prints, Vladimir Zavarukhin

St. Petersburg State University, Saint-Petersburg, Russia

Abstract
Congenital hand anomalies are considered a serious medical and social problem, occurring with a frequency of 2-3 cases per 10,000 newborns. These pathologies significantly affect the physical, psychological, and social well-being of patients, limiting their daily activities and influencing their socialization.

The study aims to investigate the impact of congenital hand anomalies on the quality of life of children aged 0 to 2 years and their families using a comprehensive assessment system.

From January 2024 to March 2025, questionnaires from 74 patients without previous surgical treatment were analyzed. The assessment was conducted using:

PedsQL Generic Core Scales
PedsQL Family Impact Module
Visual Analog Scale for hand appearance satisfaction
Visual Analog Scale for hand function
The inclusion criteria comprised patients with congenital hand anomalies aged 0-2 years who had not undergone surgical treatment.

Three main diagnoses were identified through the research:

Polydactyly (18 patients)
Symbrachydactyly (15 patients)
Syndactyly (9 patients)
According to the survey results, symbrachydactyly was found to have the greatest impact on the quality of life (average PedsQL score - 62). In syndactyly, despite a relatively minor decrease in functional results, a change in the overall quality of life assessment was also noted.

The study emphasizes the importance of comprehensively examining the quality of life of patients with congenital hand anomalies to develop recommendations for improving their condition and enhancing the effectiveness of medical care.

16:35 - 16:40

274 Arthroscopic Partial Trapeziectomy With Hematoma Distraction Procedure In Basal Thumb Osteoarthritis.

Abdelaziz Monsef Ali

Azhar university assuit, Assuit, Egypt

Abstract
Abstract:
Purpose: Arthroscopic partial trapeziectomy combined with various interpositions and ligament reconstruction procedures is gaining popularity now as a valid alternative to conventional surgery. This study aims to assess the clinical and radiological outcomes of arthroscopic partial trapeziectomy with hematoma distraction of the trapeziometacarpal joint in basal thumb osteoarthritis.
Methods: Twenty-four patients, with grades II and III trapeziometacarpal osteaoarthritis treated with arthroscopic partial trapeziectomy and hematoma distraction by K-wires, were prospectively followed up for at least 12 months. Outcome measures included the Disabilities of the Arm, Shoulder, and Hand (DASH) questionnaire, the visual analogue scale (VAS) for pain, grip strength, and pinch strength.
Results: After 12 months, DASH improved from a mean of 53 ± 8.2 to a mean of 27 ± 5.8, VAS improved from a mean of 5.4 ± 1.9 to a mean of 1.4 ± 1.3, grip strength improved from a mean of 21.4 ± 12.1 kg to a mean of 26 ± 10.5 kg, and pinch strength improved from a mean of 4.1 ± 2.1 kg to a mean of 4.9 ± 2.5 kg.
Conclusions: Arthroscopic partial trapeziectomy with hematoma distraction procedure results in clinical and functional improvement of the thumb with preservation of trapeziometacarpal space after one year.

Thursday, 4 September

Research 1
17:30 - 17:35

441 Factors Associated With Periprosthetic Joint Infection Following Hip Or Knee Arthroplasty: A Study Of 30,102 Cases Conducted At A National Orthopaedic Treatment Centre

Jeremy Wong[1], Swati Chopra[1], Andrew Hall[2], David Wallace[1], Fahd Mahmood[1], Jon Clarke[1], Nicholas Holloway[1], Christopher Gee[1]

1. Golden Jubilee University National Hospital, Glasgow, United Kingdom
2. University of St Andrews, St Andrews, United Kingdom

Abstract
Introduction

Periprosthetic joint infection (PJI) following lower limb arthroplasty is associated with major physical, psychological, and social harm, yet its aetiology remains poorly evaluated.

Aims & Objectives
Identify characteristics associated with increased risk of PJI following primary total hip (THA) or total knee arthroplasty (TKA) performed for arthritis.

Study Design & Methods
A retrospective, cohort study was conducted using prospectively collected clinical data from a bespoke single-centre database. THA and TKA cases performed for end-stage arthritis between 01/01/2010 and 31/12/2021 were included. Variables collected include: demographics, clinical factors, surgical factors, and perioperative management factors. The primary outcome measure was PJI related to the same prosthetic joint from 2 weeks to 11 years, and was further sub-categorised as superficial or deep infection.

Results
A total of 30,102 procedures (15,191 THA and 14,911 TKA) performed in 25,829 patients from 2010–2021 were included. On adjusted analyses, factors independently associated with increased risk of deep infection in THA were male sex (odds ratio [OR] 1.96; 95% confidence interval [CI] 1.179–3.257; p=0.009); perioperative blood transfusion (4.82; 1.420–16.37; p=0.0012); obesity class II (3.552; 1.366–9.239; p=0.009), and obesity class III (3.682; 1.158–12.88 p=0.028). Factors independently associated with increased risk of deep infection in TKA were: perioperative blood transfusion (OR 9.743; 95% CI 3.810–24.91; p<0.001) and operation time (1.011, 1.000–1.034; p=0.049).

Conclusions
The findings highlight the importance of providing a holistic strategy to support physical optimisation while awaiting surgery, preoperative assessment and reducing risk of perioperative blood transfusion.

17:04 - 17:09

612 Potential Role Of Denosumab In Reducing Type 2 Diabetes Risk And Improving Glycemic Control In Osteoporotic Patients - A Meta-Analysis

Ryan Jasper Yu Ngo, Carlos Miguel Ignacio Azucena, Daveric Tranate De Jesus

Jose R. Reyes Memorial Medical Center, Manila, Philippines

Abstract
This meta-analysis evaluated the efficacy of denosumab in reducing type 2 diabetes mellitus (T2DM) risk in osteoporotic patients and its impact on glycemic control parameters, including fasting blood sugar (FBS), HbA1c, and HOMA-IR.

A systematic literature search of PubMed, Cochrane Library, and Embase identified randomized controlled trials (RCTs) and cohort studies comparing denosumab with placebo or other osteoporosis treatments. Studies meeting predefined inclusion criteria were assessed for quality using the Cochrane risk-of-bias tool. The primary outcome was T2DM incidence, while secondary outcomes included changes in FBS, HbA1c, and HOMA-IR. Random-effects models were used for analysis, with heterogeneity assessed via the I^2 statistic.

Nine studies with 172,385 participants were included. Denosumab was associated with a 26% reduction in T2DM incidence (RR = 0.74, 95% CI 0.61–0.89, p = 0.001). FBS significantly decreased in denosumab-treated patients (SMD = -0.23, 95% CI -0.43 to -0.02, p = 0.018), but no significant improvements were observed in HbA1c (SMD = -0.44, p = 0.10) or HOMA-IR (SMD = -0.21, p = 0.114). Heterogeneity was high for T2DM incidence (I^2 = 87%) and moderate for FBS (I^2 = 62%).

Denosumab may lower T2DM risk and improve FBS in osteoporotic patients, suggesting potential metabolic benefits beyond bone health. However, its effects on HbA1c and HOMA-IR remain unclear. Further long-term RCTs are needed to confirm these findings and investigate the mechanisms linking RANKL inhibition to glucose metabolism.

17:35 - 17:40

698 Innovative Implant Coating Shows Dual-Functional Antibacterial And Osteogenic Properties To Treat Osteoporotic Fracture-Related Infection

Ronald Man Yeung Wong[1,2], Baoqi Li[2], Chaoran Liu[2], Ning Zhang[2], Wing Hoi Cheung[2], Shui Yee Sharon Leung[3]

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2. Department of Orthopaedics & Traumatology, The Chinese University of Hong Kong, Hong Kong, China
3. School of Pharmacy, The Chinese University of Hong Kong, Hong Kong, China

Abstract
Introduction: Fracture-related infection (FRI) is a serious complication in orthopaedic trauma often resulting in complications including compromised bone healing and persistence in infection. The prevalence of muti-drug resistant bacteria and biofilm formation often renders conventional therapies ineffective too. This study adopted a coating approach with polydopamine (PDA) to immobilize deoxyribonuclease I (DNase I) and lysostaphin (Lyso) onto the implant surface, to act as an innovative implant for FRI. Methods: Coatings were prepared on titanium K-wires by immersion with PDA, followed by incubation with DNase I and Lyso. Surface morphology and protein immobilization were characterized using atomic force microscope (AFM) and X-ray photoelectron spectroscopy (XPS). Antibacterial activity and biofilm inhibition activity of the coatings were quantified by colony forming units (CFUs) counting and biomass staining. The in-vivo treatment efficacy was investigated in MRSA infected open femoral fracture model in osteoporotic SD-rats, and evaluated by bacterial culture, X-ray, micro-CT, and histology. Results: The construction of DNase I-Lyso-PDA coating was confirmed by AFM and XPS. DNase I-Lyso-PDA coating eliminated bacteria and significantly inhibited biofilm formation in-vitro. The coating eradicated the bacteria in fractured bones and prevented biofilm formation on the implant in-vivo. There was also prevention of bone destruction caused by infection. Interestingly, micro-CT analysis showed bone volume/tissue volume (BV/TV) significantly increased in DNase I-Lyso-PDA coating group compared to non-infected control group. Conclusion: The DNase I-Lyso-PDA coating showed dual-function by exerting excellent antibacterial and biofilm inhibition effect, and enhanced fracture healing in osteoporotic FRI.

17:53 - 17:58

1219 Reduced Neuroinflammation Via Astrocytes And Neutrophils Promotes Regeneration In Neonatal Spinal Cord Injury

Kazuki Kitade[1,2], Kazu Kobayakawa[1], Hirokazu Saiwai[2], Kazuya Yokota[1], Jun Kishikawa[1], Gentaro Ono[2], Takeshi Maeda[2], Yasuharu Nakashima[1]

1. Department of orthopedic surgery, Kyushu University, Fukuoka, Japan
2. Department of orthopedic surgery, Spinal Injuries Center, Iizuka, Japan

Abstract
INTRODUCTION: Neonatal spinal cord injury (SCI) results in better functional recovery than adult SCI, but the underlying mechanisms remain unclear. Given our previous findings on age-dependent variations in post-SCI inflammation, we investigated differences in inflammatory responses between neonatal and adult mice and their effects on axon regeneration and functional outcomes.

METHODS: Two-day-old (neonatal) and 8-week-old (adult) C57/BL6N and Aldh1l1-EGFP transgenic mice were used to establish a spinal cord crush injury model at the Th10 level. Flow cytometry, immunohistochemistry, and quantitative PCR analyses were performed on spinal cord and blood samples. Statistical comparisons were conducted using unpaired t-tests and two-way repeated-measures ANOVA with Tukey–Kramer post-hoc testing (JMP PRO 16.0.0).

RESULTS: Flow cytometry revealed that neonatal neutrophils exhibited significantly lower expression of CXCR2 and β2 integrin compared to adults. Neonatal astrocytes showed lower NF-kB activation and secreted significantly lower levels neutrophil-recruiting chemokines (Cxcl1, Cxcl2) than adult astrocytes. Consequently, no neutrophil infiltration occurred in neonatal spinal cords post-SCI, resulting in significantly lower inflammatory cytokine expression (Il-1b, Il-6, Tnf-a). This led to fewer apoptotic neurons, minimal glial scar formation, enhanced axonal regeneration, and significantly improved locomotor recovery at 28 days post-SCI (BMS score: neonate 6.5 vs. adult 2.5, n=6, $P<0.0001$).

CONCLUSIONS: Neonatal SCI exhibits a neutrophil-free inflammatory response due to milder astrocytic chemoattraction and lower expression level of neutrophil adhesion molecule and chemokine receptor in comparison to adults, promoting scar-free spinal cord repair and robust axon regeneration. Reproducing this neonatal-like neutrophil-free neuroinflammation in adult SCI could enhance axonal regeneration and favorable functional recovery.

17:17 - 17:22

1670 Elevated Interleukin-6 Expression In Ossification Of The Posterior Longitudinal Ligament

HIDEKI Saito, Takafumi Yayama, Kanji Mori, Kosuke Kumagai, Yuya Chosei, Shinji Imai

Department of Orthopedic Surgery, Shiga University of Medical Science, Shiga, Japan

Abstract
Background:
Ossification of the posterior longitudinal ligament (OPLL) is a pathological condition characterized by ectopic bone formation within the spinal ligament, affecting approximately 3% of the general population, with a higher prevalence in Asian populations. Cytokine imbalances, particularly involving interleukin-6 (IL-6), have been implicated in the ossification process. However, the precise mechanisms and signaling pathways regulating osteoblast and chondrocyte differentiation in OPLL remain unclear.

Method:
We collected tissue samples from 14 OPLL patients undergoing spinal surgery and 7 patients with cervical spondylotic myelopathy (CSM) without OPLL. Histologic and immunohistochemical examinations were performed on ligament tissue sections, while primary ligament cells were subjected to cytokine profiling and immunoblotting. A suspension array was used to measure the concentrations of 27 inflammatory cytokines and growth factors.

Result:
Suspension array and immunoblot analyses demonstrated significantly elevated IL-6 levels in OPLL patients compared to CSM. Modulation of IL-6 expression influenced the transcription of Sox9, Runx2, and SIRT1, key regulators of osteogenic and chondrogenic differentiation. Immunohistochemical analysis revealed the presence of these factors in mesenchymal cells within the degenerative ligament matrix adjacent to the ossification front. These findings suggest that IL-6 plays a pivotal role in regulating cellular differentiation and matrix remodeling in OPLL.

Conclusion:
IL-6 contributes to osteoblast differentiation, chondrocyte hypertrophy, and apoptosis in the early stages of OPLL. These changes in cytokine profiles are crucial for the regulation of ectopic ossification, highlighting IL-6 as a potential therapeutic target for OPLL management.

16:35 - 16:40

2284 Lacertus Syndrome In A Pediatric Patient: A Case Report From Saudi Arabia

Bayan Abdulrahman Ghalimah[1], Refal Mohammed Alqahtani[2], Abdulrahman Fahmi Bukhari[3]

1. Department of Orthopedic Surgery, Faculty of Medicine, King Abdulaziz University, Rabigh, Saudi Arabia
2. Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia
3. Occupational Therapy Department, Dr.Suliman Al Habib Medical Group, Jeddah, Saudi Arabia

Abstract
Lacertus syndrome (LS) is a rare compressive neuropathy of the median nerve near the elbow, characterized by forearm fatigue and hand weakness. Diagnosis relies heavily on clinical evaluation, as literature on the condition is limited, particularly in Saudi Arabia. We present the case of a 13-year-old active female with left-hand numbness, weakness, forearm fatigue, and pain. Clinical examination revealed tenderness over the lacertus, forearm muscle weakness, and a positive Scratch Collapse Test (SCT). Despite six sessions of occupational therapy, including myofascial release and nerve gliding exercises, her symptoms persisted. MRI confirmed median nerve compression under the lacertus fibrosus, prompting surgical release. Postoperatively, the patient experienced complete resolution of symptoms, improved grip strength, and enhanced functionality. This case underscores the importance of accurate diagnosis and timely surgical intervention for LS, highlighting the need for increased clinical awareness and research.

17:48 - 17:53

2430 Sulforaphane Modulates Macrophage Polarization: A Novel Strategy For Promoting Tendinopathy Healing

Xin Wang, Wang Zhang, Xue Fang, Changhuan Liu, Lekai Zhu, Zheng Wang

Department of Orthopedics Trauma and Microsurgery, Zhongnan Hospital of Wuhan University, Wuhan, China

Abstract
Tendinopathy is a common disease in sports medicine and seriously affects tendon function. The imbalance of macrophage M1/M2 polarization plays an important role in the occurrence of tendinopathy. Promoting the polarization of M1 macrophages to M2 macrophages has been proved to be able to effectively treat tendinopathy. Sulforaphane (SFN) is a natural isothiocyanate that has potential properties against inflammation, along with other protective functions. Here, we found that SFN can regulate the polarization of M1 macrophages towards M2 macrophages, thereby effectively modulating the inflammatory response. RNA sequencing and Western blot results suggest that this effect of SFN is mediated through the JAK1/STAT1 signaling pathway. In a collagenase-induced mouse tendinopathy model, local injection of SFN resulted in a significant improvement in the structure of tendon tissue, with the collagen matrix restoring its natural dense parallel arrangement. Furthermore, an increase in local M2 macrophages and a decrease in M1 macrophages promoted inflammation resolution. Finally, the immunomodulatory effect of SFN on macrophages was also validated in tendon tissue from tendinopathy patients. Together, SFN can effectively alleviate tendinopathy by promoting the polarization of M1 macrophages towards M2 macrophages, an effect achieved through the inhibition of the JAK1/STAT1 signaling pathway, providing a promising approach for the treatment of tendinopathy.

16:54 - 16:59

2514 Motion-Synergized Oral Piezoelectric Microspheres For Dual-Targeted Osteoporosis Therapy

Shen Jieliang

Bishan Hospital of Chongqing Medical University, Chongqing, China

Abstract
Objective: To overcome limitations of current osteoporosis therapies (e.g., single-pathway regulation and invasive procedures), we developed oral piezoelectric microspheres (OPMs) integrating bisphosphonate-mediated osteoclast inhibition and exercise-triggered osteogenic stimulation for bidirectional bone metabolism modulation.

Methods: Alginate-chitosan microspheres (50–70 μm) encapsulating alendronate-modified $BaTiO_3$ nanoparticles were synthesized via gas-assisted microfluidics. Biological evaluations included in vitro assays (BMSCs/BMMs under cyclic stretching) and in vivo OVX mouse models (oral OPMs + treadmill exercise). Safety/mechanistic studies assessed biocompatibility and Piezo1-YAP pathway activation.

Results: OPMs demonstrated 3.5-fold bone-targeted enrichment in spine/joints ($p<0.01$) and stable piezoelectricity (D33=190 pC/N). Mechanoelectrical stimulation synergistically elevated ALP activity 2.7-fold (vs. static) and suppressed osteoclastogenesis by 58% in vitro ($p<0.05$), while OPMs + exercise increased OVX mouse BMD by 20–35% ($p<0.01$) in vivo. Mechanistically, mechanical stress activated Piezo1-YAP signaling (82% nuclear-YAP, $p<0.001$) without toxicity.

Conclusion: OPMs achieve exercise-driven, bone-targeted dual therapy via piezoelectric nanoactivation and Piezo1-YAP mechanotransduction, enabling safe, non-invasive systemic osteoporosis intervention. Keywords: Piezoelectric biomaterial; Osteoporosis; Bone-targeted delivery; Piezo1-YAP.

17:40 - 17:45

2689 Enhancing Junior Doctors' Preparedness And Satisfaction In Trauma And Orthopaedics: A Quality Improvement Project With The Development Of A Comprehensive Guidebook

Zubair Younis, Ghulam Dastagir Faisal mohammed, Jebran Amin, Zaina Mansoor, Leonie Lingnau, Edwin P Jesudason

Royal Wolverhampton NHS Trust, Wolverhampton, United Kingdom

Abstract
Background: Junior doctors often feel underprepared for their trauma and orthopaedics (T&O) rotation due to limited exposure during medical school and inadequate support. This project aimed to enhance junior doctors' preparedness and satisfaction during their T&O rotation by developing a comprehensive guidebook.

Methods: A quality improvement project (QIP) was conducted at Ysbyty Gwynedd Hospital. Initial surveys identified factors contributing to poor experiences during the trauma and orthopaedics rotation, including limited knowledge of orthopaedic emergencies and a lack of useful reference resources. A guidebook was developed and refined through multiple plan-do-study-act (PDSA) cycles. The guidebook covered topics such as orthopaedic emergencies, common injuries, referral pathways, and hospital logistics, presented in an accessible flowchart format.

Results: The primary objective of achieving 75% satisfaction among junior doctors was successfully met, with satisfaction increasing from four (40%) to eight (80%) doctors in the most recent survey. Secondary outcomes included a marked improvement in the understanding of quality improvement projects, rising from three (30%) to eight (80%) doctors. Orthopaedic knowledge also saw a significant enhancement, increasing from four (40%) to nine (90%) doctors. Confidence in handling night on-call duties improved dramatically, with all 10 doctors (100%) reporting increased confidence, compared to four (40%) doctors initially. Additionally, seven doctors (70%) expressed a greater interest in pursuing a career in orthopaedic surgery.

Conclusion: The comprehensive guidebook significantly improved junior doctors' preparedness and satisfaction during their T&O rotation. While the guidebook is a valuable resource, ongoing mentorship and hands-on experience remain essential for for long-term success.

16:30 - 16:35

594 Are Surgeons Aware Of Patients' Tattoos That May Result In Legal Issues?

Cumhur Deniz Davulcu, **Derya Akbaba**, Ahmet Burak Demirdas, Erdem sahin, Nuri Aydin

Istanbul University-Cerrahpasa, Istanbul, Türkiye

Abstract
Aims and Objectives: This study aimed to assess the awareness and practices of orthopedic surgeons regarding tattoo preservation during surgical procedures, focusing on preoperative communication, informed consent, and incision planning. Additionally, it seeks to highlight the necessity of including information about tattoos in informed consent forms and its medico-legal significance.

Study Design and Methods: A cross-sectional survey of 341 orthopedic surgeons was conducted using 12 structured questions distributed via direct online messaging to participants, professional common orthopaedic surgery mail forum, and face-to-face administration.15 were female (4.4%), 326 were male(95.6%). All participants were at least orthopedic specialists. The survey collected data on demographics, surgical experiences with tattooed areas, incision planning, patient communication, and medico-legal awareness. Descriptive statistical analyses were performed.

Results: Among participants, 84.5% had encountered tattoos in surgical fields, and 72.3% had performed incisions over tattooed skin.Only 42.5% considered tattoos in their incision planning. While 84.2% verbally informed patients about potential tattoo alterations, only 20.3% documented this in written consent.35.1% received patient requests for tattoo preservation, and 19.7% believed tattoos increased postoperative infection risk. Only 6% reported patient complaints regarding tattoo alterations.

Conclusion: Although tattoos are common in surgical practice, there is no standardized approach for integrity of tattoos and medicolegal issues. Many surgeons acknowledge the risks of operating over tattooed skin, yet preoperative communication and documentation remain inconsistent. Given the rising prevalence of tattoos, standardized protocols are needed to enhance patient counseling, informed consent, and surgeon awareness.

16:40 - 16:45

1684 PREVALANCE AND INCIDENCE OF ORTHOPEDIC DISEASES IN THE OPD AT A TERTIARY CARE HOSPITAL IN BANGLADESH.

MD AMJAD Amjad Hossain[1], Munmun Nahar[2], Muhammad Tanvir Hasan[1]

1. Labaid Hospital Ltd., Dhaka, Bangladesh
2. Khawja Yunus Ali Medical College, Dhaka, Bangladesh

Abstract

Epidemiology is a science of medicine which measures the occurrence and prevention of morbidity and mortality. We tried to identify the incidence and relation of disease to risk factors, which will help in easy diagnosis and treatment of the disease.

Objectives: This study aimed at establishing a baseline statistic regarding the pattern and demographics distribution, incidence, prevalence of orthopedic disease in a tertiary care hospital.

Methods: A prospective observational study was conducted in the department of orthopaedics, Labaid Specialized Hospital in Bangladesh. 3000 consecutive patients from February 2024 to July 2024 attending the orthopaedic OPD were included in the study.

Results: Out of 3000 patients 1320(44%) were complained of low back pain, knee joint pains 1022(34%), 35(11.67%) with arthritis of different joints, , 162(5.4%) with frozen shoulder,(2%)60 AVN with femoral head,41(1.37%) with elbow joint pain;23(0.77%) with PLID , cases were reported. It has shown 700 males and 620, females with LBP, 500 males and 522 females with knee joint pains, 160 male and 190 female arthritis of different joints, 112male and 50 female with frozen shoulder,40 male and 20 female with AVN femoral head, male 28 female 13with elbow joint pain; male 14 female 9with PLID.

Our study has given the bird's eye view of various orthopedic problems as may be found in a tertiary level care setting.

Conclusion: This epidemiological study recommends that better protocols and strategies may be developed for managing orthopedic diseases in hospitals and health systems.

16:59 - 17:04

878 Development And Evaluation Of A Scoring System For Early Diagnosis Of Bone And Joint Tuberculosis In A Resource-Limited Setting: A Cross-Sectional Study

Muhammad Muzzammil

Sindh Government Services Hospital, Karachi, Pakistan

Abstract
Purpose: Bone and joint tuberculosis (BJTB) remains a major challenge in high TB burden countries, leading to severe complications and increased mortality. Early diagnosis is difficult due to limited deep tissue access and low bacterial loads. This study evaluates a scoring system to improve early BJTB diagnosis and management.

Methods: A cross-sectional study was conducted at a public sector hospital in Karachi, enrolling patients with clinical suspicion of BJTB, excluding those with severe underlying diseases or HIV. The scoring system comprised major criteria (joint pain, swelling/effusion, restricted motion, X-ray findings) and minor criteria (fever, weight loss, joint redness, pulmonary TB, raised ESR, TB history). Patients were classified as highly suspicious (score >7), suspicious (5–7), or less suspicious (<5). Treatment was initiated accordingly, with outcomes monitored over six months.

Results: Among 78 patients, 37 (47.43%) were highly suspicious, 26 (33.33%) suspicious, and 15 (19.23%) less suspicious. Anti-tuberculosis treatment (ATT) was effective in 94.59% of highly suspicious, 84.61% of suspicious, and 60% of less suspicious cases. The scoring system showed a sensitivity of 94.6%, 84.6%, and 73.3%; specificity of 75.0%, 69.2%, and 84.6%; positive predictive value (PPV) of 87.2%, 84.6%, and 84.6%; and negative predictive value (NPV) of 88.5%, 83.3%, and 74.7% for the respective groups.

Conclusion: This scoring system offers a valuable diagnostic tool for BJTB, especially in resource-limited settings. It facilitates early identification and treatment, improving patient outcomes. Further studies are needed to validate its broader applicability.
Keywords: Tuberculosis, Bone, Joint, Diagnosis, Scoring System, Karachi.

17:22 - 17:27

2446 Estrogen Deficiency Exacerbates Traumatic Heterotopic Ossification In Mice

Zheng Wang, Aixi Yu

Zhongnan Hospital of Wuhan University, Wuhan, China

Abstract
Traumatic heterotopic ossification (HO) is a devastating sequela of orthopedic surgeries and traumatic injuries. However, few studies have explored the effects of the estrogen-deficient state on HO formation. In this study, we investigated the impact of estrogen deficiency on ectopic cartilage and bone formation in tendon after Achilles tenotomy in an ovariectomized mouse model. A total of 45 female C57BL/6 mice were randomly divided into three groups: sham-operated (control), estrogen depletion by ovariectomy (OVX) and OVX with 17β-estradiol supplementation (OVX + E2), with 15 animals in each group. At 1, 3 and 9 weeks after tenotomy, the left hind limbs were harvested for histology, immunohistochemistry and immunofluorescence evaluations. The volume of ectopic bone was assessed by micro-CT. Mice in the OVX group formed more ectopic cartilage 3 weeks after tenotomy, as well as ectopic bone 9 weeks after tenotomy, compared to the control group. Estrogen deficiency resulted in more severe inflammatory infiltration at the injury sites, involving the recruitment of more macrophages and mast cells, as well as increasing the expressions of pro-inflammatory mediators, including IL-1β, IL-6, and TNF-α. Moreover, the local TGF-β/SMAD signaling pathway was dysregulated after OVX, which manifested as upregulated expressions of TGF-β and pSMAD2/3. E2 supplementation protected against OVX-induced HO deterioration, inhibited inflammatory infiltration, and downregulated the TGF-β/SMAD signaling pathway. In conclusion, estrogen deficiency exacerbated HO formation, which might be attributable to the disturbance of the inflammatory response and the activation of TGF-β/SMAD signaling at the injury sites.

16:45 - 16:50

2448 NIR-Triggered Photodynamic Therapy Of Traumatic Heterotopic Ossification With A Type II Collagen-Targeted Photosensitizer

Zheng Wang, Aixi Yu

Zhongnan Hospital of Wuhan University, Wuhan, China

Abstract
Traumatic heterotopic ossification (HO) represents an intractable sequela following trauma with no currently effective prophylaxis or treatment. Photodynamic therapy (PDT) is a non-invasive treatment for various proliferative diseases. However, the specific effects of PDT on HO development remain unclear. In this study, the therapeutic potential of a near-infrared (NIR) probe-WL-808, composed of type II collagen-binding peptide (WYRGRL) and a PDT photosensitizer (IR-808), was evaluated for the innovative HO-targeted PDT approach. In vitro studies indicated that WL-808 could induce chondrocyte apoptosis and inhibit cell viability through ROS generation under NIR excitation. In vivo, the efficacy of WL-808-mediated PDT was tested on the tenotomy HO model mice. WL-808 specifically targeted the type II collagen cartilaginous template of HO, promoting cell apoptosis and enhancing extracellular matrix (ECM) degradation under 808 nm NIR excitation, which inhibited the final ectopic bone formation. Moreover, no obvious toxicity or side effects were detected after treatment with WL-808. Taken together, WL-808-mediated PDT significantly diminished ectopic cartilage and subsequent bone formation, providing a new perspective for HO prophylaxis and treatment.

17:12 - 17:17

2814 The Relation Between Degenerative Joint Disease Of Knees And Shoulders

Mohamed Buajela Rashed

Libyan Orthopedic Board, Tripoli, Libya

Abstract
Objective: This review examines the relationship between Degenerative Joint Disease (DJD) of the knees and shoulders, focusing on clinical presentation, diagnosis, treatment, and outcomes for patients with concurrent joint degeneration. Background: Osteoarthritis (OA) is prevalent in the aging population, notably affecting the knee and shoulder joints. Recent studies suggest a correlation between knee and shoulder OA, indicating that degenerative changes in one joint may predict changes in another. Methods: A cohort of 625 patients with knee DJD, comprising 420 females and 200 males, was analyzed. Clinical evaluations revealed a significant prevalence of medial compartment OA and concurrent degenerative changes in the shoulder joints. Results: All patients with knee OA exhibited shoulder degeneration, with functional limitations in daily activities. Conservative treatments, including quadriceps strengthening, effectively improved knee function, while shoulder symptoms remained stable. Conclusion: The findings underscore the complex interplay between knee and shoulder osteoarthritis, with knee OA serving as the primary source of functional disability. This highlights the need for targeted rehabilitation strategies to address knee symptoms without exacerbating shoulder involvement. Further research is needed to explore the underlying mechanisms linking these joint degenerations

Friday, 5 September

Foot & Ankle 3
08:48 - 08:53

930 Periprosthetic Osteolysis As A Risk Factor For Revision After Total Ankle Arthroplasty

Jong Eun Kim, Keun-Bae Lee, Gun-Woo Lee

Chonnam national university hospital, Gwangju, South Korea

Abstract
Background: Periprosthetic osteolysis after total ankle arthroplasty (TAA) is a challenging problem. This study aimed to
evaluate the prevalence of and predisposing factors for osteolysis and its effects on clinical outcomes.
Methods: We enrolled 236 patients (250 ankles) who underwent primary TAA using a mobile-bearing HINTEGRA pros
thesis, with a mean follow-up of 83.5 months (range, 36 to 182 months), and subsequently divided them into 2 groups:
the osteolysis group (79 ankles) and non-osteolysis group (171 ankles). Clinical and radiographic outcomes were com
pared between the 2 groups, and a bivariable logistic regression analysis was performed to identify predisposing factors
for the development of osteolysis.
Results: In the osteolysis group (31.6% of the 250 ankles), the mean time of detection was 28.8 months post
operatively. Forty of these ankles were closely monitored without surgical treatment. Another 29 ankles under
wentbonegraftingandexchangeofthepolyethyleneinlay,andtheremaining10anklesunderwentrevisionTAAor
arthrodesis. All clinical outcome variables were significantly lower in patients with osteolysis, compared with
those without osteolysis, at the final follow-up ($p < 0.05$). In the investigation of predisposing factors, only
rheumatoid arthritis was identified as having a significant association with an increased prevalence of osteolysis
($p = 0.030$).
Conclusions: This study demonstrated that the prevalence of periprosthetic osteolysis after TAA was considerable and
that the development of osteolysis negatively affected the clinical outcome. Therefore, the prevention and appropriate
treatment of osteolysis are crucial for the satisfactory long-term survival of TAA.

08:30 - 08:35

1347 Endoscopic Transfer Of Flexor Hallucis Longus Tendon For Chronic Achilles Tendon Rupture

Mursalov Anatoly

National Medical Research Center for Traumatology and Orthopedics named after N.N. Priorova of the Ministry of Health of the Russian Federation, Moscow, Russia

Abstract
Introduction: The treatment of chronic Achilles tendon ruptures is a complex surgical challenge, for which numerous techniques have been developed. Traditional open surgeries carry risks of infection and poor wound healing, which has led to the active adoption of minimally invasive approaches. The aim of this study was to evaluate the clinical and radiological outcomes of endoscopic flexor hallucis longus (FHL) tendon transfer in patients with chronic Achilles tendon rupture.

Methods: Between 2020 and 2024, 36 patients with chronic Achilles tendon rupture underwent endoscopic treatment. The average age of the patients was 64 years (range: 42–78 years). The follow-up period ranged from 18 to 36 months (average: 28.3 months). Preoperative MRI was performed on all patients to assess the extent of the tendon rupture. Postoperative MRI was conducted 3–6 - 12 months after surgery to analyze the condition of the Achilles tendon.

Results: The average tendon gap measured on preoperative MRI was 5.6 cm (range: 4–11.2 cm). Postoperative MRI was performed for all patients, and all but one showed complete or nearly complete restoration of the Achilles tendon. The average American Orthopaedic Foot & Ankle Society score improved from 52 preoperatively to 93 at the final follow-up. All patients were able to return to their daily activities without limitations. No complaints of reduced great toe flexion strength or other complications were reported.

Conclusions: Endoscopic FHL tendon transfer has proven effective in treating chronic Achilles tendon ruptures. This minimally invasive method provides excellent functional outcomes.

09:07 - 09:12

1561 Clinical Outcome Of Distal Tibial Oblique Osteotomy (DTOO) For Osteoarthritis Of The Ankle

Yukinobu Nishii[1], Tsukasa Teramoto[2], Shota Harada[3]

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2. Nagasaki Yurino Hospital, Nagasaki, Japan
3. Japanese Red Cross Society Nagasaki Genbaku Hospital, Nagasaki, Japan

Abstract
Background:
DTOO, a joint preservation surgery for ankle osteoarthritis(AOA), was invented by Teramoto and has been reported to have good results, but DTOO is usually performed in patients up to stage 3b of the Takakura-Tanaka classification. We have performed DTOO for stage 4 and post-traumatic arthropathy, in which joint fusion and artificial joints are indicated, and have obtained excellent results. In this report, we describe the indications, techniques, and results of DTOO.
Subjects and Methods:
The subjects were varus type AOA 49 patients with 57 feet who underwent DTOO at our hospital. The mean age at surgery was 69 years (47 to 85 years), 22 males and 35 females. According to Takakura and Tanaka's classification, 7 feet had stage 2, 16 feet had stage 3a, 18 feet had stage 3b, and 10 feet had stage 4. The Japanese Society for Surgery of the Foot (JSSF) scale was used for clinical evaluation before and after surgery, and measurements using plain X-ray images and instability using stress images were used for image evaluation.
Results:
In all patients, osteotomies were fused and preoperative walking pain improved. JSSF scale improved from an average of 48.9 (16 to 66) preoperatively to an average of 87.8 (80 to 100) postoperatively.
Conclusion:
Although the osteotomy must be performed with careful attention to blood circulation at the osteotomy site, and back-up Ilizarov external fixation is necessary considering the condition of the skin and soft tissues, it is a technique that can preserve the joint even in cases of severe AOA.

09:12 - 09:17

2130 The Feasibility Of Navigation-Assisted Fracture Surgery For Foot Trauma: A Systematic Review

Alba Shehu[1], Kai Jensen[1], Roman Pfeifer[1], Valentin Neuhaus[1], Hans-Christoph Pape[1], Jens Halm[2], Michel Paul Johan Teuben[1]

1. University Hospital Zurich, Zurich, Switzerland
2. University Medical Center Amsterdam, Amsterdam, The Netherlands

Abstract

INTRODUCTION

Minimally invasive surgery became the standard of care for foot fractures, but complex cases remain challenging. The introduction of intra-operative CT imaging has improved outcomes, and navigation-assisted surgery may offer additional benefits. This study aims to assess the feasibility of navigation-assisted surgery for foot trauma.

METHODS

Following the PRISMA-guidelines, the PubMed database was searched for clinical studies on computer-assisted/navigated foot and ankle fracture surgery by the utilization of MeSH-terms. Patient and fracture characteristics as well as surgical techniques and outcome were analyzed. No language restrictions were applied.

RESULTS

37 studies on navigated fracture care for foot injuries were identified, with 4 selected for analysis. A total of 53 fractures were described, including calcaneal (n=33), talar (n=10), and 5th metatarsal (n=10). Patient age ranged from 20 to 51 years, and 75% of studies used 3D navigation. Reference guides were attached to the calcaneus. Mean operation time ranged from 13 to 61 minutes, none of the navigated screws was misplaced and no conversion to open surgery was required. Moreover no complications or infections have been reported.

CONCLUSION

Navigation-assisted fracture treatment of foot injuries is a promising technique that allows for more precise screw placement, less soft tissue injury, and improved outcomes with fewer complications. Fractures of the calcaneus, talus and metatarsals can be treated in isolation or in combination. Prospective comparative studies are needed to further explore the feasibility of this technique in trauma cases.

08:53 - 08:58

2697 How To Reduce A Traumatic Talus Enucleation?

Youssef Othman[1,2], Ashref Mestiri[1], Saber Rabhi[1,2], Youssef Sbai[1], Makram Zrig[1,2], **Abderrazek Abid**[1,2]

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Abstract

Introduction

Talus bone enucleation is a rare and severe injury involving the simultaneous dislocation of the tibio-talar, subtalar, and talo-navicular joints. Only a few cases have been reported in the literature. Early surgical management, primarily consisting of reduction, is indicated to prevent the occurrence of late avascular necrosis of the talus.

Objective

To describe the challenges and technical aspects of talus reduction in this injury.

Case Presentation

We report the case of a 38-year-old female presenting with a Gustilo type II open enucleation of the right talus, associated with fractures of both ipsilateral malleoli. Open reduction through a lateral approach was unsuccessful, necessitating an additional medial approach to achieve reduction. The concomittent malleolar fractures facilitated reduction maneuvers. The reduction was unstable in plantar flexion, so the talus was fixed to the calcaneus with K-wires. The cast and K-wires were removed at six weeks, and active range-of-motion exercises were initiated.

Results

Early skin necrosis, which occurred during the first week, was managed with local care and guided healing. Full weight-bearing was possible at 10 weeks. At the 24-month follow-up, a full range of motion was observed, with no clinical or radiological signs of avascular necrosis of the talus or osteoarthritis.

Conclusion

Open reduction of talus enucleation typically requires combined medial and lateral approaches to the bone. A medial transmalleolar approach may be considered in selected cases.

08:35 - 08:40

2851 Predicting Congenital Talipes Equinovarus (CTEV) Risk In Indian Children: A Demographic Algorithm Approach

Jyoti Santosh Jeevannavar[1], Santosh S. Jeevannavar[2], Ritvi Ashok Jain[1], Shruti Nagesh Prabhu[1], Deepa Channabasappa Shivalli[3], Rohini C. Sheshanagoudra[1]

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3. Self Employed, Dharwad, India

Abstract
Introduction: Congenital Talipes Equinovarus (CTEV), the most common musculoskeletal birth abnormality, affects about 27,000 people annually. Its etiology and pathology remain unclear.

Aims and Objectives: This study aimed to identify the risk factors contributing to the development of CTEV in our region in order to develop a predictive preventive algorithm.

Study design and Methods: This cross-sectional study identified 42 children with CTEV and data collected using records and from parents through telephonic communication.

Results: Males[34(81%)] were significantly more than females[8(19%)] at z-score of 4.0119 and p-value of <0.00001. Around 79% of the children had serial casting in the first month of life, 16% during the 2nd and 3rd month while only one child reported late at 1.5 years of age. Children with bilateral CTEV (70%) were significantly higher than the unilateral CTEV (30%) with a z-score of 2.5298 and p-value of 0.01. 15% parents reported a history of first-degree consanguinity. Mothers also reported history of gestational diabetes and anaemia at 21% each. It also reported a history of pre-eclampsia and thyroid issues in 7% and 12% of the mothers respectively. 35% mothers also reported a history of previous abortions, miscarriages or still births and one child had family history of congenital skeletal deformity. Other deformities reported along with CTEV were retrognathia, polydactyly and syndactyly which affected 5% of the children each.

Conclusion: Anemia, thyroidism and pre-eclampsia may be additional risk factors for CTEV, though further research is needed to confirm these findings.

Keywords: CTEV; Congenital abnormality; Risk factors; Maternal characteristics.

08:40 - 08:45

3027 ARTHROSCOPIC FLEXOR HALLUCIS LONGUS TRANSFER AS A TREATMENT FOR ACUTE ACHILLES TENDON RUPTURE: OUR 10 YEARS OF EXPERIENCE

Nerantzoula Goutsiou, Paschalis Papanikolaou, Menelaos Papadakis, Alexandros Sarafis, Savvas Kansizoglou, Alexandros Eleftheropoulos

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Abstract
Introduction:
Endoscopic Flexor Hallucis Longus (FHL) transfer is an arthroscopic novelty yielding excellent results as a treatment option for patients with acute Achilles tendon rupture (AATR).
Aims and Objectives:
To describe the surgical technique of the arthroscopic FHL transfer and report a case series of 38 patients with AATR who were treated in our institution.
Study Design and Methods
Between 2015 and 2025, 38 patients with AATR underwent arthroscopic FHL transfer. With the patient in a prone position, a hindfoot endoscopy was performed through the classical posterior portals. After cautious debridement, FHL was identified, released from its fascia and sheath, and mobilised. The FHL harvesting was achieved with a standard hamstring tendon stripper, the proximal stump was withdrawn through the posteromedial portal and a Vicryl stay suture was applied in a Krakow fashion. A guidewire was inserted as posteromedial as possible into the calcaneus under fluoroscopy through a posterior midline plantar stab incision. A tunnel was established with a cannulated drill. The tendon stump was fixed in the calcaneal tunnel with an interference screw. A direct Achilles tendon endoscopy was performed and the rupture site was debrided with a shaver. A below-knee cast in the equinus was applied for two weeks. A rehabilitation protocol focused on early weight-bearing and active ankle motion was suggested.
Results:
Patient satisfaction was assessed with “The Achilles tendon Total Rupture Score”. No major complications were reported.
Conclusions:
Arthroscopic FHL transfer for AATR is a reliable and safe alternative treatment option with promising results.

08:58 - 09:04

2950 Uncovering The Unrecognised Nerve Entrapments In Foot & Ankle!

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Mumbai Knee Foot Ankle Clinic, Mumbai, India

Abstract
Introduction: Nerve entrapments are frequently missed , especially in the foot & ankle, due to the common overlap in symptoms such as chronic pain, functional limitations, tingling, and reduced sensations.
Presenting common and uncommon cases of nerve entrapment. In this article, our case series illustrates some common & rare cases of entrapment neuropathy along with a review of literature.
Methods : We hereby present our observation of operatively managed 11 cases of entrapment neuropathy around foot and ankle in the last 5 years. 3 uncommon cases of Deep Peroneal nerve entrapment, 3 cases of Tibial nerve entrapment, 1 case of Superficial peroneal nerve entrapment, 1 case of Sural nerve & 3 cases of Baxter's nerve have been included in our study.
Results : Deep Peroneal nerve and its articular branches encased fibrotic compression under deep fascia, at lisfranc joint or as delayed post fibula fracture fixation entrapment. Tibial nerve was compressed by varicosities or calcific tissue compression in tarsal tunnel. Baxter's nerve compression by deep fascia of abductor hallucis muscle in all three cases.
Conclusion: High index of suspicion, thorough knowledge of nerve anatomy and possible entrapment sites, a detailed history, meticulous examination and appropriate radiological investigations are important in diagnosis and management of nerve entrapments around foot & ankle.

09:22 - 09:27

1711 Application Scope And Surgical Technique Of Sural Flap For Repairing Defect After Resection Of Plantar Melanoma

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2. School of Medicine, College of Medicine, Nursing and Health Sciences, University of Galway, Galway, Ireland

Abstract
Introduction: To investigate the application scope and surgical technique of the sural neurovascular flap (sural flap) for repairing the soft-tissue defect after extensive excision of the plantar melanoma. Methods: In 18 patients with the plantar melanoma, the primary tumors were located in the plantar heel area(n=12), lateral weight-bearing area(n=3) and arch area(n=3), with the Breslow thickness ranging from 1.1mm to 5.4 mm. The dimension of the skin islands ranged from 6.0cm×7.0cm to 14.0cm×10cm, and 14 skin islands were larger than 8.0cm×8.0cm. The transferred direction and path of the flap were selected according to the shortest distance from the pivot point to the proximal edge of the defect. Results: Seventeen flaps survived; partial necrosis occurred in 1 flap which reconstructed the defect in the plantar heel area, and the residual wound was successfully resurfaced by skin grafting. All patients were followed up for 2 to 53 months. During the follow-up period, the patients were able to walk without obvious pain in affected limbs. Neither local recurrence of the tumor nor ulceration of the flap was observed. Conclusions: The sural flap is a good option for reconstruction of the soft-tissue defect after extensive resection of the melanoma in the plantar heel area, arch area and/or lateral weight-bearing area.
Keywords: Plantar Melanoma; Surgical Flap; Sural Flap; Surgical Technique; Application scope.

09:17 - 09:22

1025 Lisfranc Injuries- Results And Outcomes Of Non Rigid Surgical Fixation

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Abstract
Background
Lisfranc injuries are rare (0.2%) but commonly missed injuries .Treatments have evolved over the years with the advent of CT and MRI for accurate diagnosis and classification of these injuries .
Mechanism involves direct trauma with axial loading or indirect load with rotation ,supination and pronation
Treatment is aimed towards restoring anatomy ,providing dynamic stability , function & minimise disability
Surgical management involves CRIF/ORIF with Dynamic fixation or Arthrodesis

Objectives
To look at epidemiology , fixation methods and outcomes of surgically treated Lisfranc injuries

Study Design & Methods
Single Surgeon study , looking at surgically treated Lisfranc injuries in single centre from 2018 to 2023 ,Retrospective
Results from clinical notes , operating notes , radiographs and patient reported outcome measures (PROMS) - Manchester Oxford Foot Questionnaire (MOXFQ)and AO,Foot and Ankle Score (AOFAS)

Results
20 patients had surgery for Lisfranc injury with average age being 45.8 years
All patients had CT scan after diagnosis within average of 2.5 days (Range 1-8 days)
Average time from scan to fixation was 11.7 days
Majority had non rigid fixation- Screws + Plate
Average MOXFQ 2.4 , AOFAOS : 2.24
Majority of patients had Excellent or Good results
3 patients who had a bad outcome were delayed surgery & non compliant

Conclusions
Displaced Lisfranc Injuries best treated with non-rigid surgical fixation .
Use of Screws and box plate preferred technique which gave
dynamic stability to medial and middle column and kept the Lisfranc joint out to length

Friday, 5 September

Hip 5
09:22 - 09:27

415 Does Using An Extra Antirotation Screw Provide Any Benefit In Managing Undisplaced Intracapsular Neck Of Femur Fractures With Dynamic Hip Screws? A Retrospective Analysis.

Bakhat Yawar

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Abstract
Background: Neck of femur fractures (NOFs) are common cause of morbidity and mortality in elderly. Approximately 60%are intracapsular (IC). 70-90% IC fractures are displaced. In our unit fixation management options utilised include screw fixation (Cannulated hip screws- CHS) or use of a fixed angle device (2-hole Dynamic hip screw- DHS, used with or without anti-rotation screws- ARS).
Methods: Retrospective cohort study which included all patients from 1st January 2015- 31st March 2022 who underwent fixation of IC neck of femur fractures with a DHS with or without the use of antirotation screws.. Primary outcomes were to compare rates of metalwork failure, reoperation rates and mortality. Secondary outcomes were surgical time, tip-apex distance (TAD) and length of hospital stay.
Results: 113 patients underwent fixation of IC NOFs (DHS alone: 66, with ARS: 47). 1 patient had failure of metalwork in each group requiring further surgery (incidence rate ratio= 0.71, p=0.83). 3 patients in DHS group and 1 patients in DHS group with anti-rotation screw had reoperations within 24 months (incidence rate ratio= 2.14, p= 0.56) due to any reason. No difference in survival in both groups at any interval via survival analysis (test statistic X2=0.39, p=0.53). No difference in LOS (p=0.33). Longer operating time when using anti-rotation screws with DHS ($p<0.01$). Higher TAD when using anti-rotation screws but not statistically significant (p=0.06).
Conclusion: Both techniques are safe and effective. However, use of an antirotation screw in addition to DHS in these injuries does not confer any significant benefits.

09:17 - 09:22

494 Risk Of Surgical Site Infection After Hip Hemiarthroplasty Of Femoral Neck Fractures: A Systematic Review And Meta-Analysis

Christof Ernst Berberich

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Abstract

Background

Surgical site infection (SSI) is a major complication following urgent hemiarthroplasty (HA) surgery for neck of femur fractures. Understanding the overall burden and the drivers for variations of SSI in infections after HA is important for quality improvements.

Objectives

To systematically analyze relevant peer-reviewed studies for recent clinical information on the quantitative risk of SSI after HA

Study Design

A comprehensive search of electronic databases was performed for clinical articles published between 2005 and July 2023 and systematically reviewed with a defined list of inclusion & exclusion criteria. The methodology was reported according to the PRISMA statement checklist. Detailed search strings were published in the PROSPERO protocol. The abstracts & full texts of the identified records were screened by two individuals using PICO Portal. Data were extracted and the pooled risk of infections calculated in a primary and subgroup analyses.

Results

The primary analysis revealed a pooled rate of superficial SSI post HA of 1.3% (17 studies, 29,288 patients) and a rate of deep SSI of 2.14% (29 studies, 192,392 patients). We found a clear tendency to higher infection rates depending on the infection follow-up period (for deep SSI from 1.24% at 1 m to 2,64% at 12 m) and depending on the infection criteria used for diagnosis (2,91% for defined vs 0.62% for undefined criteria).

Conclusions

The meta-analysis demonstrates a higher risk of infections following HA than for elective THA. The infection rates were found to be higher if follow-up periods were longer and if defined infection criteria were used for diagnosis.

08:54 - 08:59

957 Comminuted Intertrochanteric Fracture In High-Demand Elderly Patients: Single-Stage Cemented Bipolar Arthroplasty As A Viable Option For Improved Quality Of Life

Ajeet Singh

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Abstract
Introduction With the rising global population, the number of high-demand elderly individuals is also increasing. Proximal Femoral Nail (PFN) and Dynamic Hip Screw (DHS) fixation are widely used surgical options for intertrochanteric fractures. However, in elderly patients with osteoporotic bone, these fixation methods have a high failure rate. Methods This study included 26 patients treated between January 2023 and December 2023. All patients were above 70 years of age, with 16 being female. Inclusion criteria classified them as high-demand patients based on their ability to perform limited household activities under continuous supervision. All patients sustained falls at home, resulting in comminuted intertrochanteric fractures. Treatment consisted of cemented bipolar hemiarthroplasty with calcar reconstruction using the remaining femoral neck and tension band wiring (TBW) fixation of the greater trochanteric fragment. Results Assisted ambulation with a walker was initiated 48 hours postoperatively following drain removal. No cases of deep infection were reported. Four patients developed superficial bedsores, which were managed with appropriate wound care and dusting powder. One patient experienced superficial wound infection, successfully treated with local antibiotics. Functional outcomes were favourable in all patients. Four patients were lost to follow-up due to unrelated medical conditions leading to demise. Conclusion The failure rates of osteosynthesis techniques, combined with prolonged bed rest, pose significant challenges in this demographic. Cemented bipolar hemiarthroplasty offers a reliable alternative by reducing the risk of fixation failure and enabling early mobilization, ultimately contributing to improved patient care and quality of life.

08:30 - 08:35

1867 Mortality Following Total Hip Arthroplasty Or Hemiarthroplasty For Femoral Neck Fracture.

Yaron Shraga Brin[1], Meir Nyska[2], Talish Razi[3], Doron Netzer[4], Ronen Arbel[5]

1. Meir Medical Center, Kfar Saba, Israel
2. Tel-AVIV University, Kfar Saba, Israel
3. Meir Medical Center, Tel-Aviv, Israel
4. Tel-AVIV University, Tel-Aviv, Israel
5. Clalit Health Services, Tel-Aviv, Israel

Abstract

Introduction
Patients with hip fractures face a significant risk of mortality. Traditionally, patients were intervened with hemiarthroplasty (HA). In the past decade, there has been a growing preference for total hip arthroplasty (THA). The contemporary evidence about the comparable effectiveness of these interventions is limited. Therefore, our objective was to evaluate the relative effectiveness of THA compared to HA in reducing mortality in this patient population.
Methods
This observational, retrospective cohort study was based on data obtained from the electronic medical records of Clalit Health Services (CHS). The primary outcome of this study was all-cause mortality at one year. First, Patients who underwent THA were matched 1:1 with patients who underwent HA. based on sex, age group, BMI, and Charlson Score. In the second stage, logistic regression analysis was used to assess the association between the type of procedure and outcomes accounting for additional potential confounders.
Results
A total of 2,452 THA patients were matched to 2,452 HA patients. Mortality occurred in 181 THA patients (7.4%) and 371 HA patients (15.0%), with an adjusted odds ratio of 0.50 (95% CI: 41%-60%, P<0.001).
Conclusions
THA was associated with a 50% reduction of mortality at one year following the procedure. Our findings suggest that THA should be prioritized over HA in eligible patients of all age groups, as the US and UK guidelines recommend.

09:04 - 09:09

2065 The Utility Of The AP Pelvis Radiograph In Diagnosing Traumatic Hip Dislocations

Mohamed Kareem Shaath, Suleiman Tarek Shurafa, Jon P. Yawman, **Brendan Page**, Griffin Rechter, Bader A. Nasir, Joshua R. Langford, George J. Haidukewych

Orlando Health Jewett Orthopedic Institute, Orlando, United States

Abstract

Purpose

Advanced Trauma Life Support (ATLS) protocol mandates pelvic radiography as part of the initial assessment in trauma patients. With the availability of rapid and easily accessible computed tomography (CT), some institutions are either delaying or omitting the anteroposterior (AP) pelvis radiograph. This study aimed to determine how many patients had a CT scan prior to undergoing a hip dislocation reduction.

Methods

This study reviewed all operatively treated acetabular fractures at a Level-1 trauma center over a span of 12 years. Imaging data were examined, and patients with hip dislocations were selected for inclusion. The study determined if a CT scan was performed before the closed reduction of the hip. Additionally, the time until the hip was reduced was recorded.

Results

A total of 470 patients with acetabular fractures requiring repair were identified. Nineteen patients were excluded due to insufficient medical record data. Of the remaining 451 patients, 95 (21%) had a hip dislocation. Among these 95 patients, 63 (69%) underwent a CT scan prior to closed reduction. Of these 63, 17 (27%) did not have a pelvic radiograph ordered until after the hip was reduced, one of whom required emergent trauma surgery. The average time to reduction was 308 minutes. The study found that those who had a CT before reduction experienced significantly longer time to reduction ($p = 0.03$).

Conclusion

This study highlights the importance of including an AP pelvis radiograph as part of the initial trauma assessment.

08:40 - 08:45

2578 Primary Hip Replacement Using Dual Mobility Cup For Treatment Of Unstable Trochanteric Fractures In Elderly

Mahmoud Adel Anwar Abdelaziz

Beni-Suef University, Cairo, Egypt

Abstract
Unstable trochanteric fractures are a significant challenge in elderly patients due to their association with high morbidity and functional impairment. This study evaluates the radiological and functional outcomes of primary hip replacement using the dual mobility cup (DMC) as a treatment for unstable trochanteric fractures in patients over 60 years old. A prospective clinical trial was conducted at Beni-Suef University Hospital, including 40 patients with Evans type III and IV, AO/OTA type 31-A2.2 and 2.3 fractures. Different stem types (Wagner stem, cemented, cementless standard stem, and calcar stem) were selected based on bone quality and patient condition, along with circular wiring and circular band techniques for trochanteric fixation.
The results demonstrated no intraoperative complications, with cemented procedures taking a longer operative time (120 minutes) than cementless (90 minutes). Functional outcomes, assessed using the Harris Hip Score (HHS) and Visual Analog Scale (VAS), showed significant improvement, with a mean HHS of 79 and 31 patients reporting no pain at one-year follow-up. The study supports the use of dual-mobility cups in hip arthroplasty for unstable trochanteric fractures, showing reduced dislocation rates and improved functional recovery.
Further research with larger sample sizes and long-term follow-up is recommended to validate these findings.
Conclusion: Primary hip replacement with DMC provides stable fixation, early weight-bearing, and excellent functional recovery for unstable trochanteric fractures in elderly patients. Cemented stems are preferable for poor bone quality, while cementless stems suit better bone conditions. Despite minor complications, DMC demonstrates low dislocation rates and high patient satisfaction.

08:45 - 08:50

2797 Is Minimally Invasive Anterior Hip Arthroplasty A Good Option For Treating Femoral Neck Fractures In The Elderly?

Zakaria Assammar[1], Foad Lamnaouar[1], Mustapha Fadili[2], Abdelmassih Abouchaaya[3]

1. Centre Hospitalier d'Argenteuil, Paris, France
2. CHU ibn Rochd, Casablanca, Morocco
3. Centre hospitalier d'Argenteuil, Paris, France

Abstract

Introduction

The minimally invasive anterior approach to hip arthroplasty is associated with better soft tissue preservation and lower postoperative morbidity, although studies suggest that exposure of the femur is more difficult and that there is a greater risk of fracture intraoperatively.

Material and methods

We carried out a retrospective study of patients operated on between January 2018 and February 2024 who had undergone anterior hip arthroplasty by two surgeons familiar with this approach. Data were collected using an evaluation form based on data from the operative report, the hospitalisation report and the pre- and postoperative radiographs.

Results

121 cases were analysed: the sex ratio was 3 women to 1 man. The average age was 84 years. Intraoperative complications were 3%: one fracture of the greater trochanter, one fracture of the shaft of the diaphysis observed intraoperatively, and two fractures observed on postoperative X-rays. Post-operative haemoglobin levels were 0.6 units lower on average than pre-operative levels. Support was achieved on Day 1 in 97% of patients. The average post-operative length of stay was 3 days.

Conclusion

Our department's experience shows good results for the anterior hip approach in elderly patients, with a rate comparable to the posterior approach in terms of intraoperative complications, but with less morbidity and a faster recovery.

08:35 - 08:40

2413 Conversion Total Hip Arthroplasty After Failed Sliding Hip Screw Compared To Cephalomedullary Nail Failure: A Systematic Review And Meta-Analysis

Somok Banerjee, Alok Chandra Agrawal, Sandeep Nema

All India Institute of Medical Sciences, Raipur, Raipur, India

Abstract
Introduction- Conversion total hip arthroplasty (CTHA) following sliding hip screw (SHS) and Cephalomedullary nail (CMN) failure in intertrochanteric fractures is the treatment option besides revision osteosynthesis. This review determined the relative risk of medical and orthopaedic complications including peri-prosthetic fractures(PFF) and Harris hip score (HHS) following CTHA in failed SHS and CMN fixation of intertrochanteric fractures.
Method- We searched the major electronic databases for studies and
reports on CTHA after SHS and CMN fixation failures in Intertrochanteric fractures. The studies were analyzed using the Joanna Briggs Institute critical appraisal tool for cohort studies to assess the risk of bias.
Results- Three studies pooled 327 and 353 cases of CTHA from failed CMN and SHS in Intertrochanteric fractures. The relative risk of medical and orthopaedic complications and peri-prosthetic fractures was 0.87 [0.39, 1.90], 1.64 [1.18, 2.29] and 1.92[0.81, 4.56] respectively, in SHS group compared to the CMN group. The mean difference in Harris hip score was -0.72[-1.47, 0.02] between failed SHS and CMN groups. The included studies were of
retrospective study design with a more than 20% loss of follow-up and a high risk of bias.
Conclusion: There is 64% more risk of orthopaedic complications with CTHA in SHS failures than CMN failures. There is no difference in relative risk of medical complications and periprosthetic fractures between CTHA in SHS and CMN failure. The benefits in function after CTHA in both the groups is similar.

08:59 - 09:04

1070 Peri-Operative Oral Protein Supplementation Improves Muscle Power And Serum Biomarkers After Fragility Hip Fracture: A Systematic Review And Meta-Analysis.

Jia Hui Ling, Amelia Hutton, Alan Norrish

University of Nottingham, Nottingham, United Kingdom

Abstract
Background: It remains unclear whether dietary protein supplements can improve post-surgical outcomes following fragility hip fractures. This injury commonly occurs in populations at high risk of protein-caloric malnutrition and muscle-wasting. The objective of this review is to determine whether this low-risk, low-cost intervention has the ability to improve outcomes following hip fracture surgery.

Methods: This systematic review (PROSPERO ID: CRD42025642476) was conducted following PRISMA guidelines. Searches were carried out in February 2025 on MEDLINE, Embase, AMED, Scopus and Web of Science databases, yielding 619 studies. These were screened by two independent (blinded) reviewers. Comparable outcomes were pooled into IBM SPSS v29 for meta-analysis. Risk of bias was assessed using the Cochrane (RoB) tool for randomised studies.

Results: A total of 10 randomised controlled trials (RCTs) with 648 patients were included, with 4 low-risk and 6 moderate-risk studies. Protein interventions were found to significantly improve handgrip strength by 3.5kg (d=0.59, 95% CI [0.25-0.93], p<0.001) and elevate serum-IGF-1 concentrations (d=1.04, 95% CI [0.74-1.35], p<0.001) in fixed-effect models. There was a non-significant trend of decreased hospital stay (d=−0.15, 95% CI [−0.34 - 0.09], p=0.222), lowered serum-CRP (d=−0.25, 95% CI [−5.11-0.18], p=0.067), improved serum-albumin (d=0.203, 95% CI [−0.04-0.44], p=0.10) and weight gain (d=0.18, 95% CI [−0.16-0.51], p=0.30). Additional outcomes saw a trend of improved mobility (FIM) and quality-of-life (EQ-5D) scores.

Conclusion: Routine protein supplementation may be a safe and cost-effective method of improving post-operative outcomes, and we encourage the implementation of peri-operative supplementation programmes for hip fracture surgery.

Friday, 5 September

Sports Medicine 4
09:08 - 09:13

410 Exploring The Potential Of Allogenic Platelet-Rich Plasma In Joint Pathologies: A Scoping Review Of Existing Literature

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Abstract
Background: Allogenic platelet-rich plasma (PRP) has emerged as a promising alternative to autologous PRP for treating joint pathologies, offering potential advantages in consistency, cost, and applicability across patient demographics. This scoping review aims to firstly, examine the basic science of allogenic PRP and secondly, assess its efficacy and safety in joint diseases.
Methods: A systematic literature search was conducted following PRISMA guidelines, encompassing studies from 2010 to 2024. The selection criteria included controlled laboratory studies, cohort studies, and randomized controlled trials focusing on the basic science, safety profile, and clinical outcomes of allogenic PRP in joint diseases.
Results: A total of 22 studies were included. In vivo and in vitro, allogenic PRP demonstrates anti-inflammatory and pro-regenerative properties. Clinically, it showed consistent patient-reported outcome improvements, significantly reducing pain by up to 25% and improving joint function scores such as WOMAC, IKDC in knees and DASH and SPADI in shoulders. Clinician-reported outcomes such as range of motion and imaging were similarly improved; ultrasonography-detected effusion in knee OA improved by 30% and femoral cartilage thickness by 22%. The safety profile was generally favourable, with mild, transient adverse events and no severe complications reported. Transient intra-articular pain was noted in 10-15% of patients, while 8-10% of patients experienced mild swelling.
Conclusions: Allogenic PRP demonstrates promise as a treatment for joint pathologies, with favourable efficacy and safety profiles, logistical advantages, and a cost-effective alternative to autologous PRP. Despite positive early results, further large-scale studies are needed to confirm its long-term efficacy and standardize preparation methods.

09:03 - 09:08

1180 In Vivo Magic Angle MRI Imaging Reliably Identifies Collagen Fibre Orientation In ACL And Meniscal Tears And May Improve Diagnosis Of Partial ACL Tears And Meniscus RAMP Lesions.

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2. Imperial College, London, United Kingdom
3. Imperial College NHS Trust and Imperial College, London, United Kingdom

Abstract
Introduction: Magic Angle Magnetic Resonance Imaging (MA-MRI) harnesses an MRI artefact called the magic angle effect creating new tissue contrast allowing imaging of individual collagen fibre bundles.
Aims: To assess ACL and meniscal collagen fibre orientation between conventional MRI and MA-MRI and compare this with the gold standard of arthroscopic findings.
Study Design & Methods: Ethical approval for a volunteer and patient study: ICREC22IC7857 and IRAS301889. Volunteers were scanned on both conventional and MA-MRI with a 3DT1FLASH volume taken in seven different scan positions to the main magnetic field (B0). The scanner was rotated into different orientations to obtain a Magic Angle Directional Imaging (MADI) data set. These images were compared with arthroscopic findings.
Results: A total of 25 volunteers (18 volunteers and 7 patients) were scanned (20 males, 5 females, aged 20-75 years). Seven volunteers had pathology with the remaining being healthy. All patients had ACL injuries, partial or complete, and meniscal tears (10). Two had surgical correlation which was in good agreement.
Conclusion: MA-MRI provides additional information occult on conventional MRI even at 3T. Partial tears on MA-MRI correlate with arthroscopic findings. Meniscal tears are identified as discontinuation of the circumferential meniscal fibres. MA-MRI could aid clinical decision making around ACL surgical reconstruction identifying unstable injuries.Imaging of ACL grafts with MA-MRI provides additional information about the graft that is impossible to obtain through any other previously non-invasive methods.Future work on imaging ligamentisation and graft embedding could predict return to play.
Keywords: Magic Angle, MRI, Ligament, Meniscus, ACL

08:50 - 08:55

1343 RETROSPECTIVE COMPARISON OF PARTIAL MENISCAL RESECTION AND REPAIR FOR ATRAUMATIC MENISCAL LESIONS

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2. RKU, Ulm, Germany
3. University of Ulm, Ulm, Germany

Abstract

Purpose

The purpose of the present study therefore was to perform a matched-pair analysis of a cohort of patients receiving arthroscopic partial medial meniscectomy to a cohort receiving arthroscopic medial meniscal repair.

Methods

From two previous studies performed at the authors' institution, one on the results of arthroscopic partial meniscectomy and one on the results of arthroscopic meniscal repair, age- and gender-matched pairs were retrieved allowing for a +/- 5 year difference. Knee osteoarthritis outcome scale (KOOS) subscales as well as western Ontario meniscal evaluation tool WOMET subscales and overall results were compared between the two groups.

Results

Twenty-two patients were matched, 18 women and 26 men overall, with a mean age of 48 ± 8.7 years, with a mean follow-up of 4.7 ± 1.6 years (repair group) and 2.4 ± 0.6 (APM group).

All KOOS subscales as well as WOMET subscales and overall results were better in the repair group except for the WOMET sports subscale. Significant better results were found for KOOS subscales B (stiffness, repair 80 ± 25.6, APM 65.0 ± 35.4, p=0.02) and D (activities of daily living, repair 86.1 ± 11.9, APM 74.3 ± 26.6, p=0.03).

Conclusion

Significantly better results were found for meniscal repair than partial resection. Even though this is a retrospective comparison of patients included into previous studies, arthroscopic repair of atraumatic medial meniscus tears is a valuable and potentially superior alternative to partial meniscectomy with the potential benefit of long-term meniscus and thereby joint function preservation.

08:45 - 08:50

1555 Comparison Of Acl Reconstruction With Three Different Graft Accessing The Result As Functional Outcome And Donor Site Morbidity – A Cross Sectional Study

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Abstract
Introduction The anterior cruciate ligament (ACL) is highly susceptible to injury. Achieving a good functional outcome with minimal donor site morbidity requires meticulous reconstruction
Aim The functional outcome and morbidity of the donor site, taking consideration. ACL reconstruction with arthroscopy of three different graft BTB, HT & PLT
Method This comparative cross-sectional study of ACL reconstruction was conducted between 2020 and 2022, using Bone Tendon Bone (BTB), Hamstring Tendon (HT), and Peroneus Longus Tendon (PLT) grafts. The study included 60 cases with BTB, 57 with HT, and 47 with PLT, all performed with the same surgical technique. BTB grafts were fixed using two screws, while HT and PLT grafts were secured with tightrope fixation for the femur and a bioabsorbable screw for the tibia. Knee function outcomes were measured using the Lysholm scale and the International Knee Documentation Committee (IKDC) scale, along with assessments of ankle range of motion (ROM), knee strength, and overall ROM
Discussion Each graft option presents its own advantages and disadvantages. The surgeon's skill and the appropriate selection of grafts are crucial for achieving good functional outcomes, reducing donor site morbidity, and ensuring early rehabilitation. In this study, donor site morbidity was less common with HT and PLT grafts compared to BTB. While BTB grafts were associated with anterior knee pain and difficulty in kneeling, HT and PLT grafts showed fewer complications. PLT grafts, however, were occasionally linked to ankle pain, reduced ankle ROM, and reflex sympathetic dystrophy (RSD) of foot bones. Importantly, no significant pain or complications

09:13 - 09:18

1430 Bone Specific 3T Magnetic Resonance Sequence Based 3 Dimensional Models Exhibit Significant Topographical Congruence With CT-Based Models For CAM Lesions

Yigit Umur Cirdi[1], Alp Er Tunga Bölükbasi[2], Oguz Çolak[3], Çagla Tarhan[2], Safa Gursoy[3]

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Abstract
Introduction:
Computed Tomography (CT) scans, effectively illustrate CAM shape; however, assessment of the adjacent soft tissue is unattainable without MRI imaging. However, subjecting patients to two distinct imaging modalities individually leads to unnecessary expenditures of time, resources, and effort. This study aimed to evaluate the efficacy of customized 3.0T Magnetic Resonance imaging sequences (MR-osteo) compared to CT.
Methods: Patients diagnosed with FAI syndrome exhibiting an alpha angle greater than 52 °on pelvic radiography were assessed. In total, 12 hips underwent CT and MRI with predetermined MR-Osteo settings consecutively on the same day. Data were stored in the institutional picture archiving and communication system (PACS), and a surface-filled model was rendered based on CT and MR-Osteo scans. Then, the two models were virtually overlapped, and pixel-based spatial differences were measured.
Results: CT on MR as constant Distance Analysis: The mean distance was -0.02 mm, with a standard deviation of ±0.99 mm, a minimum distance of -2.94 mm, and a maximum distance of 3.47 mm. MR on to CT as constant distance analysis: The mean distance was recorded at -0.07 mm, with a standard variation of ±1.03 mm, a minimum distance of -3.79 mm, and a maximum distance of 2.96 mm.

Conclusion: The MR osteo sequence exhibited an overlap of < 1 mm in all measures relative to CT. This sequence may serve as a valuable alternative to CT,thus eliminating the time, money, and labor required to perform a CT scan.

08:55 - 09:00

473 Peroneus Longus Graft As An Alternative To Hamstrings Graft: A Comparative Study On Functional Outcome In ACL Reconstruction

Arpit Singh

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Abstract
Introduction: Acl reconstruction is one of the most commonly performed surgeries in sports injuries today. The latest entry uses the Peroneus longus tendon as a graft option. Hence, our study aims to compare the functional outcomes, donor site morbidity, and thigh muscle wasting in both groups.
Methods: patients were allocated into two groups (PL and hamstring tendon). Functional scores IKDC, Lysholm score, clinical knee evaluation (anterior drawer, Lachman, and pivot shift test), donor site morbidity (American Orthopedic Foot and Ankle Society ankle hindfoot score (AOFAS)), and thigh circumference were recorded preoperatively and at six months and one year postoperatively. The same post-op rehabilitation protocol was followed in both groups. Results: 194 patients (hamstring n = 96, peroneus n = 98) met the inclusion criteria. There were no significant differences between the preoperative, six-month postoperative, and one-year postoperative scores between the hamstring and peroneus longus groups in the IKDC ($p=0.356$) and Lysholm knee score ($p=0.289$). The mean for the AOFAS was 99.05 ± 3.56 and 99.80 ± 0.70 in the PLT and HT groups, respectively, showing no statistical difference, with a significant improvement in thigh muscle wasting among the PLT group at final follow-up ($p < 0.001$). Conclusion: We observed similar knee stability and functional outcomes and no obvious donor site morbidity among both groups. These patients also responded better to physiotherapy in recovering from their thigh muscle wasting. So, we can recommend that a PL graft can be a safe, viable, and effective option for usual arthroscopic single-bundle ACL reconstruction.

09:18 - 09:23

579 Analysis Of Lumbar Spine Stress Injuries In Adolescent Cricket Fast Bowlers- A Prospective Bio-Mechanical Study

Jujhar Singh

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Abstract
INTRODUCTION-
Fast bowling in cricket is associated with a high prevalence of lumbar spine stress injuries, especially in adolescents. This cannot be correlated with risk factors identified in adult players. This study aimed to examine the incidence and prevalence of lumbar spine stress injuries in adolescent fast bowlers as a prospective bio-mechanical study so as to predict risk factors.
METHODOLOGY-
32 asymptomatic male fast bowlers (aged 14–17 years) received baseline & annual lumbar dual-energy X-ray absorptiometry (DEXA), magnetic resonance imaging (MRI) scans, musculoskeletal and bowling workload assessment. These were followed up after one year to calculate the prevalence at baseline and annual incidence. Biomechanical assessment of bowling action was also carried out. Potential risk factors were compared between the injured and uninjured groups using T-tests with Hedges' g effect sizes.
RESULT-
At baseline, 7 cricketers (21.8%) had evidence of lumbar spine stress injury. Subsequent incidence was 27.3 ± 18.6 injuries per 100 players per year (mean ± 95% CI). Injured bowlers were older on average at the beginning of the season preceding injury (16.8 versus 15.6 years, g = 1.396, P = 0.047). High rear hip flexion (Low Rear Hip Flexion Angle) at Back Foot Contact (BFC) significantly increased the risk of injury
CONCLUSION-
Risk of lumbar spine stress injury coincides with increases in cricketing workload, bio-mechanical parameters as well as intensity as bowlers step up playing levels to more senior teams during late adolescence whilst the lumbar spine is immature and less robust.

Friday, 5 September

Shoulder and Elbow 3
10:06 - 10:11

770 Outcomes Of Arthroscopic Rotator Cuff Repair In Elderly Patients Aged Over 80 With Young Patients Less Than 45 Years

Kyu Ho Lee, Young Ki Min, Hyung Ki Cho, Sheng Chen Han, Xinran Yu, Kwon Young Kwak, Seung Min jeong, Seung Hyun Lee, Hyeon Jang Jung, **Joo Han Oh**

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Abstract
Purpose:This study aimed to analyze the functional outcomes and tendon integrity following arthroscopic rotator cuff repair (ARCR) in elderly patients aged ≥80 years with rotator cuff tears (eRCT), compared to younger patients aged ≤45 years (yRCT).

Method: We retrospectively reviewed patients who underwent ARCR between 2014 and 2023. We compared 26 elderly and 53 young atraumatic RCT patients. Subjective and functional outcomes, including visual analog scales for pain, range of motion, ASES scores, SST, Constant scores, and satisfaction VAS, were assessed preoperatively and at 6 and 12 months postoperatively. Tendon integrity was evaluated using ultrasonography at 6 months or MRI at 12 months postoperatively.

Results: The mean age was 81.5 years in eRCT and 41.3 years in yRCT. Subacromial spur was more common in eRCT (96.2%) than yRCT (69.8%) ($p = 0.008$). In eRCT, heel spurs (50%) and medial spurs (38.5%) were common, while heel spurs were most common (62.3%) in yRCT ($p < 0.001$). Whereas, the acromion thickness was greater in yRCT (8.8 mm±1.5 mm) compared to eRCT (8.0 mm±1.4 mm) ($p = 0.023$). In eRCT, 6 small, 7 medium, 2 large, and 11 massive tears were observed, while in yRCT, 36 small, 16 medium, 1 large tear and no massive tear were found. The distribution of tear sizes differed significantly between two groups.No significant differences were found in the improvements of outcomes.

Conclusion: Arthroscopic rotator cuff repair in elderly patients achieved favorable clinical success rates with significant improvements in functional outcomes, comparable to young patients.

10:21 - 10:26

1362 Retrospective Analysis Of Return-To-Sport Outcomes In Rugby Players Following Distal Biceps Tendon Repair

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Abstract
Background:
Distal biceps tendon rupture is a significant injury in rugby players, affecting upper limb function and delaying return to sport (RTS). While surgical repair is effective, limited data exist on RTS timelines and influencing factors. This study evaluates RTS outcomes post-repair using standardized questionnaires and formal assessments.

Methods:
A retrospective analysis was conducted on 50 rugby players who underwent distal biceps tendon repair (2018–2024). Data collection included questionnaires (pain, confidence, functional recovery) and objective assessments (grip strength, biceps flexion, ROM, isokinetic testing) done post 12 months of surgery. Statistical analysis included paired t-tests for functional outcomes and multivariate regression for RTS predictors.

Results:
The mean RTS time was 10.2 ± 3.1 months, with 80% returning within 12 months. 72% regained pre-injury performance levels. Significant improvements were seen in biceps flexion strength (90% at 12 months, $p<0.01$) and grip strength (94% at 12 months, $p<0.01$). ROM returned to 95% of pre-injury levels . 88% reported moderate to high confidence in RTS. Younger age (<30 years) and early surgery (<2 weeks) significantly improved RTS success (OR 2.5, 95% CI 1.4–4.7).

Conclusion:
Most rugby players successfully return to sport post-distal biceps repair within 12 months, with younger age, early surgery, and structured rehabilitation being key predictors. Further prospective studies are needed to refine RTS protocols.

09:30 - 09:35

1626 L-Shaped Morphology Is A Key Risk Factor For Delamination In Degenerative Full-Thickness Rotator Cuff Tears

Ethem Burak Oklaz, **Furkan Aral**, Ulunay Kanatli

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Abstract
Purpose: To evaluate the relationship between delamination and tear patterns in degenerative full-thickness rotator cuff tears.

Methods: This retrospective cohort study was conducted on patients who underwent shoulder arthroscopy for rotator cuff tears between December 2020 and September 2024. The study included chronic, degenerative, full-thickness rotator cuff tears without concomitant shoulder pathology. Patients were grouped based on the presence of delamination, defined as the horizontal cleavage of the torn tendons. Age, sex, dominant extremity, symptom duration, amount of retraction, tear width and tear pattern (crescent-shaped, anterior L-shaped, posterior L-shaped and U-shaped) were compared between groups. Regression analysis was conducted to identify risk factors that may be associated with the presence of delamination.

Results: The study included 130 patients, 75 with delamination (mean age 61.1 ± 8.8 years) and 55 without (mean age 61.1 ± 8.3 years). Demographic characteristics were similar among patients with and without delamination. The rate of anterior and posterior L-shaped tears was significantly higher in delaminated tears (24% and 33%, respectively) compared to non-delaminated tears (6% and 9%, respectively) ($p = 0.003$ and $p = 0.001$, respectively). Regression analysis demonstrated that anterior L-shaped tears and posterior L-shaped tears were significantly related to delamination ($p = 0.002$ and $p = 0.001$, respectively).

Conclusion: This study demonstrates that anterior and posterior L-shaped tear patterns are significantly associated with delamination in degenerative full-thickness rotator cuff tears.

09:58 - 10:03

1799 A New Comprehensive Classification Of Fracture-Dislocations Of The Elbow Based On 283 Cases.

Guillaume Herzberg[1], Marion Burnier[2], Lyliane Ly[3]

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2. Medipole Villeurbanne, Villeurbanne, France
3. Hopital Herriot, Lyon, France

Abstract
Introduction/ Aims:

There is a myriad of fracture-dislocations (Fx-dislocations) of the elbow, some being named by eponyms. Few comprehensive classifications are available. The most recently published classifications give up the eponyms and are relatively difficult to use (Adams 2019).

We propose a new comprehensive user friendly visual classification of elbow Fx-dislocations based on a series of 283 cases.

Methods

From 2010 to 2024, we operated on 283 elbow Fx-dislocations (Mean age 44years, ratio 63% males) in a surgical center specialized in Shoulder and elbow surgery. Each patient had a workup including CTS with 3D reconstructions.

We excluded 50 elbow Fx-dislocations associated with partial distal humeral fractures (Medial or Lateral Epicondylar, Dubberley types).

This left 233 Fx-dislocations of the ulna and/or radius.

We individualized six groups:

1-Valgus Bony postero-lateral Fx-dislocations (ie terrible triads & variants),
2-Varus Bony postero-medial Fx-dislocations (ie anteromedial coronoid fractures),
3- Olecranon Fx-dislocations
4-Monteggia Metaphyseal Fx-dislocations
5-Monteggia Diaphyseal Fx-dislocations
6-Essex-Lopresti Fx-dislocations

An inter and intra-observer study was included.

Results:

The distribution was as follow:
Group1 Valgus Bony PLRI 131 cases (56%)
Group2 Varus Bony PMRI 9 cases (4%)
Group3: Olecranon Fx-dislocations 65 cases (28%)
Group4: Monteggia Metaphyseal Fx-dislocations 17 cases (7%)
Group5: EssexLopresti Fx-dislocations 11 cases (5%)

The inter/intra observer study showed good reliability.

Discussion

There are few classifications of elbow Fx-dislocations. The most recent give up the classics eponyms (Monteggia etc...) and are difficult to use. We propose a new user friendly system based on 283 cases that keeps the most famous eponyms and includes therapeutic relevance.

10:11 - 10:16

2157 External Rotation Deficit Does Not Impact The Effectiveness Of Lower Trapezius Transfer For Irreparable Rotator Cuff Tears. Outcomes And Graft Healing Analysis.

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2. Hospital Universitari Vall d'Hebrón, Barcelona, Spain

Abstract
INTRODUCTION: Arthroscopy-assisted lower trapezius transfer (SALTT) is a standard treatment for irreparable posterosuperior rotator cuff tears (PST) with active external rotation (ER) lag.
AIM: To evaluate SALTT outcomes in PST patients, regardless of preoperative ER lag, and assess graft healing.
METHODS: A prospective cohort study of 52 patients undergoing SALTT with Achilles allograft fixation. Inclusion criteria: symptomatic PST, Hamada ≤ 2, Infraspinatus fatty infiltration ≥ 3, follow-up ≥ 18 months. Patients were categorized into ER lag (ERLag, n=20) and non-ER lag (non-ERLag, n=32) groups. Active range of motion (AROM), Subjective shoulder value (SSV), Simple Shoulder Test (SST), American Shoulder and Elbow Surgeons (ASES), Constant-Murley (CS), and Activities of Daily Living-Active external rotation (ADLER) scores were assessed. MRI and sonography evaluated graft healing.
RESULTS: Mean follow-up was 24 months. PST types were Collin D (71%) and E (17%). 25% had prior surgery. AROM improved from (122, 104, 27-49, L1) to (165, 152, 45-73, T7) ($p < 0.05$). SSV, SST, ASES, CS, and ADLER scores also improved from (39,34,6-11,46,14) to (79,80,2-24,71,27) respectively ($p < 0.05$). Both ERLag and non-ERLag groups showed significant improvement in AROM and scores ($p<0.05$).
Non-ERLag group showed significant improvement in ER in (56º) compared to ERLag (27º) ($p>0.05$). However, no statistical difference was found when comparing the two groups ($p>0.05$). Graft healing was confirmed in 91% of patients. Complications included one infection, one humeral fixation failure.
CONCLUSION: SALTT effectively improves pain, mobility, and function in PST patients, irrespective of preoperative ER lag.

10:16 - 10:21

2172 Acute Versus Delayed Reverse Total Shoulder Arthroplasty For Proximal Humeral Fractures In Elderly Frail Patients – A Retrospective Comparative Study

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univeristy hospital of north tees, Stockton On Tees, United Kingdom

Abstract

Introduction

Conservative management is often preferred in elderly frail patients with proximal humeral fractures (PHFs) to avoid surgical and anaesthetic risks. However, intervention in the form of reverse total shoulder replacement (RTSA) may become necessary later if functional outcomes are not optimal. RTSA can be considered in patients as a primary management option.

Methods

87 patients with a mean age 74.2 years who underwent primary RTSA for acute PHFs were compared with 40 patients with a mean age 71.6 years who underwent RTSA in for fracture sequelae. Demographic data, radiographs, and surgery data were prospectively collected and analyzed. At final follow-up, range of motion(ROM) and radiographic analysis findings, as well as the Oxford shoulder scores(OSS) were recorded.

Results

Modified frailty index score was similar between two groups. Median duration between injury and surgery in fracture sequalae group was 326 days. Surgeries in the primary RTSA group for acute fractures, were done in less than 4 weeks from injury. The median duration of surgery in fracture sequalae group was 125 mins which was significantly higher than the acute fracture group. The median follow-up in fracture sequalae group was 49.8 months while it was 42.4 in the other group. The ROM and OSS were significantly better in primary RTSA group.

Conclusion

Although salvage RTSA following trial of conservative treatment or failed ORIF, has the potential to provide a good outcome, RTSA done as a primary management in frail patients leads to better quicker recovery and an early return to good predictable outcomes.

09:40 - 09:45

2666 A Case Of Failed Posterior Labral Repair Treated With Arthroscopic Posterior Bone Block Augmentation Technique

Dr Vishnu S

Sports injury centre,VMMC, SAFDURJUNG,NEW DELHI, Delhi, India

Abstract
Posterior shoulder instability is a rare condition, accounting for 2-10% of shoulder instability cases. Due to its diverse clinical presentations, there is no consensus on the optimal treatment, often resulting in high failure rates. While soft tissue repairs are commonly performed, bone block augmentation is indicated in cases of failed soft tissue procedures, glenoid bone loss , posterior glenoid rim dysplasia or excessive posterior glenoid slope. We present a case of 17 year old right hand dominant male who experienced multiple posterior shoulder dislocations following an electric shock injury. Initial clinical and radiological assessment revealed a painful, restricted range of motion, positive kim's and jerk tests, a posterior labral tear, and mild posterior glenoid erosion without bone loss. Arthroscopic evaluation also revealed a posterior GLAD lesion and posterior labral repair was performed for the patient. However, four months postoperatively, the patient developed recurrent subluxation episodes. MRI revealed an intact labral repair with progressive posterior glenoid erosion. A subsequent arthroscopy confirmed persistent subluxation despite the intact repaired labrum. Given these findings, we proceeded with posterior bone block cerclage augmentation using an iliac crest bone graft. At 8 months followup, the patient had regained full,painless range of motion and returned to sports without recurrence of instability. Bone block augmentation is an effective treatment option for posterior shoulder instability, particularly in cases involving failed soft tissue repairs, glenoid dysplasia, erosion or bone loss. It should be considered as a primary surgical approach in such conditions to optimize outcomes and prevent recurrence.

09:48 - 09:53

2840 Pectoralis Major Tendon Rupture: A Retrospective Cohort Study Of Direct Repair Of Chronic Tears Using A Unicortical Button Technique

Elena Chiara Thalia Georgiakakis, Daniel Watts, Graham Tytherleigh-Strong

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Abstract
Pectoralis major (PM) tendon ruptures commonly affect younger, active individuals involved in high-demand physical activities and can lead to significant functional impairment, work-related challenges, and reduced quality of life. When not diagnosed early or treated promptly, these ruptures can become chronic, complicating repair due to tendon retraction, muscle atrophy, scar formation, and altered anatomy. Previous studies have explored the use of autografts and allografts for augmentation in chronic cases. This study evaluates 14 male patients (mean age 33.8 ± 12.6 years) with chronic PM tendon ruptures, treated with a unicortical button fixation technique. A retrospective cohort analysis was conducted from March 2019 to May 2022. Chronic tears were defined as those presenting at least 6 weeks after injury. Pre- and post-operative evaluations included demographic and injury data and standardised outcome measures: Bak criteria, Single Assessment Numeric Evaluation (SANE) score, and Oxford Shoulder Score (OSS). The mean time from injury to surgery was 9.6 ± 10.1 months. According to the Bak classification, 71.4% of patients achieved excellent outcomes, and 28.6% had good outcomes. The mean SANE score improved from 45.0 ± 24.5 to 91.8 ± 7.0 ($p<0.0001$), and the OSS improved from 35.1 ± 6.1 to 47.9 ± 0.5 ($p<0.0001$). One patient developed a suture granuloma unrelated to the fixation technique. In conclusion, direct repair of chronic ruptures using the cortical button technique resulted in excellent clinical outcomes with a low risk of complications, challenging the notion that chronic repairs inherently lead to inferior outcomes.

09:53 - 09:58

2322 Impact Of Lateralization And Distalization Shoulder Angles On Postoperative Outcomes In Shoulder Arthroplasty: A Systematic Review

Athanasios Kalogeropoulos, Hasan Mercalose, Al Acraf Khoriati, Tony Antonios, Ali Narvani, Mohamed Imam

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Abstract

Introduction

The Lateralization Shoulder Angle (LSA) and Distalization Shoulder Angle (DSA) significantly influence postoperative biomechanics, implant longevity, and functional recovery in shoulder arthroplasty. This systematic review evaluates their impact on clinical outcomes and complication rates, aiming to define optimal angle ranges for improved surgical success.

Methods

A systematic search of PubMed, Scopus, Web of Science, and Cochrane Library (until December 2024) identified studies analyzing LSA and DSA in relation to postoperative function. Extracted data included range of motion, functional scores, and complications. Bias assessment used the Cochrane ROB-2 tool for randomized trials and the Newcastle-Ottawa Scale for observational studies.

Results

Thirteen high-quality studies (8,315 patients) showed optimal LSA (75°–95°) correlated with improved external rotation and higher ASES and Constant scores. Optimal DSA (40°–65°) was associated with enhanced anterior elevation and abduction. A strong negative correlation ($rs = -0.7$, $p < .001$) highlighted the need for balanced biomechanical adjustments. Deviation from these ranges increased complications, including acromial fractures and implant instability.

Conclusion

Maintaining LSA between 75°–95° and DSA between 40°–65° optimizes functional recovery and minimizes complications. Future research should validate these findings and explore advanced imaging and patient-specific instrumentation to refine implant positioning.

09:35 - 09:40

2072 EVALUATION OF THE EFFECTS OF TREATMENT STRATEGIES ON PAIN, SLEEP QUALITY, FUNCTIONAL OUTCOMES AND PATIENT SATISFACTION IN ELDERLY PATIENTS WITH 3- OR 4- PART PROXIMAL HUMERUS FRACTURES

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3. Karadeniz Technical University Faculty of Medicine, Department of Psychiatry, Trabzon, Turkey

Abstract

Introduction:Proximal humerus fractures(PHF) are common fractures in elderly patients.

Aims:The aim of this study was to compare pain,sleep quality,functional scores,satisfaction outcomes between reverse shoulder arthroplasty(RSA) and nonsurgical treatment groups in patients with displaced complex PHF.

Methods:A retrospective review was performed on all 3- and 4-parts PHF treated with either RSA or nonoperative treatment with minimum 1-year follow-up.The study was conducted on patients older than 70 years old.Main outcome measures were the Constant-Murley score(CMS),the Quick Disabilities of the Arm,Shoulder and Hand score(Q-DASH),visual analog scale(VAS) and Pittsburg Sleep Quality Index(PSQI).Additionally, the patient's satisfaction was evaluated using a 5-points Likert scale.An autonomy score and a cognitive assessment score were also measured.Complications and reinterventions were considered secondary outcomes.

Results:A total of 90 patients were included in the study(54 nonsurgical,36 RSA).There were no statistically significant differences in age,gender and fracture type distribution between the two groups($p>0.05$).At 1st month the VAS and PSQI scores,at 6th month the VAS, PSQI and CMS scores,at 12th month only the CMS scores were better in the RSA group compared to the nonsurgical group($p<0.05$).The complication rate was higher for the RSA group;however, patient's satisfaction at 12th month was significantly better in the RSA group($P<0.05$).

Conclusion:Treatment with RSA provides superior functional outcomes compared with nonsurgical treatment for patients presenting with an acute PHF.At short-term follow-up,the main advantage of RSA appeared to be less pain and better sleep.However,surgery must be indicated with caution as the risk for complications is higher.

Keywords:Proximal humerus fractures, reverse shoulder arrhroplasty, nonsurgical treatment, sleep quality

Friday, 5 September

Knee 6
11:23 - 11:28

620 Coronal Plane Alignment Of The Knee In Adolescents In With Skeletally Mature Alignments

Wu Chean Lee[1], Chin Yee Woo[2], Kevin Boon Leong Lim[2], Kunnasegaran Remesh[1], Tong Leng Tan[1]

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Abstract
Background
Most coronal plane alignment of the knee (CPAK) studies involve patient population older than 18 years old. However, CPAK phenotype might evolve with age, and during progression of osteoarthritis. There might also be a difference in CPAK phenotypes between genders. We investigated the CPAK distribution in an adolescent population at the end of their skeletal maturity, and the difference in the CPAK distribution between the genders.

Methods
Slot-scanning radiography (EOS) images of 500 knees were obtained. These were patients with Risser score of ≥4, at which the mechanical lateral distal femoral angle (mLDFA) and medial proximal tibia angle (MPTA) would have reached the adult parameters. The arithmetic hip-knee-ankle angle (aHKA) and joint line obliquity (JLO) were calculated.

Results
There were 275 patients (mean age 14.7 ± 1.4 years), of which 187 were female. Of the 500 knees, 332 knees were female. CPAK type II (neutral aHKA, JLO apex distal) was most common (55.4%), then type III (valgus aHKA, JLO apex distal) (24.4%), and type I (8.6%) (varus aHKA, JLO apex distal). In females, CPAK type II was most common (53.3%), then type III (26.5%), and type VI (valgus aHKA, JLO apex neutral)(7.2%). In males, type II was most common (59.5%), then type III (20.2%), and type I (13.7%). Males and females had statistically significantly different CPAK distribution ($p<0.01$).

Conclusion
Adolescents at skeletal maturity were majority CPAK type II, followed by type III. There was also different distribution of CPAK between males and females. This might affect surgeons' alignment philosophy and target in total knee arthroplasty.

11:36 - 11:41

692 Does Advanced Osteoarthritis Mimic Neuropathic Joint?

Shubhranshu Shekhar Mohanty, Ajinkya Desale, Ashraf Shaikh, Pranav Keswani, Rudra Prabhu, Prashant Kamble, Arzan Jesia, **Imtiaz Kazi**, Sameer Rajkondawar

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Abstract
Introduction:
Radiographic imaging often fails to correlate with symptom severity, and advanced osteoarthritis (OA) may exhibit features reminiscent of neuropathic joints. This study explored the clinicopathological and histopathological correlations between advanced OA and neuropathic joints, hypothesizing clinical similarities.
Methods:
A retrospective study involving 43 patients who underwent total knee arthroplasty for advanced knee OA was conducted from 2016 to 2020. Clinical, radiological, and histopathological evaluations were performed. Advanced OA was defined as an Ahlbach grade IV or above. The functional Knee Society Score (KSS) was used to assess clinical severity, and histopathology was considered "significant" if the results were consistent with the neuropathic joint findings. The statistical analyses included univariate and binary logistic regression analyses.

Results:
The mean age was 57.63 ± 17.13 years, and most patients were females (69.77%). A total of 53.49% of the grading systems yielded histopathological findings resembling those of neuropathic joints. Univariate analysis revealed significant
correlations between histopathology and the functional KSS, Ahlbach grade, and NRS score ($p < 0.01$). Binary logistic regression confirmed that KSS (< 40) and NRS score (< 7) were significant predictors ($p < 0.001$, Nagelkarke $R2 = 0.576$).

Conclusion :
Patients with advanced knee OA may exhibit characteristics resembling those of neuropathic joints, particularly individuals with a poorer functional knee. Thorough assessments are crucial for distinguishing between primary OA and neuropathic joint pathology and for carrying out more precise management strategies. This study provides valuable insights into the complex presentation of advanced OA and highlights the importance of using more constrained prosthesis for better outcomes.

11:51 - 11:56

927 Arthrofibrosis Of Knee Post ACL Reconstruction A Watchful Complication Led To Delay In Recovery-A Prospective Study

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Abstract
Introduction- ACL is a common ligament in the knee that often requires arthroscopic reconstruction following an injury. Arthrofibrosis is one of the reported complications following ACL reconstruction, which can hinder recovery progress and lead to suboptimal results. Careful observation of signs and symptoms can help detect early arthrofibrosis. However, in cases of delayed presentation, arthrofibrosis require surgical intervention. Materials and Methods- We treated 39 cases of arthrofibrosis from January 2022 to July 2023. 36 cases were referred from other centre, while three cases were from our centre. 16 patients were female, and 23 were male, with right-side dominance being more common. All cases referred from other centre presented late. Arthroscopic arthrolysis was performed in all cases. Histopathological examination screening was done using the tissue obtained from the procedure. Result- Aggressive physiotherapy was advised to all the patients. 29 patients achieved full range of motion and quadriceps volume at four weeks. 7 patients achieved full range of motion and quadriceps volume at eight weeks. 3 patients achieved full flexion with 5degree of extension lag, less quadriceps volume and eventually recovered over 6 months. Conclusion- Arthrofibrosis is a dreaded complication in ACL surgeries, which hampers the desired outcome of a commonly performed elective surgery. Surgical timing, prolonged immobilization, subclinical infection, and delayed clinical diagnosis were a few of the possible causes in our study. Arthroscopic arthrolysis is the treatment of choice for patients with failed conservative trial, and it also gives us a chance to re-evaluate the knee again.

11:18 - 11:23

1575 Simplicity In Success: Treating Difficult Post-Traumatic Knee Arthritis With Advanced Medial Pivot Knee Replacement

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HOSPITAL KULIM, Kulim, Malaysia

Abstract
Total knee arthroplasty in post traumatic knee can be a challenging one especially if patient had a recent fracture. A combination of mechanical imbalance due to ligamentous laxity, meniscal tear, malignment, malunion and nonunion of the fracture contributes to the post traumatic arthritis.

Case Presentation
A 55-year-old woman sustained a left distal femur fracture with intraarticular involvement following a motor vehicle accident three years ago, Her recovery was complicated by persistent severe knee pain, leaving her wheelchair-bound. Upon presentation at our center, we reassessed her condition and found a malunion of the distal femur, along with a 20-degree fixed flexion deformity and limited knee flexion of only 80 degrees. We initially removed the implant from her left distal femur and performed open adhesiolysis on her left knee. Six months after implant removal, we proceeded with a primary total knee arthroplasty (TKA) on her post-traumatic knee. The challenges encountered included a deformed distal femur morphology with absent medullary canal, pre operative ROM of 20-80 degree, arthrofibrosis, which made it impossible to evert the patella. However, through standard exposure, debulking of fibrous tissue, and meticulous soft tissue balancing, we successfully achieved a stable balanced knee with primary AMP knee.
Post surgery, patient achieved significant improvement in her quality of life, walking pain free and able to return to her daily activity. She scored 90 in her FJS assessment. For younger patients, the long-term durability of the implant is always a critical consideration, which we were able to achieve with Primary AMP Knee.

11:41 - 11:46

1695 Combined Techniques In Knee Arthroscopy: A Case Of Multiligamentar Injury And Medial Meniscus Tear And Extrusion

Tiago Puga, Sofia Romano, Tânia Patrão, Catarina Rodrigues, Tiago Soveral Pereira, Daniel Gonçalves, Nuno Malheiro, Carolina Oliveira, Rómulo Silva

ULS Alto Minho, Viana Do Castelo, Portugal

Abstract
Introduction: We present the authors' approach to a complex case of multiligamentous knee injury associated with a medial meniscus tear and extrusion in a physically demanding patient.

Clinical Case: A 42-year-old female patient presented with a complete anterior cruciate ligament (ACL) rupture, partial medial collateral ligament (MCL) tear, partial radial tear of the posterior horn of the medial meniscus, and meniscal extrusion.
Arthroscopy was performed with standard ACL and MCL reconstruction. The posterior horn lesion, which mimicked a root tear with meniscal extrusion, was addressed using a transtibial tunnel and sutures at both meniscal ends, secured following meniscal recentralization.
Given the meniscal injury, with radial and vertical longitudinal component in the posterior horn, we modified the technique developed by Hideyuki Koga, MD, PhD, from Tokyo Medical and Dental University. Three knotless anchors were used according to the original technique, with the variation that the posterior anchor’s post suture formed a loop around the horizontal tear, reducing mobility after lesion debridement. The suture was then passed peripherally through the meniscus and secured at anchor #2 in the meniscal body region, achieving meniscal reduction as part of the centralization technique.

Results: At 16 weeks, the patient was pain-free, no need for walking aids, negative meniscal tests, full range of motion, and was returning to controlled sports. KOOS and Lysholm scores showed improvements.

Conclusion: A radial tear with extrusion is biomechanically equivalent to a total meniscectomy. Recent advancements in arthroscopic techniques provide multiple treatment options, demonstrating significant medium- and long-term benefits.

11:46 - 11:51

2175 Correlation Between Different Tibial Slope Clusters And Specific CPAK Types Of The Knee – A Machine Learning Study

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Abstract
Introduction:The Coronal Plane Alignment of the Knee (CPAK) classification defines nine knee phenotypes based on hip-knee angle (aHKA) and joint line obliquity (JLO). The posterior tibial slope (PTS) has gained clinical importance in total knee arthroplasty (TKA) planning. Excessive PTS may lead to instability. Given the rise of personalized TKA techniques, we investigated the relationship between PTS clusters and CPAK phenotypes.
Aims & Objectives: We aimed to identify possible PTS clusters and examine their correlation with CPAK phenotypes. We also analyzed variations in coronal limb alignment and PTS based on age, sex, and BMI.
Study Design & Methods: Radiographs of patients undergoing TKA (2010–2023) were analyzed, excluding posttraumatic arthritis, prior corrective osteotomies, neoplasms, or poor-quality images. Five examiners independently measured MPTA, LDFA, and PTS with high interobserver reliability (ICC >0.80). Knees were classified by CPAK, and PTS clusters were determined using k-means clustering. Statistical comparisons were conducted using χ^2 tests, correspondence analysis, and Spearman's ρ.
Results:A total of 2,328 knees (35.5% male, 64.5% female) were assessed. Four PTS clusters were identified, with a significant distribution difference among CPAK groups ($p<0.001$). Valgus knee types (CPAK II, III, VI, IX) had steeper PTS, while varus types (CPAK IV, V, VII, VIII) had lower PTS ($p<0,001$). CPAK I had uniform PTS distribution. Male patients had more varus knees, while females had more valgus knees.
Conclusion:Certain PTS clusters are more frequently associated with specific CPAK knee types. Analysis of the association of PTS and CPAK can aid in preoperative planning to enhance TKA outcomes.

11:00 - 11:05

2932 Lower Incidence Of Early Prosthetic Joint Infection In Total Knee Arthroplasty With All-Polyethylene Tibial Components

Justin Moo Young[1], Viraj Deshpande[1], Mark Cubberly[1], Sean Guerrero[2], Steven Barnett[2], **Matthew P. Siljander**[1]

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2. Department of Orthopedic Surgery, Hoag Orthopedics Institute, Irvine, United States

Abstract
Introduction:

All-polyethylene (AP) tibial implants show comparable survivorship to metal-backed (MB) tibial implants, yet there is a paucity of literature comparing risk of prosthetic joint infection (PJI) between the two components.

Aims and Objectives:

The primary aim of this study was to compare PJI rates in patients undergoing total knee arthroplasty (TKA) with AP and MB tibial components, while also evaluating clinical factors associated with PJI.

Study Design and Methods:

A retrospective review of our institution's prospective joint registry was conducted to identify TKAs performed using either AP or MB tibial components between January 2019 and April 2022. All-polyethylene and MB groups were compared based on age, ASA, diabetes, alcohol use, BMI, sex, heart disease, nicotine use, CKD, operative time, and return to OR for infection. Statistical analysis was performed by an outside independent statistician using sample t-tests and Chi-square tests. All patients had a minimum one-year follow-up.

Results:

A total of 6,010 TKAs (2,700 AP and 3,310 MB) were identified through retrospective review. The PJI rate was 0.07% in the AP group and 0.30% in the MB group ($P < 0.05$). The AP group had lower mean BMI and operative time but were older with higher rates of heart disease, CKD, ASA 3 patients, and nicotine use (all $P < 0.001$).

Conclusion:

TKAs with AP tibial implants were associated with a lower rate of PJI despite being used in a significantly older surgical population with more medical comorbidities. Use of these implants is a viable option in appropriately selected patients.

11:10 - 11:15

506 A Comparative Analysis Of Three Knee Arthrodesis Techniques To Manage Failed Total Knee Arthroplasty Due To Infection: Intramedullary Nailing, LRS External Fixator, And Compression Plating

Raja Bhaskara Rajasekaran, Dheenadhayalan Jayaramaraju, Velmurugesan P, Dhanasekara Raja Palanisami

Ganga Medical Centre & Hospitlas Pvt. Ltd, Coimbatore, India

Abstract

Introduction

This study compared external fixation (EF), intramedullary nailing (IMN), and compression plating (CP) for knee arthrodesis following failed total knee arthroplasty (TKA) due to periprosthetic joint infection, focusing on complications, radiological, and functional outcomes.

Methods

Patients aged ≥18 who underwent knee arthrodesis following failed TKA due to infection from 2008 to 2023 were included. Retrospective data on demographics, surgical techniques, complications, and outcomes were collected. Postoperative patient-reported outcome measures (PROMs), pain, and functional status were assessed. Radiographic data was reviewed for limb shortening and union status.

Results

46 patients (mean age 66.2 years), predominantly male (84.8%) were involved in this study. Twenty patients underwent EF, 16 underwent CP, and 10 underwent IMN, all for infected primary TKA. Pseudomonas was the most common infecting organism (15.2%). Average follow-up was 29.1 months. Bony fusion was achieved in 41 knees (89.1%), with five requiring additional surgery; four eventually required amputation due to non-fusion. Time to union was significantly shorter in the CP group compared to the IMN group ($p < 0.001$), and EF group also had a significantly shorter time to union compared to IMN ($p = 0.02$). Infection eradication was 100% in the EF group, with significantly fewer additional surgeries and complications compared to other groups.

Conclusion

KA has shown to be an effective method to control infection, achieve fusion and provide pain relief following failed infected TKA. EF emerged as the preferable method for KA, showing fewer complications, shorter union times, and no additional surgeries compared to IMN and CP.

11:05 - 11:10

166 REPORT OF 86 CASES OF FLOATING KNEE ARTHRODESIS AFTER PROSTHETIC KNEE INFECTION: A MULTICENTER STUDY

Amparo Ortega-Yago[1], Aranza Pedraza-Corbí[1], Laia Boades[2], Kushal Lakhani[3], Marta Sabater[2], Pablo Corona[4], Francisco Argüelles-Linares[1], Jose Baeza-Oliete[1]

1. Hospital UiP la Fe, Valencia, Spain
2. Hospital Clinic de Barcelona, Barcelona, Spain
3. Hospital Nuestra Señora Candelaria, Tenerife, Spain
4. Hospital Vall d'Hebron, Barcelona, Spain

Abstract
ABSTRACT
:
The objective of this study was to analyze the results of floating knee arthrodesis in patients who had a history of a prosthetic knee infection and to perform an external validation of the BAOR Scale (Knee Arthrodesis Functional Scale).The analysis consisted of determining reinfection rates, functional results, and the survival of arthrodesis.
METHODS
86 patients who had undergone floating knee arthrodesis in cases of PJI were retrospectively included in the study between 2012 and 2022 at three different referral centers for complex bone and joint infections in Spain.The patients were assessed functionally with the BAOR scale, which had been previously validated.
RESULTS
At a mean follow-up of 4 years (1 year to 9 years),13 patients suffered reinfection (15%). The recurrence of infection was not observed to be significantly affected by sex (P=0.13), age (P=0.1), or the type of surgery previously undergone(P=0.17), nor was the McPherson Host Grade (P=0.4) observed to have a significant effect. Patients who had a McPherson Limb Grade 3 were more likely to suffer reinfection than those with a McPherson Limb Grade 2 (P=0.036).
There were 45 patients (53%) who were fully evaluated and scored. For 16 patients (35%), the results were evaluated as excellent, for 22 (48%) acceptable, for 6 (14%) low, and for 1 (3%) poor. There was a significant correlation between patient satisfaction and functional outcomes (P=0.0006).
CONCLUSIONS
The arthrodesis nail without bone-bone fusion is an effective and safe procedure for patients who have a recurrent PJI, providing satisfactory functional results when a knee prosthesis revision cannot be performed.

11:28 - 11:33

691 The Prevalence, Pattern, And Factors Affecting Sleep In Patients With Osteoarthritis Of The Knee Undergoing Total Knee Arthroplasty: An Observational Study In A Tertiary Care Center

Shubhranshu Shekhar Mohanty, **Imtiaz Kazi**, Pranav Keswani, Prashant Kamble, Arzan Jesia, Pratik Pujari

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Abstract
This prospective observational study aimed to evaluate the prevalence, pattern, and contributing factors of sleep disturbances in 300 patients undergoing primary knee arthroplasty (TKA) for osteoarthritis at a tertiary care center. Patients were assessed preoperatively and at 1 month, 3 months, and 6 months postoperatively using the Pittsburgh Sleep Quality Index (PSQI), Epworth Sleepiness Scale (ESS), Visual Analogue Scale (VAS) for pain, and Oxford Knee Score (OKS) for functional improvement.

The study revealed that all patients experienced varying degrees of sleep disturbances preoperatively. Sleep quality significantly worsened at 1 month postoperatively (PSQI: 12.81, ESS: 12.07; $p<0.001$) alongside increased pain levels (VAS: 7.42). However, sleep quality showed marked improvement at 3 months (PSQI: 10.42, ESS: 10.60) and further improvement at 6 months (PSQI: 6.35, ESS: 7.16; $p<0.001$). Pain scores also significantly decreased over time (VAS: 4.77 at 6 months, $p<0.001$). Functional outcomes, measured by OKS, improved significantly at 3 months and 6 months postoperatively, indicating consistent recovery.

A positive correlation was observed between pain intensity and sleep disturbances, while no direct correlation was found between functional improvement and sleep patterns. Gender, socio-economic status, and associated illnesses did not significantly affect sleep disturbances. Early rehabilitation and mobilisation were found to play a crucial role in alleviating knee pain and indirectly improving sleep quality.

The study concluded that although sleep disturbances are common after TKA, they are transient and improve with pain reduction and functional recovery. Adequate postoperative analgesic cover and early rehabilitation are essential for enhancing both pain management and sleep quality.

Friday, 5 September

Spine 5
11:10 - 11:15

1909 The Expression And The Function Of Fibroblast Growth Factor 1 In The Hypertrophied Ligamentum Flavum Of Lumbar Spinal Stenosis

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Abstract
Background: Fibrosis is one of the main pathologies caused by hypertrophy of the ligamentum flavum (LF), which leads to lumbar spinal stenosis (LSS). The fibroblast growth factor 1 (FGF-1) expression and function are not well understood in LF. We aimed to evaluate FGF-1 expression in the hypertrophied and non-hypertrophied human LF, and to investigate its function using primary human LF cell cultures.
Methods: Hypertrophied lumbar LF from LSS and non-hypertrophied lumbar LF from control patients obtained during surgery. Immunohistochemistry (IHC) and qPCR were performed to evaluate FGF-1 expression in LF tissue. The function of FGF-1 and transforming growth factor beta 1 (TGF-β1) was also investigated using primary LF cell culture. The effects on cell morphology and cell proliferation were examined using a crystal violet staining assay and MTT assay, respectively. Immunocytochemistry (ICC), western blotting (WB), and qPCR were performed to evaluate the effect of FGF-1 on TGF-β1-induced myofibroblast differentiation and fibrosis.
Results: IHC and qPCR showed higher FGF-1 expression in hypertrophied LF compared to control LF. Crystal violet staining and MTT assay revealed that FGF-1 decreases LF cell size and inhibits their proliferation in dose-dependent manner, whereas TGF-β1 increases cell size and promotes proliferation. ICC and WB further demonstrated that TGF-β1 increases, while FGF1 decreases theα-SMA expression in LF cells. FGF-1 also caused downregulation of collagen type 1 and type 3 expression in LF cells.
Conclusion: FGF-1 is highly upregulated in the LF of LSS patients. Meanwhile, in vitro, FGF-1 exhibits antagonistic effects to TGF-β1 by inhibiting cell proliferation and decreasing LF

11:46 - 11:51

753 Tandem Spinal Stenosis (TSS) – Managed With Staged Surgery

Chinmay Nath

JIS School of Medical Science & Research, Kolkata, India

Abstract
Introduction: Tandem spinal stenosis (TSS) is a condition of spine in which there is concurrent significant spinal canal narrowing in at least two different regions of spine. Primary manifestation of tandem stenosis includes neurogenic claudication, gait abnormality, myelopathy and radiculopathy. There is no consensus about the sequence of surgical management if both regions are symptomatic and require surgery. A clear management protocol is required.

Method: Between 2012 and 2019, 14 cases of symptomatic tandem stenosis were diagnosed in a series of 195 patients who underwent surgery for spinal canal stenosis of either cervical or lumbar spine or both (7.18%). Patients presented with multiple neurological complaints, including neurogenic claudication, gait disturbances and signs of either radiculopathy, myelopathy or both. 13 patients had stenosis of cervical and lumbar region, and one had involvement of cervical and thoracic region. Patients were assessed with mJOA score and ODI both pre and post operative periods. All 14 patients underwent surgery for both regions which were done in staged manner and all of them got cervical spine surgery first.

Result: All patients improved neurologically. Average preoperative mJOA score was 11.6 which was improved to 15.7. Average preoperative ODI score was 42.7% which was improved to 18.1%. There were no major complication except one case of dural tear during lumbar decompression and one case of superficial infection which were managed eventually.

Conclusion: Tandem spinal stenosis can be managed very well by staged surgery with cervical spine surgery done first.

11:00 - 11:05

1972 The Craniovertebral Junction Congenital (CVJ) Abnormalities Treatment Approach

Timur Alisherovich Dzhumatov, Alexander Vadimovich Gubin

St. Petersburg State University Hospital, Saint-Petersburg, Russia

Abstract
The Introduction.
Congenital anomalies of the craniovertebral spine region belong to a very diverse group of embryopathies. The research hypothesis was that the surgical treatment strategy for congenital spinal anomalies was based on the primary pathological syndrome. The treatment of anomalies is based on a specific clinical algorithm.
Purpose.
To create the surgical roadmap for treatment of patients with congenital CVJ abnormalities.

The Material and methods.
The case histories of 95 patients with congenital anomalies of the craniovertebral spine region were analyzed. CT, MRI selective angiography were used to specify the abnormality structure and to make preoperative planning. Various surgical techniques such as halo, anterior and posterior fusion, decompression of the brain, spinal cord and cervical vertebral arteries, revision of the spinal canal, neurolysis, and meningolysis were applied to 62 patients aged from 3 months to 18 years
The Results.
All patients were categorized based on their primary pathological syndrome. These included instability, torticollis, brain and spinal cord stenosis and ischemia. Each group had its own important subgroup. The main surgical treatment stages for these patients involve spinal fusion and/or brain and spinal cord decompression.
The Conclusion.
The selection of main pathological syndrome or combination of syndromes is a simple and effective way for making the right decision when treating patients with congenital and genetic cervical spine abnormalities and deformities. Syndromic approach can be used for prognosis as well. The basic surgical skills and tricks in genetic and congenital cervical spine deformities management are the same.

11:23 - 11:28

2015 Ossified Ligamentum Flavum As A Rare Cause Of Myelopathy In Congenital Scoliosis

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Abstract
Introduction and purpose: Ossified ligamentum flavum(OLF), is a disease of ectopic bone formation from within the yellow ligament. It is a rare, frequently missed cause of compressive myelopathy occurring commonly in the lower dorsal spine.
Materials and methods: We describe a 31-year-old male patient who presented with a congenital lumbar scoliosis with back pain, gait unsteadiness and neurodeficit, who was planned for deformity correction elsewhere. A detailed neurological and radiological evaluation with magnetic resonance imaging(MRI) and computed tomography(CT) scan, revealed an occult OLF at D11-D12 level compressing the spinal cord. A meticulous decompression of the cord was achieved using a high speed burr to thin out the OLF and allowing the adherent portion to float. Deformity correction was deferred as the patient had good sagittal and coronal spinal balance, clinically.
Results and conclusion: The patient had complete recovery of symptoms and returned to work at three months post-surgery. The neurology returned to normal at four months post-surgery. No intraoperative or post-operative complications were observed. The VAS and ODI scores showed significant improvement at 27-months follow-up. Association of OLF with congenital scoliosis has not been previously described in literature. A high degree of suspicion, a meticulous neurological examination and corroborative radiological evaluation, is imperative in all spinal deformity cases to detect an occult unrelated etiology of neurological deficit which may be masqueraded by the huge spinal deformity. High speed burr is an effective and safe tool to avoid complications like dural tear and neural injury in cases of OLF.

11:28 - 11:33

1587 Prevalence Of Left-Sided Disc Herniation In Adults: A Clinical Study

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Abstract
Disc herniation is a prevalent spinal disorder that can occur in different directions, including left-sided, right-sided, and bilateral. Previous studies suggest that left-sided disc herniation may be more common than right-sided herniation, although data on this topic remains limited. This study aims to evaluate the prevalence of left-sided disc herniation in comparison to other types in an adult population. A total of 200 adult patients presenting with symptoms of disc herniation were included in the study. Diagnostic imaging (MRI scans) was used to identify the side of herniation, which was classified as left-sided, right-sided, or bilateral. Demographic data, including age, gender, type of work, smoking, BMI, abdominal circumference, facetal anatomy were also recorded for analysis. Out of the 200 patients, 102 (51%) had left-sided disc herniation, 73 (36.5%) had right-sided disc herniation, and 25 (12.5%) had bilateral disc herniation. Statistical analysis revealed a significant difference in prevalence between left-sided and right-sided herniation (p-value < 0.05), indicating a stronger tendency toward left-sided herniation. The study demonstrates that left-sided disc herniation is more prevalent than right-sided herniation in adults, with a statistically significant difference in the distribution. Significant age, gender, abdominal circumference, type of work differences suggests that factors other than demographic characteristics may contribute to this trend. Further research is needed to explore the underlying causes of this left-sided predominance and its clinical implications.

11:41 - 11:46

1534 Evaluating The Accuracy Of Mazor X Stealth In Spine Surgery: A Systematic Review Of Clinical And Surgical Outcomes

Abith Ganesh Kamath[1], **Kapil Sugand**[1], Saran Singh Gill[1], Hussayn Shinwari[2], Sandra Bonczek[3], Luqman Wali[3], Jan Lehovsky[3], Michael Mokawem[3], Arash Aframian[1]

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Abstract

Background

Robotic technologies like the Mazor X Stealth are transforming spine surgery on the promise of enhancing precision, reducing radiation exposure, and improving intraoperative workflows. This systematic review evaluates the system's clinical and surgical accuracy, addressing gaps in literature and providing insights into its strengths, limitations, and impact on patient and surgical outcomes.

Methodology

A systematic review was compiled after conducting a comprehensive search across Ovid Medline, PubMed, Scopus, Embase, Web of Science. Studies were screened using a selection criteria and study quality was assessed using standardised tools. Furthermore, thematic content analysis was performed. Out of 50 studies identified, 13 were included, with all studies undergoing a quantitative analysis. The main outcome measures utilised were accuracy (Gertzbein and Robbins Grade classification), operating time and estimated blood loss.

Results

Thirteen studies involving 1,522 patients were analysed, showing a median screw placement accuracy between 72.5%-100%, with a mean of 95.2% . Median screw placement times per study ranged from 3.6-3.9 minutes, reflecting efficiency. Clinical outcomes varied, with blood loss between 104-940 mL and operating times ranging from 124-428 minutes.

Conclusions

The Mazor X Stealth system demonstrates high accuracy in spine surgery, enhancing precision of pedicle screw placement, efficiency, and clinical outcomes. Despite promising findings, limited long-term data and geographic representation highlight the need for standardised metrics, better accuracy systems beyond the Gertzbein and Robbins criteria as well as multi-centre studies. Continued research is essential to fully establish its reliability, applicability in complex cases, and overall impact on patient recovery.

11:51 - 11:56

1949 Biomechanical Effects On The Prostheses And Vertebrae Of Three-Level Hybrid Surgery: A Finite Element Study

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Abstract
Background: According to the different numbers and locations of cervical disc arthroplasty (CDA) and anterior cervical discectomy and fusion (ACDF), the contiguous three-level hybrid surgery (HS) has six constructs. Few studies had concerned the von Mises stress on the prostheses and vertebrae among the different constructs.
Objectives: To explore the biomechanical effects on the prostheses and vertebrae in three-level HS.
Study Design: A biomechanical study.
Methods: A FE model of cervical spine was constructed. Five surgical models, FAF model (ACDF-CDA-ACDF), AFA model (CDA-ACDF-CDA), FFF model (ACDF-ACDF-ACDF), SF model (single-level ACDF) and SA model (single-level CDA) were developed. A 75-N follower load and 1.0-N·m moment was applied to produce flexion, extension, lateral bending and axial rotation.
Results: Compared with the intact model, the range of motion of cervical spine in FAF model was decreased lower than FFF model and higher than AFA model. The maximum interface pressure of the Prestige-LP in FAF model was similar to SA model, but increased in AFA model. The maximum interface pressure of the Zero-P was increased in FAF and AFA model compared with that in SF and FFF models. In FFF model, the maximum pressures of the vertebrae were highest. The stress mainly distributed on the anterior area of the vertebral bodies.
Discussion: HS seemed to be more suitable than ACDF for the surgical treatment of three-level CDDD in consideration of the biomechanical effects, especially for the two-level CDA and one-level ACDF construct. But a more appropriate CDA prosthesis should be explored in the future.

11:36 - 11:41

600 A Novel Uni-Portal Non-Coaxial Spinal Endoscopic Surgery（UNSES）combined With Bone Anchored Annular Repair Technique For The Treatment Of Lumbar Disc Herniation With Vertebral Marginal Rupture Of Annulus Fibrosus

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Abstract

Introduction: A novel Uni-portal Non-coaxial Spinal Endoscopic Surgery（UNSES）technique utilizes a single incision, housing both the 30 degree arthroscope and the surgical instruments.

Objectives: This study aims to evaluate the clinical safety and efficacy of UNSES combined with bone anchored annular repair (BAAR) technique for the treatment of lumbar disc herniation with vertebral marginal rupture of annulus fibrosus.

Methods: From December 2022 and December 2023 this study recruited 42 patients with lumbar disc herniation, who underwent UNSES combined with BAAR technique. Bone anchored annular repair is a novel technique which used annulus fibrosus repair device close the annular defects on the vertebral body edge. The pre/post-operation neurological function and pain status were evaluated by VAS and ODI.The assessment also data including: operation time, the quantity of bleeding and intraoperative and postoperative complications, were recorded. Patients were followed up at intervals of preoperative, postoperative 1 months, 3 months, last follow-up.

Results: The procedure was successfully performed in all cases. Average operation time was 55 minutes, Average blood loss was 25.3±6.2mL. The preoperative symptoms were alleviated significantly after surgery. All the standardized measures improved significantly. At the last follow-up, including VAS score (7.9±1.2 to 1.1±0.5; $p<0.001$) and ODI (75.3 to 9.6; $p<0.001$). There was no postoperative complication and disc reherniation.

Conclusion: Early results showed the use of the UNSES combined with BAAR technique are beneficial for short term outcomes demonstrating reduction in symptomatic disc reherniation with low post-operative complication rates.

Key words: Uni-portal Non-coaxial Spinal Endoscopic Surgery；Bone anchored annular repair；Vertebral marginal rupture；Lumbar disc herniation

11:18 - 11:23

1543 The Impact Of Patient-Specific Short Rods On Spinopelvic Alignment And Clinical Outcomes After Degenerative Lumbar Fusion

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Abstract

Introduction

Patient-Specific Short Rods (PSSRs) are customized spinal rods designed to match a patient's unique spinal curvature. This study evaluates whether PSSRs improve lumbar lordosis (LL), pelvic tilt (PT), and pelvic incidence (PI) more effectively than standard rods in lumbar spinal fusion surgeries.

Methods

We conducted a retrospective cohort study of 60 adults who underwent ALIF or TLIF with posterior pedicle screw fixation for degenerative lumbar conditions from January 2014-July 2019. Patients with complete pre- and post-operative data were included; those with prior lumbar fusion, deformities, or nondegenerative conditions were excluded. Radiographic outcomes (LL, PT, PI, PI-LL) were assessed using pre- and post-operative x-rays. Patients were categorized as preserved, restored, mal-aligned, or worsened based on alignment changes.

Results

60 patients were included, evenly split between PSSR and standard rod groups. Post-operative analysis showed improved alignment in the PSSR group. The mean PI-LL mismatch was 3.42 ± 9.25° for PSSR, and 3.61 ± 10.92° for the controls, with no significant difference ($p > 0.9$). 47% of PSSR patients had preserved spinopelvic alignment, and 20% achieved restored PI-LL alignment, compared to 60% and 7% in the control group. The PSSR group showed greater reduction in PI-LL mismatch (5.19° vs. 0.91°), suggesting better alignment correction.

Conclusion

PSSRs offer better radiographic outcomes than standard rods in lumbar fusion, improving alignment and reducing PI-LL mismatch. These findings suggest that individualized spinal alignment may lower revision risks and enhance long-term outcomes. Further research is needed to confirm these results.

Key words: lumbar fusion transforaminal interbody

11:05 - 11:10

1556 Two-Level Pedicle Subtraction Osteotomy For Adult Spinal Deformity – Evaluation Of Safety, Efficacy, And Complications

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Abstract
Introduction: Adult spinal deformities often require osteotomies like Pedicle Subtraction Osteotomy (PSO), an effective but high-morbidity technique sometimes requiring multiple PSOs for adequate correction. Few studies address alignment outcomes or complications. We report outcomes on 48 patients who underwent double PSO in the thoracic and/or lumbar spine.
Methods: 48 patients who underwent two-level PSO at the University of Colorado (2012–2024) were retrospectively analyzed. Patients were grouped: thoracic PSOs, lumbar PSOs, and one in each. Radiographic (SVA, LL, PI, PT, CTPA, TPA, sagittal imbalance) and clinical outcomes (blood loss, complications, mortality) were assessed pre- and postoperatively, with up to two years of follow-up. Statistical analysis used SPSS, with p-values < 0.05 considered significant.
Results: The mean age was 62, BMI 29.5, and average follow-up 57 months. Postoperatively, hemoglobin dropped by 3.2 points, and average blood loss was 2,300 mL. Lumbar double PSO patients had 600 mL more blood loss than thoracic PSO patients, though not significant. Durotomy occurred in 13%. One patient (2.1%) died postoperative from a narcotic overdose, another needed reoperation for wound complications, and one with combined PSOs had proximal junctional failure. Radiographic analysis showed significant improvements in LL, SVA, TPA, and CTPA ($p < 0.05$).
Conclusion: Blood loss and complication rates for double PSO align with those for single or multi-level PSOs. Double PSO offers significant spinal alignment improvements without increasing complication risk or blood loss, suggesting it is a safe option for selected patients with rigid spinal deformities.

Keywords: PSO, Complications, Postoperative Outcomes, Spinal Deformities