23rd Asia Pacific Orthopaedic Association Congress
Dubai
29th February - 2nd March 2024

Congress Abstract Book

This document is a compendium of the abstracts accepted for the 23rd APOA Congress.

Contents

Foot & Ankle

General

Hand and Upper Limb

Hip

Infection

Knee

Orthopaedic Research

Osteoporosis

Paediatrics

Spine

Sports Injury

Trauma

TRAUMATIC ACHILLES TENDON RUPTURE IN PAEDIATRIC: A CASE REPORT

Presenter : Ahmad Anas Bin Abdul Majid

Associates : Aminuddin Che Ahmad
, Mohd Adham Shah Ayeop,
Muhammad Syafiz Ahmad Ismani1

Institutions : Department of Orthopaedic, Traumatology and Rehabilitation, International Islamic University Malaysia, Kuantan, Pahang Malaysia.

ABSTRACT
This case report presents the traumatic experience of a 7-year-old boy involved in a motorcycle accident, which resulted in a severe injury to his left ankle. The incident led to a deep gloving wound, exposing the avulsion fracture of left calcaneum and multiple cut over the Achilles tendon. Emergency wound debridement, repair of torn tendons, and external fixation were performed. However, the patient experienced complications, including Achilles tendon repair failure and wound dehiscence, requiring delayed Achilles tendon reconstruction. The discussion highlights the rarity of Achilles tendon ruptures in children, emphasizing trauma as a common cause as well as the importance of tailored treatment strategies for these unique traumatic injuries.

The Quality of Life and Functional Outcome of Anterior Talofibular Ligament Repair Using Bostrom Gould Technique With And Without Internal Bracing.

Presenter: Normughni Mohd Fikirudin [1]

Associates: Dr Normughni Binti Mohd Fikirudin [2]

Institution:

1. Universiti Islam Antarabangsa Malaysia,
2. Sultan Ahmad Shah Medical Centre.

Abstract

Background : Lower ankle sprains is the most common reported sports related injury and in general population .Lateral ankle ligamentous injury accounts 85 % of all ankle sprains where by anterior talofibular ligament (ATFL) and the calcaneal fibular ligament (CFL) are most commonly affected. Recent advances have allowed repairs to be made with augmentation which strengthens the repair , mechanically approved to be stable, allowing the patient to start earlier rehabilitation programs and earlier return to sports or daily activity.

Hypothesis : Functional outcome and quality of life patients whom underwent Broström -Gould repair with internal bracing are better compare to those without internal bracing.

Study Design : A cross-sectional study using SF- 36, AOFAS score questionnaire.

Method : Seventeen consecutive patients underwent ankle arthroscopy and open ATFL Brostrom -Gould repair with and without internal bracing for management of lateral ankle instability between 2019 to 2023 . Postoperatively, the American Orthopaedic Foot & Ankle Society (AOFAS) score and SF-36 score was administered to assess the functional status and the quality of life.

Result : Twenty two patients were reviewed at an average postoperative follow-up of 4-5 years. The functional assessment using AOFAS showed that patients who underwent internal bracing augmentation were pain-free (40.0) while those without were (30.0). No significantly different in functional outcomes were found in patients who had undergone Broström -Gould repair with and without internal bracing . The quality-of-life assessment revealed notable differences in the physical functioning of patients whereby patients with internal bracing had higher functionality (90.0) compared to those without (82.5). Meanwhile, patients with internal bracing had a perfect score of 100.0 for pain control and 93.75 for general health compared to those without (77.5 and 75.0, respectively). The pain control was not statistically significantly associated with internal brace augmentation; however, the general health of patients was found to be statistically significantly different between these groups ($U = 7.00$, $p = 0.004$).

Conclusion : The Broström-Gould repair technique with or without internal brace augmentation show no significant difference in the functional outcome as both yield good outcome. Patients with internal bracing had a perfect score of for pain control and general health compared to those without internal bracing. A prospective randomized controlled trials are needed.

Keywords : Brostrom- Gould repair, internal brace Ankle instability, Lateral ligament repair, ATFL, Ankle sprain.

FUNCTIONAL AND RADIOLOGICAL OUTCOME OF DISTAL TIBIA FRACTURE WITH MIPPO (Minimal Invasive Percutaneous Plate Osteosynthesis)

Presenter: Dr YASWANTH CHOWDARY KAKOLLU [1]
Associates: Dr PRASANNA BAINDOOR [2] , Dr Keshav S Shenoy [3] ,DR SANTOSH S JEEVANNAVAR [4] .

Institution:

1. Junior resident 2. Additional Professor 3. Professor

4. Professor and Head of Department ,

Department of Orthopaedics, SDM College of Medical Sciences and Hospital, Dharwad.

Background : Fractures of the distal tibia can be challenging to treat because of peri-articular involvement and comminution. Rigid internal fixation is challenging because of limited soft tissue envelope. Recently periarticular reduction and fixation by limited incisions followed by bridging the fracture zone by MIPPO techniques have gained importance. This method negates the disadvantage of traditional open reduction and fixation.

Methods: 25 adult patients with distal tibia fracture from November 2020 to November 2023 were included in the study and were treated with MIPPO technique for closed Distal tibia fracture with Ruedi-Allgower - TYPE I, II; AO – TYPE A1, A2, A3 and C1, C2 were included in the study and patients were followed up at post op day 2, 6 weeks, 3 months 6 months and 1 year. Ankle ROM and Functional outcome calculated at each follow up using AOFAS. Radiological outcome assessed with RUST Score by union status and ankle joint alignment in sagittal and coronal plane and any evidence of osteoarthritis.

Results: Improvement in AOFAS scoring was seen at each follow up at 6 weeks, 6 months and 1 year. Complete fracture union was achieved in all patients at an average of 32 weeks. No local wound dehiscence and complications were encountered in our study. 2 patients had articular step and varus mal-union at final follow up

Conclusion: MIPPO technique adopted for treatment of peri articular fractures of distal tibia result in excellent clinical and functional outcome. Steep learning curve and increased radiation exposure intra operatively are major drawbacks. Proper case selection based on fracture geometry and patients' demographic profile is essentials.

Correction of Hallux Valgus Does Not Decrease Lesser Metatarsal Pressure: A Pedographic Analysis

Presenter: Yu Hsi Chen

Introduction:

There is still substantial variability in the operative treatment of hallux valgus (HV) despite the emergence of high-quality evidence. One inconsistency is the inclusion of lesser metatarsal shortening osteotomy (LMTSO) alongside hallux valgus correction for patients with HV and metatarsalgia. A recent survey showed that more than 70% of surgeons perform additional LMTSO for metatarsalgia in HV patients. However, the literature demonstrates no benefit of LMTSO on long-term radiographic and functional outcomes when performed alongside HV correction in patients with HV and metatarsalgia. There is a mismatch between current practice and evidence. The fundamental question is whether the plantar pressure on the middle metatarsals decreases after an isolated hallux valgus surgery, and pedographic evidence for this remains lacking.

Materials and Methods:

This prospective study was conducted at a tertiary hospital from January 29, 2019, to July 18, 2023. Inclusion criteria included patients with moderate hallux valgus, experiencing symptoms warranting surgical correction, having only hallux symptoms, and being aged over 18 years. Exclusion criteria encompassed patients with central metatarsalgia or plantar keratoses, 1st TMT joint instability, 1st MTP joint arthritis, or other combined ipsilateral foot pathologies such as metatarsus adductus, pes planus, and lesser toe deformity. Patients with rheumatic diseases or those who had previously undergone lower limb surgeries were also excluded. All included patients underwent 4th generation MICA performed by our senior author without procedures on soft tissues or lesser toes. Radiographic parameters, including HVA, IMA, DMAA, HVI, and pedographs, were measured before and 3 months after the surgery.

Results:

Radiographic parameters showed significant improvement 3 months after surgery ($p < 0.01$). However, max force($p = 0.6$), max pressure($p = 0.56$), and cumulative loads($p = 0.36$) on lesser metatarsals did not exhibit significant changes between pre- and post-operative measurements.

Discussion and Conclusion:

Minimally invasive Chevron and Akin osteotomies for hallux valgus result in significant radiographic correction but do not significantly alter plantar foot pressure under lesser metatarsals at 3 months post-operation. For patients with hallux valgus complicated by transfer metatarsalgia, correction of hallux valgus may not be adequate for the release of lesser metatarsal pressures. Further research is needed to evaluate the longer-term effects of these procedures on foot biomechanics and clinical outcomes.

Intra-articular calcaneum fracture – MIS Approach

Presenter: Vishnu Senthil Kumar

Case

Calcaneal fractures with intra-articular components are predominately treated with open reduction and internal fixation. We describe our management of intra-articular fracture with mini-open sinus tarsi approach and K-wire.

24 year old male presented with left calcaneum intra-articular fracture. He had presented with D12 wedge compression and L4 burst fracture. He had presented with paraplegia with bladder disturbances. He was operated with long segment spinal fixation from T11-L5.

Radiologically it showed intra-articular calcaneum fracture. Pre-op Gissane and Bohler's angle are 115.5 and 11.1 Deg. In view of paraplegia and swelling, we did minimal open reduction with sinus tarsi approach and fixation with K-wire. Intra-operatively, sinus tarsi approach, peroneal tendons were retracted, Joint fragment was found depressed and rotated – it was reduced with elevation. The fracture fragments were stabilized with K-Wires. The following K-Wires were used for reduction. 1 st K-wire was used to correct the varus angulation, 2 nd K-wire included to maintain articular reduction. 3 rd K-wire was used to stabilize the corrected varus and hold the reduced posterior lateral facet. The Final wire was used for tuberosity reduction.

Post-operatively, Gissane and Bohler's angle measured 125.9 and 16.4 Deg. Final Follow up, included Bohler's and Gissane included 14 and 125 Deg with good functional outcome. The Advantages of the above method included absence of minimal incision and plate related complications.

Hindfoot nails in the treatment of fragility fractures about the ankle in far north Queensland: a retrospective case analysis

Presenter: Thomas Donnely
Associates: Arvind Puri

Abstract:

Ankle and distal tibial fractures in a frail population provides a unique challenge in management. Complicated fracture patterns, poor bone quality, and poor physiology lead to high complication rates with traditional management options. Hind foot nail fixation provides a promising alternative with potential reduced complications rates in this population.

Objective: this retrospective study explores the efficacy of hind foot nails as a surgical treatment for ankle fragility fractures in the elderly or physiologically complex in a Rural setting of Cairns, Far North Queensland, Australia. The primary outcomes of interest include time to weight bearing and incidence of complications post operatively.

Methods: Thirteen patients aged 60 or older who underwent a hind foot nail fixation for ankle and distal tibial fractures were included in the study. Data on patient demographics, surgical details and postoperative outcomes were collected and analysed.

Results: The average time to weight bearing for the cohort was 16.6 days. Reasons for delayed weightbearing included pain, surgeon imposed NWB periods and one significant outlier with multiple co-morbidities who developed a superficial wound infection delaying weight bearing for 71 days. Post operative complications included removal of metal in 4 patients, two superficial wound infections, and one instance of deep metalwork associated infection.

Conclusion: Hind foot nailing appears to offer a promising alternative fixation technique for ankle fragility fractures, with a reduced time to weightbearing compared to traditional techniques. Nevertheless the observed complications necessitate careful consideration of potential risks and benefits associated with this procedure in this specific demographic. Further research and larger studies are warranted to better determine the factors influencing outcomes and refine the selection criteria for hind foot nail fixation in elderly individuals with ankle fractures.

Biomechanical comparisons of different designs on a novel embedded calcaneal plate for medial displacement calcaneal osteotomy (MDCO)

Presenter: Shun-Ping Wang

Institution: Taichung Veterans General Hospital, Taiwan

Abstract

Background: Medial displacement calcaneal osteotomy (MDCO) is frequently used for the surgical correction of Adult acquired flatfoot deformity. This study aims to investigate the biomechanical effect of the different diagonal screw design on a novel-designed embedded calcaneal plate for MDCO.

Methods: Four groups according to the varied implanted plate were set as control group (Group 1), non-diagonal screw (Group 2), one-diagonal screw (Group 3), and two-diagonal screws groups (Group 4). For FEA, a 450N load was applied to on the anterior process of the calcaneus from top to bottom. Observational indices included the stress on the cortical and cancellous bone of the calcaneus surrounding the implant, the plate itself, and the displacement of the structure under load for assessing the overall stability. In addition, this study also used in vitro biomechanics test combined with DIC system to investigate the stiffness of the structure after implantation, and the displacement of calcaneus structure after external force.

Results: Under a simulated load in FEA, significant overall instability and higher stress concentration on the calcaneal surrounding host bone and the plate/screws system were observed in group 2 comparing to other groups. Regard to the mechanical testing with DIC system, significant increased rotation stability, maximum force and stiffness with the addition of diagonal screws. In comparison to Group 2, the obvious increase of 112% and 157% in maximum force as well as 104% and 176% in stiffness were found in Group 3 and 4, respectively.

Conclusion: For reducing stress concentration and enhancing overall stability, more than one-diagonal screw design is recommended and two-diagonal screws design will be superior. This study provided biomechanical references for further calcaneal implants design to prevent clinical failure after MDCO.

Influence of Bone Grafts on Radiological and Functional Outcomes in Surgically Treated Calcaneal Fractures: Results Over the Mid-to Long-Term

Presenter: MUHAMMED YUSUF AFACAN

Associates: Enes Polat MD, Bedri Karaismailoğlu MD [1] , Hüseyin Botanlıoğlu MD, Ali Şeker MD

Institution: Istanbul University-Cerrahpasa, Cerrahpasa Faculty of Medicine, Department of Orthopaedics and Traumatology, Istanbul, Turkey

Abstract:

Introduction: In managing intra-articular calcaneal fractures, the conventional approach involves open reduction with plate and screw fixation, sparking debates about the necessity of employing bone grafts to address bone gaps. This study seeks to compare radiological and functional outcomes in patients undergoing surgery for intra-articular calcaneal fractures, focusing specifically on the application of bone grafts.

Patients and Methods: The study enrolled thirty patients, with 13 receiving iliac grafts and 17 without. Preoperative and postoperative assessments included Gissane and Böhler angles, Visual Analog Scale (VAS) scores, American Orthopedic Foot and Ankle Society (AOFAS) ankle hindfoot scale, and Kellgreen-Lawrance subtalar arthrosis stages. The average follow-up period was 6.7 years, ranging from 3.5 to 10 years.

Results: The Böhler angle significantly increased ($p<0.001$), while the Gissane angle did not show significant changes in the early postoperative period for the entire study group ($p=0.1$). Patients with grafts demonstrated a significantly higher Böhler angle in the early and late postoperative periods compared to preoperative values ($p=0.04$, $p=0.05$). Similarly, patients without grafts exhibited a significantly higher Böhler angle in the early and late postoperative periods compared to preoperative values ($p=0.004$, $p=0.002$). No significant differences were observed between periods in Gissane measurements ($p=0.3$), VAS scores, AOFAS scores, and the development of subtalar arthrosis in both grafted and non-grafted patients.

Conclusion: This study evaluated patients with calcaneal fractures, with and without grafts, using Böhler and Gissane angles, VAS scores, AOFAS scores, and the development of fracture union and subtalar arthrosis across preoperative, early, and late postoperative periods. No significant differences were found between the two groups in terms of clinical and radiological outcomes during mid-to long-term follow-up.

Surgical treatment of symptomatic flexible flat feet in adolescents: Calcaneal lengthening V.S. medial calcaneal sliding osteotomy combined with subtalar arthroeresis.

Presenter: Huang Yu Po, MD

Institution: Far Eastern Memorial Hospital, New Taipei City, Taiwan

Introduction

There is two major corrective surgery including medial calcaneal sliding osteotomy (MCO) with subtalar arthroereisis and calcaneal lengthening(CL) treating symptomatic flexible flatfoot. This study aimed to compare these two surgical methods in symptomatic pes valgus in skeletally mature adolescents.

Method

Retrospectively examined flatfoot patients between July 2014 and November 2022. Twenty-one feet of 13 adolescents underwent MCO with subtalar arthroereisis, and 23 feet of 13 adolescents underwent CL. The radiological and clinical outcomes, including lateral Meary's angle, anteroposterior Meary's angle, calcaneal pitch, and American Orthopaedic Foot and Ankle Society ankle-hindfoot scores(AOFAS) were assessed during a mean follow-up of 31 months.

Result

In MCO with subtalar arthroereisis group, the calcaneal pitch(CP) and the anteroposterior and lateral Meary's angles showed significant correction, from 12.8 to 15.4, and from 13.7 to 6.4 and 10.6 to 6.1 ($p < 0.001$). Moreover, the CP and the anteroposterior and lateral Meary's angles also corrected significantly in CL group, from 14.4 to 19.6, and from 14.5 to 4.6 and 13.5 to 8.5 ($p < 0.001$), respectively. The AOFAS improved significantly in both groups, from 73.3 to 99.6 and 68.0 to 98.5 ($p < 0.001$). In the MCO with the subtalar arthroereisis group, the most common complication is sinus tarsi pain, and the implant removal rate was 28.6%. On the other hand, in CL group, the osteotomy site union time is longer(2.5 months), and there is one case having postoperative wound infection.

Discussion and conclusions:

MCO with subtalar arthroereisis is prone to use on hindfoot valgus patients or older adolescents. Besides, CL is preferred used to treat forefoot abduction. Both surgical corrections have significant improvements in clinical and radiological outcomes. The preference of MCO or CL depends on the severity of hindfoot valgus and forefoot abduction.

Minimally Invasive Surgery for hallux valgus with metatarsus adductus

Presenter: Chun Hsien Huang
Associates: Yan Yu Chen
Institution: Show Chwa Hospital
Abstract:

Hallux valgus (HV) correction represents a routine surgical intervention within the purview of foot and ankle surgeons. However, the convergence of hallux valgus with metatarsus adductus (MA) poses a formidable challenge, rendering the condition more intricate and less predictable. This investigative study delves into the outcomes associated with the correction of HV concomitant with MA, employing a minimally invasive approach characterized by the minimally invasive chevron akin (MICA) procedure supplemented by proximal minimally invasive metatarsal osteotomy (PMMO). Data spanning the period from August 2021 to July 2023 were collected, comprising a cohort of 10 patients presenting with both HV and MA. Inclusion criteria encompassed restricted space for 1st metatarsal head translation or metatarsalgia. The surgical intervention involved the application of MICA in conjunction with PMMO on the 2nd, 3rd, and 4th metatarsals. The entirety of the procedures was executed by a singular surgeon, Dr. Yan Yu Chen, at a designated medical facility.

Quantitative assessment of foot pressure was conducted through a sophisticated system developed by RS scan lab. The average duration of the surgical procedures was recorded at 47.2 minutes. Postoperative evaluation revealed significant reductions in hallux valgus angle (HVA), intermetatarsal angle (IMA), and metatarsus adductus angle (MA). Moreover, maximal foot pressure over the 2nd and 3rd metatarsals, as well as impulse over the 2nd, 3rd, and 4th metatarsals, exhibited marked decreases postoperatively. It is imperative to acknowledge the study's limitations, notably the modest sample size, absence of comprehensive clinical outcome data, and the lack of a protracted follow-up duration.

In summation, the amalgamation of MICA and PMMO emerges as an efficacious modality for addressing the intricacies associated with HV and coexisting MA. The immediate weight-bearing capacity post-surgery, coupled with the rectification of foot deformity and a discernible reduction in pressure over the lesser metatarsals, underscores the viability of this approach. Nevertheless, future research endeavors should aim to address the identified limitations and provide a more comprehensive understanding of the long-term implications and clinical outcomes associated with this surgical technique.

Terminal Cholangiocarcinoma with Clavicle Pathological Fracture: Operative Management and Unpredictable Course

Presenter: Yen-Sheng Chiang

Institution: Dalin Tzu Chi Hospital

Background:

Cholangiocarcinoma, a formidable malignancy often diagnosed in advanced stages, poses challenges due to limited treatment options. This case report delves into the intricate management of a 77-year-old female with terminal cholangiocarcinoma, extensive bone metastasis, and an uncommon clavicle pathological fracture.

Methods:

Given the scarcity of reported cases globally and the lack of consensus on optimal management, the patient underwent open reduction internal fixation surgery for the clavicle pathological fracture. This approach, paired with bone cement, aimed to enhance stability and enhance the patient's quality of life.

Results:

Postoperatively, the patient initially showed positive signs of recovery, experiencing improved functionality and reduced pain. However, three months later, respiratory failure, considered part of the natural progression in advanced cancer cases, led to her passing. This outcome emphasizes the challenge in estimating the remaining life expectancy of cancer patients, a complex task even in advanced stages of the disease.

Conclusions:

While the surgical intervention effectively addressed the rare clavicle pathological fracture, the subsequent progression to respiratory failure highlights the unpredictable nature of terminal cholangiocarcinoma. Estimating the remaining life expectancy in advanced cancer patients remains challenging, underscoring the need for ongoing research to better understand and navigate the complex dynamics of late-stage malignancies.

3D printed plates in Orthopaedic Oncology reconstruction: are they worth the cost and effort?

Presenter: Manish Agarwal

Institution: Nanavati Max Superspeciality Hospital

Introduction

Orthopaedic Oncology reconstructions often involve large defects with distorted bony anatomy from the tumour. In many situations, no conventional implants are available (as in Tibio-talar fusions or pelvi-femoral fixation). Often, the segment available for bony purchase is small particularly when doing joint sparing or physis sparing surgeries. Conventional implants do not offer secure purchase in these situations, particularly in very young children. In pelvic reconstruction with ECRT, customised plates allow faster surgery by saving the time and effort required for contouring. Having the option to direct the screws in areas of good bone stock and ability to lock the screw head help get secure purchase for the length of time needed for the union of the radiated bone. In this paper we aim to report our early experience with custom 3D printed Titanium plates.

Material & Methods

20 customised 3d printed plates were used in 15 patients between Feb 2019 and May 2023. All these were patients where conventional implants would not provide a secure purchase or where two plates would be needed instead of one. Implants were designed from CT scans of the involved bone. A detailed plan was made including where the screw purchase was desired. All implants were sourced from a single company(3D incredible). The design was finalised in close consultation with the operating surgeon. 3 D printed surgical guides were used in most of the cases. Post printing, the processing included drilling the locking threads and channels as per plan. Retrospective analysis of prospectively collected data was analysed from 17 plates used in 15 patients. Patients were followed up as per the usual protocol followed depending on the disease. Plain radiographs were done to periodically check for union and any implant related failures.

Results

20 customised 3d printed plates were used in 15 patients between Feb 2019 and May 2023. The indications varied from ' tibiotalar fusion (4) , pelvic ECRT (3), long bone ECRT(5), hip Rotationplasty(1), scapula(1), femur ABC (1). 8 of these plates were in children <10y old. The plates were delivered in 8-20 days after finalisation of the design. 1 patient of hip rotationplasty underwent an amputation for vascular compromise in early postoperative period. There was one non union with deformity in patient who underwent ECRT of his Tibia. This was treated by another plate and bone grafting after which the junction healed. One plate was removed for deep infection. There were no plate breakages at a followup period. There was no intraoperative mismatch between plate and bone in any case.

Conclusions

3D printed plates have helped us get a secure fixation in challenging reconstructions, particularly in children. The cost has been higher than conventional plates but have the benefit of reducing the time for reconstruction and in some cases saving the cost of 2 nd plate. In addition, secure purchase was obtained in all cases. The lead time has been short and technical challenges are few. We believe this technology has wide application in several orthopaedic oncology and other complex orthopaedic reconstructions.

CASE SERİES REPORT: DEATH LEADİNG FASCİİTİS HEALTH PROBLEM DETECTED İN POST-COVİD PATİENTS

Presenter: Barış Sarı [1]
Associates: [1] HASAN ULAS OGUR, [1] HASAN ORKUN VARMIS, [1] İSMAİL AKÇAY
Institution:

[1] University of Health Sciences; Adana City Training and Research Hospital, Department of Orthopedics and Traumatology

-ABSTRACT-

INTRODUCTION:

Coronavirus- 19 pandemic had entered our lives in 2019. During this period lots of people ignored their health conditions in order not to spend time in the hospitals and to decrease the risk of getting infection. So even in severe conditions, people' admissions to hospitals had been late. The virus itself and immunosuppression treatment used had collectively make people vulnerable to severe health problems.

MATERIALS and METHODS:

Two patients had been admitted to T.R Ministry of Health Adana City Training and Research Hospital with pre-diagnosis of necrotizing fasciitis developing after covid infection. Post- covid necrotizing fasciitis is a rarely seen situation. In order to write a case report, we reported their hospital informations in detail day by day. Because of the loss of these 2 patients, informed consents from theire first degree relatives had been taken. No personal data providing disturbing privacy is included in the case report. None other than group members are allowed to take task in the report preparation.

DISCUSSION – CONCLUSION:

Despite of the antibiotic treatment under the control of department of Infectious Disease Department and surgical debridement carried out Orthopedics and Traumatology Department, none of the patients had recovery. When we check the literature, this post covid phenomenon is rarely seen condition. Similar case reports had been published from Iran, Mardin – Turkey and Egypt in the literature.

Preoperative MRI Rotator Cuff Tendon Stump Classification Correlates with the 3 Surgical Outcomes Following Superior Capsular Reconstruction

Presenter: Jia Guo

Institution: Asan Medical Center

Purpose : To investigate the correlation between rotator cuff stump classification and postoperative outcomes after superior capsular reconstruction (SCR).

Methods : A total of 75 patients who underwent SCR between June 2013 and May 2021 were included in this study. Based on stump classification using the signal intensity ratio of the tendon rupture site to the deltoid muscle in the coronal view of preoperative T2-weighted, fat-suppressed MRI scans, the patients were classified into types 1, 2, and 3 with ratios of < 0.8, 0.8–1.3, and > 1.3 (44, 17, and 14 patients, respectively). The American Shoulder and Elbow Surgeons (ASES), Constant, and visual analog scale (VAS) scores for pain and range of motion were evaluated at a minimum of 1 year of follow-up postoperatively. The acromiohumeral distance and RC tear arthropathy according to the Hamada classification were assessed on plain radiography. Postoperative graft integrity was evaluated by MRI at 3 and 12 months postoperatively and annually thereafter. Graft failure was defined as completediscontinuity.

Results : Clinical and radiological outcomes were significantly improved after SCR. In comparison with type 2 and 3 patients, type 1 patients had significantly higher ASES scores (type 1, 2, and 3 = 84 ± 10, 75 ± 15, and 76 ± 14; all P = 0.014), constant scores (type 1, 2, and 3 = 65 ± 5, 61 ± 9, and 56 ± 13; all P = 0.005), and forward flexion (type 1, 2, and 3 = 155 ± 10, 154 ± 15, and 145 ± 13; all P = 0.013). However, these statistical differences between groups were below the established minimum clinically important difference values for the ASES and Constant scores after rotator cuff repair. The graft failure rate after surgery was lower in the type 1 group than that in the other two groups; however, the difference was not statistically significant (P = 0.749).

Conclusion : Patients with stump classification type 1 showed significantly better functional scores (ASES and VAS scores) and forward flexion; however, the clinical importance of these differences may be limited. Stump classification may be useful for predicting postoperative clinical outcomes.

Study Design : Cohort study; Level of evidence, III.

Key Terms : superior capsular reconstruction; massive rotator cuff tear; stump classification; advanced glycation end-products; magnetic resonance imaging signal intensity of the stump

Characteristics of Terminal Hemimelia: What is the Difference between Terminal Hemimelia and Classic Fibular Hemimelia?

Presenter: Mi Hyun Song
Associates: Tae Joon Cho
Institution: Division of Paediatric Orthopaedics, Seoul National University Children's Hospital

Abstract

Purpose: Fibular hemimelia (FH) has denoted a spectrum of postaxial longitudinal deficiency (PALD) with fibular aplasia/hypoplasia; the term “terminal hemimelia” (TH) is reserved for patients with PALD having a normal fibula. We aimed to delineate the characteristics of TH.

Methods: Thirty patients with PALD who had a normal or hypoplastic fibula and visited our institution between 1992 and 2022 were reviewed. Patients were divided into TH and classic FH groups, and their demographic characteristics and clinical and radiographic findings were compared.

Results: Femoral shortening, knee valgus, and tibial spine hypoplasia were less common in TH (n=13) than in classic FH (n=17) ($p=0.03$, $p<0.001$, and $p=0.003$, respectively). None of the patients in the TH group exhibited knee instability, whereas 12% of patients with classic FH did. Ball-and-socket ankle and absence of lateral rays were commonly observed in both groups. However, tarsal coalition was observed less frequently in TH ($p=0.004$). All TH patients exhibited a painless plantigrade foot without ankle instability. Despite limb-length discrepancy (LLD) at maturity averaging 40.4 mm for TH and 67.0 mm for classic FH ($p<0.001$), patients with TH, except for one, exhibited >20 mm of LLD. Forty-six percent of them underwent limb-length equalization procedures, mostly single-stage tibial lengthening, at a mean age of 11.2 years.

Conclusions: TH may present with a milder phenotype than classic FH. It mainly overlaps with symptoms of FH below the ankle joint and manifests as LLD. However, a considerable number of patients with TH required limb-length equalization procedures, e.g. single-stage tibial lengthening.

Keywords: hemimelia, postaxial longitudinal deficiency, ball-and-socket ankle, absence of lateral foot ray, limb-length discrepancy

Uncommon Occurrence of Plaster Cotton Allergy Resulting in Allergic Contact Dermatitis in the Right Forearm After Splint Application for a Distal Radius Fracture

Presenter: Muhammed Yusuf Afacan
Associates: Göker Değer [1] , Ahmet Burak Demirdas [2] , Derya Akbaba [2] , Muhammed Yusuf Afacan [2]

Institution:

[1] Department of Orthopaedics and Traumatology, Beykoz State Hospital, Istanbul, TUR

[2] Department of Orthopaedics and Traumatology, Istanbul University-Cerrahpasa, Cerrahpasa Faculty of Medicine, Istanbul, TUR

Abstract:

Allergic contact dermatitis resulting from splint or cast application, specifically plaster of Paris, is a rare occurrence in orthopedic and traumatology clinical settings. This case study aims to shed light on the identification of allergic contact dermatitis post-splint application, emphasizing conditions requiring vigilance. It also outlines precautionary measures and available treatment options.

A 56-year-old right-hand dominant female presented to the emergency department following a fall on her right hand, reporting pain, swelling, and tenderness without neurovascular injury. Radiographs confirmed a distal radius fracture, leading to the application of a plaster of Paris splint. Within one day, she returned with severe itching and burning in the right arm. The splint was removed, and dermatology consultation confirmed allergic contact dermatitis from undercast cotton padding. Topical antihistamine ointment and oral corticosteroids were prescribed. Regular follow-up revealed fracture healing and union by the 5th week, with minimal residual skin color changes.

This case underscores the significance of swift diagnosis and appropriate treatment. It highlights the need for a follow-up appointment within one day of cast or splint application, as skin problems may manifest before neurovascular issues. Educating patients on warning signs, including skin irritation, neurovascular deficits, and symptoms of compartment syndrome, ensures timely identification of significant issues. Healthcare practitioners should inquire about patients' history of allergic reactions, adopting a proactive approach to prevent allergic contact dermatitis through early intervention and preventive measures.

Quality of Life of Geriatric Patients with Low Back pain and Fragility Fracture in Ulin General Hospital

Presenter: Zairin Noor
Associates: Raihan Az-Zahra, Raihan Febri Rumboko, Roselina Panghiyangani, Ridma Irsyam Septadi, Pandji Winata Nurikhwan, Husna Dharma Putera
Institution: Head of Doctoral Study Program, Faculty of Medicine Lambung Mangkurat University, Indonesia.

ABSTRACT

Background:

Several factors can affect the quality of life in elder people. Among those, chronic issues such as low back pain and fragility fracture are often not seen as primary concern when treating elder people.

Objective:

This study aims to determine whether there are differences in quality of life between geriatric patients with low back pain and those with fragility fractures at Ulin General Hospital Banjarmasin, Indonesia.

Methods:

A cross-sectional study was performed at the outpatient clinic of Ulin General Hospital Banjarmasin, a tertiary care hospital in a province of Indonesia. Data collection uses purposive sampling with primary data from direct interviews and questionnaires using the SF-36 questionnaires to all geriatric patients.

Results:

From August until October 2023, we collected 150 total samples: 50 control subjects; 50 subjects with low back pain; and 50 subjects with fragility fracture. The results showed significant differences ($p < 0,005$) in the quality of life in geriatric patients with low back pain vs control in 4 domains: Physical functioning (55 vs 75), Physical role (50 vs 50), Social function (75 vs 75), and General health (37 vs 58).

In the quality of life in geriatric patients with a fragility fracture, there were significant differences vs control in 6 domains ($p < 0,005$): Physical functioning (5 vs 75), Mental health (96 vs 100), Vitality (80 vs 87,5), Emotional role (100 vs 66), Pain (42 vs 67), and Social function (75 vs 75)

Conclusion:

Low back pain and fragility fractures decrease the quality of life in geriatric patients. We hope this research will raise awareness to proper prevention and adequate treatment.

Keywords: *quality of life, geriatric, low back pain, fragility fracture, SF-36 questionnaires.*

Frozen Bone autograft for reconstruction of bone and soft tissue sarcoma; our experience

Presenter: Badaruddin Sahito
Associates: Azam Kamboh, Nauman H, Awais Abro , Asif Jatoi, Khalil U rehman
Institution: Dow university of health Sciences / Dr Ruth KM Pfau civil hospital Karachi Pakistan

Objective : Objective of this study is to assess outcome of patients trated with Frozen Bone autograft technique . This is one of the excellent biological method of reconstruction for bone sarcomas.

Material & methods: 22 patients were included in the study from 2014 to 2023March at department of orthopaedic `surgery Dow university of health Sciences / Civil hospital karachi .

Results & Discussion : 20 patient have bone sarcoma and 2 have soft tissue tumor involving bone . 6 to 60 yr age pt included in the study . 9 osteosarcoma, , 10 ewing sarcoma, , 2 chondrosarcoma, 1 synovial sarcoma , 1 rhabdomyosarcoma . 1 pelvis, 8 distal femur , 6 proximal femur ,3 proximal tibia, 1 ulna, 3 humreus. Pedicle and free freezing done in selected cases .MSTS in upper limb was 28 and in lower limb was 20 to 28 variable. 2 patients had soft tissue recurrence . 1 had hip disarticulation , 1 have above knee amputation. Infection in 5 patients. Maximum follow up we have 5 years. 1 patient lost follow up. 6 patients died , 4 osteosarcoma and 1 ewingsand 1 synovial sarcoma.

Conclusion: frozen bone autograft is one of the best methods of reconstruction , with excellent union at osteotomy site and no bony recurrence . But infection is really disastrous .

Robotic Navigation in anterior and posterior cervical surgeries.

Presenter: Dr Vidyadhara Srinivasa

Associates: Dr Madhava Pai K, Dr Balamurugan T, Dr. Abhishek Soni

Institution: Manipal Institute of Robotic Spine Surgery

Introduction

Robots have been extensively used in thoracic and lumbar instrumentation, with limited work having been done for the cervical spine. The current generation of spine robots have navigation capabilities with additional measure of safety. This can be used for safe and adequate decompression as well as in the preparation and anatomical placement of implants in both anterior and posterior cervical surgeries. We report the first series of cases wherein a third generation spine robot was used in the all manner of cervical spine surgeries.

.

Methods

Fourteen patients who underwent all variety of robotic assisted cervical spine surgery (nine-anterior and five posterior) were analyzed. The Mayfield clamp of the radiolucent table was used to secure all patients and to limit the movement of the cervical spine to avoid loss of navigation accuracy. The procedures were done without bone mounts using intra-operative O-arm scan. The O-arm time, Robot time, and mean radiation exposure was noted. Post-operative O-arm scans were done to determine if there was any pedicle breach. All procedures were done under neuromonitoring.

Results

The most cranial level of instrumentation was the occiput and the most caudal instrumented vertebra was T4. The mean O-arm time was 4.4minutes, the mean robot registration time was 3.5 minutes and the mean time per screw was 3.5 minutes. The mean radiation dose to the patient was 26.1mGy. Post operative O-arm scans showed accurate placement of cervical implants.

Conclusions

The use of spine robots extends beyond placement of pedicle screws in the thoracolumbar spine. When used for its navigation capabilities, the robot also ensures safe and adequate real time decompression along with accurate placement of implants in the cervical spine even in patients with anatomical aberrations and previous surgeries.

Subacromial Spacer Implantation During Arthroscopic Partial Repair in Patients With Massive Irreparable Rotator Cuff Tears Provides Satisfactory Clinical and Radiographic Outcomes: A Retrospective Comparative Study

Presenter: Syed Dil Bagh Ali Shah, M.D

Associates: Kerem Bilsel, M.D., Orkhan Aliyev, M.D., Burak Altintas, M.D., Rodi Ertogrul, M.D., and Mehmet Kapicioglu, M.D.

Institution: Department of Orthopaedics and Traumatology, Bezmialem University, Istanbul, Turkey

Purpose : To compare the clinical and radiographic outcomes of partial rotator cuff repair (RCR) with and without implantation of a biodegradable subacromial spacer in the treatment of symptomatic irreparable massive rotator cuff tears (MRCTs).

Methods : Patients with MRCT who underwent arthroscopic partial repair alone (PR) or combined with subacromial spacer augmentation (PRS) were included. Patient-reported outcomes, including visual analog scale (VAS), American Shoulder and Elbow Surgeons (ASES), and Constant scores in addition to range of motion (ROM) were collected preoperatively and at the final follow-up. Additionally, we determined the percentages of all of the patients in groups that achieved the minimal clinical important difference (MCID), substantial clinical benefit (SCB), and patientacceptable symptomatic state (PASS) for the VAS, ASES, and Constant scores. Acromiohumeral distance (AHD) was determined as well.

Results : A total of 32 patients were included. Group PR included 20 patients with a median age of 68 years (range: 64-73) and median follow-up 28.0 months (14.0-60.0). Group PRS included 12 patients with a median age of 68.5 years (range: 63-74) and median follow-up of 17.0 months (12.0-32.0). At the final follow-up, the ASES, VAS, and Constant scores were significantly higher in the PRS group (75.5 [55-88.3], 1.0 [0-3], and 70.0 [43-79], respectively, compared to the PR group (55.0 [37.5-65], 2.0 [0-4], and 55.0 [31-79], respectively; $P < .05$). The only statistically significant differences were found between the PR and PRS groups in terms of the proportions of the patients who achieved MCID for the ASES (70% vs. 100%; P ¼ .04) and in terms of the proportions of the patients who achieved SCB for the ASES (60% vs 100%; P ¼ .01) There was also statistically significant difference between the PR and PRS groups, in terms of the proportions of the patients who achieved PASS for the VAS and ASES ([30 % vs 66.7 %; P ¼ .04] and [0 % vs 50 %; P ¼ .001], respectively). AHD was also improved in the PRS group (8.4 [7-9.5] vs 7.85 [5.5-9]; $P < .05$). ROM was greater in the PRS group at final follow-up with median forward flexion degree, 140.0(90-150) versus 120.0(80-153) ($P < .001$) and median abduction degree, 100.0(70-130) versus 90.0(70-110). There was no difference in terms of external rotation between groups (3[2-5] vs 3.0(2-4); P ¼ .4).

Conclusions : Arthroscopic partial RCR with implantation of a sub-acromial spacer leads to satisfactory clinical and radiographic outcomes in patients with symptomatic irreparable MRCT compared with patients treated with partial repair alone.

Level of Evidence : Level III, retrospective comparative study

Post-Surgical TFCC Management of Athletic Individuals

Presenter: Arthur Blair Agero Jr

Institution: Mediclinic Parkview Hospital, Dubai

Abstract:

Introduction: The Triangular Fibrocartilage Complex (TFCC) is one of the crucial stabilizing structures of the wrist. In the athletic population, this complex is often partially or completely ruptured necessitating surgical repair. Surgical intervention may either be open or arthroscopic.

Regardless of the surgical approach, the recovery from a TFCC surgical repair may take several months. Immobilization of the wrist and forearm for a given period is part of all the current protocols in post-surgical treatment. In most literature, this immobilization period to prevent the rotation of the forearm can last from six weeks to eight weeks with the wrist held in a neutral position, usually using a Muenster cast/splint. In the protocols reviewed, the pronosupination is only initiated between the 6 th week and 8 th week or even later after the cast is removed.

It is known that prolonged immobilization of the wrist and hand can lead to complications such as stiffness and weakness. Paradoxically, immobilization is necessary to allow the ligament complex to heal. However, an early mobilization (EM) approach in the hand therapy of TFCC post-surgery may potentially be an option.

This study aims to present cases of surgically repaired TFCC ruptures in the athletic population treated with early mobilization who were treated by the author. Seven patients who underwent open surgical repair of the TFCC from two different facilities from 2013 to 2022 were chosen for the study. Selected patients are either professional athletes or fitness enthusiasts. Patients who had arthroscopic repair were automatically excluded.

The outcome measures include the initiation of the forearm rotation (pronosupination), the occurrence of re-injury during hand therapy, safe return to occupation, range of motion, Visual Analogue Scale (VAS) pain score, and patient satisfaction.

Results: Seven patients had the wrist and forearm active rotation initiated on the 3 rd week post-surgery. There were no incidents of re-rupture or re-injury within the hand therapy period. Six patients returned to work after 3 months from surgery. Six have a complete range of motion. Two patients still complain of pain of 2/10 in VAS when loading the wrist heavily months after discharge. Five expressed are very satisfied with the outcome of their surgery and hand therapy.

Conclusions: The athletic population will benefit from reduced immobilization and early commencement of hand therapy.

Limitations: The population size is minimal. The treatment was done only by a single hand therapist. The approach has been shared with only 2 other therapists. Requires a significant amount of hands-on exposure to TFCC injuries and repairs to progress safely. The protocol has not been published.

Functional outcome of distal nerve transfers for high mixed peripheral nerve injuries

Presenter: Khalid Masood

Institution: HULS Center, Lahore, Pakistan

Abstract

Introduction: Primary repair of a high peripheral nerve injury results in a uniformly poor outcome as a result of the great distance between the site of injury and the innervated muscles. Distal nerve transfers are one of many options available to the hand surgeons caring for these patients, those are further squeezed in case of mixed nerve injuries.

Objective: to evaluate functional outcome of distal nerve transfers in mixed peripheral nerve injuries at high level in addition to primary repair.

Material and methods: Prospective study of 5 year conducted at HULS department, CMH Lahore from 2016 to 2021 with follow up period of 3 years. Total number of 34 patients with high mixed nerve injuries with different combinations were treated with distal nerve transfers in addition to primary neurorrhaphy.

Results: This resulted in timely return of function to the extrinsic and intrinsic muscles of the hand within a year those were documented further by electromyography. Sensations were also improved measured by fine touch, pain and 2 points discrimination tests.

Conclusion: Distal nerve transfers for the treatment of high mixed nerve injuries is a much better approach than the traditional primary neurorrhaphy only that that results in reinnervation period and allows quick recovery which is critical to the function of the hand.

FUNCTIONAL OUTCOME OF LATERAL EPICONDYLITIS TREATED BY LOCAL INJECTION OF AUTOLOGUS PLATELET RICH PLASMA

Presenter: DR. A. A. NACHAPPA [1]
Associates: DR. MANJUNATH DARAGAD [2] , DR. SANTOSH JEEVANNAVAR [3]

Institution:

1. POST GRADUATE, DEPARTMENT OF ORTHOPAEDICS, SDM MEDICALCOLLEGE AND HOSPITAL, DHARWAD.

2. PROFESSOR, DEPARTMENT OF ORTHOPAEDICS, SDM MEDICALCOLLEGE AND HOSPITAL, DHARWAD.

3. PROFESSOR AND HOD, DEPARTMENT OF ORTHOPAEDICS, SDM MEDICALCOLLEGE AND HOSPITAL, DHARWAD.

Introduction : Lateral epicondylitis is most commonly noted among the working age group that significantly alters the activity of daily living. Treatment with platelet rich plasma (PRP) have shown good results with resolution of patient's symptoms.

Objectives : To assess the functional outcome and efficacy of Platelet rich plasma in patients with Lateral epicondylitis

Materials and method : This is a Prospective study, which was conducted in the Department of Orthopaedics, SDMCMSH, Dharwad. 50 patients with lateral epicondylitis were included in the study, which included 21 males and 29 females, with 74% involving the dominant hand. PRP was prepared using open method and 2ml injected at the site of maximum tenderness around the lateral epicondyle. Patients were managed with tennis elbow brace. No NSAIDS were prescribed during the study. Follow-up was done at 2 weeks, 6 weeks, 3 months and 6 months. Functional outcome was calculated at each follow-up using Visual Analogue Score (VAS) and Nirschl score.

Results : The average VAS score at presentation was 8.26, at 3 months- 2.93 and at 6 months-1.55, indicating about 81.2% improvement in the clinical outcome. At presentation the average Nirschl score was 6.02, at 3 months it was 2.48 and at 6 months it was 1.4, indicating 80% improvement in the functional outcome of activity of daily living. However out of the 50 patients who received PRP, 3 patients came back with history of persistent pain, two were managed conservatively and one patient was given another dose of PRP injection. No other alleviation of symptoms or complications were reported.

Conclusion : Management of lateral epicondylitis with PRP injection has shown good functional outcome and significant improvement in activity of daily living with faster recovery rate and minimal complications.

NEGATIVE EFFECT OF SIMULTANEOUS FIXATION IN DISTAL RADIOULNAR JOINT INJURY ACCOMPANYING FOREARM FRACTURES: A CASE PRESENTATION RESULTING IN CHRONIC RADIAL HEAD DISLOCATION

Presenter: Derya Akbaba
Associates: *MUHAMMED YUSUF AFACAN , MEHMET FATIH GUVEN*

Institution: Istanbul *University-Cerrahpasa, Cerrahpasa Faculty of Medicine, Department of Orthopedics and Traumatology*

Abstract:

Following distal radioulnar joint injuries accompanying forearm fractures, simultaneous fixation of the distal radioulnar joint during forearm stabilization can have a negative impact on elbow stability in the subsequent course. Failure to extract the fixation material after adequate rehabilitation with distal radioulnar joint fixation can lead to the development of chronic pronation, supination restrictions, and elbow instability in the later stages.

A 42-year-old male patient with no known comorbidities and no regular medication use underwent external fixator application for a left open forearm both bone fracture. Subsequently, external fixator extraction, open reduction, and internal fixation, along with distal radioulnar joint repair, were performed in 2019 After implant extraction, the material for distal radioulnar joint fixation was not removed. Chronic radial head dislocation was observed in the following stages, leading to open reduction and anular ligament reconstruction with a triceps autograft which has been done in 2022. Despite one year of appropriate rehabilitation, the patient's surgery resulted in failure, and chronic radial head dislocation and elbow instability persist.His current physical examination shows left forearm supination has 30 degree restriction, pronation has 15 degree restriction, left elbow flexion is 100 degree, extension is 15 degree restricted and his left wrist extension is 15 degree.

In both bone forearm fractures, the distal radioulnar joint and elbow should be evaluated simultaneously, and a gradual surgical planning and appropriate rehabilitation should be pursued for the optimal outcome. Timely implant extraction holds high importance in achieving maximum cure for the patient, considering the correct sequencing of surgical planning stages. Simultaneous fixation of the distal radioulnar joint and forearm, followed by non-extraction of fixation material, may result in chronic radial head dislocation.

Association of Coracoacromial Ligament Degeneration With Rotator Cuff Tear Patterns, Retear Rate and Functional Outcomes

Presenter: Wei Ren Su

Associates: Hao-Chun Chuang , Chih-Kai Hong , Kai-Lan Hsu , Fa-Chuan Kuan

Institution: Department of Orthopaedic Surgery, National Cheng Kung University Hospital, College of Medicine, National Cheng Kung University, Tainan.

ABSTRACT

Background:

Degeneration of the coracoacromial ligament (CAL) frequently accompanies massive rotator cuff tears. The potential impact of CAL release and acromioplasty on retear rates and complications, such as iatrogenic shoulder instability, remains uncertain. This study aimed to assess the effects of CAL degeneration, postoperative retear incidence, and preoperative rotator cuff tear patterns on functional outcomes and residual pain following arthroscopic surgery.

Objective:

To investigate the association between CAL degeneration and the patterns of massive rotator cuff tears using multiple modalities and to assess the effect of CAL degeneration on supraspinatus tendon retear rates.

Methods:

We prospectively recruited 44 patients who had undergone arthroscopic rotator cuff repair without acromioplasty or CAL release. Preoperative MRI scans were reviewed to determine the patterns of rotator cuff tears. The CAL was biopsied intraoperatively and histologically analyzed using the Bonar score. The integrity of the repaired supraspinatus tendon was analyzed on follow-up MRI at six months postoperatively using the Sugaya classification. Finally, the functional outcomes including ASES score, Constant-Murley score, and VAS for pain were followed up every 3 months until 1 year after surgery. The differences in outcomes were analyzed using repeated-measure ANOVA.

Results:

Patients with Collin type B rotator cuff tear had significantly higher CAL Bonar scores than those with Collin type A or isolated supraspinatus tears (10.0 vs 6.8 and 3.4; $P = .03$ and $P < .001$, respectively). Patients with a degenerative acromial undersurface of Copeland-Levy stage 2 or 3 had CALs with significantly higher Bonar scores than those with an intact acromial undersurface (8.4 and 8.2 vs 3.5; $P = .034$ and $P = .027$, respectively). The CAL Bonar scores of patients with different stages of the 6-month postoperative Sugaya classification were comparable (6.5, 7.2, 8.0, and 7.8 for stages 1, 2, 3, and 4, respectively; $P = .751$). Twenty five out of the 44 patients completed one-year follow up. Compared with those with mildly degenerated CAL, patients with moderate to severe CAL degeneration had equivalent ASES and Constant score (p=0.127 and p=0.417) but significantly higher residual pain (p=0.046). Patients with retear on MRI images, shown as insufficient thickness of repaired supraspinatus tendon 6 months after surgery, also had equivalent ASES and Constant score (p=0.109 and p=0.404) but significantly higher residual pain (p=0.010).

Conclusion:

CAL degeneration was more severe in anterosuperior-type massive rotator cuff tears. Interestingly, even without acromioplasty, the severity of CAL degeneration did not affect the retear rate of the supraspinatus tendon. While CAL degeneration correlated with slightly increased residual pain, it did not reach minimal clinically significant difference. Preoperative tear patterns had no significant impact on outcomes.

Keywords:

coracoacromial ligament; rotator cuff repair failure; rotator cuff tear; supraspinatus tendon.

Implant Design Considerations for Radial Head Arthroplasty: A literature Review of Present Evidence

Presenter: Jia Guo
Associates: Prof. In-Ho Jeon
Institution: Asan Medical Center, University of Ulsan, College of Medicine

Abstract

l Background

As the exponential growth of the understanding of elbow anatomy, biomechanics, and kinetics continues, multiple prosthetic designs as well as surgical techniques have been developed since Speed first introduced radial head prostheses in 1941. Although there has been an enormous rise in the number of publications on radial head arthroplasty in recent years, there is presently no evidence indicating the superiority of one type of radial head implant over others.

l Purpose of review

Current radial head prosthesis designs vary in terms of material, shape and size of the prosthetic radial head, polarity, modularity, stem fixation methods, and stem length. The purpose of this study is to present a review of recent research on the variables regarding the design considerations of radial head prostheses.

l Recent findings

Current literature demonstrates that it is crucial to replicate the native radial head anatomy to ensure proper functioning and stability after RHA. Recent studies have demonstrated the benefits of prosthesis modularity, which are prostheses made with modular components. This allows surgeons to customize the implant during surgery by selecting alternative head sizes and stem lengths to replicate the natural architecture of the radiocapitellar joint. In addition, long-term follow-up studies are essential to understand the longevity and potential complications of the prosthetic devices.

l Summary

However, it is important to consider individual patient cases when determining the specific type of radial head implant, this article provides an overall reference for surgeons to help identify the appropriate radial head prosthesis to achieve effective results.

The challenge of transulnar basal fracture dislocation: A surgical strategy based on the pattern of coronoid fracture

Presenter: Chu Min-su
Associates:

Hyoung-Seok Jung2, Hong je Kang3, Jae-Sung Lee

1. Medical Center of Chung-Ang University School of Medicine ‘

2.Chung-Ang University Gwangmyeong Hospital

3. Wonkwang University Hospital

ABSTRACT

Background: The rarity and complexity of transulnar basal fracture-dislocations pose significant challenges in treatment. This study aimed to categorize these fractures based on coronoid fracture patterns and propose tailored surgical approaches for each type. Additionally, we evaluated the functional and radiological outcomes among the patients managed using our treatment algorithm.

Methods: A total of 19 patients who underwent open reduction and internal fixation for transulnar basal coronoid fracture-dislocations between March 2018 and October 2022 were enrolled in this study. These patients were classified based on the coronoid fracture patterns associated with olecranon fractures: Type 1 involved anteromedial facet (AMF) fractures, Type 2 encompassed coronoid base and body fractures, and Type 3 involved a combination of Types 1 and 2. We made a midline longitudinal dorsal incision to facilitate the provisional fixation of the olecranon fragment to the distal metaphysis using a locking plate. Subsequently, we employed the over-the-top (Type 1) and Taylor–Scham approaches (Type 3) for direct coronoid process fixation with buttress plating. Type 2 fractures were approached via medial fascial exposure from the posterior ulnar cortex or through the olecranon fractures, and subsequently fixed with miniplates and screws. Bony union and joint articulation were assessed via plain radiographs, and functional outcomes were evaluated using range of motion and the Mayo Elbow Performance Score.

Results: Among the 19 patients, 3 had Type 1 fractures, 14 had Type 2 fractures, and 2 had Type 3 fractures. All fractures exhibited solid osseous union without subluxation or dislocation. The average flexion and extension arc was 119.47° ± 20.88°, with a mean flexion of 127.37° ± 13.37° and an average flexion contracture of 7.89° ± 10.04°. The average Mayo Elbow Performance Score was 82.63 ± 12.51 points. Qualitatively, patient outcomes were excellent in 5 patients, good in 9, and fair in 5.

Conclusion: Most of our patients presented with easily approachable coronoid base and body fractures. However, in AMF fractures of the coronoid process, a direct medial approach is required for buttress plating. We believe our study helps provide valuable surgical strategies and useful guidelines for making appropriate decisions in transulnar basal fracture-dislocations.

Level of evidence: Level IV, Case Series, Treatment Study

Keywords: Transulnar basal fracture dislocation; olecranon; coronoid process; anteromedial facet fracture

COMPARISON OF ROTATOR CUFF MUSCLE ACTIVITY WHEN USING ABDUCTION SLING VS SIMPLE ARM SLING IN FILIPINOS: AN ELECTROMYOGRAPHY STUDY

Presenter: RIC ADRIAN A. ESTACIO, MD
Associates: JOSE MARI GERALD O. ARPILLEDA, MD
JONATHAN C. RONQUILLO, MD
ROSITA NARDO-ESTABILLO, MD
Institution: DEPARTMENT OF ORTHOPAEDICS
DEPARTMENT OF PHYSICAL AND REHABILITATION MEDICINE
DE LA SALLE UNIVERSITY MEDICAL CENTER

Abstract : Rotator cuff tear is a common cause of shoulder pain and weakness with a prevalence of 30-50% over the age of 501. No consensus currently exists on immobilization protocols after surgery4,6. Electromyography (EMG) was chosen in this study because this is a reliable and valid method of measuring motor unit action potential.

This experimental, pilot study was done among 34 healthy volunteers, having unlikely degenerative cuff issues aged 18- 40 years, Filipino, and without previous shoulder injury. The general objective of this study was to compare the rotator cuff activity using EMG between standard arm sling and abduction sling. To date, there are no studies comparing the muscle activities of rotator cuff muscles placed on immobilization techniques via EMG.

A total of 34 participants were included in the study. There were 21 males and 13 females (62% and 38% respectively) with an average age of 30 years old (range 20-30). Eighty two percent were right-handed. In all participants, results of the needle examination did not show any recruitment pattern while immobilized in either shoulder position in the standard arm sling or the abduction position, thus motor unit action potential was recorded zero.

This study was undertaken as a first step towards providing baseline rotator cuff muscle EMG information on shoulder position with least voluntary rotator cuff contraction. Based on the results of the study, we conclude that when the shoulder is at rest, EMG activities of both the supraspinatus and infraspinatus are not activated during immobilization with either standard arm sling or abduction sling. These findings comparing the EMG findings of standard sling versus abduction sling can springboard further studies to form evidence-based recommendations on immobilization after rotator cuff surgical repair.

Keywords: Rotator Cuff tear, Immobilization techniques, Standard Sling, Abduction Sling

Neglected Locked Volar Distal radio-ulnar joint dislocation

Presenter: Vishnu Senthil Kumar

Introduction:

Isolated DRUJ can be easily missed due to lack of clinical and radiological paucity. Dorsal DRUJ dislocation is more common than volar. We report such a case of neglected missed locked volar isolated DRUJ and its management.

Case Report:

35 yr old female had sustained injury to her right dominant wrist about 2 months back. Position of wrist during injury was not known to patient. She had pain following the incident and was on native treatment in the form of casting for three weeks (1 per week).

Presented to us with pain and in-ability to pronate. On examination, the width of the affected wrist was small compared to the normal side. Palpation revealed a bony swelling on the volar aspect of the wrist. No distal neurovascular deficit. Movements of the right wrist included 0-30 degree of ulnar deviation, 10 deg of radial deviation, 50 deg of palmar and 45 deg of dorsi-flexion was present. Full supination was present but only 20 deg of active pronation.

Radiograph of AP and Lateral view showed volar dislocation of ulnar head. PA view not possible because of lack of pronation of wrist. MRI showed complete tear of dorsal and volar radio-ulnar ligaments, TFCC is normal. No soft tissue interposition.

Under GA, distraction of DRUJ, direct pressure of ulnar head and passive pronation reduced the ulnar head which was stable. Two DRUJ K-wires were used to maintain reduction and patient was put on above elbow POP in neutral position for 2 weeks later mobilized in maximum pronation for 4 weeks.

At 6 weeks, K-wire removed and active/active assisted mobilization started. Now Patient at 6 weeks follow up, patient has regained around 40 deg of pronation and pain free.

Discussion:

Normal DRUJ movement involves volar translation of ulna during supination and reverse in pronation. Hyper-supination injuries cause volar DRUJ displacement. Rotation of forearm during radiographs and lack of obvious clinical findings due to underlying soft tissues can miss DRUJ injuries. In Volar dislocation, volar joint capsule and dorsal disruption of radio-ulnar ligament is present. Irreducible nature is due to ECU interposition and compressive pull of pronator quadratus. GA relaxes the pronator quadratus spasm and aides in reduction.

Conclusion:

High degree of clinical suspicion and proper radiograph is needed to avoid DRUJ injuries. Pronation is needed for various activities of daily living, hence early reduction and physiotheraphy is mandatory.

Double Dislocation of Both the Proximal and Distal Interphalangeal Joints in the Little Finger

Presenter: Muhammed Yusuf Afacan

Authors: Muhammed Yusuf Afacan [1] , Mahmut Kürşat Özşahin [1] , Önder Aydıngöz [1]

[1] *Istanbul University-Cerrahpasa, Cerrahpasa Faculty of Medicine, Department of Orthopaedics and Traumatology, Istanbul, Turkey*

Abstract

High-energy traumas can result in joint dislocations, often accompanied by fractures. However, the simultaneous double dislocation of both proximal and distal interphalangeal joints (PIP and DIP) in fingers is a rare occurrence. While it may be assumed that these dislocations happen concurrently during the same traumatic event, the possibility of consecutive events should be considered. A 29-year-old right-hand dominant male presented to the emergency room with deformity in his left little finger after being struck by a ball during a football game. Despite the little finger's immobility following hyperextension injury, there was slight swelling, discoloration, and pain, with no signs of laceration or neurovascular damage. Radiographs revealed PIP and DIP joint dislocations in the left little finger, along with a proximal fracture of the distal phalanx, indicating a stepladder deformity. Closed reduction was successfully performed through longitudinal traction and pressure applied over the base of the dislocated digit. Subsequently, an aluminum finger splint was applied to maintain the little finger in a functional position and prevent further damage. Follow-up radiographs confirmed the successful reduction of both joints. Immobilization with the aluminum finger splint was advised for three weeks, followed by range of motion exercises and rehabilitation. A three-month follow-up revealed nearly full range of motion in both PIP and DIP joints without stiffness or pain. Despite the expectation that double dislocation may manifest with more pronounced pain and swelling, this case demonstrates that it can also present with mild symptoms. The little finger's susceptibility to trauma, attributed to the lack of surrounding tissue, makes it more prone to double dislocations. This case report highlights the rare occurrence of simultaneous double dislocation involving both PIP and DIP joints in the little finger, with successful recovery achieved through early reduction and timely rehabilitation.

Coracoid base fractures- case series of a missed classification variant.

Presenter: Bhavin Jadav

Institution: Flinders Medical Centre

Introduction & aims

The coracoid process makes an important part of the superior shoulder suspensory complex (SSSC) to the extent it has been referred to as the ‘lighthouse of the shoulder’. Distinction between simple ‘avulsion’ injuries versus Injuries to any two of these structures in the SSSC results in failure of functional stabilisation of the shoulder, often referred to ‘floating shoulder’ which is an indication for operative fixation is important. We present our experience and understanding of these uncommon injuries that are inconsistently reported.

Method

We report 4 cases of coracoid base avulsion fractures that were identified as SSSC failures and managed operatively. The Acromioclavicular (AC) joint reduction and referencing with the intact part of acromion with the help of hook plate results in reduction of coracoid as well as functional off-loading of coracoid process allowing it to heal in reduced position. The hook plate is later removed after confirming osseous union of the coracoid.

Results

Fixation of the SSSC injuries with coracoid base avulsion and AC joint injury with hook plate resulted in indirect reduction of the coracoid, removing the necessity of direct reduction and/or fixation of the coracoid process itself and allowed healing of the injury.

Conclusions

Understanding the mechanics of the shoulder in the reference of the SSSC is important in managing these uncommon injuries. Hook plate as an implant has fallen out of favour in general but specific indications remain where it can be used to good effect for management of these complex injuries. This injury is a variant of the AcromioClavicular joint injury that is on the spectrum of but not classified in the Rockwood classification and could be added in the classification as a variant.

OSTEOMYELITIS FOLLOWING EXTENSOR TENDON REPAIR OF RIGHT MIDDLE FINGER : A DEVASTATING COMPLICATION

Presenter: Noor Shafika Abd Hamid
Associates: Mohd Hafizi, Nurul Syahirah, Teh WB3
Institution: Department of Orthopaedics, Hospital Pengajar UniSZA

INTRODUCTION : Osteomyelitis of the hand is relatively uncommon. Distal phalanx is the most frequently implicated bone in osteomyelitis at 38%, followed by proximal phalanx and metacarpal which are both 23% and lastly is middle phalanx by 16%. Index finger has the highest incidence of osteomyelitis followed closely by thumb, little finger, middle and ring finger. The presentation can vary from involvement of a single bone, multiple bones or digits and even bilateral hands. Aetiologies of osteomyelitis can be identified as hematogenous seedlings, contiguous spread or direct inoculation into the affected bone. We presented a case of osteomyelitis with multiple bone involvement in a right middle finger following an extensor tendon repair.

CASE REPORT : A middle aged male, presented to our centre with chronic swelling and persistent discharge from his right middle finger for 6 months duration. He was right hand dominant with underlying poorly controlled diabetes mellitus. Prior to this, he had history of extensor tendon repair zone 1 at right middle finger complicated with acute surgical site infection for which drainage was done. Both procedures were done at another centre.

Clinically, there was a swelling at dorsum aspect of right middle finger extending from base of nailbed till middle phalanx. Single sinus was present and surrounded by an area of erythema with persistent serous discharge. Range of motion of distal interphalangeal joint was markedly limited. His white cell count was 7.11 10>9/L. X-ray right middle finger showed presence of sequestrum with loss of normal articular surface distal interphalangeal joint (DIPJ). MRI revealed focal collection from base of nailbed to DIPJ as well as lytic cortical destruction base of distal phalanx and head of middle phalanx consistent with chronic osteomyelitis.

Since he was right handed, a finger salvage procedure was planned. He underwent wound debridement, sequestrectomy and K wire insertion right middle finger. Tissue culture grew *Klebsiella pneumoniae* and *Staphylococcus lugdunensis* both sensitive to cefuroxime, ampicillin/sulbactam and fusidic acid respectively. K wire was placed to stabilise the DIPJ. Patient was treated with a course of a week intravenous ampicillin/sulbactam then changed to oral cefuroxime and fusidic acid for 6 weeks.

Upon follow up, he achieved total eradication of infection clinically and radiographically. K wire was removed. He was able to achieve range of motion of DIPJ 0 - 45 degree.

DISCUSSION & CONCLUSIONS: Several risk factors have been recognized in osteomyelitis of the hand which are vascular insufficiency, diabetes mellitus and end stage renal failure. Management of hand osteomyelitis remain an arduous task mainly due to few circumstances ; bone defects resulting in substantial loss of digital length and high amputation rate. High amputation rate is further influenced by 2 factors which are late (>6months) presentation and increase in number of surgical procedures attempted. In this case, patient had poorly controlled diabetes mellitus with delayed presentation. In conclusion, adequate debridement with targeted antibiotics therapy are fundamental in managing osteomyelitis of the hand.

Treating Chronic Distal Radioulnar Joint subluxation with TFCC repair and DRUJ capsular imbrication: Midterm Results of 225 patients

Presenter: CHEN-WEI YEH

Abstract

Purpose:

Neglected triangular fibrocartilage complex (TFCC) fovea tear and dorsal distal radioulnar joint (DRUJ) capsule laxity contributed to the chronic DRUJ instability. This article aimed to evaluate clinical results and intervention timing of dorsal DRUJ capsular imbrication to the chronic DRUJ instability

Methods:

Retrospective study was conducted on 225 patients from 2016 to 2021. The inclusion criteria were symptomatic ulna fovea sign for over 6 months. 225 patients were divided into two groups: Group 1 “Cross-form TFCC repair” (CR) contained 135 cases and Group 2 “Cross-form TFCC repair” and dorsal DRUJ capsular imbrication (CR + DCI) contained 90 cases. The inclusion criteria were symptomatic chronic DRUJ instability for >6 months and dorsal DRUJ subluxation on MRI. The pain visual analog scale score (VAS), grip strength, modified Mayo Wrist Score (MMWS), wrist range of motion (ROM), patient reported outcomes (PRO) were assessed for a minimum of 3 years postoperatively

Results:

There were significant improved in pain VAS score, grip strength, wrist ROM, MMWS, PRO between preoperative and postoperative in both groups with P values of .001. In short-term following, grip strengths in “CR + DCI” group was better than “ CR ” group; however, wrist stiffness was noted in “ CR + DCI” group. In mid-term following grip strengths in “CR + DCI” group was still superior to “CR” group. Also, the wrist stiffness showed relieved in “CR + DCI” group and no significance difference between two groups.

Conclusions:

In the cases of chronic DRUJ instability treated with TFCC capsular repair and dorsal DRUJ capsular imbrication, the grip strength promoted significantly. Although it seemed that the wrist stiffness may be noted in short period, it can be recovered in mid-term following. We recommend this procedure as an option of treatment for patients with chronic DRUJ instability.

Single plating versus Dual plating osteosynthesis of scapular fracture – A Case series

Presenter: Chang-Han Chuang

Abstract

Scapula fractures are considered to be infrequent occurrences in medical practice.[1] The majority of scapula fractures, accounting for over 80%, are suitable for non-surgical treatment and yield positive functional outcomes [2, 3] However, there has been a significant shift in the approach to treating scapula fractures in recent years. Despite the scapula's robust muscle covering, which generally promotes successful healing of most fractures, improper alignment of the scapula during the healing process (scapular malunion) [4] can lead to notable impairments in shoulder girdle function. These impairments may manifest as persistent pain, cosmetic deformities, impingement, and scapulothoracic dyskinesis[5] Several studies have identified factors that indicate the need for surgical intervention [6, 7]

In cases of double column fractures, the use of single or dual plate fixation has generated conflicting results. Rongguang et al. suggested that single plating yielded favorable outcomes, along with reduced operative time, blood loss, prominence, and implant removal rate[8] On the other hand, Gao et al. conducted a study involving 23 cases of displaced scapular body fracture, employing a minimally invasive approach with both lateral and medial plating. They reported positive clinical and radiographic outcomes, with only one complication observed[9]

A comparative analysis was conducted at Show-Chwan Hospital between 2014 and 2019, involving a total of 28 cases. Among them, 16 cases underwent single plate fixation, while 12 cases opted for double plate fixation. The purpose of this comparison was to assess the outcomes between single and dual plate fixation approaches.

An innovative method for Tendon repair training in Pakistan.

Presenter: Haroon Rashid

Institution: Aga Khan University

Introduction;

Orthopedics and plastics surgery residency training in various parts of Pakistan lack practicing on models. So it was thought to develop an animal model for improving surgical skill of tendon repair techniques in response to the lack of cadaver availability and anatomically accurate models in developing countries like Pakistan.

Method and materials;

Annual workshops are conducted all over Pakistan since 2003 at National level in different teaching hospitals, after approval from their conference committee. Tendons from goat forelegs are used for the workshop due to their availability in lesser cost and cultural suitability in Pakistan. The workshops involved a presentation on basic tendon repair techniques, followed by hands-on practice on animal tendons under the supervision of instructors). Tendons from goat forelegs were used for the workshop due to their availability favorable cost and cultural suitability in Pakistan. The instructors' panel consist of senior orthopedics and plastic surgery consultants from Pakistan and overseas. The attendees are mostly orthopedic surgery and plastic surgery residents, fellows, and junior consultants. The instructors would demonstrate all forms of tendon repairs and then supervise when attendees practice. At the end of each workshop the supervisors and attendees received feedback forms. Their feedback forms are collected, criticism and suggestions noted.

Results;

In all workshops the Supervisors and Attendees found the model to be an excellent opportunity for practicing surgical skills before working on patients. They reported significant improvement in their confidence and surgical skills, with many suggesting that the workshop should be mandatory for all residents across the country.

Conclusion;

The animal model we developed can be easily replicated in various centers in developing countries like Pakistan. The use of animal tendons as a model provides an accessible and cost-effective alternative to cadavers; anatomically and histologically similar models, which are often unavailable or expensive. This workshop can help improving their surgical skills. We believe that our animal model workshop offers a viable solution and alternate to hands-on training for residents in Pakistan, and potentially other regions facing similar challenges.

Outcomes of Phalangeal Neck Fractures in a Pediatric Population

Presenter: Alphonsus Khin Sze Chong, MBBS, MMed

Associates: Ruth En Si Tan, MBBS, Jin Xi Lim, MBBS

Institution: National University Hospital, Singapore

Abstract:

Purpose

Displaced pediatric phalangeal neck fractures are regarded as unstable, and hence, surgical fixation is traditionally recommended. In our experience, some patients with displaced fractures treated nonsurgically healed with a good clinical outcome and no further displacement. We studied the outcome of displaced phalangeal neck fractures treated nonsurgically with attention to the change in fracture displacement over time and hypothesized that displaced phalangeal neck fractures can be treated nonsurgically with maintenance of acceptable radiological parameters.

Methods

A retrospective review of 35 patients aged 16 and younger was conducted. Included patients had at least 10 degrees of angulation or 25% translation in either the coronal or the sagittal plane, with no malrotation. Angulation and translation of the distal fracture fragment in the coronal and sagittal planes was measured from radiographs taken at 2 intervals—within 7 days of the injury and at least 21 days after the injury. Initial and final measurements were compared to determine the amount of fracture displacement that occurred.

Results

Thirty-five patients with type II A, B, and C fractures (classification according to Al- Qattan) comprised our study sample. Twelve patients had undergone manipulation and reduction. Average radiological follow-up was 4.3 months (range, 0.7e86 months; median, 1.2 months; SD, 14.7). These fractures treated nonsurgically did not displace as the fracture healed, suggesting that type II fractures, although traditionally regarded as unstable, may maintain their radiological parameters without surgical fixation.

Conclusions

Our findings suggest that displaced phalangeal neck fractures do not necessarily displace with nonsurgical treatment.

CEMENT IN CEMENT ‘ROTI’ SHOULDER INTRA-OPERATIVE MOULDED ANTIBIOTIC CEMENT SPACER (IOMACS): A TECHNICAL NOTE

Presenter: Pradeep Balasubramanian, M.S., Dan.S, F.R.A.C.S., Mah E.T, P.S.M.; F.R.A.C.S

Aim: To describe a technique to create a Shoulder IOMACS useful in 2 stage revisions for Prosthetic joint infection (PJI) and more recently for the definitive treatment of infected shoulder arthroplasty. Antibiotic Cement spacers have also been used in the treatment of shoulder sepsis or destructive osteomyelitis in compromised patients.

Commercial moulds or spacers are expensive, not customizable and limited in availability, sizes, and configuration. Hand moulding techniques, are not accurate in replicating the explanted prothesis. We describe a simple technique of creating an IOMACS using trial components.

Methods: First, the trials are matched to the sized explanted prosthesis. An intra-operative mould is created by wrapping a cement ‘roti’ (Indian flatbread) over the matched trials and bi-valving it before curing. Into this mould, new cement is injected to replicate the index prothesis and all its components, down to its size length and version. Cement and antimicrobials may be customized to match MBEC (Minimum Biofilm Eradication Concentration) for the organism identified. A stout K wire buried into the spacer stem and lateral margin adds structural support.

Results: We have replicated this technique in about 20 trials in-vitro and in 1 case in-vivo. There was no spacer fracture in the 1 clinical case during removal. There was some spacer rotation and minimal glenoid erosion at removal and clinical resolution of the infection to facilitate a revision. We have not used it in the definitive or long-term treatment of the septic shoulder.

Conclusions: The cement in cement ‘roti” shoulder IOMACS technique is relatively simple, accurate, cost effective, easily reproducible and can be readily created with minimum inventory. It is customizable to the shoulder, bug, and patient. It may take some in-vitro practice to perfect the technique before attempting a clinical case. It may also be adapted other infected joint replacements needing a two-stage revision. Biomechanical or long term follow up of this technique is needed to provide more data about complications and longevity to allow possible expansion of the indications of this technique in other infected arthroplasty.

Assessment of Ulnar Variation in Turkish Population; A Radiologic Research

Presenter: Barış Sarı [4]

Associates: Nazım Aytekin [1] , Özhan Pazarcı [2] , M. Vakıf Keskinbıçkı [3]

Institution:

[1] Tokat Public Hospital, Department of Orthopedics and Traumatology, Tokat/Türkiye 0000-0002-8949-5614

[2] T.C University of Health Sciences, Adana Faculty of Medicine, Adana City Training and Research Hospital, Department of Orthopedics and Traumatology, Adana/Türkiye 0000-0002-2345-0827

[3] Department of Hand Surgery, Bossan Hospital, Gaziantep, Turkey 0000-0002-3891-7944

[4] T.C University of Health Sciences, Adana Faculty of Medicine, Adana City Training and Research Hospital, Department of Orthopedics and Traumatology, Adana/Türkiye 0000-0002-1757-4364

-ABSTRACT-

INTRODUCTİON AND PURPOSE.

Positive ulnar variance may cause ulnar impaction syndrome, negative ulnar variance may lead to ulnar tunnel syndrome. These syndromes may lead to loss in functioning of the wrist by pain and decrease in range of motion. In this study, we aim to present and detect ulnar variances in Turkish population by using anterior posterior direct radiography.

MATERIALS AND METHODS.

We included 185 patients in this study. After excluding 7 patients because of non-proper documentation and non-proper direct radiography image, 178 patients remained in the study.

We put the diagnosis of ulnar variance according to anterior posterior direct radiography of the wrist. In a positive ulnar variant ulna is 2mm longer than radius and in a negative ulnar variance ulna is 1 mm shorter than radius. People having ulna between these values are accepted as neutral ulnar variance.

For analysis we used SPSS program. Shapira, ANOVA and Post Hoc tests are applied to the data. Meaningful p value is accepted as $p < 0,05$.

FINDINGS.

The mean age for 178 patients were 45,56. 73 of them were male (41%). 136 patients (76,4%) of the patients were detected with neutral ulnar variance. 27 patients (15,2%) had positive ulnar variance and rest was detected with negative one. The most common job among our patients were housewives (67 patients, 37,6%). 58,9 % of them were living in a city center.

89,8% of the patients had no known inflammatory disease, 6,7% of them had known rheumatoid arthritis diagnosis. 87,1% of the patients had no hand surgery history. 28 patients (15,7%) had paint at the ulnar side of the wrist. 163 patients (91,6%) had no detected bone lesions, 9 patients had been detected with simple bone cyst (5%).

A meaningful correlation between the presence of ulnar variation and the pain at the ulnar side of the wrist had been found with p value $p<0,05$.

DISCUSSION:

Our study shows that there is an important level of ulnar variance in Turkish population. Positive ulnar impaction may result more pain in the wrist compared to the other variances. It is found that negative ulnar variance is associated with degenerative changes mostly in the distal radius just proximal to the distal radio ulnar joint.

CONLUSİON.

Positive ulnar variance is more associated with the pain in the wrist whereas negative ulnar variance is more associated with the degeneration in the wrist just proximal to the distal radioulnar joint.

A study of different surgical modalities in the management of proximal humerus fractures

Presenter: Karthikeyan Dhandapani

Institution: Royal Gwent Hospital

Abstract

A study of different surgical modalities in the management of proximal humerus fractures

Background : Proximal humerus fractures are common but debilitating injuries. Numerous factors contribute to post-injury functional outcomes; therefore, a large debate exists over appropriate treatment. Optimal treatment for displaced or unstable two, three, and four-part proximal humerus fractures remains controversial. This study is conducted to analyze the results of proximal humerus fractures treated by different modalities of surgical fixation.

Materials & Methods : This study was carried out in Malla Reddy Institute of Medical Sciences, from July 2016 to June 2018. Thirty patients of displaced proximal humeral fractures were admitted in this hospital and treated surgically by PHILOS plate, K-wire and hemiarthroplasty. Follow up is done from 4 weeks to 12 months both clinically and radiologically. Results were evaluated by the use of Neer's shoulder score.

Results : Most common mode of injury was found to be road traffic accident and the most common type was two part fracture accounting for 12 out of 30 patients (40%).The results were evaluated by Neer's score. The average follow up duration was 11.4 months. Of the thirty patients, 7 (23.3%) had excellent results, 17 (56.7%) had satisfactory results, 4 (13.3%) had unsatisfactory results and 2 (6.67%) were failure.

Conclusions : Closed reduction and percutaneous pinning can be used for un-displaced or displaced fractures of the proximal humerus without comminution, in the younger age groups with good bone quality. In older individuals it is good to fix with percutaneous K wires, considering bone density (osteoporosis) and also to reduce the period of surgery. K wire fixation gave excellent results in our patients for the treatment of unstable 2 part proximal humerus fractures. Proximal humerus locking plate (PHILOS) gives reliable fixation for 2-part and 3-part fractures and has good functional outcome. In more complicated fracture patterns of 4-part fractures, its use is associated with poor clinical outcome. Prosthetic replacement should be considered as primary treatment in cases with marked comminution of the humeral head, in fracture-dislocations, and in elderly patients.

Keywords: PHILOS plate, hemiarthroplasty, Neer's score, proximal humerus fractures, surgical Management

Presentation of a Rare Case: Bilateral Avascular Necrosis in Femurs and Humerus Linked to Corticosteroid Use

Authors: Mert Can Çavuş [1] , Muhammed Yusuf Afacan [1] , Arda Zeytunlu [2] , Aliekber Yapar [3]

Presenter: **Muhammed Yusuf Afacan**

[1] Department of Orthopaedics and Traumatology, Istanbul University-Cerrahpasa, Cerrahpasa Faculty of Medicine, Istanbul, TUR

[2] General Practice, Antalya Kepez District Health Department, Antalya, TUR

[3] Department of Orthopaedics and Traumatology, University of Health Sciences, Antalya Training and Research Hospital, Antalya, TUR

Abstract:

Avascular necrosis is a bone pathology characterized by impaired blood circulation, resulting in tissue death due to inadequate vascular nourishment. Instances of avascular necrosis are on the rise in the fields of orthopedics and traumatology. The increased use of corticosteroids to manage inflammatory diseases and acute respiratory distress syndrome during the COVID-19 pandemic has led to a surge in outpatient referrals for cases of glucocorticoid-associated avascular necrosis. This study seeks to clarify the management of avascular necrosis following oral corticosteroid use in a young, healthy male patient, affecting both humeral and femoral heads bilaterally.

A 26-year-old male, without chronic health conditions, was diagnosed with bilateral avascular necrosis in humeral and femoral heads within two years following a one-month oral corticosteroid course. The patient underwent a comprehensive treatment plan, including hyperbaric oxygen therapy, oral antiplatelet therapy, a customized physical therapy and rehabilitation program, and bilateral core decompression surgery for both hip joints. Over the three-year follow-up, the patient responded favorably to treatment, exhibiting complete and painless range of motion in both shoulder and hip joints. This case emphasizes a critical point: femoral head avascular necrosis may not necessarily be the initial affected bone, and a considerable time lapse may occur between corticosteroid use and the onset of clinical symptoms. It underscores the importance of not dismissing complaints related to other bones in diagnosed patients and stresses the significance of early detection in avascular necrosis. Additionally, the study highlights the need for heightened vigilance in cases of orthopedic concerns among individuals with a history of corticosteroid use, especially those linked to the pandemic and inflammatory diseases, to enable early diagnosis and intervention for avascular necrosis.

Legg-Calve-Perthes Disease – A New Dimension of Treatment

Presenter: Islam Shahidul

Institution: Ad-din Women's Medical College Hospital
Department of Orthopedics & Spine Surgery
Dhaka, Bangladesh

Introduction : Perthes disease is a rare childhood condition affecting the hip joint. It develops when there is a temporary loss of blood supply to the rounded head of the femur (thigh bone) – the "ball" part of the "ball and socket" hip joint. Blood supply is important for bone, as it delivers oxygen and nutrition to the bone. Lack of blood supply causes bone cells to die. This process is called osteonecrosis, or avascular necrosis. As a consequence, the femoral head is weakened, which results in multiple fractures. When the blood supply returns, a new femoral head forms. As a rare disease, Perthes disease afflicts about one in 10,000 children, usually children between the ages between three to eleven years old. Both hips are affected in up to 15% of children. Treatments include time/observation, drugs, physical therapy, casting and surgery. Most children return to normal activities with or without some limitations. Duration of recovery is much longer. But in our study, restoration of the vascular supply, reformation of femoral head was achieved by application of PRP (Platelet Rich Plasma) within 6 months of starting the treatment.

Aim of the study: To treat the children affected by Perthes disease as disease condition in a shorter period of time by application of platelet rich plasma as therapeutic agent.

Method : Small amount of blood (30-40 ml) is drawn from the cubital vein and the blood is centrifuged to make the therapeutic plasma. In PRP (Platelet Rich Plasma) platelet is 2.5 times concentrated than normal blood. Then the plasma is collected for injection. With all aseptic precautions, plasma is injected directly into the hip joint. A wide bore needle is inserted just medial to the femoral pulse and subsequently injection is given by multiple pricks in epiphyses of femoral head. In our protocol, 3-5 doses of PRP injection is given and follow up X-ray is done after one month of third dose of injection. After checking the X-ray, decision is made whether to give further two doses of injection or not.

Result : We have provided treatment to 10 patients of Perthes disease. All patients were benefited regarding pain and 80-90% patients were benefited from pain as well as reformation of the femoral head with radiological evidence.

Conclusion : Though our samples are small, this regenerative treatment with PRP injection therapy arises the hope to cure a neglected disease like Legg-Calve-Perthes disease.

Rare Cases of Misdiagnosis of Osteonecrosis of the Femoral Head with Femoral Neck Fracture:

A Two-Case Report

Presenter: Ting-Hsien Kwan [1]

Associates: Chen-Hao Chiang [1] , Wei-Hsin Chih [1] , and Cheng-Ming Chou [1]

Institution: [1] Department of Orthopaedics, Chia-Yi Christian Hospital, Chia-Yi City, Taiwan

Abstract:

This study presents two rare cases of femoral neck fractures associated with undiagnosed osteonecrosis of the femoral head (ONFH) at the initial clinic visits. In the first case, a 55-year-old man experienced sequential bilateral displaced femoral neck fractures. Despite the absence of visible ONFH on X-ray and normal liver function test results, the condition went undiagnosed. Given the patient's functional normalcy, close reduction with cannulated screws was applied at both sides. However, nine months later, he presented with bilateral hip pain, revealing nonunion and implant failure on X-rays. Subsequently, the patient underwent bilateral total hip arthroplasty (THA), achieving a satisfactory outcome during the 4-year follow-up. In the second case, a 52-year-old woman with liver cirrhosis suffered a left displaced femoral neck fracture following minor trauma, and ONFH was not identified during the initial X-ray examination. Due to the chronic displaced fracture and poor general condition, bipolar hemiarthroplasty was performed. After two years, she developed right hip pain, and X-rays showed extensive necrosis and sclerosis of the femoral head. Computed tomography scans for ONFH staging revealed impending fracture lines at the subcapital site of the previous left femoral neck fracture. Subsequent right THA was performed, resulting in a satisfactory outcome.

Neurologic Deficit following THR : Diagnostic Dilemma - A Case Report

Presenter: Vinit Yadav

SICOT APOA ARTHROPLASTY FELLOW

VARANASI INDIA

BACKGROUND: Total hip replacement is a standard procedure done worldwide with known complications associated. Neurological deficit post replacement is less common complication that too bilaterally after replacement. Here we are presenting a similar case where disc extrusion was the cause for neurological deficit post replacement.

METHODS: young female was operated for bilateral secondary arthritis hip through hardinge's approach under combined spinal and epidural anaesthesia.she was bed ridden for last 6 months post surgery she developed sensory motor loss in both lower limbs. MRI spine revealed extruded disc which was removed endoscopically. Patient had good recovery after the procedure

CONCLUSION: There are 1 to 10 percent chances of nerve injury post hip replacement but usually associate with unilateral replacement. Epidural hematoma after anaesthesia is another leading cause but extruded disc in prolonged bed ridden patient is rare finding and always a difficult task to evaluate preoperatively.

Total Hip Arthroplasty for Failed Osteosynthesis of Proximal Femoral Fractures: Clinical Outcomes from a Low- and Middle-Income Country

Presenter : Devarshi Rastogi

Associates : Devarshi Rastogi, Shailendra Singh, Ahmad Ozair, Shah Waliullah, Shitanshu Kumar Singh, Rajeshwar Nath Srivastava

Institution : Department of Orthopaedic Surgery, King George's Medical University, Lucknow, Uttar Pradesh, India

Introduction: Total hip arthroplasty (THA) has demonstrated utility in the surgical management of patients with proximal femoral fractures that fail internal fixation, with good outcomes reported from high-income countries. Given the lack of data from resource-limited settings, this work sought to report the clinical outcomes of THA for failed proximal femoral osteosynthesis from a low- and middle-income country (LMIC).

Methods: The work was conducted and reported in accordance with Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines. A retrospective cohort study was carried out on all patients who underwent rescue THA for failed osteosynthesis of proximal femoral fractures, from January 2016 to June 2020, at a tertiary care center in Northern India. Primary study outcomes were functional outcomes as assessed by Harris Hip Score (HHS) at 1-year postoperatively and the frequency of perioperative complication as assessed by the Clavien-Dindo-Sink Grading System.

Results: Twenty-eight patients with a mean age of 43.25 ± 10.5 years were included, with 18 males and 10 females. For their femur fracture stabilization, the most common method used had been dynamic hip screw (n = 16, 57.1%), followed by cannulated cancellous screw (n = 6, 21.5%), proximal femoral nail (n = 3, 10.7%), dynamic condylar screw (n = 2, 7.1%), and Schanz Screw (n = 1, 3.6%). Causes of failure included cut-out of the screw (n = 14, 50.0%), avascular necrosis (n = 8, 28.6%), back-out of the screw (n = 3, 10.7%), non-union (n = 2, 7.1%), and secondary osteoarthritis (n = 1, 3.6%). THA was carried out after a mean of 26.64 ± 9.01 months after the index procedure. HHS improved significantly from 39.71 ± 10.89 preoperatively to 79.54 ± 4.22 at 1-year follow-up (mean difference 39.82, 95% confidence interval 43.66–35.98, $P < 0.001$). Perioperative complications occurred in two patients of Clavien-Dindo-Sink Grade III and another of Grade II, with no mortality occurring by 1 year.

Conclusions: In resource-limited settings like LMICs, THA may be a safe and efficacious surgical modality for failed osteosynthesis of proximal femoral fractures.

Keywords: Clavien-Dindo-Sink, Harris hip score, implant failure, intertrochanteric fracture, neck femur fracture, total hip replacement.

The Impact of the Use of Rectangular or Conical Cross-Section Femoral Component in Total Hip Arthroplasty for Developmental Hip Dysplasia: A Retrospective Comparative Study on Clinical and Radiological Outcomes

Presenter: MUHAMMED YUSUF AFACAN
Associates: Cumhur Deniz Davulcu [1] , Muhammed Yusuf Afacan [1] , Gökhan Kaynak [1] , Önder Aydıngöz [1] , Mahmut Enes Kayaalp [2]

Institutions:

[1] Istanbul University-Cerrahpasa, Cerrahpasa Faculty of Medicine, Department of Orthopaedics and Traumatology, Istanbul, Turkey

[2] University of Pittsburgh, Department of Orthopaedic Surgery, Pittsburgh, USA

Introduction and Objective: Total hip arthroplasty (THA) is a commonly successful surgical treatment option for hip dysplasia developed in adult patients due to developmental hip dysplasia (DDH). This study aims to identify factors affecting radiological and clinical outcomes in patients who underwent THA with rectangular or conical cross-section femoral components on the grounds of hip dysplasia and to compare the clinical and radiological results of these two groups.

Materials and Methods: Between 2015-2020, 66 cases who underwent total hip arthroplasty due to hip dysplasia, using SL-Plus (Smith & Nephew, Memphis, TN, USA) or Wagner cone (Zimmer-Biomet, Warsaw, IN, USA) as the femoral component, were identified. The median age of the patients was 50, with 91% being female. Pre- and postoperative visual analog scale (VAS) pain scores and Harris hip scores (HKS) were obtained from the patients. Radiological images were used to determine the frequency of maximum union status, component alignment, leg length discrepancy, length of excised segment in cases with shortening osteotomy, amount of leg lengthening, level of femoral osteotomy, distance of femoral component osteotomy line crossing, ratio of this distance to the component length, femoral canal filling rate, formation of radiolucent lines around the component, frequency of hypertrophic callus at the osteotomy line, and radiolucent line formation.

Results: The average follow-up period was found to be 5 years, with a minimum follow-up period of 2 years. Fifty-six patients had Crowe types 3-4. Among the 66 patients who underwent THA on the basis of DDH, conical cut prostheses were used in 31 cases, while rectangular cut prostheses were used in 35 cases. Excellent postoperative HKS was observed in 58% of all patients, 68% in those with conical cut prostheses, and 49% in those with rectangular cut prostheses. There was no significant difference between the two groups in terms of pre- and postoperative VAS pain scores and HKS. Both groups showed a significant decrease in VAS pain scores and a significant increase in HKS. Radiolucent line formation at the osteotomy line was significantly different between the two groups, with a higher frequency observed in the group using rectangular cut prostheses. In the group using rectangular cut femoral stems, a higher proximal and distal canal filling rate and a higher rate of radiolucent lines around the prosthesis and at the osteotomy line were observed.

Conclusions: Similarly successful results were obtained in patients undergoing THA on the grounds of DDH with rectangular and conical cross-section femoral components. No superiority was observed in terms of pain, function, and leg length discrepancy regarding femoral component selection. The rate of achieving an excellent HKS at the final follow-up assessment was higher in patients using conical cut prostheses. In patients using rectangular cut prostheses, a higher femoral canal filling rate, radiolucent lines around the prosthesis, and the rate of radiolucent lines at the osteotomy line were observed.

Optimizing Limb Length Discrepancy in Navigated Total Hip Arthroplasty through the Direct Anterior Approach on a Traction Table: Preliminary Outcomes from a Prospective Comparative Case Study

Presenter: Erh-Ti Lin
Associates: Erh-Ti Lin, MDa
, Horng-Chaung Hsu, MD, PhDa, b
, Chen-Wei Yeh, MDa
, Hsien-Te Chen,
MD, PhDa, b, Chih-Hung Hung, MDa, b, *

Institutions: a Department of Orthopedic Surgery, China Medical University Hospital, Taichung, Taiwan (R.O.C.)
b
Joint Reconstruction Center, China Medical University Hospital, Taichung, Taiwan (R.O.C.)

ABSTRACT

Background

Total hip arthroplasty (THA) through the direct anterior approach (DAA) currently demonstrated enhanced postoperative recovery compared to conventional approaches. Nevertheless, measuring the leg-length discrepancy poses a challenge, particularly on a traction table. The introduction of the surgical navigation system holds promise for addressing the issue. Herein, we aim to assess the potential benefits of employing a navigation system for correction and its impact on clinical outcomes.

Methods

A prospective study was designed, and 72 patients with advanced hip arthritis undergoing THA through the DAA between March 2021 and September 2021 were consecutively enrolled and included in the final analysis. A navigation system was used for quantifying the intraoperative limb length change. The characteristics, surgical outcomes, length measurement, functional outcomes, and undesired outliers were recorded perioperatively.

Results

The preoperative block test showed significantly shorter mean functional leg length (5.6 ± 4.9 vs. 2.3 ±4.5 mm, $p < 0.005$) in the navigation group (n=32) than the conventional group (non-navigated, n=40). D uring the surgery , the navigation group showed significantly less fluoroscopy execution time (14.6 ± 4.0 vs. 25.2 ± 4.0 sec, $p < 0.0001$) . The gap between the radiographic length change and the preoperative block test was significantly smaller in the navigation group (1.7 ± 4.7 vs. 7.5 ± 7.1 mm, $p < 0.0001$). The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) total scores decreased significantly in both groups after THA, with a marked correlation between the WOMAC function scores and the length change being identified ($p < 0.05$). Outliers were less frequent in the navigation group (3.1% vs. 30.0%).

Conclusion

The functional limb-length discrepancy is common among patients requiring surgery. THA through the DAA showed good clinical outcomes. With the assistance of a navigation system, limb length discrepancy could be addressed and probably improve functional outcomes. Moreover, a personalized limb lengthening plan could be achieved in THA.

Risk factors of insufficient Hip Distraction for a safe central compartment access during Hip Arthroscopy: retrospective Analysis of 677 Cases

Presenter: Yi-Sheng Chan

Institution: Chang Gung Memorial Hospital at Keelung, Chang Gung University

Abstract

Purpose: The aim of our study is to evaluate the risk factors of the patients with insufficient hip distraction during hip arthroscopic surgery. **Methods:** Six hundred and forty-three patients with 677 hips were enrolled in this retrospective study. Before the hip arthroscopic surgery, the failure of traction is defined as the fixed traction space of hip joint even after full traction force. Age, gender, diagnoses of FAI, body mass index (BMI), body height, body weight, lateral center-edge angle (LCEA), hip joint space and Tönnis grading system were obtained. **Results:** Average age of patients with and without insufficient hip distractions were 43.2 and 42.2 years old. The ratio of male with and without insufficient distraction were 68.6 % and 45.8 %. Average BMI, body height and weight of patients in both groups were 24.1/23.7 kg/m2, 168.9/164.8 cm and 68.6/64.8 kg, respectively. The incidence of cam, pincer, and combined type FAI with and without insufficient hip distraction were 51.4 %, 5.7 %, 42.9 % and 55.3 %, 0.3 % and 12.1 %, respectively. The average LCEA and hip joint space in both groups were 38.6/28.1 degrees and 4.6/4.4 mm, respectively. Based on Tönnis grading system in both groups, 62.9/67.8 % hips were grade 0, 28.6/27.4 % hips grade 1, 5.7/3.1 % hips grade 2 and 2.9/1.7 % hip grade 3, respectively. Higher incidence of pincer type FAI and mixed type FAI in patients with insufficient hip distraction were noted. **Discussion:** No significant difference was observed in age, BMI, body weight, Tönnis grading and hip joint space between both groups. Male gender, increased body height, larger LCEA and FAI, particular in pincer type, had higher chance for insufficient hip distraction. **Conclusions:** Male, increased body height, larger LCEA and pincer type FAI were risk factors for insufficient hip distraction during hip arthroscopic surgery. For such risky patients, peripheral compartment approach should be performed first and do not try to tract hip harder. Traction complications of hip could be avoided.

Key words

Arthroscopic surgery; Femeroacetabular impingement (FAI); Hip distraction

Midterm Results of Dual-mobility Bearings for patients with Abductor-Trochanteric Complex Insufficiency

Presenter: Göksel Dikmen

Associates: Vahit Emre Ozden, Kayahan Karaytug, Remzi Tozun

Institution: Acıbadem MAA University, Faculty of Medicine, Department of Orthopedics and Traumatology, Acıbadem Maslak Hospital, International Joint Centre (IJC), Istanbul Turkey

Background : The purpose of this study was to summarize the performance of dual-mobility cup systems for revision total hip arthroplasty in patients who had abductor-trochanteric complex deficiency.

Methods : We prospectively followed up 17 patients (20 hips) with a mean age of 64,5 years (range: 33–89 years) who underwent acetabular reconstruction with dual-mobility cups for aseptic loosening in 12 hips, infection treatment as second or single stage in 6 hips, and instability in 2 hips. All of the patients had abductor insufficiency. We evaluated the clinical Harris Hip scores (HHS) and radiographs for migration, loosening, and osteolysis. The survival of the components was calculated according to Kaplan-Meier survivorship analysis, and failure was defined as an acetabular component and total hip system revision for any reason.

Results : The mean duration of follow-up was 110,6 months (range; 96-170 months). There were 2 (12.5%) repeat revisions for cemented cup migration after 11 months and 19 months. There was no dislocation. At the last follow up, the mean HHS increased from 42 points preoperatively to 84 points. The cumulative survival rate of the dual-mobility cup system was 91% (95% confidence interval (CI): 88- 96.7%) at 9 years, with any revision as the end point.

Conclusion : Dual-mobility cups may provide excellent stability in patients with abductor-trochanteric complex insufficiency at mid-term follow up.

Results of Bernese Periacetabular Osteotomy after a mean of 10 years :

Risk Factors for Survivorship and Complications

Presenter: Vahit Emre ÖZDEN

Associates: Göksel DİKMEN, Kayahan KARAYTUĞ, Remzi TÖZÜN

Institution: Acibadem Mehmet Ali Aydinlar University, Orthopaedics and Traumatology Department
İstanbul – Turkey

Abstract

Background: In this retrospective, single surgeon (RT) series, we defined the acetabular reorientation with Bernese periacetabular osteotomy(PAO) for individual radiographic parameters. We specifically asked: (1) What is the acetabular correction rate regarding defined targeted values? (2) What are the risk factors associated with PAO failure and complications?

Methods: 90 hips whose follow-up period more than 5 years were involved in the study. Hip2Norm® was used for radiographic evaluation. Survival analysis was done. Failure was defined according to radiographic parameters, clinical results or as ending with total hip arthroplasty(THA). Uni- and multivariate analysis were done to identify the risk factors for the survivorship and complications.

Results: After PAO, 36(40%) Total Coverage(TC), 38(42%) Anterior Coverage(AC), 9(10%) Posterior Coverage(PC), 17(19%) Lateral Center Edge(LCE), 11(12%) Acetabular Index(AI), 21(23%) Extrusion Index(EI) were within targeted values. 68(76%) LCE, 74(82%) AI and 61(68%) EI were over coverage. 16 of 24 retroverted hips were corrected. At a mean of 11 years, 62(69%) hips were preserved. 7(8%) hips underwent THA. Survival rate at 10 years was 88%. BMI(HazardRatio[HR]:1.2), higher OA grade(HR:4.9), poor joint congruency(HR:3.7) and severe dysplasia(HR:2.2) were the risk factors for survival. Correction of retroversion was found protective (HR:0.34).96 complications were seen in 53 hips. Ischial fractures were most common complications. Older age was a risk factor for complications.

Conclusions: After a mean of ten years period, Bernese PAO preserved hips from THA even with some postoperative lateral over-coverage values. While correction of retroversion is favorable.

Wound alpha defensin levels are significantly higher in patients with fracture-related infection: A pilot, prospective cohort study

Presenter: Siddhartha Sharma [a]

Associates: Prasoon Kumar [a] , Anupam Mittal [b] ,#, Parth Bansal [a] , Sameer Aggarwal [a] ,Rajesh Kumar Rajnishc, Ankit Dadra [a]

Institution:

[a] Department of Orthopedics, Postgraduate Institute of Medical Education and Research, Chandigarh, India

[b] Department of Translational & Regenerative Medicine, Postgraduate Institute of Medical Education and Research, Chandigarh, India

[c] Department of Orthopedics, All India Institute of Medical Sciences, Jodhpur, India

Background

In the absence of frank purulence, wound cultures represent 'gold-standard' for diagnosis of fracture-related infection (FRI). However, these are time-intensive and may be falsely negative, necessitating the need for accurate and rapid biomarker-based diagnosis. We conducted this study to determine the accuracy of 3 wound-based biomarkers for the diagnosis of FRI.

Methods

This was a prospective cohort study on adult patients who underwent an operative procedure for an upper or lower limb fracture. Wound fluid levels of alpha-defensin (AD), neutrophil elastase (NE), and IL-6 were evaluated on postoperative day 2, and patients were followed up for one month. Patients were categorized as cases (FRI) or controls (no FRI), based on the consensus definition of FRI. Uni-variate analysis, along with receiver operating characteristic (ROC) analysis was performed.

Results

48 patients were included. AD levels showed a 2.6-fold elevation in cases (n = 26, Median = 23.74 μg/ml) as compared to controls (n = 22, Median = 8.78 μg/ml). The area under the curve for this variable was 0.71 (95% Confidence Intervals = 0.56 –0.86). The levels of NE and IL-6 were not significantly different between cases and controls.

Conclusion

Wound AD levels are significantly elevated in patients with FRI. However, these results need to be validated in a larger cohort of patients before this can be used as a biomarker of FRI.

Limb Salvage Surgery; Our Indications and Our Complications

Presenter: Barış Sarı (1)
Associates: Ahmet Kapukaya (2), Özhan Pazarcı(3)
Institution:

1) T.C University of Health Sciences, Adana Medical Faculty, Adana City Training and Research Hospital, Department of Orthopedics and Traumatology, Adana/Türkiye 0000-0002-1757-4364

2) T.C University of Health Sciences, Adana Medical Faculty, Adana City Training and Research Hospital, Department of Orthopedics and Traumatology, Adana/Türkiye 0000-0003-0623-0408

3) T.C University of Health Sciences, Adana Medical Faculty, Adana City Training and Research Hospital, Department of Orthopedics and Traumatology, Adana/Türkiye 0000-0002-2345-0827

-ABSTRACT-

INTRODUCTION AND PURPOSE:

Bone and soft tissue tumors are getting more common in the world. T.C University of Health Sciences, Adana City Training and Research Hospital serves as a major hub for orthopedic oncology patients in the region. To be able to provide more efficient treatment to our patients, we must collect data retrospectively related with the complications developed and to provide information related with our indications for Limb Salvage Surgery (LSS). In our study, we aimed to explore indications and results of TRA done in our hospital.

MATERIALS AND METHODS:

Our study includes total of 95 patients whose 53 of them are male and 42 of them are females treated with LSS between the dates of 26 th of November 2014 and 06 th of August 2022. The mean age of the patients is 43.92 with standard deviation (std) 23,51. The patients' data had been collected retrospectively. The data had been analyzed by using SPSS program.

FINDINGS:

Out of total 95 patients; 44,2% of the patients were female and 55,8% of the patients were male. 51,6% of the patients had primary bone tumors, 30,5% of them had metastatic bone tumors in which adenocarcinoma metastases are the most common ones and 26,3% of the patients had been treated with TRA because of fracture healing sequels. Mean follow up period was 13, 71 months (std 14,7). 33,7% of the patients had surgical wound problems in the postop period. 16,8 % of the patients had microorganisms detected in the cultures obtained from them. 4,2% and 3,2% of the patients had Methicillin Resistant Staphylococcus Aureus (MRSA) and Klebsiella Pneumonia positive cultures respectively. 23,2% of the patients had undergone debridement procedure during follow ups at least one time. In 23,6 % of the patients, periprosthetic fractures had been detected. In 13,7% of them, aseptic loosening had been detected.

CONCLUSION :

Limb Salvage Surgery is a treatment method in which the functioning of the extremity is preserved effectively. The rate of fractures and related sequels are continuously getting more frequent among the indications. İts complications and surgery techniques are complicated. Limb Salvage Surgery should be applied in the hospitals with good levels of experience and knowledge in the bone and soft tissue tumors.

Pyomyositis of quadriceps muscle concomitant with knee synovitis in a 5-monthold child : A case report and review of the literature

Presenter: Shan-Yang Huang
Associates: Shu-Hsin Yao, Chun-ho Chen
Institution: Chiayi Christian Hospital

Introduction

Pyomyositis, also referred to as tropical myositis, infective myositis, pyogenic myositis, suppurative myositis, myositis purulenta tropica, epidemic abscess, or bacterial pyomyositis, constitutes a rare skeletal infection [1]. It is categorized as either primary or secondary. Primary pyomyositis (PPM) results from hematogenous dissemination of an occult source, whereas secondary pyomyositis (SPM) typically arises as a consequence of a direct infectious process, such as appendicitis, infectious colitis, Crohn's disease, or neoplasia [2]. Delayed diagnosis often stems from the nonspecific nature of symptoms or the deep-seated location of the affected muscle. Diagnosis is facilitated through imaging modalities such as CT and MRI. Pyomyositis predominantly impacts muscle groups in the pelvis and legs, particularly the thigh [3]. Knee involvement is uncommon. This report describes a case of a 5-month-old neonate with pyomyositis localized to the left thigh, concomitant with knee synovitis.

OUR EXPERIENCE WITH PEC MAJOR FLAP FOR STERNOCLAVICULAR JOINT INFECTIONS

Presenter: Bhavin Jadav

Institution: Flinders Medical Centre

Email: bhavin.jadav@sa.gov.au

Abstract:

Sternoclavicular joint infections are uncommon but severe and complex condition usually in medically complex and compromised hosts. These infections are challenging to treat with risks of infection extending into the mediastinal structures and surgical drainage is often faced with problems of multiple unplanned returns to theatre, chronic non-healing wounds that turn into sinus and the risk of significant clinical escalation and death. Percutaneous aspirations or small incision drainage often provide inadequate drainage and failed control of infection, while open drainage and washout require multidisciplinary support, due to the close proximity of the mediastinal structures and the great vessels as well as failure to heal the wounds and creation of chronic wound or sinus.

We present our series of 8 cases over 6 years where we used the plan of open debridement of the Sternoclavicular joint with medial end of clavicle excision to allow adequate drainage. The surgical incision was not closed primarily and a suction vacuum dressing was applied until the infection was contained on clinical and laboratory parameters. After the infection was deemed contained, the surgical incision was closed by local muscle flap by transferring the medial upper sternal head of the Pectoralis Major muscle to fill in the sternoclavicular joint defect. This technique provided a consistent and reliable way to overcome the infection and have the wound definitively closed that required no secondary procedures after the flap surgery and no recurrence of infections so far.

We suggest that open and adequate drainage of Sternoclavicular joint staged with vacuum dressing followed by pectoralis major local flap is a reliable technique for achieving control of infection and wound closure for these challenging infections.

An uncommon instance of periprosthetic joint infection involving Streptococcus dysgalactiae subspecies dysgalactiae

Presenter : Muhammed Yusuf Afacan

Authors: Muhammed Yusuf Afacan [1] , Cumhur Deniz Davulcu [1] , Gokhan Kaynak [1] , Ayse Ceylan Kilinçarslan [2] , Edip Tokuc [2] , Hrisi Bahar Tokman [2]

[1] Istanbul University-Cerrahpasa, Cerrahpasa Faculty of Medicine, Department of Orthopaedics and Traumatology, Istanbul, Turkey

[2] Istanbul University-Cerrahpasa, Cerrahpasa Faculty of Medicine, Department of Microbiology, Istanbul, Turkey

Abstract:
Periprosthetic joint infection (PJI) is a seldom-encountered yet crucial complication following joint arthroplasty, necessitating revision surgery. The analysis of synovial fluid plays a pivotal role in diagnosing PJI, and both conventional and molecular microbiologic examinations aid in identifying the infection's causative agent. This unique case aims to present the second documented occurrence in the literature of PJI in the knee attributable to Streptococcus dysgalactiae subspecies dysgalactiae (SDSD). Streptococcus dysgalactiae subspecies equisimilis (SDSE) is commonly implicated in S. dysgalactiae PJI cases in existing literature, with SDSD primarily affecting animals. The reported case involves a farmer with underlying health conditions, engaged in cattle and sheep farming, who developed periprosthetic joint infection due to SDSD. The treatment involved surgical excisional debridement, open washing, decompression, and liner replacement. Bacterial identification was achieved through MALDI-TOF MS, confirming SDSD. Following a one-year follow-up, the patient has completely recovered without any recurrence of the infection.

Robotic assisted thoracic tubercular kyphosis correction, transpedicular decompression and instrumented fusion.

Presenter: VIDYADHARA SRINIVASA

Associates: Dr Madhava Pai K, Dr Balamurugan T, Dr. Abhishek Soni

Institution: Manipal Institute of Robotic Spine Surgery

Background and Objectives

Spondylodiscitis is a debilitating disease, commonly encountered in spine practice. Empirical treatment with antitubercular drugs based on positive clinical and magnetic resonance imaging findings is common practice in India. Early identification and appropriate antimicrobial treatment is of paramount importance for good clinical outcomes. Robotic assistance allows accurate placement of pedicle screws and allows internal gibbectomy by using navigable burrs. We present a unique report on tubercular spondylodiscitis with myelopathy treated by fully robotic assisted posterior spinal transpedicular decompression, instrumentation and fusion.

Methods

A 29-year-old male presented with pain in the back pain since 6 months and progressive difficulty in walking with spasticity and clumsiness of two weeks duration. Plain radiographs of the thoracic spine revealed destruction and collapse of D7 and D8 vertebra, with magnetic resonance imaging showing epidural, paraspinal and prevertebral abscesses. A decision for robotic assisted posterior spinal decompression, instrumentation and fusion was taken.

Results The patient underwent D4-D11 instrumentation, fusion and decompression from D6 to D8 via laminectomy and arthropediculectomy. The patient tolerated the procedure well and was allowed to sit up on post operative day 1. Cartridge based nucleic acid amplification test confirmed presence of Mycobacterium tuberculosis and he was started on antitubercular therapy. The patient was mobilized on the 2 nd post-operative day and was on regular follow up with significant neurological recovery at 3-months follow-up.

Conclusions

Robotic assistance allows accurate placement of pedicle screws and internal gibbectomy by using real-time navigable burrs. We present the first case report on tubercular spondylodiscitis treated by fully robotic assisted posterior spinal instrumentation and fusion.

Postoperative Urinary Retention Induced Hyponatremic Seizure Following Total Knee Arthroplasty with An ERAS Protocol: A Case Report and Literature Review

Presenter: Hsin-Hsin Lee [1]

Associates: Yuan-Hsin Tsai [1,2]

Institution: [1] Department of Orthopedic Surgery, Show-Chwan Memorial Hospital, Changhua 500, Taiwan
[2] Ph.D. Program in Tissue Engineering and Regenerative Medicine, National Chung Hsing University, Taichung 402, Taiwan

Abstract

Seizure induced by hyponatremia related to postoperative urinary retention after total knee arthroplasty with an enhanced recovery after surgery (ERAS) protocol is an uncommon but major issue.

We report a 70-year-old woman developing generalized tonic-clonic seizure one day aft er undergoing total knee arthroplasty with an ERAS protocol. The occurrence of altered consciousness initiated further investigation, revealing hyponatremia and significant urinary retention, evidenced by the drainage of a large volume of urine following urinary catheterization. The prompt resolution of neurological symptoms highlights the correlation between hyponatremia-induced seizures and postoperative urinary retention.

ERAS protocol in total knee arthroplasty aimed at facilitating overall outcomes and reducing complication rates, although the incidence of postoperative urinary retention is still of concern.

This article emphasizes the importance of recognizing and addressing hyponatremia-induced seizures, along with considering postoperative urinary retention (POUR) as a potential cause despite the implement ation of ERAS protocol, in elderly patients undergoing total knee arthroplasty .

Single-stage versus two-stage exchange for revision knee arthroplasty for chronic periprosthetic infection

Presenter: Waqar Khan

Institution: Hayatabad Medical Complex Peshawar, Pakistan

Abstract:

Objectives: Double-stage exchange revision is still regarded as the best method for treating periprosthetic joint infections that have persisted for a long time. The goal of this review is to compare the differences between single-stage and double-stage prosthetic exchange for chronic periprosthetic joint infection around the knee in terms of eradication rates and functional outcome.

Materials and methods: The success rates and functional results of either single-stage exchange or double-stage exchange for knee arthroplasty revision performed for persistent infection were reviewed in full text studies published in English between 1992 and 2020. Particular consideration was given to the type of spacer: articulating or static, in the case of double-stage exchange. A total of 32 papers were examined: 14 for single-stage studies with 687 participants and 18 for double-stage studies with 1086 patients. For the one-stage operation, the average eradication rate was 87.1%, whereas for the two-stage procedure, it was 84.8%. The functional results were comparable across the two groups: the average Knee Society Knee Score for the single-stage exchange group was 80.0 and for the double-stage exchange group, it was 77.8. In the single-stage exchange group, the average range of motion was 91.4°, while in the double-stage exchange group, it was 97.8°.

Conclusion: If there are no contraindications, single-stage exchange appears to be a viable alternative to two-stage exchange in cases of chronic periprosthetic joint infection around the knee. It offers the advantages of a unique surgical procedure, lower morbidity, and lower costs while producing similar results in terms of eradication rates and functional outcomes.

Effect of anteromedial portal location on femoral tunnel inclination, length, and location in hamstring autograft-based single-bundle anterior cruciate ligament reconstruction: a prospective study

Presenter: Ismail AlMogbil [3]

Associates: Abdulaziz Z. Alomar [1] , Baraa Baltow [2]

Institution:
[1] Department of Orthopaedic Surgery, College of Medicine, King Saud University, P.O. BOX 7805, 11472 Riyadh, Saudi Arabia.

[2] Department of Orthopaedic
surgery, AlHada Armed Forces Hospital, Ministry of defense, Taif, Saudi Arabia.

[3] Department of Surgery, Unaizah College of Medicine and Medical Sciences,
Qassim University, Qassim, Saudi Arabia.

Abstract
Background Portal positioning in arthroscopic anterior cruciate ligament reconstruction is critical in facilitating the drilling of the femoral tunnel. However, the traditional approach has limitations. A modifed inferior anteromedial portal was developed. Therefore, this study aims to compare the modifed and conventional far anteromedial portals for femoral tunnel drilling, assessing factors such as tunnel length, inclination, iatrogenic chondral injury risk, and blowout.

Material and methods Patients scheduled for hamstring autograft-based anatomical single-bundle arthroscopic anterior cruciate ligament reconstruction were divided into two groups: modifed and far anteromedial groups. Primary outcomes include diferences in femoral tunnel length intraoperatively, tunnel inclination on anteroposterior radiographs, and exit location on lateral radiographs. Secondary outcomes encompass tunnel-related complications and reconstruction failures. To identify potential risk factors for shorter tunnel lengths and posterior exits, regression analysis was conducted.

Results Tunnel parameters of 234 patients were analyzed. In the modifed portal group, femoral tunnel length and inclination were signifcantly higher, with tunnels exhibiting a more anterior exit position ($p<0.05$). A higher body mass index exerted a negative infuence on tunnel length and inclination. However, obese patients in the modifed portal group had longer tunnels, increased inclination, and a lower risk of posterior exit. Only a few tunnel-related complications were observed in the far anteromedial group.

Conclusion The modifed portal allowed better control of tunnel length and inclination, ensuring a nonposterior femoral tunnel exit, making it benefcial for obese patients.

Keywords Anterior cruciate ligament reconstruction, Anteromedial portal, Far anteromedial portal, Femoral tunnel, Tunnel inclination, Tunnel length

Making an affordable world-class Tumor Knee Prosthesis : challenges and solutions

Presenter: Manish Agarwal [1]

Associates: Ravi Bhallamudi [2] , Nirmal Panda [3] · Balasubramanian Krishnamurty [3]

Institutions :

1. Nanavati Max Superspeciality Hospital
2. Indian Institute of Technology, Bombay
3. Non Ferrous technology Development Corporation

Abstract

Introduction: Tumor prostheses required for reconstructing large joint involving gaps are the mainstay of any limb salvage surgery program for bone tumors. Most Asian countries find the standard international implants expensive and often of unsuitable dimensions for their populations.

The development cycle for such implants is long and complicated involving design of prosthesis components and surgical armamentarium, followed by pilot batch production, in vitro simulator testing, human clinical trials and regulatory approvals. Most manufacturers are not interested due to small market size coupled with the difficulties and high costs involved.

In this paper, we describe the challenges we faced and solutions we found inorder to successfully design and manufacture such an implant.

Method: we formed an inter-disciplinary group comprising an orthopedic oncologist, mechanical engineers and materials scientists from three different non-profit or government organizations. We secured government funding and developed a completely new rotating hinge design and component system for the distal femur. We also designed the surgical armamentarium with femoral and tibial cutting jigs and other instruments. Knee simulator and testing machines were developed to test the prosthesis. A dedicated pilot production facility along with inspection and quality management system was also set up. A clinical trial was started after clearance from the national drug controller and the institutional ethics committes of the centres involved.

Result The new prosthesis provides flexion-extension up to 120 degrees and axial rotation of 5 degrees in both directions. It successfully completed twenty million cycles of loading with fatigue and wear testing. The regulatory body of the government and institutional ethical committees of hospitals approved the human clinical trials on 150 patients, which are currently in progress. After first 50 cases, interim evaluation showed no mechanical failures of the prosthesis over a followup period of 3mo-54mo. The jigs developed allowed us to make accurate cuts and seat the implant within the bone as planned preoperatively. A rough back of envelope calculation estimates the cost of a distal femur tumor prosthesis to be $1500 compared to $6500-$8000 for the various international western implants.

Conclusion The design, manufacturing and testing of the prosthesis components and armamentarium took more than a decade and presented many challenges. These were overcome by several technological innovations by the engineering team and continuous feedback from the surgeons. We believe that availability of a low cost and high quality implant will allow limb saving surgeries to performed more universally. The experience is expected to be useful to all others interested in this field. The unique approach of government funding the research and development and then commercialising the technology to manufacturers would allow these implants to be available at an affordable cost.

High-grade patellofemoral dysplastic knees :Comparison of Sulcus Deepening Trochleoplasty and Tibia Tubercle Osteotomy

Presenter: Chen-Heng Hsu

Associates: Kuo Yao, Hsu, MD Yi Sheng, Chan,MD

Institution: Department of Orthopaedic Surgery
Chang Gung Memorial Hospital, Linkou

Purpose : High-grade patellofemoral dysplasia with patellofemora instability is often associated with multifactorial factor, main risk factors include patella alta, trochlea dysplasia, excessive tibial tuberosity to trochlea grove (TT–TG) distance. However, no studies have previously directly compared the clinical outcomes between the trochleoplasty with combined procedures and tibial tubercle transfer reconstruction . The aim of the study is to compare the clinical results in both group of high-grade patellofemora l dysplastic knees with patellofemoral instability with different surgical procedures.

Methods : Between January 2005 and January 2023, a total of 9 patients with recurrent patella dislocation(RPD) with high-grade patellofemoral dysplastic knees were reviewed, Group A included 5 habitual dislocation patients who received tibial tubercle transfer and extensive lateral release , Group B ,include 4 patients, 3 receive trochleoplasty with combined procedures due to Dejour B or D trochlea dysplasia , another one patient received patella Distalization and MPQTFL due to patella alta

Tegner, Kujala scores, apprehension and pain, trochlear dysplasia, sulcus angle, tibial tuberosity trochlear groove, patellar tilt and shift, Caton– Deschamps index were assessed pre- and postoperatively

Results : At the final follow up of the Group A patients, all 5 patients

were subjectively satisfied with the outcome of the procedure, all showing absence of positive apprehension or redislocation . But one patient has high J sign

Radiologically significant improvement of patellofemoral positional

parameters leading to more normal patellofemoral articulation was recorded,

while the trochlea dysplasia was persisted. For the Group B patients, all the four patients were very satisfied with the outcome of the procedure, all showing absence of positive apprehension or redislocation, Radiologically significant improvement of patellofemoral positional parameters leading to more normal patellofemoral articulation was recorded. increase in Tegner score from 2 to 6, range 3–8 points), Kujala score increased from48 to 85 points.

Discussion

Many surgical techniques have been described for the treatment of High-grade patellofemoral dysplastic knees, Although most research and consensus statements agree that trochlea reconstruction should be performed in most flat or convex trochlea with bump cases, Additional procedures can be used ‘a la carte’ according to certain conditions or pathology. A tibial tubercle osteotomy (TTO) is usually indicated in patients with maltracking and/or patella alta ,or pain with OA but the direction and degree of correction must be carefully considered. In our Group A, no single one patient received Trochleoplasty due to no trochlea bump, so tibial tubercle osteotomy (TTO) is successful.

Trochleoplasty is technically demanding and should be reserved for a select few

patients with severe trochlear dysplasia. It should be performed by an experienced knee surgeon due to the high risk of inadvertent complications.

Conclusion : High-grade patellofemoral dysplastic knees with recurrent patella dislocation, RPD can be treat with Sulcus Deepening Trochleoplasty or tibial tubercle osteotomy ,the Sulcus Deepening Trochleoplasty yield the most anatomical restoration with good clinical outcome

Keywords: Dysplastic; Knee; Patella instability; Patellofemoral dysplasia; Trochlea;

Outcomes of Total Knee Replacement versus Unicompartmental Knee Arthroplasty in an Enhanced Recovery After Surgery Protocol

Presenter: Louise Woon Theng Lo

Associates: Sheng Xu1, Hee-Nee Pang, Darren Tay, Seng Jin Yeo, Shi-lu Chia, Ming Han
Lincoln Liow, Beng Teck Jason Lim, Ngai Nung Lo, Yongqiang Jerry Chen

Institution: Singapore General Hospital Departmental of Orthopaedic Surgery

Introduction:

The choice to perform a total knee replacement (TKR) versus a unicompartmental knee arthroplasty (UKA) in a patient with unicompartmental knee osteoarthritis is a joint decision between the patient and surgeon. While UKAs have become increasingly popular due to its shorter surgical time, decreased blood loss, faster recovery and improved range of motion, concerns have been made regarding increased risk of early failure post-UKA. As such, the contentious nature of one's superiority over the other persist. Furthermore, the use of Enhanced Recovery After Surgery (ERAS) protocols have been increasingly popular due to multiple studies demonstrating faster return to daily activities, improved patient satisfaction, reduced complication rates and reduced length of stay and healthcare cost. This was particularly valuable during the COVID pandemic when hospital beds were lacking.

Hence, this study aims to compare the 6 month functional outcomes of patients undergoing total knee replacement (TKR) versus unicompartmental knee arthroplasty under the Enhanced Recovery After Surgery (ERAS) protocol.

Methods:

Patients who fulfilled the inclusion criteria of being ASA ≤ 3 and were agreeable to be discharged within 23 hours were enrolled into the institution's ERAS protocol which included physiotherapy on postoperative day (POD) 0, discharge on POD 1, a home visit by a physiotherapist on POD 7 and a home visit by nurses on POD 14. All patients who were enrolled in the institution's ERAS protocol for primary unilateral TKR and UKA from August 2020 to July 2021, and successfully discharged within 23 hours were included in this study. Patient characteristics and comorbidities, 30-day post-operation readmission, infection and re-operation rates were analyzed. Comorbidities collected include diabetes, ischaemic heart disease, stroke, lung disease, arthritis outside of the knee, depression, hypertension, colitis, psoriasis, hyperlipidemia Parkinson's disease, renal impairment, obesity and vascular disease were compared using a chi squared test. Patient reported outcomes measures namely the Knee Society Function Score (KSFS), Knee Society Knee Score (KSKS), Oxford Knee Score (OKS) and both the Physical and Mental component of the Short-Form Health Survey (SF-36) were assessed preoperatively and 6 months postoperatively.

Statistical analysis was performed using STATA version 17. Chi-squared test was used to determine if there were differences in categorical characteristics and Mann-Whitney U test was used to test for differences in non-normally distributed variables between TKR and UKA patients. Finally, a multiple linear regression adjusted for age, gender and pre-operative outcomes scores were performed to compare the post-operative outcomes of patient who underwent TKR versus UKA under the ERAS protocol.

Results:

Three hundred and forty-two TKR and 108 UKA patients were included in this study. UKA patients were on average 2.6 years younger ($p = 0.006$) but otherwise did not differ significantly from TKR patient in body mass index, gender or pre-existing comorbidities.

Univariate analysis showed significantly better preoperative and 6 month postoperative KSKS and SF-36 MCS in UKA patients. There were no significant differences in the pre or postoperative KSFS, OKS or PCS scores between the 2 groups. Multivariate analysis showed no significant difference in the 6 month postoperative functional outcome scores between UKA and TKR patients.

No UKA patients required re-operation within 30 days postoperatively, while 3 TKR patients required re-operation. Two for prosthetic joint infections needing debridement, antibiotics and implant retention and 1 for haemarthrosis who underwent joint aspiration in the operating theatre.

Conclusion:

In conclusion, UKA achieves equivalent functional outcomes at 6 months postoperatively as compared to TKR patients. Furthermore, TKR patients had a higher incidence of readmission for infection in this study. Given the benefits of UKA such as less invasiveness, lower morbidity, readmission and infection rates, UKA would be a reasonable option to offer in unicompartmental knee osteoarthritis patients. However, further studies should be performed to compare the long term outcomes between TKR and UKA patients under the ERAS protocol.

EVALUATION OF THE RELATIONSHIP BETWEEN THE RISK OF RE-INFECTION AND PREOPERATIVE LABORATORY FINDINGS IN PATIENTS UNDERGOING TWO-STAGE REVISION KNEE ARTHROPLASTY AFTER INFECTED TOTAL KNEE ARTHROPLASTY

Presenter: Derya Akbaba

Associates: CUMHUR DENİZ DAVULCU

Institution: Istanbul University-Cerrahpasa Cerrahpasa Faculty of Medicine Department of Orthopedics and Traumatology

Objective: Total knee arthroplasty is a highly successful surgical technique for the treatment of knee osteoarthritis. However, periprosthetic joint infection is one of the most commonly observed complications following this procedure. Surgical interventions performed in cases of this complication, aimed at enhancing the patient's quality of life, also carry the risk of potential exacerbation. Numerous revision techniques have been attempted for these patients, seeking to cope with this daunting complication. The purpose of this study is to assess the relationship between the risk of re-infection in patients undergoing two-stage revision surgery due to periprosthetic joint infection after total knee arthroplasty and preoperative laboratory findings during the pre-revision period.

Methods: Between January 2015 and November 2023, 30 patients (22 females, 8 males) who underwent two-stage revision knee arthroplasty with a diagnosis of periprosthetic joint infection in our clinic and were followed for at least one year were included in the study. Preoperative and postoperative blood values and complications observed during the follow-up period were recorded from patient files. Patients who had elective total knee arthroplasty surgery and were diagnosed with periprosthetic joint infection after surgery underwent implant extraction and antibiotic cement application in the first surgical session. Patients receiving postoperative antibiotic therapy underwent subsequent antibiotic cement extraction and revision total knee arthroplasty surgery. In our study, the impact of parameters such as age, gender, surgical side, laboratory findings, smoking status, and the time between the two stages of the surgical procedure on the development of reinfection in patients was evaluated.

Results: The average age of the 30 patients was 64.7 years (range: 42-82). The mean duration between the 1st and 2nd stage surgeries of the revision knee arthroplasty was 118 days (range: 63-178). In our study, reinfection was observed in 3 cases (9%) during the postoperative period after the completion of all surgical processes. There were no significant differences between the groups with and without reinfection in terms of age, gender, surgical side, smoking status, and the time between the two stages of the surgical procedure. However, preoperative CRP level and neutrophil/lymphocyte ratio were significantly higher in the group with reinfection compared to the other patients. In the group without reinfection, the mean preoperative CRP level was 6.4 mg/L, and the neutrophil/lymphocyte ratio was 1.3, while in the group with reinfection, the mean CRP level was 21.5 mg/L, and the neutrophil/lymphocyte ratio was 2.8.

Conclusion: Our study demonstrates a success rate of 91% in the treatment of patients who developed periprosthetic joint infection after total knee arthroplasty and underwent two-stage revision surgery. Furthermore, it was found that preoperative CRP level and neutrophil/lymphocyte ratio are significant factors influencing the achievement of successful surgical outcomes during the postoperative period of revision total knee arthroplasty.

Keywords: total knee arthroplasty, reinfection, revision knee arthroplasty, periprosthetic joint infection

A COMPARISON BETWEEN TRANSFORMING GROWTH FACTOR BETA 1 LEVEL IN OSTEOARTHRITIS AND HEALTHY CARTILAGE OF HUMAN KNEE

Presenter: Bintang Soetjahjo

Associates: Mujaddid Idulhaq, Eti Poncorini Pamungkasari, Rieva Ermawan, Asep Santoso, Musa Fasa Roshada

Institution: Orthopaedic and Traumatology Department, Dr. Moewardi District General Hospital,
9 Faculty of Medicine Universitas Sebelas Maret, Surakarta, Central Java, Indonesia

Abstract

Background

Osteoarthritis (OA) of the knee account as many as 80% of all osteoarthritis cases. Recent study has focused toward prevention and early treatment with regenerative medicine. Understanding the pathogenesis at molecular level is essential to entangle the pathogenesis. One important protein that has proven its significance in animal study is Transforming Growth Factor Beta 1 (TGF-β1). This study was performed as a pilot study to analyse the level of TGF-β1 in human knee cartilage.

Method

This was an observational analytic study comparing two groups of subjects. The case group was taken from distal femur cartilage of patients undergoing TKA because of primary knee OA. Control group was taken from non-weight bearing surface, medial side of lateral condyle of distal femur cartilage near the attachment of Anterior Cruciate Ligament (ACL) of patients undergoing ACL reconstruction without evidence of knee OA. TGF-β1 level was measured with ELISA method in each group.

Results

There were 24 subjects, 12 subjects in case group and 12 subjects in control group. The mean age was 25,5 (±8.7) years old in control group and 63 (±6.5) years old in case group. All patients in control group was male and 83.33% (n=10) in case group was female. TGF-β1 was higher in case group (14.05±2.56 pg/ml) compared to control group (12.27±2.40 pg/ml; p value =0,019).

Discussion

OA of the knee occurred most often in elderly females. TGF-β1 level was found to be higher in knee OA compared to knee without OA. TGF-β1 increase was stimulated by acid environment of catabolic process of the knee cartilage undergoing degradation and matrix destruction in OA. The increase of TGF-β1 was necessary to promote chondrocyte proliferation, increase of type II Collagen synthesis, SOX-9, and aggrecan, all of which are essential for chondrogenesis .

Conclusion

There was a significantly higher level of TGF-β1 in osteoarthritis cartilage compared to healthy cartilage in human knee.

Keywords

Osteoarthritis, TGF-β1, cartilage, human knee, TKA, AC

Supracondylar transverse osteotomy using fixator assisted technique for correction of distal femoral deformities

Presenter: Sungmin Kim

Associates: Dong Hoon Lee

Institution: Department of orthopedic surgery
Chonnam National University Medical school

Abstract:

Background

Malalignment or malrotational deformity of the distal femur may predispose to pain or discomfort. The goal of treatment is to restore the mechanical axis alignment of the lower extremity. Previous methods have limitations such as large incision, lack of precision in correction, and difficulty in addressing the sagittal or rotational deformities. The technique with supracondylar transverse osteotomy using multiple drilling for the correction of distal femoral deformity can address the rotational deformities as well as angular deformities of the distal femur. In addition, with external fixator assisted technique, we can achieve the precise correction. This report describes a series of patients treated with supracondylar transverse osteotomy using fixator assisted technique (STO-FAT) for correction of distal femoral deformities. The purpose of our study were 1) to introduce STO-FAT and 2) to evaluate the ability of STO-FAT to achieve correction of the deformities of the distal femur and achieve osseous union and 3) to assess the complications associated with STO-FAT.

Materials and methods

A total of 54 segments of femur (48 patients) who underwent distal femoral osteotomy with STO-FAT from 2011 to December 2014 were evaluated. All patients treated by this method during this period. The surgical procedures included less preparation of soft tissue, application of a temporary external fixator, complete distal femoral osteotomy, correction of alignment, and final fixation with the help of an external fixator. Mechanical axis deviation (MAD) and mechanical lateral distal femoral angle (mLDFA) for coronal and mechanical posterior distal femoral angle (mPDFA) for sagittal planes was compared pre- and postoperatively and complications were assessed by chart review. To assess the rotational deformity, a preoperative rotational profile CT was performed, and the correction angle was determined before surgery. During the surgery, the planned correction was executed using Shantz pins in accordance with the preoperative plan. Delayed union was described as union occurring later than 4 months.

Results

The overall completeness of reaching the target correction was excellent. We achieved the targeted mechanical neutral alignment within 2° in forty-six of 54 limbs; the mean postoperative MAD and mLDFA were 0.36, 87.43, respectively . There was no significant difference between pre- and postoperative mPDFA (p =0.189), which means that the correction in the coronal plane was achieved without causing changes in sagittal angle of femur. Sagittal plane correction was achieved simultaneously in four femurs in three patients successfully. Four limbs out of 54 femurs showed complications, all of which were resolved without leaving any sequela. There was no delayed union or nonunion. There were two femurs with superficial infection. Hardware irritation was observed in one patient.

Conclusions

STO-FAT for distal femoral deformity correction are safe and effective surgical techniques. This method enables correction not only of coronal and sagittal deformities but also of rotational deformity. Although the temporary external fixation can cause pin tract infections, those can be managed easily. With less invasive soft tissue procedure, the union-related risks can be lowered.

RESULTS OF SYNTHETIC MESH RECONSTRUCTION FOR PATELLAR TENDON RUPTURE AFTER TOTAL KNEE ARTHROPLASTY

Presenter : Ulas Yavuz

Cumhur Deniz DAVULCU MD [a] , *Ulaş YAVUZ MD* [a]

[a] Orthopaedics and Traumatology, Cerrahpasa Faculty of Medicine, Istanbul University-Cerrahpasa, Istanbul, Turkey

ABSTRACT

Objective: The aim of our study is to demonstrate the short-term clinical results of patellar tendon reconstruction with synthetic propylene mesh in patients who underwent total knee arthroplasty (TKA).

Introduction: Patellar tendon rupture is a rare complication after TKA, which is very effective on knee function and difficult to treat. (Anand et al., 2018) Various methods using primary repair and reconstruction with autografts or allografts have been described in the literature as surgical treatment options. (Cadambi & Engh, 1992; Lamberti et al., 2018) Failure rates of primary repair are high, especially in chronic cases, so reconstruction with whole extensor mechanism allograft or Achilles tendon allograft are currently the preferred methods in these cases. (Lamberti et al., 2018) However, failure rates of up to 27% have been reported in cases treated with these methods, and extension lag has been reported to develop again in the postoperative period in many cases. (Balato et al., 2022; Sain et al., 2021) In addition, difficulties in obtaining the allografts and their risk of disease transmission are also important problems with these methods. (Hinsenkamp et al., 2012) Although the risk of disease transmission is low, this is a significant risk as transmission of agents that are difficult to treat, such as HIV, HCV and M. tuberculosis, may occur. (Hinsenkamp et al., 2012) Reconstruction with polypropylene mesh is a method that can be applied without the need for any graft. (Browne & Hanssen, 2011) Although good results with this technique have been reported in the literature, the number of reported cases is quite low. (Abdel et al., 2019; Fuchs et al., 2022)

Method: Three patients who developed patellar tendon rupture after TKA and underwent reconstruction with propylene mesh were included in the study. All patients were treated with a long leg cast for 3 months after the reconstruction procedure, and the cast was renewed every month. After the cast was removed, the patients underwent rehabilitation to improve range of motion and quadriceps strength. The minimum follow-up period was 4 months from the cast removal. Knee Society Score (KSS), range of motion and extension lag measurement were used for clinical evaluation. (Insall et al., 1989)

Results: The average follow-up period was 11.67 months (4-20). All patients underwent patellar tendon reconstruction with polypropylene mesh using the same technique. One patient underwent only patellar tendon reconstruction during surgery without any revision of any prosthetic components, one patient underwent single-stage TKA revision and patellar tendon reconstruction in the same session, and one patient underwent the second stage of staged TKA revision and patellar tendon reconstruction in the same session. Postoperative KSS scores of the patients were 73, 73 and 71, respectively; active knee flexion was 100, 100, and 90 degrees, respectively, and limitation in knee extension was 5, 5, and 10 degrees, respectively. The extension lag measurements of the patients were 5, 5 and 7 degrees, respectively. No complications developed in any patient in the postoperative period.

Conclusion: This study reports successful short term clinical results in 3 cases in which reconstruction was performed with synthetic polypropylene mesh for patellar tendon ruptures after TKA.

References

Abdel, M. P., Pagnano, M. W., Perry, K. I., & Hanssen, A. D. (2019). Extensor Mechanism Reconstruction with Use of Marlex Mesh. *JBJS Essential Surgical Techniques* , *9* (2), e21. https://doi.org/10.2106/JBJS.ST.18.00106

Anand, S., Kanwat, M., Mishra, A., Mittal, R., & Yadav, C. S. (2018). Management of Patellar Tendon Rupture after Total Knee Arthroplasty using Hamstring graft: A Case Report. *Journal of Orthopedic Case Reports* , *8* (2), 57–60.

Balato, G., De Franco, C., Lenzi, M., de Matteo, V., Baldini, A., & Burnett, R. S. J. (2022). Extensor mechanism reconstruction with allograft following total knee arthroplasty: a systematic review and meta-analysis of achilles tendon versus extensor mechanism allografts for isolated chronic patellar tendon ruptures. *Archives of Orthopaedic and Trauma Surgery* , *143* (7), 4411–4424. https://doi.org/10.1007/s00402-022-04718-5

Browne, J. A., & Hanssen, A. D. (2011). Reconstruction of Patellar Tendon Disruption After Total Knee Arthroplasty. *The Journal of Bone & Joint Surgery* , *93* (12), 1137–1143. https://doi.org/10.2106/JBJS.J.01036

Cadambi, A., & Engh, G. A. (1992). Use of a semitendinosus tendon autogenous graft for rupture of the patellar ligament after total knee arthroplasty. A report of seven cases. *The Journal of Bone and Joint Surgery. American Volume* , *74* (7), 974–

979.

Fuchs, M., Gwinner, C., Meißner, N., Pfitzner, T., Perka, C., & von Roth, P. (2022). Therapy of chronic extensor mechanism deficiency after total knee arthroplasty using a monofilament polypropylene mesh. *Frontiers in Surgery* , *9* . https://doi.org/10.3389/fsurg.2022.1000208

Hinsenkamp, M., Muylle, L., Eastlund, T., Fehily, D., Noël, L., & Strong, D. M. (2012). Adverse reactions and events related to musculoskeletal allografts: reviewed by the World Health Organisation Project NOTIFY. *International Orthopaedics* , *36* (3), 633–641. https://doi.org/10.1007/s00264-011-1391-7

Insall, J. N., Dorr, L. D., Scott, R. D., & Scott, W. N. (1989). Rationale of the Knee Society clinical rating system. *Clinical Orthopaedics and Related Research* , *248* , 13–14.

Lamberti, A., Balato, G., Summa, P. P., Rajgopal, A., Vasdev, A., & Baldini, A. (2018). Surgical options for chronic patellar tendon rupture in total knee arthroplasty. *Knee Surgery, Sports Traumatology, Arthroscopy* , *26* (5), 1429–1435. https://doi.org/10.1007/s00167-016-4370-0

Sain, A., Bansal, H., Pattabiraman, K., Muellner, M., & Muellner, T. (2021). Extensor Mechanism Reconstruction Using Allograft Following Total Knee Arthroplasty: A Review of Current Practice. *Cureus* , *13* (1), e12803. https://doi.org/10.7759/cureus.12803

Simultaneous versus Staged Bilateral Oxford Unicompartmental Knee Arthroplasty in the Era of Diagnosis-Related Group : Influence on Outcome and Cost

Presenter: Chi Sheng Chien

Associates: Chi-Kun Hsieh, Chien-Chieh Wang

Institution: Department of Orthopedics, Chi Mei Medical Center, Tainan ,Taiwan

Abstract:

Introduction

Numerous studies have explored the comparative outcomes of simultaneous and staged Oxford Unicompartmental Knee Arthroplasty (OUKA), revealing no conclusive superiority between the two approaches. Besides, significant variations in hospital costs have been observed between the simultaneous and staged groups across diverse insurance payment systems. This study seeks to examine the impact on clinical outcomes, hospital costs, and profits associated with simultaneous versus staged OUKA under the Taiwanese Diagnosis-Related Group (Tw-DRG) reimbursement system of the National Health Insurance (NHI).

Materials and Methods

We retrospectively reviewed electronic medical record between June 2018 and December 2022. Total number of 37 patients (74 knees) were identified and divided into two groups. Group A contained 19 patients who received simultaneous bilateral OUKA, and Group B consisted of 18 patients who underwent two-stage bilateral OUKA. Outcome measurement included tourniquet time, length of hospital stay, change in hemoglobin, need to transfusion, complications, hospital costs, and DRG profits.

Results

The two study groups exhibited no significant differences in patient characteristics. While the simultaneous group experienced a greater drop in hemoglobin levels, this did not lead to higher rates of blood transfusions or complications. In terms of functional outcomes, no significant differences were observed between the two groups. Notably, simultaneous bilateral OUKA led to a significant reduction in hospital stay and cost, ultimately contributing to increased hospital profits under the Tw-DRG reimbursement system.

Conclusions

Simultaneous bilateral OUKA emerges as a safe and cost-effective procedure under the Tw-DRG reimbursement system. It demonstrated comparable functional improvement to staged bilateral OUKA, without elevating the risks of complications. Notably, this approach had the advantages of reduced hospital stay and lower costs, ultimately contributing to increased hospital profits. Future investigations, incorporating larger patient cohorts, comprehensive clinical outcome scores, and extended follow-up periods, are warranted to reaffirm and build upon these findings.

The Impact of Intravenous Tranexamic Acid on Blood Loss, Transfusion Requirements, and Early Mobilization in Unilateral Total Knee Arthroplasty: A Retrospective Comparative Study

Authors: Cumhur Deniz Davulcu, Muhammed Yusuf Afacan

Presenter: Muhammed Yusuf Afacan

Istanbul University-Cerrahpasa, Cerrahpasa Faculty of Medicine, Department of Orthopaedics and Traumatology, Istanbul, Turkey

Objective: Despite being one of the most successful surgeries of the past century, total knee arthroplasty (TKA) is associated with a significant risk of bleeding and the need for allogeneic blood transfusion (ABT). Tranexamic acid (TA), an increasingly utilized antifibrinolytic agent, aims to reduce blood loss and transfusion requirements in TKA. Early rehabilitation is a targeted goal in TKA. This retrospective study compares the effects of intravenously administered TA, given in two doses preoperatively and postoperatively, on total blood loss and transfusion requirements in unilateral TKA. The study also explores whether earlier mobilization is achievable in cases where TA is administered.

Methods: Between January 2016 and January 2023, a total of 123 patients undergoing elective unilateral TKA at our clinic were identified. Demographic data, pre- and post-operative blood parameters, and complications observed during the 90-day follow-up were recorded from patient files. Total blood loss was calculated using the Nadler formula, and ABT amounts were documented. Postoperative discharge times and time to initiation of mobilization were noted. The 62 patients receiving IV TA as a preoperative dose of 10 mg/kg and postoperative dose of 10 mg/kg twice, and the 61 patients without TA were compared as two separate groups.

Results: In the TA group, the total average blood loss, decrease in hemoglobin levels, and amount of blood transfusion were significantly lower than in the control group. The length of hospital stay was also significantly shorter in the TA group compared to the control group. Additionally, the time for postoperative patient mobilization was significantly shorter in the TA group than in the control group.

Conclusion: Administering IV TA at a preoperative dose of 10 mg/kg and postoperative doses of 10 mg/kg twice has been found to significantly reduce blood loss and ABT requirements in TKA without increasing thromboembolic complications. Hence, we consider it an effective and reliable method in TKA and recommend its usage. Furthermore, due to the potential for earlier postoperative mobilization, we also recommend the use of TA.

Keywords: Early postoperative mobilization, postoperative blood transfusion, postoperative length of hospital stay, total knee arthroplasty, intravenous tranexamic acid use

The Incidence and Risk Factors of Postoperative Urinary Retention After Total Hip and Knee Arthroplasty

Presenter: *Cheng-En, Tsai*
Institution: *Chi Mei Medical Center, Tainan, Taiwan*

Introduction

Postoperative urinary retention (POUR) is a common complication after total joint arthroplasty (TJA). The results of POUR may lead to chronic voiding difficulty, bacteremia, and urinary tract infection. (subsequent hematogenous periprosthetic infection). This study aims to evaluate the incidence and predictive risk factors of POUR.

Methods

From September 2022 to February 2023, patients preparing to undergo primary Total knee and total hip arthroplasty were prospectively collected. POUR was defined as if the residual urine exceeded 400ml after an operation. The patients were divided into the POUR group and the non-POUR group. Patient demographics, urologic history, operative data, and bladder scanner volumes between the two groups were calculated.

Results

Thirty-three patients developed POUR. POUR Group (n=33) had a significantly higher body mass index (BMI) as compared to the Non-POUR group (n=167). Nevertheless, the POUR group had lower bladder voiding efficiency (BVE). The following factors of Hypertension, Diabetes mellitus, and IPSS score were risk factors for POUR.

Conclusion

In our study, patients with POUR demonstrated lower preoperative BVE and higher international prostate symptom scores (IPSS). In addition, our study is the first to identify BVE as the risk factor of POUR. Awareness of these risk factors may help clinicians detect the patients at risk and decrease the risk of complications.

Rotating hinge arthroplasty in a post-septic arthritic knee with global instability in an adult women – A rare case

Presenter: Vishnu Senthil, Govt Royapettah hospital, Chennai
Institution: Govt Royapettah Hospital, Chennai

Introduction:

Post septic arthritic knee with deformity and loss of femoral condyle is rare in an adult women. We present such a case with global instability which was treated with rotational hinge arthroplasty.

Case Report:

51 year old women presented to us with pain, deformity and affected activities of daily living. Pain and deformity was insidious and progressive onset from the age of 18 yrs. Patient had taken only conservative management in the form of medications and physiotheraphy. Knee ROM was 0-30 deg with varus and valgus stability. Patient was walking with painful limp. Radiological examination showed deformed femoral condyle with complete loss of lateral condyle and deformed medial condyle. Deformed condyle was articulating with tibia with loss of MCL and rudimentary LCL as per MRI report.

Patient was posted for surgery with standard medial para-patellar approach, distal femur resected and proximal tibia cut done. Trailing done with small femur and definitive rotating hinge prosthesis was implanted. Patella was resurfaced and complete lateral retinacular release was done to mobilise the patella for proper tracking. Post-operative no peroneal palsy was identified. Now the patient at one year follow up with knee ROM of 0-60 degree and walking with full weight bearing.

Conclusion:

Literature review has not reported such a case of post septic sequelae following varicella at the age of 18. Patient had documented that no evidence of acute septic arthritis or arthrotomy was performed. Non-uniform involvement of lateral condyle more than medial condyle suggests the rudimentary embryological presence of intra-articular septations between the condyles. Patient had not taken treatment for the initial deformity and it progressed in the adulthood with arthritis. Pre-operative planning is necessary to avoid nerve palsy and give a good functional knee to the patient. Knowledge of such a case of neglected post–septic sequelae is needed to avoid delayed diagnosis and treatment.

Ultrasound-Guided Hyaluronic Acid vs. Platelet Rich Plasma Injections: A Comparative Analysis in Knee Osteoarthritis Treatment with Cost-utility Analysis.

Presenter: Karthikeyan Dhandapani

Institution: Royal Gwent Hospital

Objective: To evaluate the efficacy of Cellular Matrix (CM) injections, a synergistic blend of Platelet Rich Plasma (PRP) and Hyaluronic acid (HA), in the treatment of knee osteoarthritis (KOA) and to discern if CM provides superior benefits compared to PRP injections alone.

Background: As the prevalence of KOA, a debilitating degenerative joint disease, amplifies, its societal health implications intensify. While conservative treatments are conventionally recommended, intra-articular injections of PRP and HA have emerged as contemporary interventions. When used independently, Both PRP and HA have shown promising results, outpacing intra-articular steroid injections in pain relief and function improvement. The recent hypothesis that the combination of PRP and HA, termed Cellular Matrix, might enhance therapeutic benefits prompted this study.

Methods: We recruited patients aged 18-80 with symptomatic knee arthritis fitting the specified criteria. They were divided into two groups: one receiving PRP injections(53) and the other receiving CM injections(29). Outcomes were gauged based on the Oxford Knee Score (OKS), WOMAC pain, WOMAC total, EQ5D and VAS Pain score collected post-treatment.

Results: A pivotal aspect of our study was the pronounced therapeutic improvements observed in both treatment groups. The CM cohort registered significant reductions in PainVas score ($p<<0.0001$) and OKS ($p<0.0001$) from baseline to the end of treatment. Similarly, the PRP cohort exhibited a noteworthy decrease in PainVas ($p<0.0001$) and OKS scores ($p<0.0160$). However, a direct comparison between the two treatments revealed no significant difference in their effectiveness for the end-of-treatment PainVas and OKS scores.

Discussion: Despite the distinct therapeutic modalities, PRP and CM injections showcased comparable and considerable improvements in KOA treatment outcomes. The parity in results between the two treatments is particularly significant given the potential cost-effectiveness of CM injections compared to PRP. The study has limitations, including disparate cohort sizes and differential data collection periods, necessitating comprehensive research for a more conclusive insight.

Conclusion: Cellular Matrix and PRP injections demonstrate marked potential in managing KOA, with no significant distinction in their short-term efficacy. Further, longitudinal studies are warranted to assess enduring benefits.

Osteoarthritis: New Treatment, New Hope

Presenter: Osteoarthritis: New Treatment, New Hope

Institution: Ad-din Women's Medical College Hospital
Department of Orthopedics & Spine Surgery
Dhaka, Bangladesh

Introduction : Osteoarthritis is a progressive degenerative disease of articular cartilage, leading to joint pain, stiffness, and impaired mobility. This is one of the leading causes of disability in elderly population. Conventional treatment modalities only provide symptomatic relief but fall short of limiting the natural course of disease. Conversely, PRP (Platelet Rich Plasma) can provide both symptom relief and joint restoration.

Background : PRP is an autologous blood product obtained by centrifuging patient's own blood having no adverse effect. The centrifuge machine separates the blood into three main layers based on density: red blood cells (RBCs), platelet-rich plasma (PRP), platelet-poor plasma (PPP). PRP is then carefully collected from the second layer and injected in the affected joint. Platelets contain growth factors that can stimulate tissue repair and regeneration. Having a higher concentration of platelets, PRP possesses a healing property of damaged tissues. When administered intra-articularly, these growth factors repair and regenerate degenerated articular cartilage by stimulating chondrocyte proliferation.

Aims : As joint PRP injection is a comparatively new treatment option, research related its efficacy is fewer. Still, analysis of the available literature show the positive impact of PRP on pain reduction and functional improvement in osteoarthritis.

Method : A comprehensive search for relevant database was conducted to identify the effect of PRP on osteoarthritis. We administer PRP injection for stage 1-3 osteoarthritis, showcasing radiologic evidence depicting increased joint space. In case of stage 4 osteoarthritis, we enhance traditional PRP treatment by incorporating laser puncture techniques. The combined approach results in improved clinical outcome and radiological evidence, demonstrating its efficacy.

Conclusion : Although there are a limited number of studies regarding the role of PRP on osteoarthritis, more research are going on. The natural healing property of PRP has the ability to reverse the damage and degeneration of articular cartilage, resulting in both alleviation of symptoms and reparation the affected joints

Synergistic Antibacterial Effect of Casein-AgNPs Combined with Tigecycline against *Acinetobacter baumannii*

Presenter: Wei-Hsun Wang

Abstract

Acinetobacter baumannii (*A. baumannii*) is a common and challenging pathogen of nosocomial infections, due to its ability to survive on inanimate objects, desiccation tolerance, and resistance to disinfectants. In this study, we investigated an antibacterial strategy to combat *A . baumannii* via the combination of antibiotics and silver protein. This strategy used a functional platform consisting of silver nanoparticles (AgNPs) resurrected from silver-based calcium thiophosphate (SSCP) through casein and arginine. Then, the silver protein was combined with tigecycline, the first drug in glycylcycline antibiotic, to synergistically inhibit the viability of *A . baumannii* . The synergistic antibacterial activity was confirmed by the 96-well checkerboard method to determine their minimum inhibitory concentrations (MIC) and calculated for the combination index (CI). The MIC of the combination of silver protein and tigecycline (0.31 mg/mL, 0.16 μg/mL) was significantly lower than that of the individual MIC, and the CI was 0.59, which indicates a synergistic effect. Consequently, we integrated the detailed synergistic antibacterial properties when silver protein was combined with tigecycline. The result could make for a promising approach for the treatment of *A . baumannii* .

Keywords: A. baumannii; AgNP; silver protein; synergistic antibacterial effect; tigecycline.

Impaired Glycine Neurotransmission Causes Adolescent Idiopathic Scoliosis: A Novel Variant and Functional Pathway

Presenter: Jason Cheung*

Associates: Xiaolu Wang, Ming Yue, Prudence Wing Hang Cheung, Yanhui Fan, Meicheng Wu, Xiaojun Wang, Sen Zhao, Anas M. Khanshour, Zheyi Chen, Danny Chan, Qiuju Yuan, Guixing Qiu, Zhihong Wu, Jianguo Zhang, Shiro Ikegawa, Nan Wu, Carol A. Wise, Yong Hu, Keith Dip Kei Luk, You-Qiang Song, Bo Gao

Institution: *Department of Orthopaedics and Traumatology, The University of Hong Kong

Background

Adolescent idiopathic scoliosis (AIS) is the most common form of spinal deformity affecting millions of adolescents worldwide, but it lacks a defined theory of etiopathogenesis. Based on a thorough clinical investigation, genetic analysis and functional study, we identify the origin of some AIS as neuropathic. Variants of *SLC6A9* , which encodes glycine transporter 1 (GLYT1), reduce glycine transportation, impaired glycine neurotransmission, and central pattern generators (CPGs) dysfunction leading to spinal deformity.

Methods

Five multi-generation AIS families and 843 sporadic cases were identified, and along with 3219 controls, underwent genetic analyses including linkage analysis, genome sequencing, and targeted sequencing to identify pathogenic variants. Paraspinal muscle sEMG tests were performed on familial cases. Additionally, 858 patients from two additional AIS cohorts in China and US were used for validation. After identifying disease-associated variants, cellular mechanisms were studied and zebrafish models were generated to understand the underlying etiology of the spinal curvature and to test candidate treatments.

Results

Disease-causing and predisposing variants of *SLC6A9* in multiple families and many sporadic cases were identified via genetic analyses. *SLC6A9* variants affected subcellular localization and stability of GLYT1, leading to reduced glycine uptake activity in cells. *Slc6a9* mutant zebrafish exhibited discoordination of spinal neural activities and pronounced spinal curvatures which resembles the human patients carrying the *SLC6A9* pathogenic variant. Administration of a glycine receptor antagonist or a clinically used glycine neutralizer sodium benzoate partially rescued the phenotype (scoliosis phenotype dropped from 70.2% to 30.3%). Aberrant EMG bursts were found in *SLC6A9* pathogenic variants suggesting an impairment of paraspinal muscle balance control.

Conclusion

Genetic variants affecting glycine transportation are strong causal risk factors of AIS. This is a novel genetic variant and confirmed functional pathway that leads to AIS pathogenesis. Results from patients and animal models suggest a neuropathic origin for “idiopathic” scoliosis, involving the dysfunction of CPGs, potentially a common cause of AIS. Our work suggests further avenues for early diagnosis and prevention of AIS. A true breakthrough for work in AIS etiology.

Effect of Suture Purchase on Biomechanical Characteristics in Barbed Sutures

***Presenter** : Assoc. Prof.MD, Ali Eray Günay* , Kayseri City Education and Training Hospital Orthopaedic and Traumatology Clinic,

***Authors:** Yiğit Umur Cırdı, Ali Eray Günay, Mehmet Ekici, Ömer Tolga Şekerci, Ramazan İlter Öztürk*

Objective: The aim of this study is to examine the relation of the length of suture inside the tendon and repair strength and its effect on tensile force

Methods: The study was conducted in 2023 in Kayseri. Twenty-four sheep flexor manus tendons were taken, and four groups were formed based on the material to be used in tendon repair and the distance of tendon passage. The incision line was drawn of midline of the tendon. Passage points were marked 1 cm away from the incision line in Groups A and C, and 2 cm in Groups B and D, The incision was made with 11no scapel. And Group A and B repaired with 3/0 poliprolene suture with kessler method, C and D repaired with 3/0 Vloc suture.

The repaired tendons were placed in the Instron tensile device by compression from both ends. Traction force was applied to open 10 mm per minute. The entire process was recorded with a slow-motion camera. The traction force at the moment of 2 mm opening in the tendon gap was evaluated as the 2 mm GR value. Traction was continued, when the thread was broken or tendon was slide from the suture, that is determined as the maximum tensile strength value.

Results: In the intergroup comparison, there was no statistically significant difference in the MTS amounts between the groups. In 2mmGR; when the suture passage distance was taken to 2 cm, a much higher 2mmGR value was obtained compared to 1 cm. Furthermore, this increase is 58.3% in non-barbed sutures and 157.5% in barbed sutures.

Conclusion: Although repair with barbed sutures has theoretical advantages such as short repair time, less bulging, and strong repair, these advantages may only be seen in tendons with long passages. Although repair strength is similar to conventional sutures up to 2 cm, a stronger repair may be possible with longer passages. This could evolve into the use of devices like intratendinous barbed nails in the future, similar to intramedullary nails.

Keywords: Tendon Repair, Vloc, Knotless Sutures

Mechanical behaviors of titanium, nickel–titanium, and stainless elastic intramedullary nail in fixation of tibial diaphyseal fractures

Presenter: Pei-Yuan Lee [2]

Associates: Yen-Nien Chen [1]

Institution: Department of Physical Therapy, Asia University, NO.500, Lioufeng Rd., Wufeng, Taichung 413305, Taiwan [1]

Department of Orthopaedic Surgery, Show Chwan Memorial Hospital, Changhua, Taiwan [2]

Introduction : Elastic nails have been widely used in the diaphyseal fracture fixation of long bones in adolescents. However, high complication rates have been reported in cases involving weights exceeding 55 kg. The existing nails are fabricated with different metals in clinical settings; however, the effect of the materials on the mechanical responses of the fractured bone remains unclear. Hence, the present study is conducted to compare the mechanical responses of typically used metals, namely titanium, stainless, and nickel–titanium, for elastic nails in the fixation of tibial diaphyseal fractures.

Material and methods: A sawbone tube is used to determine the contact force, which is developed after constraining the nail inside the narrow canal using different nail materials. Furthermore, a finite element (FE) model of the tibial diaphyseal fracture is developed to predict the fracture gap deformation based on different nail materials under axial compression and bending loads. The push-out force in the FE simulation is compared with that of a case without an end cap.

Results: In the sawbone tube, the results indicate that the contact force developed by the titanium nail is significantly higher than those developed by stainless and nickel–titanium nails. The contact forces developed by the titanium, stainless steel, and nickel– titanium nails are 385 (SD 34), 358 (SD 49), and 258 (SD 42) N, respectively. In the FE simulation, the titanium nail yields the highest push-out force when an end cap is not used, and the push-out forces in axial compression are 201, 183, and 87 N in the titanium, stainless, and nickel–titanium nails under axial compression, respectively. By contrast, the stainless nail yields the smallest gap deformation when an end cap is used.

Conclusion : Results of the present study show that the end cap is an important factor affecting the mechanical responses of nails fabricated using different materials. Titanium nails are preferred when an end cap is not used, whereas stainless nails are preferred when an end cap is used.

: Elastic nails have been widely used in the diaphyseal fracture fixation of long bones in adolescents. However, high complication rates have been reported in cases involving weights exceeding 55 kg. The existing nails are fabricated with different metals in clinical settings; however, the effect of the materials on the mechanical responses of the fractured bone remains unclear. Hence, the present study is conducted to compare the mechanical responses of typically used metals, namely titanium, stainless, and nickel–titanium, for elastic nails in

the fixation of tibial diaphyseal fractures.

Material and methods: A sawbone tube is used to determine the contact force, which is developed after constraining the nail inside the narrow canal using different nail materials. Furthermore, a finite element (FE) model of the tibial diaphyseal fracture is developed to predict the fracture gap deformation based on different nail materials under axial compression and bending loads. The push-out force in the FE simulation is compared with that of a case without an end cap.

Results: In the sawbone tube, the results indicate that the contact force developed by the titanium nail is significantly higher than those developed by stainless and nickel–titanium nails. The contact forces developed by the titanium, stainless steel, and nickel– titanium nails are 385 (SD 34), 358 (SD 49), and 258 (SD 42) N, respectively. In the FE simulation, the titanium nail yields the highest push-out force when an end cap is not used, and the push-out forces in axial compression are 201, 183, and 87 N in the titanium, stainless, and nickel–titanium nails under axial compression, respectively. By contrast, the stainless nail yields the smallest gap deformation when an end cap is used.

Conclusion: Results of the present study show that the end cap is an important factor affecting the mechanical responses of nails fabricated using different materials. Titanium nails are preferred when an end cap is not used, whereas stainless nails are preferred when an end cap is used.

Assessing the Potential of JPEG File Size Variations for Fracture Detection in Lower Leg X-Ray Images

Presenter : Huan-Ju Lee

Huan-Ju Lee [1] , Mei-Ju Lee [2] , Chen-Kun Liaw [1] , Chih-Hwa Chen [1] , Chang-Jung Chiang [1]

Taipei Medical University-Shuang Ho Hospital,Ministry of Health and Welfare [1] ,

Taipei Veterans General Hospital [2]

Background: X-ray imaging is pivotal in diagnosing skeletal injuries, particularly fractures. With the advent of digital storage in medical informatics, JPEG compression has become essential for managing large volumes of X-ray images due to its efficient file size reduction while maintaining image quality. This study explores the hypothesis that JPEG file size variations can be used to identify fractures in lower leg X-rays.

Methods: A retrospective analysis was conducted on lower leg AP X-ray images obtained from Taipei Medical University-Shuang Ho Hospital's PACS system from January 1, 2021, to December 31, 2021. The study included 118 assessable images categorized into non-fracture, complex fractures, and linear fractures. These images, initially in DICOM format, were standardized and converted to high-quality JPEG files. Statistical analyses, including T-tests, were performed to compare file sizes across the categories.

Results: The study comprised 71 non-fractured, 16 linear fractured, and 31 complex fractured images. T-test analysis revealed a significant difference in file sizes between non-fractured and fractured groups, with fractured images showing larger file sizes. However, the distinction between linear and complex fractures was not statistically significant.

Discussion: The significant differences in file sizes between non-fractured and fractured groups suggest that JPEG file size analysis could be a potential tool for preliminary fracture identification. The lack of significant difference between linear and complex fractures indicates a need for further investigation.

Conclusion: This study demonstrates that JPEG file size variations in lower leg X-ray images could aid in fracture detection. However, limitations such as the study's scope, manual image processing methods, and unexplored JPEG compression parameters highlight the need for further research.

A Case Report of Malignant Myxofibrosarcoma Accompanied by Episodes of Hypoglycemia

Authors: Muhammed Yusuf Afacan [1] , Nuri Ayoğlu [1] , Mahmut Kürşat Özşahin [1] , Hüseyin Botanlıoğlu [1]

Presenter: Muhammed Yusuf Afacan

[1] *Istanbul University-Cerrahpasa, Cerrahpasa Faculty of Medicine, Department of Orthopaedics and Traumatology, Istanbul, Turkey*

Abstract

Myxofibrosarcoma, a malignant mesenchymal tumor categorized as a fibroblastic sarcoma predominantly found in the elderly, exhibits varying degrees of malignancy, ranging from low-grade to high-grade based on cell characteristics. The primary treatment approach involves extensive surgical resection, with or without the inclusion of radiotherapy and chemotherapy. Notably, hypoglycemia attacks may occur due to the secretion of insulin or insulin-like substances by the tumor cells. This case study aims to underscore the significance of early surgical intervention in mitigating hypoglycemia attacks, preventing recurrence, and averting metastases. Additionally, it highlights the limitations of tru-cut biopsy in accurately distinguishing between low and high-grade myxofibrosarcoma. An 82-year-old male patient sought our clinic with a rapidly expanding mass in the left retroscapular region and recurrent hypoglycemic episodes. Initial biopsy results were inconclusive regarding the tumor grade, prompting surgical removal of the mass. Subsequent pathological examination revealed high-grade myxofibrosarcoma, a detail not evident in the initial biopsy. Following surgery, the hypoglycemia attacks ceased. Adjuvant local radiotherapy, administered at a total dose of 60 Gy in 30 fractions to the surgical site, proceeded without complications. Over a three-year follow-up period, no new masses, recurrences, or hypoglycemia attacks were observed. In summary, hypoglycemia attacks may serve as an indicative marker of malignant tumor presence, offering insights into both the initial diagnosis and ongoing assessment for recurrence and tumor aggressiveness. Given the limitations of biopsy in determining tumor grade, early surgical intervention becomes crucial for effective management.

The Impact of High Glucose-Induced Inflammation and Fibrosis on Intervertebral Disc Degeneration: A Novel Insight into the Role of mTOR/PKCδ and NFκB Signaling Pathways

Presenter: Chun Tseng
Associates: Chia-Yu Lin, Pang-Hsuan Hsiao, Hsien-Te Chen ,Yi-Chin Fong
Institution: Graduate Institute of Biomedical Sciences, China Medical University, Taichung 404, Taiwan
Abstract:

Intervertebral disc degeneration (IVDD), a major cause of low back pain and disability worldwide, features abnormal fibrosis development as a prominent pathological characteristic. Hyperglycemia-induced inflammation and fibrosis, although known to influence the pathogenesis of several diseases, remain under-explored within the context of IVDD. Our study probes the impact and associated mechanisms of these conditions on IVDD progression. Procedures, adhering to the Helsinki Declaration's ethical standards, involved dissecting intervertebral discs from ten patients presenting with lumbar spinal intervertebral disc herniation and IVDD. The Ingenuity Pathway Analysis of the GEO database (GSE219145) aided in identifying several pathways involved in IVDD, primarily the mTOR and PKC pathways. Fibrosis in the intervertebral disc was assessed via Masson staining, and qPCR and western blot assay evaluated the expression levels of fibrosis markers (CTGF, COLa1, ATF4, EIF2). We discovered a positive correlation between IVD fibrosis progression and IVDD gradient. The annulus fibrosus (AF), crucial for IVD's mechanical function, was leveraged for experiments. High-glucose (33 mM) treatment of AF cells resulted in an increased expression of fibrosis markers on both mRNA and protein levels. Masson's staining further revealed a positive link between tissue fibrosis and Pfirrman scores, while immunohistochemistry established the upregulated expression of fibrosis markers in high-grade IVDD tissue samples. Interestingly, high glucose treatment promoted mTOR and PKC phosphorylation in a time-dependent manner, both of which were inhibited by mTOR and PKC inhibitors (Repamycin and GF109203x) or siRNA. Additionally, NF-κB, a key fibrosis response transcription factor and a common PKC signaling downstream target, was curbed by NF-κB inhibitors or p65 siRNA, subsequently reducing high glucose-induced fibrosis markers upregulation. Our findings suggest that high glucose promotes fibrosis marker expression via the mTOR/PKCδ and NF-κB signaling pathways in AF cells, illuminating potential therapeutic targets for low back pain treatment and new insights into hyperglycemia-induced IVDD mechanisms.

Simultaneous versus Staged Bilateral Oxford Unicompartmental Knee Arthroplasty in the Era of Diagnosis-Related Group : Influence on Outcome and Cost

Presenter: Chi Sheng Chien

Associates: Chi-Kun Hsieh, Chien-Chieh Wang

Institution: Department of Orthopedics, Chi Mei Medical Center, Tainan ,Taiwan

Abstract:

Introduction

Numerous studies have explored the comparative outcomes of simultaneous and staged Oxford Unicompartmental Knee Arthroplasty (OUKA), revealing no conclusive superiority between the two approaches. Besides, significant variations in hospital costs have been observed between the simultaneous and staged groups across diverse insurance payment systems. This study seeks to examine the impact on clinical outcomes, hospital costs, and profits associated with simultaneous versus staged OUKA under the Taiwanese Diagnosis-Related Group (Tw-DRG) reimbursement system of the National Health Insurance (NHI).

Materials and Methods

We retrospectively reviewed electronic medical record between June 2018 and December 2022. Total number of 37 patients (74 knees) were identified and divided into two groups. Group A contained 19 patients who received simultaneous bilateral OUKA, and Group B consisted of 18 patients who underwent two-stage bilateral OUKA. Outcome measurement included tourniquet time, length of hospital stay, change in hemoglobin, need to transfusion, complications, hospital costs, and DRG profits.

Results

The two study groups exhibited no significant differences in patient characteristics. While the simultaneous group experienced a greater drop in hemoglobin levels, this did not lead to higher rates of blood transfusions or complications. In terms of functional outcomes, no significant differences were observed between the two groups. Notably, simultaneous bilateral OUKA led to a significant reduction in hospital stay and cost, ultimately contributing to increased hospital profits under the Tw-DRG reimbursement system.

Conclusions

Simultaneous bilateral OUKA emerges as a safe and cost-effective procedure under the Tw-DRG reimbursement system. It demonstrated comparable functional improvement to staged bilateral OUKA, without elevating the risks of complications. Notably, this approach had the advantages of reduced hospital stay and lower costs, ultimately contributing to increased hospital profits. Future investigations, incorporating larger patient cohorts, comprehensive clinical outcome scores, and extended follow-up periods, are warranted to reaffirm and build upon these findings.

A Deep Learning Model (VeriOsteo® OP) for Osteoporosis Detection Using Standard Chest X-ray: A Multicenter Study

Presenter: Kun-Hui Chen

Institution: Taichung Veterans General Hospital, Taiwan

Abstract

Background:

An increasing number of studies are dedicated to the development of deep learning models in medical imaging for Osteoporosis prediction. The Chest X-ray (CXR) serves as a standard examination within routine physical examinations, stands as the most frequently utilized image diagnosis modality. It constitutes a valuable subject for osteoporosis research and prevention. Since T12 and L1 vertebrae are commonly associated with osteoporotic fractures based on previous literature, this study collaborates with Acer Medical Inc. to develop a deep learning model, VeriOsteo® OP, for bone mineral density (BMD) prediction and the identification of individual with high risk of osteoporosis using the image of CXR.

Methods

We retrospectively reviewed individuals with age above or equal to 50 who underwent both CXR and Dual-energy X-ray Absorptiometry (DXA) examinations with interval within six months. We excluded individuals with absence of T-score value of L1-L2-L3-L4 or the difference of T-score value between adjacent vertebrae greater than 1. The VeriOsteo® OP contains two Artificial Intelligence (AI) image deep learning models. The first model employs image detection techniques to delineate the T12 and L1 regions on CXR and adjusts the image contrast and window level. Then, upload the extracted image to the second model to predict the averaged BMD value of L1 to L4 vertebrae. Finally, convert the predicted BMD into a T-score value and diagnose Osteoporosis (T-score ≤ -2.5) based on the World Health Organization (WHO) announcement.

Results

This study included 5,562 patients (training dataset: 5,122 patients; Testing dataset: 440 patients) with a mean age of 64.4 with standard deviation ±13.2 (age of training dataset: 64.5 with standard deviation ±13.3; age of testing dataset: 62.5 with standard deviation 12.4). In testing dataset, of 304 patients were from the medical center Taichung Veterans General Hospital (VGHTC) and the other 136 patients were from the community physical examination center Joy Clinic. Male and female comprised 20.2% and 79.8% respectively and 253 individuals (57.5%) were diagnosed as osteoporosis. Significantly correlation (R = 0.88) was found between the BMD values of model prediction and gold-standard DXA measurement. The accuracy of osteoporosis diagnosis (T-score ≤ -2.5) was 88.99% with sensitivity 88.71% and specificity 89.36%. The area under curve (AUC) of osteoporosis diagnosis was 94.61%, which indicates the model has a well-performing diagnostic capability.

Conclusion

The proposed model VeriOsteo® OP validated by multicenter data represents a promising and reliable auxiliary tool for the osteoporosis diagnosis using the T12 and L1 image region on CXR. The VeriOsteo® OP provides an opportunity for early detection of osteoporosis and further osteoporosis related fracture prevention.

STRESS FRACTURE DEVELOPING IN THE BILATERAL PROXIMAL FEMUR AND A CASE OF HYPERPARATHYROIDISM WITH DELAYED DIAGNOSIS

Presenter : *DERYA AKBABA [1]*

Associates *: MUHAMMED YUSUF AFACAN [1] ,MEHMET FATİH GÜVEN [1] ,*

Institution *: [1] Istanbul University-Cerrahpasa, Cerrahpasa Faculty of Medicine, Department of Orthopedics and Traumatology*

Abstract

Stress fractures are fractures that occur due to repetitive and mechanically excessive loading of bones, making their diagnosis initially challenging. While these fractures can result from chronic fatigue or inadequate bone density, the presence of an underlying metabolic disorder, which might be easily overlooked during diagnosis, should be thoroughly investigated. This approach ensures a more controlled and targeted management of the patient's treatment. In this case, a 43-year-old woman diagnosed with osteoporosis and with a history of bisphosphonate use complained of intermittent pain intensifying in both hips. Despite no acute osseous pathology on X-ray imaging and full hip joint mobility during examination, a bone scintigraphy performed for control and monitoring purposes incidentally revealed findings consistent with stress fractures in the medial periosteal areas of the proximal diaphysis of bilateral femurs. Subsequent contrast-free thigh magnetic resonance imaging at the described levels confirmed bilateral proximal femur stress fractures, with more pronounced linear cortical fissures on the right side in the medial cortex. Following absolute non-weight bearing and rest, appropriate medical analgesia, and prophylactic medical treatment against the risk of deep vein thrombosis, the patient's ongoing pain led to further biochemical tests. The parathyroid hormone level was found to be 306 ng/L, exceeding the accepted normal upper limit by fivefold (normal range: 15-65 ng/L). The patient had normal total and ionized serum calcium concentrations. Advanced investigations revealed secondary hyperparathyroidism associated with osteoporosis. The incidentally detected bilateral proximal femur stress fractures were successfully treated in the patient through adequate rehabilitation, metabolic regulation, weight-bearing restrictions, and rigorous clinical follow-up without the need for prophylactic internal fixation. This case emphasizes the necessity of investigating the presence of metabolic diseases in the background of asymptomatic stress fractures. It also serves as an example indicating that with sufficient metabolic regulation, close clinical monitoring, and appropriate rehabilitation, stress fracture cases can be successfully treated without resorting to surgical interventions like prophylactic internal fixation.

Giant cell tumor grade III & denosumab effects; prospective study on 127 patients.

Presenter: Badaruddin Sahito [1]

Associates: Nauman Hussain, Awais abro, Soughat Katto, Jagdesh K , Khali u rehman, Dr A manan , Dr Waqar [1]

Dr Ruth KM Pfau [2]

Institution: Dow University of health sciences [1] , Civil hospital Karachi Pakistan [2]

Background : Denosumab is new invention in the treatment of giant cell tumor of bone .

Materal & Methods :

From 2017 to March 2023 we have treated 119 giant cell tumor III with 4 doses of neoadjuvant denosumab 120 mg subcutaneously . Clinical and radio;ogical response observed.9 Proximal humerus , 23 distal radius ,6 distal ulna , 6 pelvis, 12 proximal femur , 27 distal femur ,26 proximal tibia, 5 distal tibia , talus 1, 8 fibula , 4 metacarpal. 8 patients presents with pathological fracture. We did marginal resection or wide margin in all patients except 8 cases we did extended curettage . We have found denosumab provide good consolidation , reduce edema , delinate tumor , make resection easier . we have denosumab as adjuvant in one case of giant cell tumor of patella .

Conclusion : denosumab is good before surgery to delineat tumor but the ultimate treatment is surgery .

Robotic Assisted Balloon Kyphoplasty

Presenter: VIDYADHARA SRINIVASA

Associates: Dr Madhava Pai K, Dr Balamurugan T, Dr. Abhishek Soni

Institution: Manipal Institute of Robotic Spine Surgery

Background and Objectives

Balloon Kyphoplasty and Vertebroplasty have been conventionally performed percutaneously under fluoroscopic guidance with satisfactory results. However, these procedures are more challenging in those patients with spinal deformities, higher BMI, severe osteoporosis, high-grade collapse such as vertebra plana due to altered anatomy and poor visualization on fluoroscopy creating multiple false tracts. Cement leakage into the spinal canal through pedicle breaches can result in poor outcomes. Intraoperative computed tomography (CT) guided robotic navigation systems have been successfully used in the accurate placement of pedicle screws. These systems can also be used to accurately drill tracks that are completely intrapedicular without fluoroscopic guidance in challenging situations. The current study attempts to determine the clinical and radiological outcomes of robotic assisted Balloon Kyphoplasty along with intra-operative O-arm scan.

Methods

Twenty-four patients with 32 vertebral compression fractures who underwent robotic assisted Balloon Kyphoplasty with the “scan and plan” workflow were included in the study. We did not use a bone mount in any of the cases as we felt there wasn’t significant movement of the patient during the procedure. The O-arm time, Robot time, and mean radiation exposure were noted. Post-operative O-arm scans were done to determine if there was any cement leak.

Results :

The most cranial vertebra was T6 and the most caudal vertebra was L4. The mean O-arm time was 4.1 minutes, the mean robot registration time was 4.7 minutes and the mean time per trajectory was 1.2 minutes. The mean radiation dose to the patient was 27.1 mGy. None of the patients had any cement leak on the post-operative O-arm scan. The mean time to mobilization post procedure was 127 minutes.

Conclusions

Robotic assisted drilling of trajectories for insertion of Kyphoplasty Balloons is accurate and this reduces the risk of cement leak into the canal.

Laboratory tests for the diagnosis of septic arthritis of the hip joint in children

Presenter: Ryosuke Yamaguchi

Associates: Tomoyuki Nakamura, Kazuyuki Takamura, Haruhisa Yanagida, Toru Yamaguchi, Yasuharu Nakashima

Institution: Kyushu University, Fukuoka, Japan

Fukuoka Children's Hospital, Fukuoka, Japan

Introduction : Early and reliable diagnosis is essential for successful management of septic arthritis of the hip joint in children. The purpose of this study was to comprehensively investigate useful laboratory tests for the diagnosis of septic arthritis of the hip joint in children.

Method : Retrospectively 29 patients having hip arthritis were divided to septic arthritis (SA) group and (non-SA group) based on the final diagnosis. Patient background, blood tests and synovial fluid tests were compared between the two groups. Additionally, a multivariate analysis was performed to explore useful diagnostic test and its cutoff values.

Results : In univariate analysis, C-reactive protein in blood, synovial fluid cell count and glucose level ratio in synovial fluid/blood were significantly different between the group. On the other hand, patient background (age and gender), other blood tests (white blood cell count, neutrophil fraction, erythrocyte sedimentation ratio) were not significantly different. A multivariate analysis revealed that glucose level ratio in synovial fluid/blood (cutoff value: ≤ 66%, sensitivity: 80%, specificity: 92%) and synovial fluid cell count (cutoff value: ≥20,000/mm ^{2} , sensitivity: 92%, specificity: 90%) were useful diagnostic tests.

Conclusion : Test results of synovial fluid glucose level less than 2/3 of blood glucose level, and synovial fluid cell count greater than 20,000 strongly indicate septic arthritis of the hip join in children.

Incidental Detection of Bilateral Tarsal 3rd Middle Phalangeal Bipartition in the Emergency Department: A Case Report

Presenter: emel gonen bas [2]

Associates: Uluman Sisman [1] , Mehmet Eren [2]

Institution:

1. School of Medicine, Koç University, Istanbul, Turkey.
2. Department of Orthopedics and Traumatology, School of Medicine, Koç University, Istanbul, Turkey.

Abstract

Bipartite bone formation is a congenital variation occurring due to the incomplete ossification of newly forming bones in the body. Patella and sesamoid bones are the most common bipartite bone sites. However, some unusual bones can also have this kind of variation and it is important to diagnose them correctly and avoid unnecessary overtreatment. In this case report, we are presenting the case of a 10-year-old boy, who presented to the Emergency Department due to a glass cut to the plantar site of the right foot, and bipartition in the 3rd middle phalanges of both feet has been found in the radiographies. Although distal phalangeal bipartition is reported before, this is the first case to be reported to have bipartition in the tarsal middle phalanges in the literature.

Key Words : bipartite, middle phalanx, variation, tarsal phalanges, case report

Cross Sectional Analysis of Knowledge and Treatment Barriers in Primary Caregivers of Idiopathic Congenital Talipes Equinovarus Patients in The Philippine Band of Mercy Clubfoot Clinic

Presenter: *Rosalyn P. Flores, MD, FPOA, FPCS*

Associates: *Cesar Paolo L. Zaballero III, MD*

Institution: University of Santo Tomas Hospital
Department of Orthopaedics

Background: This study was conducted to assess the awareness of primary caregivers of children with clubfoot, also known as Congenital Talipes Equinovarus (CTEV). This investigation will focus on understanding their familiarity with the condition, beliefs, knowledge, adherence to treatment, and the obstacles faced throughout the treatment journey.

Methods: This is a cross-sectional analytical study. Three hundred twenty-five caregivers of CTEV patients in the Philippine Band of Mercy Clubfoot Clinic were interviewed using a validated questionnaire. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) software program, version 21.0, and a chi-square test was applied wherever suitable.

Results: Among the participants, 22% (n=72) demonstrated familiarity or understanding of CTEV, while the majority, comprising 78% (n=253) lacked knowledge about this congenital condition. Participants without knowledge frequently resort to traditional methods such as massage (62.06%), whereas those with knowledge predominantly opt for medical interventions like cast application (52.78%). Referral sources for treatment for those who self-referred constituted 29.17% of those with knowledge and 17.1% without knowledge, showing a significant difference with a p-value of 0.02. Participants' satisfaction with physician explanations exhibited a statistically significant difference ($p = 0.02$), with 66.67% of those with knowledge expressing satisfaction compared to 80.63% without knowledge. A significantly higher percentage of caregivers without knowledge, at 77.87%, reported experiencing social stigma, in contrast to the 43.06% reported by caregivers with knowledge ($p < 0.00001$).

Conclusion: This study shows that there is a significant knowledge gap among primary caregivers of children with CTEV. The study also revealed differences in treatment beliefs between caregivers with and without knowledge, highlighting the impact of awareness on treatment choices. These findings indicate a need for a widespread awareness campaign and targeted educational interventions regarding CTEV and its management in order to prevent delays in seeking treatment and incorrect management of CTEV, thereby preventing complications arising from neglected and erroneously-treated cases of clubfoot.

The Proximal Femur Maturity Index (PFMI) is a novel tool to Predict Curve Progression Risk in Patients with Adolescent Idiopathic Scoliosis Undergoing Bracing

Presenter: Jason Pui Yin Cheung

Associates: Janus Siu Him Wong, Keith DK Luk, Prudence WH Cheung

Institution: Department of Orthopaedics and Traumatology, The University of Hong Kong

Background :

The Proximal Femur Maturity Index (PFMI) can be used to assess skeletal maturity on existing whole-spine radiographs without additional radiation. However, the relationship between the PFMI at the initiation of bracing for adolescent idiopathic scoliosis (AIS) and subsequent curve progression remains unknown. This study aimed to investigate the relationship between the PFMI and curve progression, and the predictability of risks to adulthood curve progression and surgical thresholds based on the PFMI grade at brace initiation.

Methods :

This was a prospective study of 202 patients with AIS who were prescribed underarm bracing according to the Scoliosis Research Society criteria and had good brace-wear compliance. The patients were followed from brace initiation until complete skeletal maturity. Longitudinal data on the coronal Cobb angle and skeletal maturity assessments using Risser staging, Sanders staging, the distal radius and ulna classification, and the PFMI were collected. Each patient was assessed on whether the major curve progressed to ≥40° (adulthood deterioration) and ≥50° (the surgical threshold). Logistic regressions were used to predict probabilities of curve progression to the 2 thresholds, adjusted for factors that were significant in univariate analyses.

Results :

The PFMI correlated with the other skeletal maturity indices (r_s = 0.60 to 0.72, $p < 0.001$ for all). The pre-brace PFMI grade correlated with progression to ≥40° ($r_{rb} = -0.30$, $p < 0.001$) and to ≥50° ($r_{rb} = -0.20$, $p = 0.005$). Based on regression models ($p < 0.001$) adjusted for the pre-brace major Cobb angle and curve type, brace initiation at PFMI grades 2 and 3 for a curve of ≥30° had predicted risks of 30% (95% confidence interval [CI], 4% to 55%) and 12% (95% CI, 7% to 17%), respectively, for progression to the surgical threshold. Brace initiation at PFMI grade 5 had 0% progression risk.

Conclusions :

The PFMI can be used for predicting curve progression and prognosticating brace outcomes in AIS. Patients with brace initiation at PFMI grade 4 for a curve of <30° or at grade 5 were unlikely to progress to the adulthood deterioration or surgical threshold. In comparison, skeletally immature patients initiating bracing at a PFMI grade of ≤3 for a major curve of ≥30° had a higher risk of progression despite compliant brace wear.

Does the infant hip dysplascia disease spefiic care certification program improve the infant hip care in Changhua Christian Children's Hospital?

Presenter: Wei-Hsun Wang

Institution:

1. PAEDIATRIC ORTHOPAEDIC DEPARTMENT, CHANGHUA CHRISTIAN CHILDREN'S HOSPITAL,
2. ORTHOPAEDIATRIC DEPARTMENT, CHANGHUA CHRISTIAN HOSPITAL,
3. DEPARTMENT OF POST-BACCALAUREATE MEDICINE, COLLEGE OF MEDICINE, NATIONAL CHUNG HSING

ABSTRACT

Does the infant hip dysplascia disease spefiic care certification program improve the infant hip care in Changhua Christian Children's Hospital?

INTRODUCTION / OBJECTIVE

The Joint Commision of Taiwan launched the infant hip dysplascia disease specific care certification program. Changhua Christian Children's Hospital (CCCH) is the first certified healthcare organization in this program. This program aims to encourage comprehensive infant hip care services from hip dysplascia prevention to acute and chronic hip dysplascia care to meet neonate hip healthcare demands. We introduec this programin CCCH. The efficiency of the early diagnosis and avoidance of the major surgery in DDH was imrpoved.

MATERIALS & METHOD

We set up a cross-disciplinary team integrating in the infant hip dysplascia care. This progam was launched from March 2022. The hip stability was assessed with standard hip physical examination, followed by selective hip ultrasound according to the risk factor and each hip stability. Either observation, Pavlik harness treatment, or close reduction were applied according to each hip condition. The DDH prevention baby care method (Diaper wear, baby clothes, the way of carrying the baby) was introduced to the parents. The incidence of early diagnosis, surgery for DDH were collected.

RESULTS / DISCUSSION

The total number of hip screen was 2494. 258 cases were classified as hip dysplascia. The early detection rate was 5.82%. No case failed Pavlik harness treatment. The incidence of DDH surgery was 0.00%. A Taiwanes population based study revealed the overall DDH incidence ranged from 0.14% to 0.18%, Incidence of early diagnosis ranged from 0.071% to 0.092% and Incidence of DDH surgery ranged from 0.046% to 0.067%. In our study, the incidence of early diagnosis was higher than the average incidence of DDH in Taiwanese population. The incidence of DDH surgery is lower than the average incidence of DDH surgery in Taiwanese population.

CONCLUSION

The infant hip dysplascia DSC certification program in CCCH improved the efficiency of the early diagnosis and treatment of DDH and avoid major DDH surgery in the infants.

A COMPREHENSIVE EXPLORATION OF FIBRODYSPLASIA OSSIFICANS PROGRESSIVA (FOP)

A RARE PEDIATRIC CASE:

UNVEILING THE STONE MAN SYNDROME

Presenter: Derya Akbaba

DERYA AKBABA 1 ,AL I OSMAN GOKHAN ÇIBIKÇI 1 , MUHAMMED YUSUF AFACAN 1 , ALI SEKER 1
1 Istanbul University-Cerrahpasa Cerrahpasa Medical Faculty Department of Orthopedics and Traumatology

Abstract

Fibrodysplasia Ossificans Progressiva(FOP) commonly known as Stone Man Syndrome is a rare medical condition diagnosed through the combination of physical examination and genetic testing results. FOP which generally manifests with foot deformities and heterotopic ossification (HEO) foci in dispersed across the body, should not be ignored in differential diagnosis. In our case, clinical journey of a 10-year-old patient, which began approximately 2 years ago when a palpable swelling was detected on the back during his mother's bathing, and has been followed by us, revealed an increase in the number of palpable swellings in his body secondary to minor trauma stories reported during follow-ups. The patient had no family history related to this disease. There was no history of consanguinity among first-degree relatives. Additionally, the patient, who had bilateral congenital shortening and malformation of the first toe in his examination, was diagnosed through genetic tests conducted during this process. Radiological imaging of the patient showed heterotopic ossification foci, predominantly affecting the axial skeleton and chest wall, especially cervical and thoracic vertebrae. The patient, who occasionally experiences severe pain attacks, is closely monitored and kept under control through rigorous outpatient follow-ups and appropriate analgesic support. Although there is no definitive treatment method for this disease, patients have been observed to benefit from use of analgesics during pain attacks. In our patient, we aim to control the pain level by using such medications. Furthermore, studies and clinical experiences suggest that surgical excision of heterotopic bone may lead to more severe and painful new bone growth. Therefore, we are conservatively monitoring our patient. Emphasis is placed on being particularly cautious to minimize risk of trauma exposure for patient .This case presentation underscores the pivotal role of a thorough physical examination in diagnosing FOP. Additionally, it sheds light on the importance of patients who have received this diagnosis avoiding traumas as much as possible and controlling HEO rates to a certain extent through a conservative approach rather than surgery.

Neglected Monteggia injury in a 12-month-old child—Case report and literature review

Presenter: Shan-Yang Huang [a]

Associates: Chii-Jeng Lin [b] , Shu-Hsin Yao [a] , Chun-Ho Chen [a] ,*

Institution: [a] Department of Orthopaedics, Ditmanson Medical Foundation Chia-Yi Christian Hospital, Chiayi City, Taiwan, ROC
[b] Department of Orthopaedics, National Cheng Kung University, Tainan City, Taiwan, ROC

ABSTRACT

Monteggia fracture is rare in infants and is frequently overlooked initially. This is especially true in cases that occur before the appearance of ossification centers in the elbow. Treatment should be optimized to avoid long-term complications. We report a 12-month-old child with neglected Monteggia fracture who achieved a successful outcome after receiving an arthrography-assisted closed reduction of the radial head dislocation and an ulnar osteotomy with plate fixation and bone graft. The patient had a stable radiocapitellar joint with full range of motion at the final follow-up.

Combination therapy with meclozine and growth hormone for promoting bone growth in a mouse model of achondroplasia

Presenter: Kenta Sawamura [a]

Associates: Maskaki Matsushita [a] , Kenichi Mishima [a] , Yasunari Kamiya [a] , Shiro Imagama [a] , Hiroshi Kitoh [b]

Institutions: [a] Department of Orthopaedic Surgery, Nagoya University Graduate School of Medicine, Japan

[b] Department of Orthopaedic Surgery, Aichi Children's Hospital and Medical Centre, Japan

INTRODUCTION: Achondroplasia (ACH) is a common skeletal dysplasia associated with short-limbed short stature caused by gain-of-function mutations in fibroblast growth factor receptor 3 (*FGFR3*) gene. We found that meclozine, which has been used for a motion sickness, inhibited FGFR3 signaling employing a drug repositioning strategy. We are currently performing Phase 2 clinical trial for children with ACH. In Japan, growth hormone (GH) has been approved to ameliorate the short stature for children with ACH. The objective of this study is to investigate the effect of combination therapy with meclozine and GH on promoting bone growth in a mouse model of ACH.

MATERIALS AND METHODS: ACH mice treated with or without meclozine or/and GH were randomly allocated to the experiment. The 2 mg/kg/day of meclozine was administered using feeding tube twice a day and GH at a dose of 1 IU (0.35 mg)/kg/day was subcutaneously injected once daily for mice aged 7 days to 56 days (7 weeks). Body length and body weight of each mouse were measured every week during the treatments. At the end of treatments, the mice were subjected to microcomputed tomography (μCT) scans for whole body. Three-dimensional images were reconstructed from the μCT scans, and the lengths of long bones, including humerus, radius, ulnar, femur and tibia, were measured. Bone mineral density (BMD) was calculated from the metaphyseal trabecular in femur.

RESULTS: Body length was significantly increased in both meclozine-treated and GH-treated ACH mice compared to untreated ACH mice. On the other hand, body weight was increased in GH-treated ACH mice. Meclozine and GH also enhanced each bone length in ACH mice, although there was no synergistic effect of combination therapy on promoting bone growth. BMD in ACH mice were significantly increased by combination therapy with meclozine and GH in ACH mice.

CONCLUSION: Meclozine and GH had comparable effects on promoting bone growth in ACH mice. Except for BMD, there seemed to be no synergistic effects of combination therapy with meclozine and GH in ACH mice.

Treatment Outcomes at Skeletal Maturity after Physeal-sparing Procedures for Early-Onset Slipped Capital Femoral Epiphysis

Presenter: Mi Hyun Song
Associates: Kwang Ryeol Lee, Chang Ho Shin, Tae Joon Cho, In Ho Choi
Institution: Division of Paediatric Orthopaedics, Seoul National University Children's Hospital

Abstract

Background : Physeal-sparing procedures are preferred in the treatment of early-onset slipped capital femoral epiphysis (SCFE) to reduce the significant limb-length discrepancy (LLD) and deformation of the proximal femur with femoroacetabular impingement (FAI). The aim of this study was to investigate the treatment outcomes at skeletal maturity after physeal-sparing procedures for early-onset slipped capital femoral epiphysis.

Patients and Methods : We reviewed the medical and radiological records of patients with SCFE treated at our institution from February 1992 to December 2022. Patients diagnosed with early-onset SCFE at age ≤10 years and followed up to skeletal maturity were included. Physeal-sparing procedure using long screw with a short-threaded tip was performed selectively in patients with mild to moderate stable SCFE. Patients were dichotomized into physeal-sparing and in-situ fixation groups according to the surgical procedures. Radiographic and clinical outcomes were compared between physeal-sparing and in-situ fixation groups: changes in slip angle, LLD, femoral neck length (FNL), articulotrochanteric distance (ATD), angle α, femoral head–neck offset (OS) and Harris Hip Score.

Results : Fifteen patients underwent a physeal-sparing procedure, whereas another 15 patients underwent in-situ fixation. There was no further slippage or loss of fixation in either group. However, the changes in slip angle of the physeal-sparing group were significantly larger than those of the in-situ fixation group (p =0.001). LLD at maturity of the physeal-sparing group was significantly smaller than that of the in-situ fixation group (2.0 mm versus 21.2 mm, p <0.001). In the physeal-sparing group, there were no significant differences in FNL, ATD, angle alpha, and OS between the affected and unaffected sides at the final follow-up. Whereas, in the in-situ fixation group, significant decreases in FNL, ATD, and OS and increase in angle α were observed on the affected side compared to the unaffected side (p <0.001, p =0.001, p <0.001, and p <0.001, respectively). The main purpose of additional surgeries during the follow-up was the screw change into a longer one because the proximal femoral physis outgrew the screw in the physeal-sparing group, whereas LLD and FAI in the in-situ fixation group.

Conclusions : Physeal-sparing procedure using a long screw with a short-threaded tip can stabilize the proximal femoral physis in early-onset SCFE. It may also allow the continual growth and remodeling of the proximal femur in the treatment of early-onset SCFE.

Keywords: Slipped capital femoral epiphysis, Physeal-sparing procedures, Limb length discrepancy, Femoroacetabular impingement

EVALUATION OF THE DEVELOPMENT OF TARSAL BONES IN TURKISH CHILDREN THROUGH DIRECT GRAPHIC ANALYSIS

Authors: Osman Çağrı KÖKER, Muhammed Yusuf AFACAN, Mahmut Kürşat ÖZŞAHİN, Ali ŞEKER

Presenting Author: Muhammed Yusuf Afacan

ABSTRACT OBJECTIVE: Radiological examination methods are among the most commonly used and most reliable methods in age determination. In this study, it was aimed to investigate the relationship between tarsal bone formation times and chronological age in Turkish children. It is aimed to evaluate the validity and reliability of age determination using foot radiographs and to contribute to the preparation of age determination atlas specific to our country.

METHODS: Between September 2016 and January 2020, direct foot radiography images that applied to our hospital were evaluated retrospectively. The formation of ossification centers of the tarsal bones was noted together with the patient's chronological age as formed/not formed in the table.

RESULTS: 2144 cases were examined through the imaging system and a total of 324 cases (15% of all cases), 148 girls and 176 boys, who met the criteria were evaluated. The age of the cases ranged from 1 to 198 months, with an average of 97.85 years. Tarsal bone ossification centers presentation date are listed in months girls and boys respectively; 59/76 for calcaneal apophysis, 3.5/5 for cuboid, 28/50 for navicular, 22/38 for medial cuneiform, 28/38 for middle cuneiform, 17.5/14.5 for outer cuneiform. The ossification center for the calcaneus and talus is observed from birth in all cases.

CONCLUSION: Although the formation dates of ossification centers in the tarsal bones are within the ranges reported in the literature, they contain information specific to Turkish children. Our study contains positive results that can be used as data for atlases. In this respect, it will help to minimize the difference between chronological age and estimated age by combining it with both age estimation and other age estimation techniques.

Keywords: Age estimation, ossification center, age determination, ossification center, tarsal bones, foot bones, age determination atlas

Neural Network Applications in Ultrasonographic Assessment of Developmental Dysplasia of the Hip

Presenter: Hsuan-Kai Kao

【Introduction】

Developmental Dysplasia of the Hip (DDH) is a widespread congenital condition potentially leading to hip dislocation and necessitating surgical intervention if not addressed early. Ultrasound is the preferred DDH screening method, but its effectiveness is limited by the scarcity of skilled operators, posing challenges to widespread neonatal screening.

【Methods】

We created a deep learning AI model to autonomously identify five key anatomical points in hip ultrasounds, aiding in measuring alpha and beta angles according to Graf's system for DDH in infants. We collected 2D ultrasound images from 986 neonates (age 0–6 months), with 2406 images from 921 patients annotated by senior orthopedists.

【Results】

The AI model accurately localized keypoints with a mean error of about 1 mm. It showed high correlation (R = 0.89) in alpha angle measurements compared to expert annotations. It effectively classified abnormal and dysplastic hips, with an area under the curve of 0.937 and 0.974, respectively. Experts concurred with the model's findings in 96% of cases, and it maintained over 0.85 correlation in new image predictions.

【Conclusions】

The AI model's precise localization and strong performance metrics indicate its potential as a valuable aid in DDH diagnosis in clinical settings.

Non-elongating Rod in the Management of Congenital Pseudarthrosis of the Tibia : Is an Elongating Rod Necessary?

Presenter: Tae-Joon Cho
Associates:

Hanbual Yang M.D. , Yoon Joo Cho M.D., Chang Ho shin M.D., Mi Hyun Song M.D.

In Ho Choi M.D.

Institution: Division of Pediatric Orthopaedics, Seoul National University Children's Hospital, Seoul, South Korea

Abstract:

Refracture after osteosynthesis remains as one of the most common problems in the management of congenital pseudarthrosis of the tibia (CPT). Installation of an intramedullary rod has been used to prevent re-fracture. Non-elongating rod has been widely used, but some authors advocated use of an elongating rod. The authors attempted to delineate the outcome of non-elongating rod in the management of CPT, and to determine whether an elongating rod would have any advantage over non-elongating rod.

A retrospective study was performed on 37 cases of CPT in 29 patients in which osteosynthesis was performed using a non-elongating rod with or without additional fixator, mostly Ilizarov external fixator or plate and screws in some. By reviewing the serial radiographs and medical records, the temporal and spatial patterns of re-fracture after osteosynthesis were analyzed. Procedures necessary for installing elongating rod was simulated on preoperative radiographs.

Mean age at the index operation was 4.4±2.2 years. Twenty-three cases were followed without re-fracture until the latest follow-up or the time of intramedullary rod removal. The period from the index operation averaged 91.3 months (range, 21 – 209). Fourteen cases sustained re-fracture at average 30.6 months postoperation (range, 7 – 69). Level of re-fracture was within the part of tibia protected by indwelling non-elongating intramedullary rod in all cases, of which median ratio of the distance from the distal end to the length of rod was 52.4% (IQR, 32.4 – 58.7). Thirteen of 14 re-fractures occurred at the initial pseudarthrosis site. At the index operation, additional osteotomy would have been required in 11 out of 37 cases (29.7%), if an elongating rod installed, due to proximal angular deformity.

Hence, it is doubtful that an elongating rod might have prevented re-fracture, which would have made the surgical procedure more complex. The authors do not recommend an elongating rod in the management of CPT.

Level of evidence : Therapeutic studies, Level IV

Keywords: congenital pseudarthrosis of the tibia; re-fracture; intramedullary rod; non-elongating rod; elongating rod

Hinge abduction hip dysplasia in (morquio a syndrome) treated by proximal femoral valgization osteotomy: a rare case report

Presenter: Ameen Alkhateeb , MD [a] . C.E.S .EBOT.

Abstract

Morquio A syndrome or mucopolysaccharidosis type IVA (MPS IVA) may lead to various skeletal disorders caused by dysfunction of endochondral ossification of epiphyseal cartilage, especially severe hip dysplasia, which leads to pain and impaired mobility [1]. The management of hip dysplasia in patients with Morquio A syndrome is considered challenging and requires a multidisciplinary approach [2]. Many techniques has been used for congenital hip dysplasia, especially varus osteotomy of the femur in combination with pelvic osteotomy such as Pemberton, Dega, or shelf acetabuloplasty, are widely reported for MPS patients. Nevertheless, resubluxations were described after these techniques [3]. The well-known surgical approach with valgization and augmented shelf acetabuloplasty in cases with hinge abduction were not described for MPS IVA patients in the literature very often [4], so we aim to focus on valgization in combination of shelf to treat hinge abduction hip with minimal complications.

EXCESSIVE CALLUS FORMATION WHİCH MAKES US TO THINK ABOUT OSTEOSARCOMAS

Presenter: Dr.Barış Sarı [1]

Associates: Assoc. Prof Dr. Ahmet Yılmaz [2] , Assoc. Prof. Osman Çiloğlu [3]

Institution:

1) T.C. University of Health Sciences; Adana City Training and Research Hospital; Department of Orthopedics and Traumatology; ORCID 0000-0002-1757-4364

2) T.C. University of Health Sciences; Adana City Training and Research Hospital; Department of Orthopedics and Traumatology; ORCID 0000-0002-4015-5045

3) T.C. University of Health Sciences; Adana City Training and Research Hospital; Department of Orthopedics and Traumatology ORCID 0000-0002-3660-3511

- ABSTRACT –

INTRODUCTION.

Osteosarcoma is the most common malign tumor of the skeletal system; it is characterized by the formation of osteoid by the malign tumor cells. Mostly it is seen in the metaphysis of the long bones in which there is a rapid growth rate. 80% of the cases are localized in the knee region of the body. In our study, we assessed a child case who had a circular excessive bone formation at the proximal 1/3rd of tibia with a fracture in the proximal metaphysis in which we put the pre-diagnosis of osteosarcoma with osteoblastic signs.

DEVELOPMENT.

A 4-year-old boy applied to a health center with a non-displaced, transverse fracture at the distal 1/ 3 tibia- fibula and he had been applied a conservative treatment with casting. He had not attended any polyclinics follow ups and he had ended his casting by himself.

Once 4 months; patient had applied to our polyclinic with a swelling in his knee joint. In the physical examination there was a solid and hard palpable tissue surrounding the bone in a circular way. There was no pain. There was a minimal decrease in the flexion of the knee.

In the radiologic examination, at the 1/3 rd proximal tibia, there was a new bone formation surrounding the tibia completely, at the tibia proximal metaphysis there was a partially displaced fracture. At the site of fracture in (distal 1/3 tibia-fibula) malunion with medial angulation had been formed.

In the computed tomography, it was seen that new forming bone had surrounded the whole tibia in a circular and intense way. There was no cortical damage.

There was no abnormal result in the blood tests. With the assessment of the clinical and radiological findings, a non-treated tibia distal 1/3 fracture and related excess callus formation is our pre-diagnosis. We had applied incisional biopsy to this patient. Histopathology report was saying that it is suitable with callus formation. After 1 year in a direct radiography., it is seen that the callus was regressed. Trabecular formation was formed in the proximal part of the tibia.

CONCLUSION

In the differential diagnosis of the osteosarcoma, an untreated fracture and excessive callus formation should be kept in mind.

Functional Outcome of Supracondylar Fractures of Humerus in Children – A Prospective Study

Presenter: Karthikeyan Dhandapani
Associates: Other names
Institution: Institution they work in

Background: Supracondylar fractures of the humerus are prevalent among children aged 3 to 10 years, constituting 50-70% of all elbow fractures. Soft tissue complications can lead to long-term consequences despite advancements in treatment techniques. This study aims to evaluate the functional outcomes of conservative and surgical management.

Materials and Methods: The study spanned from Jan 2020 to June 2021, involving 25 pediatric cases (1-14 years) with closed, unstable supracondylar fractures fit for surgery. Ethical clearance and consent were obtained. Treatment modalities included closed reduction, percutaneous pinning, and open reduction with k-wire fixation. Flynn's criteria and Baumann's angle were used for evaluation.

Results: Most participants (44%) were 6-8 years old, with a male predominance (68%). Types II and III fractures were more common, with 36% showing posteromedial displacement. Surgical intervention occurred within 24 hours for 64% of cases. Complications included pin tract infection (4%), iatrogenic ulnar nerve injury (4%), and k-wire migration (4%). All fractures achieved union, and the mean hospital stay was 3.52 days. Radiographic outcomes, including Baumann's angle, showed favourable results.

Discussion: Percutaneous pinning emerged as the preferred method, offering reduced chances of elbow stiffness and cost-effectiveness. A low complication rate, rapid fracture union, and satisfactory radiographic outcomes were observed. Surgical interventions within 24 hours yielded optimal results. The study highlighted the importance of early intervention in minimizing complications.

Conclusion: Closed reduction and percutaneous pin fixation demonstrated safety and efficacy for displaced supracondylar fractures in children, with minimal risk of infection and elbow stiffness. It facilitated shorter hospital stays, reducing overall treatment costs. Excellent functional and cosmetic outcomes were achieved, emphasizing the significance of this approach in managing such fractures.

Percutaneous Laser Disc Decompression (PLDD): Our Early Experience

Presenter: Islam Shahidul

Institution: Ad-din Women's Medical College Hospital
Department of Orthopedics & Spine Surgery
Dhaka, Bangladesh

Introduction :
Percutaneous laser disc decompression (PLDD) is a minimally invasive procedure for managing intervertebral disc herniation. This abstract aims to elucidate the principle, role and the efficacy of PLDD in alleviating symptoms resulting from a herniated disc.

Background :
PLDD has its roots in 1980s in Austria. In February of 1986, Professor Peter Ascher, a neurosurgeon and Daniel S.J. Choy first performed PLDD in the department of Neurosurgery, University of Graz, Graz, Austria. In 1987, the first paper was published in the New England Journal of Medicine under the title of ''Percutaneous laser nucleolysis of lumbar disks''. A.A. White III, Chief Orthopedic Surgeon at Harvard, suggested that the word 'decompression' would describe the procedure more precisely than the word 'nucleolysis'.

Procedure :
Through targeted application of laser energy, PLDD achieves disc decompression of a portion of the intervertebral disc, offering a promising alternative to traditional surgical procedure. A thin optical fiber is inserted via a needle percutaneously under local anaesthesia. Once in position, the fiber delivers energy, which then causes vaporization of water content and structural protein alteration of nucleus pulposus, eventually relieving intradiscal pressure.

Aims : The major advantage of PLDD is that is causes symptom relief while preserving the spinal stability. Notably, this procedure preserves surrounding structures compared to conventional open surgical approach.

Conclusion :
PLDD emerges as a promising minimally invasive intervention for intervertebral disc herniation. This procedure offers fewer post-operative complications, shorter period of recovery and less hospital stay which pave the path for enhanced patient outcomes in disc herniation.

First 200 cases of Robotic Spine Surgeries – Lessons Learnt

Presenter: VIDYADHARA SRINIVASA

Associates: Dr Madhava Pai K, Dr Balamurugan T, Dr. Abhishek Soni

Institution:

Manipal Institute of Robotic Spine Surgery

Manipal Hospital, Old Airport Road, Bangalore, India

Introduction

Spine surgery is complex and challenging due to variable anatomy, proximity of neural structures and risk of blood loss. Robotic assistance has been shown to increase safety and reduce blood loss.

Objectives

The current study is a report on the first two hundred cases of robotic spine surgery, looking at accuracy of screw placement, intraoperative blood loss, time to mobilization and length of hospital stay.

Materials and Methods

The first two hundred consecutive patients who underwent robotic assisted spine surgery were included. These cases included robotic assisted thoracic and lumbar fusions, kyphoplasties and both anterior and posterior cervical surgeries. The accuracy of screw placement using post-operative 3D fluoroscopy, intraoperative blood loss, time to mobilization and length of hospital stay were noted. We also compared the first hundred cases with the next hundred cases to determine the presence of a learning curve.

Observation

The mean age was 49.14 ± 16.58, with the frequency of females being 61.9%. Post-operative 3D fluoroscopy showed 98.7% accuracy, with 1.2% of cases having a <2mm pedicle breach. The mean blood loss was 551.2 ± 401.57mL. The time to mobilization was 335.2 ± 17.34 minutes. The mean duration of hospitalization was 2.1 days. There was no statistically significant difference between the first 100 cases with the next 100 cases.

Conclusion

Robotic assisted spine surgery ensures accurate placement of spinal implants, with low blood loss, early mobilization and short hospitalization. The present study proves that there is not much learning curve with the robotic spinal surgery.

Surgical Management for Degenerative Cervical Myelopathy by Anterior approach.

Presenter: Dr Md Rezaul Karim

Associates: Dr Provash, Dr Nur Alam, Dr Mushfique, Dr Azad, Dr Ashker Ibne Shams, Dr Subrata, Dr Chayon, Dr Zia, Dr Lokman, Dr Saad

Institution: Spine & Ortho Unit, NITOR, Dhaka

Abstract

Study Design. This prospective study involves 26 patients with degenerative cervical myelopathy who were surgically treated by anterior corpectomy, interbody fusion by titanium mesh cage (TMC) filled with autogenous bone, and stabilized by anterior cervical plate .

Objectives. This study was conducted to determine the indications, efficacy, and complication rate associated with performing corpectomy to achieve anterior decompression of neural elements or for removing anterior lesions.

Methods. Twenty-six patients with degenerative cervical myelopathy who had surgical treatment and an average 30 months (range, 24–52 months) follow-up were included. The mean age was 64.9 years (range, 55–74 years) and the average period between myelopathic symptoms and surgery was 2.8 years (range,6 months–5 years). Preoperative evaluation of every patient consisted of anterior–posterior, lateral, bilateral oblique, flexion, and extension radiographs, computed tomography reconstructions, and magnetic resonance imaging of the cervical spine, Degree of pre and postoperative myelopathy was determined according to the scoring systems developed by Nurick and Japanese Orthopedic Association (JOA). Eight patients had a mild balance problem and difficulty while walking but were able to perform their daily activities. Two patients had spastic quadriparesis ambulating on either crutches or with the help of others. Surgical treatment in all patients consisted of anterior corpectomy.

Results. The average preoperative Nurick score was 3.5 (range, 2–5) and the JOA score was 7 (range, 1–14). Major and statistically significant neurologic recovery was within the first 3 months, and average Nurick and JOA scores at 3 months were 2 (range, 0–3) and 8 (range, 8–17) respectively. Most of the patients had improved neurologic status at the final follow-up. As confirmed by plain radiographs and sometimes computed tomography reconstructions, solid fusion was achieved and we had no implant-related complication or failure. One patient developed quadriplegia after the operation. 1 patient (3.8%) postoperative CSF leaking developed and improved spontaneously. At the final follow-up, all patients except one were able to ambulate without support and maintain their daily activities.

Conclusions: Anterior decompression provides good neurologic recovery in patients with degenerative cervical myelopathy. Titeneum cage impregnated with cancellous bone provides good structural support, and solid fusion can be achieved with an anterior cervical plate.

Keywords: cervical spine, cervical myelopathy, anterior cervical corpectomy, and stabilization

Post Operative Discitis: Conservative versus Operative Management

Presenter: Md Kamrul Ahsan

Institution: Department of Orhtopaedic Surgery, BSMMU

Abstract

Background: The treatment option of postoperative discitis (POD) is either conservative or operative, but to date, there are no established validated protocols for the treatment of postoperative lumbar discitis

Aim: This study aimed to assess the outcome of conservative versus operative management of POD following single-level lumbar discectomy.

Methods: Records of 50 men and 25 women aged 26-65 (mean, 42.53) years who underwent treatment for post-operative discitis (POD) after single level OLD at L3-4 (n = 8), L4-5 (n = 42), L5-S1 (n = 25) level. The POD was diagnosed according to specific clinical signs, laboratory and radiographic investigations and all of them received initial intravenous antibiotics (IVA) for at least 4-6 weeks followed by oral ones. Successful responders (n = 55) were considered in Group-C and remainder [Group-S (n = 20)] were operated at least after 4 weeks of failure. Demographic data, clinical variables, hospital stay, duration of antibiotic treatment and post-treatment complications were collected from the hospital record and assessment before and after treatment were done by using visual analogue scale (VAS) and Japanese Orthopaedic Association (JOA) score. Comprehensive outcome was evaluated by modified criteria of Kirkaldy-Willis.

Results: The mean follow-up was 36.38 months. Significant improvement in mean VAS and JOA scores was achieved in both conservative (76.36% satisfactory) and operative (90% satisfactory) groups although the difference was statistically insignificant.

Conclusion: Although insignificant, early surgical intervention provided better results (e.g. functional outcomes, length of hospital stay, and duration of antibiotic treatment therapy) than conventional conservative treatment in post-operative discitis.

Keywords: discitis; management; open lumbar discectomy; post-operative.

Novel Anatomical Locking Plate for Treatment of Fractures of Posterior Acetabular Wall and Column

Presenter: Chang-Han Chuang

Abstract

This study evaluated the safety and clinical efficacy of an innovative anatomical locking plate known as the anatomical posterior acetabular plate (APAP) for posterior plating for acetabular fractures. From January 2015 to December 2018, 19 patients who had posterior wall or posterior column fractures and underwent open reduction and internal fixation (ORIF) with the APAP using the standard Kocher–Langenbeck approach were included. Relevant surgical data were collected for clinical evaluation. Reduction quality was graded according to Matta's radiological criteria. Functional outcomes were evaluated using the modified Merle d'Aubigné scoring system and the Oxford Hip Score (OHS) questionnaire. Satisfactory anatomical reduction was achieved in 16 (84.2%) patients. The final modified Merle d'Aubigné scores were excellent for one hip (5.3%), good for ten hips (52.6%), fair for six hips (31.6%), and poor for two hips (10.5%). The mean OHS was 33.3 (10–44). The incidence of heterotopic ossification, posttraumatic osteoarthritis, and osteonecrosis of the femoral head was 10.5%, 21%, and 26.3%, respectively. The rate of conversion to total hip arthroplasty was 15.8% after 4 years. The results of this study indicate that the APAP provides adequate fixation and satisfactory short-term results in treating posterior acetabular fractures.

Percutaneous Pedicle Screw Fixation in Caries Spine – Does Early MIS Fixation has Advantage Over Conservative?

Presenter: Varun Agarwal

Institution: Rohilkhand Medical College, Bareilly, Uttar Pradesh, India

Background : Tuberculous (TB) spine with spondylodiscitis has conventionally been treated with medical management and prolonged immobilization in bed. Surgical intervention is only indicated for progressive deformity or neurological deficit, preventing spinal cord compression and its complications. However, prolonged bed rest has its own set of complications and poor acceptability by the patient.

Objective: We performed this study to investigate the role of fixation by percutaneous pedicle screw fixation (PPSF) in spondylodiscitis secondary to TB origin for pain relief and rapid early mobilization of the patient.

Material and Methods: Thirty-two cases of tuberculous spondylodiscitis were managed from March 2017 to 2019. Clinical assessment, radiological evaluation, and laboratory studies with over a year follow-up after PPSF without decompression. Visual analog scale (VAS score) and Oswestry disability indices (ODI scale, Hindi version) were used for outcome measure.

Results: Female-to-male ratio was 19:13. The average follow-up was 14 months ± 6 days and the duration for fusion was around 6 months. The mean duration of hospital stay was 4.006 ± 1.17 days. The average blood loss was 27.18 ml ± 17.71. The mean surgical time was 121.25 ± 14.59 min. ATT was continued for 12–18 months. C-reactive protein (CRP), erythrocyte sedimentation rate (ESR) pain scores (visual analog scale), and ODI were lower at 3 months and at final follow up. No failure of instrumentation or decline in neurological condition was reported after operative intervention.

Conclusion : Primary treatment of TB spine has been chemotherapy with limited indications for surgery. Severe pain in the presence of spondylodiscitis without neurological deficit or deformity projects as an unclear situation and a temporary surgical fixation gives stability to prevent unexpected neurological injury and promote early healing with faster rehabilitation in contrast to strict bed rest and external bracing.

Keywords : Pedicle screw fixation, percutaneous, spondylodiscitis, tuberculous

PREDICTING NEUROLOGICAL IMPROVEMENT IN LATE-PRESENTING CERVICAL TRAUMA WITH MAGNETIC RESONANCE IMAGING PARAMETERS

Presenter: Maria Florencia Deslivia

Purpose: To investigate Magnetic Resonance Imaging (MRI) parameters that can predict neurological improvement in cervical SCI.

Overview of Literature : Despite its poor prognosis, late-presenting traumatic cervical Spinal Cord Injury (SCI) might result in neurological improvement with operative treatment. Initial American Spinal Injury Association (ASIA) scale is typically used to determine prognosis; however, several limitations have been identified.

Methods : We reviewed 46 traumatic cervical SCI patients presented >36 hours after injury. The potential clinical predictors and MRI parameters as well as their relationship with ASIA scale improvement were statistically analyzed. MRI axial view was assessed using Brain and Spinal Injury Center (BASIC) Score while sagittal view based on Intramedullary Lesion Length (IMLL).

Results : A total of 27 patients (58.6%) had ASIA scale improvement in 6 months. There were similar baseline characteristics between two groups. There was significantly increased chance of ASIA scale improvement with better BASIC score (0-2) ($P = 0.008$, OR = 5.3, 95% CI (1.498-18.84)). IMLL <30 mm significantly increased chance of ASIA scale improvement ($P = 0.036$, OR = 3.68, 95% CI (1.062-12.771)) . Initial ASIA scale ($P = 0.109$) was not found to be significant.

Conclusion : Our study offered a systematic approach to interpret MRI based on axial and sagittal view into quantitative data which can later be utilized to guide treatment, rehabilitation, and our communication with patients.

Single-Lateral-Position Robot-Assisted Oblique Lumbar Interbody Fusion and Pedicle Screw Placement: Technique and Preliminary Outcomes

Presenter: Chien-Chou Pan, MD, PhD

Associates: Leo Shaw, MD; Kun-Huei Chen, MD, PhD; Cheng-Hung Lee, MD, PhD.

Institution: Department of Orthopedic Surgery, Taichung Veterans General Hospital, Taichung, Taiwan.

Introduction

Oblique lumbar interbody fusion (OLIF) is a minimal invasive approach which provide good outcome for degenerative spine diseases. The standard approach is doing cage insertion in lateral position, changing to prone position, and then doing posterior instrumentation (PI). It's time-consuming while changing position of patients. We performed a modified approach, which includes cage insertion and robot-assisted PI in single-lateral position during the whole procedure.

Method

From Jan 2022 to Jun 2023, there were 31 patients included in this retrospective study. All these patients received OLIF plus robot-assisted PI in single lateral position. The follow up duration was at least 6 months. Clinical outcomes, Oswestry Disability Index (ODI) scores and pain scores were recorded preoperatively, and 1, 3, 6 months postoperatively.

Result

The average surgical level was 2.1 per patient. The operation time for the procedure was 221 ± 39 minutes, with an average blood loss of 91 ± 19 ml, and an average length of stay of 4.5 ± 0.77 days. These patients showed no intraoperative complications, revision surgeries, or hardware malposition. The patients also showed significant improvement in ODI and pain scores during the postoperative follow-up.

Discussion

Our data revealed that this single-lateral-position OLIF plus robot-assisted PI provides good postoperative outcomes. In addition, this procedure could achieve high precision of screw insertion, and might decrease surgical time due to no need to change patient's position during the operation. However, this is a single institute, short-term, and small patient number study. A large sample size and longer follow up duration are necessary for the future study **.**

Should we adopt gradual or immediate brace weaning? A randomized controlled trial

Presenter: Jason Cheung

Associates: Prudence Wing Hang Cheung

Institution: Department of Orthopaedics and Traumatology, The University of Hong Kong

Introduction

For adolescent idiopathic scoliosis (AIS), there is a current lack of consensus on whether it is best to adopt slow weaning with reduced hours of brace-wear versus rapid immediate brace removal. Clinicians strive to achieve the balance of bracing only the necessary period, yet without removing the brace prematurely. Prolonged bracing bears the possible consequences of muscle weakness, reduced spinal mobility, and discomfort from further brace-wear. On the other hand, the outcomes of bracing, especially curve magnitude and balance, need to be maintained without deterioration after complete brace removal. Our knowledge of gradual weaning on maintaining curve magnitude and overall truncal balance after weaning is limited. Hence, this study aims to compare the degree of curve magnitude maintenance in Cobb angle after weaning between immediate and gradual brace weaning protocols for AIS. Secondary aims are to compare the degree of truncal balance maintenance and changes of HRQoL between the two protocols.

Methods

This was an open-label randomized controlled trial. Patients underwent underarm bracing and were advised for brace weaning by the clinician, with Risser stage≥4, >2 years post-menarche, and no bodily growth between 2 visits were randomly allocated into two groups: gradual weaning (nocturnal brace-wear for 6 months, with theromsensors for brace compliance monitoring), and immediate weaning. Radiographic assessment included major and minor curve Cobb angles, truncal and sagittal balance. HRQoL was assessed using SRS-22r questionnaire and EQ-5D-5L. The time of weaning was defined as baseline. Primary and secondary study outcomes were changes of major Cobb angle, truncal balance and HRQoL measures at post-weaning 6-months, 1-year and 2-years. Statistical analyses were performed according to intention-to-treat (ITT) and subordinately based on per-protocol (PP) principle. Primary analyses were conducted using one-way ANCOVA (analysis of covariance) to evaluate simultaneously the effect of two weaning protocols on the outcome of changes of major Cobb whilst controlling for covariates (curve type, skeletal maturity status and major Cobb at weaning). Each patient was assessed for curve progression (major Cobb increase >5º), static curve (change of major Cobb between 5º to -5º) or curve regression (reduction of major Cobb >5º). Whether weaning protocols associate with the occurrence of curve progression/static/regression was tested using Chi-square test. Secondary analyses included ANCOVA for analysing changes of truncal balance and HRQoL.

Results

A total of 369 patients (82.4% girls) were recruited and randomized to immediate and gradual weaning. PP consisted of 306 patients: 151 with gradual weaning and 155 with immediate weaning. For both the entire cohort (ITT) and subset (PP), there were no intergroup differences of patient demographics at baseline ($p>0.05$), including weaning major Cobb angle (30.4º±8.3º vs 29.1º±8.6º in PP, 29.4º±8.3º vs 28.5º±8.7º in ITT). ITT and PP demonstrated similar intergroup comparison results. Adjusted mean difference of changes of major Cobb angle between gradual and immediate weaning at post-weaning 6-months, 1-year and 2-years were 1.7º (95%CI:0.5-2.9º, p=0.006), 1.3º (95%CI:-0.1- 2.6º, p=0.064), 0.6º (95%CI:-0.1-2.3º, p=0.463) respectively. Weaning major Cobb angle had significant effect on the change of major Cobb [$F(1,246)=191.70$, $p<0.001$]. Curve progression/static/regression were not associated with the weaning protocols ($\chi^2=2.114$, p=0.347) at post-weaning 2-years. At post-weaning 2-years, there were no significant difference between immediate and gradual weaning for change of truncal shift (2.6 vs 2.4mm, p=0.897), change of C7-CSVL deviation (2.3 vs 1.7mm, p=0.695), change of SVA deviation (-2.4 vs 0.9mm, p=0.305). When comparing immediate and gradual weaning, there were minimal differences of changes of SRS-22r total score (0.22 (95%CI:0.15-0.30) vs 0.27 (95%CI:0.18-0.37), p=0.407), EQ-5D utility score (0.016 (95%CI:0.007-0.024) vs 0.023 (95%CI:0.010-0.036), p=0.360) and EQ-VAS (2.1 (95%CI:-0.6-4.7) vs 1.4 (95%CI:-1.2-4.0), p=0.730).

Conclusion

Gradual weaning appears to have no obvious benefits over immediate weaning in terms of post-weaning curve magnitude and truncal balance maintenance, and HRQoL changes. Gradual weaning and immediate weaning can achieve very similar brace outcomes without statistically and clinically relevant difference, given that baseline characteristics were comparable between the two arms and covariates were controlled for. Immediate weaning had a significantly larger change of major Cobb angle (by 1.7º) at post-weaning 6-months, but the intergroup difference became similar (0.6º, p=0.463) at post-

weaning 2-years. This is within the clinically relevant range of Cobb angle change. The similar curve progression, static and curve regression regardless of weaning protocol, provides evidence that we should not rely on continual wearing of the orthosis for maintaining brace outcomes. These study findings contribute towards the standardization of brace weaning protocol of AIS for optimal treatment outcomes. The standardization of immediate weaning should benefit patients with earlier time for increased exercises, muscle training and activity level.

Risk Factors of Failed Conservative Treatment in Adjacent Vertebral Fractures Following Vertebroplasty

Presenter: Ming-Hsiao Hu

Associates: Po-Han Huang, Chih-Wei Chen, Chuan-Ching Huang, Sie-Hua Yang

Institution: Department of Orthopaedic Surgery, Spine Division, National Taiwan University Hospital, Taipei, Taiwan

Abstract

Study design: Retrospective Cohort Study

Objective: Adjacent vertebral fractures following vertebroplasty are not uncommon. Presently, there is a lack of consensus regarding the management of these adjacent fractures. This study investigated the risk factors contributing to the failure of conservative treatment for adjacent vertebral fractures.

Methods: We included patients who developed adjacent vertebral fractures within two years post single-level vertebroplasty. Baseline demographics, osteoporosis parameters, and radiological measurements were systematically collected. Risk factors for failed conservative treatment were identified using sequential univariate and multivariate logistic regression analyses.

Results: Of 117 patients with a mean age of 78.6 years, 78 successfully underwent conservative treatment, while 39 required surgical interventions for adjacent vertebral fractures. In the latter group, adjacent fractures predominantly occurred six months post the initial vertebroplasty and were primarily located in the lumbar spine. Univariate logistic regression indicated an onset time within six months as a protective factor, while fractures in the lumbar spine were associated with unsuccessful conservative treatments, with odds ratios of 0.33 (95% CI: 0.11-0.96, p =0.043) and 2.57 (95% CI: 1.17-5.65, p =0.019), respectively. The multivariate logistic regression analysis indicated that the sole significant factor for unsuccessful conservative treatment was the lumbar spine location of the fractures (odds ratio 2.57, 95% CI: 1.17-5.65, p =0.019).

Conclusion: The timing and location of adjacent vertebral fractures are crucial in determining treatment efficacy. Patients with fractures in the lumbar spine may necessitate a more aggressive treatment approach.

Long-term Outcomes of Vertebral Body Sliding Osteotomy for the Treatment of Cervical Myelopathy: A Minimum of 5-year Follow-up

Presenter: Sehan Park

Associates: Dong-Ho Lee, Sung Tan Cho, Jae Hwan Cho, Chang Ju Hwang, Choon Sung Lee

Institution: Department of Orthopaedic Surgery, University of Ulsan Colleges of Medicine, Asan Medical Center

Introduction: Vertebral body sliding osteotomy (VBSO) is an anterior decompression and fusion technique involving the anterior vertebral body translation along with ossification of posterior longitudinal ligament or spondylotic lesion causing cord compression (Figure 1). VBSO has been reported to result in fewer complications, better lordosis restoration, and faster bone union than corpectomy. However, previous studies demonstrated the outcomes of VBSO with ≥ 2 years of follow-up, but its long-term outcome was not reported. Maintaining the advantages of VBSO in the early postoperative period during the long-term follow-up remained unclear. Therefore, this study aimed to 1) demonstrate the long-term outcomes of VBSO with a minimum of 5-year follow-up and 2) compare the results with other anterior reconstruction techniques including anterior cervical discectomy fusion (ACDF) and anterior cervical corpectomy fusion (ACCF).

Materials and methods: A total of 128 patients, who underwent VBSO, ACDF, or ACCF for cervical myelopathy treatment and were followed up for >5-years, were retrospectively reviewed. Fusion, subsidence, C0–2 lordosis, C2–7 lordosis, segmental lordosis, C2–7 sagittal vertical axis (SVA), surgical complications, neck pain visual analog scale (VAS), neck disability index (NDI), and Japanese Orthopedic Association (JOA) score were assessed. Statistical comparisons between the VBSO, ACDF, and ACCF groups were made.

Results: The VBSO, ACDF, and ACCF groups included 38 (29.7%), 62 (48.4%), and 28 (21.8%) patients, respectively. No cases experienced dural tear, postoperative neurologic deterioration, infection, graft dislodgement and no patient required revision operation during the follow-up in the VBSO group. The VBSO revision rate (0/38, 0.0%) was significantly less than that of ACDF (8/62, 12.9%. $p = 0.023$) or ACCF (5/28, 17.9%, $p = 0.011$) (Table 1). VBSO demonstrated higher fusion rate at 6-month and 1-year follow-up, but the fusion rate at 5 years (97.4%) was not significantly different compared to ACDF (85.5%, $p = 0.054$) and ACCF (85.7%, $p = 0.077$). Segmental lordosis at the 5-year follow-up was significantly higher in the VBSO group (16.1 ± 7.6) than the ACDF ($p = 0.002$) or ACCF ($p < 0.001$) groups. Furthermore, C2–7 lordosis at the 5-year follow-up was significantly higher in the VBSO group compared to the ACCF group ($p = 0.017$) (Table 2). Neck pain VAS, NDI, JOA score, and JOA recovery rate did not show significant intergroup differences during the postoperative 5-year period (Table 1).

Conclusion: No cases required revision operation in VBSO during a 5-year follow-up, which demonstrated significant results compared to ACDF or ACCF. VBSO reached stable construct earlier than other techniques, as demonstrated with a higher 6-month and 1-year fusion rate, which would have enhanced the long-term safety and decreased the need for reoperation. Furthermore, VBSO showed a greater capacity to restore lordosis than ACDF or ACCF since it preserves the vertebral body and includes multiple lordotic shape interbody spacer insertion, which was maintained during the long-term follow-up. Therefore, VBSO demonstrated advantages over ACDF or ACCF regarding revision rate and lordosis restoration in long-term follow-up and is considered a safe anterior reconstruction technique for cervical myelopathy treatment.

PREOPERATIVE CLOSE REDUCTION OF CERVICAL FRACTURE DISLOCATION

Presenter: Abdul Satar [1]

Associates: Mohammad Zahid khan [1] , Mohammad Arif [1] , Sameer kabeer [1] , Ihsan ullah [1]

Institution: [1] Department of Orthopedics and spine surgery Hayat Abad medical complex Peshawar Khyber pukhtoon khawa Pakistan

Study design: Retrospective study.

Purpose: To determine Reduction rate of cervical fracture dislocation using preoperative gradual in hospital skull traction.

Overview of literature:

Cervical spine fractures dislocations are unstable injuries and requires surgical intervention and stabilization. The approach may be anterior, posterior or combined. Majority of the surgeons prefer anterior approach after initial close reduction of cervical fracture dislocation. If close reduction preoperatively fails, then posterior direct reduction is needed followed by anterior surgery.in this study we want to determine the rate of success(reduction) using preoperative gradual traction.

Method: This retrospective study was conducted at Spine Unit Hayatabad Medical Complex and Aman hospital Peshawar. All patient with cervical fracture dislocation presented between Jan 2015 to Jan 2019, who underwent cervical traction prior to surgical interventions were included in the study. The demographics, type of dislocation, preoperative traction duration and neurology of all patients were recorded. The success of reduction using closed in hospital gradual traction was assessed using lateral cervical spine x-ray. Data was assessed using SPSS version 20.

Results: A total of 52 patients were included in the study with a mean age of 30.06 years (SD± 8.03). In 35(67.3%) patients the dislocation was bifacet while in 17(32.7%) it was unifacet. Successful reduction using gradual in hospital awake traction was achieved in 39(75%) patients while in 13(25%) patients reduction was not achieved. Mean duration of preoperative traction was 3.6 (SD±1.1) days with minimum 2 days and maximum 7 days.

Conclusion: Gradual in hospital traction in awake patient is an effective means of reducing cervical fracture dislocation.

Key words: Cervical fracture dislocation, skull traction, ASIA scale

Clinical Epidemiology of Spinal Trauma in Hasan Sadikin Hospital during pre and post Covid 19 Pandemic

Presenter: Agus Hadian Rahim
Associates: Ahmad Ramdan, Abdul Kadir Hadar, Andreas Satrio Marsahala Lumban Tobing, Hans Kristian Handoko

Introduction : Traumatic spinal injury (TSI) results from injury to bony, ligamentous, and/or neurologic structures of the spinal column and can cause significant morbidity and mortality.

The annual incidence of traumatic spinal injury was 19.54 cases/100,000 persons per year. The highest peak of injury occurred in the 20–24-year-old age group (11.58%).

Methods : The study design is a retrospective population-based study using the data of patient with spine trauma in between 2018-2023.

Result : From the study we during the 5-year study period, from 2019 to 2023, we find that the total number of patient for a year is incident 11 cases of TSI. The mean age at the time of the injury was 49 years, with a higher prevalence of male patients. TSIs occurred most frequently due to traffic crashes and occupational accidents. On average, hospital length of stay was just 14 days, although among patients that died within the first 12 months of the injury, the length of stay was significantly greater. The mortality of the patient is about 32% Incidence rates remained substantially stable for both traffic crashes and occupational accidents. Estimates in 2020-2021 are hardly comparable with previous years due to the COVID-19 pandemic and the strong restrictions on individual mobility with a reduced number of traffic crashes and occupational accidents in all age groups.

Conclusion : The incidence of traumatic spinal injury during the Covid pandemic has decreased. The average gender of traumatic spinal case of men is 43 cases, while in women as many as 13 cases. The most common traumatic spine injury is at the cervical level

Keyword : Spinal trauma, epidemiology, Hasan Sadikin Hospital, covid 19 pandemic

Endoscopic Spinal Surgery with Guide Wire M Technique for Enhanced Abscess Clearance in Segmental Lobulated Pus Formation Patient

Presenter: Chun Tseng [1,2,3,4]

Associates: Chia-Yu Lin [2,3] , Pang-Hsuan Hsiao [2,3] , Hsien-Te Chen. [2,3,5]

Institutions:
1. Graduate Institute of Biomedical Sciences, China Medical University, Taichung 404, Taiwan
2. Department of Orthopaedic Surgery, China Medical University Hospital, China Medical University, Taichung, Taiwan
3. Spine Center, China Medical University Hospital, China Medical University, Taichung Taiwan
4. Department of Orthopedic Surgery, China Medical University Beigang Hospital, Yunlin, Taiwan
5. Department of Sports Medicine, College of Health Care, China Medical University, Taichung, Taiwan

Abstract

Background: Infective spondylodiscitis, a serious spinal infection, primarily affects the lumbar vertebrae and intervertebral discs. The condition is characterized by high morbidity and mortality rates. Its rarity, diagnostic challenges, and severe consequences if untreated underscore its clinical significance.

Methods: This study explores the Full-Endoscopic Transforaminal Approach, particularly the Guide Wire M technique, for treating infective spondylodiscitis. This minimally invasive method includes the Inside-Out and Outside-In transforaminal techniques, crucial for addressing both anterior and posterior pathologies with minimal structural damage.

Case Presentation: We present a case of a 48-year-old male with a history of heroin addiction, diagnosed with infective spondylodiscitis at the L2/3 level. Post-surgical outcomes demonstrated significant improvements in inflammatory markers and neurological function, highlighting the effectiveness of the Guide Wire M technique in managing complex spinal infections.

Discussion: The integration of the Guide Wire M technique with the Full-Endoscopic Transforaminal Approach represents a significant advancement in treating infective spondylodiscitis. This method offers a refined solution by being minimally invasive, enhancing precision, and reducing recovery times. However, the limitations of endoscopic surgery, such as increased low back pain in some patients, must be acknowledged.

Conclusion: Endoscopic spinal surgery with the Guide Wire M technique is a promising alternative for infective spondylodiscitis treatment, especially in cases with lobulated pus formation. Its ability to remain rigid for penetration yet pliable upon contact with fluid is advantageous for precise, safe navigation, and effective abscess drainage. This technique positions itself as a valuable tool in the spinal surgeon's arsenal, warranting further research and clinical trials for broader applications in spinal pathologies.

Impact of sarcopenia on outcomes following lumbar spine surgery for degenerative disease: An updated systematic review and meta-analysis

Presenter: Michael Chen

ABSTRACT

Background: In lumbar spine surgery for degenerative disc disease, the negative impact of pre-existing sarcopenia on postoperative outcomes has been noted, necessitating further investigations. This study aimed to consolidate the evidence regarding the prognostic influence of sarcopenia in degenerative lumbar spine surgeries.

Methods: A literature search of public databases was conducted up to Nov 15, 2023 using combinations of the key words“sarcopenia” and “lumbar spine surgery”. Eligible studies were those that focused on adults undergoing decompression or fusion surgery for degenerative lumbar spine diseases, and compared the outcomes between patients with and without preoperative sarcopenia. Primary outcomes were change in Oswestry Disability Index (ODI), and back and leg pain visual analog scale (VAS) pain scores. Secondary outcomes were changes in EuroQol 5-Dimension (EQ5D), Japanese Orthopaedic Association (JOA), and Short Form Health Survey-Physical (SFHS-p) scores, and length of hospital stay (LOS).

Results: Ten retrospective studies with a total of 1,470 patients were included. Sarcopenic patients exhibited significantly worse functional improvement as assessed by ODI compared to non-sarcopenic patients (pooled standardized mean difference [pSMD] = 0.53, 95% confidence interval [CI]: 0.17-0.90). Back pain improvement after surgery was also less in sarcopenic patients (pSMD = 0.24, 95% CI: 0.12-0.37), while there was no difference in leg pain improvement. Non-sarcopenic patients had greater improvements in EQ5D (pSMD = 0.25) and SFHS-p (pSMD = 0.39), and shorter LOS (pSMD = 0.62).

Conclusions: As compared to patients without sarcopenia, those with sarcopenia undergoing lumbar spine surgery for degenerative diseases have lower improvements in functional ability, quality of life, physical health, pain relief and extended hospitalization compared to those without sarcopenia.

Keywords: Degenerative lumbar spine disease; sarcopenia; spine surgery; quality of life; systematic review and meta-analysis.

Lumbar Spinal Stenosis Grading in multiple Magnetic Resonance Imaging using Deep Convolutional Neural Networks

Presenter: Suk-Joong Lee [1]
Associates: Dongkyu Won [2] , Hyun-Joo Lee [3] , , Sang Hyun Park [2]
Institution:

[1] Department of Orthopedic Surgery, Dongsan Medical Center, Keimyung University School of Medicine, Daegu, Korea

[2] Department of Robotics Engineering, Daegu Gyeongbuk Institute of Science and Technology, Daegu, Korea.

[3] Department of Orthopaedic Surgery, School of Medicine, Kyungpook National University, Kyungpook National University Hospital, Daegu, Korea.

Abstract

Study design: Comparison of retrospective magnetic resonance imaging grading by experts and deep learning convolutional neural networks (CNNs).

Objective: This study investigated the feasibility of a computer-assisted lumbar spinal stenosis grading system by comparing the diagnostic agreement between two experts and between experts and trained artificial CNN classifiers.

Summary of Background Data: Recently, the application of deep learning for clinical diagnosis has gained popularity. This approach can quicken image interpretation without missing diagnosis.

Methods: Data was collected from patients' lumbar axial dataset in DICOM format. Two experts independently labeled the sampled images with the same diagnostic tools: localization of patches near the spinal canal and stenosis grading. Faster R-CNN trained with localization labels, such as bounding boxes detects validated center locations of the canals, and the rootlet level and stenosis classifiers trained using the VGG network, classify whether the canal indicates spinal rootlet and finally grade the stenosis grading of rootlet level. Our framework was trained using independent labels created by the two experts, and a 10-fold cross-validation was used for consistent evaluation. Extensive comparisons for rootlet leveling and stenosis grading were reported between the two experts, as well as between that of the experts and prediction results generated by the CNN models.

Results: Rootlet or cord leveling for the two analyzers was 90.3%, and the F1 score was 86.6%. The agreement of Analyzers-Classifiers was 92.7/96.8% for data with 90.6/95.6% in the F1 score. In stenosis grading, the two analyzers agreed on 89.2% of the data, and the F1 score was 76.5%. The grades of Analyzers-Classifiers agreed on 91.5/89.4% of the data, with an F1 score of 78.4/75.7%.

Conclusion : The fully automated deep learning model shows competitive results in stenosis grade diagnosis and rootlet leveling under similar anatomical conditions. However, abrupt anatomical changes can puzzle the diagnosis based only on images.

Full-Endoscopic Transforaminal Decompression with Modified 2 Reaming Technique on Lateral Recess Stenosis: Outcomes of 3 155 Cases and Five Years' Experience. A Case Series Study

Presenter: Ming-Hsien Hu
Associates: Yu-Hsuan Chung, Chi-Huan Li
Institution: Department of Orthopedics, Show Chwan Memorial Hospital, Changhua, Taiwan

Abstract : Lateral recess stenosis (LRS) is a degenerative condition which caused by bulging disc, hyperplasia of superior articular process and hypertrophy of ligament flavum. With the advent of specialized instrumentation and technique, transformational endoscopic lumbar approach can not only be utilized to deal with migrated herniation, but also stenosis. Regarding to increased comorbidity and risk of general anesthesia in the elderly, transforaminal approach is strongly advocated. Here, we described a modified non-sequential foraminoplasty technique using trephine and reviewed our cases to demonstrate the safety and efficacy. This study was conducted in 155 patients with LRS who underwent full endoscopic transforaminal decompression between April 2017 to September 2022. Clinical evaluation using the visual analogue scale (VAS), Oswestry Disability Index (ODI) and modified Macnab criteria was recorded. Clinical and postoperative outcomes revealed significantly lower back and leg visual analog scale scores, as well as Oswestry Disability Index scores at various postoperative time points compared to preoperative values ($P < 0.01$) (Table 1 and Figure 3). At the final follow-up, the modified MacNab criteria were rated as follows: excellent in 65 patients (41.9%), good in 60 patients (38.7%), fair in 2 patients (1.2%), and poor in 28 patients (18.0%). Full endoscopic transforaminal decompression using modified non-sequential foraminoplasty technique is an effective and safe treatment for lumbar lateral recess. For elderly patients or those with multiple comorbidities, Fullendoscopic transforaminal decompression with modified technique is a reasonable or even preferred treatment.

Safety and efectiveness of minimally invasive scoliosis surgery for adolescent idiopathic scoliosis: a retrospective case series of 84 patients

Presenter: Seung Woo Suh [1]
Associates: Jae Hyuk Yang [1] , Dong-Gune Chang [2] , Neelesh Damani [1] , Hoon-Nyun Lee [1] , Jungwook Lim [1] , Frederick Mun [3]
Institution:

1) Department of Orthopedics, Spine and Scoliosis Research Institute, Korea University Medical Centre, Guro Hospital, 148 Gurodong-ro, Guro-dong, Guro-gu, Seoul 152-703, Republic of Korea
2) Department of Orthopaedic Surgery, Sanggye Paik Hospital, College of Medicine, Inje University, 1342, Dongil-Ro, Nowon-Gu, Seoul 01757, Republic of Korea
3) Penn State College of Medicine, Hershey, PA, USA

Abstract
Purpose The aim of this study was to retrospectively evaluate a prospective series of patients with adolescent idiopathic scoliosis
(AIS) who were treated with minimally invasive scoliosis surgery (MISS) technique with a minimum follow-up more than 1 year.

Materials and methods We retrospectively analyzed the prospectively collected data of 84 patients with AIS treated with MIS
technique using two or three coin hole size incisions and a muscle-splitting approach. The clinical and radiological data such as
the correction of deformity, coronal and sagittal profle and record of the perioperative morbidity of the patients were analyzed.

Results The mean primary Cobb angle was corrected from 59.8° preoperatively to 18.6° postoperatively with a mean correction of 68.9% ($p<0.001$). The mean kyphosis at T2 to T12 was maintained within normal range with an increase from 31.2°
preoperatively to 35.3° postoperatively ($p<0.001$). The 30-day perioperative complication rate was 7.14% with one deep infection and fve cases of hemothorax. The mean operation time was 312.8 min; mean estimated blood loss was 846.6 ml (range 420–2800); and mean length of stay was 8.5 days (range 5 to 14). All data of postoperative SRS-22 questionnaire were signifcantly improved ($p<0.001$).

Conclusion MISS used for AIS provides adequate correction in both planes and acceptable rate of perioperative complications, with a low estimated blood loss and short length of stay. Considering all the positives, the application of MISS technique for AIS seems meaningful and can become a valid alternative to posterior approach in the routine use.

Graphic abstract
These slides can be retrieved under Electronic Supplementary Material.

Do all Spinal injuries need decompression?

Presenter: [1] Prof. Dr. Md Shah Alam

Associates: [2] Dr Sarwar Jahan, [3] Dr Sharif Ahmed Jonayed, [3] Dr Abdullah Al Mamun, [3] Dr OZM Dastagir, [4] Dr. Md. Ziaul Hasan

Institution:

1 Professor & Chief Consultant, Bangladesh Spine & Orthopedic Hospital (BSOH), Dhaka, Bangladesh

2 Assistant Professor, National Institute of Traumatology & Orthopaedic Rehabilitation (NITOR), Bangladesh

3 Senior Consultant, National Institute of Traumatology & Orthopaedic Rehabilitation (NITOR), Bangladesh

4 IMO, National Institute of Traumatology & Orthopaedic Rehabilitation (NITOR), Bangladesh

Background: The purpose of this study is to investigate the clinical outcome of posterior stabilization without decompression for thoracolumbar burst fractures.

Materials and method: 48 consecutive cases of thoracolumbar fractures involving T11–L2 stabilized by a pedicle screw system were reviewed. Neither reduction of the height of a fractured body nor any decompression procedure was added during surgery. 40 patients had incomplete paraplegia; 8 patient had complete paraplegia. Neurological recovery and remodeling of the spinal canal were evaluated. Neurological status was evaluated at the time of injury, just before and after surgery, and at final follow-up. The degree of spinal canal compromise was assessed using axial CT scan images. The duration of follow-up averaged 12 weeks. no significant correlation was observed between the degree of canal compromise and the severity of the neurological deficit.

Result: Canal compromise had decreased significantly 3–4 weeks after injury. 25 patients regained neurology at the final follow-up. The mean pre-operative kyphotic deformity was 22.75±4.69 ^{0} which became 10.53±3.11°at final follow up. ODI improved from a pre-operative score of 67.20 to a final 25.08. At the final follow-up, all patients with incomplete paraplegia had improved by at least one modified Frankel grade.

Conclussion: This study suggests that the effect of decompressing thoracolumbar fractures with neurological deficits remains unclear and questions the need to operate simply to remove retropulsed bone fragments. Posterior stabilization without decompression should constitute appropriate surgical treatment for these fractures.

The Stability Between an Anatomic and a Low Tibial Tunnel in Double-Bundle PCL Reconstruction

Presenter: Chieh-An Chuang

Associates: Chih Hao Chiu, Yi Sheng Chan, Kuo Yao Hsu

Institution: Chang Gung Memorial Hospital, Linkou branch, Taiwan

Introduction

Posterior cruciate ligament (PCL) reconstruction is indicated in patients with grade III PCL injuries and failed nonoperative treatment in patients with combined ligament injuries involving the PCL. However, there is currently no consensus on the optimal placement of the tibial tunnel PCL reconstruction. A previous study compared the posterior laxity between the anatomic tibial tunnel (above the champagne glass drop-off) and low tibial tunnel (below the champagne glass drop-off) placements after single-bundle PCL reconstruction. The double bundle PCL reconstruction has been reported to be able to restore better knee stability after PCL reconstruction. We, therefore, conducted the study to compare the posterior laxity between these two different tunnel positions in patients who underwent double-bundle PCL reconstruction. We hypothesize that a lower tibial tunnel might have better clinical and radiologic outcomes than an anatomic one.

Method

We retrospectively reviewed patients who underwent double-bundle PCL reconstruction between 2020 and 2022. All the patients received the computed tomography scan with standard sagittal and coronal views postoperatively to evaluate the tibial tunnel placement. The side-to-side difference of posterior tibial translation (PTT) was measured in stress view six months after the surgery. The patient characteristic data, complications, and post-operative radiographic and clinical outcomes were recorded and compared.

Results

At last, 12 patients were included in our study. There were six patients in the lower tibial tunnel group and six patients in the anatomic tunnel group. One complication with wound infection was noted in the anatomical tunnel group. The lower tibial tunnel group had an average 9.8mm distance more inferior than the anatomical tunnel group. The average PTT side-to-side difference was 2.3mm. There were no significant differences between groups regarding post-operative knee range of motion and the side-to-side PTT difference on kneeling stress radiographs. Both groups reported good IKDC scores and Tegner scores with no significant differences.

Conclusions

The clinical and radiologic outcomes regarding posterior laxity were comparable between anatomic and low tibial tunnel placements. Double bundle PCL reconstruction can achieve good knee stability in both anatomic and lower tibial tunnels after PCL injury.

Reverse shoulder arthroplasty in elderly patients with chronic anterior shoulder dislocation.

Presenter: Mohamed Zubair Mohamed Alfayyadh

Institution: National Orthopedic Center of Excellence for
Research And Learning (NOCERAL), University of Malaya, Kuala Lumpur, Malaysia.

Abstract :

Anterior shoulder dislocation my go undiagnosed in elderly people with late presentation to orthopaedic clinic. This can be attributed to low demand of elderly people, high pain tolerance and the presence of other comorbidities. The patients are usually presented with chronic locked anterior glenohumeral joint dislocation with a large Hill-Sachs lesion engaging on anterior glenoid. Proper diagnosis and management plan is needed for this condition due to the high risk of complications. The presence of associated bone loss, fractures, rotator cuff tears and shoulder stiffness are the main factors related to the reduction failure. Reverse shoulder arthroplasty yielded satisfactory outcomes in patients with cuff tear arthropathy and other degenerative changes of the shoulder joint. The biomechanical concept of this implant allows stabilization of the shoulder independently of soft tissues defects. In this presentation, we will discuss the indications, surgical technique and clinical outcomes of patients with chronic locked anterior glenohumeral dislocation surgically treated with a reverse shoulder arthroplasty.

Outcomes of Non operative Treatment of Isolated, Acute Posterior Cruciate Ligament (PCL) Injury

Presenter: Waqar Khan
Associates: Ahmad I and Sanaullah
Institution: Department of orthopedic and spine surgery Hayatabad medical complex Peshawar

1. Abstract

1.1. Objectives: The aim of this study is to evaluate the results of non-operative treatment of acute, isolated PCL injury.

1.2. Study Design : Prospective Observational Study.

1.3. Setting: Orthopedics and spine unit, Hayatabad Medical Complex, Peshawar.

1.4. Method: 63 patients who had post traumatic PCL injury were recruited for our study). There were 23 partial PCL injuries and 40 total PCL injuries among the 63 knees. These 63 knees were subjected to a thorough subjective, objective, functional, and radiological examination.

1.5. Results: There was no discomfort in 38 knees (60%), mild pain in 14 knees (22%), and significant pain on exercise in 6 (9.5%) knees at the most recent follow-up examination (10 percent). In 54 knees (93%), there was no swelling, mild, intermittent swelling in three knees (5%), and moderate swelling on exertion in one knee (2 percent). Fifty-two patients (91%) experienced no giving way, whereas five patients (9%) complained of giving way on occasion, especially while walking downstairs.

1.6. Conclusion: We currently believe that patients with acute, isolated, complete PCL tears and up to 10 mm of posterior tibial translation (anterior border of tibial plateau flush with anterior surface of femoral condyles with knee in 90-degree flexion) can be treated non operatively and that the majority of patients can achieve a satisfactory functional result.

Management of Posterior Sternoclavicular Joint Dislocation in an Adolescent Following a Direct Elbow Impact to the Clavicle: A Case Study

Authors: Mahmut Gorkem Gurcinar , Mete Ozer , Muhammed Yusuf Afacan , Sinan Ustundag

Presenter: **Muhammed Yusuf Afacan**

[1] *Department of Orthopaedics and Traumatology, Istanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, Istanbul, TUR*

[2] *Department of Orthopaedics and Traumatology, Istanbul Gelisim University, Istanbul, TUR*

Abstract: The occurrence of posterior dislocation in the sternoclavicular joint is an uncommon orthopedic injury that poses potential complications with elevated mortality rates, given the joint's critical location and its association with neurovascular, tracheal, and esophageal injuries. Consequently, prompt diagnosis and treatment are imperative to avert complications. This case report details the experience of a 13-year-old male who sustained a direct elbow strike to his left clavicle during a football game. The patient presented at the emergency department with complaints of pain, noticeable gap and deformity in the superior and medial sternum, along with numbness in the left upper extremity. Due to the challenge of identifying this orthopedic emergency through direct radiographs, a computed tomography scan was performed, revealing a posterior dislocation of the left sternoclavicular joint. Subsequently, a closed reduction procedure was conducted under sedation in the operating theatre, with a fluoroscopy-assisted serendipity view confirming the success of the reduction. The patient was then prescribed a shoulder arm sling and underwent regular follow-ups. By the fourth week, the sling was removed, and joint movement exercises commenced. Muscle-strengthening exercises were introduced in the sixth week, achieving full range of motion by the eighth week, accompanied by complete muscle strength and without any residual deformity. This case underscores the significance of early intervention in preventing potential life-threatening complications associated with posterior sternoclavicular joint dislocation. It also demonstrates that timely rehabilitation can lead to the restoration of full shoulder joint mobility and muscle strength, obviating the need for surgical intervention.

Complications following all-inside anterior cruciate ligament reconstruction

Presenter: Yung-Chang Lu1,2,3

Associates: Tsung-Yu Lin1,4,5 · Cheng-Chun Chung1 · Wei-Cheng Chen1 · Che-Wei Su6 · Hsu-Wei Fang2,5 ·

Institutions:

1 Department of Orthopedic Surgery, Mackay MemorialHospital, No.45, Minsheng Rd, Tamsui Dist.,New Taipei City, Taiwan, Republic of China

2 Biomechanics Research Laboratory, Department of Medical Research, Mackay Memorial Hospital, No. 45, Minsheng Rd, Tamsui Dist., New Taipei City, Taiwan, Republic of China

3 Department of Medicine, Mackay Medical College, No. 46,

Sec. 3, Zhongzheng Rd, Sanzhi Dist., New Taipei City, Taiwan, Republic of China

4 Mackay Junior College of Medicine, Nursing and Management, No. 42, Sec. 3, Zhongzheng Rd, Sanzhi Dist., New Taipei City, Taiwan, Republic of China

5 Chemical Engineering and Biotechnology Department, National Taipei University of Technology, No. 1, Sec. 3, Jhongsiao E. Rd, Da'an Dist., 106344 Taipei City, Taiwan, Republic of China

6 Department of Radiation Oncology, Mackay Memorial Hospital, No. 92, Sec. 2, Chung-San North Rd, Zhongshan Dist., 104 Taipei City, Taiwan, Republic of China

Abstract

Purpose: We conducted a comprehensive analysis of possible perioperative complications following all-inside anterior cruciate ligament reconstruction (ACLR). Additional techniques and tips are proposed to prevent and manage complications.

Methods: Complications following all-inside ACLR performed between December 2015 and December 2020 were retrospectively analysed. Altogether, 348 operations were performed and 275 patients were enrolled with a minimum 12-month follow-up period. Only semitendinosus autograft was utilised in most patients, and semitendinosus–gracilis autograft and allograft were used in five and 31 patients, respectively. Simultaneous meniscal repair, partial meniscectomy, and chondral surgery were performed in 29.5%, 21.1%, and 4.4% of patients, respectively. Complications were observed based on the patient's clinical condition, plain film, and magnetic resonance imaging. Clinical outcomes were assessed pre-operatively and at 12 months post-operatively, using the International Knee Documentation Committee form, Lysholm and Tegner activity scores, and KT1000 side-to-side difference.

Results: Intraoperative and post-operative complications developed in 65 patients (23.6%). The most common complication was cortical button malposition on the femoral side (19.3%). Intra-operative breakage of the retrograde drill was found in two cases (0.73%), with three cases (1.1%) of over-drilling with destruction of the outer cortex. Post-operatively, four (1.5%), 13 (4.7%), and 16 (5.8%) cases of infection, full-thickness re-rupture, and loss of extension, respectively, were recorded. Functional outcome scales showed significant post-operative improvement.

Conclusion Cortical button malposition was the most common but easily preventable complication. All-inside ACLR could be safe and promising after the suggested additional operative techniques and proper perioperative management which decrease complication rates and improve favourable outcomes.

Keywords All-inside technique · Anterior cruciate ligament · Complications · Anterior cruciate ligament reconstruction•

Yung-Chang Lu

yungchanglu@hotmail.com

Comparison of changes in Patellofemoral Kinematics Secondary to Anterior Cruciate Ligament deficiency and post-reconstruction in young adults - A Cross-sectional observational study.

Presenter: Karthikeyan Dhandapani

Institution: Royal Gwent Hospital

Background

The research addresses the impact of ACL injury and reconstruction on patellofemoral kinematics, highlighting the high frequency of ACL injury among athletes and the potential complications and limitations associated with ACL reconstruction.

Materials and Methods

The study was conducted at JIPMER OPD from July 2020 to July 2022, following approval from the JIPMER institutional ethics committee. It was a cross-sectional observational study including patients aged 18 to 40 years, one year post-ACL reconstruction. The research involved thorough clinical, radiological, and functional assessments of the patients, with detailed criteria for inclusion and exclusion.

Results

The study included 50 participants, with the majority sustaining sports-related injuries and undergoing BPTB graft. The distribution of time since surgery was also documented. Clinical assessments revealed a high prevalence of patellofemoral pain and other related symptoms among the participants. Radiological parameters, such as the Caton-Deschamps index, lateral patellofemoral angle, and patellar congruence angle, were measured and analyzed. The mean Kujala scale and VAS score were reported as measures of functional limitations and pain, respectively.

Discussion and Conclusion

The findings of the study provide valuable insights into the prevalence of patellofemoral pain and the associated clinical, radiological, and functional parameters following ACL reconstruction. The results contribute to the understanding of patellofemoral kinematics and the potential etiology of patellofemoral pain post-reconstruction. The study emphasizes the importance of comprehensive assessments in evaluating the impact of ACL reconstruction on patellofemoral dynamics and associated symptoms.

Dynamic Hip Screws versus Multiple Cannulated Screws for Non Displaced Intracapsular Femoral Neck Fractures: A Comparative Study of Complications.

Presenter: Watten Hammadi

Institution: DMC

Abstract:

Back ground and aim of the work: dynamic hip screws (DHS) and multiple cannulated screws (MCS) are the treatment of choice of non displaced intracapsular femoral neck fracture and may be complicated by mortality, non-union, avascular necrosis, and revision. In this retrospective chart review study we will compare these complications in both techniques.

Material and method: In this multicenter retrospective chart review study, we reviewed the records and data of all patients operated upon by DHS or MCS for treatment of Garden type I and type II intracapsular femoral neck fracture from January 2017 to December 2022. Patients with incomplete files or follow up less than one year were excluded from the study.

Results: The study enrolled 85 patients 35 males and 50 females with mean age of 72±5.4 for males and 70.6±7.6 for females. Forty four patients were operated upon with DHS and 41 patients with MCS. The mortality rate of DHS was 15.9% and was 17.1% in MCS group (P>0.05, insignificant). Non union was recorded in 4.5% of DHS group in 4.9% of MCS patients (P> 0.05-IS). Avascular necrosis (AVN) was significantly higher in DHS than in MCS (9.1% and 4.9% respectively, P<0.05). Revision was required in15.9% patients of DHS patients and in 14.6% of MCS patients (P>0.05, IS).

Conclusion: this study found that DHS was superior to CS on AVN rate, however, there was no significant difference between both methods as regard; mortality, revision, and non-union.

Keywords: Dynamic hip screws, cannulated screws, complications

Percutaneous full-robotic assisted iliosacral screw fixation of unstable vertical sacral fracture.

Presenter: VIDYADHARA SRINIVASA

Associates: Dr Madhava Pai K, Dr Balamurugan T, Dr. Abhishek Soni

Institution:

Manipal Institute of Robotic Spine Surgery,

Manipal Hospital, Old Airport Road,

Bangalore, India

Study design: Case report

Objective: To present a case of full robotic assisted percutaneous ilio-sacral screw fixation in a patient with unstable vertical sacral fracture (Denis type 2) with contralateral external hemipelvectomy.

Summary of background data: The TiRobot (TINAVI Medical Technologies, Beijing, China) has been used to place percutaneous iliosacral screws in pelvic fractures, but no such workflow exists for the MazorX stealth edition (MXSE) (Medtronic, Dublin, Ireland).

Methods: A 22-year-old male presented 3-weeks following a motor vehicular accident with an open pelvic fracture which was temporarily stabilized with an external fixator. He underwent a left sided external hemipelvectomy due to the extensive degloving injury associated with the open pelvic fracture with vascular compromise. We managed right-sided unstable vertical sacral fracture (Denis type 2) with full robotic assisted ilio-sacral screw fixation following closed reduction of the fracture. This allowed seating of the patient, change in position and better pulmonary toilet.

Results: Two 6.5mm cannulated cancellous ilio-sacral screws were placed percutaneously through the ilium-S1 bony corridor, above the S1 foramen using robotic assistance with the MXSE. The patient was allowed to sit with the leg hanging down on the first post-operative day.

Conclusion: Robotic assistance in surgery offers unique solutions to challenges, improves surgeon’s understanding of the problem, and increases the confidence in treating them unconventionally.

Aseptic Diaphyseal Non-Union of Long Bone – Tips and Tricks of Management

Presenter: Md Abdul Gani Mollah

Institution: Former Director, NITOR Dhaka

Abstract

Introduction: Failure of bone healing after intramedullary nailing (either open or closed) of diaphyseal long bone is a challenge for orthopaedic surgeon all over the world. Autogenous cancellous bone grafting is the gold standard method that needs exploration of the fracture site, hesitation of the patient to do that as well as donor site morbidities and complication. Here closed exchanged bigger size nailing, Pneumatic riming, and application of BMAC (Bone marrow aspiration Concentrate) is one of the best and effective methods for better outcomes.

Methodology: Our subjects included 21 patients (6 female, 15 male) with an average age of 28 years. All fractures were mechanically stabilized (Open or closed) following trauma (MVA). Aseptic non-union affected the femur/Tibia in 21 patients among them 15 were male and 6 females. Close pneumatic rimming and Nailing (Either antegrade/Retrograde), fixation with longer and wider size nail with BMAC aspirated from both the posterior superior iliac crest/ Tibial tuberosity applied slowly at fracture site percutaneously under image intensifier(C-arm). Non-union were classified radiographically according to the Weber–Cech method and prognostically using the Calori and Moghaddam scores. All patients were radiographically assessed at 1.5, 3, 6, and 12 months follow up.

Results: All of 21 non-union healed in the course of time. The mean time for new bone formation was 3.3 months, and the radiological union was 5-6 months.

Conclusion : This study showed the benefits of restoring both mechanical and biological aspects when addressing non-union of the long bones In particular, the association of BMAC which is encouraging considering the outcome of bone healing and percutaneous bone marrow implantation could be an effective and safe treatment for non-union.

Novel Adaptation of Suture Bridge Technique for Greater Tuberosity Re-displacement Post ORIF With PHILOS- A Technical Note

Presenter: KHAYAS OMER KUNHEEN

Institution: Govt Medical College, Kozhikode, Kerala, India

ABSTRACT

Isolated Greater tuberosity (GT) fractures still pose a therapeutic challenge due to the wide variety of treatment options and lack of proper comparative studies on outcome. Plating still remains a valid option but has several unfavourable effects. One among them is re-displacement of tuberosity postoperatively especially in cases with comminution which may easily be missed in regular plain radiographs. Conventional techniques of fixation may remain insufficient in such scenarios. We hereby propose an adaptation of a described technique, in a 45 year old male presenting with re-displacement of GT post plate fixation. Open double row suture bridge construct was used to fix the displaced fragment maintaining the plate in situ and patient had excellent functional and radiological outcome on follow up.

KEYWORDS

Greater tuberosity fracture ; Comminution; Double-row fixation; Suture anchor; Suture Bridge technique; PHILOS; Re displacement

INTRODUCTION

Isolated greater tuberosity(GT) fractures are often encountered in practise as they comprise around 17 – 21% of all proximal humerus fractures occurring in various age group patients (1,2) . Various treatment modalities have been described previously based on the fracture pattern, size of the fragment, displacement, bone quality ,associated injuries etc.. Open reduction and internal fixation(ORIF) using anatomical or non anatomical plates is a valid option in indicated cases (3–7) .Most common complications reported are screw penetration, tuberosity malunion, impingement, stiffness and implant failure. Secondary displacement of GT after successful primary ORIF using plate is only rarely reported (3,7,8) . No studies have provided any treatment recommendation for this complication .We hereby propose an adaptation of a described surgical technique for the management of this complication without revising the original implant .

TECHNICAL NOTE

45 year old male had a Road traffic accident and sustained shoulder dislocation with fractured and displaced GT (fig1). The shoulder was reduced and GT fixed using anatomical plate via deltopectoral approach by the index surgeon. Immediate postoperative radiographs showed a satisfactorily reduced GT (fig2) .. Two months later he presented to us complaining about his inability to elevate the upper limb. Postoperatively he had 6 weeks of passive mobilization , and was started on active assisted rehabilitation for which he responded poorly. On examination he had only grade 2 power in abduction and external rotation .Radiograph and CT scan showed > 20mm postero-superiorly displaced GT with plate insitu (fig 3,4) .The treatment we proposed was an open reduction and internal fixation with double row suture bridge technique retaining the implant insitu .

Figure 1 . Post And Pre Reduction Image Of Index Dislocation

Figure 2 . Immediate Postop Image After Index Surgery

Figure 3 . Eight Weeks Postop Image Showing Displaced GT(arrow)

Figure 4 Postoperative CT At 8 Weeks showing displaced GT(arrow)

SURGICAL TECHNIQUE

Standard protocol was followed for anesthesia with general anaesthesia and Interscalene block .The patient was in beach chair position with 45 degree inclination and the site was prepped and draped with the arm allowed to move freely or hang besides.

Deltoid splitting approach was preferred over reopening the healed deltopectoral wound. This was considering the better visualization and manipulation of the supraspinatus cuff and the more posteriorly placed infraspinatus cuff(which tends to pull the attached GT fragment posteriorly also) . Incision was planned taking into consideration the site of previous deltopectoral incision leaving a healthy skin bridge in between. The incision was placed starting from a point over the acromion 2 cm behind its anterior most corner(fig 5).

Figure 5 . Late Picture Showing Site Of Both Incisions

The deltoid was split for a length of about 4-5 cm without releasing its origin from the acromion. The subdeltoid bursal tissue was debrided and the displaced GT fragment was identified(fig 6) .We expected a failure of the previously placed sutures passed via supra and infraspinatus tendons tied over the PHILOS plate suture holes . But all the sutures were found intact , instead the sutures have cut through the cuff tissue longitudinally along its fibres continuos with the lines of the comminution in GT. This has resulted in superior and posterior migration of the GT as a whole leaving the intact plate sutures behind . Another observation was that the lateral distal margin of the GT fragment corresponded to the proximal row of screws in the plate. This was supposedly due to the multiple breaks in the GT fragment during screw application which later coalesced postoperatively during the pull on GT via Cuff .That explained the smaller size of GT fragment before reoperation compared to the fragment size before index surgery(plating)

.

Figure 6 . Intraoperative Image Showing Secondary Displaced GT (at the tip of scissors) With Attached Cuff Tissue(arrow)

Stay sutures were applied on the cuff in supraspinatus and infraspinatus for manipulation.The fracture bed was freshened. As demonstrated in the figure7, two medial row anchors(5mm double loaded titanium)were applied 1.5 cm apart in an area whereby maximum purchase was obtained in the cancellous bed. The eight thread ends were passed serially through supraspinatus and the infraspinatus using retrograde suture passers 1cm medial to the bone tendon interface. Reduction was assessed by pulling on the threads laterally(fig 8) to confirm whether the GT would remain atleast 0.5mm below the head once the second row is later applied .Medial row knots were serially tied in mattress fashion .

Figure 7 . Applying Medial Row Titanium Anchor At Deadman Angle of 45

.

Figure 8 . After Passage Of All The 8 Threads From Two Double Loaded Medial Anchors

Of the 8 loose threads from four knots one thread from each knot was grouped together to form two groups of four threads. The threads were buried using self tapping knotless anchors (as done in a case of lateral row of double row rotator cuff repair) just adjacent to the anterior margin and posterior margin of the plate leaving a safe strip of bone(fig9).Bone awls were used for entry for the lateral row anchors as the cortical bone was hard in this region. In doing so a crisscross mesh of threads were available pressing down the GT comminuted fragments as a single unit further preventing the redisplacement , in contrast to the previously applied suture cuff bites tied to the plate which failed cutting through the cuff leading to GT redisplacemnet. The joint is moved through entire range of motion to assess the reduction and rule out impingement *(due to malreduction or downsloping* acromion) on abduction or external rotation. The cut through longitudinal tears in the rotator cuff were repaired with absorbable sutures. The deltoid split is reapproximated and the surgical site is closed in layers.

Figure 9 . (Left) Schematic Diagram Of The Double Row Suture Bridge Showing The Medial Row Knots(Arrow) And The Lateral Row Knotless Anchors(Arrow Head) Forming A Crisscross Pattern Of Threads Compressing GT Like A Mesh Preventing Redisplacement Of Comminuted Fragments .(Right) Xray Image Of The Projection Used In Schematic Diagram

FOLLOW UP

Immediate postop image showed well reduced GT (fig 10) .The limb was maintained in sling with pendulum exercises only. Passive elevation to 45 degree and external rotation to 10 degree was started after suture removal and passive ROM gradually increased in following 6 weeks. Active strengthening exercises was started after 6 weeks. 6 months postop xray showed well healed GT in AP and axial view(fig 11).He attained passive and active abduction of 160 degree with grade 5 power at 6 months followup (fig12).His external rotation was 10 degree short compared to other side. The terminal restriction of extreme ROM was attributed to the arthrofibrosis post two open procedures and associated heterotopic ossification at inferior capsular region.fig(11) .His constant score at 6 month was calculated to be 90 and graded as excellent. He accepts the ROM and is fully back into his occupation.

Figure 10 . Immediate Postop image .The double row of anchors can be noted (arrow)

Figure 11 . Six Months Postop AP and Lateral Images Showing Well Reduced GT. Heterotopic Ossification Can Be Noticed At Calcar Region (arrow)

Figure 12 Active Abduction Of 160 Degree At 6 Month Followup

DISCUSSION

GT fractures have been conveniently classified with good interobserver reliability into three major groups namely- vertical split(associated with anterior shoulder dislocation) horizontal fracture(avulsion type) and the depressed type(against glenoid or acromion) with varying treatment options for each type (1,4,9)

Accordingly various treatment algorithms have been proposed for greater tuberosity fractures which includes percutaneous screw; open reduction and internal fixation with anatomical or non anatomical buttress plates or cannulated screw fixation with or without washer; tension band techniques like transosseous suture or open/arthroscopic suture bridge constructs (10–14) All fractures with displacement more than 5mm have been recommended surgical fixation by many authors (5,15) . Most of the authors who have treated the GT fracture using plates have published favourable results (10,11,16) . Major complication reported was malunion and its related secondary problems like impingement ,loss of External rotation, stiffness and weakness (11,15) .But only very few studies have reported secondary displacement of GT after a reasonably well performed plate fixation. (3,7,8) .The reason for failure was not discussed adequately. Park et al reported risk of secondary displacement of GT in comminuted cases treated with regular anatomical plates. (5)

For Biomechanical stability screws should be oriented perpendicular to the fracture line. But in comminutesd GT cases, there can be multiplanar orientation of fractures . Posteriorly directed pulling forces of the infraspinatus and the teres minor muscles on the GT fracture fragment is a major displacing force which needs an anterior traction force to counter. The screw orientation of the conventional locking plate cannot resist this traction force, which may lead to secondary displacement (5) Passage of screw can create further comminution (17) Regular radiographs fail in interpreting the fracture configuration and degree of comminution .3D CT scans may provide adequate information in preoperative planning. The fragment size, degree of displacement, degree of comminution, and presence of osteoporosis influence the choice of adequate operative technique (17) .We consider plating as an inferior option in comminuted GT fractures.

Bhatia et al reported an open technique for reduction and internal fixation of comminuted isolated greater tuberosity fractures (9) and later many other surgeons demonstrated the same arthroscopically (5,14,17–19) It was essentially a suture bridge technique with double row of suture anchors. *The superior displacement of GT may lead to limitation in abduction due to impingement and shoulder dysfunction and weakness due to pain and inflammation* .The medial row anchors and the mattress knots when applied over the cuff effectively brings down the GT down to a position inferior to the articular margin which is important in the functional outcome (15) It is important to spread the double loaded anchors adequately according to the size of the GT fragment and the orientation of the rotator cuff fibre. An anchor is to be applied for every 1.5 cm of fracture surface. For adequately countering the cuff pull superiorly nd more importantly posteriorly , strategic spots have to be chosen on the cuff (keeping in mind the comminuted fracture configuration) for taking the bites in order to pass the sutures from the anchors in a mattress fashion. On tying the medial knots we can appreciate that the medial edge of the GT which corresponds with the medial end of the cuff footprint is reduced anatomically and further the pull of the cuff on the GT fragment is negated to a large extent.. The strain over the medial footprint can be nullified to a great extent by using a second row of anchors as described in routine double row cuff repair constructs. By bringing the threads of the medial row knots laterally in a crisscross manner ample coverage over the comminuted GT fragments is obtained. This method also provides greater contact area and contact pressure for the fragment over the raw area thereby enhancing the healing process (20)

There are numerous studies available on management of greater tuberosity malunion or non union post primary hemiarthroplasty done for trauma. But we could not find any series or reports on secondary displacement of GT in isolated GT fracture cases treated with plating . Handschin et al in their study of functional outcome of plating for proximal humerus fracture reported revision with plate for secondary displacement of GT post primary plating (3) . Solberg reported treating non union of GT with secondary bonegrafting (21) Our method is far more superior whereby the original implant is retained and the lateral row is applied at a safe distance from the in situ plate. Associated partial rotator cuff tears are reported in GT fracture which can effectively be treated by medial row anchors at anatomical footprint .The displacement was more than 20 mm and hence arthroscopic procedure was not considered for fixation. (17)

Implant removal was deferred during second surgery since it was only two month post the index surgery and adequate healing of the non displaced insitu retained portion of primarily fractured GT was not expected. Our experience also makes us believe that atleast multiple xray views or preferably CT scan is recommended in all GT fractures. The degree of comminution is of grave significance in selecting the mode of fixation of GT. We consider Plating as an inferior option in cases of comminuted GT fractures. Further research with higher level of evidence is required to substantiate our hypothesis

CONCLUSION

The anatomical plating or regular tension band fixations are inferior compared to double row suture bridge fixation for isolated greater tuberosity fractures in the presence of comminution . Even in non comminuted cases ,plating is too invasive compared to an equally good alternative of suture bridge technique with lesser complication rate. CT scan is recommended in all cases irrespective of presence of comminution in the plain radiograph. Secondary displacement of GT can effectively be treated by suture bridge technique retaining the insitu implant.

DIY 3D PRINTING FOR ACETABULAR FRACTURE SURGERY: THE WORKFLOW TEMPLATE

Presenter: Bhavin Jadav

Institution: Flinders Medical Centre, Bedford park, SA 5042, Australia

3D printing techniques have attracted a lot of curiosity in various surgical specialties and the applications of the 3D technology have been explored in many ways including fracture models for education, customized jigs, custom implants, prosthetics etc. Often the 3D printing technology remains underutilized in potential areas due to costs and technological expertise being the perceived barriers.

We have applied 3D printing technology for acetabular fracture surgeries with in-house, surgeon made models of mirrored contralateral unaffected acetabulum based on the patients' trauma CT Scan in 9 patients. The CT Scans are processed to the print with all free-ware modeling software and relatively inexpensive printer by the surgeon and the resulting model is used as a 'reduced fracture template' for pre-contouring the standard pelvic reconstruction plates. This allows use of the standard surgical implants, saves time on intra-operative plate contouring and also aids in reduction to an extent.

We share through this presentation the workflow of the freeware softwares to use in order to use this surgical planning and implant preparation that may remove the perceived barriers of cost and technology from surgeons that wish to explore using 3D printing technology for acetabular fracture management and may extend applications to other regions.

Clinical Epidemiology pattern of orthopaedic trauma during covid 19 Pandemic A Multicenter Study (dr. Hasan Sadikin General Hospital and Ulin General Hospital)

Presenter: Agus Hadian Rahim

Other Associates:

Rahim AH, Hidayat NN, Ismiarto YD, Mulyadi D, Arsa W, Ramdhan A, Utoyo GA, Budi MNS, Primadhi RA, Herman H, Alpharian GT, Prasetia R, Hadar AK, Malik R [1]

Noor Z, Akbar IZ, Siagian AMH, Putera HDP, Damayanthi ED, Kesuma W, Iqbal M [2]

Setiadi, C [3]

Institutions:

1. Department of Orthopaedics and Traumatology Faculty of Medicine Universitas Padjadjaran, Dr. Hasan Sadikin General Hospital

2. Department of Orthopaedics and Traumatology, Ulin Hospital

3. Resident Orthopaedics and Traumatology Faculty of Medicine Universitas Padjadjaran, Dr. Hasan Sadikin General Hospital

ABSTRACT

Introduction : COVID-19 has had profound implications on global healthcare systems, and this pandemic management has led to a significant change in orthopedic surgical activity. We aimed to evaluate the types and incidence of fractures treated during the pandemic in order to provide insight into the situations for which orthopedic trauma surgeons should be prepared in unusual circumstances that may arise in the future. ***Methods*** : This is a descriptive observational cross-sectional study survailance from electronic medical record. Inclusion criteria including patients who were admitted and examined by orthopedic surgeons in both emergency departments and outpatient clinics were sought from the medical records between January 2018 and December 2022 were included. Analysis was performed using SPSS version 26 and Microsoft excel on descriptive analysis using mean, frequency, percentage, and standard deviation. Local ethical committee approval was obtained for this retrospective cross sectional study. ***Results*** A total of 2890 patients were enrolled for the current cohort, from 2018 until 2022, with predominantly male (n = 2117). Even though, an increase in overall admission from 2018 (n = 631) to 2019 (n = 784), a decrease thereafter is occurred during the pandemic COVID-19, which is from 2020, 2021, and 2022 (n = 652, 500, and 323, respectively). ***Conclusion*** : Knowing the number of fracture can be a tool to evaluate the types and incidence of fractures treated during the pandemic in order to provide insight into the situations for which orthopedic trauma surgeons should be prepared in unusual circumstances that may arise in the future.

Keywords : COVID-19; Demographic; Fracture, Tertiary Care

Management of the Ulnar Nerve in Surgery for Distal Humerus Fracture: A Case of Ulnar Neuropathy Development Following Open Reduction and Internal Fixation

Authors: Muhammed Yusuf Afacan [1] , Burak Öztürk [1] , Mehmet Fatih Güven [1]

Presenter: Muhammed Yusuf Afacan

[1] *Istanbul University-Cerrahpasa, Cerrahpasa Faculty of Medicine, Department of Orthopaedics and Traumatology, Istanbul, Turkey*

Abstract:

This case report examines the development of postoperative ulnar neuropathy symptoms and persistent nonunion in a patient who underwent surgery for a distal humerus fracture. The study aims to explore the relationship between nonunion and the subsequent development of ulnar neuropathy, prompting a discussion on the necessity of ulnar nerve care, including transposition, manipulation, or decompression, during distal humerus fracture surgeries. A 52-year-old man with a bi-columnar distal humerus fracture, resulting from a fall on his right elbow, underwent open reduction and internal fixation at an external center one year prior. Eight months post-surgery, the patient reported elbow restriction, discomfort, numbness, and weakness in the fourth and fifth digits of the right hand. Radiological exams revealed nonunion in the distal right humerus. Notably, the patient had no signs of ulnar neuropathy before the injury. In the eighth month following the injury, the patient underwent implant removal, open reduction internal fixation with autograft, and ulnar nerve transposition. Subsequent follow-up revealed a resolution of ulnar neuropathy symptoms. The case emphasizes the importance of the surgeon's expertise in managing the ulnar nerve during distal humerus fractures and underscores the need for further research to establish the link between ulnar neuropathy onset and nonunion in the treatment of such fractures.

Understanding the effects of 3D printing and fracture mapping on intraoperative parameters, postoperative complications, and functional recovery on pelvic and acetabular fractures

Presenter: Chun-Hao Tsai

Abstract:

Three-dimensional printing and fracture mapping technology is gaining popularity for preoperative planning of complex fractures. Our team recently published a meta-analyses and systematic review regarding to further understand the effects of 3D printing and fracture mapping on intraoperative parameters, postoperative complications, and functional recovery on pelvic and acetabular fractures. A total of 17 studies were included in this study, of which 3 were RCTs, with a total of 889 patients, including 458 patients treated by traditional open reduction and internal fixation methods and 431 patients treated using 3D printing strategies. It was revealed that three-dimensional printing and fracture mapping reduced intraoperative surgical duration (RoM 0.74; 95% CI; 0.66–0.83; I2 = 93%), and blood loss (RoM 0.71; 95% CI; 0.63–0.81; I2 = 71%). as compared to traditional surgical approaches. In addition, there was significantly lower exposure to intraoperative imaging (RoM 0.36; 95% CI; 0.17–0.76; I2 = 99%), significantly lower postoperative complications (OR 0.42; 95% CI; 0.22–0.78; I2 = 9%) and significantly higher excellent/good reduction (OR 1.53; 95% CI; 1.08–2.17; I2 = 0%) in the three-dimensional printing and fracture mapping group. With these results, we proceeded to conduct a prospective study involving (1) Virtual reduction simulation with our inhouse simulation software, (2) Bone density surface projection with our inhouse mesh grid optimization algorihtm and (3) 3D-printing for patients with complex pelvic and acetabular fractures. A total of 93 patients, including 31 patients with simulation and 3D printing and 62 patients with non-simulation and 3D printing were included in this study. All patients had completed a follow-up of at least 48 months. There were no significant differences noted for the age, gender and ISS scores between the two groups ($p > 0.05$). Application of simulation and 3D printing led to shorter surgical durations for all groups and 3D printing AO/OTA 61 groups were noted to have statistically significant shorter surgical durations as compared to the control group ($p < 0.05$). 3D printing AO/OTA 62 groups having statistically improved EQ-5D-5L scores ($p < 0.05$). We further stratified postoperative outcomes of the various groups by gender, age, ISS score, intraoperative blood loss and surgical durations. For the AO/OTA 61 groups, there were improved EQ-VAS for all subgroups except for females, age < 60 years old and those ISS < 6. Improved Majeed Pelvic scores were noted in all groups, especially so for the AO/OTA 62 groups. Similarly, improved EQ-5D-5L were noted in all groups, especially so for the AO/OTA 61/62 groups. The revision rates (open reduction with internal fixation or hip arthroplasty) rates were tabulated and in a minimum of 2 years of follow-ups, there were no significant differences between the two groups, however, the simulation and 3D printing groups had lower revision hazard ratio for both AO/OTA 61 and AO/OTA 62 groups. Furthermore, no revision surgeries were seen in the combined pelvic-acetabular fracture groups for AO/OTA 61/62. Despite lacking statistical significance for all outcomes, our results revealed a positive trend with promising potential to enhance functional outcomes in complex fracture management. With this platform, we would like to share our simulation, 3D printing standard operating procedures so as to facilitate further discussions to bring 3D simulation and printing to the next level.

Simultaneous Soft tissue and metatarsal reconstruction with free vascularized bone graft after foot traumatic injury - case series and literature review

Presenter: Ching Wei Hu
Associates: Ching-Wei, Hu, MD [2] ; Chung-Chen Hsu,MD [1] ; Chih Hung Lin,MD [1] ; Ching-Hsuan, Hu, MD.PhD [1]
Institution:

1. Department of Plastic and Reconstructive Surgery, Chang Gung Memorial Hospital, Chang Gung Medical College and Chang Gung University, Taoyuan, Taiwan.

2. Department of Orthopaedic Surgery, Chang Gung Memorial Hospital, Keelung Branch

Ethical approval and informed consent: All procedures performed in studies involving human participants were in accordance with the ethical standards of the Institutional Review Board and Medical Ethics Committee at Chang Gung Memorial Hospital and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Short Running Head: Traumatic metatarsal reconstruction with fibula bone

Disclosures: The authors have no financial disclosures to declare.

Funding: None

Abstract

Background: Severe foot traumatic bone and soft-tissue defects are often treated by lower leg amputation but the amputation of the lower leg may comprise patients' basic daily activities. Therefore, reconstructive surgery is a more favorable option in order to preserve patients' function.

Methods: From December of 2019 to November 2021, six patients suffered from severe traumatic metatarsal bone, dorsum pedis skin and soft-tissue defects. A free fibular osteomyocutaneous flap or free iliac vascularized bone graft incorporating soft tissue was used to reconstruct the metatarsal bones and the soft-tissue defect, respectively.

Results: After 2 years of follow-up, all patients are able to walk independently and have returned to work.

Conclusion: To avoid amputation, reconstruction with free fibular osteomyocutaneous flap is a reliable method to treat traumatic complex midfoot defects successfully.

Keywords: Metatarsal bone reconstruction, mid foot crush injury, fibula flap, iliac bone flap

Local progression and distal seeding following Intramedullary Nail Stabilization of Femur pathologic fracture

Presenter: Chun Yen Chen

Abstract:

Objectives

Pathologic fractures in the femur can be effectively treated with intramedullary nails. These devices are popular because they offer prompt stabilization while requiring only a minimally invasive procedure. Despite the benefits of using intramedullary nails for the treatment of femur fractures, local disease progression may occur after the surgical procedure. Moreover, one of the major concerns may inadvertently spread tumor cells along the intramedullary tract, potentially resulting in a loss of structural integrity of the entire construct. We sought to identify the factors that are associated with complications.

Methods

The medical records of all patients who had an impending or completed pathologic fracture treated with an intramedullary nail between January 2014 and December 2021 were reviewed. We excluded patients without a confirmed diagnosis of metastasis, those under 18, those with a soft tissue mass that eroded into bone, and those with nonunion from causes other than metastasis. Overall, 97 patients were included in this study. When a long bone lesion either fractured or was found to have at least a 35% risk of fracturing within three months, as determined by five orthopaedic oncology surgeons involved in the patient's care, an intramedullary nail was used to treat the impending or pathologic fracture. This was done in patients who were expected to live for at least three months, in order to provide palliative benefit during their lifetime. Out of the 97 cases studied, lung carcinoma was the most common primary malignancy, accounting for 36% (35 cases). This was followed by hepatocellular carcinoma, which made up 16% (15 cases), breast carcinoma at 12% (12 cases), multiple myeloma at 12% (12 cases) and renal cell carcinoma at 8% (7 cases). The risk of progression was evaluated at 1, 3, 6, and 12 months post-surgery. Multivariate logistic regression analysis was used to assess the association of patients' characteristics with the likelihood of local progress or distal metastasis.

Results

Out of the 97 patients studied, 4 (4.1%) experienced disease progression around the intramedullary nail, while 2 patient (2%) developed new lesions at the end of the intramedullary nail. One out of the 97 patients studied (1%) needed a reoperation due to local progression. Our analysis revealed no links between local disease progression and several factors, including the usage of cement, curettage, radiation or systemic therapy, type of fracture, or the brand of intramedullary nail.

Conclusion

Our study demonstrated the risk of local tumor progression and reoperations following intramedullary nail stabilization appears to be low. The association between lesion progression and survival duration was not observed, although this finding is limited due to the small sample size in our study.

Tips and Tricks of Distal Femoral dual Plating – Ten Commandments

Presenter: Vishnu Senthil Kumar

Lateral femoral plating:

Commandment 1 – Importance of CT scan

Commandment 2 – Distal femur anatomy and radiological appearance

Commandment 3 – Key design of modern implants

Commandment 4 – Radiological quality and image interpretation

Commandment 5 – Key steps in reduction

Commandment 6- Plate positioning in distal femur

Commandment 7 – Plate inclination

Commandment 8 – Importance of working length

Commandment 9 – Avoiding varus/valgus due to plate positioning

Commandment 10 – Additional modalities of stability and Biological reconstruction

Medial Femoral Plating:

Tips on sites of incision, Relationship of vascular structures to the medial distal femoral plate position, How to put incisions in mippo approach.

“Pop-out from a book” traumatic obturator dislocation in an open book pelvis fracture with contralateral subtrochanteric femur fracture.

Presenter: Yee Tong Chong
Associates: Narinder, Gurmeet
Institution: Department of Orthopaedic & Traumatology, Hospital Seberang Jaya, Malaysia
Abstract:

Abstract

Traumatic obturator hip dislocation associated with open-book pelvic injury is an extremely rare injury pattern. Following a literature search, only three cases have been reported. We would like to share some experience gained in managing this patient on the methods of closed reduction, and acute management strategies and review the literature on these rare injuries. Early reduction of the hip can preserve the femoral head blood supply, reduce the incidence of traumatic hip osteoarthritis, and allow early resuscitation and stabilization in open-book fracture to improve patient outcomes.

Keywords: obturator dislocation, anterior hip dislocation, open book fracture

Case Report

A 34-year-old male, with no comorbid, was brought into the emergency room following a road traffic accident. He complained of severe pain over bilateral hip, right ankle, and inability to ambulate due to pain. On examination, he was conscious and oriented, hemodynamically unstable but responsive to fluid resuscitation. Local examination noted the right lower limb was shortened, abducted, and externally rotated. He had tenderness over the right groin area with a palpable lump. The distal neurovascular examination was normal. Radiographic evaluation of pelvis revealed right hip obturator (anterior inferior) dislocation with open book fracture and contralateral subtrochanteric femur fracture and right posterior malleolus fracture (a) & (b). The patient was pushed immediately to the operating theatre for hip reduction and pelvis external fixation. After general anesthesia, the patient was positioned supine with cleaned and draped from the umbilicus until the right ankle. Closed manipulative reduction using inline traction with two assistant counterforces on bilateral iliac wing, the inline traction maneuver was continued for two minutes followed by a gentle external rotation. The closed reduction was found to be satisfactory as checked under the image intensifier and supraacetabular pelvis external fixator was applied (c). Second-stage surgery was done 5 days later which consists of plate osteosynthesis over symphysis pubis, right posterior malleolus, and long proximal femoral nail over the left femur (d) & (e). Post-operatively patient was discharged home with non-ambulatory advice and we are closely monitoring him for avascular necrosis of the right femoral head and aim for union of right posterior malleolus fracture and left subtrochanteric femur fracture.

Discussion

Hip dislocation and open book fracture are both orthopedic emergencies that usually occur due to high-energy trauma and require urgent intervention as soon as possible (within 6 hours). The anterior hip only accounts for less than 10% of hip dislocation as most commonly is posterior dislocation. The combination of both anterior hip dislocation and “open book” pelvis injuries is extremely rare. Young et al reported a case of a 44-year-old male who sustained an obturator dislocation with pelvic ring fracture and sacroiliac joint diastasis, successfully reduced with shanz pin in the femoral neck and ORIF of the symphysis pubis and percutaneous screw fix of sacroiliac joint in a single setting resulted in good outcome (1). Markham et al reported a case of obturator hip dislocation with a contralateral sacroiliac joint disruption. He was successfully treated with closed reduction of the hip and nonoperative treatment of the pelvic ring injury (2). The biggest difficulty faced in this case is the need to achieve emergency reduction and the method of attempting closed reduction and maintaining reduction to reduce the risk of avascular to femoral head and traumatic hip osteoarthritis.

Conclusion:

Urgent reduction in the hip and pelvis is important in aiding resuscitation efforts. Attempting an initial closed reduction of the hip in the emergency department is reasonable but may be difficult without appropriate sedation. In conclusion, obturator hip dislocations associated with pelvic ring injuries are extremely rare and present unique reduction challenges that should be recognized early to provide effective resuscitation preserve the femoral head blood supply, and improve patient outcomes.

References

1. Young, P., Bashir, A., & Perdue, P. (2023). Obturator dislocations of the hip associated with pelvic ring injuries: Case report and review of the literature. *Trauma case reports 46* , 100871. doi.org/10.1016/j.tcr.2023.100871

2. D.E. Markham, Anterior dislocation of the hip and diastasis of the contralateral sacroiliac joint in the rear-seat passenger's injury Br. J. Surg. 59 (4) (1972 Apr) 296–298

10 Year Experience of Treating the Acetabular Fracture with Reconstruction Plate at Civil Hospital Karachi / Dow university of health Sciences .

Presenter: Badaruddin Sahito
Associates: Dr Jagdesh K, Dr Nauman Hussain, Dr Soughat K, Dr Awais Abro ,Dr Azam

Abstract :

Acetabulum fractures are severe trauma injuries , thought to be rare. Acetabulum fractures needs to be evaluated and fixed properly.

METHODOLOGY: It was a prospective descriptive study conducted at the Department of Orthopaedic Surgery, Dow University of Health Sciences / Civil hospital Karachi from May 2013 to feb 20 23 . An aggregate number of 130 patients who were diagnosed with Acetabular fracture were enrolled in the study. The primary cause of fracture was road traffic accident. All the patients were treated with reconstruction plates and one third plate . Post-operative complications and radiological outcomes were evaluated.
RESULTS: Total 130 patients with Acetabular fracture were treated. Excellent radiological outcome wasachieved in 30 % of the patients, good radiological outcome was achieved in 50 %, fair& p oor radiological outcome was achieved in 20 % of the patients. Post-operative complications like sciatic nerve injury was developed in 2 patients, dislocation 3 patients , myositis ossificans was in One (0 2) , 17 patients develop avascular necrosis , 12 had infection & 21 develop hip arthritis .

CONCLUSION: Due to high velocity trauma simple to complex acetabulum fracture frequently seen in orthopaedic bay . Proper evaluation, surgical approach and timely appropriate treatment of these complex injuries improve the functional outcome of patients with long term outcome of arthritis .

Global reconstruction in post tubercular kyphotic deformity: An analysis of 67 cases

Presenter: Shah Alam

Institution: Bangladesh Spine & Orthopaedic Hospital

Introduction:

Kyphotic deformity is a common and disabling complication in TB spine. Surgery is indicated to decompress neural elements and correct the spine deformity. Although Global reconstruction and fusion has been established as the treatment of choice for severe TB kyphosis, there is paucity of studies on the clinical outcomes among patients treated in Bangladesh.

Materials and method

This prospective case series was conducted in a tertiary level hospital & in private hospital from

January 2003 to December 2023. Most of the patients operated posteriorly to achieve correction. Correction of deformity was easier in wet TB than the dry TB. Global reconstruction

was done using single posterior approach in all the cases.

Results :

This study comprises 67 cases (M=20, F=47), with an average age of 17 years. Mean kyphosis

angle was 85+9 ° preoperatively which came down to 13+7° finally. There was no major complication. None of the patients develop or worsened neurologically after surgery. Finally

patient achieved satisfactory cosmetic appearance.

Conclusion :

Prevention of deformity should be the primary aim. Long standing severe kyphosis produces

painful costopelvic impingement, reduced vital capacity, lumbar canal stenosis & late onset

paraplegia. With improved surgical technique & rigid spinal instrumentation involving three

column - posterior is the only approach for prevention & correction of kyphosis

Outcome of Subtrochanteric Femoral Fractures Fixation by Proximal Femoral Nail

Presenter: Dr Mohammad Saiful Islam

Background: The treatments of subtrochanteric femoral fractures are a challenge. It accounts for about 10% to 34% of all hip fractures with a high complication rate. This area consists of mostly cortical bone with high stress generation and thus heals slowly. The fracture is too proximal to adequately control with implants for femoral shaft and too distal to control with implants for intertrochanteric fractures. The inherent instability of fracture pattern and forces of the muscles with comminuted medial calcar is giving the fracture a tendency to varus collapse. Extramedullary implants are associated with a higher rate of implant failure while intramedullary nails are not suitable for the short proximal segment and wide medullary canal. Recently proximal femoral nail (PFN) has been applied in the treatment of subtrochanteric fractures. This study was done to assess the outcome of fixation of subtrochanteric femoral fractures with PFN.

Objective: To evaluate the outcome of subtrochanteric femoral fracture fixation by proximal femoral Nail.

Methods: This descriptive observational study was conducted from August 2022 to July 2023 at Mymensingh Medical College Hospital through non randomized purposive sampling. Total 20 patients aged above 18 years irrespective of sex with closed subtrochanteric fracture were included but pathological fracture; multiple injuries were excluded from the study. Healing process and postoperative complications were recorded after clinical and radiological evaluation. Radiological union assessed by RUST criteria and Functional status were evaluated by Modified Harris Hip Score.

Results: The mean age of the patients was 44.65 ± 12.30 years with a range of 25-70 years. The majority of patients were male (65%) and most of injury (80%) were due to road traffic accidents. and with most fractures was Seinsheimer type II (45%). The average operative time was 98.75 min. The follow-up period was an average of 34.05 weeks (26-36 weeks), time to union was 13.40 weeks (10-26 weeks). According to RUST criteria union rate 95% with delayed union 5% and no nonunion. There were two patients with superficial wound infection, two unaccepted shortening, and two varus malalignments with no implant failure. Most of the patients regained their walking (75%) and squatting (70%) and returned to the preinjury state (70%) of activities. Evaluation of outcome by Modified Harris Hip Score showed excellent (65%), good (20%), fair (10%), and poor (5%) results. The satisfactory outcome was 85% and the unsatisfactory was 15%.

Conclusion: PFN is a safe, reliable, and effective implant for the treatment of subtrochanteric femoral fractures which provides stable fixation with a high union rate, fewer complications, and early rehabilitation.

Key Wards: Subtrochanteric Femoral Fractures; Proximal femoral Nail

FUNCTIONAL OUTCOME OF MONTEGGIA FRACTURE DISLOCATION OF FOREARM TREATED WITH COMPRESSION PLATE IN ADULTS - A PROSPECTIVE STUDY.

Presenter: Karthikeyan Dhandapani

Institution: Royal Gwent Hospital

Abstract

Background: Monteggia fracture-dislocation (MFD) is a complex injury involving radial dislocation and ulnar fracture, posing challenges for effective management. Historically, conservative approaches yielded poor outcomes, prompting a shift towards surgical interventions. This prospective study evaluates the functional outcomes of MFD in adults treated with dynamic compression plating.

Materials and Methods: A hospital-based prospective study was conducted at Malla Reddy Institute of Medical Sciences from October 2018 to September 2019. Twenty adult patients with radiologically diagnosed Monteggia fracture-dislocations were included. Inclusion criteria comprised closed and open grade I fractures in individuals aged above 18 years. Surgical intervention involved open reduction, internal fixation of the ulna using a dynamic compression plate, and closed reduction of the radial head. Functional outcomes were assessed using the Anderson criteria.

Results: The study population predominantly consisted of males (55%), with an average age of 35.9 years. Road traffic accidents accounted for 55% of injuries, with type I Monteggia fractures being most common (70%). The surgical technique resulted in 75% of fractures uniting in less than 4 months, and no cases of nonunion were observed. Superficial infections occurred in 15% of cases, while one patient experienced posterior interosseous nerve injury, recovering spontaneously after 3 months. Functional outcomes were excellent in 65% of cases, satisfactory in 30%, and unsatisfactory in 5%.

Discussion and Conclusion: Monteggia fracture-dislocations pose significant challenges, especially in adults. Surgical management with open reduction and internal fixation using dynamic compression plating demonstrated promising results in terms of fracture union and functional outcomes. Early intervention, anatomic reduction, and fixation contribute to positive outcomes. Complication rates were minimal, emphasizing the efficacy and safety of the proposed surgical approach. This study advocates for the adoption of this technique as a simple and effective means of treating Monteggia fracture-dislocations in adults, with an emphasis on postoperative immobilization for optimal results.