



SAOA 2023

**PODIUM PRESENTATION
ABSTRACTS**



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P1. The effect of treatment delays on fracture-related infection in open tibia shaft fractures. GT4.

Category: Trauma

Presentation: Oral

Frans Willem Kock (Stellenbosch University), Tinus Basson (Stellenbosch University) Marilize Burger (Stellenbosch University), Nando Ferreira (Stellenbosch University)

Background: This study aimed to investigate the outcomes of open tibia shaft fractures at a level one trauma center in a developing world setting. Specific objectives were to determine the association of time delay to antibiotic administration, surgical debridement, definitive skeletal stabilisation and soft tissue reconstruction, and the development of fracture-related infection (FRI).

Methods: A retrospective cohort study included all adult patients with open tibia shaft fractures from July 2014 to June 2016 and January 2018 to December 2019. Patients who were skeletally immature at the time of injury, those with pathological fractures and who did not complete follow-up of at least three months were excluded. Patients were identified from hospital records. Data was captured in Microsoft Excel and analysed using STATISTICA. A Chi-squared was used to detect significant differences between groups.

Results: No association between infection and antibiotic administration was observed when patients were treated within or after 3 hours ($p=0.625$) or if patients had their first surgical debridement in theatre before or after 24 hours ($p=0.259$). Patients who waited more than five days for definitive skeletal fixation or soft tissue reconstruction had a significant increase in FRI (OR 4.7, 95% CI 2.0 – 10.9 and OR 4.7, 95% CI 2.0 – 11.0, respectively). Patients who underwent more than two formal debridements had a higher risk of developing FRI (OR 15.6, 95% CI 5.8 – 41.6).

Conclusion: Whilst administration of antibiotics within 3 hours of presentation to the emergency unit had no impact on the development of FRI, time delays in managing open tibia shaft fractures are associated with an increased risk for FRI. Definitive soft tissue reconstruction and skeletal stabilization should not be delayed for more than five days.



P2. Complications associated with primary reverse shoulder arthroplasty in the public sector a retrospective study 2011-2021. GT5

Category: Arthroplasty

Presentation: Oral

Jan Gabriel du Plessis (University of Pretoria), Odette Koch (University of Pretoria), Megan O'Connor (University of KZN), TLB le Roux (University of Pretoria)

Registrar Mmed Project

Background

In reverse shoulder arthroplasty (RSA), a high complication rate is noted in the international literature (24.7%), and limited local literature is available. The complications in our developing health system, with high HIV, tuberculosis and metabolic syndrome prevalence may be different from that in developed health systems where the literature largely emanates from.

The aim of this study is to describe the complications and complication rate following RSA in a South African cohort.

Methods

An analytical, cross-sectional study was done where all patients' who received RSA over an 11 year period at a tertiary hospital were evaluated. One-hundred-and-twenty-six primary RSA patients met the inclusion criteria and a detailed retrospective evaluation of their demographics, clinical variables and complication associated with their shoulder arthroplasty were assessed. All fracture, revision and tumour resection arthroplasties were excluded, and a minimum of 6 months follow up was required.

Results

A primary RSA complication rate of 19.0% (24/126) was noted, with the most complications occurring after 90 days at 54.2% (13/24). Instability was the predominant delayed complication at 61.5% (8/13) and sepsis being the most common in the early days at 45.5% (5/11). Haematoma formation, hardware failure and axillary nerve injury were also noted at 4.2% each (1/24).

Conclusions

Keeping in mind the immense difference in socioeconomic status and patient demographics in a third world country the RSA complication rate in this study correlates with the known international consensus. This also proves that RSA is still a suitable option for rotator cuff arthropathy and glenohumeral osteoarthritis even in an economically constrained environment like South Africa.



P3. Musculoskeletal Injuries from Gender-based Violence at a Tertiary Orthopaedic Centre. GT7.

Category: Trauma

Presentation: Oral

Kenneth Leslie (University of the Free State), Steven Matshidza (University of the Free State)

Intimate partner violence (IPV) causes significant morbidity and its unlikely to be reported compared to other forms of gender-based violence (GBV). For early detection, understanding Orthopaedic injuries from GBV is vital.

This study assesses the pattern of musculoskeletal injuries from GBV and determines the factors associated with it.

It is a retrospective observational study of patients aged ≥ 18 years, with GBV-related acute Orthopaedic injuries. Data was reviewed from January 2021 to December 2021, including, demographic information, soft tissue and bony injuries, relationship to assailant, substance abuse and the day and time of injury. Frequencies and percentages for categorical data were analysed. Chi-square test was used to calculate association. T-test was used to compare groups for continuous & categorical variables. Multivariate analysis was conducted to find the odds ratio and a p-value < 0.05 was statistically significant.

138 patients were included, the mean age at presentation being 35.02 years (SD=11). 92.75% of GBV victims were females. Most were unemployed (66.7%). 30.43% (n=42) had a soft tissue injury; superficial laceration being the most common (23.1%), flexor tendon injury (10.87%), hand abscess (5.8%), and extensor tendon injury (5.07%). 71.02% (n=98) sustained appendicular fractures. 51.45% (n=71) sustained upper limb fractures; distal radius fractures (10.86%) and distal 3rd ulnar fractures (9.42%). 19.57% (n=27) had lower limb fractures; 7.25% (n=10) had lateral malleolus ankle fractures. 63.7% (n=80) of cases were by an intimate partner on weekends (50.73%). 62.31% occurred between 16h00 and 0h00. 41.1% (n=65) reported alcohol abuse. 63.04% had surgery.

GBV likely occurs in early middle-aged females by intimate partners influenced by alcohol over the weekends between 16h00 to 0h00. Distal radius/distal 3rd ulnar fractures are the most common bony injuries. Superficial wrist laceration is the commonest soft tissue injury. These findings may assist with early detection and intervention to prevent adverse outcomes in GBV.



P4. The role of prophylactic antibiotics in zone II and zone V acute flexor tendon injuries. GT11

Category: Hands

Presentation: Oral

Rihangwele Tshisikule (WITS University)

Background: Our study sought to establish the necessity of prolonged pre-operative antibiotic prophylaxis in patients presenting with zone II and zone V acute flexor tendon injuries (FTI). We hypothesized that a single dose of prophylactic antibiotic was adequate in prevention of post-operative wound infection in acute zone II and V FTI.

Methods: This was a prospective study of 116 patients who presented with zone II and zone V acute FTI. The study included patients who were 18 years and older. Those with macroscopic contamination, immunocompromised, open fractures, bite injuries, and crush injuries were excluded. Patients were randomised into a group receiving a single dose of prophylactic antibiotic and another group receiving a continuous 8 hourly antibiotic doses until the day of surgery. Each group was subdivided into occupational and non-occupational injuries. Their post-operative wound outcomes were documented 10 – 14 days after surgery. The wound outcome was reported as no infection, superficial infection (treated with wound dressings), and deep infection (requiring surgical debridement).

Results: There was 0.9% rate of deep post-operative wound infections, which was a single zone V acute FTI case in a single dose prophylactic antibiotic group. There was a 7.8% superficial post-operative wound infection rate, which was mainly zone II acute FTI in both antibiotic groups. There was a strong association between zone II acute FTI and post-operative wound infection ($p < 0.05$). There was no association between (antibiotic dosage or place of injury) with post-operative wound infection ($p > 0.05$).

Conclusion: There is no benefit in prescribing prolonged pre-operative antibiotic in patients with acute, simple lacerations to zone II and zone V FTI if there is no macroscopic wound contamination.



P5. Outcomes of Open Tibia Fractures in Children. GT16

Category: Paediatrics

Presentation: Oral

Waziba Ncana (University of Cape Town)

Background

Open tibia fractures are common injuries in our paediatric population and are often associated with high-energy trauma such as pedestrian-vehicle accidents. At our institution, these injuries are routinely treated with debridement and mono-lateral external fixation.

The purpose of this study was to determine the outcome of open tibia fractures treated according to this protocol, as well as the complication rate and factors contributing to the development of complications.

Methods

We performed a retrospective folder review of all patients with open tibia fractures that were treated according to our protocol from 2015-2019. Patients treated by other means, who received primary treatment elsewhere, and with insufficient data, were excluded. Data was collected on presenting demographics, injury characteristics, management, and clinical course. Complications were defined as pin tract infections, delayed- or non-union, malunion, growth arrest, and neurovascular injury. Appropriate statistical analysis was performed.

Results

One-hundred-and-fifteen fractures in 114 children (82 males) with a median age of 7 years (IQR 6-9) were included in the analysis. Pedestrian vehicle accidents (PVA's) accounted for 101 (88%) of fractures, and the tibial diaphysis was affected in 74 cases (64%). Fracture severity was equally distributed among the Gustillo-Anderson grades. The median Abbreviated Injury Score was 4 (IQR 4;5). Ninety-five fractures (83%) progressed to uneventful union within 7 weeks. Twenty patients (17%) developed complications, with delayed union and fracture site infections being the most common complications. Gustillo-Anderson Grade 3 fractures, an increased Abbreviated Injury Score, and the need for advanced wound closure techniques were risk factors for developing complications.

Conclusion

Surgical debridement and external fixation in a simple mono-lateral frame is an effective treatment for open tibia fractures in children and good outcomes were seen in 83% of patients. More severe injuries requiring advanced wound closure were associated with the development of complications.



P6. Acute carpal tunnel syndrome; results of a protocol for early nerve decompression and surgical stabilization for bony wrist trauma

Category: Hands

Presentation: Oral

Hamish Jeffrey (Imperial College Healthcare NHS Trust) , Thomas Samuel (Imperial College Healthcare NHS Trust), Edward Hayter (Imperial College Healthcare NHS Trust) , George Lee (Imperial College Healthcare NHS Trust) , Max Little (Imperial College Healthcare NHS Trust) , John Hardman (Imperial College Healthcare NHS Trust) , Raymond Anakwe (Imperial College Healthcare NHS Trust)

Background

We undertook this study to investigate the outcomes of surgical treatment for acute carpal tunnel syndrome following our protocol for concurrent nerve decompression and skeletal stabilization for bony wrist trauma to be undertaken within 48-hours.

Methods

We identified all patients treated at our trauma centre following this protocol between 1 January 2014 and 31 December 2019. All patients were clinically reviewed at least 12 months following surgery and assessed using the Brief Michigan Hand Outcomes Questionnaire (bMHQ), the Boston Carpal Tunnel Questionnaire (BCTQ) and sensory assessment with Semmes-Weinstein monofilament testing.

Results

The study group was made up of 35 patients. Thirty-three patients were treated within 36-hours. Patients treated with our unit protocol for early surgery comprising nerve decompression and bony stabilization within 36-hours, report excellent outcomes at medium term follow up.

Conclusions

We propose that nerve decompression and bony surgical stabilization should be undertaken as soon as practically possible once the diagnosis is made. This is emergent treatment to protect and preserve nerve function. In our experience, the vast majority of patients were treated within 24-hours.



P7. Gender-based transgressions and bullying, homophobia and transphobia among orthopaedic surgeons and trainees. A systematic review of literature and awareness piece on workspace behaviours.

Category: SAFOSS

Presentation: Oral

Pududu Archie Rachuene (University of Pretoria) , Hannah Bussio (Sefako Makgatho University)

Background:

Females and other minority groups including the LGBTQ community are largely under represented orthopaedics, with their negative experience of the work space being cited as a possible contributing factor. The aim of this systematic review was to evaluate the literature for the prevalence of gender transgressions, homophobia, transphobia and bullying within the orthopaedic work space.

Method:

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach was used with 2 independent reviewers.

Results:

A search was conducted using Pubmed and Scopus which identified 973 articles, 94 of which were duplicates. 18 of these were retained after review, the majority of which were surveys. The prevalence of discriminatory behaviour was found to range from 53% to 74.5%, with males in positions of seniority being the most common perpetrators.

Conclusions:

Gender transgressions, homophobia, transphobia and bullying appears to be a prevalent issue in the orthopaedics, and this is bound to impact the emotional state of these minority groups, thereby impacting their retention in the work space.



P8. Adolescent idiopathic scoliosis with concomitant spondylolysis: choice of fusion levels evaluation of the outcomes obtained leaving the lytic level not instrumented

Category: Spine

Presentation: Oral

Haemish Crawford (Starship Hospital) , Alice Baroncini (Starship Hospital) , Antony Field (Starship Hospital) , Anand Segar (Starship Hospital)

Purpose: 7% of adolescent idiopathic scoliosis (AIS) patients also present with a pars defect. To date, there are no available data on the results of fusion ending proximal to a spondylolysis in the setting of AIS. The aim of this study was to analyze the outcomes of posterior spinal fusion (PSF) in this patient cohort, to investigate if maintaining the lytic segment unfused represents a safe option.

Methods: Retrospective review of all patients who received PSF for AIS, presented with a spondylolysis or spondylolisthesis and had a min. 2-years follow-up. Demographic data, instrumented levels and preoperative radiographic data were collected. Mechanical complications, coronal or sagittal parameters, amount of slippage and pain levels were evaluated.

Results: Data from 22 patients were available (age 14.4 ± 2.5 years), 18 Lenke 1-2 and four Lenke 3-

6. Five patients (24%) had an isthmic spondylolisthesis, all Meyerding I. The mean preoperative Cobb angle of the instrumented curves was $58 \pm 13^\circ$. For 18 patients the lowest instrumented vertebra (LIV) was the last touched vertebra (LTV); for two LIV was distal to the LTV; for two, LIV was one level proximal to the LTV. The number of segments between the LIV and the lytic vertebra ranged from 1 to 6. At the last follow-up, no complications were observed. The residual curve below the instrumentation measured $8.5 \pm 6.4^\circ$, the lordosis below the instrumented levels was $51.4 \pm 13^\circ$. The magnitude of the isthmic spondylolisthesis remained constant for all included patients. Three patients reported minimal occasional low back pain.

Conclusion: The LTV can be safely used as LIV when performing PSF for the management of AIS in patients with L5 spondylolysis



P9. RADIOGRAPHIC AND CLINICAL OUTCOMES IN ADOLESCENT IDIOPATHIC SCOLIOSIS CORRECTIVE FUSION SURGERY

Category: Spine

Presentation: Oral

Benjamin Blankson (UCT/GSH) , Robert Dunn (UCT/GSH) , Lubabalo Noconjo (UCT)

Introduction

Adolescent idiopathic scoliosis (AIS) is a complex three-dimensional deformity of the spine characterized by a Cobb angle of at least 10 degrees. The goal of surgery is to not only prevent progression but restore sagittal and coronal balance, protecting cardiopulmonary function and improving cosmesis.

We reviewed the impact of deformity correction surgery in terms of radiology and patient reported outcome (PROMs).

Method

The senior authors prospectively maintained database from 2003 -2022 was retrospectively analysed in terms of pre- and post-operative patient reported outcome measures (SRS 22) as well as radiological parameters.

44 patients with AIS were identified with pre and post op PROMS. The average age at surgery was 15yrs with 84% female. 38% had a Lenke 1 curve and 3 patients had Lenke 6 curves. 73% had posterior surgery.

Results

There was a total improvement in SRS 22 scores by 7.8%. Patients reported significant satisfaction with treatment 4.8/5 and improvement in self-image with a change of 0.4 ($p < 0.001$). However, no difference in function, pain and mental health were recorded.

Overall, proximal thoracic (PT) curves improved from 24 degrees to 11 degrees ($p < 0.001$), Main thoracic (MT) curve 55 degrees to 19 degrees and Thoracolumbar/Lumbar curves (TL/L) 45 degrees to 11 degrees. Pre-operative flexibility and post-operative correction were 0.40 and 0.41 respectively for PT curve. MT was 0.32 and 0.67. That for TL/L was 0.57 and 0.71 respectively.

Conclusion

Surgery yields significant main curve correction correlating with high patient reported satisfaction rate. Although total SRS 22 score yielded 7.8% improvement, sub-analysis of self-image showed the most significant improvement.



P10. Clinical and radiographic outcome of Lenke V Adolescent Idiopathic Scoliosis via the Anterior Approach

Category: Spine

Presentation: Oral

Delroy Arnolds (UCT/GROOTE SCHUUR) , Laura Marie-Hardy (UCT/GROOTE SCHUUR) , Robert Dunn (UCT/GROOTE SCHUUR)

Background

Adolescent idiopathic scoliosis is a three-dimensional deformity of the spine, affecting 1-3% of the population.

Most cases are treated conservatively. Curves exceeding 45° in the thoracic spine and 40° in the lumbar spine may require correction and fusion surgery, to limit the progression of the curve and prevent restrictive pulmonary insufficiency (curves above 70°)

When fusion is required, it may be performed either by posterior or anterior approaches

Posterior is useful for thoracic (Lenke I) curves, notably to correct the thoracic hypokyphosis frequently observed in AIS. Anterior approaches by thoraco-lumbotomies allow an effective correction of thoraco-lumbar and lumbar curves (Lenke V and VI), with fewer levels fused than with posterior approaches. However, the approach requires diaphragm splitting and one may be concerned about the long-term pulmonary consequences

The literature provides conflicting insight regarding the consequences of the approach in anterior scoliosis correction, the interpretation of the results being difficult knowing that the correction of the scoliosis itself may improve pulmonary function.

Methods

This is a retrospective observational study done at a Tertiary Institution. The HRQOL scores have been collected as a prospective cohort. Clinical and radiographic data was collected from patients charts and analysed by two senior surgeons

Results

A cohort of 64 patients were operated in the given time period. 50 patients met the inclusion criteria. No major complications were reported. The Union rate was 100% and no post operative complications were noted. Pre and post SRS scores improved in all patients

Conclusion

The Anterior approach for Lenke V AIS gives great surgical exposure and allows for excellent correction of Cobb angle with minimal risk to the patient.



P11. Scoliosis surgery week: A South African Tertiary institution experience

Category: Spine

Presentation: Oral

Mmangaliso Maseko (university of the witwatersrand) , Freddy Ukunda (university of the Witwatersrand)

Background:

Orthopaedic paediatric deformities, globally, are often corrected later than initial identification due to resource constraints (bed availability, investigative modalities, surgical skill set). The study aims to analyse experiences and challenges met with running a flagship scoliosis surgery week in a tertiary public health care facility, with the goal of reducing patient waiting time on the waiting list.

Methods:

In this retrospective study, patients from an existing deformity correction waiting list were selected for a 5 day scoliosis surgery week. Investigations relevant to clinical findings were carried out and patients were scheduled on a “one patient per day” surgery list. Inclusion criteria was any patient with adolescent idiopathic scoliosis of varying degree that was symptomatic. Exclusion criteria was any other deformity of any age.

Outcomes measured include: Administrative hurdles (obtaining funding, organising ward and ICU beds, getting nursing staff), Surgical challenges (severity of the curve, intraoperative time, approach chosen) and perioperative management (anaesthesia, pain management, cost of equipment) will be looked at to better define the experiences and challenges.

Results:

All scheduled surgeries were completed. This meant more cases were carried out than what was done in the last 2 years at the facility combined. Lack of Nursing staff availability and few ICU beds delayed starting cases. Anterior fusion took a shorter surgical time in comparison to posterior and cost far less to carry out owing to deformity severity. Intra and post operative management also varied due to daily changes in theatre staff and a lack of standardized protocols.

Conclusion:

Running a scoliosis surgery week helps to lower the waiting time for deformity correction in public health care facilities. Pre organising resources results in more successful outcomes and an increase in the number of cases done over a shorter period.



P12. Mortality in patients admitted to Acute Spinal Cord Unit, Cape Town South Africa

Category: Spine

Presentation: Oral

Nicholas Kruger (University of Cape Town) , Delroy Arnolds (University of Cape Town) , Rob Dunn (University of Cape Town)

Objectives

To analyse the causes and factors associated with mortality in patients admitted to ASCI unit in a low- or middle-income country.

Setting

The study was performed at a Tertiary Hospital at Groote Schuur Hospital, Cape Town South Africa

Methods

Data between 1996 -2022 were retrospectively collected from hospital records of patients admitted to the ASCI Unit

Results

There was approximately 3223 admissions for the study period. 682 patients were confirmed dead

87% were male and 64% were unemployed.

The mean age was 46 years (ranging from 14 – 87 years)

A 1/3 of injuries were caused by a MVA, a ¼ by a fall (low energy and from a height), and 1/5 by a gunshot wound

Average length of stay was 47 days (SD = 52 days), ranging from as short as 1 day to 512 days for one patient.

Majority (65%) were admitted for more than a week but less than 2 months 32% were ventilated, and 17% with a CPAP facemask.

10% of patients had a pre-existing ulcer prior to admission

65% of patients had surgery via the posterior approach, 33% via the anterior approach

On average patients died within 5 years of being admitted to hospital, ranging from dying in the same year as the injury to 20 years later

73% of the deaths were classified as natural deaths and 20% as unnatural

Conclusion

There is a high mortality in patients with acute spinal cord injury, causes are multifactorial, and in depth critical analyses is required to improve clinical outcomes and rationalise resource allocation.



P13. A survey of the practice of cervical traction reduction in the Western Cape. GT17

Category: Spine

Presentation: Oral

Bijou Salence (University of Cape Town), Nicholas Kruger (University of Cape Town)

A retrospective follow-up study was done, assessing regional practices in acute cervical reduction in hospitals in the Western Cape. The constitutional court ruled on the urgency in managing cervical dislocations, and our task is to ensure that medical treatment is optimized to comply with best medical practice and the apex court.

A questionnaire was distributed and completed by emergency departments at each hospital, the results retrieved, analysed, and compared to a similar survey done in 2016.

Results

Protocols for managing cervical spine dislocations had improved from 80% having no protocols to only over half of facilities (52,6%) not having protocols in place. Inadequate equipment availability remained a problem with only 50% of facilities having adequate equipment available in 2016 to 43,6% in 2023. 10,3% of participants did not know if there was equipment available. In terms of knowledge, there remained poor formal training with a drop from 93% participants identifying that the main indication to attempt emergency cervical reduction was acute cervical dislocation with worsening neurology, to only 46,2%. However, there was an increase in the number of participants who thought reduction was safe. The same percentage of participants from 2016 to 2023 would attempt emergency cervical reduction if given adequate training.

Conclusion

Previously we found that most Western Cape hospitals had inadequate protocols, training, and equipment for cervical reductions. In 2023, more hospitals in the Province have protocols in place for cervical reductions and the same percentage of doctors would attempt emergency cervical reduction with adequate training. However, equipment and training for management of acute cervical dislocations has not improved. We conclude that most Western Cape Hospitals are unprepared to adequately manage acute cervical dislocations.



P14. A review of fluoroscopy guided percutaneous transpedicular spinal biopsies at a tertiary hospital.GT14

Category: Spine

Presentation: Oral

Shivam Bhikha, (Wits South Africa)

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Background

When a suspicious spine lesion is identified, an accurate diagnosis based on tissue biopsy is needed to direct towards the correct treatment protocol.

Several studies concluded that the percutaneous fluoroscopy guided biopsy of vertebral lesions is a safe, effective and accurate diagnostic tool and is preferred over open techniques when possible.

The aim of this study was to review percutaneous fluoroscopy guided transpedicular spinal biopsies at a tertiary hospital over a 6-year period.

Methodology

The research design was a retrospective review of patients who underwent percutaneous transpedicular spinal biopsies under fluoroscopy guidance at a tertiary hospital over a six year period (1st January 2016 to the 31st December 2021).

The spine theatre registry and hospital records system were used as the source for data collection. Statistical analysis was conducted to determine the effectiveness of transpedicular spinal biopsies, compare spinal pathology amongst age and gender and to identify any complications.

Results

The study analysed 180 biopsies, 120 yielding a positive result (66.67%). Of these 8.9% were pyogenic infection, 18.4% neoplasm, 36.7% Tuberculosis and 2.7% other. There were 75 males and 105 females with an age range between 9 and 86 years and mean age of 43.44. Comparing age and gender found no statistical significance ($p = 0.778$). Comparing biopsy result and gender showed no statistical significant relationship ($p = 0.970$). Comparison of biopsy result with age showed no statistical significant association ($p = 0,545$). Four complications were identified (2.22%).

Conclusion

The study showed that fluoroscopy guided percutaneous transpedicular biopsy is an effective and safe modality in obtaining spinal specimens in all age groups for a wide spectrum of spinal pathological lesions.



P15. Is a coccygectomy an efficacious surgical treatment for debilitating coccygeal pain?

Category: Spine

Presentation: Oral

Aftab Younus (Helen Joseph Hospital), Mohammad Aftab (Helen Joseph Hospital), Lonwabo Nxiweni (Helen Joseph Hospital)

Introduction:

To determine the demographic, pre-operative, operative, post-operative, and outcome in seven patients who presented to our unit over a 5-year period and underwent a coccygectomy for coccydynia unresponsive to conservative measures.

Material and Methods:

We performed a retrospective chart review of seven patients who presented to the Department of Orthopedics at Helen Joseph hospital, University of the Witwatersrand, Johannesburg, South Africa, with coccydynia unresponsive to a trial of adequate conservative measures, and underwent operative intervention. The study period was from 01 January 2014 to 31 December 2018.

Results:

The mean age of subjects in our study was 53 years. The average length of conservative treatment prior to presentation to our unit was 8 months. All patients were taken to surgery and the mean length of surgery was 49 min and the mean volume of intra-operative blood loss was 63.4 ml. In all 7 (100%) of subjects a total coccygectomy was performed. At our 1-year end point all 7 (100%) subjects reported a favourable outcome and were satisfied – extremely satisfied with the procedure.

Conclusion:

In our study a total coccygectomy resulted in a significant reduction in coccygeal pain and subjects a 1-year follow-up end point. We recommend that in patients who fail an adequate recognized trial of conservative measures for coccydynia, a total coccygectomy should be performed.



P16. Reason(s) for refusal of surgery in patients with established degenerative lumbar pathology

Category: Spine

Presentation: Oral

Mzwakhe Khumalo (Wits)

Background

Low back pain is the single most common cause for disability in individuals aged 45 years or younger, it carries tremendous weight in socioeconomic considerations. Degenerative aging of the structural components of the spine can be associated with genetic aspects, lifetime of tissue exposure to mechanical stress & loads and environmental factors. Mechanical consequences of the disc degenerative include loss of disc height, segment instability and increase the load on facets joints. All these can lead to degenerative changes and osteophytes that can narrow the spinal canal. Surgery is indicated in patients with spinal stenosis who have intractable pain, altered quality of life, substantially diminished functional capacity, failed non-surgical treatment and are not candidates for non-surgical treatment.

Question: What are the reasons for refusal of surgery in patients with established degenerative lumbar spine pathology eligible for surgery?

Methodology: All patients meeting the study criteria, patients older than 18 years, patients with both clinical and radiological established symptomatic degenerative lumbar spine pathology and patients eligible for surgery but refusing it were recruited. Questionnaire used to investigate reasons why they are refusing surgery.

Results 59 were recruited, fifty-one (86.4 %) females and eight (13.6 %) males. Twenty (33.8 %) were between the age of 51 and 60 years, followed by nineteen (32.2 %) between 61 and 70 years, and fourteen (23.7 %) between 71 and 80 years. 43 (72 %) patients had lumbar spondylosis complicated by lumbar spine stenosis, followed by nine (15.2 %) with lumbar spine spondylolisthesis and four (6.7 %) had adjacent level disease. 28 (47.4 %) were scared of surgery, fifteen (25.4 %) claimed that they are too old for surgery and nine (15.2 %) were not ready.

Conclusion Findings from this study outlined that patients lack information about the spinal surgery. Patients education about spine surgery is needed.



P17. An interpopulation comparison and correlation of 3- dimensional morphometric measurements of the scapula

Category: Shoulder and Elbow

Presentation: Oral

Pududu Archie Rachuene (University of Pretoria) , Roopam Dey (University of Cape Town) , Yawovi Dodzi Motchon (University of Cape Town) , Sudesh Sivarasu (University of Cape Town) , Roche Stephen (University of Cape Town)

Background: In patients with shoulder arthritis, the ability to accurately determine glenoid morphological alterations affects the outcomes of shoulder arthroplasty surgery significantly. This study was conducted to determine whether there is a correlation between scapular and glenoid morphometric components. Existence of such a correlation may help surgeons accurately estimate glenoid bone loss during pre-operative planning.

Methods: The dimensions and geometric relationships of the scapula, scapula apophysis and glenoid were assessed using CT scan images of 37 South African and 40 Chinese cadavers. Various anatomical landmarks were marked on the 77 scapulae and a custom script was developed to perform the measurements. Intra-cohort correlation and inter-cohort differences were statistically analyzed using IBM SPSS v28. The condition for statistical significance was $p < 0.05$.

Results:

The glenoid width and height were found to be significantly ($p < 0.05$) correlated with superior glenoid to acromion tip distance, scapula height, acromion tip to acromion angle distance, acromion width, scapula width, and coracoid width, in both the cohorts. While anterior glenoid to coracoid tip distance was found to be significantly correlated to glenoid height and width in the South African cohort, it was only significantly correlated to glenoid height in the Chinese cohort. Significant ($p < 0.05$) inter-cohort differences were observed for coracoid height, coracoid width, glenoid width, scapula width, superior glenoid to acromion tip distance, and anterior glenoid to coracoid tip distance.

Conclusion: This study found correlations between the scapula apophyseal and glenoid measurements in the population groups studied. These morphometric correlations can be used to estimate the quantity of bone loss in shoulder arthroplasty patients.



P18. The official translation of the DASH scoring system to isiZulu for use in South Africa

Category: Shoulder and Elbow

Presentation: Oral

Mario Rankin (King Edward VIII Hospital) , Samkelwe Majola (King Edward VIII Hospital)

Background:

The Disability of Arm Shoulder and Hand (DASH) score questionnaire is a common self-administered tool to assess symptom severity and function in patients with injuries or pathology of the upper limb.

However, having such a pertinent tool only in English is limiting in multi-cultural and multilingual populations where English is not always the first language, such as our South African context.

IsiZulu is the most widely spoken language in South Africa (approximately 25% of the population). There are certain instances in research, particularly in international studies, where non-English speaking individuals need to be excluded based on translator reliability. This puts our institutions at a disadvantage by not being able to contribute to research.

Methods:

As per the international Institute of Work and Health (IWH), we followed the 5 stage guidelines to achieve the most appropriate linguistic and cultural adapted translation for our setting.

1. Two independent translations from English to isiZulu.
2. A synthesis of the 2 initial translations.
3. Two independent back-translations from the synthesized isiZulu version into English.
4. Expert panel (consisting of university lecturers and official translators) to review all versions and re-create an optimized synthesized version.
5. Pre-testing of the final optimized synthesized version in a pilot study.

Results:

This rigorous process allowed for a concise and more culturally relevant translation for use in our population. The fourth stage in the process was integral in synthesizing the tool while considering the colloquial and semantic differences and resolving them with appropriate equivalents.

Conclusion:

The IWH guidelines aids in the cross-cultural adaptation of the DASH score while remaining valid and comparable to the original English version. This is beneficial in multi-national research projects and allows for the standardization of health outcome measures.



P19. Clinical Outcomes Following Glenohumeral Dislocation With Greater Tuberosity Fracture

Category: Shoulder and Elbow

Presentation: Oral

Rosemary Hackney (Edinburgh Orthopaedics) , Gemma Toland (Edinburgh Orthopaedics) , Gearoid Crosbie (Edinburgh Orthopaedics) , Samuel Mackenzie (Edinburgh Orthopaedics) , Nick Clement (Edinburgh Orthopaedics) , John Keating (Edinburgh Orthopaedics)

A fracture of the tuberosity is associated with 16% of anterior glenohumeral dislocations. Manipulation of these injuries in the emergency department is safe with less than 1% risk of fracture propagation. However, there is a risk of associated neurological injury, recurrent instability and displacement of the greater tuberosity fragment. The risks and outcomes of these complications have not previously been reported.

The purpose of this study was to establish the incidence and outcome of complications associated with this pattern of injury.

We reviewed 339 consecutive glenohumeral dislocations with associated greater tuberosity fractures from a prospective trauma database. Documentation and radiographs were studied and the incidence of neurovascular compromise, greater tuberosity fragment migration and intervention and recurrent instability recorded.

The mean age was 61 years (range, 18-96) with a female preponderance (140:199 male:female). At presentation 24% (n=78) patients had a nerve injury, with axillary nerve being most common (n=43, 55%). Of those patients with nerve injuries 15 (19%) did not resolve. Greater tuberosity displacement

>5mm was observed in 36% (n=123) of patients with 40 undergoing acute surgery, the remainder did not due to comorbidities or patient choice. Persistent displacement after reduction accounted for 60 cases, later displacement within 6 weeks occurred in 63 patients. Recurrent instability occurred in 4 (1%) patients. Patient reported outcomes were poor with average EQ5D being 0.73, QDASH score of 16 and Oxford Shoulder Score of 41.

Anterior glenohumeral dislocation with associated greater tuberosity fracture is common with poor long term patient reported outcomes. Our results demonstrate there is a high rate of neurological deficits at presentation with the majority resolving spontaneously. Recurrent instability is rare. Late tuberosity fragment displacement occurs in 18% of patients and regular follow-up for 6 weeks is recommended to detect this.



P20. Long term follow-up (14-25 years) of patients treated with closed reduction, splinting and early movement for simple dislocation of the elbow

Category: Shoulder and Elbow

Presentation: Oral

Thomas Mackinnon (Imperial College Healthcare NHS Trust) , Edward Hayter (Imperial College Healthcare NHS Trust) , Thomas Samuel (Imperial College Healthcare NHS Trust) , George Lee (Imperial College Healthcare NHS Trust) , Daniel Huntley (Imperial College Healthcare NHS Trust) , John Hardman (Imperial College Healthcare NHS Trust) , Raymond Anakwe (Imperial College Healthcare NHS Trust)

Background

We have previously reported on the medium-term outcomes following a non-operative protocol of a short period of splinting followed by early movement to treat simple dislocations of the elbow.

We undertook extended follow up of our original patient study group to determine whether the excellent results previously reported were maintained in the very long-term. A secondary question was to determine the rate and need for any late surgical intervention.

Methods

We attempted to contact all patients in the original patient study group. Patients were requested to complete the Oxford elbow score (OES), the Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire and a validated patient satisfaction questionnaire. Patients were requested to attend a face-to-face assessment where they underwent a clinical examination including neurovascular assessment, range-of-motion and an assessment of ligamentous stability.

Results

Seventy-one patients (65%) from the original patient study group agreed to participate in the study.

The mean duration of follow-up was 19.3 years. At final follow-up patients reported excellent functional outcome scores and a preserved functional range of movement in the injured elbows. The mean DASH score was 5.22 points and the mean Oxford Elbow Score was 91.6 points. The mean satisfaction score was 90.9 points.

Conclusions

Our study shows that the excellent outcomes following treatment with a protocol of a short period of splinting and early movement remain excellent and are maintained into the very long term. These findings support our hypothesis that this treatment protocol is appropriate and suitable for most patients with simple dislocations of the elbow. The role for primary ligamentous repair for this patient group should be carefully considered. Work to more clearly define the anticipated benefits of surgery for specific patient groups or injury patterns would help to support informed decision making.



P21. Transcoracoid drilling for coracoclavicular ligament reconstructions in patients with acromioclavicular joint dislocations result in eccentric tunnels

Category: Shoulder and Elbow

Presentation: Oral

Maketo Molepo (Molepo Orthopaedics Inc) , Erik Hohmann (Burjeel Hospital for Advanced Surgery & University of Pretoria) , Sinmiloluwa Oduoye (University of Pretoria) , Jolandie Myburgh (University of Pretoria) , Reinette van Zyl (University of Pretoria) , Natalie Keough (UP)

None

This study aimed to describe the morphology of the coracoid process and determine the frequency of commonly observed patterns. The second purpose was to determine the location of inferior tunnel exit with superior based tunnel drilling and the superior tunnel exit with inferior based tunnel drilling.

Materials and Methods

A sample of 100 dry scapulae for the morphology aspect and 52 cadaveric embalmed shoulders for tunnel drilling were used. The coracoid process was described qualitatively and categorized into 6 different shapes. A transcoracoid tunnel was drilled at the centre of the base. Twenty-six shoulders were used for the superior-inferior tunnel drilling approach and 26 for the inferior-superior tunnel drilling approach. The distances to the margins of the coracoid process, from both the entry and exit points of the tunnel, were measured.

Results

Eight coracoid processes were of convex shape, 31 of hooked shape, 18 of irregular shape, 18 of narrow shape, 25 of straight shape, and 13 of wide shape. The mean difference for the distances between superior entry and inferior exit from the apex was Powered by Editorial Manager® and ProduXion Manager® from Aries Systems Corporation 3.65+3.51mm (p=0.002); 1.57+2.27mm for the lateral border (p=0.40) and 5.53+3.45mm for the medial border (p=0.001). The mean difference for the distances between inferior entry and superior exit from the apex was 16.95+3.11mm (p=0.0001); 6.51+3.2mm for the lateral border (p=0.40) and 1.03+2.32 mm for the medial border (p=0.045).

Conclusion

The most common coracoid process shape observed was a hooked pattern. Both superior to inferior and inferior to superior tunnel drilling directed the tunnel from a more anterior and medial entry to a posterior-lateral exit. Superior to inferior drilling resulted in a more posteriorly angled tunnel. With inferior to superior tunnel drilling cortical breaks were observed at the inferior and medial margin of the tunnel.



P22. Shoulder and elbow function following antegrade humeral nailing and plate fixation in middle third humeral shaft fractures

Category: Shoulder and Elbow

Presentation: Oral

Jason Du Plessis (University of the Witwatersrand. Department of Orthopaedic Surgery, CMJAH) , Nabeela Kazeem (University of the Witwatersrand) , Ashleigh Lewis (University of the Witwatersrand. Department of Orthopaedic Surgery, CMJAH) , Stiaan Steyn (University of the Witwatersrand. Department of Orthopaedic Surgery, CMJAH) , Susan Van Deventer (University of the Witwatersrand. Department of Orthopaedic Surgery, CMJAH)

Background

The choice of whether to perform antegrade intramedullary nailing (IMN) or plate fixation (PF) poses a conundrum for the surgeon who must strike the balance between anatomical restoration while reducing elbow and shoulder functional impairment. Most humeral middle third shaft fractures are amenable to conservative management given the considerable acceptable deformity and anatomical compensation by patients. This study is concerned with the patient reported outcomes regarding shoulder and elbow function for IMN and PF respectively.

Methods

A prospective cohort study following up all the cases treated surgically for middle third humeral fractures from 2016 to 2022 at a single centre. Telephonically an analogue pain score, an American Shoulder and Elbow Society (ASES) score for shoulder function and the Oxford Elbow score (OES) for elbow function were obtained.

Results:

One hundred and three patients met the inclusion criteria. Twenty four patients participated in the study, fifteen had IMN (62.5%) and nine had PF (37.5%). The shoulder function outcomes showed no statistical difference with an average ASES score of sixty-six for the IMN group and sixty-nine for the PF group. Women and employed individuals expressed greater functional impairment. Hand dominance has no impact on the scores of elbow and shoulder function post operatively.

The impairment of abduction score post antegrade nailing was higher in the antegrade nailing group than the plated group. The OES demonstrated greater variance in elbow function in the PF group with the IMN group expressing greater elbow disfunction.

Conclusion:

This study confirms that treatment of middle third humerus shaft fractures by plate fixation is marginally superior to antegrade intramedullary nailing in preserving elbow function and abduction ability.



P23. The prevalence and profile of African patients with os acromiale that present with shoulder pain at a tertiary hospital in Pretoria, South Africa.

Category: Shoulder and Elbow

Presentation: Oral

Nthambeleni Priscilla Mulaudzi (SMU) , NL Mzayiya (SMU) , PA Rachuene (UP)

Introduction

Os acromiale is a developmental defect caused by failure of fusion of the anterior epiphysis of the acromion between the ages of 22 and 25. The prevalence of os acromiale in the general population ranges from 1.4% to 15%. Os acromiale has been reported as a contributory factor to shoulder impingement symptoms and rotator cuff injuries, despite being a common incidental observation. In this retrospective study, we examined the prevalence of os acromiale in black African patients with shoulder pain.

Methods

We retrospectively reviewed the clinical records, radiographs, and magnetic resonance imaging (MRI) scans of 119 patients who presented with atraumatic and minor traumatic shoulder pain at a single institution over a one-year period. Anteroposterior, scapula Y-view, and axillary view plain images were initially evaluated for the presence of os acromiale, and this was corroborated with axial MRI image findings. Patients with verified os acromiale had their medical records reviewed to determine their first complaint and the results of their clinical examination and imaging examination.

Results

Radiographs and MRI on 24 patients (20%) revealed an osacromiale. This cohort had a mean age of 59.2 years, and there were significantly more females (65%) than males. Meso-acromion was identified as the most prevalent type (n=11), followed by pre-os acromion (n=7). All patients underwent bilateral shoulder x-rays, and 45 percent of patients were found to have bilateral meso-acromion. Most patients (70%) were reported to have unstable os acromiale with subacromial impingement symptoms, and nine patients (36%) had confirmed rotator cuff tears based on clinical and MRI findings. Surgery was necessary for 47% of the 24 patients with confirmed

OS acromiale (arthroscopic surgery, n=7; open surgery, n=1) in order to treat their symptoms

Conclusion
The prevalence of os acromiale in our African patients with atraumatic shoulder symptoms is greater than that reported in the general population. Os acromiale is a rare condition that should always be considered when evaluating shoulder pain patients.



P24. The efficacy of the BiPOD method, using an artificial LARS® ligament, in reducing Acromioclavicular joint injuries; a retrospective case series.

Category: Shoulder and Elbow

Presentation: Oral

Renier Kriel (Institute of Orthopaedics and Rheumatology, Stellenbosch, Winelands MediClinic) , Joe de Beer (Institute of Orthopaedics and Rheumatology, Stellenbosch, Winelands MediClinic)

Background:

Acromioclavicular joint injuries are one of the most common injuries in the shoulder girdle complex. Surgical management is considered based on patient profile, level of activity, pain, and classification of injury. To date, a vast array of surgical techniques have been proposed and described in the literature, a possible reason being that the optimal solution is still uncertain. The aim of this study is to determine the efficacy of an alternative surgical technique.

Methods:

This study is a retrospective case series of 80 patients that have been operated by a single surgeon over a period of 6 years. A novel surgical technique, the 'BiPOD method', was applied where a synthetic artificial ligament (LARS®) is used to reconstruct and reduce the acromioclavicular joint.

The technique is done in a reproducible manner, where a single continuous artificial ligament is used to reduce and reconstruct both, the coracoclavicular and acromioclavicular ligament complexes to achieve bidirectional stability. Patients were followed-up postoperatively, either clinically where possible or telephonically. The Acromioclavicular Joint Instability Score (ACJI) and radiographic measurements were used to determine the clinical and surgical outcome of the surgery.

Results:

Radiographic parameters, measuring the reduction of the coracoclavicular- and acromioclavicular joint, were analysed and documented. The results showed marked improvement in both, the coracoclavicular distance and acromioclavicular distance. Clinically, using the ACJI scoring system, the patients reported substantial improvement in pain and function. Complications were recorded but were insignificant.

Conclusion:

The BiPOD surgical technique, making use of an artificial LARS® ligament, has proven acceptable outcomes in the surgical management of acromioclavicular joint dislocations.



P25. Arthroscopic and radiographic findings at time of Latarjet screw removal. GT12.

Category: Shoulder and Elbow

Presentation: Oral

Rimon du Plessis, (UCT South Africa), Stephen Roche (UCT South Africa), Jean-Pierre du Plessis, (UCT South Africa), Roopam Dey, (UCT South Africa) Wybrand de Kock (UCT South Africa), Jape de Wet (UCT South Africa).

Background

The Latarjet procedure is a well described method to stabilize anterior shoulder instability. There are concerns of high complication rates, one of these being a painful shoulder without instability due to screw irritation. The arthroscopic changes in the shoulder at time of screw removal compared to those pre-Latarjet have not been described in the literature.

Methods

We conducted a retrospective review of arthroscopic videos between 2015 and 2022 of 17 patients at the time of their Latarjet screw removal and where available (n=13) compared them to arthroscopic findings at time of index Latarjet. Instability was an exclusion criterion. X-rays prior to screw removal were assessed independently by two observers blinded to patient details for lysis of the graft. Arthroscopic assessment of the anatomy and pathological changes were made by two shoulder surgeons via mutual consensus. An intraclass correlation coefficient (ICC) was analyzed as a measure for the inter-observer reliability for the radiographs.

Results

Our cohort had an average age of 21.5 ± 7.7 years and an average period of 16.2 ± 13.1 months between pre- and post-arthroscopy. At screw removal all patients had an inflamed subscapularis muscle with 88% associated musculotendinous tears and 59% had a pathological posterior labrum. Worsening in the condition of subscapularis muscle (93%), humeral (31%) and glenoid (31%) cartilage was found when compared to pre-Latarjet arthroscopes. Three failures of capsular repair were seen, two of these when only one anchor was used. X-ray review demonstrated 79% of patients had graft lysis. Excellent inter-rater reliability was observed with an ICC value of 0.82.

Conclusion

Our results show a high rate of pathological change in the subscapularis muscle, glenoid labrum and articular cartilage in the stable but painful Latarjet. 79% of patients had graft lysis with prominent screws on X-ray.



P26. The musculoskeletal profile of female adolescent elite water polo players and the factors affecting throwing performance.

Category: Shoulder and Elbow

Presentation: Oral

Janine Gray (UCT ORU) , Lianne Verwey (Department of Physiotherapy UCT) , Roopam Dey (Human Biology UCT ORU) , JP du Plessis (UCT ORU) , Basil Vrettos (UCT ORU) , Stephen Roche (UCT ORU)

Background

The musculoskeletal (MSK) profiles of water polo players and other overhead athletes has been shown to relate to injury and throwing performance (TP). There have been no robust studies conducted on the MSK profiles and the variables affecting TP amongst female, adolescent, elite water polo players.

Methods

A prospective quantitative cohort design was conducted amongst eighty-three female adolescent, elite water polo players (range 14-19 years). All participants filled out the Kerlan-Jobe Orthopaedic Clinic questionnaire, followed by a battery of screening tests aimed to identify possible MSK factors affecting TP. Pain provocation tests, range of motion (ROM), upward scapula rotation (USR), strength and pectoralis minor length measurements were all included. Participants also performed throwing speed (TS) and throwing accuracy (TA) tests.

All the data collected were grouped together and analysed using SPSS 28.0. The condition for statistical significance was set as $p < 0.05$. Multi-collinearity was tested for among variables to find out inter-variable correlations. Finally, a multiple regression analysis was performed.

Results

The mean KJOC score was 82.55 ± 14.96 . 26.5% tested positive for at least one of the impingement tests. The MSK profile revealed decreased internal rotation ROM, increased external rotation ROM, a downwardly rotated scapula, weak external rotators, weak serratus anterior strength, strong lower trapezius and gluteus medius strength and a shorter pectoralis minor length all on the dominant side.

Age, pectoralis minor length, upper trapezius and serratus anterior strength as well as upward scapula rotation were all positively correlated with TS, while sitting height, upper trapezius and serratus anterior strength and glenohumeral internal rotation ROM were positively correlated with TA.

Conclusion

Multiple MSK parameters were found to be related to TS and TA in elite, adolescent water polo players.



P27.Epidemiological Data review of Primary Reverse Total Shoulder Arthroplasty from at a Single Tertiary Academic Hospital in South Africa: A Four-Year Retrospective Review

Category: Shoulder and Elbow

Presentation: Oral

Sarah Swartbooi (Chris Hani Baragwanath Academic Hospital)

Background

Reverse Total shoulder arthroplasty (RTSA) was initially introduced to treat rotator cuff arthropathy. With proven successful long-term outcomes, it has gained a noteworthy surge in popularity with its indications consequently being extended to treating various traumatic glenohumeral diseases.

Several countries holding national registries remain a guide to the use the prosthesis, however a notable lack of epidemiological data still exists. More so in South Africa where the spectrum of joint disease related to communicable diseases such as HIV and tuberculosis may influence indications and patient demographics. By analysing the epidemiology of patients who underwent RTSA at our institution, we aimed to outline the local disease spectrum, the patients afflicted and indications for surgery.

Methods

A retrospective review of all patients operated within the sports unit between 1 January 2019 and 31 December 2022 was conducted. An analysis of the epidemiological data pertaining to patient demographics, diagnosis, indications for surgery and complications were recorded.

Results

Included in the review were 58 patients who underwent primary RTSA over the 4-year period. There were 41 females and 17 male patients, age <55 years (n= 14) >55 years (n=44). The indications included 23 rotator cuff arthropathy (40%), 12 primary glenohumeral osteoarthritis (OA) (20%), 10

avascular necrosis (AVN) humeral head (17%), 7 inflammatory OA (12%), 4 chronic shoulder dislocation (7%) and 2 sequelae of proximal humerus fractures (4%).

Conclusion

The study revealed RTSA being performed in patients older than 55 years of age, the main pathologies included rotator cuff arthropathy and primary OA, however AVN and shoulder dislocations secondary to trauma contributed significantly to the total tally of surgeries undertaken.

This highlights the disease burden of developing countries contributing to patients presenting for RTSA



P29. Extended gram-negative cover antibiotic prophylaxis in orthopaedic trauma surgery: Is it time to reconsider current practice?

Category: Infection

Presentation: Oral

Jerry Tsang (Division of Orthopaedic Surgery, University of Stellenbosch) , Nando Ferreira (Division of Orthopaedic Surgery, University of Stellenbosch) , Adrian Jansen van Rensburg (Division of Orthopaedic Surgery, University of Stellenbosch) , Rudolph Venter (Division of Orthopaedic Surgery, University of Stellenbosch) , Gadi Epstein (Division of Orthopaedic Surgery, University of Stellenbosch)

Background: Gram-negative organisms are increasingly seen as causative pathogens in orthopaedic fracture surgery, which might necessitate a change in antibiotic prophylaxis protocols.

Methods: A single-centre retrospective review of antibiogram results from all patients treated for fracture-related infection (FRI) was conducted. Subgroup analysis was undertaken to identify any host, injury or treatment variables predisposed to Gram-negative infection.

Results: The bacteriological results of 267 patients who underwent surgical treatment for FRI were analysed. Pathogens were isolated in 216 cases (81%), of which 118 (55%) were Gram-negative infections. Fractures involving the tibia and femur ($p=0.007$), the presence of soft tissue defect ($p=0.003$) and bone defects ($p=0.001$) were associated with an increased risk of developing a Gram-negative FRI.

Conclusion: Gram-negative fracture-related infections were associated with injuries experiencing bone loss and those requiring soft tissue reconstruction. It is, therefore, prudent to consider extended Gram-negative directed antimicrobial prophylaxis in these cases to prevent the development of fracture-related infection



P30. Microbiological epidemiology at Chris Hani Baragwanath Academic Hospital: Poly-microbial osteomyelitis analysis

Category: Infection

Presentation: Oral

Tiego Hlapolosa (Wits University orthopaedics) , Paul Kgagudi (Wits University orthopaedics) , Maxwell Jingo (Wits University orthopaedics)

Background

Most patients treated at our clinical setting present during chronic osteomyelitis stage, which is anecdotally likely to be poly-microbial. Adults with poly-microbial infection have a predilection for gram-negative bacteria and anaerobes, a scenario that hypothetically leads to a higher morbidity of poly-microbial osteomyelitis following trauma. Our study looks into the epidemiology of poly-microbial osteomyelitis treated at our Tumour and Infection unit.

Methods

Retrospective study of patients treated for osteomyelitis from 2016 to 2020. Records of eligible patients were retrieved for examination. Demographics such as age, sex and race were recorded. Clinical presentation, organisms cultured, including their anti-microbial sensitivities were documented.

Results

There were 63 participants in the study. 31 (49.21%) had mono-microbial osteomyelitis with 32 (50.79%) having poly-microbial osteomyelitis. Majority of the poly-microbial patients presented with a sinus (68.75%) mostly located in the tibia (50%).

Multiple mixed pathogens (both gram-positive and gram-negative) were cultured in our patients and this comprised 71.21% of the total bacteria cultured. Staphylococcus Aureus was the commonest bacteria (30%) isolated, followed by Enterococcus faecalis (12%). The commonest gram-negative bacteriae cultured was Enterococcus cloacae (10%) followed by Acinetobacter baumannii (7%). Most enterobacteriaceae species were sensitive to Ertapenem and Ceftazidime.

Conclusion

A slightly higher incidence of poly-microbial osteomyelitis was found in our study than that reported in literature. Furthermore, our study demonstrated a wide variety of organisms found in poly-microbial osteomyelitis, with a large contribution made by gram-negative anaerobic rod-shaped bacteria



P31. Short-term Celecoxib Promotes Bone Formation Without Compromising Antibiotic Efficacy in Early Orthopaedic Device-Related Infection: Evidence from a Rat Model

Category: Infection

Presentation: Oral

Vuyisa Mdingi (University of KwaZulu Natal) , Lena Gens (AO Research Institute Davos) , Karen Mys (AO Research Institute Davos) , Stephan Zeiter (AO Research Institute Davos) , Leonard Marais (University of KwaZulu Natal) , Geoff Richards (AO Research Institute Davos) , Fintan Moriarty (AO Research Institute Davos) , Marco Chittò (AO Research Institute Davos)

Background: We investigated the effects of non-steroidal anti-inflammatory drugs (NSAIDs) with different cyclooxygenase (COX) selectivity on orthopaedic device-related infections (ODRIs) in a rat model. We aimed to measure the impact of NSAID therapy on bone changes, bacterial load, and cytokine levels after treatment with antibiotics. We also compared the effects of long vs short-term celecoxib (a COX-2 inhibitor) treatment on the same outcomes.

Method: Skeletally mature female Wistar rats were implanted with Staphylococcus epidermidis- contaminated polyetheretherketone (PEEK) screws in the proximal right tibia and monitored for 7 days. All animals received subcutaneous antibiotics (rifampicin plus cefazolin) for two weeks from day 7 to 21. In phase I of the study, rats were randomly assigned to receive 28 days of oral treatment with acetylsalicylic acid, ibuprofen, celecoxib, or vehicle control. In phase II, an additional group received seven days of celecoxib treatment from day 0 to 7. Bone changes were monitored using in vivo micro-CT and histology. Quantitative bacteriology was performed at euthanasia. Plasma samples were collected to measure cytokine levels on days 0, 6, 20, and 28.

Results: Combination antibiotic therapy resulted in treatment success in 85.71% of cases, while the addition of long-term celecoxib treatment reduced it to 45.45%. Long-term celecoxib treatment significantly reduced bone loss (33.85% mean difference [95% CI 14.12-53.58], $p=0.0004$ on day 6 bone fraction) and periosteal reaction (0.2760 μm mean difference [95% CI 0.2073-0.3448], $p<0.0001$ on day 14 periosteal thickness) during early infection compared to the control group. Short-term celecoxib treatment showed similar radiological results without a reduction in treatment success (88.9%). No differences in the inflammatory markers were observed.

Conclusion: Our findings highlight the potential benefits of short-term use of celecoxib in improving bone fraction during the early post-infection period without impairing the efficacy of antibiotic therapy



P32. Shoulder septic arthritis in paediatrics and adolescents: a retrospective review of clinical presentation, bacteriological profile and outcomes. GT10

Category: Infection

Presentation: Oral

Nyiko Mukansi (University of Pretoria)

Introduction: Shoulder septic arthritis is uncommon and frequently misdiagnosed, resulting in severe consequences. This study evaluated the demographics, bacteriological profile, antibiotic susceptibility, treatment regimens, and clinical outcomes.

Materials and methods: This is a 10-year retrospective observational analysis of 30 patients (20 males and 10 females) who were treated for septic arthritis of the shoulder. The data collecting process utilised clinical records, laboratory archives, and x-ray archives. We gathered demographic information, pre- and post-intervention clinical data, serum biochemical markers, and the results of imaging examinations. All patients had a surgical arthrotomy and joint debridement in the operating room, and specimens were taken for culture and sensitivity testing. The specimens were cultivated for at least seventy-two hours. Shoulder joint ranges of motion, comorbidities, and the presence of osteomyelitis were assessed clinically to determine the outcome. All statistical analyses were conducted using the STATA 17 statistical software. Analysis of correlation between categorical variables was performed using the chi-squared test.

Results: The majority of the study patients were black Africans (97%). The age range of the group was from 8 days to 17 years. At presentation, 33% of patients had a low-grade fever, whereas the majority (60%) had normal body temperature. The average length of symptoms was 3.9 days (ranged from 1 day to 15 days), and the majority of patients had an increased white cell count (83%) and C-reactive protein (98%). There was accumulation of fluid in the joint of all individuals who received shoulder ultrasound imaging. We noted a significant incidence of gram-positive cocci, which were mostly susceptible to first-line antibiotics. Shoulder stiffness affected 63% of patients and chronic osteomyelitis affected 50% of individuals. Neither the severity nor the duration of the symptoms was related to an increased risk of osteomyelitis.

Conclusion:

The results of this study revealed that the clinical characteristics and bacterial profile of septic arthritis of the shoulder conform to typical patterns. The likelihood of osteomyelitis and an unfavourable prognosis is considerable.



P33. Microbial contamination of cellphones of health care worker in the orthopaedic department at a tertiary institute in Gauteng

Category: Infection

Presentation: Oral

Yenziwe Ngema (Witswatersrand University) , Solomon Ndou (Witwatersrand University) , Jurek Pietrzak (Witwatersrand University) , Khodiseni Sikhauli (Witwatersrand University)

Background: The role that fomites have to play in surgical site infection (SSI) and periprosthetic joint infection (PJI) has been observed and researched in the past. However the role that cellphones play in the transfer of microorganisms from hands to surgical sites and the indiscriminate use of cellphones within the Orthopaedics, could increase the risk of infection. This study aimed to measure the contamination of cellphones of health care workers (HCW's) in a South African tertiary hospital. Secondly was to investigate the cellphone hygiene behaviour of HCW's.

Method: A prospective cross-sectional study was conducted in June 2022. Samples were taken from the the participant's cellphones under an aseptic technique and sent for microbiology. The participants also filled out a questionnaire on cellphone behaviour . The inclusion criteria was orthopaedic HCW's working in the institution; This included nurses and doctors in the orthopaedic theatres and main orthopaedic wards.

Results: Sixty-two participants were included; 54 from Orthopaedics and 7 from Anaesthesia. From the samples, 71% grew pathogens while 30,64% grew two or more colonies. This is slightly lower than other studies which showed contamination up to 100%. Micro-organisms cultured included Staphylococcus species; S.Epidermidis, Methycillin sensitive S.aureas; and E.Coli. Cellphone hygiene behaviour was also better than most other studies in terms of frequency of cleaning the devices and hand hygiene around cellphone usage. This which may be a contributing factor to the lower micro-organism contamination.

Conclusion: This study should be the first of many as we have identified that there are indeed pathogens on cellphones transferable to patients; causing sepsis. Though cellphones have become vital in patients management in the hospital setting, factors such as improvement in cellphone hygiene through education and frequent cleaning of cellphones will aid in disabling the negative impact of cellphones in the orthopaedic environment.



P34. In patients with hand sepsis does bedside debridement compared to operating theatre debridement have similar clinical outcomes, hospital cost and time to discharge in a District Hospital setting in South Africa?

Category: Infection

Presentation: Oral

Carolien Kruger (Khayelitsha Hospital)

Hypothesis

In patients with hand sepsis does bedside debridement compared to operating theatre debridement have similar clinical outcomes, hospital cost and time to discharge in a District Hospital setting in South Africa?

Methodology

A case series of 130 adult patients presenting to a district level orthopaedic unit over 1 year with hand sepsis requiring debridement.

All included patients were debrided at the bedside (i.e. the emergency room, ward, OPD) under wrist or digital block.

Patients excluded from the study included patients with necrotising soft tissue infections that required debridement in theatre.

A cost analysis was done based on operating theatre (OT) costs saved as defined by Samuel¹ et al.

Results

If an average theatre time of 45 min is taken then the cost saved per patient is approximately R1500 and approximately R300000 for the patients included in the case series. This excludes ward and other hospital costs related to a longer hospital admission.

The mean time to discharge for the included patients was 24 hours.

Conclusion

This study suggests that bedside debridement can be a viable and cost effective option for selected cases of hand sepsis that can avoid the high cost and time associated with operating theatre debridement with similar outcomes.

This has implications for the future treatment of hand sepsis in resource constrained settings where operating theatre time is not only very expensive but also very scarce.



P35. Antibiotic targeted cement rods in chronic osteomyelitis, long term outcomes from a level one South African trauma centre. GT3.

Category: Infection

Presentation: Oral

Caterina Nicolaou (University of Witwatersrand), Allan Roy Sekeitto (University of Witwatersrand), Juan David Urrea (Universidad Del Valle Colombia) Brenda Milner (University of Witwatersrand)

Background:

Fracture related infection, in particular chronic osteomyelitis, requires complex management plans. Meta analyses and systematic reviews have not found a gold standard of treatment for this disease. In 2017 an alternative treatment protocol was undertaken in our institution; whereby staged surgery with the use of cheaply manufactured tailored antibiotic cement rods was used in the treatment of chronic osteomyelitis, secondary to traumatic long bone fractures. Short term outcomes for this protocol demonstrated a 75.7% microbiological resolution to a negative culture and a good clinical outcome of 84.2% overall was demonstrated in terms of sinus resolution, skin changes, pain and function. Our aim now was to assess the long term outcomes of this treatment strategy.

Methods:

A cross-sectional study of patients who had previously undergone the set treatment protocol was performed. Patient satisfaction, effects on activities of daily living, return to work and clinical improvement at 5 years following the intervention were assessed using a patient questionnaire and the validated AAOS lower limb score.

Results:

The average AAOS lower limb score was 88 which was en par to other similar studies. 80% of patients had returned to some form of work. Ongoing mild pain was a persistent problem for 50% of the patients however 98% of the patients were overall satisfied with the treatment satisfaction at 5 years. Only 1 patient required further treatment. 8 patients could not be located for follow up.

Conclusion:

Chronic osteomyelitis remains a complex disease to treat. This treatment protocol demonstrates favourable microbiological, serological and clinical short term outcomes and favourable patient satisfaction and functional long term outcomes at 5 years. Our study highlights antibiotic targeted cement rods as a feasible treatment option in managing chronic osteomyelitis.



P36.Critical bone defect affecting the outcome of management in anatomical type IV chronic osteomyelitis

Category: Infection

Presentation: Oral

Jerry Tsang (Tygerberg Hospital, University of Stellenbosch), Gadi Epstein (Tygerberg Hospital, University of Stellenbosch), Nando Ferreira (Tygerberg Hospital, University of Stellenbosch)

Background:

The Cierny and Mader classification assists with decision-making in the management of osteomyelitis by stratifying the host status and the pathoanatomy of disease. However the anatomical type IV represents a heterogeneous group with regards to treatment requirements and outcomes. We propose that modification of the Cierny and Mader anatomical classification with an additional type V classifier (diffuse corticomedullary involvement with an associated critical bone defect) will allow more accurate stratification of patients and tailoring of treatment strategies.

Methods:

A retrospective review of 83 patients undergoing treatment for Cierny and Mader anatomical type IV osteomyelitis of the appendicular skeleton at a single centre was performed.

Results:

Risk factors for the presence of a critical bone defect were female patients (OR 3.1 (95% CI 1.08- 8.92)) and requirement for soft tissue reconstruction (OR 3.35 (95% CI 1.35-8.31)); osteomyelitis of the femur was negatively associated with the presence of a critical bone defect (OR 0.13 (95% CI 0.03-0.66)). There was no statistical significant risk of adverse outcomes (failure to eradicate infection or achieve bone union) associated with the presence of a critical-sized bone defect. The median time to bone union was ten months (95% CI 7.9-12.1 months). There was a statistically significant difference in the median time to bone union between cases with a critical bone defect (12.0 months (95% 10.2-13.7 months)) and those without (6.0 months (95% CI 4.8-7.1 months))

Conclusion:

This study provided evidence to support the introduction of a new subgroup of the Cierny and Mader anatomical classification (Type V). Using a standardised approach to management, comparable early outcomes can be achieved in patients with Cierny and Mader anatomical type V osteomyelitis.

However, to achieve a successful outcome, there is a requirement for additional bone and soft tissue reconstruction procedures with an associated increase in treatment time.



P37. Improving the diagnosis of spinal tuberculosis and our understanding of its pathophysiology and interaction with HIV-1 co-infection

Category: Infection

Presentation: Oral

Robyn Waters (University of Cape Town) , Michael Held (University of Cape Town) , Robert Dunn (University of Cape Town) , Maritz Laubscher (University of Cape Town) , Anna Coussens (Walter and Eliza Hall Institute) , Nawaal Adikary (University of Cape Town)

BACKGROUND: Specific and rapid detection methods for spinal tuberculosis, with sufficient sensitivity in HIV-1 co-infected individuals, are needed, to ensure early initiation of appropriate treatment to prevent physical disability and neurological fallout. In addition, understanding the systemic and local pathophysiology of spinal tuberculosis, and its interaction with HIV-1 infection, is crucial to guide future therapeutic interventions.

METHODS: We prospectively enrolled adult patients presenting with signs and symptoms of suspected spinal tuberculosis, at Groote Schuur Hospital, between November 2020 and December 2021. TB diagnostic testing was performed on open and CT-guided spinal biopsies using Xpert MTB/RIF Ultra compared to gold standards TB culture and histology. A highly sensitive droplet digital PCR assay for detecting and quantifying *Mycobacterium tuberculosis* complex (MTBC) and HIV-1 DNA was tested. Plasma inflammatory proteins were measured to assess systemic inflammation.

RESULTS: Xpert Ultra had a high sensitivity of 94.7% and specificity of 100% for STB against TB culture and histology in both open and CT-guided biopsy samples. The ddPCR assay confirmed TB detection in 94% of patients with positive Xpert Ultra results. Four patients with negative TB diagnostic results had MTBC DNA detected by ddPCR. HIV-1 DNA was detected in the spinal tissues from all HIV-1-infected patients. MTBC DNA levels were significantly higher in HIV-1-co-infected spinal tissue samples ($p < 0.01$). We identified four biomarkers significantly associated with higher bacterial burden at the disease site ($p < 0.01$).

CONCLUSIONS: Xpert Ultra and MTBC ddPCR improve the detection of STB. DdPCR can be utilized as an additional, highly sensitive tool for detecting and quantifying Mtb, in pathological samples that may be paucibacillary. These findings provide novel diagnostic and pathophysiologic insight into STB, in the context of HIV-1 infection, and provide rationale to include these tests in hospital and research settings for patients from communities burdened by TB and HIV-1.



P38. Primary Malignant Bone Tumours: Epidemiological data from Pretoria, South Africa. GT6

Category: Oncology and Limb reconstruction

Presentation: Oral

Johan du Preez (University of Pretoria, South Africa), Jannes Meijer (Private South Africa), Theo le Roux (University of Pretoria, South Africa)

Primary malignant bone tumours are a scarce entity with limited population-based data from developing countries. The aim of the study is to investigate the frequency and anatomical distribution of primary malignant bone tumours in a local South African population. This will be an epidemiological retrospective study. Data will be used of patients that were diagnosed with primary malignant bone tumours over a period of nine years spanning from 1 January 2014 to 31 December 2022. This data will be received from private and government laboratories. Data to be considered are type of primary malignant bone tumours diagnosed, incidence of primary malignant bone tumours over a period of nine years and the most common anatomical sites of primary malignant bone tumours. The rationale behind our study is to assess the frequency of different primary malignant bone tumours in another geographic area of South Africa and to compare these findings to local and international literature. With a projected increase in diagnosis of primary malignant bone tumours in developing countries it is important to have more available data about primary malignant bone tumours from these areas to have a better understanding of these conditions and to understand the impact of the burden they impose on healthcare systems so that management of these conditions can also be improved. Preliminary results show that 23.83% of primary malignant bone tumours occurred in the age group 0-24 years of age, 49.22% in the 25-59 age group and 26.95% in the 60+ age group. The most common tumour that occurred was chondrosarcoma (49.21%) followed by osteosarcoma (41.80%) then Ewing's sarcoma (4.69%) and lastly chordoma (4.30%). From the 256 samples that met the inclusion criteria the five most common anatomical sites were distal femur (63), proximal tibia (41), proximal humerus (38), pelvis (34) and proximal femur (20).



P39. Factors associated with dissemination and complications of acute bone and joint infections in children

Category: Paediatrics

Presentation: Oral

Vuyisa Mdingi (University of KwaZulu Natal) , Pieter Maré (University of KwaZulu Natal) , Leonard Marais (University of KwaZulu Natal)

Background

Paediatric bone and joint infections remain common in low- and middle-income countries (LMICs). We aimed to determine the complication rate and incidence of disseminated infection in paediatric bone and joint infections in an LMIC setting. Secondly, we aimed to elucidate factors associated with complications and disseminated disease.

Methods

We retrospectively reviewed our database for children that presented with bone and joint infections between September 2015 and March 2019. Data were extracted to identify factors that were associated with development of complications and disseminated infection.

Results

We analysed 49 children. The median age at presentation was 6 years (range 1 month to 12 years). Locally advanced disease was present in 13 children (27%). The remaining 36 children were evenly divided (18/49 each, 37%) between isolated AHOM and SA, respectively. Disseminated disease was present in 16 children (33%) and was associated with locally advanced disease, an increase in number of surgeries and an increased length of stay. Twenty-six complications were documented in 22 (45%) children. Chronic osteomyelitis developed in 15/49 (31%) cases, growth arrest in 5/49 (10%), and pathological fracture, DVT and septic shock in 2/49 (4%) each. Complicated disease was associated with locally advanced disease, a higher number of surgeries, disseminated disease and an increased length of stay. Sixty five percent of cases cultured *Staphylococcus aureus*, while 25% (12/49) were culture negative. The median time from admission to surgery was one day, and the median time from onset of symptoms to surgery was seven days.

Conclusion

We found a high complication rate. One third of patients had locally advanced disease, and this was associated with the development of complications and disseminated disease. Further studies are needed to be able to predict which children will have poor outcomes.



P40. Long-term health outcomes of paediatric multifocal musculoskeletal sepsis – a 15-year review

Category: Paediatrics

Presentation: Oral

Haemish Crawford (Starship Hospital), Anna McDonald (Starship Hospital, New Zealand), Matthew Boyle (Starship Hospital, New Zealand), Catherine Byrnes (Starship Hospital, New Zealand)

This study aimed to identify long-term physical and psychosocial health outcomes in children with overwhelming musculoskeletal sepsis.

Methods:

Children admitted to the Paediatric Intensive Care Unit (PICU) from 1st January 2002 to 31st December 2017 with a musculoskeletal focus of infection were identified. A medical notes review was completed to determine survival and morbidity. Present-day clinical assessment of the musculoskeletal and respiratory systems along with questionnaires on health-related quality of life, mental health and sleep were performed.

Results:

70 patients were identified over 15 years. Seven children died acutely (five Pasifika and two Māori children) indicating 10% mortality. Recurrence/chronic infection affected 23%. Growth disturbance affected 18%. The hip joint and proximal femur suffered the worst long-term complications. Children under 2 years most at risk of long-term disability. No patients had chronic respiratory illness beyond 90 days. Fifteen children had symptoms of acute neurological impairment, three of whom had permanent acquired brain injury. Twenty-six survivors (41%) were assessed a mean of 8.2 years (SD 4.5, range 2- 18 years) after discharge. Health-related quality of life scores were on par with normative data. All patients who underwent pulmonary function tests had normal results. Six patients and eight parents screened positive for moderate to severe post-traumatic stress disorder.

Conclusion:

Paediatric multifocal musculoskeletal sepsis can result in complex illness with multi-organ complications for some children. Māori and Pasifika children are most at risk. Children under 2 years and those with proximal femur and/or hip involvement are most likely to have chronic musculoskeletal sequelae and permanent disability. Other outcomes are favourable with no evidence of chronic lung disease or mean reduced quality of life. A period of rehabilitation for children with identified acquired brain injury should be part of discharge planning.



P41. Staphylococcal osteoarticular infections associated with blood stream infections in children: Is prolonged IV antibiotic therapy always indicated?

Category: Paediatrics

Presentation: Oral

Matthew Leppan (Mediclinic Nelspruit), Anria Horn (University of Cape Town)

Background:

Staphylococcus aureus osteo-articular infections (OAI) are frequently accompanied by blood stream infections (BSI) diagnosed by positive blood culture (BC). Microbiological protocols in adults advise prolonged intravenous antibiotics and repeat BC 48-hourly in the presence of a BSI, however evidence to support the systematic employment of these guidelines in paediatric patients is lacking. We aimed to determine whether there was an increased incidence of orthopaedic and systemic complications in patients with s aureus BSI, and whether a shorter duration of intravenous antibiotics was associated with the development of complications.

Methods

Following ethical approval, the departmental surgical database was searched for patients that underwent surgery for acute OAI over a 5-year period. Patients with no sample taken for BC were excluded, as were those with other or no organisms identified from any site. Demographic and clinical data were captured, including duration of IV antibiotics and development of complications. Statistical significance was set at $p < 0.05$

Results.

Following exclusions, 44 patients with a median age of 85 months remained to be analysed. Thirty patients (68%) had a positive BC. A positive BC was associated with a higher rate of systemic complications ($p = 0.026$) but not orthopaedic complications ($p = 0.159$). Patients who had developed any complication had a significantly longer duration of IV antibiotic treatment compared to those without complications ($p < 0.001$). The presenting CRP levels were significantly higher in patients that developed complications ($p = 0.004$).

Conclusion

Patients with staphylococcal BSI in association with an OAI are at increased risk of developing systemic complications. In our cohort, a shorter duration of antibiotic use was not associated with the development of complications, which does not support the systematic use of long courses of IV antibiotics in s aureus BSI. Further research will be required to determine the ideal protocol for these patients.



P42. Is malnutrition contributing to the severity of Supracondylar fractures in children: a retrospective review. GT13

Category: Paediatrics

Presentation: Oral

Shiksha Ragunandan, University of Pretoria South Africa, Ruan Goller (University of Pretoria, South Africa)

Background: The aims of this study was to determine the incidence of malnutrition in children with supracondylar fractures. It was hypothesised that the presence of malnutrition will increase the severity type of fractures.

Methods: The study was a retrospective, cross-sectional study at a single institution. Children between 0 years and 12 years of age, who sustained documented supracondylar fracture treated surgically as a result of low velocity trauma were included in the study. Patients who sustained high velocity trauma, who had known bone disorders or had incomplete chart data, were excluded from the study Data was captured from children's notes who have been treated surgically for supracondylar fractures from casualty, theatre and the clinic notes. The nutritional status of children and fracture grade were identified and the two sets of data were compared against each other to try to identify a possible relation between fracture severity and malnutrition. Data was analysed in STATA and 5% level of significance was used to signify statistically significant associations.

Results: 150 patients were identified and included in the study. The majority of patients reviewed were in the normal nutritional range according to their z-scores. The severity of the fracture was not only associated with a poorer nutritional status however children with high and low z-scores (over weight as well as undernourished children) had the more severe fracture patterns, while children with normal z-scores had a fracture patterns of varying severity.

Conclusion: Children who were malnourished were more likely to sustain more severe fracture types. The results highlighted the need for all children to have a good nutritional status as this may play a role in preventing more complex fractures.



P44. Delayed discharge of patients with suspected non-accidental injury

Category: Paediatrics

Presentation: Oral

Dina Simmons (CMJAH/Wits) , Anthony Robertson (CMJAH/Wits) , Brenda Milner (Wits)

Introduction

Child abuse is an essential discussion within society and poses many challenges. The international literature describes patient and family based risk factors and suspicious injuries. We have created a protocol for the identification and investigation of children with suspected non-accidental injuries. The paediatric orthopaedic ward experiences many children being delayed in the ward once fit for discharge. This study aimed to quantify those delayed discharges and describe the demographics and risk factors for abuse within the local population.

Methodology

After obtaining ethics clearance, we conducted a retrospective review of records from the Teddy Bear Clinic, as well as admission records. The study examined demographic characteristics, family background, injury characteristics and referral to Child Welfare. The delay of discharge from hospital was quantified and was compared to those characteristics.

Results

Records were collected from 1 January 2015 to 31 December 2021. Seventy-nine complete records were included. There were 40 males and 39 females with an average age of 20 months. 75.9% were under 36 months old. 94.1% of the cases sustained lower limb fractures. Fifty-two cases had a delayed discharge. The delay ranged from 1 to 233 days. There was an association between an age less than 36 months and delayed discharge. There were no significant correlations between caregiver characteristics and delayed discharge. The later the completion of investigations, the more likely there would be a delay. There was also a significant correlation between referral to Child Welfare and delayed discharge.

Discussion

Children under 36 months on this remain at highest risk for non-accidental injury. Delayed discharge was associated with age less than 36 months, upper limb fractures and referral to Child Welfare.

Despite the delayed discharge, most children returned to the same home environments



P45. Rubber Band Syndrome: a case report outlining the diagnosis and surgical management of a rare orthopaedic condition in South Africa

Category: Paediatrics

Presentation: Oral

Stephen Mattushek (Wits University) , Troye Joseph (Wits University) , Makhaya Twala (Wits University) , Kuvashan Reddy (Wits University)

Background: In Asia, traditional bands are placed around limbs of children to ward off evil spirits and ensure good health. This practice may lead to the Rubber Band Syndrome (RBS) a rare paediatric condition described mainly in Asia which results from a forgotten thread or elastic band applied to the limb of a child. Because pressure necrosis beneath the band is slow, rapid healing of tissues over the band can obscure its presence. This makes the condition difficult to diagnose and distinguish from other infective conditions. This study presents the first case of RBS reported in South Africa.

Case: The patient aged 18 months presented with a swollen hand, circumferential scar and discharging sinus on the wrist. A radiograph was negative. In theatre the volar wound was explored. Debridement revealed a yellow rubber band deep to the wrist flexors and neurovascular bundles but superficial to the extensor retinaculum. Complete removal of the rubber band and antibiotics was followed by rehabilitation with Occupational Therapy. At a 3 month follow up, there was no evidence of infection, sensation was normal and motor function of the hand restored.

Discussion: In this case, the structures through which the band had already passed were intact and overlay the band. It would appear that as the band slowly eroded the underlying structures it was followed by healing along the tract until the band exited deep to these structures. The band may come to rest on bone causing osteomyelitis if allowed to progress.

Conclusion: A high index of suspicion of RBS is needed in children presenting with a circumferential scar and a non-healing wound, especially on the wrist or ankle. Careful debridement and complete removal of the band are essential to resolve symptoms and restore function



P46. 15 years on: A Prospective Comparison of Ponseti casting vs Surgical Treatment of Clubfoot

Category: Paediatrics

Presentation: Oral

james recordon (Starship Hospital) , sue stott (Starship Hospital) , matthew Halanski (Starship Hospital) , peter mcnaair (Auckland University Technology) , mark boocock (Auckland University of Technology) , haemish crawford (Starship Hospital)

In 2010, we published results of Ponseti versus primary posteromedial release (PMR) for congenital talipes equinovarus (CTEV) in 51 prospective patients. This study reports outcomes at a median of 15 years from original treatment.

Methods: We followed 51 patients at a median of 15 years (range 13-17 years) following treatment of CTEV with either Ponseti method (25 patients; 38 feet) or PMR (26 patients; 42 feet) . Thirty-eight patientsd were contacted and 33 participated in clinical review (65%), comprising patient reported outcomes, clinical examination, 3-D gait analysis and plantar pressures.

Results: Sixteen of 38 Ponseti treated feet (42%) and 20 of 42 PMR treated feet (48%) had undergone further surgery. The PMR treated feet were more likely to have osteotomies and intra- articular surgeries (16 vs 5 feet, $p < 0.05$). Of the 33 patients reviewed with multimodal assessment, the Ponseti group demonstrated better scores on the Dimeglio (5.8 vs 7.0, $p < 0.05$), the Disease Specific Instrument (80 vs 65.6, $p < 0.05$), the Functional Disability Inventory (1.1 vs 5.0, $p < 0.05$) and the AAOS Foot & Ankle Questionnaire (52.2 vs. 46.6, $p < 0.05$), as well as improved total sagittal ankle range of motion in gait, ankle plantarflexion range at toe off and calf power generation. The primary PMR group displayed higher lateral midfoot and forefoot pressures.

Conclusion: Whilst numbers of repeat surgical interventions following Ponseti treatment and primary PMR were similar, the PMR treated feet had greater numbers of osteotomies and intra-articular surgeries. Outcomes were improved at a median of 15 years for functional data for the Ponseti method versus PMR, with advantages seen in the Ponseti group over several domains. This study provides the most comprehensive evaluation of outcomes close to skeletal maturity in prospective cohorts, reinforcing the Ponseti Method as the initial treatment of choice for idiopathic clubfeet



P47. The Fassier technique for correction of proximal femoral deformity in children with osteogenesis imperfecta

Category: Paediatrics

Presentation: Oral

Sandile Mwelase (UKZN), Pieter Maré (UKZN), Leonard Marais (UKZN), David Thompson (UKZN)

Background

Children with osteogenesis imperfecta (OI) frequently present with coxa vara (CV). Skeletal fragility, severe deformity and limited fixation options make this a challenging condition to correct surgically. Our study aimed to determine the efficacy of the Fassier technique to correct CV and determine the complication rate.

Methods

Retrospective, descriptive case series from a tertiary hospital. We retrospectively reviewed records of a cohort of eight children (four females, 12 hips) with OI (6/8 Sillence type III, 2/8 type IV) who had surgical treatment with Fassier technique for CV between 2014 and 2020.

Inclusion Criteria: All patients with CV secondary to OI treated surgically with Fassier technique.

Exclusion Criteria: Patients older than 18 years; Patients with CV treated non-operatively or by surgical technique different to Fassier technique.

Data relating to the following parameters was collected and analyzed: demographic data, pre- and postoperative neck shaft angle (NSA), complications and NSA at final follow-up.

Results

The mean age at operation was 5.8 years (range 2–10). The mean NSA was corrected from 96.8° preoperatively to 137° postoperatively. At a mean follow-up of 38.6 months, the mean NSA was maintained at 133°, and 83% (10/12) of hips had an NSA that remained greater than 120°. There was a 42% (5/12) complication rate: three Fassier–Duval rods failed to expand after distal epiphyseal fixation was lost during growth; one Rush rod migrated through the lateral proximal femur cortex with recurrent coxa vara; and one Rush rod migrated proximally and required rod revision.

Conclusion

The Fassier technique effectively corrected CV in children with moderate and progressively deforming OI. The deformity correction was maintained in the short term. The complication rate was high, but mainly related to the failed expansion of the Fassier–Duval rods.



P48.Genetic testing in the Orthopaedic clinic

Category: Paediatrics

Presentation: Oral

Shahida Moosa (Stellenbosch University/Tygerberg Hospital)

Background: Medical Genetics is a transversal discipline with the potential to impact on every specialty and subspecialty in medicine and the allied health sciences. The completion of the human genome project resulted in technical advancements in genomics, genomic testing and our understanding of genetic disorders in general. These advancements have greatly enhanced our understanding of the role of genetics in Orthopaedic practice, with respect to both monogenic and complex disorders. Tygerberg Hospital is currently the only state hospital in South Africa to support genetic testing in the form of gene panels as part of routine care. This is complemented by more comprehensive research testing in the form of exome and genome sequencing as part of the Undiagnosed Disease Programme.

Methods: We audit the genetic and genomic testing done on patients referred from the Orthopaedic clinic over a period of 3 years (2020-2022) and review diagnostic rates and interesting results.

Results: The largest group of patients referred (n=50) had a clinical diagnosis of osteogenesis imperfecta (OI). A 100% diagnostic yield was achieved for these patients with the identification of recurring variants (FKBP10, COL1A2). Further families (n=20) with much rarer conditions are presented with important implications on the orthopaedic and medical management, prognosis, and genetic counselling for the families.

Conclusions: We highlight the impact of genomic testing in the Orthopaedic clinic. Management changes and precision orthopaedic intervention were only possible due to a genetic diagnosis. We motivate for increased access to testing, especially for younger patients presenting with complex orthopaedic phenotypes.



P49. Aetiology of Cerebral Palsy in patients undergoing orthopaedic surgery for musculoskeletal deformities.

Category: Paediatrics

Presentation: Oral

Hammaad Gamielien (University of Cape Town) , Anria Horn (University of Cape Town) , A Mentz (University of Cape Town) , D Maimin (University of Cape Town) , T Van Heerden (University of Cape Town) , M Thomas (University of Cape Town)

Background: Cerebral Palsy (CP) is a group of disorders that affect movement and posture caused by injury to the developing brain. While prematurity and low birth weight are common causes in developed countries, birth asphyxia, kernicterus, and infections have been identified as predominant aetiologies in Africa. There is, however, very little information on the aetiology of CP in South Africa. The purpose of this study was to determine the aetiology, severity, and topographical distribution of CP in children undergoing orthopaedic surgery at our tertiary paediatric unit.

Method: A retrospective folder review was performed for patients with CP that underwent orthopaedic surgery from July 2018 to June 2022. Data was collected on perinatal circumstances, aetiology or risk factors for developing CP, severity of disability as classified by the Gross Motor Function Classification Scale (GMFCS) and topographical distribution. Descriptive analysis was performed.

Results: Two-hundred-and-thirty-four patients were included in the analysis. No specific aetiology could be identified in 51 (21.9%) patients. Hypoxic ischaemic encephalopathy (HIE) accounted for 23.6% of patients and was the most common aetiology across the different categories except for patients graded as GMFCS 2, in whom prematurity was the most common aetiology. Congenital brain malformations (10.5%) and cerebral infections, including HIV encephalopathy (11.4%) were the next most frequent aetiologies, followed by prematurity (7.6%), ischaemic stroke (6.8%) and intraventricular haemorrhage (6.3%). Fifty-two percent of patients were classified as GMFCS 4 or 5. There was a predominance of quadriplegic patients (37%) compared to hemiplegics (29%), diplegics (30%) and monoplegics (4%).

Conclusion: Most patients undergoing orthopaedic surgery for musculoskeletal sequelae of CP were severely disabled quadriplegic patients in whom HIE was the predominant cause of CP. This emphasises the need for intervention at a primary care level to decrease the incidence of this frequently preventable condition.



P50: The Posterior malleolar fracture- changing concepts

Fred Louw



P51. Comparison of visual estimations of distal radius fracture radiographic parameters between different levels of orthopaedic doctors. GT15.

Category: Trauma

Presentation: Oral

Vishad Naidoo (University of the Witwatersrand, South Africa), Jason Du Plessis (University of the Witwatersrand South Africa), Brenda Milner (University of the Witwatersrand, South Africa)

Background: Distal radius fractures are common in South Africa. Accurate, decisive radiographic parameter interpretation is key in appropriate management. Digital radiographic facilities are rare in the public setting and goniometer usage is known to be low, thus, visual estimates are the primary form of radiographic assessment. Previous research associated orthopaedic experience with accuracy of distal radius fracture parameter estimation but, oftentimes, doctors treating orthopaedic patients are not experienced in orthopaedics.

Methods: A cross-sectional questionnaire including four distal radius fracture radiographs administered to 149 orthopaedic doctors at three Johannesburg teaching hospitals. Participants grouped into ranks of: consultants (n=36), registrars (n=41), medical officers (n=20) and interns (n=52). Participants visually estimated values of distal radius fracture parameters, stated whether they would accept the position of the fractures and stated their percentage of routine usage of goniometers in real practice.

Results: The registrar group was most accurate in visually estimating radial height, whilst the interns were least accurate ($p=0.0237$). The consultant, registrar and medical officer groups were equally accurate in estimating radial inclination whilst the intern group was the least accurate ($p<0.0001$). The consultant and registrar group were equally accurate at estimating volar tilt, whilst the medical officer and intern groups were least accurate ($p<0.0001$). The Gwet's AC agreement was 0.1612 ($p=0.047$) for acceptance of position of the first radiograph, 0.8768 ($p<0.0001$) for the second, 0.8884 ($p<0.0001$) for the third and 0.8064 ($p<0.0001$) for the fourth. All groups showed no difference in goniometer usage, using them largely 0-25% of practice ($p=0.1937$).

Conclusion: The study found that accuracy in visual estimations of distal radius fracture parameters was linked to orthopaedic experience but not linked to routine practice goniometer usage, which was minimal across all groups. Inter-rater agreement on acceptability of fracture position is potentially dependent on severity of deviation from acceptable parameters.



P52. Patterns of injury and treatment for distal radius fractures at a major trauma centre

Category: Trauma

Presentation: Oral

Jonathan Francis (Imperial College Healthcare NHS Trust) , Joseph Battle (Imperial College Healthcare NHS Trust) , John Hardman (Imperial College Healthcare NHS Trust) , Raymond Anakwe (Imperial College Healthcare NHS Trust)

Aims

Fractures of the distal radius are common, and form a considerable proportion of the trauma workload. We conducted a study to examine the patterns of injury and treatment for adult patients presenting with distal radius fractures to a major trauma centre serving an urban population.

Methods

We undertook a retrospective cohort study to identify all patients treated at our major trauma centre for a distal radius fracture between 1 June 2018 and 1 May 2021. We reviewed the medical records and imaging for each patient to examine patterns of injury and treatment. We undertook a binomial logistic regression to produce a predictive model for operative fixation or inpatient admission.

Results

Overall, 571 fractures of the distal radius were treated at our centre during the study period. A total of 146 (26%) patients required an inpatient admission, and 385 surgical procedures for fractures of the distal radius were recorded between June 2018 and May 2021. The most common mechanism of injury was a fall from a height of one metre or less. Of the total fractures, 59% (n = 337) were treated nonoperatively, and of those patients treated with surgery, locked anterior-plate fixation was the preferred technique (79%; n = 180).

Conclusion

The epidemiology of distal radius fractures treated at our major trauma centre replicated the classical bimodal distribution described in the literature. Patient age, open fractures, and fracture classification were factors correlated with the decision to treat the fracture operatively. While most fractures were



P53. Operative versus non-operative management of distal radius fractures in adults: a systematic review and meta-analysis of randomised controlled trials with an elderly subgroup analysis

Category: Trauma

Presentation: Oral

Katrina Bell (Edinburgh Orthopaedics), William Oliver (Edinburgh Orthopaedics), Timothy White (Edinburgh Orthopaedics), Samuel Molyneux (Edinburgh Orthopaedics), Nicholas Clement (Edinburgh Orthopaedics), Andrew Duckworth (University of Edinburgh)

Background: This systematic review and meta-analysis aimed to compare the outcome of operative and non-operative management in adults with distal radius fractures, with an additional elderly subgroup analysis. The main outcome was 12-month PRWE score. Secondary outcomes included DASH score, grip strength, complications and radiographic parameters.

Methods: Randomised controlled trials of patients aged ≥ 18 yrs with a dorsally displaced distal radius fractures were included. Studies compared operative intervention with non-operative management.

Operative management included open reduction and internal fixation, Kirschner-wiring or external fixation. Non-operative management was cast/splint immobilisation with/without closed reduction. Version 2 of the Cochrane risk-of-bias tool was used.

Results: After screening 1258 studies, 16 trials with 1947 patients (mean age 66yrs, 76% female) were included in the meta-analysis. Eight studies reported PRWE score and there was no clinically significant difference at 12 weeks (MD 0.16, 95% confidence interval [CI] -0.75 to 1.07, $p=0.73$) or 12 months (mean difference [MD] 3.30, 95% CI -5.66 to -0.94, $p=0.006$). Four studies reported on scores in the elderly and there was no clinically significant difference at 12 weeks (MD 0.59, 95% CI

-0.35 to 1.53, $p=0.22$) or 12 months (MD 2.60, 95% CI -5.51 to 0.30, $p=0.08$). There was a no

clinically significant difference in DASH score at 12 weeks (MD 10.18, 95% CI -14.98 to -5.38, $p<0.0001$) or 12 months (MD 3.49, 95% CI -5.69 to -1.29, $p=0.002$). Two studies featured only elderly patients, with no clinically important difference at 12 weeks (MD 7.07, 95% CI -11.77 to -2.37,

$p=0.003$) or 12 months (MD 3.32, 95% CI -7.03 to 0.38, $p=0.08$).

Conclusions: There was no clinically significant difference in patient-reported outcome according to PRWE or DASH at either timepoint in the adult group as a whole or in the elderly subgroup.



P54. A Review of Calcaneal Fractures Presenting to A South African Tertiary Institution

Category: Trauma

Presentation: Oral

Mzwandile Nyalungu (Wits university), Loyiso Gqamana (Wits university)

Study aims and objectives.

To identify the demographics, mechanisms of injury and treatment modalities of patients presenting at CHBAH with calcaneal fractures.

Study methods.

A retrospective study of all admitted patients with calcaneal fractures from 01 January 2018 to 31 December 2022. The data collected includes age, gender, side of injury, mechanism of injury, isolated injury versus polytrauma, open and close fractures, different treatment modalities and time to surgery. The descriptive data will be analyzed, with results presented as frequency charts, histograms, and percentages.

Study results.

A total of 98 patients showed a male predominance of 90.8% compared to 9.2% of females. The median age was 38 years, the commonest mechanism was from falls from height, accounting for 67.3% with gunshot injuries accounting for 5%. Bilateral fractures were observed in 5 patients, with similar total numbers between those isolated to the left (47) as compared to the injuries isolated to the right side (46). Calcaneus fractures associated with other injuries in polytrauma cases were observed in 17.4%, and open fractures were observed in 7 patients with 5 having occurred post gunshot injury.

A total of 48 patient required surgical treatment with the average time to surgery found to be 15 days. The surgical management varied, with open reduction and internal fixation with plate and screws in 68.7%, followed by 16.7% of patients who were treated with open reduction and internal screw fixation.

Conclusion.

Calcaneal fractures occurred frequently amongst male patients secondary to fall from height. Half of the total patient number admitted had require a surgical intervention to treat the fracture, with open reduction and internal fixation with plate and screws being the frequent mode of fixation in this population group.



P55.Understanding Hip Fracture Outcomes And Complications In The Western Cape

Category: Trauma

Presentation: Oral

Sicelo Mkhize (Registrar) , James Masters (Registrar)

Background

One of the most important sequelae to ageing is osteoporosis and subsequently hip fractures. Hip fractures are associated with major morbidity, mortality and costs. Most patients require surgery to restore mobility. Provision of surgery and its complications is poorly understood in South Africa. Our aim was to collect and report current hip fracture care at four centres in South Africa, as well as reporting surgical and general patient outcomes.

Methods:

A three year retrospective cohort at four centres will be described, focussing on provision of surgical care, mortality, types of surgery and complications.

Results:

We identified 562 patients who had surgical intervention for fragility fractures, 66% were females. Forty nine percent had open reduction and internal fixation, 28% had hemi-arthroplasty replacement whilst 23% had total hip replacements. Twenty percent of patients had operative intervention within 36 hours of presentation to the emergency department. Mortality was 9% at 30 days. The most common complications were lower respiratory infections (29%), urinary tract infections (21%) and surgical site infections (9%).

Conclusion:

This is the largest cohort of surgically treated hip fracture from South Africa. Proportions of patients receiving different surgical interventions such as THR are comparable to the broader literature.

However a number of key performance indicators such as surgery within 36 hours are challenging to meet. Given the changing demographics of South Africa, this study provides an early insight to contemporary care and may help provide direction for broader national strategies for reporting and improving hip fracture care.



P56. Orthopaedic Trauma Emergencies Done After-Hours

Category: Trauma

Presentation: Oral

Susan Van Deventer (CMJAH) , Jurek Pietrzak (CMJAH) , Ahmad Yunus Mota (CMJAH)

INTRODUCTION:

In 2019, the incidence of fractures were 178 million globally, South Africa accounting for close to 600 000 of these fractures, an 18.53% increase since 1990. South Africa does not have the public infrastructure to adequately facilitate the optimal surgical management of this burden. This forces intensive labour practices among orthopaedic surgeons, often performing complex surgeries throughout the night. There is a direct correlation between “after-hour” operations and the increase in morbidities.

METHODS:

A retrospective review of the orthopaedic surgical cases and orthopaedic surgical emergencies done at a tertiary institution in Johannesburg between 8th of August 2021 to 12th December 2022. The nature of the orthopaedic interventions, the date of booking of the surgical procedures, date of surgical procedures, as well as start and end time of the orthopaedic interventions were analysed.

“After-Hours” orthopaedic interventions were defined as interventions done between 16:00 and 07:00. Orthopaedic emergencies were defined as: Open fracture debridements, external Fixator insertion, arthrotomies, fasciotomies and the insertion of steinmann pins.

RESULTS:

1483 (27.92%) of 5310 operative cases done on the emergency board were orthopaedic cases. 1098 (74.04%) hardware-related cases and 535 (36.08%) orthopaedic emergencies were done. 854 (57.58%) cases were done “After-Hours” of which 433 (29.20%) cases were done during “Dead-Hours” (23:00-07:00). Of these 433 cases, only 173 (39.95%) were true orthopaedic emergencies.

DISCUSSION:

Although the proportion of emergencies done after hours were greater than during working hours, there is still a large proportion of intricate orthopaedic cases done between 16:00- 07:00 that should not be prioritized, due to an associated higher morbidity.

Enhanced strategic planning is advisable in future in order to prioritize complex hardware cases during working hours, and due to the burden, prioritize minor relooks and simple skin- grafts for the latter aspects of the night. A dedicated Orthopaedic Trauma theatre is recommended.



P58. Classifying open tibia and femur fractures using the Orthopaedic Trauma Society (OTS) Open Fracture Classification System in a setting with high incidence of civilian gunshot fractures.

Category: Trauma

Presentation: Oral

Zamalunga Lunga (University of Cape Town) , Maritz Laubscher (University of Cape Town) , Simon Graham (University of Oxford) , Michael Held (University of Cape Town) , Nando Ferreira (Stellenbosch University) , Ramanare Magampa (University of Cape Town) , Sithombo Maqungo (University of Cape Town)

Objectives: Open fracture classification systems are limited in their use. Our objective was to classify open tibia and femur fractures using the OTS classification system in a region with high incidence of gunshot fractures.

Methods: One hundred and thirty-seven patients with diaphyseal tibia and femur open fractures were identified from a prospectively collected cohort of patients. This database contained all cases (closed and open fractures) of tibial and femoral intramedullary nailed patients older than 18 years old during the period of September 2017 to May 2021. Exclusion criteria included closed fractures, non-viable limbs, open fractures > 48 hours to first surgical debridement and patients unable to follow up over a period of 12 months (a total of 24). Open fractures captured and classified in the HOST study using the Gustilo-Anderson classification, were reviewed and reclassified using the OTS open fracture classification system, analysing gunshot fractures in particular.

Results: Ninety percent were males with a mean age of 34. Most common mechanism was civilian gunshot wounds (gsw) in 54.7% of cases. In 52.6% of cases soft tissue management was healing via secondary intention, these not encompassed in the classification. Fracture classification was OTS Simple in 23.4%, Complex B in 24.1% and 52.6% of cases unclassified.

Conclusion: The OTS classification system was not comprehensive in the classification of open tibia and femur fractures in a setting of high incidence of gunshot fractures. An amendment has been proposed to alter acute management to appropriate wound care and to subcategorise Simple into A and B subdivisions; no soft tissue intervention and primary closure respectively. This will render the OTS classification system more inclusive to all open fractures of all causes with the potential to better guide patient care and clinical research.



P59. Prevalence of vascular injury in patients with orthopaedic trauma on the knee at Chris Hani Baragwanath Academic Hospital.

Category: Trauma

Presentation: Oral

Nangamso Mkombe (Wits), Richard Kgabo (Wits) , Nangamso Mkombe (Wits)

Background: Orthopaedic injuries in the knee are often associated with vascular injury. When these vascular injuries are missed devastating there are devastating outcomes like limb ablation. Pulse examination in these patients is not sensitive to exclude vascular injuries. That often lead to clinicians opting for Computed Tomography Angiogram (CTA) to exclude vascular. this usually leads to a burden in Radiology Department. This study aimed to evaluate the prevalence of vascular injury in patient with orthopaedic injury in the knee.

Methods: The computed tomography (CT) done in patients with distal femur fracture, knee dislocation and proximal tibia fractures were retrieved from the picture archiving and communication system (PACS). The CTs were done between June 2017 and June 2022. The computed tomography angiogram (CTA) reports were reviewed to determine cases that vascular injury.

Results: A sample size of 511 cases was collected. 386 cases were done CTA and 125 cases were not done CTA. There were 218 tibial plateau fractures, 79 knee dislocations, 72 distal metaphyseal femur fractures, 61 floating knees, 55 distal femure intraarticular and 26 proximal metaphyseal tibia fractures. The mechanisms of injury in these were gunshot, fall from standing height, fall from height, MVA, MBA, PVA and sports. Prevalance was 9.17% (47) of the total injuries in the knee. Prevalance in patients who were sent for CTA was 12.08%.

Conclusion: Routine CTA in patients with injuries in the knee is not recommended. The use of ankle brachial index may decrease the number of CTA done.

Level of Evidence: 4

Keywords: Vascular injuries, orthopaedic injuries in the knee



P60. Surgical Management of unstable sacral fractures

Category: Trauma

Presentation: Oral

Tamsanqa Mazibuko (Witwatersrand university south africa)

Background: Sacral fractures are often underdiagnosed, but are frequent in the setting of pelvic ring injuries. They are mostly caused by high velocity injuries or they can be pathological in etiology.

We sought to assess the clinical outcomes of the surgically treated unstable sacral fractures, with or without neurological deficits. unstable sacral fractures were included in the study.

Hypothesis:

Surgical treatment of sacral fractures can offer satisfactory outcomes. Methods:

Single centre, prospectively collected data, retrospective review of patients who sustained vertically unstable fractures of the sacrum who underwent surgical fixation. out of a total of 432 patients with pelvis and acetabulum injuries. fifty six patients met the inclusion criteria. 18 patients had sustained zone one injuries . 14 patients had zone 2 injuries and 10 patients had zone 3 injuries. Operative fixation was performed percutaneously using cannulated screws in 18 patients.. Open fixation of the sacrum using the anterior approach in 6 patients. Posterior approach was indicated in all 10 of the zone 3 injuries of the sacrum. While in 4 patients , combined approaches were used. 3 patients had decompression and spinopelvic fixation.

Results

Neurological deficits were present in 16% of the patients. 2 patients presented with neurogenic bladder. Of the 4 patients who had neurological deficit, 3 resolved with posterior decompression and posterior fixation. All 4 neurological deficits were due to traction or compression of the nerve roots. No hardware failures or non unions observed.

Conclusion

The rate of neurological deficit was related more to the degree of pelvic ring instability than to a particular fracture pattern. Low rates of complications and successful surgical treatment of sacral fractures is achievable. Timely accurate diagnosis mandatory



P61: Removal of retained bullets from the hip joint in civilian gunshot injuries.

Category: Trauma

Presentation: Oral

Sithombo Maqungo (University of Cape Town South Africa), Anna Antoni (University of Cape Town South Africa), Simon Graham (University of Liverpool United Kingdom), Stefan Swanepoel (University of Cape Town), Andrew Nicol (University of Cape Town), Ntambue Kauta (University of Cape Town, South Africa), Maritz Laubscher (University of Cape Town, South Africa)

Removal of bullets retained within joints is indicated to prevent mechanical blockade, 3rd body wear and resultant arthritis, plus lead arthropathy and systemic lead poisoning.

The literature is sparse on this subject, with mostly sporadic case reports utilizing hip arthroscopy. We report on the largest series of removal of bullets from the hip joints using open surgical methods.

Methods

We reviewed prospectively collected data of patients who presented to a single institution with civilian gunshot injuries that breached the hip joint between 01 January 2009 and 31 December 2022.

We included all cases where the bullet was retained within the hip joint area.

Exclusion criteria: cases where the hip joint was not breached, bullets were not retained around the hip area or cases with isolated acetabulum involvement.

Results

One hundred and eighteen (118) patients were identified. One patient was excluded as the bullet embedded in the femur neck was sustained 10 years earlier.

Of the remaining 117 patients, 70 had retained bullets around the hip joint.

In 44 patients we undertook bullet removal using the following methods: surgical hip dislocation (n = 18), hip arthrotomy (n = 18), removal at site of fracture fixation/replacement (n = 2), posterior wall osteotomy (n = 1), direct removal without capsulotomy (tractotomy) (n = 5).

In 26 patients we did not remove bullets for the following reasons: final location was extra-capsular embedded in the soft tissues (n=17), clinical decision to not remove (n=4), patients' clinical condition did not allow for further surgery (n= 4) and patient refusal (n=1).

No patients underwent hip arthroscopy.

Conclusion

With adequate pre-operative imaging and surgical planning, safe surgical removal of retained bullets in the hip joint can be achieved without the use of hip arthroscopy; using the traditional open surgical approaches of arthrotomy, tractotomy and surgical hip dislocation.



P62. Gunshot induced fracture of the proximal femur: Outcomes of management at a tertiary hospital in South Africa

Category: Trauma

Presentation: Oral

Thabo Mokoena (Stellenbosch University)

Background: Gunshot-induced fractures of the proximal femur typically present with severe comminution and bone loss. These fractures may also be associated with local damage to soft tissue, neurovascular structures and injuries to abdominal organs. The aim was to evaluate the outcomes of civilian gunshot injuries to the proximal femur at a major trauma center in South Africa

Methods: A retrospective review of all patients who sustained gunshot-induced proximal femur fractures between January 2014 and December 2017 was performed. Patients with gunshot injuries involving the hip joint, neck of femur or pertrochanteric fractures were included. Patient demographics, clinical- treatment and outcome data were collected. Results are reported as appropriate given the distribution of continuous data or as frequencies and counts.

Results: Our study included 78 patients who sustained 79 gunshot-induced proximal femur fractures. The mean age of patients was 31 ± 112 , and the majority of patients were male (93.6%). Pertrochantenteric fractures were the most common injuries encountered (73.4%). Treatment included cephalomedullary nail (60.8%), arthrotomy and internal fixation (16.4%) and interfragmentary fixation with cannulated screws (6%). One case of complete neck of femur fracture had fixation failure, which required conversion to total hip arthroplasty. The overall union rate was 69.6%, and 6.3% of patients developed a fracture-related infection in cases who completed follow-up.

Conclusion: The study shows an acceptable union rate when managing these fractures and a low risk of infection. As challenging as they are, individual approaches for each fracture and managing each fracture according to their merits yield acceptable outcomes.



P63. Civilian Gunshot Fractures of the Acetabulum

Category: Trauma

Presentation: Oral

Anna Antoni (University of Cape Town) , Kim Laubscher (University of Cape Town) , Benjamin Blankson (University of Cape Town) , Kirsty Berry (University of Cape Town) , Stefan Swanepoel (University of Cape Town) , Maritz Laubscher (University of Cape Town) , Sithombo Maqungo (University of Cape Town)

Background: Acetabulum fractures caused by civilian firearms represent a unique challenge for orthopaedic surgeons. Treatment strategies should include the assessment of infection risk due to frequently associated abdominal injuries and maintenance of joint function. Still, internationally accepted treatment algorithms are not available. The aim of the study was to increase knowledge about civilian gunshot fractures of the acetabulum by describing their characteristics and management at a high-volume tertiary hospital.

Methods: All adult patients admitted to our hospital between January 2009 and December 2022 with civilian gunshot fractures of the acetabulum were included in this descriptive retrospective study.

Results: In total our institution treated 301 patients with civilian gunshot fractures of the hip joint and pelvis during the observation period, of which 54 involved the acetabulum. Most patients were young males (88,9%) with a mean age of 29 years. Thirty patients (55,6%) had associated intraabdominal or urological injuries. Fracture patterns were mostly stable fractures with minor joint destruction amenable to conservative fracture treatment (n=48, 88,9%). Orthopaedic surgical interventions were performed in 21 patients (38,9%) with removal of bullets in contact with the hip joint via arthrotomy or surgical hip dislocation as most frequent procedures. Most patients received antibiotics on admission (n=49, 90,7%). Fracture related infections of the acetabulum were noted in six patients (11,1%) while the mortality in the study population was low with one demised patient (1,9%) due to the trauma burden.

Conclusion: Most civilian acetabulum gunshot fractures are associated with intraabdominal or urological injuries. In comparison to the literature on extremity gunshot fractures, there is an increased risk of infection in our study population. The decision for surgical wash-out and bullet removal should be based on contamination and anticipated joint destruction, while osteosynthesis or primary arthroplasty are rarely necessary for these injuries.



P64. Medium term outcomes for surgical versus non-operative treatment for Bennett's fractures of the thumb metacarpal. A matched cohort study

Category: Hands

Presentation: Oral

Joseph Battle (Imperial College Healthcare) , Jonathan Francis (Imperial College Healthcare), Vijay Patel(Imperial College United Kingdom), John Hardman (Imperial College Healthcare NHS Trust)United Kingdom, Raymond Anakwe(Imperial College Healthcare NHS Trust

Background

There is no agreement as to the superiority or specific indications for cast treatment, percutaneous pinning or open fracture fixation for Bennett's fractures of the thumb metacarpal. We undertook this study to compare the outcomes of treatment for patients treated for Bennett's fracture in the medium term.

Methods

We reviewed 33 patients treated in our unit for a Bennett's fracture to the thumb metacarpal with closed reduction and casting. Each patient was matched with a patient treated surgically. Patients were matched for sex, age, Gedda grade of injury and hand dominance. Patients were reviewed at a minimum of 5-years and 66-patients were reviewed in total. Patients were examined clinically and also asked to complete a DASH questionnaire score and the brief Michigan hand questionnaire. Follow up plain radiographs were taken of the thumb and these were reviewed and graded for degenerative change using the Eaton-Littler score.

Results

Sixty-six patients were included in the study, with 33 in the surgical and non-surgical cohorts respectively. The average age was 39 years old. In each cohort, 12/33 were female, 19/33 were right-handed with 25% of individuals injuring their dominant hand. In each cohort there were 16 Grade 1 fractures, 4 Grade 2 and 13 Grade 3 fractures.

There was no difference between the surgically treated and cast-treatment cohorts of patients when radiographic arthritis, pinch grip, the brief Michigan Hand Questionnaire and pain were assessed at final review.

The surgical cohort had significantly lower DASH scores at final follow-up. There was no significant difference in the normalised bMHQ scores.

Conclusion

Our study was unable to demonstrate superiority of either operative or non-operative fracture stabilization. Patients in the surgical cohort reported superior satisfaction and DASH scores but did not demonstrate any superiority in any other objectively measured domain.



P65. SAFE USE OF ELECTROCAUTERY IN WRIST ARTHROSCOPY SURGERY

Category: Hands

Presentation: Oral

Adriaan Smit (Private practice)

Background:

Complications of electrocautery have been reported and include damage to cartilage, tendon and nerve tissues. As result, authors have indiscriminately advised against its use. These complicatons could be avoided by continual and sufficient saline lavage and by its application under direct vision of intra-articular structures only.

Methods and results:

In a retrospective study of all consecutive wet wrist arthroscopy cases by the author since introduction of an electrocautery device with articular fluid temperate monitoring (EDGE Bipolar Arthroscopic Radiofrequency System, Conmed), case notes were analysed to assess findings at surgery and at clinical follow-up. There were no complications of chondrolysis due to thermal damage or of structural damage to extra-articular structures, including tendons, nerves and extrinsic ligaments. There were no exclusion criteria for the study.

Conclusion:

By using a continual flow wet arthroscopic technique with sufficient outflow, aided by continual intra-articular temperature monitoring, thermal damage to cartilage can reliably be avoided. By avoiding any extra-articular electrocautery use, no complications of tendon, nerve or extrinsic ligament damage were noted. Electrocautery offers an effective surgical technique without significant risk of complications previously noted.



P67. Deep infection rate resulting in reoperation for sepsis following minor hand surgery with Wide-Awake Local Anaesthesia No Tourniquet (WALANT) and field sterility in an outpatient setting. GT9.

Category: Hands

Presentation: Oral

Lee Skosana (University of Pretoria, South Africa), Odette Koch (1 Military Hospital, South Africa) Theo Le Roux (1 Military, South Africa)

Abstract

This study aims to determine the incidence of surgical site infection leading to reoperation for sepsis following minor hand procedures performed outside the main operating room using field sterility in the South African setting.

Methods

The investigators retrospectively reviewed the records of 485 patients who had WALANT-assisted minor hand surgery outside a main operating theatre, a field sterility setting between March 2019 and April 2023. The primary outcome was the presence or absence of deep surgical site infection that required reoperation within four weeks. Cases included where elective WALANT minor hand procedures, a minimum age of 18 with complete clinical records.

Results

The patients were mostly female (54.8%), with a mean age of 56.35 years. The majority of cases were trigger finger and carpal tunnel release. An overall 485 cases were reviewed, the deep surgical site infection rate resulting in reoperation within 4 weeks post-operatively was 1.24% ((95% Confidence Interval (CI) 0.0034 to 0.0237); $p = 0.009$).

Conclusion

Minor hand procedures performed under field sterility using WALANT have a low surgical site infection rate. The current study's infection rates are comparable to international surgical site infection rates for similar surgeries performed in main operating rooms using standard sterilisation procedures. Field sterility is a safe and acceptable clinical practice that may improve work efficiency in public sector.

Level of evidence: Level 4

Keywords: WALANT, Hand surgery



P68. A retrospective review of the bacteriology of hand sepsis at a tertiary hospital in Gauteng. GT1

Category: General

Presentation: Oral

Allyson Adams (University of Pretoria), Hlabane Sithebe (University of Pretoria)

Background: The aim of this investigation is to firstly quantify the burden of disease, and secondly qualify the organisms being cultured during debridement to establish their sensitivities to available antibiotics. This study will also look at the concomitant burden of Human Immunodeficiency Virus (HIV) and Diabetes Mellitus (DM) in cases of hand sepsis, to establish whether these two disease processes require special consideration and treatment tailoring.

Methods: The method employed to collect the data will be retrospective collection of patient information, using random sampling. Included patients will be adult patients who undergo debridement and have a sample registered on the National Health Laboratory System (NHLS). The daily intake sheet will be used to collect patients details and these details will then be used to collect results of intra-operative specimens using the NHLS. These patient details will also be used to check patients' HIV results and HBA1c (Glycated Haemoglobin A1c) results.

Results: Majority of the specimens revealed Methicillin Sensitive Staphylococcus Aureus (MSSA), with a reassuringly low rate of Methicillin Resistant Staphylococcus Aureus (MRSA) when compared to international data. The yield of patients tested for HIV or DM was lower than expected, despite this being the standard of care.

Conclusion: The projected impact of this study will be assessment of the current burden of disease and then clarification of our current management strategy, in order to assess if it would be possible to change to a more cost-effective antibiotic with a narrower spectrum of bacteria coverage. The potential exists to not only implement cost saving measures, but also promote antibiotic stewardship by decreasing the practice of empiric broad-spectrum antibiotic use.



P69. The direct costs of hip fracture care in South Africa: a public healthcare system perspective

Category: General

Presentation: Oral

Farhanah Paruk (University Of KwaZulu Natal), Nyasha Mafrakureva (University of Sheffield, United Kingdom), Bilkish Cassim (University of KwaZulu Natal), Mkhululi Lukhele (University of Witwatersrand), Celia Gregson (University of Bristol), Sian Noble (University of Bristol)

Background

Fragility fractures are an emerging healthcare problem in Sub-Saharan Africa and hip fractures (HFs) are associated with high levels of morbidity, prolonged hospital stays, increased healthcare resources utilization, and mortality. The worldwide average healthcare cost in the first-year post HF was US\$43,669 per patient in a 2017 systematic review, however there are no studies quantifying fracture-associated costs within SSA. We estimated direct healthcare costs of HF management in the South African public healthcare system.

Methods

We conducted a prospective ingredients-based costing study in 200 consecutive consenting HF patients to estimate costs per patient across five regional public sector hospitals in KwaZulu-Natal (KZN). Resource use including staff time, consumables, laboratory investigations, radiographs, operating theatre time, surgical implants, medicines, and inpatient days were collected from presentation to discharge. Counts of resources used were multiplied by relevant unit costs, estimated from KZN Department of Health hospital fees manual 2019/20, in local currency (South African Rand, ZAR). Generalised linear models were used to estimate total covariate adjusted costs and cost predictors.

Results

The mean unadjusted cost for HF management was ZAR114,179 (95% CI; ZAR105,468-125,335). The major cost driver was orthopaedics/surgical ward costs ZAR 106.68, contributing to 85% of total cost. The covariate adjusted cost for HF management was ZAR114,696 (95% CI; ZAR111,745-117,931). After covariate adjustment, total costs were higher in patients operated under general anaesthesia compared to surgery under spinal anaesthesia and no surgery.

Conclusion

Direct healthcare costs following a HF are substantial: 58% of the gross domestic per capita (US\$12,096 in 2020), and six-times greater than per capita spending on health (US\$1,187 in 2019) in SA. As the population ages, this significant economic burden to the health system will increase. Further research is required to evaluate direct non-medical, and the indirect costs incurred post HF.



P70. Establishing a Consensus on Research Priorities in Orthopaedic Trauma Within South Africa

Category: General

Presentation: Oral

Simon M Graham (Orthopaedic Research Unit (ORU), Division of Orthopaedic Surgery, Groote Schuur Hospital, University of Cape Town) Luke Render(Liverpool Orthopaedic and Trauma Service, Liverpool University Teaching Hospital Trust, Liverpool, United Kingdom) , Sithombo Maqungo (Orthopaedic Research Unit (ORU), Division of Orthopaedic Surgery, Groote Schuur Hospital, University of Cape Town,South Africa), Nando Ferreira (Division of Orthopaedic Surgery, Department of Surgical Sciences, Stellenbosch University South Africa) Leonard Charles Marais (Department of Orthopaedic Surgery, School of Clinical Medicine, College of Health Sciences, University of KwaZulu-Natal, South Africa), Michael Held (Orthopaedic Research Unit (ORU), Division of Orthopaedic Surgery, Groote Schuur Hospital, University of Cape TownSouth Africa) Maritz Laubscher (Orthopaedic Research Unit (ORU), Division of Orthopaedic Surgery, Groote Schuur Hospital, University of Cape Town)

On behalf of the Orthopaedic Research Collaboration in Africa (ORCA)

Background

Musculoskeletal (MSK) injuries are one of the leading causes of disability worldwide. Despite improvements in trauma-related morbidity and mortality in high-income countries over recent years, outcomes following MSK injuries in low and middle-income countries, such as South Africa (SA), have not. Despite governmental recognition that this is required, funding and research into this significant health burden are limited within SA.

This study aims to identify research priorities within MSK trauma care using a consensus-based approach amongst MSK health care practitioners within SA.

Method

Members from the Orthopaedic Research Collaborative (ORCA), based in SA, collaborated using a two round modified Delphi technique to form a consensus on research priorities within orthopaedic trauma care. Members involved in the process were orthopaedic healthcare practitioners within SA.

Results

Participants from the ORCA network, working within SA, scored research priorities across two Delphi rounds from low to high priority. We have published the overall top 10 research priorities for this Delphi process. Questions were focused on two broad groups - clinical effectiveness in trauma care and general trauma public health care. Both groups were represented by the top two priorities, with the highest ranked question regarding the overall impact of trauma in SA and the second regarding the clinical treatment of open fractures.

Conclusion

This study has defined research priorities within orthopaedic trauma in South Africa. Our vision is that by establishing consensus on these research priorities, policy and research funding will be directed into these areas. This should ultimately improve musculoskeletal trauma care across South Africa and its significant health and socioeconomic impacts.

Funding: This study was not funded but was supported by AO Alliance and the South African Orthopaedic Trauma Society



P71.Risk Acceptability Assessment for Complications of Five Orthopaedic Procedures: A questionnaire-based Study

Category: General

Presentation: Oral

Winifred Mukiibi (WITS, South Africa), Prof Abdirashid Aden (WITS), Nasir Iqbal (WITS)

Background

Surgeons must explain the risk of complications to prospective patients and get informed consent. If a complication that occurred was omitted in the process or given the wrong risk level, culpability of the surgeon is judged in court against what a “reasonable patient” would like to know to give or refuse consent.

Objectives

The concept “reasonable patient” is widely used, no attempt has been made to define it objectively. We assessed insight of patients, presumed “reasonable”, about risks of certain complications after they underwent one of five orthopaedic procedures.

Methods

Questionnaire was administered with procedures: femur IMN, tibia IMN, ankle ORIF, distal radius ORIF and hip arthroplasty. Four common/serious complications were chosen per procedure, and matched against life events with documented risk levels.

Results

There were 230 participants 163 males and 67 females. We found 19.1% of patients above age 40 and 33.3% with tertiary education wouldn't accept nerve injury as reported in literature. With infection risk, 18.1% above 40 and 52.9% with pre-tertiary education would not accept. All patients below 40 and 7.4% pre-tertiary education wouldn't accept the risk of death as reported. However, 37.1% above 40 and 76.9% with pre-tertiary education would accept that risk at a higher level.

Conclusion

It is hard to predict what risk of complication a patient may accept. This study highlights that some patients will not accept risks as reported in literature, even though they need the procedure. Therefore, surgeons need to explain complications fully, so that patients knowingly accepts or refuses consent. The subset of patients who are not willing to accept any level of risk, should be the subject of another study.



P72. Evaluation of the self-drilling, self tapping Schanz pin thread patterns on the near cortex when inserted on bone without pre-drilling

Category: General

Presentation: Oral

Emmanuel Nkosinathi Mkhize (Registrar, Universitas Hospital, Bloemfontein, South Africa), Craig Blake (Consultant, Universitas Hospital, Bloemfontein South Africa)

Background

The external fixator is an invaluable device when treating acute complex trauma and in limb reconstruction. It is therefore important to ensure its efficient and safe application to avoid complications.

A lot of research has been done to evaluate the factors around external fixator stability, pin site infections and more is still being done to understand pin loosening. The purpose of this study was to evaluate other factors that may contribute in external fixator pin loosening.

The aim was to evaluate if the different Schanz pin insertion techniques contribute to pin loosening.

Methods

Two tibia diaphyses from two cadavers were each divided into three sections. Three different drilling techniques were repeated in each of the sections. A total of 36 Schanz pins were inserted and a section cut out of the bone in front of the pins was done

allowing visual inspection of the pin hole for features of thread stripping. These features were predefined as thread pattern disruption, smoothing and shallow imprint on the cortex.

Results

Evidence of pin thread stripping was seen in all of the pin insertion techniques. The first method where the hole was pre-drilled and pin inserted with the drill showed 100% thread stripping. The second method of pre-drilling and hand insertion showed the least amount with 16.7% of pin stripping noted and 66.7% pin thread stripping was observed when inserting the pin with power without pre-drilling the pilot hole using the third method.

Conclusion

Different pin insertion techniques result in varying amounts of pin thread stripping. The most amount of thread stripping occurs when a Schanz pin is inserted with power after pre-drilling. This finding, although not measured scientifically, supports the current

recommendation of pre-drilling and manual insertion of the pin. In future, more scientific measurement methods are necessary to quantify these findings and assess their clinical significance.



P73. Quantitative ultrasound and MRI imaging of the buttocks and thighs in a seated position

Category: General

Presentation: Oral

Nkhensani Mogale (1,3 Department of Anatomy, School of Medicine, Faculty of Health Science, University of Pretoria, Pretoria, South Africa), Justin Scott (2 Department of Mechanical Engineering, Michigan State University, East Lansing, Michigan, USA), Daniel Schantz (3 College of Osteopathic Medicine, Department of Radiology, Michigan State University, East Lansing, Michigan, USA), Viktor Ilyasov (3 College of Osteopathic Medicine, Department of Radiology, Michigan State University, East Lansing, Michigan, USA) Tamara R. Bush (2 Department of Mechanical Engineering, Michigan State University, East Lansing, Michigan, USA), (Albert van Schoor (1 Department of Anatomy, School of Medicine, Faculty of Health Science, University of Pretoria, Pretoria, South Africa) Jill M Slade (3 College of Osteopathic Medicine, Department of Radiology, Michigan State University, East Lansing, Michigan, USA)

Background: Pressure ulcers are a common occurrence in individuals with spinal cord injuries, and are attributed to prolonged sitting and limited mobility. This therefore creates the need to better understand soft tissue composition, in the attempt to prevent and treat pressure ulcers. In this study, novel approaches to imaging the soft tissue of the buttocks were investigated in the loaded and unloaded position using ultrasound (US) and magnetic resonance imaging (MRI).

Methods: Twenty-six able-bodied participants (n=26, 13 males and 13 females) were recruited for this study and 1 male with a spinal cord injury. Two visits using US were required, as well as one MRI visit to evaluate soft tissue thickness and composition. US Imaging for the loaded conditions was performed using an innovative chair which allowed image acquisition in the seated upright position and MRI was done in the lateral decubitus position and loading was applied to the buttocks using a newly developed MRI compatible loader. The unloaded condition was a lateral decubitus position. Soft tissue was measured between the peak of the ischial tuberosity (IT) and the proximal femur and skin.

Results: Tissue thickness reliability for US was excellent, ICC=0.934-0.981 with no significant differences between the scan days. US and MRI measures of tissue thickness were significantly correlated (r=0.68–0.91). US underestimated unloaded tissue thicknesses with a mean bias of 0.39 - 0.56 for total tissue and muscle + tendon thickness. When the buttocks were loaded, total tissue thickness was reduced by 64.2±9.1%.

Conclusion: US assessment of soft tissue thicknesses was reliable in both positions. The unloaded measurements using US were validated with MRI with acceptable limits of agreement, albeit tended to underestimate tissue thickness. Tissue thickness, but not fatty infiltration of muscle played a role in how the soft tissue of the buttocks responded to loading.



P74. Quality assessment of laboratory cadaveric and biomechanical studies. The development and validation of a new basic science quality score.

Category: General

Presentation: Oral

Erik Hohmann (Burjeel Hospital for Advanced Surgery, Dubai, United Arab Emirates School of Medicine, University of Pretoria, South Afr United Arab Emirates), Nikolaos Paschos (Department of Orthopaedic Surgery, Harvard Medical School Massachusetts General Hospital, USA), Natalie Keough (Department of Anatomy, University of Pretoria, Pretoria, South Africa), Deniz Erbulut (Herston Biofabrication Institute, Royal Brisbane Hospital, Herston, Australia) Abrie Oberholster (Centre for Asset Integrity Management (C-AIM) Department of Mechanical and Aeronautical Engineering University of Pret South Africa), Vaida Glat (Department of Orthopaedics, University of Texas Health Science Center, San Antonio, Texas, USA), Maketo Molepo School of Medicine, University of Pretoria, South Africa), Boyko Gueorguiev (AO Research Institute Davos (ARI) Davos, Switzerland), Kevin Tetsworth (Department of Orthopaedic Surgery, Royal Brisbane Hospital, Herston, Australia)

Introduction: The purpose of this study was to develop a quality appraisal tool for the assessment of laboratory basic science biomechanical studies.

Materials and Methods: Score development comprised of the following phases: item identification/development, item reduction, content/face/criterion validity, weighting, test-retest reliability and internal consistency. For item identification/development, the panel was asked to independently list criteria and factors they considered important for cadaver study and generate items that should be used to appraise cadaver study quality. For content validity, the content validity ratio (CVR) was calculated. The minimum accepted content validity index (CVI) was set to 0.85. For weighting, equal weight for each item was 6.7% [15 items]. Based on these figures the panel was asked to either upscale or downscale the weight for each item ensuring that the final sum for all items was 100%. Face validity was assessed by each panel member using a Likert scale from 1-7. Strong face validity was defined as a mean score of >5. Test-retest reliability was assessed using 10 randomly selected studies. Criterion validity was assessed using the QUACS scale as standard. Internal consistency was assessed using Cronbach's alpha.

Results: Five items reached a CVI of 1 and 10 items a CVI of 0.875. For weighting five items reached a final weight of 10% and ten items 5%. The mean score for face validity was 5.6. Test-retest reliability ranged from 0.78-1.00 with 9 items reaching a perfect score. Criterion validity was 0.76 and considered to be strong. Cronbach's alpha was calculated to be 0.71 indicating acceptable internal consistency.

Conclusion: The new proposed quality score for basic science studies consists of 15 items and has been shown to be reliable, valid and of acceptable internal consistency. It is suggested that this score should be utilised when assessing basic science studies.



P75.The treatment, management, demographics and economic costs of orthopaedic injuries sustained in motorcycle accidents in delivery drivers in South Africa

Category: Trauma

Presentation: Oral

Joshua Ward (New Somerset Hospital Orthopaedics, South Africa), Schalk Klopper (Groote Schuur Hospital Orthopaedics, South Africa) Frederick Louw (New Somerset Hospital Orthopaedics, South Africa) Maximilian Schmieschek (University Hospital Cologne, Germany)

Background:

Motorcycle accident-related traffic accidents contribute significantly to the burden of orthopaedic injuries seen in the South African Healthcare system. Subsequent to the Covid-19 pandemic, there has been an increase in the number of delivery drivers on the roads of South Africa. Many of these delivery drivers have no formal employment contracts. We aim to describe the demographics and injury patterns in motorcyclists involved in time dependent delivery work in South Africa; and to quantify the cost to the state of their orthopaedic surgeries.

Methods:

We performed a consecutive case series study at all of the hospitals draining the study region over the period of one year. Epidemiological, clinical and cost to hospital data was collected from medical records, digital radiographs, theatre invoices and a dedicated patient questionnaire.

Provisional Results:

So far 41 delivery drivers were captured by the study over a period of 11 months. All drivers were male and the vast majority foreign nationals. 11 patients were polytraumatised and 5 required admission to an intensive care unit. The most common injury patterns were closed femur fractures (17) followed by tibial shaft fractures (13). The average cost of surgery was R35 049 and average cost of ward stay R44 882 at an average of 10 days admission in a general ward. Overall, an estimated total of R 3.1 million rand was spent on these injuries.

Conclusion:

Informally employed “app users” performing delivery work on motorcycles in South Africa have added a significant burden to the cost of state healthcare since 2020. The vast majority of these patients are foreign nationals who do not hold South African licences or health insurance. They are sustaining high energy injuries typical of motorcycle-car accidents and many of them are left with lifelong loss of function.



P76. An observational study into the incidence of e-hailing motorcycle drivers who experience Orthopaedic related trauma with regards to Tembisa Provincial Tertiary Hospital

Category: General

Presentation: Oral

Sanishan Thangathasagen Govender (Tembisa Provincial Tertiary Hospital, South Africa) Grant Connellan (Tembisa Provincial Tertiary Hospital, South Africa) Nokwanda Ngcoya (Tembisa Provincial Tertiary Hospital South Africa)

Since the advent of the COVID-19 pandemic, there has been a technologically based progression to almost every sector of society. This has led to an influx of e-hailing motorcycle drivers (online based consumable transportation platforms) and thus an increase in road traffic accidents. This group experiences an abundance of Orthopaedic related trauma with a considerable economic burden. Therefore, the study aimed to determine the incidence of this study group as well as quantify the severity and cost implications thereof for the sake of public health and epidemiology. This was an observational study whereby a prospective cohort analysis was respectively conducted at a single centre to determine the incidence, of the study group, over a seven-month period. The study included any e-hailing motorcycle driver who sustained Orthopaedic related trauma, whilst on duty, within the catchment area whereas all other patients were excluded and used as a comparator. A descriptive statistical analysis was done to further delineate the severity of injury by comparing the type of injury, anatomical location injured, and management plan incurred. A total of 5096 individuals experienced Orthopaedic related trauma with 60 individuals (1.18%) being e-hailing motorcyclists who sustained injury whilst on duty. The incidence being 118 per 10000 patients. Further analysis revealed that 78.33% of the population experienced fractures or dislocations with 52.31% of these injuries requiring surgical intervention. The Upper limb (53.85%) and Lower limb (43.08%) were the most affected anatomical locations. The Orthopaedic care for this population group places a meaningful burden on the South African Health sector. These drivers work in unsafe environments and sustain high energy impacts, yet very little oversight exists. Therefore, continued research with new regulations needs to be drafted, looking into vehicle safety, working conditions, operative hours, and the need for public awareness.



P77. Epidemiology and Pattern of Orthopaedic injuries caused by Delivery Motorbike Accidents (DMBA) at South African Tertiary Hospital

Category: General

Presentation: Oral

David Nzimande (Steve Biko Academic Hospital, South Africa) ,Falethu Sukati (Steve Biko Academic Hospital, South Africa)

Introduction: Trauma patients present with different injuries and some of them require emergency surgical procedures. Orthopaedic department at Steve Biko Academic Hospital (SBAH) have seen an increasing number of patients presenting with serious orthopaedic injuries due to Delivery Motorbike Accidents (DMBA). The aim of the study was to establish the epidemiology and pattern of orthopaedic injuries sustained following Delivery Motorbike Accident.

Methods: Motor Vehicle Accident (MVA) administration office at SBAH in emergency department was approached for patients registers used between 1 January 2020 and 31 December 2022. These patients were registered as Motor Vehicle Accident (MVA), Motorbike Accident (MBA) and Pedestrian Vehicle Accident (PVA) by the administration office. The details of patients classified as MBA were collected and used to obtain clinical data from medical and radiological records in the form of patient's files and PACS respectively.

Results: Approximately 240 patients presented to Emergency department with orthopaedic injuries following a motorbike accident. About 78 files could not be retrieved from the patient's records department. About 74 patients had their occupation recorded as unknown or unemployed. Approximately 70 patients had their occupation indicated in the file by the Clinicians or Administration Clerks. About 40 patients had their occupation as delivery man or working for a delivery company. 16 patients did not have images on the PACS system. Most of the patients were males, presented after hours and sustained multiple injuries that were managed surgically. Very few patients had their helmet status indicated in the file.

Conclusion: The study suggests that accidents due to delivery motorbikes are prevalent at SBAH and result in orthopaedic injuries. Almost 50% of patients who had their occupation indicated in the file were delivery employees. A follow up prospective study is recommended to ensure complete collection of data from patients at presentation to ED.



P78. Prevalence of osteoporosis in HIV-infected patients initiating anti-retroviral drugs living in Johannesburg

Category: General

Presentation: Oral

Mzwakhe Khumalo (Wits South Africa)

Background: Low-energy fractures complications are a major public health issue that make osteoporosis even worse. In sub-Saharan Africa, the prevalence of osteoporosis varies from 18.2% to 65.8%. There was no change in bone mineral density between HIV-infected and non-HIV-infected women in Sub-Saharan Africa, where HIV is widespread. Other investigations that demonstrated that HIV-infected people had poor BMD both before and after starting anti-retroviral treatment did not consistently show a low BMD finding. Inflammation-mediated bone remodelling has been associated with low BMD in HIV-infected patients. Antiretroviral Therapy has been demonstrated to exacerbate bone loss in addition to the pre-existing intrinsic risk of developing osteoporosis.

Question: Is there loss of bone in HIV-infected patients before initiating ART?

Methodology: The patients who were HIV-positive and enrolled in the ADVANCE research were retrospectively reviewed on a desk. All of the 1053 individuals in the ADVANCE research had a DXA scan performed to evaluate BMD as part of the initial screening and recruitment approach. The ADVANCE research enrolled HIV-positive people and randomly assigned them to three ART arms.

Results: A total of 400 patients were reviewed. Of these 400 records reviewed, 62.3% were female. 80% of the participants were younger than 40 years old, and 3% were older than 50 years. 82% were virally suppressed with less than 50 viral copies. The prevalence of osteopenia was 25.5% and osteoporosis was 2.8%, observed in predominantly African female participants aged between 30 and 39 years.

Conclusion: The findings of this study confirm that there is pre-existing bone loss among HIV-infected ART naïve individuals. Approximately 28.3% in our study had clinically confirmed evidence of bone loss and of these, 2.8% of the entire cohort had osteoporosis. Bone loss was most prevalent in black females who are virologically suppressed.



P79. The impact of HIV infection on wound healing and fracture union in patients with closed ankle fractures treated with a plate osteosynthesis at a tertiary level hospital

Category: General

Presentation: Oral

Thabang Rachoene (SMU South Africa) , Archie Rachuene(UP, South Africa), Khanyile Sonke(SMU South Africa), Tladi Mpho (Louis Pasteur South Africa)

Introduction: Fractures of the ankle are common, and they mostly affect young adults. Wound complications are not uncommon following the fixation of these fractures. This study evaluated the impact of HIV on wound healing after plate osteosynthesis in patients with closed ankle fractures.

Methods: This is an observational retrospective study of patients operated on at a tertiary level hospital. We reviewed hospital records for patients above 18 years of age who presented with wound breakdown following ankle open reduction and internal fixation. The patients' hospital records were retrieved to identify all the patients treated for closed ankle fractures and those who developed wound breakdown. Patients with Pilon fractures were excluded. The National Health Laboratory System (NHLS) database was accessed to retrieve the CD4 count, viral load, haematology study results, and biochemistry results of these patients at the time of surgery and subsequent follow-up. The x-rays were retrieved from the electronic picture archiving system (PACS) and were assessed for fracture union at a minimum of 3 months follow-up.

Results: We reviewed the medical records of 172 patients with closed ankle fractures treated from 2018 to 2022. Thirty-one (18.0%) developed wound breakdown after surgery, and they were all tested for HIV. Most of the patients were male (58.0%), and the average age of the cohort was 43.7 years (range: 21 years to 84 years). Ten of these patients (32.2%) were confirmed HIV positive, with CD4 counts ranging from 155 to 781. Viral load levels were lower than detectable in 40% of these patients. All patients progressed to fracture union at a minimum of 3 months follow-up.

Conclusion: We observed no difference between HIV-positive and HIV-negative patients in terms of wound breakdown and bone healing post-plate osteosynthesis for closed ankle fractures.



P80. Number of distal radial fractures in the elderly will increase by more than half by 2040: prediction modelling using national data.

Category: Trauma

Presentation: Oral

Katrina Bell Edinburgh Orthopaedics United Kingdom

Liam Yapp Edinburgh Orthopaedics United Kingdom

Timothy White Edinburgh Orthopaedics United Kingdom

Samuel Molyneux Edinburgh Orthopaedics United Kingdom

Nicholas Clement Edinburgh Orthopaedics United Kingdom

Andrew Duckworth University of Edinburgh United Kingdom

Abstract text

Background: The aim was to predict the number and incidence of distal radius fractures in Scotland over the next two decades according to age group, categorised into under 65yrs(<65) and 65yrs and older (≥65), and estimate the potential increased operative burden of this.

Methods: The number of distal radius fracture in Scotland was isolated from the Global Burden of Disease database and this was used, in addition to historic population data and population estimates, to create a multivariable model allowing incorporation of age group, sex and time. A Negative Binomial distribution was used to predict incidence in 2030 and 2040 and calculate projected number of fractures according to the population at risk. A 20.4% operative intervention rate was assumed in the ≥65 group (local data).

Results: In terms of number of fractures, there was a projected 61% rise in the ≥65 group with an overall increase of 2099 fractures per year from 3417 in 2020 (95% confidence interval (CI) 2960 – 3463) to 5516 in 2040 (95% CI 4155–5675). This was associated with 428 additional operative interventions per year for those ≥65yrs. The projected increase between 2020 and 2040 was similar in both sexes (60% in females, 63% in males), however the absolute increase in fracture number was higher in females (2256 in 2020 [95% CI 1954–2287] to 3620 in 2040 [95% CI 2727–3721]) compared to males (1160 [95% CI 1005–1176] to 1895 [95% CI 1427–1950]). There was a 4% projected fall in the number of fractures in those <65.

Conclusions: Incidence of distal radius fractures is expected to considerably increase over the next two decades due to a projected increase in the number of fractures in the elderly. This has implications for the associated morbidity and healthcare resource use.



P82. Necrotizing soft tissue infections: A retrospective case series at a district hospital in South Africa

Category: Infection

Presentation: Oral

Loren Bridget Benjamin (Worcester Provincial Hospital, South Africa)

Background:

Necrotizing soft tissue infection (NSTI) is a rapidly progressive infection that typically starts in the dermis and epidermis and spreads along soft tissue planes, penetrating subdermal layers and can lead to massive tissue necrosis resulting in severe morbidity and mortality. The aim of this case series was to describe the epidemiology and burden of NSTI's at a District Hospital servicing a South African urban settlement.

Methods:

This retrospective case series was performed at a single centre. Consecutive patients were identified following a clinical diagnosis for NSTI. Further laboratory pre-operative work up was standardized including: use of validated Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC scores) and Human Immunodeficiency Virus (HIV) status. All patients who underwent surgical debridement were captured on the Theatre Database (www.medwebtools.org[™]). All patients received standardized perioperative, intra-operative and post-operative protocols for antibiotics, debridement and soft tissue closure or cover based on the severity of disease. Medical records, theatre notes, National Health Laboratory Service (NHLS) results and radiological results were captured for every patient.

Results:

28 patients (14 male, 14 female) presented with NSTI over a 3 year period (2021-2023). The mean age was 39.5 years. The most common organisms cultured were *Streptococcus pyogenes* (10 patients), *Staphylococcus aureus* (9 patients), *Bacillus cereus* (3 patients).

Conclusion:

This retrospective case series is an important study because it demonstrates some of the highest incidence of NSTI globally; however, the cause of this is yet to be determined. Our results show that having a high clinical index of suspicion; using the LRINEC score to assess severity and using a standardized antibiotic and peri-operative protocol with early soft tissue cover that NSTI's can be managed effectively with a reduction in patient morbidity and overall length of hospital stay.



P83. The QuickDASH and PRWE scores are not optimal patient-reported outcome measures following a fracture of the distal radius due to the ceiling effect: potential implications for future research

Category: Trauma

Presentation: Oral

Katrina Bell Edinburgh Orthopaedics United Kingdom

William Oliver Edinburgh Orthopaedics United Kingdom

Timothy White Edinburgh Orthopaedics United Kingdom

Samuel Molyneux Edinburgh Orthopaedics United Kingdom

Nicholas Clement Edinburgh Orthopaedics United Kingdom

Andrew Duckworth University of Edinburgh United Kingdom

Background: The aim of this study was to determine the floor and ceiling effects for both the QuickDASH and PRWE following a fracture of the distal radius. Secondary aims were to determine the degree to which patients with a floor or ceiling effect felt that their wrist was 'normal', and if there were patient factors associated with achieving a floor or ceiling effect.

Methods: A retrospective cohort study of patients sustaining a distal radius fracture and managed at the study centre during a single year was undertaken. Outcome measures included the QuickDASH, the PRWE, EuroQoL-5 Dimension-3 Levels (EQ-5D-3L), and the normal wrist score.

Results: There were 526 patients with a mean age of 65yrs (20-95) and 421 (77%) were female. Most patients were managed non-operatively (73%, n=385). The mean follow-up was 4.8yrs (4.3-5.5). A ceiling effect was observed for both the QuickDASH (22.3%) and PRWE (28.5%). When defined to be within the minimum clinical important difference of the best available score, the ceiling effect increased to 62.8% for the QuickDASH and 60% for the PRWE. Patients that achieved a ceiling score for the QuickDASH and PRWE subjectively felt their wrist was only 91% and 92% normal, respectively. On logistic regression analysis, a dominant hand injury and better health-related quality of life were the common factors associated with achieving a ceiling score for both the QuickDASH and PRWE (all $p < 0.05$).

Conclusions: The QuickDASH and PRWE demonstrate ceiling effects when used to assess the outcome of fractures of the distal radius. Patients achieving ceiling scores did not consider their wrist to be 'normal'. Future patient-reported outcome assessment tools for fractures of the distal radius should aim to limit the ceiling effect, especially for individuals or groups that are more likely to achieve a ceiling score.



P84. Knee constitutional alignment in a South African arthritic population group using the Coronal plane alignment of the knee (CPAK) classification: how do we compare?

Category: Arthroplasty

Presentation: Oral

Kaylem Coetzee (Tygerberg Hospital), Koos Jordaan (Tygerberg Hospital)

Background

Alignment philosophies are currently a hot topic in knee arthroplasty. Failure to address patient specific constitutional alignment has been proposed to contribute to the nearly 20% dissatisfaction rates reported by patients. New technologies in the form of computer assisted and robotic surgery have given surgeons the ability to execute these alignment strategies with greater precision. In an effort to determine the constitutional alignment of patients and provide intra-operative alignment targets, the CPAK classification was developed in 2021. It is however, not yet validated in a South African population group.

Methods

A retrospective review of 400 long leg standing x-rays will be performed from an arthritic patient group at a high-volume tertiary level arthroplasty unit in South Africa from 2019 to 2023.

Inclusion criteria include all skeletally mature patients with knee osteoarthritis who have either received or are waiting for knee arthroplasty, with appropriate x-rays for analysis.

Exclusion criteria include any extra articular deformity that will affect alignment measurements of the lower limbs.

Specific angular measurements will be performed by the principal investigator, as described in the original study, to classify participants according to the CPAK classification.

Results

The distribution of participants within the 9 described CPAK groups will be compared with multiple similar international studies. Preliminary data analysis indicates that a South African cohort differs from other international groups with significantly more constitutional valgus observed.

Conclusion

This will be the first study of its kind in a cohort from Africa. Knowing how the local population differs from international groups will influence the surgical goals of constitutional knee alignment for South African surgeons. Particularly relevant when one considers the rapid uptake of robotic technology in South Africa. This research will provide a significant contribution to this new and exciting concept that aims to improve knee outcome measures.



P85. Radiographic predictors of hip abductor tears

Category: Arthroplasty

Presentation: Oral

Roopam Dey (University of Cape Town) , [FJ du Toit \(University of Cape Town\)](#) , Garth Grobler (Life Vincent Pallotti Hospital) , Brendan Dower (Life Vincent Pallotti Hospital) , Marc Nortje (University of Cape Town)

Background:

Hip abductor tears(AT) have long been under-recognized, under-reported and under-treated. There is a paucity of data on the prevalence, morphology and associated factors. Patients with “rotator cuff tears of the hip” that are recognized and repaired during total hip arthroplasty(THA) report comparable outcomes to patients with intact abductor tendons at THA.

Methods:

The study was a retrospective review of 997 primary THA done by a single surgeon from 2012-2022. Incidental findings of AT identified during the anterolateral approach to the hip were documented with patient name, gender, age and diagnosis. The extent and size of the tears of the Gluteus medius and Minimus were recorded. Xrays and MRI's were collected for the 140 patients who had AT and matched 1:1 with respect to age and gender against 140 patients that had documented good muscle quality and integrity. Radiographic measurements (Neck shaft angle, inter-teardrop distance, Pelvis width, trochanteric width and irregularities, bodyweight moment arm and abductor moment arm) were compared between the 2 groups in an effort to determine if any radiographic feature would predict AT.

Results:

The prevalence of AT were 14%. Females had statistically more tears than males(18vs10%), while patients over the age of 70y had statistically more tears overall(19,7vs10,4%), but also more Gluteus Medius tears specifically(13,9vs5,3%). Radiographic measurements did not statistically differ between the tear and control group, except for the presence of trochanteric irregularities. MRI's showed that 50% of AT were missed and subsequently identified during surgery.

Conclusion:

Abductor tears are still underrecognized and undertreated during THA which can result in inferior outcomes. The surgeon should have a high index of suspicion in elderly females with trochanteric irregularities and although an MRI for every patient won't be feasible, one should always be prepared and equipped to repair the abductor tendons during THA.



P86. Novel solution to the arthroplasty backlog problem in an tertiary academic institution

Category: Arthroplasty

Presentation: Oral

Nkhodiseni Sikhauli (Charlotte Maxeke Johannesburg Academic Hospital) , Jurek RT Pietrzak (CMJAH) , Allan R Sekeitto (CMJAH) , Mabua Chuene (CMJAH) , Richard Almeida (CMJAH) , Lipalo Mokete (CMJAH)

Background: Hip and knee joint arthroplasty wait list has been getting outrageously long in South Africa with some tertiary hospital reporting more than 5 years of waiting time. This has been further compounded by covid 19 pandemic. There is plateau of ideas on how best to address the backlogs in high volume tertiary centers, with catchup list, out reach program, private partnership seeming unsustainable. We sought to look for sustainable solution to the problem and we looked not far but inside the system.

Method: Triggered by the fire that engulfed part of the hospital, we found ourself refuged at the sister tertiary hospital with no access to theatre time. We visited districts hospitals within the cluster and discovered state of the art facility underutilized. We presented a plan to establish a satellite arthroplasty center which was greatly embraced by the management. We partnered with the trade to setup an arthroplasty service in this district hospital. Employed 3 retired nurses and 2 parttime anesthetist all on yearly contract. We developed pathways for patient selection according to American Society of Anaesthesiologist(ASA).

Results: 232 total joint arthroplasties were performed in 15-month, 33%Hips and 67%Knees. The average hospital stay was $2,3 \pm 2$ days. We had 1 mortality(# NOF) and 2 cases of PJI treated successfully with debridement antibiotic and implant retention. We had 5 cases of intraoperative calcar femur fracture managed with cables and all stable at 6weeksand 3month. Over 76% of the cases were performed by fellows as the primary surgeons.

Conclusion: Primary hip and knee total joint replacement can be safely performed in a district hospital. Employing motivated retired staff was key to the success of this project. Fellowship trainees performed most of the operations. We suggest that other academic hospitals with long waiting list can look at emulating this model within their district.



P87. Primary Hip and Knee Arthroplasty at District Level is Safe and may reduce the Burden on Tertiary Care in a Low-Income Setting.GT8

Category: Arthroplasty

Presentation: Oral

Kim Laubscher (UCT, South Africa), Ntambue Kauta (UCT South Africa), Michael Held (UCT South Africa), Marc Nortje (UCT South Africa) Roopam Dey (UCT South Africa)

Background: Arthroplasty procedures in low-income countries are mostly performed at tertiary centers, with waiting lists exceeding 12 to 24 months. Providing arthroplasty services at other levels of healthcare aims to offset this burden, however there is a marked paucity of literature regarding surgical outcomes. This study aims to provide evidence on the safety of arthroplasty at district level.

Methods: Retrospective review of consecutive arthroplasty cases performed at a District Hospital (DH), and a Tertiary Hospital (TH) in Cape Town, between January 2015 and December 2018. Patient demographics, hospital length of stay, surgery related readmissions, reoperations, post-operative complications, and mortality rates were compared between cohorts.

Results: Seven hundred and ninety-five primary arthroplasty surgeries were performed at TH level and 228 at DH level. The average hospital stay was 5.2 ± 2.0 days at DH level and 7.6 ± 7.1 days for TH ($p < 0.05$). Readmissions within 3 months post-surgery of 1.75% (4 patients) for district and 4.40% (35) for TH ($p < 0.05$). Reoperation rate of 1 in every 100 patients at the DH and 8.3 in every 100 patients at the TH ($p < 0.05$). Death rate was 0.4% vs 0.6% at district and TH respectively ($p > 0.05$). Periprosthetic joint infection rate was 0.43% at DH and 2.26% at TH. The percentage of hip dislocation requiring revision was 0% at district and 0.37% at TH. During the study period, 228 patients received arthroplasty surgery at the DH; these patients would otherwise have remained on the TH waiting list.

Conclusions: Hip and Knee Arthroplasty at District health care level is safe and may help ease the burden on arthroplasty services at tertiary care facilities in a Southern African context. Adequately trained surgeons should be encouraged to perform these procedures in district hospitals provided there is appropriate patient selection and adherence to strict theatre operating procedures.



P88. NEW INCENTIVES AND PITFALLS IN PATIENT- SPECIFIC 3D PRINTED PELVIC IMPLANTS

Category: Arthroplasty

Presentation: Oral

André Olivier (Private Practiced), George Vicatos (Univercity of Cape town)

BACKGROUND:

Custom 3D printed implants can be anatomically designed to assist in complex surgery of the bony pelvis in both orthopaedic oncology and orthopaedic reconstruction surgery.

METHODS: This series includes patients who had major pelvic bone loss after initially presenting with tumours, fractures or infection after previous total hip arthroplasty. The extent of the bone loss in the pelvis was severe and therefore impossible to be reconstructed by conventional 'off –the-shelve' implants.

The implant was designed considering the remaining bony structures of the contra-lateral hemi- pelvis, to provide an anatomical, secured support for the reconstructed hip joint. The latter was realised by strategically orientated screws and by porous structures (an integral part of the implant), which stimulates osseointegration.

A custom pelvic implant was designed, manufactured and 3D printed. Reconstruction of the pelvis was performed together with a cemented (bipolar bearing) acetabular cup. In some cases, a proximal femoral replacement was also necessary to compensate for bony defects.

RESULTS: All patients had sufficient range of motion (ROM) at the hip with post-operative stability. It has been verified, at six and twelve months postoperatively, that there is a strong hold of the implant due to osseointegration. Additionally, in patients whose posterior acetabular wall was missing, it was discovered that the implant assisted in bone formation and covered the entire posterior surface of the implant.

CONCLUSION:

All patients in this study managed with this novel treatment option, proved to have a stable pelvic reconstruction with restoration of leg lengths, improvement of strength and independent ambulation at short and medium term follow-up.



P89. Prophylaxis and management of Periprosthetic Joint Infection (PJI) with hypochlorous acid.

Category: Arthroplasty

Presentation: Oral

Hennie Roos (Trifectiv Surgical Wound Irrigation)

Background.

The incidence of PJI in knee replacements is 2.8% and slightly lower with hip replacement surgery. PJI make up 15% (or even more) of knee revisions. To combat PJI, antibiotic laden bone cement has been used for many decades, but antibiotic stewardship dictates more prudent management of antimicrobials. Projected increase in infection rate, due to increased surgery and latent infection to be almost 5-fold up to 2035.

Biofilm is a complex structure of bacteria and polysaccharide matrix and, is recognised as a major component in PJI and other orthopaedic infections.

Biofilm is responsible for high incidence of resistance to antimicrobials and ineffective host immune response.

Method. Stabilized hypochlorous acid has been reported to have a rapid kill rate on all pathogens, including MDR pathogens associated with chronic and acute wound infections. It destroys biofilm on contact, is not cytotoxic, reduces inflammation and stimulates wound healing. 0,038% of Hypochlorous acid was used as prophylaxis against infection and to treat PJI.

Results. We report on our experience with hypochlorous acid as a wound irrigation as prophylaxis against infection (more than 600 cases) and for PJI. We also report on a University study where a head to head analysis was done on the anti-biofilm efficacy between hypochlorous acid 0,038% (Trifectiv Surgical Wound Irrigation) and Product X (an industry-standard product for the prevention and treatment of biofilm infection).

Conclusion. Hypochlorous acid offers a valuable addition to the armamentarium of wound antiseptics, with added anti-inflammatory value. An in vitro study demonstrated superior efficacy against biofilm when compared to Product X.



P90. Predicting transfusion requirements for primary hip and knee arthroplasty: designing a regional service for high volume arthroplasty surgery

Category: Arthroplasty

Presentation: Oral

Vijay Patel (Imperial College London) , Edward Hayter (Imperial College Healthcare NHS Trust) , Harry Hodgson (Imperial College Healthcare NHS Trust) , Reece Barter (Imperial College Healthcare NHS Trust) , Raymond Anakwe (Imperial College Healthcare NHS Trust)

Background

Extended patient waiting lists for assessment and treatment are widely reported for planned elective joint replacement surgery. The development of regionally based Elective Orthopaedic Centres, separate from units that provide acute, urgent or trauma care has been suggested as one solution to provide protected capacity and patient pathways. These centres will adopt protocolised care to allow high volume activity and increased day-case care. We report the plan to establish a new elective orthopaedic centre serving a population of 2.4 million people. A census conducted in 2022 identified that 15000 patients were awaiting joint replacement surgery with predictions for further increases in waiting times

Methods

The principle of care will be to offer routine primary arthroplasty surgery for low risk (ASA 1 and 2) patients at a new regional centre. Pre-operative assessment and preparation will be undertaken digitally, virtually and/or in person at local centres close to the where patients live. This requires new and integrated pathways and ways of working. Predicting which patients will require perioperative transfusion of blood products is an important safety and quality consideration for new pathways. We reviewed all cases of hip and knee arthroplasty surgery conducted at our centre over a 12-month period and identified pre-operative patient related predictive factors to allow us to predict the need for the perioperative transfusion of blood products.

Results

We examined patient sex, age, pre-operative haemoglobin and platelet count, use of anti-coagulants, weight and body mass index to allow us to construct the Imperial blood transfusion tool.

Conclusion

We have used the results of our study and the transfusion tool to propose the patient pathway for the new regional elective orthopaedic centre which we present.



P91.What is the compliance regarding thromboprophylaxis in post operative arthroplasty patients in a tertiary hospital in South Africa?

Category: Arthroplasty

Presentation: Oral

Richard Almeida (Charlotte Maxeke Johannesburg Academic Hospital) , Jurek Pietrzak (Charlotte Maxeke Johannesburg Academic Hospital) , Lipalo Mokete (Charlotte Maxeke Johannesburg Academic Hospital) , Nkhodiseni Sikhauli (Charlotte Maxeke Johannesburg Academic Hospital)

Introduction

Total Joint Arthroplasty (TJA) is a successful orthopaedic procedure allowing dramatic clinical and functional improvements. Globally, there's been an increase in demand and performed cases associated with an increase in complications. Subsequently, focus on the prevention of complications has become important worldwide. The incidence of venous-thrombotic events (VTE) despite great attention has not diminished despite much investigation. A balance between efficacy and safety from the available agents is essential. Low molecular weight heparin (LMWH) has been commonly used, but oral anti-coagulants have become more popular. The aim of this study was to assess the adherence LMWH and the effectiveness and safety of preventing VTE in post-operative arthroplasty patients in a South African setting.

Methods

We conducted a prospective cohort study that included hip and knee, primary and revision, arthroplasty patients who received thromboprophylaxis with one daily injection of LMWH for 14 days post discharge. Patients who omitted 1 or more doses during the follow up period were classified as "non adherent". A questionnaire was used at follow up visits at least 6 weeks post-operatively.

Results

100 consecutive patients were followed up. The mean age of patients was 63.45 years. There were 68 % female patients. There was a 92% compliance rate. 60 % of patients had the injection administered by a family member, 38 % administered it themselves and 2 % had the injection administered by health professionals. Venous thromboembolic events were confirmed in 5 % at 7.86 days after surgery. Three patients had persistent wound drainage after surgery, however, none required reoperation or readmission.

Conclusion

Compliance with LMWH is high and is comparable with oral agents. It is effective in preventing VTE and safe with regards to bleeding and wound complications in a South African setting. Patient education regarding medications may improve compliance of the medication.



P92. REGISTRAR TRAINING IN HIP AND KNEE ARTHROPLASTY: ARE THEY DOING ENOUGH?

Category: Arthroplasty

Presentation: Ora

Koos Jordaan (Tygerberg), Kaylem Coetzee (Tygerberg)

Background:

Orthopaedic surgery is a practical surgical specialization field, the exit exam for registrars remains written and oral. Despite logbook evaluation and surgical work-based assessments, the question remains: can registrars perform elective surgery upon qualification? In South Africa, obstacles to elective surgical training include the trauma workload, financial constraints, fellowships and the Covid pandemic. In hip and knee arthroplasty, new approaches like the direct anterior approach (DAA) and robotic-assisted knee surgery also contributed to the dilution of cases available for registrar training. There are concerns that orthopaedic registrars do not perform enough cases to achieve surgical proficiency.

Methods:

Review of the last 4 years of registrar logbooks in hip and knee arthroplasty surgery performed in a single tertiary academic hospital in South Africa. We included all primary total hip replacements (THR), total knee replacements (TKR) and hemiarthroplasties (HA) done for neck of femur (NOF) fractures between 1 April 2019 and 30 March 2023. Differentiation between registrar assisting, registrar performing with consultant supervision and registrar performing independent surgery was done.

Results:

990 hip arthroplasties (472 Primary THR, 216 NOF THR, 302 NOF HA) and 316 Primary TKR were performed during the study period. In primary elective THR the posterior approach was dominant and used in 76% of cases. In NOF THA the DAA was dominant used in 98% of cases. Primary TKR robotic-assisted technologies was used in 27% (n=94) cases.

Registrars as the primary surgeon were the highest in NOF THA at 70% of cases and the lowest performing TKR at 25%.

During 3-month rotations, an average registrar performed 12 (2 TKR and 10 THR) and assisted in 35 (10 TKR and 25 THR) cases.

Conclusion:

Despite the large number of arthroplasties operations being performed over the last 4-year period, the surgical cases done by registrars are below, the proposed minimal cases to provide surgical proficiency during their training period.



P93.Reasons for Total Knee Arthroplasty Revisions: A Retrospective Cohort Study

Category: Knees

Presentation: Oral

Ashley Arakkal (Groote Schuur Hospital/University of CPT) , Mohammad Daoub (Groote Schuur Hospital/University of CPT) , Marc Nortje (Groote Schuur Hospital/University of CPT) , Thomas Hilton (Groote Schuur Hospital/University of CPT) , Johan Le Roux (Groote Schuur Hospital/University of CPT) , Michael Held (Groote Schuur Hospital/University of CPT)

Title: Reasons for Total Knee Arthroplasty Revisions: A Retrospective Cohort Study
Abstract: **Background:** The aim of this retrospective cohort study was to investigate the reasons for total knee arthroplasty (TKA) revisions at a tertiary hospital over a four-year period. The study aimed to identify the primary causes of TKA revisions and shed light on the implications for patient care and outcomes. **Methods:** The study included 31 patients who underwent revisions after primary knee arthroplasty between January 2017 and December 2020. A retrospective approach was employed, utilizing medical records and radiological findings to identify the reasons for TKA revisions. The study excluded oncology patients to focus on non-oncologic indications for revision surgeries. Patient demographics, including age and gender, were recorded. Data analysis involved categorizing the reasons for revision based on clinical assessments and radiological evidence. **Results:** Among the 31 patients included in the study, 9 were males and 22 were females. The age of the patients ranged from 43 to 81, with a median age of 65 and an interquartile range of 18.5. The primary reasons for TKA revisions were identified as aseptic loosening (10 cases) and prosthetic joint infection (PJI) (13 cases). Additional reasons included revision from surgitech hemicap (1 case), patella osteoarthritis (1 case), stiffness (2 cases), patella maltracking (2 cases), periprosthetic fracture (1 case), and patella resurfacing (1 case). **Conclusion:** The findings of this retrospective cohort study highlight aseptic loosening and PJI as the leading causes of TKA revisions in the examined patient population. These results emphasize the importance of optimizing surgical techniques, implant selection, and infection control measures to reduce the incidence of TKA revisions. Future research efforts should focus on preventive strategies to enhance patient outcomes and mitigate the need for revision surgeries in TKA procedures.



P94. Does the use of dual antibiotic-loaded bone cements (DALBC) hold promise to further reduce the incidence of PJI in higher risk patients?

Category: Infection

Presentation: Oral

Christof Berberich (Heraeus Medical GmbH)

Background

Periprosthetic joint infection (PJI) in geriatric and/or multimorbid patients is an enormous challenge for orthopaedic surgeons. Revision procedures have also been demonstrated to expose patients to higher infection risks. Prior patient stratification according to presumed infection risks, followed by a more potent local antibiotic prophylaxis protocol with selective use of DALBC, is an interesting strategy to decrease the burden of PJI in high risk patients.

Methods

The PubMed & EMBASE databases were screened for publications pertaining to the utilization of DALBC in cement for infection prophylaxis & prosthesis fixation. 6 preclinical & 7 clinical studies were identified which met the inclusion criteria and were stratified by level of clinical evidence. Only those studies were considered which compared the PJI outcome in the DALBC vs the SALBC group.

Results

(1) DALBC have been shown to exert a much stronger and longer lasting inhibition of biofilm formation on many PJI relevant bacteria (gram-positive and gram-negative pathogens) than single gentamicin-only containing cements.

(2) DALBC use (COPAL G+C) in the intervention arm of 7 clinical studies has led to a significant reduction of PJI cases in a) cemented hemiarthroplasty procedures (3 studies, evidence level I and III), in b) cemented septic revision surgeries (2 studies, evidence level III), in c) cemented aseptic knee revisions (1 study, evidence level III) and in d) cemented primary arthroplasties in multi-morbid patients (1 study, evidence level III-IV). These benefits were not associated with more systemic side effects or a higher prevalence of broad antimicrobial resistancies.

Conclusions

Use of DALBC is likely to be more effective in preventing PJI in high risk patients. The preliminar findings so far may encourage clinicians to consolidate this hypothesis on a wider clinical range.



P95. Posterior cruciate ligament injuries managed with internal bracing

Category: Knees

Presentation: Oral

Ashley Arakkal (Groote Schuur Hospital/University of CPT) , Brad Bonner (Groote Schuur Hospital/University of CPT) , Waldo Scheepers (Groote Schuur Hospital/University of CPT) , Richard De Villiers (Winelands Radiology) , Richard Van Bornmann (Groote Schuur Hospital/University of CPT) , Michael Held (Groote Schuur Hospital/University of CPT)

Introduction: Poor availability of allografts in South Africa has led to an increased use of synthetic augmentation to stabilize knee joints in the treatment of knee dislocations. This study aims to evaluate multiligament knee injuries treated with a posterior cruciate ligament internal brace.

Methods: The study included patients with knee dislocations who were treated with a PCL internal brace. The internal brace involved the insertion of a synthetic suture tape, which was drilled into the femoral and tibial footprint. Chronic injuries were excluded. Patient-reported outcome scores (PROMs), range of motion, stress X-Rays, and MRI scans were reviewed to assess outcomes.

Acceptable outcomes were defined as a Lysholm score of 84 or more, with grade II laxity in no more than one ligament and a range of motion from full extension to 90° or more.

Results: The study included eight patients, with a median age of 42, of which five were female. None of the patients had knee flexion less than 90° or an extension deficit of more than 20°. PROMs indicated acceptable outcomes (EQ5D, Tegner Lysholm). Stress radiographs showed less than 7mm (Grade I) of posterior translation laxity in all patients. Four patients underwent MRI scans 1-2 years after the initial surgery, which revealed healing of the PCL in all patients. However, increased signal in a continuous ligament suggested only partial healing in two patients. Tunnel widening of 200% and 250% was noted around the tibial and femoral PCL footprints, respectively.

Conclusion: All patients demonstrated stable knees and acceptable PROMs. Tunnel widening was observed in all patients who had MRI scans. Factors such as suspensory fixation, anisometric tunnel position, and the absence of PCL tear repair may have



P96. Surgical technique of arthroscopic single graft double- bundle posterior cruciate ligament reconstruction using the peroneus longus tendon

Category: Knees

Presentation: Oral

Waldo Scheepers (University of Cape Town, Orthopaedic Surgery) , Michael Held (University of Cape Town, Orthopaedic Surgery) , Dave North (University of Cape Town, Cape Town Sports & Orthopaedic Clinic) , Richard von Bormann (Cape Town Sports & Orthopaedics Clinic)

The posterior cruciate ligament (PCL) is the primary posterior stabilizer of the knee. PCL injuries rarely occur in isolation, and are associated with multiligamentous knee injuries in up to 95% of cases. Posterior cruciate ligament reconstruction (PCLR) has been demonstrated to improve outcomes and stability of the knee versus conservative management, and numerous techniques are available to the treating surgeon. The potential disadvantages of allografts and the use of multiple grafts have created the need for the use of a single autograft. Recent literature has indicated the superiority of the double-bundle PCLR technique over single-bundle usage, although this has been controversial in the past. Residual knee laxity is decreased, native knee kinematics are better replicated, and improved subjective and objective outcomes have been reported with anatomic double-bundle PCLR when compared to single-bundle PCLR. Peroneus longus tendon (PLT) grafts are frequently used in anterior cruciate ligament reconstructions, and good results have been reported with their use in single-bundle PCLR. The advantages of the PLT graft include a long length, a large cross-sectional area and a simple harvesting technique with reduced cost compared to allografts. Surgical time is also reduced by using a double-bundle single graft. In this article, we describe the technique of using a single graft double-bundle PCLR using the PLT. We recommend the use of our arthroscopic single graft double-bundle PCLR technique using the PLT as the authors have obtained good results with this method, though further research is required to evaluate the long- term outcomes of this technique



P97. Direct posterior knee portals using needle arthroscopy: a technical feasibility study.

Category: Knees

Presentation: Oral

Kelsi Greenwood (Department of Anatomy, School of Medicine, Faculty of Health Sciences, University of Pretoria South Africa) Maketo Molepo (Department of Anatomy, School of Medicine, Faculty of Health Sciences, University of Pretoria South Africa), Nkhensani Mogale (Department of Anatomy, School of Medicine, Faculty of Health Sciences, University of Pretoria South Africa) (Natalie Keough Department of Anatomy, Warwick Medical School, United Kingdom), Erik Hohmann (Burjeel Hospital for Advanced Surgery, Dubai, United Arab Emirates School of Medicine, University of Pretoria

Knee arthroscopy is typically approached from the anterior, posteromedial and posterolateral portals. Access to the posterior compartments through these portals can cause iatrogenic cartilage damage and create difficulties in viewing the structures of the posterior compartments. The purpose of this study was to assess the feasibility of needle arthroscopy using direct posterior portals as both working and visualising portals.

Methods: For workability, the needle scope was inserted advanced from anterior between the cruciate ligament bundle and the lateral wall of the medial femoral condyle until the posterior compartments were visualised. For visualisation, direct postero-lateral and -medial portals were established. The technique was performed in 9 knees by two experienced researchers.

Results: Workability and instrumentation of the posteromedial compartment and meniscus was achieved in 56%. The posterior horns could not be visualised in four specimens as the straight lens could not provide a more medial field of view. Visualisation from the direct medial posterior portal allowed a clear view of the medial meniscus, femoral condyle and posterior cruciate ligament in all specimens. Workability and instrumentation of the posterolateral compartment was not possible with the needle scope.

Conclusion: Direct posterior approaches for the posteromedial compartment access are challenging with the current needle scope options and could only be achieved in over 50%. The postero-lateral compartment was not accessible. An angled lens or a flexible Needle scope would be better suited for developing this technique further.



Determining the Safety and Accessibility of Direct Posterior Portals into the Knee with Respect to the Neurovascular Structures. A cadaveric study.

Category: Knees

Presentation: Oral

Kelsi Greenwood (Department of Anatomy, School of Medicine, Faculty of Health Sciences, University of Pretoria, South Africa ,South Africa) ,Maketo Molepo (Department of Anatomy, School of Medicine, Faculty of Health Sciences, University of Pretoria, South Africa, South Africa), Nkhensani Mogale (Department of Anatomy, School of Medicine, Faculty of Health Sciences, University of Pretoria, South Africa), Natalie Keough(Department of Anatomy, Warwick Medical School, United Kingdom United Kingdom),Erik Hohmann(Burjeel Hospital for Advanced Surgery, Dubai, United Arab Emirates)

Introduction: The posterior compartments of the knee are currently accessed arthroscopically through anterior, posteromedial or posterolateral portals. A direct posterior portal to access the posterior compartments has been overlooked due to a perceived high-risk of injury to the popliteal neurovascular structures. Therefore, this study aimed to investigate the safety and accessibility of a direct posterior portal into the knee. **Method:** This cross-sectional study comprised a sample of 95 formalin-embalmed cadaveric knees and 9 fresh-frozen knees. Cannulas were inserted into the knees, 16mm from the vertical plane between the medial epicondyle of the femur and medial condyle of the tibia and 8 and 14mm (females and males respectively) from the vertical plane connecting the lateral femoral epicondyle and lateral tibial condyle. Landmarks were identified in full extension and cannula insertion was completed with the formalin-embalmed knees in full extension and the fresh-frozen in 90-degree flexion. Posterior aspects of the knees were dissected from superficial to deep, to assess potential damage caused by cannula insertion. **Results:** Incidence of neurovascular damage was 9.6% (n=10); 0.96% medial cannula and 8.7% lateral cannula. The medial cannula damaged one small saphenous vein (SSV) in a male specimen. The lateral cannula damaged one SSV, 7 common fibular nerves (CFN) and both CFN and lateral cutaneous sural nerve in one specimen. All incidences of damage occurred in formalin-embalmed knees. The posterior horns of the menisci were accessible in all specimens. **Conclusion:** A medial-lying direct posterior portal into the knee is safe in 99% of occurrences. The lateral-lying direct posterior portal is of high risk to the CFN.



P98. TITLE CAST study Casting of unstable Ankle fractures that would have been Surgically Treated. A review of radiological outcomes of these fractures treated at secondary level hospitals in Cape Town.

Category: Foot and Ankle

Presentation: Oral

Britt Cindy Patterson (UCT), Jeannie McCaul (UCT)CAST study, G McCollum

Casting of unstable Ankle fractures that would have been Surgically Treated.

A review of radiological outcomes of these fractures treated at secondary level hospitals in Cape Town.

Background

The purpose of this study was to investigate the effectiveness of casting in achieving acceptable radiological parameters for unstable ankle injuries.

Method

This retrospective observational cohort study was conducted involving the retrieval of X-rays of all ankles taken over a 2 year period in an urban setting to investigate the radiological outcomes of cast management for unstable ankle fractures using four acceptable parameters measured on a single X- ray at union.

The Picture Archiving and Communication System (PACS) was used, the X-rays were measured by a single observer. Results From the 1st of January 2020 to the 31st of December 2021, a total of 1043 ankle fractures were treated at the three hospitals with a male to female ratio of 1:1.7.

Of the 628 unstable ankle injuries, 19% of patients were lost to follow up. 190 were managed conservatively with casts, requiring an average of 4 manipulations, with a malunion rate of 23.2%. Unstable ankle injuries that were treated surgically from the outset and those who failed conservative management and subsequently converted to surgery had a malunion rate of 8.1% and 11.0% respectively.

Conclusion

Unstable ankle fractures pose a challenge with a high rate of radiological malunion, regardless of the treatment Casting surgery from the outset or converted to surgery, with rates of 23% and 8% and 11% respectively. In this multivariate analysis we found that conservative management was the only factor influencing the incidence of malunion, age, sex and type of fracture did not have a scientific significant influence.



P99. Lateral ligament reconstruction using anterior half of peroneus longus

Category: Foot and Ankle

Presentation: Oral

Michael Abramson (University of Cape Town), Graham McCollum (University of Cape Town)

INTRODUCTION

Ankle sprains are common injuries. Most of them involve the lateral ligament complex. 20-40% of these injuries will go on to develop symptomatic chronic lateral instability (CLI) and require surgical intervention.

The gold standard surgical treatment remains the Brostrom-Gould. There are however certain scenarios where this may be unsuitable, such as in hyperlaxity, poor native tissue or revision surgeries.

In these situations, a reconstruction with some form of augmentation or grafting is necessary. The anterior half of peroneus longus (AHPL) has gained in popularity as an autograft due to its favourable tendon properties, ease of harvesting, and low reported morbidity. This technique has been adopted by the senior author in these situations.

Our primary aim was to assess patient reported outcomes and satisfaction following this surgery. Our secondary objectives were to assess return to sports, donor site morbidity and to report any surgical complications.

METHOD

We performed a retrospective single surgeon study on all patients who underwent CLI reconstruction using the anterior half of peroneus longus between 2014 and 2021. Data was collected prospectively. The Karlsson foot and ankle scoring chart as well as a simple satisfaction table were used to assess outcomes. Minimum follow up was 1 year.

RESULTS

44 patients met the inclusion criteria. 23 women, 21 men. The average age was 37.0 (+/-13.5).

24 were very satisfied with the surgery, 10 were satisfied, 6 were fair and 4 were dissatisfied. The average Karlsson score improved from 65/90 (34-77) to 85/90 (range 45-90).

The average return to sport was 5 months. There was 1 non-surgical complication recorded.

There was no repeat surgery for a complication, or recurrent instability and no donor-site morbidity was reported.

CONCLUSION

The results of our study demonstrates that the CLIR using AHPL is a reliable, predictable and safe



P100. A Retrospective Cohort Study of the use of a Propriety Calcium sulphate/Hydroxyapatite/Antibiotic compound (Cerament G) in the surgical treatment of Diabetic Foot.

Category: Foot and Ankle

Presentation: Oral

Jonathan Page (NHS), Paul Mackenney (NHS)

Introduction:

Diabetic foot problems are a common cause for hospitalisation in this group and up to 25% of diabetic patients will be affected. Prevalence of diabetes is rising, currently affecting 680000000 people worldwide. The enormity of this problem mandates any strategy that shortens therapeutic period and enhances success rates. Cerament G has been used in our unit as a treatment adjunct in diabetic foot treatment. Successful treatment is viewed as eradication of infection and a functional foot.

Method:

Retrospective review of 40 months practice: 115 patients. Inclusion- all diabetic feet requiring surgery Cerament G used, protocol driven Microbiology pathway.

Exclusion: Primary closure not possible. Cerament G not used.

Outcome assessed in three groups: Total failure (further surgery required); slow to heal (healing by secondary intention); healed without problems.

Results:

Healed 99 (eradication of infection and return to function), failure to heal 16 (success rate: 86.1%). Infection was the cause of failure in only in 2.6% (13 failures due to patient noncompliance or poor vascularity).

Conclusion:

Accepted success rate in treating osteomyelitis in diabetic feet is 68% (medical treatment only), combination of surgery and medical is 86%. Eradication of infection is the only end point return to function is not addressed. This study shows Cerament G with surgery/systemic antibiotics provides a 97.4% success rate.

Therapeutic drivers in this field have been determined traditionally by Physicians and Vascular Surgeons (resection rather than reconstructive surgery.) Our assertion is that eradicating infection in a functionally useless foot is a waste of health resources. Our strategy is always the delivery of an intact functional foot residuum. Cerament G as an adjunct allows this goal in a cost-effective manner.