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Correlation Of The Squat-and-Smile Test Against Other Patient Reported Outcome Scores In Knee Pathology

Registrar: no

Paper/Poster: Paper

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Submission:
Introduction
The use of Patient Reported Outcome Measures (PROM) for knee pathology may be affected by socioeconomic factors, language barriers and time constraints in busy outpatient clinics. The Squat and Smile Test (SST) is an example of such a test that has previously been validated for femur fractures. The aim of this study was to validate the SST against other PROM in patients with knee pathology.

Methods
Patients presenting to a subspecialist knee clinic in a large hospital in sub-Saharan Africa were approached to participate. They were asked to squat and the depth of the squat as well as the need to support themselves were, classified into 4 categories. To describe their pain, participants also selected one of three smiley faces (unhappy, neutral, smiling). These test scores were correlated to the patient’s Knee Injury and Osteoarthritis Outcome Score (KOOS), Lysholm Tegner Score and EQ5D scores.

Results
Seventy patients (median age 53.4 years) were included. The Squat depth correlated moderately with the KOOS score (r = 0.56) and poorly with the EQ5D and Lysholm scores (r=0.46; r = 0.43). The need for squat support had poor correlations with the KOOS, EQ5D and Lysholm scores (r= 0.29; r=0.31; r=0.31) as did the Smiley Face component (r=0.40; r=0.32; r=0.30).

Conclusion
For patients with knee pathology, the squat depth correlates moderately with other PROM. It could therefore be used in settings for which conventional PROM have limited application. Support needed to squat, and a visual analogue scale of smiley faces had poor correlation when compared to other knee PROM and should not be used for the assessment of knee pathology.
Hypoalbuminaemia In Orthopaedic Trauma Patients In A Rural Hospital In South Africa

Introduction
The deleterious effects of hypoalbuminaemia in the peri-operative period are well documented. We aimed to review serum albumin levels in a cohort of orthopaedic trauma patients to determine the prevalence of hypoalbuminaemia. Secondarily, we aimed to identify factors associated with an increased risk of hypoalbuminaemia.

Methods
A retrospective cross-sectional study was performed of data collected prospectively at a regional hospital serving primarily a rural population in South Africa.

Results
Two hundred ninety-five patients were included in the study. Twenty-nine per cent of the cohort was found to have hypoalbuminaemia. Femur neck fractures (p < 0.001), intertrochanteric fractures (p = 0.004), tibial plateau fractures (p = 0.034) and polytrauma (p = 0.013) were associated with hypoalbuminaemia. The mean albumin level was lower in HIV-positive patients when compared to HIV-negative patients (35.7 g/L vs 37.5 g/L, p = 0.007). The presence of comorbidities other than HIV, like diabetes mellitus (p = 0.001), previous pulmonary tuberculosis (p = 0.034) and chronic renal failure (p = 0.007) was associated with hypoalbuminaemia.

Conclusion
In this cohort of orthopaedic trauma patients from rural South Africa, we found a 29% prevalence of hypoalbuminaemia at the time of presentation. High-risk subgroups include patients with pre-existing comorbidities and increased age, as well as patients presenting with polytrauma, femoral neck, intertrochanteric femur or tibial plateau fractures.
A RCT Comparing Silver Impregnated Fibrous Hydrocolloid Dressings To Silver Sulfadiazine Cream Dressings For The Treatment Of Fracture Blisters To Determine Time To Surgical Readiness

Introduction
Fracture blisters are a fairly uncommon orthopaedic challenge, occurring in approximately 2.9% of all acute fractures. Treatment thereof is complex, with no prior clear consensus. The aim of this study was to investigate, in patients suffering from fracture blisters, the time to surgical readiness in those treated with silver impregnated fibrous hydrocolloid (SFH) dressings compared to those treated with topical silver sulfadiazine (SS) cream, and to determine the direct costs associated with both treatments.

Methods
Design
A single-blind, randomised controlled trial.

Setting
The study was conducted at Tygerberg Hospital, a tertiary care facility, and Worcester Provincial Hospital, a secondary care facility, Western Cape, South Africa.

Patients
Patients > 18 years, suffering from one or more fracture blisters overlying fractures requiring surgical fixation, were considered for inclusion.

Main Outcome Measurements
The main outcome was the time to surgical readiness, following complete re-epithelialisation of the affected site, in both groups. The direct cost associated with each treatment and the daily cost associated with hospital stay per day was recorded.
Results
At an interim-analysis 70 patients had been enrolled and completed the study protocol with 35 patients per group. Groups were balanced across patient and clinical demographic characteristics. A significant difference of 4 days (95%CI: 2.9-5.1 days, p < 0.001) in the mean time to surgical readiness (SFH group, 5.3 days vs SS group, 9.3 days) was observed. No difference between the time to surgical procedure as well as the total length of hospital stay between the two groups was observed.

Conclusion
This study reports that SFH dressings is a cost-effective treatment option for the management of fracture blisters evidenced by a significant accelerated time to blister re-epithelialisation compared to a commonly described method of SS cream dressings.
Introduction
This study aimed to create a geometric femoral profile for a South African population, using measures obtained from reconstructed multi-planar computed tomography scans. Specific objectives included i) investigating the association between specific measurements and subgroups ii) comparing measurements to current cephalomedullary nail design parameters.

Methods
Complete femur computed tomography scans of adult patients were used and orientated to the various desired anatomical planes with multi-planar reconstruction techniques to allow standardized landmark placement and measurement of the defined points.

Results
100 Computer Tomography Scans were included for review with the final Cohort consisting of 56 male and 44 female patients.

- Neck Shaft Angle of Proximal Femur: mean 126.3 degrees ± 5.4 (95% CI 125.2 - 127.4)
- Neck Shaft Angle to Apex Bow of Femur: mean 126.5 degrees ± 5.6 (95% CI 125.4 - 127.6)
- Neck Shaft Angle to Distal Intercondylar Notch: mean 128.3 ± 5.6 degrees (95% CI 127.2 - 129.4)
- Femur Neck Axis Length: mean 94.1 mm ± 7.4 (95% CI 92.6 - 95.6)
- Radius of Curvature: mean 1.2 m ± 0.3 (95% CI 1.1 - 1.2)
- Femur Neck Shaft Axis offset: mean 6.1 ± 1.7 mm (95% CI 5.7 - 6.4)
- Femur Anteversion: mean 18.8 ± 9.2 degrees (95% CI 16.9 - 20.6)
- Posterior Condylar Angle: median 2.1 (interquartile range 1.0 - 3.0)

Conclusion
This investigation has produced femur geometry measurements with techniques to limit positioning error and while the femur geometry in this study is similar to established norms, there were still noticeable implant-anatomy mismatches.

We highlight the novel measurement of the neck-shaft axis offset. The femur neck axis consistently passed anterior to the proximal femur axis, which may have a significant impact on proximal femur fixation and of particular concern to cephalomedullary device fixation, in which case an entry point will not solve the concern. Interestingly, the observed radius of curvature mean was smaller than the currently available femur nail
options. In addition, the average anteversion was larger than the implant options. Other mismatches were also identified, but the mismatch design may be intentional design philosophy and further clinical studies are required to assess the impact on femur fixation.
Check X-rays In Paediatric Orthopaedic Trauma: Is It A Redundant Practice?

Registrar: no

Paper/Poster: Paper

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Submission:

Introduction
Modern trauma practise usually involves the repeat of radiographs following any intervention including the applications of casts or back slabs. Most decision making with regards to orthopaedic surgical intervention can be made on the initial presenting Xray and a thorough neurovascular examination alone. All healthcare staff have a duty to minimise exposure to ionizing radiation as far as clinically possibly, more so in a paediatric cohort.

Methods
Retrospective review of all patients attending RHC emergency department between 1/8/20-31/10/20 with upper limb trauma that clearly required operative intervention based on initial radiographs. We used an exclusion criteria of the following requirements:

• Need for surgical intervention unclear on initial imaging
• Manipulation undertaken in Emergency Department
• Application of full-Plaster Of Paris

After establishing that there is a significant amount of redundant repeat x-rays we implemented a departmental wide QI request (28/02/2021 - 22/04/2021)to halt repeat x-rays being performed for all traumatic forearm fractures, including monteggias, galeazzi, off-ended distal radius fractures and displaced supracondylar humerus fractures. We repeated a similar audit months after to establish if there were any significant clinical outcomes.

Results
Audit 1:
• 18 Supracondylar humeral fractures
• 47 Forearm Fractures (both bone, distal-radius, Galeazzi, Monteggia
• 30 of 65 patients (46%) unnecessarily re-imaged following backslab application in the knowledge that they required surgical intervention!

Audit 2:
• 28 Cases including aforementioned upper limb traumatic cases
• 26 of 28 patients did not receive a repeat x-ray
• 2 of 28 received a repeat x-rays
Conclusion
After implementation of QI – there was no difference in outcome of whether patients required surgical intervention. Audit 1 presented us with data to establish that repeat x-rays were performed on those intended for theatre. Audit 2 proved that repeat x-rays provided no difference in clinical outcomes. Are repeat x-rays outdated, necessary and possibly harmful?
**Effectiveness Of Virtual Reality Training For Femoral Nail Application In Orthopaedic Surgery: A Systematic Review**

**Registrar:** no

**Paper/Poster:** Paper

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**Introduction**

‘See one, do one, teach one’, this longstanding adage describing the method of traditional surgical teaching has been transformed with the advent of immersive virtual reality (VR) training. VR training is a potential solution to the challenges of time, costs and patient safety posed by teaching in a clinical environment; VR allows students and trainees to practise surgical skills away from the theatre to gain competency before operating on patients. However, there remains a paucity in the literature regarding the validity of VR simulation in orthopaedic trauma procedures such as intramedullary femoral nailing. Therefore, this systematic review aims to evaluate the effectiveness of VR training for intramedullary femoral nail application across all training levels.

**Methods**

Free-text search strings, MeSH terms and expanded keywords/phrases were employed to search the PubMed, Embase (via Ovid), Web of Science and Scopus databases, in accordance with PRISMA guidance. Studies were deemed eligible if they investigated the effectiveness of VR training for femoral nail procedures.

**Results**

Fifty studies were identified following the database search, four studies met the eligibility criteria, comprising a total of 86 participants. Outcome measures differed significantly between the studies (17 different outcome measures used). The heterogeneity of the results meant a meta-analysis could not be conducted. A subjective analysis across all studies showed that VR training for the femoral nail application procedure demonstrated face, content, construct and transfer validity.

**Conclusion**

VR simulation training for the application of femoral nails has shown significant benefits to psychomotor and cognitive skills in students and orthopaedic trainees. VR simulators provide a realistic and cost-effective opportunity for trainees and students to practise their surgical skills, without having to rely on theatre-based experience. This is of particular importance during the COVID-19 pandemic where elective procedures have been cancelled at short notice, limiting surgical exposure for all trainees.
Introduction
There is a high number of patients presenting to our hospital following train accidents. The pattern of orthopaedic (musculoskeletal) injuries and management following these accidents is not fully reported. The aim of this study is to describe orthopaedic injuries sustained as a result of train accidents and evaluate how these are managed. A further aim is the assessment of the mortality and amputation rates of the patients involved and the description of the demographic details, in the hope that we can be better prepared to manage these injuries and be able to direct prevention strategies.

Methods
This is a retrospective observational study of patients presenting to a Level 1 Trauma Centre in a major city of South Africa. Prospectively collected data from January 2013 to July 2019 were reviewed retrospectively. All patients presenting with complaint ‘train casualty’ or ‘train-‘ were included in the study.

Results
Two hundred and twenty-two patients were identified presenting as train casualties to our trauma department; 48 patients were excluded, leaving a total of 174 patients included in the study; 92 of these were orthopaedic referrals. The average age was 29 years and males accounted for 87% of the patients. Eight patients (4.6%) in total died in the trauma unit. Twelve patients (6.9%) underwent amputation to 14 body parts.

Conclusion
The findings of this retrospective observational study of 174 patients provide an insight into train accident victims and their orthopaedic injuries, as well as management patterns. The victims of these accidents are young males from poor socioeconomic areas. The victims who make it to hospital have a good chance of survival and even limb salvage. Despite the improved updated treatments, more needs to be done in terms of controlling and preventing railway violence and accidents.
Fine Wire Frame Assisted Tibial Nailing

Registrar: no

Paper/Poster: Paper

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Submission:

Introduction
Tibial fractures are the most common of the long bone fractures. The preferred treatment for tibial diaphyseal fractures is intramedullary nailing using a suprapatellar approach. Intramedullary nailing can be technically challenging especially when the fracture is in the proximal and distal third of the tibia and there is a higher risk of mal reduction. We investigated a technique where we make use of a fine-wire external ring fixator to assist with reduction of the fractures before insertion of a tibial intramedullary nail via a suprapatellar approach.

Methods
We retrospectively reviewed all tibia fractures that were operatively managed with an intramedullary nail inserted via a suprapatellar approach after placement of a fine-wire external ring frame to aid reduction of the fracture. 31 patients underwent frame assisted tibial nailing for acute fractures during the period November 2019 to November 2020. Full length AP and lateral radiographs of the operated tibia were obtained either immediately post op or at the Orthopaedic Outpatient Clinic 2 weeks post-surgery. We measured the varus/valgus angulation at the fracture site on AP radiograph views and the procurvatum/recurvatum angulation on lateral views. Angulation of less than 5 degrees varus/valgus and 10 degrees recurvatum/procurvatum was considered adequate reduction. We also assessed for post-operative complications related to the placement of the fine-wire frame.

Results
Acceptable reduction in 27 of the cases was achieved. Mal reduction noted in two cases. Unfortunately, there were no post-operative images in two of the cases. The mean operative time was 77 minutes. The mean waiting time from injury to surgery was 6.5 days. No complications related to the fine-wire frame were documented in 30 of the cases while one patient developed septic metalware which was treated successfully with suppressive antibiotics, debridement and removal of metalware once fracture union was achieved.

Conclusion
Fine-wire frame assisted tibial nailing of unstable tibial fractures via a suprapatellar approach is easy and safe to perform. The fine-wire frame helps achieve adequate length, angulation and rotation of tibial fractures before insertion of the intramedullary nail. In some instances, the technique may need to be augmented with temporary blocking wires or screws during passage of the reduction guidewire and intramedullary nail.
Introduction
Below knee amputation is the safest treatment for aggressive benign and malignant bone tumours of the distal tibia yielding good oncological and functional results. However, in selected patients where limb salvage is feasible and amputation unacceptable to the patient, limb salvage using a distal tibial replacement (DTR) can be considered.

Methods
A retrospective folder review was performed for all 10 patients who received a modular distal tibial replacement between 01/01/2005 and 31/01/2019 for a primary bone tumour either benign aggressive or malignant. Six were female and the mean age was 31 (12-75) years. There were five patients with giant cell tumour of bone, four with osteosarcoma and one with a low-grade chondrosarcoma. The patients with osteosarcoma had neo-adjuvant chemotherapy before surgery. Function was assessed by the Musculoskeletal Tumor Society (MSTS) score.

Results
Two patients had local recurrence treated with a below knee amputation. and one patient died of metastases. At a mean follow-up of 3 years, the remaining 8 patients had a mean MSTS score of 83 (67 - 93) %. One patient died of metastases 3 years postoperatively.

Conclusion
Endoprosthetic replacement of the distal tibia for primary bone tumours can be a safe treatment option in very selected cases.
Polidocanol Injections For Aneurysmal Bone Cysts – Results In 66 Consecutive Patients

Introduction
In 2007 we introduced percutaneous sclerotherapy with Polidocanol as the treatment of choice for aneurysmal bone cysts (ABCs). We present our experience of this method.

Methods
We retrospectively analyzed data from 66 consecutive patients treated with repeated injections of polidocanol. Diagnosis was based upon radiological findings and, in most cases, fine needle aspiration biopsy. Open biopsy was only performed in diagnostically atypical cases. Each injection consisted of 4 mg polidocanol per kg body weight. Healing was considered to have occurred when there was no remaining pain and radiology showed sclerosis in or around the lesion. Median follow-up time was 3 (1-7) years.

Results
60 of the 66 cysts healed after a median of 4 (1-11) injections. Two lesions failed to respond and were curetted and filled with bone cement. 4 lesions recurred 2-7 years after treatment. Four patients experienced minor local inflammatory reactions.

Conclusion
Our results show that percutaneous sclerotherapy with polidocanol has high efficacy in the treatment of ABCs, with a low frequency of side effects. The method appears especially valuable in ABCs of the pelvis and sacrum, where surgery is associated with considerable morbidity.
Prosthesis Or Osteosynthesis For The Treatment Of A Pathological Hip Fracture? A Nationwide Registry-based Cohort Study

Introduction
How endoprosthetic replacement compares to osteosynthesis in the treatment of pathologic hip fractures as far as functional outcome and use of healthcare resources is concerned remains largely unknown. We aimed to investigate this in a nationwide registry.

Methods
The study was based on 980 patients with a pathological fracture of the proximal femur, reported to the Swedish Fracture Registry 2014-2018. We analyzed the functional outcome after surgery for a pathological fracture of the hip in terms of post-operative pain and ambulatory capacity. The preferred surgical method depending on the level of the treating unit was also examined. Furthermore, we documented the length of hospital stay and the patterns of discharge and compared them between these two methods.

Results
Patients operated with an endoprosthesis reported significantly lower pain at follow-up. Both methods (endoprosthetic replacement and osteosynthesis) were equally effective in restoring the ambulatory capacity and demanded a similar length of stay in hospital. Orthopaedic surgeons working in hospitals with dedicated sarcoma teams were more likely to use a prosthesis rather than osteosynthesis, when compared to surgeons working at other university hospitals or emergency hospitals.

Conclusion
Endoprosthetic replacement results in a better functional outcome in terms of post-operative pain without consuming more healthcare resources. Endoprosthetic replacement should be, in most cases, the method of choice in pathological fracture of the proximal femur.
Introduction
Knee scooters have become popular for patients required to be non-weightbearing. Information is limited regarding falls and injuries sustained while using knee scooters and potential contraindications to their use are ill-defined. No study has assessed patient reported injuries and satisfaction. This study aimed to evaluate the patient’s perspective with regards to use of a knee scooter. As a secondary aim we assessed for risk factors associated with knee scooter related injuries to make recommendations for the safe use of knee scooters.

Methods
Patients who used a knee scooter between 2018 and 2020 were emailed a questionnaire assessing (1) demographic data, (2) medical history, (3) falls and injuries sustained, including management of these, and (4) patient satisfaction. This study was a descriptive, cross-sectional survey analysis.

Results
101/196 (51.5%) responses were received, which included 32 males and 69 females. The cohort had a mean age of 56.4 years, and BMI of 28.5. Mean time spent using the scooter was 6.7 weeks. Twenty-five respondents fell off the scooter, with 5 reporting injuries. One patient required medical attention for a shoulder injury. Cause of fall included hitting an obstacle, making a sharp turn, moving too fast, and moving downhill. There was no correlation between falls and patient comorbidities. Ninety-six percent of respondents reported high satisfaction and preferred the scooter to crutches.

Conclusion
The knee scooter is a safe, and well-tolerated, mobility aid for patients requiring non-weightbearing during their recovery, with high satisfaction rates. Educating patients on correct use and common causes for falling is an important preventative measure.
Introduction
To determine the incidence of pulmonary metastases on chest CT in trunk and extremity soft tissue sarcoma based on two size criteria, and to identify factors associated with metastases.

Methods
A Retrospective review of chest CT studies in patients with trunk and extremity soft tissue sarcoma over an 18-month period. Data collected included patient age/sex, tumour location, size and relationship to fascia. All chest CTs were reviewed for the presence of metastases which were diagnosed according to two size criteria: multiple nodules > 5 mm in size or multiple nodules > 10 mm in size. Follow-up CT studies were reviewed in cases initially considered indeterminate.

Results
127 males and 73 females were included (mean age 57.1 years; range 10-90 years). 147 (73.5%) tumours were deep to the fascia and 53 (26.5%) superficial. Tumour size classified according to the 12 AJCC 2019 criteria was: T1 = 52, T2 = 76, T3 = 39, T4 = 33. Based on nodule size > 5 mm, 73 (36.5%) patients had no metastases, 42 (21%) had metastases, while 85 (42.5%) studies were indeterminate. Based on nodule size > 10 mm, 73 (36.5%) patients had no metastases, 28 (14%) had metastases, while 99 (49.5%) studies were indeterminate. Larger maximum dimension of the primary tumour was a risk factor for pulmonary metastases using both size criteria.

Conclusion
The incidence of pulmonary metastases at presentation in trunk and extremity soft tissue sarcoma is 14-21%. 42.5-49.5% of chest CTs were indeterminate.

Disclosure: The incidence of pulmonary metastases at presentation in trunk and extremity soft tissue sarcoma is 14-21%. Indeterminate pulmonary nodules are also very common.
A Review Of The Role Of Targeted Muscle Reinnervation In Managing Amputation-related Pain

Registrar: no

Paper/Poster: Paper

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Submission:
Introduction
Surgical and non-surgical options have been considered for the management of post-amputation neuroma pain. Despite the large variety of surgical treatments, the only surgical treatment that has been shown to result in a consistent and reproducible improvement is Targeted Muscle Reinnervation (TMR) surgery.

Methods
Four databases MEDLINE (PubMed), Scopus, Web of Science, Cochrane Library and Embase, were searched. Each article had to fully satisfy the eligibility criteria to be included. Different assessment tools for pain was tested in the included studies. Phantom limb pain (PLP) and Residual limb pain PROMIS scoring system were used. It measured intensity, behaviour and interference.

Results
Six papers met the inclusion criteria and were eligible for inclusion in the qualitative and quantitative analysis. Total of 150 patients were included with a sample size range from 16-51 TMR patients. Compared to standard treatment at 12 months, TMR showed a significantly lower worst phantom limb pain (n= 580; mean difference= −2.33; 95% CI= −3.21 to -1.45; P < 0.01) as well as for worst residual limb pain (n= 578; mean difference= −2.54; 95% CI= −3.23 to -1.84; P < 0.01). For PROMIS phantom limb pain measures, compared to standard treatment at 12 months, TMR showed a significantly lower pain intensity (n= 646; mean difference= −9.67; 95% CI= −12.75 to -6.59; P < 0.01), behaviour (n= 641; mean difference= −7.12; 95% CI= −10.61 to -3.62; P < 0.01) and interference (n= 645; mean difference = −7.90; 95% CI= −12.62 to -3.18; P < 0.01).

Conclusion
Based on this review, it can be concluded that TMR has shown favourable results for managing pain in pre and post-operative patients in comparison with the general amputation population or with the preoperative status.

Disclosure: Randomized trials to compare different techniques are still recommended.
Introduction
Aspiration of a joint (arthrocentesis) is a critical component in diagnosing arthritis. A large number of our patients didn’t have sufficient blood investigations ordered. Also, documentation of the procedure and its findings was poor. Therefore we developed the ‘Joint Arthrocentesis Checklist’ as an interventional tool to our practice with respect to BSR & BHR, ROA, RCGP and BSAC guidelines for the management of the swollen hot joint in adults.

Methods
A retrospective study for adult patients with hot swollen joints requiring joint aspiration. In the first cycle, data collected from 29 random patients' admitted to Morriston Hospital over a period from September 2019 till June 2020. After introducing the checklist, a second cycle was done. Data were collected from 21 random patients between February 2021 till April 2021.

The criteria investigated:
1) bloods requested on presentation
2) blood culture on presentation
3) evidence of aspiration to dryness
4) sufficient and standardized documentation.

Results
In the first cycle; ESR level, Blood culture and LFTs were requested in 8.3%, 41.6%, and 70.8% of patients, respectively. However, CRP level and U&Es were requested in 91.6%. Documentation presented in 75% of all patients, however unstandardized and insufficient. Also, aspiration to dryness was evidenced in 0% of all patients included.

In the second cycle; the checklist was used in 90.5% of patients included. ESR level, Blood culture and LFTs requested increased by 37.3%, 21.9%, 5.3% respectively. However, CRP level and U&Es requests stayed relatively the same at 89.7%. Aspiration to dryness was evident in 100% of all cases where the checklist was used. Documentation presence escalated to reach 90% of patients. Finally, documentation was more standardized and sufficient.
Conclusion
Improvement was noted in our practice concerning bloods, cultures requested and sufficient documentation. We suggest using the 'Joint Arthrocentesis Checklist' to aid health practitioner to minimize missing vital clinical steps such as patient ID confirmation, bloods, and equipment required. Also, to record aspirate appearance, volume and microscopy. The checklist helped with standardization of care provided to our patients as well as its documentation.
Continuous Irrigation As Dead Space Management For Fracture Related Type 1 Intramedullary Chronic Osteomyelitis

Introduction
Dead space management following intramedullary debridement and reaming can be challenging and several alternatives have been described. The main objective of this study was to investigate the clinical outcome and resolution rate in patients treated for fracture related Cierny and Mader anatomical type 1 intramedullary chronic osteomyelitis by means of continuous irrigation (modified Lautenbach system) as dead space management following intramedullary reaming.

Methods
A consecutive series of thirty patients with Cierny and Mader type 1 chronic osteomyelitis, treated between May 2016 and September 2019, were evaluated retrospectively. Patient history and clinical information, including imaging and laboratory results, were reviewed. Treatment procedures and antibiotic profiles were also recorded.

Results
The initial cohort included 30 cases with 18 tibias, 11 femurs and one humerus. Seven patients were excluded; three patients did not return for follow up and four patients had less than six months follow up. Of the remaining 23 patients, 91% (21/23) achieved resolution of infection over a median follow up period of 16 months (Interquartile range, IQR 7-21 months). Infecting organisms where isolated in 65% (15/23). The median duration of hospital stay was 6 days (IQR 4-7 days). Post-operative complications were noted in two cases and involved a tibial and femoral refracture, respectively. Both patients however achieved union without recurrence of infection following surgical intervention.

Conclusion
Continuous irrigation is an effective option for dead space management during the treatment of intramedullary chronic osteomyelitis in a resource constrained environment. It provides the additional advantage of instilling high dose intramedullary antibiotics and negates the need for a second surgical procedure.
Outcomes Of Bilateral Simultaneous Hallux MTPJ Fusion

Registrar: no

Paper/Poster: Paper

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Submission:
Introduction
Arthrodesis of the first metatarsophalangeal joint (MTPJ) is a frequently performed surgical procedure. Many patients have bilateral hallux MTPJ pathology requiring bilateral arthrodesis. There are concerns that bilateral simultaneous hallux surgery, under one anaesthetic, results in the patient being severely incapacitated in the early post-operative period. We hypothesize that bilateral simultaneous hallux MTPJ fusions does not compromise outcomes or the patients’ post-operative comfort and rehabilitation and is cost and time effective.

Methods
In this retrospective study, 16 patients who underwent bilateral simultaneous first MTPJ arthrodesis were compared to 16 patients who had unilateral MTPJ arthrodesis with regards to outcome, tolerance, cost and time effectiveness. Outcome measures were evaluated using the American Orthopaedic Foot and Ankle Society (AOFAS) hallux score and the Self-Reported Foot and Ankle questionnaire (SEFAS).

Results
There was a significant improvement in the AOFAS scores post-surgery in the bilateral group and according to the SEFAS grading, 14 patients (87.5%) had good or excellent outcome scores with 13 (81.25%) of these patients having excellent scores. This was comparable to the outcome scores in the unilateral group. Two patients developed non-unions bilaterally compared to one in the unilateral group. There is also a notable general cost saving and less time off work when bilateral fusions are done at the same setting.

Conclusion
Bilateral simultaneous hallux MTPJ arthrodesis is an effective, convenient and cost effective option for patients requiring MTPJ fusions for bilateral hallux pathology.
Functional And Patient Reported Outcomes Following Lateral Hallucal Sesamoidectomy

Introduction
Lateral hallucal sesamoidectomy is an infrequently performed procedure indicated for patients with sesamoid pathology failing conservative treatment. Concerns exists regarding patient satisfaction, plantar scar pain, hallux malalignment and metatarsophalangeal joint (MTPJ) movement restriction following sesamoidectomy. This study aims to assess patient satisfaction after lateral hallucal sesamoidectomy via the plantar approach.

Methods
In this prospective study, we reviewed all patients who underwent lateral hallucal sesamoidectomy between January 2004 and December 2017. Twelve patients (14 feet) were available for final assessment. Outcome measures were evaluated using the American Orthopaedic Foot and Ankle Society (AOFAS) clinical rating scale and the Self-Reported Foot and Ankle questionnaire (SEFAS). Patients were assessed clinically and radiologically. The average postoperative follow-up was 111.5 months (range 28-177 months).

Results
All patients reported excellent outcome scores with a mean SEFAS score of 46.08 (range 43-48) and a mean AOFAS score of 92.33 (range 78-100) at final follow-up. All twelve patients reported their outcome as being excellent. No malalignment was noted clinically, however, three patients had a noticeable increase in the gap between the hallux and second toe when compared to the contralateral side. Range of motion at the MTPJ was preserved with a mean dorsiflexion of 80.83 degrees (range 70-90 degrees) and a mean plantarflexion was 25.83 degrees (range 0-30 degrees). None of the patients experienced any pain, discomfort or irritation related to the plantar scar. One patient developed neuroma like symptoms in the first web space.

Conclusion
Lateral hallucal sesamoidectomy via a plantar approach is an effective and reliable treatment option as demonstrated by the high levels of patient satisfaction, preservation of function, excellent PROM scores and limited complications in this study.
Patient Reported Outcomes Following Revision Neurectomy
Through A Dorsal Approach For Recurrent Interdigital Neuroma

Registrer: no

Paper/Poster: Paper

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Submission:

Introduction
Interdigital neuroma is one of the commonest causes of metatarsalgia. The reported success rate after excision of a primary neuroma is 74%. Recurrent symptoms after neurectomy can be due to a recurrent interdigital neuroma. Recurrent interdigital neuromas can be diagnosed using sound clinical examination and ultrasonography. Surgical excision is the best treatment modality with varying success reported in the literature. We report on the clinical outcome following surgical excision of recurrent interdigital neuromas through a dorsal approach.

Methods
All patients who had undergone excision of a recurrent interdigital neuroma by a single surgeon between 01/2010 and 12/2019 were identified. Inclusion criteria included patients having a preoperative ultrasound and postoperative histology report. The exclusion criteria were preexisting neuropathy or tarsal tunnel syndrome. Demographic data was collected, and a self-reported foot and ankle score questionnaire (SEFAS) was completed by the patient at their most recent follow-up.

Results
Twenty-three patients (25 feet) were included in the study. Mean time of follow-up was 75 (range 14 to 189) months. The mean age was 49 (range 15 to 71) years. Eleven (44%) recurrent neuromas were excised from the second webspace and 14 (56%) were excised from the third webspace. All excised masses were confirmed as recurrent neuromas histologically. Regarding the SEFAS score, 17 (73.93%) patients scored as excellent, one (4.34%) as good, three (13.04%) as fair, and two (8.69%) as poor.

Conclusion
This long term follow-up study on outcomes after surgery for recurrent interdigital neuroma suggests that excision through a dorsal approach is an effective treatment option with a high patient satisfaction.
Comparison Of Two Oblique Fifth Metatarsal Osteotomies For The Management Of A Bunionette

Introduction
A bunionette is a painful prominence of the fifth metatarsal head. This study aimed to compare the clinical outcome of 2 corrective osteotomies, namely, the Mau-type and Ludloff-type osteotomies. We report results with regard to correction, healing, complications, and patient-reported outcomes.

Methods
Thirty-two patients who underwent bunionette corrective surgery from March 2011 to May 2017 were included in the study. All patients had pre- and postoperative radiographs. The pre- and postoperative fourth-fifth intermetatarsal angles (IMAs) and postoperative fifth metatarsal bowing angle were measured. Radiographic union was assessed at 12 weeks. All patients completed the Self-Reported Foot and Ankle Score (SEFAS) questionnaire to assess clinical outcome. Thirty-two patients (43 feet) were available for follow-up and completed the SEFAS score. Twenty-two Mau-type and 21 Ludloff-type osteotomies were performed.

Results
The mean pre- and postoperative IMA for Mau was 10.5 and 4.3 degrees, respectively, and for the Ludloff was 10.2 and 4 degrees, respectively, with no statistically significant difference between the 2 groups. The Mau caused more bowing with a mean of 9.8 degrees as compared to a mean of 3.5 degrees with the Ludloff. No patients in the Mau group reported clinical problems related to the increased bowing. All osteotomies united. The Mau cohort had a mean SEFAS score of 45 and the Ludloff cohort a mean of 46. No feet had fair or poor outcome scores.

Conclusion
Patient satisfaction after bunionette correction with an oblique shaft rotational osteotomy was good. Orientation of the osteotomy did not affect outcomes. Postoperative bowing of the fifth metatarsal was greater with the Mau-type osteotomy. Postoperative fifth metatarsal bowing had no negative clinical effects. The trend in our unit has been a preference toward the Mau-type osteotomy as it is perceived to be more stable.
SAOA Congress 2021

Category: General

ID: 11283

A Clinician-run 3D Printing Lab For Orthopaedic Pre-operative Planning: An Illustrative Case Series

Registrar: no

Paper/Poster: Paper

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Submission:

Introduction
Because of the reduced cost and increased accessibility, it has become possible to make 3D Printing (3DP) part of daily practice in the orthopaedics department of a South African academic hospital in a sustainable way.

Methods
In 2018, a clinician-run orthopaedic 3DP Laboratory was founded to study the place of this emergent technology, specifically in pre-operative planning. The design and manufacturing process is discussed, and two main usage situations are elaborated on: models for intra-operative reference (haptic maps) and models for rehearsal or templating (simulation models).

Results
From January 2020 to April 2021, 3D printed anatomical models were manufactured for 16 patients. For 12 patients these were simulation models, and for four patients these were haptic maps. The average time for manufacture was 33 hrs (range 8hrs to 56hrs), and the average cost per model was ZAR 3 823.00 (range ZAR 781.00 to ZAR 12 720.00). Three specific cases are discussed to illustrate the range of potential applications in orthopaedic pre-operative planning.

Conclusion
Using 3D P anatomical models, it is possible to simulate critical steps in a surgical procedure, taking an essential part of surgical training out of the high-stress environment of the operating room. By developing a basic capacity for design and manufacture of these models in-house, we have greater control over the process. This technology offers a range of benefits including simulating basic procedures and the planning and rehearsal of advanced complex cases.
The Bridging Infix: A Modified, Minimally-invasive Subcutaneous Anterior Pelvic Fixation Technique And Case Series

Registrar: yes

Paper/Poster: Paper

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Submission:
Introduction
The management of pelvic ring injuries using minimally invasive techniques are gaining wider acceptance, especially if adequate reduction and stability can be achieved with these modern techniques. We present the Bridging Infix technique; which is a modification and combination of existing techniques for subcutaneous anterior pelvic fixation.

Methods
The incisions are limited to over the iliac crests and a 6 to 8 cm incision superior to the pubic symphysis. Subcutaneous tunnels are made with blunt dissection to connect the lateral windows to the middle window. A custom bent plate-rod (used in occipito-cervical fusion) is passed through the tunnel, with the plate section fixed to the iliac crest. The rods are connected in the middle window via rod-rod clamps to a straight rod. Fracture reduction can be done at this stage before tightening of the connecting clamps. Intra-operative fluoroscopy is used to confirm placement and final reduction. Patients are encouraged to weight-bare as tolerated immediately post-op, but can remain toe-touch weight-baring for the first six weeks in selected cases. The implant is not routinely removed.

Results
We present the technique and cases where the Bridging Infix was used to treat fragility fractures of the pelvis, provide anterior fixation in lateral compression fractures, revision surgery due to pelvic sepsis and anterior stabilization for SI fusion.

Conclusion
The Bridging Infix is a modified technique for minimally-invasive subcutaneous anterior pelvic fixation. Its use can strongly be considered by even the general orthopaedic surgeon in cases where an external fixator may not be well tolerated or where patients are too frail for extensive or invasive surgeries, such as open reduction and internal fixation with plate and screws.
Quality Of Life Following An Open Latarjet-Bristow Procedure In A General Population With A Recurrent Anterior Shoulder Instability

Registrar: yes

Paper/Poster: Paper

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Submission:

Introduction
Despite the high reporting on anterior glenohumeral instability, to date, there are no studies that report on the quality of life following a Latarjet-Bristow procedure with a recurrent anterior shoulder instability. The purpose of this study was to evaluate quality of life in patients who had a Latarjet-Bristow procedure.

Methods
A single centre retrospective review with a prospective recall of patients who underwent a Latarjet-Bristow technique for recurrent anterior glenohumeral instability at the Chris Hani Baragwanath Academic Hospital Orthopaedic Department between 01 January 2017 and 31 March 2020. Outcomes measures included: Health related quality of life using the Short Form (SF)-36 questionnaire, patient related outcome measures using the Western Ontario Shoulder Instability Index (WOSI) and Rowe scores.

Results
A total of 66 patients were identified to participate in the study; 40 (60.6%) responded and were included in the analysis. There were nine females and 31 males with a median age of 32 years (range 27.5 – 41 years). Three patients had bilateral anterior shoulder instability with a single joint being operated and three patients were epileptic. Physical and mental components summary of the SF-36 showed a better health related quality of life in the general population. There was a significantly strong correlation between SF-36 and WOSI. However, SF-36 and Rowe scores showed a fair correlation. Our study revealed an overall 15% complication rate of which 7.5% of cases were hardware-related complications, 2.5% instability arthropathy and 7.5% recurrence rate.

Conclusion
The Latarjet-Bristow procedure improves the quality of life in a general population similarly to an athletic population. The number of episodes of dislocation before surgery and the delayed surgical intervention did not increase the recurrent anterior shoulder instability rates postoperative.
Proposal For A South African Sarcoma Registry

Registrar: no

Paper/Poster: Paper

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Submission:
Introduction
Sarcoma care in South Africa is an under-developed entity characterized by late presentation of patients, frequent absenteeism, delays in treatment and difficulty in providing treatment due to resource constraints. However, the development of the South African Oncology and Limb Salvage Society along with efforts in the major centres is improving access to sarcoma treatment for South Africans.

We currently do not have accurate data on the incidence and prevalence of sarcomas in South Africa and a registry has been a long-term goal here. Data is powerful and would be useful to motivate for increased education and awareness surrounding sarcomas in South Africa as well as allocation of resources for personnel and treatment. The aim of this presentation is to instigate cooperation with other sarcoma centres in South Africa to launch a comprehensive South African Sarcoma Registry.

Methods
The type of data collected pertains to referral, diagnostics, tumour characteristics, treatment and follow-up. Important variables include:

- whether the patient had been operated before referral to a sarcoma centre
- type of biopsy they received
- tumour size
- tumour type and grade
- amputation or limb sparing surgery
- surgical margins
- adjuvant chemotherapy or radiation therapy
- follow-up of local recurrence, metastases and cause of death.

Results
A template for a Sarcoma Registry has been set up. A Sarcoma Registry has been approved by the UCT Faculty of Health Sciences Human Research Ethics Committee R005/2021. We will start entering patients treated in the Cape Town hospitals both private and academic in August 2021. We will try to locate sarcoma patients that have not been referred to a Sarcoma Centre by working with the South African Cancer Registry.

Conclusion
A Sarcoma Registry will increase interest in sarcoma care in South Africa, both at the general and specialist level. With local data from a South African Registry, better decisions can be made around sarcoma treatment. It will also lead to more patients referred to specialized sarcoma centres which is paramount for a good oncologic outcome.
Primary THA In The Very Young Patient (<55 years)

Registrar: no

Paper/Poster: Paper

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Submission:
Introduction
The successes of total hip arthroplasty (THA) has internationally resulted in more arthroplasty being performed in younger patients. The quadruple disease profile in developing countries such as South Africa also contribute to unique pathology profile that presents for THA. In particular, i) trauma, ii) the HIV pandemic and iii) alcohol abuse put the very young patient at risk for developing early hip arthritis which eventually results in the need for THA. The aim of this study was to provide an overview of population profile of young patients (< 55 years) presenting at our institution for THA.

Methods
A retrospective review of all primary THA being performed in patients < 55 years old in a single tertiary hospital in South Africa, between 2015 and 2020, was conducted. Demographical data as well as clinical data, including diagnosis, surgical approach and bearing surface, fixation technique and surgical seniority, was collected.

Results
A total of 382 THA were performed during the study period (7%, n=26 < 25 years; 17%, n=65 < 35 years; 23%, n=86 < 45 years; 57%, n=216 < 55 years). Mean age was 42.7 years with most being male 58% (n=216). Uncemented fixation was used in 96% (n=366) of the cases via the posterior approach 68% (n=260). Ceramic on highly crosslink polyethylene were the most used bearing combination 51% (n=195) with an 32mm diameter femoral head 75% (n=286). The main pathology was avascular necrosis (42%, n=160. The primary surgeon in most cases was an arthroplasty consultant (50%, n=191), followed by an arthroplasty fellow (31%, n=118) and an arthroplasty registrar (19%, n=73).

Conclusion
We report a high volume of young patients, < 55 years, requiring primary THA at a tertiary hospital in South Africa. The main pathologies included avascular necrosis and trauma which highlights the quadruple disease burden of developing countries that contributes to an increased burden of very young patients presenting for THA.
Tuberculosis Of The Knee In A Resource Constrained Setting At Mafikeng Provincial Hospital (North West Province, South Africa)

Introduction
Aim
To outline the clinical presentation and common radiographic features of TB of the knee. To evaluate the response to treatment over a 9 month period and to assess the manner in which TB of the knee is currently managed and outline how this can be altered to better suit a resource constrained setting.

Methods
A sample of 5 patients were selected and prospectively followed up between 2020 and 2021. The patients were assessed clinically, radiographically and a full biochemistry baseline work up was performed. X-ray investigations were classified according to the Kerri and Martini classification system. All patients at presentation received a functional assessment through the use of the Oxford knee score (OKS). All patients were diagnosed by means of partial synovectomy and GXP of synovial fluid. TB treatment was instituted for a 9 month period. Physiotherapy rehabilitation was also provided throughout. After completing treatment, ESR and an oxford knee score were repeated, assessed and documented. The changes in the baseline and the post-treatment investigations were analysed.

Results
Common clinical features included inability to weight-bear without a walking aid, joint warmth and erythema with tender joint line with absence of joint effusion. X rays features showed gross anatomical disorganisation with focal erosions and juxta-articular osteopenia for the majority of cases. All cases had positive GXP with classic histological features on biopsy. After completing treatment (9 months) the patient sample showed an average improvement in OKS of 15% and an average ESR reduction of 55 mm/hour.

Conclusion
It is well known that osteo-articular tuberculosis is infamous for being the great imitator of other pathological processes. Patients thus often present late with significant functional limitation. The incidence of the so called “Late-Presenters” is postulated to be exponentially higher in the remote/ rural parts of South Africa. Despite the late clinical presentation, significant (up to 15%) improvement in functional capacity can be achieved by simply starting anti-TB chemotherapy and instituting a carefully planned physio programme.
Introduction
The success of Total Knee Arthroplasty (TKA) internationally has resulted in these procedures being increasingly performed on younger patients. However, there is a paucity of literature regarding TKA in the young patient (< 55 years). Furthermore, the effect of HIV, trauma and limited health resources in the South African context, and the influence of these factors on young patients undergoing TKA has not been investigated. The aim of this study was to provide an overview of young patients (< 55 years) presenting at our institution for TKA.

Methods
A retrospective review of all primary TKA’s performed in patients < 55 years old at a single tertiary hospital in South Africa, between 2017 and 2020, was conducted. Demographic data as well as clinical data, including diagnosis, severity of deformity, implant and fixation method was collected.

Results
A total of 276 primary TKA’s were performed during the study period. Thirty-one TKA’s (10.6%) in 24 patients were done in patients under the age of 55 years. Seven patients received bilateral staged TKA. The majority (n=20) were female with a mean age of 47.6yrs. (range 27-55yrs.). Inflammatory arthritis was the most common underlying diagnosis in 17 TKA’s, followed by post traumatic osteoarthritis in 8 TKA’s with the remaining 6 being primary osteoarthritis. Valgus was the most common deformity in 17 TKA’s with a mean valgus deformity of 14.7 degrees (range 2-25 degrees). Varus deformity was present in 6 knees with a mean deformity of 9.5 degrees (range 2-30 degrees). Cemented fixation was used all but 1 patient (2 TKA’s) who received bilateral uncemented TKA.

Conclusion
The majority of young patients undergoing TKA at our institution were female. The underlying conditions leading to TKA were inflammatory arthritis and post traumatic osteoarthritis. Severe valgus deformity was the common deformity encountered in this cohort of patients.
PEDO-ARTHROPLASTY: Primary THA In Paediatric Patients (<20years)

Registar: no

Paper/Poster: Paper

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Submission:
Introduction
The success of total hip arthroplasty (THA) in younger patients has expanded the age groups traditionally set out for hip replacement surgery. Performing THA in the paediatric population group (< 20 years) remains controversial, yet the primary aim of this procedure is to relieve pain, restore function and allow physical and social development in this unique population. Implant longevity, growing skeleton and severe contractures and deformities remain unique challenges in this age group. The aim of this study was to provide an overview of paediatric patients requiring THA at a single hospital in South Africa.

Methods
A retrospective review of all primary THA in patients (< 20 years), performed by a single surgeon at a tertiary academic hospital in South Africa between January 2015 – December 2020 was conducted. Patient demographics, pathology, previous surgery, surgical approach, implants fixation and bearing surfaces and surgical complications were recorded.

Results
21 primary THA were performed in 20 patients (n=10 male and n=10 female) (one bilateral single stage) in the study period. Mean age at surgery was 16 years (range 14-19 years). Eight patients had no formal surgery prior to THA whilst 12 patients had an average of 4 surgical events prior to THA. Primary pathology included, chondrolysis with painful ankyloses (n=7), post Perthes (n=5), failed slipped femoral epiphysis surgery (n=3), complications from hip joint trauma surgery (n=2) and Achondroplasia (bilateral), Sickle cell disease and Developmental dysplasia each one. Surgical approaches included posterior (n=18), direct anterior (n=2) and antero-lateral (n=1) approached. Uncemented ceramic on ceramic implant were used in 15 cases and uncemented ceramic on high cross link polyethylene in 6 cases. All surgery was performed by single surgeon. No follow-up surgery to the hip joint has been required to date for any patient, following the initial THA.

Conclusion
Successful THA could be performed in 21 cases of paediatric patients at a single hospital in South Africa. Chondrolysis with painful ankylosis followed by failed paediatric surgery were the main causes in our environment. No patient required follow-up surgery at the time of review.
**Mortality Rate For NOF Fracture Patients Receiving Hip Arthroplasty In South Africa**

**Registrar:** no

**Paper/Poster:** Paper

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**Submission:**

**Introduction**

International mortality rates after hip arthroplasty in NOF fracture patients remain very high. A recent systematic review reported an average worldwide mortality rates of 22% at one year but mentioned that they could find no publications for the whole African continent.

**Methods**

A retrospective cohort review of all consecutive NOF fracture patients receiving hemi-arthroplasty or total hip arthroplasty from January 2015 to December 2017 at a single tertiary hospital in South Africa. All-cause mortality was confirmed via department of Home Affairs ID system review. Secondary goals were to correlate mortality risk between age, ASA score, implant choice, surgical approach and cementing of the femoral implant.

**Results**

Hip arthroplasty was performed on 310 patients during the study period. Mortality rate was calculated for in-hospital (3.3%), 30 days post-surgery (5.6%), 90 days post-surgery (14.9%), 6 months post-surgery (21.4%), 1 year mortality (26.7%) and 2 years post-surgery (35.3%). Mortality risk between age and ASA score were similar to international publications. Significant risk of mortality was associated with cementing of the femur (p < 0.001) and type of procedure (p < 0.001). Mortality risk between surgical approach differs between 30 day, 6 months and one year. A Cemented Thompson done via the antero-lateral approach had the highest association with death, while an uncemented THR done via direct anterior approach had the lowest association with death.

**Conclusion**

The all-cause mortality after hip fracture surgery in a single tertiary centre in South Africa was found to be 26.7% at one year. Cementing of the femur, type of procedure and surgical approach all contributed to increased risk of mortality after NOF fracture surgery.
Prevalence And Antibiogram Study Of Bacterial Isolates In Infections After Fracture Fixation (IAFF) At A Tertiary Hospital

Registrar: yes

Paper/Poster: Paper

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Submission:

Introduction
Infection after fracture fixation (IAFF) is a feared and devastating complication with significant morbidity and in some instances, mortality. This frequently encountered complication poses a unique challenge where both fracture union and control of sepsis is the ultimate goal.

Staphylococcus aureus is a common organism found in orthopaedic infections and literature support the use of cloxacillin, but we cannot easily prescribe cloxacillin at our facility and we started looking into alternative antibiotics.

Having a bacterial profile specific to our hospital will help us create a treatment protocol that will give coverage for the most of the prevalent organisms we encounter.

Methods
Retrospective observational study, to determine the common microbes and their antibiotic sensitivity in patients that presented with IAFF to our tertiary hospital that underwent debridement and deep tissue sampling during the period June 2016 until February 2020.

We used the theatre book and NHLS labtrak to find all the results we used in the study.

Results
We had a total number of 113 cases. The most common organism found was Staphylococcus Aureus in a total of 35 cases (31%). Only 3 were Methicillin Resistant Staph Aureus cases (MRSA), it is 9% of the Staphylococcus cases. We also had a total of 26 cases that had no growth on culture (23%).

Other isolates were 11 cases Enterobacter Cloacae (10%), 7 cases Pseudomonas Aeruginosa, 7 cases Proteus (6%), 5 cases Klebsiella Pneumonia, 4 cases Enterococcus and 4 cases Serratia Marcescens and 6 cases Acinetobacter Baumannii.

Conclusion
Cloxacillin would cover 25% of the IAFF cases we encountered and for 36 of the other isolates a total of 27 (75%) were sensitive to Cefepime and that is a total of 32% of cases that was Pseudomonas, Serratia Marcescens and Enterobacter etc.

So in conclusion the suggestion is to start empirically with Cloxacillin and Cefepime after the debridement and de-escalate according to the culture results and if you do not have cloxacillin then use high dose cefazolin.
Development Of A Validated Radiographic Scoring Tool For Surgeons Performing Total Hip Replacements

Registrar: no

Paper/Poster: Paper

Author : Woyisile Nkomo
Author Institute : University of Cape Town

Submission:
Introduction
Good preoperative planning based on x-rays can help with the accurate prediction of size and component placement specific to the individual patient’s anatomy. There are numerous studies documenting patient outcomes following hip arthroplasty but a paucity of literature scoring the surgeon’s ability to predict and then fulfil planned placement of joint replacement components.

According to the author’s knowledge, no validated radiographic scoring tool for surgeons performing total hip replacements exists.

AIM
This study aims to produce a reliable, self-scoring, radiograph-based checklist for surgeons training to perform hip arthroplasty. Such a tool will improve awareness around the surgical procedure and document accuracy in hip joint arthroplasty.

Methods
The first phase tests the reliability of our hip scoring tool. We retrospectively applied the score to 20 templated hips and got 2 expert observers to individually in isolation score the x-rays to test reliability. We commenced with the second part of the study once the tool was assessed to be reliable using the appropriate statistical methodology. In the second part of the study we applied the tool to measure the difference between junior and senior registrars. The second part of the study is a pilot for the purposes of a future prospective study.

The statistical analysis was performed in IBM SPSS v25. To evaluate inter-rater reliability we performed an intraclass correlation coefficient (ICC). The two groups were compared using Mann-Whitney U test and the level of significance was set at 0.05. Power analysis was performed in G*Power with the cut off being at 0.8.

Results
Moderate to excellent inter-rater reliability was observed between the scores obtained by the experts. Senior registrars scored significantly higher for cup sizes (p=0.014) and overall score (p=0.011) compared to the junior registrars.

Conclusion
Our X-ray based Hip Scoring Tool is reliable and can be used to measure the ability of surgeons to anticipate pitfalls and correctly predict intraoperative outcomes as they embark on Total Hip arthroplasty.
Patient Reported Outcome Following Plantar Incisions In Foot Surgery

Introduction
Plantar incisions may be used in a variety of surgical procedures. Despite numerous studies reporting on procedures which use plantar incisions and thus inadvertently demonstrating good results with plantar incisions, most surgeons still avoid this approach due to the fear of developing a painful plantar scar. There is a shortage of studies demonstrating a clear correlation between plantar scar formation and poor patient reported outcomes. The aim of this study is to assess the clinical outcome of plantar incisions in various procedures.

Methods
In this retrospective study we identified all patients who underwent surgery using a plantar incision between January 2000 and December 2019. A total of 23 patients were available for assessment. Three common procedures were identified: lesser metatarsal head resection, plantar fibromatosi excision and lateral sesamoidectomy. Demographic data was collected, and clinical outcome was assessed using the Self-Reported Foot and Ankle questionnaire (SEFAS). Twenty-one female (22 feet) and two male patients (2 feet) were included. The mean follow-up was 124 (range, 8-231) months in the plantar fibromatosis group, 111.5 (range, 28-177) months in the lateral sesamoidectomy group and 106.3 (range, 42-157) months in the lesser metatarsal head excision group. The study included 12 patients in the sesamoidectomy, 9 patients in the plantar fibromatosis- and 2 patients in the lesser metatarsal head excision groups. The mean age of the study population was 45 (range, 20-71) years.

Results
The mean postoperative SEFAS score in our series was 44 (range 22-48). Nineteen (82%) patients scored as excellent, two (10%) patient as good, one (4%) patient as fair and one (4%) as poor. All wounds healed well with no symptomatic callosities on clinical examination requiring revision.

Conclusion
This study demonstrates that plantar incisions, irrespective of indication and orientation (21 longitudinal and 3 transverse), heal well and with good patient reported outcomes. We believe that it would be erroneous to “avoid plantar incisions at all costs” and that plantar incisions must be considered if deemed technically superior and with less risk than a dorsal approach.
Management Of Neglected Traumatic Hip Dislocation In Children

Registrar: no
Paper/Poster: Paper
Author : Rick Gardner

Submission:
Introduction
Neglected traumatic hip dislocation in children is uncommon and there is no consensus on appropriate management. Previous studies report varied operative management with high rates of avascular necrosis and post-operative subluxation/dislocation. We report a series of seven consecutive cases who underwent operative reduction following neglected hip dislocation and describe our technique for treatment.

Methods
All seven children sustained posterior dislocations and had no treatment prior to presentation at our institution. An associated marginal acetabular fracture was present in two cases. One additional patient was excluded from the study due to complete loss of articular cartilage that precluded open reduction. The mean time prior to surgical intervention was 13.1 months (4-36) with a mean age of 7 years (5.3-10.8). All children underwent pre-operative skeletal traction for 10-14 days. A posterolateral approach was used in all cases. The acetabulum was cleared of scar tissue and a femoral shortening performed as required (five cases). Minor erosion of the articular cartilage of the posterior aspect of the femoral head was noted in 3/6 cases. Following reduction, a posterior capsulorrhaphy was performed and the patient immobilised in a hip spica for 6 to 12 weeks.

Results
The mean follow-up was 44 months (33-56). The majority of children (86%) could walk and run without a limp, could squat and had no pain. One child had mild pain and a limp. Mean Harris Hip Score was 98.9. No hip subluxed or dislocated post-operatively. The radiographs at latest follow-up showed no evidence of growth disturbance in 29% of cases, coxa magna in 57% and partial femoral head collapse in one case (14%). Of note, those patients managed within 8 months of injury had none or minimal evidence of growth disturbance.

Conclusion
At medium-term follow-up, open reduction with a posterolateral approach, posterior capsulorrhaphy and femoral shortening (as required) produces a satisfactory outcome with a stable, congruent reduction. Good clinical function can be expected with a low incidence of avascular necrosis.
The Management Of Neglected Septic Hip Dislocation In Infants-
Using Radiographic Evidence Of The Ossific Nucleus To Guide Treatment

Registrar: no

Paper/Poster: Paper

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Submission:
Introduction
Septic hip arthritis in infants is an uncommon presentation but requires prompt diagnosis and emergent treatment. There remains a lack of clarity regarding the management of the untreated/neglected hip dislocation following hip sepsis. While non-operative care has advocates, the inevitable shortening and likely long-term abductor lurch is undesirable. A wide variety of surgical interventions (including open reduction, trochanteric arthroplasty etc.) have been described with often suboptimal outcomes.

Over the past 5 years, we have reserved open reduction (+/- femoral and pelvic osteotomies) for those children where there was radiographic evidence of an enlarging ossific nucleus. We believed this was a key finding to determine those hips that did not have severe AVN and could benefit from reduction.

Methods
Between January 2016 and November 2018, five children with untreated septic hip dislocation following sepsis as an infant underwent open reduction +/- femoral and pelvic osteotomies. Our protocol on whether to perform an open reduction has been radiographic evidence of a growing ossific nucleus. If the ossific nucleus failed to develop by 18 months, severe avascular necrosis was assumed and open reduction was not considered. This retrospective and consecutive case series reviews these cases. Those with less than 18 months follow-up post-operatively were excluded from the study. Surgical technique is discussed.

Results
Average follow-up from surgery 35 months (21-52 months). There were no secondary infections and no hip redislocated. At latest review, all patients were walking without a limp and had no pain. Hip examination was comparable with the contralateral hip in each patient with leg length discrepancy < 1cm. Radiographic appearance at final follow-up demonstrated congruent hips with variable growth disturbance of the proximal femur.

Conclusion
We believe there is a place for a nuanced approach to this challenging condition. The risk of surgical intervention creating a stiff, painful hip needs to be considered. The presence (or absence) of a developing ossific nucleus could be a key decision-making tool to help the surgeon decide on whether to offer open reduction.
Introduction
Injuries of the acromioclavicular joint (ACJ) are quite common in young and active people and account for about 9% of all shoulder girdle injuries. The best management of acute Grade III injuries has been a source of controversy and extensive debate. When surgery is indicated, there is still no gold standard surgical technique for treating Grade III dislocations.

Methods
A comprehensive search of PubMed, Medline, Cochrane and EMBASE using various combinations of the keywords "Rockwood", "Type III", "Grade III", "treatment", "surgery", "acromioclavicular joint", "dislocation", since the inception of the databases to December 2020. Surgical techniques were divided into two groups, Group 1: AC joint fixation using hardware, and Group 2: CC ligament fixation/reconstruction. 15 studies were selected for the final following the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines.

Results
This review showed better outcome scores in Group 2. Overall, complication rates were higher in Group 1 compared to Group 2. The results of this review show that CC fixation using suspensory, or loop devices of Rockwood Grade III injuries have better outcomes and fewer complications than fixation of the AC joint with hardware.

Conclusion
The results of this review show that CC fixation using suspensory, or loop devices of Rockwood Grade III injuries have better outcomes and fewer complications than fixation of the AC joint with hardware.
Western Cape Hip And Knee Arthroplasty Waiting List: Heading Towards A Cliff Without Brakes

Introduction
Hip and knee replacements improve quality of life. Access to arthroplasty units in the South African public sector is regrettably very long. This is a direct and indirect reflection of health care challenges and deficiencies. The supply-demand mismatch is spiralling toward a health crisis. Waiting lists are the only way to quantify and manage the burden of disease in a cost-effective manner. Managing waiting lists are complex and require a strategic plan to execute it successfully. Surgical complexity and patient morbidities inevitably increase with time and a delay has a direct impact on outcomes. Uninsured patients have no alternative options to pursue.

Methods
The Western Cape Department of Health’s centralized waiting list database was used to extrapolate demographic and comparative data. Data is managed by all the subunits delivering arthroplasty services. We could access demographic and clinical data of patients added and patients removed from the lists.

Results
From 2012 to November 2020 there were a total of 8362 patients added onto the provincial waiting list. 4854 Patients are still on the list. Of the 3508 patients removed from the list, 82% had an operation in a state facility, 2% had an operation done in a private hospital, 8% died before the operation and 6% were removed from list without an operation. The median age is 65 (range 7 - 96). The average days on the list is 1440 (3.9 years) with the longest being 9853 days (27 years).

Conclusion
Strategies need to be implemented to reduce demand and increase service delivery utilizing valuable data from these lists. There is a discrepancy in patient prioritization. Waiting times are unacceptably long and detrimental to patient care.
An Institutional Review Of Percutaneous Stabilization Versus Open Stabilization Of Unstable Thoracolumbar Fractures

Introduction
Thoracolumbar fractures are commonly hyper-flexion distraction/compression injuries and, in the context of motor vehicle accidents, are frequently unstable. We aimed to determine the significance of the minimally invasive percutaneous stabilization of these injuries compared to the traditional open surgical approach in 51 patients admitted over a 5-year period.

Methods
Retrospective chart review of 51 patients admitted with unstable thoracolumbar fractures over a 5-year period, 01 January 2014–29 November 2018, 24 of which underwent an open stabilization of an unstable thoracolumbar fracture and 27 of which underwent a minimally invasive percutaneous stabilization of an unstable thoracolumbar fracture. Medical records were analyzed for Age; Gender; Mechanism of injury; Whether an open stabilization or minimally invasive percutaneous stabilization was performed; Vertebral level/s injured; Admission neurological status assessed by the American Spinal Injury Association (ASIA) Scale; Time from injury to operative intervention; Length of operative procedure; Volume of intra-operative blood loss; Levels in instrumented; Amount of immediate post-operative surgical site pain utilizing the Visual Analogue Pain Score; Post-operative neurological status assessed by the ASIA scale; Complications; Length of hospital stay; and Patient satisfaction at a 1-year follow-up endpoint utilizing the scale of non-satisfied, partially satisfied, satisfied, very satisfied and extremely satisfied.

Results
When comparing the open surgical stabilization cohort versus the percutaneous stabilization cohort a significant reduction was demonstrated in Length of surgery ($p = 0.007$); Volume of intra-operative blood loss ($p < 0.001$); Early post-operative pain ($p < 0.001$); Length of hospital stay ($p = 0.0017$) and; One-year patient satisfaction ($p < 0.001$), all of which favored the percutaneous surgery group.

Conclusion
Our study confirms the significant intra-operative, post-operative, and 1-year benefit of percutaneous stabilization versus the open approach in unstable thoracolumbar fractures. Our study findings support several other studies which confirm this same benefit. We recommend percutaneous stabilization to be the
preferred surgical intervention to manage these injuries.
Introduction
Cervical disc replacement surgery aims to preserve cervical motion in younger patients who present with symptomatic degenerative cervical disc herniation and mobile facet joints. We aimed to determine the demographics, pre-operative range of motion, operative parameters, post-operative parameters, range of motion at 2-years post-operatively, in 27 patients who presented to our unit over a 6-year period who underwent cervical total disc replacement surgery.

Methods
We performed a retrospective chart review of 27 patients who presented to our unit with degenerative cervical disc disease, from 01 January 2014 – 31 December 2019, who underwent cervical disc replacement surgery. The data collected included patient age; gender; mechanism of injury; clinical presentation; cervical level/s involved; description and site of the disc herniation; length of preoperative symptomatology; preoperative range of cervical flexion; length of operative procedure; volume of intra-operative blood loss; amount of immediate post-operative radiculopathy pain assessed by the visual analogue scale; complications; length of hospital stay; and cervical range of motion at 2-year follow-up.

Results
The mean age of our subjects was 45.5 (+/-6.5) years. Regarding gender 11/27 (41%) subjects were female and 16/27 (59%) subjects were male. In terms of number of levels 21/27 (78%) subjects had single level surgery and 6/27 (22%) subjects had double level surgery. Considering age categories, patients in the 4th decade demonstrated a statistically significant increase between their pre-operative segmental range of cervical flexion and their post-operative segmental range of cervical flexion (p = 0.02).

Conclusion
Through the results of our study we report that in our 27 subjects cervical total disc replacement surgery was motion preserving in 100% of our subjects at a 2-year study end point. We further report that all our subjects demonstrated some degree of increase in their segmental ranges of motion in all planes, although this was largely insignificant.
Minimally Invasive Spinal Surgery In Spinal Tuberculosis In Academic Hospital - A Case Series

Registrar: no

Paper/Poster: Paper

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Introduction
Spinal tuberculosis is increasing in prevalence in sub-Saharan Africa as we find ourselves at the epicentre of immunosuppression secondary to a human immunodeficiency pandemic. The large conventional open procedures for debriding and reconstructing spinal tuberculosis, include a thoracotomy which utilizes a transpleural corridor, the lateral extra cavitary approach which involves rib resection and utilizes the extrapleural corridor, the posterolateral approach which involves a costotransversectomy and thereafter extra pedicular or transpedicular corridors, are increasingly being recognized to carry with them considerable morbidity. To avoid this minimally invasive procedures are increasingly being utilized in the surgical management of this problem.

Methods
We present a short series of 4 patients who presented to our unit over a 4-year period with spinal tuberculosis that we managed minimally invasively. Our case report series provides four distinct surgical options, amongst many more that are available, and is as such merely a sample of what can be done. Three patients had thoracic tuberculosis, they were treated with thoracoscopic drainage, debridement, corpectomy and fusion. One patient had lumbar tuberculosis, he was treated with posterior micro-tubular decompression and minimally invasive posterior spinal fusion.

Results
All patients had improvement of neurology at 6 to 9 months, They all require less bleeding intra-operative and post-operative, less painkiller post-operative period and early discharge from the hospital. We furthermore conducted a PubMed search on the subject and provide an overview of how minimally invasive spinal surgery is being applied to the problem of spinal tuberculosis around the world

Conclusion
Minimally invasive spine surgery in the context of treating thoracic tuberculosis is clearly well established. These procedures are furthermore gaining popularity in the lumbar spine. These minimally invasive procedures enjoy many of the benefits of the traditional open approaches and importantly avoid their morbidity. Our series of case reports highlight several of the minimally invasive procedures currently being utilized and illustrates how minimally invasive spinal surgery is currently being applied to the treatment of spinal
tuberculosis in South Africa.
The Impact Of The COVID-19 Pandemic On Orthopaedic Trauma Admissions In A Central Academic Hospital In Johannesburg

Introduction
The Novel Coronavirus (SARS-CoV-2) has caused a global economic and healthcare crisis. Many countries tried to curb the spread of COVID-19 with the introduction of various lockdown rules to restrict transmission and prepare healthcare systems for an increase in COVID-19 admissions. The Republic of South Africa (RSA) was the only country in the world to implement an alcohol ban as one of the lockdown restrictions.

Methods
A retrospective review of clinical records was conducted. Data collected included orthopaedic trauma admissions for the six-month period in a quartenary facility in Johannesburg from 01 March to 31 August in the years: 2018, 2019 and 2020, respectively. Lock down alert levels were categorized by the Department of Health which included the ban, re-introduction and re-banning of alcohol consumption. Data collected for 2018, 2019 and 2020 included demographics of sex and age, as well as fracture location, open or closed injuries, polytrauma patients and those who suffered gun-shot wounds.

Results
Overall, 785, 718 and 556 patients were admitted in 2018, 2019 and 2020, respectively. There was a significant decrease of 22.56% of orthopaedic trauma admissions during the five-month lockdown period in 2020 compared to 2019 (p-value = 0.01) and 29.17% from 2020 compared to 2018 (p-value = 0.011). In 2020, admissions increased by 112% (n = 82) from alert level 4, when alcohol was banned, to alert level 3 (3a), when alcohol was reintroduced. Admissions decreased by 32.9% (n = 51) from alert level 3 (3a) to alert level 3 (3b), when alcohol was re-banned. Patients were 1.27 times more likely to be admitted in alert level 3 (3a) than alert level 3 (3b) (95% CI: 0.99, 1.65). Motor vehicle accidents (MVAs) were the commonest cause of admissions in alert level 3 (3a), accounting for 40.6% (n = 56) whereas in alert level 3 (3b), MVAs decreased to 12.4% (n = 12). COVID-19 tests were positive in 10.18% (n = 34) of the 346 tests performed on orthopaedic trauma admissions.

Conclusion
Our study showed the decrease in orthopaedic trauma admissions due to the COVID-19 lockdown regulations, including alcohol restrictions, in a central academic hospital in Johannesburg.
Radiologic Features Of Tuberculosis Of The Spine In HIV Negative And Positive Patients

Introduction

Purpose: To compare the radiologic parameters of spine tuberculosis in Human Immunodeficiency virus (HIV) negative and positive patients.

Overview of literature: The rate of co-infection of patients with tuberculosis by the Human immunodeficiency virus is increasing. In spine tuberculosis, the literature is not clear if there are radiologic features specific to the HIV co-infected patients. This study is a contribution to the literature that is addressing this problem.
Materials and Methods
Prospective multicenter study of 61 consecutive patients undergoing surgery for spine tuberculosis during the 15-month period from Jan 2019. Clinical parameters, including HIV status and blood parameters were assessed. Chest radiographs were examined for pulmonary involvement. Spine radiographs were used to measure angle of kyphosis and radiographic pattern of the disease. Magnetic Resonance Imaging (MRI) was used to measure vertebral body height, volume of pus, skip lesions and spinal cord compression.

Results
70% (43 patients) of this cohort were HIV positive and 18 were negative. There was no difference in the clinical parameters between the two groups of patients. The amount of vertebral body loss was significantly more in HIV positive patients (p=0.01). The amount of pus was marginally more in HIV positives (109.92±28.36mm³ vs 63.30±19.11mm³). There was no statistically significant difference in the kyphosis, skip lesions and cord compression between the two groups.

Conclusion
HIV positive patients show more vertebral body destruction as measured by vertebral body height, and marginally more pus formation. Entire spine MRI is recommended so as not to miss skip lesions.
Multicentre Review Of Intramedullary Lengthening Nails: A Middle-income Country Perspective

Introduction
Lengthening nails are an established method of limb reconstruction for leg length discrepancy (LLD), requiring meticulous peri-operative care and patient selection. Literature on these nails is predominantly from developed countries, with more accessible resources for the procurement of devices and post-operative therapies. This paper aims to present the results and lessons learnt from four tertiary level limb reconstruction units working within two middle-income countries (MIC).

Methods
Ethical approval was obtained from all four units. All lengthening nails (PRECISE II) undertaken between 2016-2020 at each unit were included. Demographics, aetiology, surgical approach and information about the planned correction versus achieved correction were compared. Data on time to consolidation and complications were recorded with a 12-month minimum follow-up. Complications were classified according to the Black et al criteria.

Results
There were 57 limb segments lengthened (54 patients), of which 43 were femora, 12 tibiae and two humeri. The aetiology of LLD was predominately post-traumatic (33%), congenital (26%) and growth plate injuries (22%). Fourteen (26%) cases required acute deformity correction. The mean distraction length was 46mm (20-
90mm). Fifty-one segments (89%) had less than 5mm discrepancy of planned versus actual distraction lengths. Healing index was a median of 30 days/cm (range: 18-130 days/cm). Thirteen patients experienced complications, of which ten required further surgery. Two cases had lifelong complications and did not achieve their intended correction. Two nails were successfully reused on the same patients. There were no instances of uncontrolled or failed lengthening. The were no instances of osteolysis.

Conclusion
The complication profile according to the Black et al criteria is in keeping with the established literature. Complications were lower than expected from external fixator lengthening devices. Patient compliance and remote geography were not an issue during treatment. Access to weekly therapy did not seem to impact the majority of patients. Reusing nails for extensive leg length discrepancy cases was safe, but should be used with caution. This paper would appear to support cost-effectiveness arguments for lengthening nails in a middle-income country, although a formal cost analysis should be undertaken.
Comparison Of Paediatric Blood Culture Bottles With Conventional Culturing Techniques In The Diagnosis Of Septic Arthritis At Dr George Mukhari Academic Hospital

Registrar: yes
Paper/Poster: Paper

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Submission:
Introduction
Synovial joint infections are rare and are often associated with potentially devastating consequences that can lead to loss of life or limb. Conventional synovial bacterial culture methods are reported to have a poor bacterial yield rate. For this reason, the literature suggests inoculating the sample into a paediatric blood culture bottle. This requires a small sample quantity and has been reported to have an improved bacterial yield rate and time. This study was conducted to compare the bacterial yield and time taken to get results between these two culturing methods at our institution.

Methods
A retrospective, observational, cross-sectional study was conducted at Dr George Mukhari Academic Hospital on all patients (n=84) treated for large, native joint septic arthritis between 01 / 01 / 2020 and 31 / 12 / 2020. Only samples that had both tests performed on them were included. Ethical clearance was obtained from the SMU research ethics committee.

Results
A total of eighty-four patients with synovial joint infections were identified. Twenty-three patients had a complete set of samples (Blood culture bottle (BCB) and conventional samples) and met the inclusion criteria (27.3%). The population mean age was 26.3 (± 20.4) years, with male predominance (65.2%). There was no significant difference in bacterial yield between the two methods on Gram-staining (p = 0.757). Both culturing methods had a yield of 47.8%, with a sensitivity of 65.7%. An Agreement of cultured organisms was 82.6% (95% CI, 62.9% – 93.0%). BCB method showed a faster mean time to identifying an organism; 27.8 (±21.8) hours compared to 67.7 (±29.0) hours when using conventional culture (P < 0.001).

Conclusion
The use of Conventional synovial fluid culture methods versus the BCB method showed comparable bacterial yield in patients with synovial joint infections. However, the BCB method showed significantly faster bacterial yield time and this can impact early, expedited treatment in these patients.
CT Scan Assessment And Functional Outcome Of Periprosthetic Bone Grafting After Total Ankle Arthroplasty At Medium Term Follow-up

Introduction
Periprosthetic cysts are reported to occur in up to 95% of ankle arthroplasties (AA) at the medium term, with an uncertain significance. Periprosthetic cysts have been correlated with AA failure. The aim of this study was to determine the clinical and radiological outcomes, using CT scan, after periprosthetic cyst bone grafting. As a secondary aim we assessed for the minimum cyst size that should be grafted.

Methods
A retrospective review was done of all AA procedures done between 2007 and 2014. If cysts were detected on radiographs, a CT scan was done to assess size and operative planning. All patients who had grafting of cysts were included. Periprosthetic cysts larger than 1.75cm³ were grafted. Eight patients with nine cysts were identified. The mean time to bone grafting was 7.3 (3.8-9.5) years. Patient radiographs were assessed for implant malalignment. Samples were taken from cysts for histological staining. Functional outcome was assessed using AOFAS ankle score, VAS pain score and SEFAS score. A CT scan was done at follow-up to assess bone graft incorporation and cyst size progression. The mean time to CT scan post grafting was 3.0 (0.7-4.7) years. Incorporation of at least 70% and no further increase in cyst size was defined as a successful procedure.

Results
Seven of the eight patients were asymptomatic preoperatively. There was no implant malalignment identified. There were no significant differences in the pre- and postoperative functional scores. Preoperatively cysts had a mean volume of 8.16 (2.04 to 14.03)cm³, and postoperatively the mean volume decreased to 0.98 (0 to 4.17)cm³ (p = 0.0002). The mean percentage incorporation was 89% (69%-100%). Eight of the grafted cysts were considered successful on CT, with the ninth having 69% incorporation. There were five cysts that were not grafted, as they were below 1.75cm³, and remained the same size or had minimal enlargement.

Conclusion
The good results in this small cohort suggests that prophylactic bone grafting may extend implant survival with minimal complications. We recommend that periprosthetic cysts greater than 1.75cm³ be prophylactically bone grafted irrespective of symptoms and that cysts below 1.75cm³ can be monitored for progression in size.
Should We Routinely Prescribe Proton Pump Inhibitors Perioperatively In Elderly Patients With Hip Fractures: A Review Of The Literature

Registrar: yes

Paper/Poster: Paper

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Submission:

Introduction
Elderly hip fracture patients are at risk of stress related gastric mucosal damage and upper gastro-intestinal bleeding is one of the underrecognized but devastating complications. Protein pump inhibitors (PPIs) offer effective prophylaxis against stress related gastric mucosal damage.

Methods
We performed a narrative analysis of the literature to determine whether peri-operative use of PPIs should be more widespread in this subgroup of patients.

Results
Although the literature is replete with articles on PPIs and hip fractures, we could only identify three articles dedicated to the analysis of prophylactic use of PPIs in patients with a hip fracture. Two were based on prospective studies (n=392) and these showed significant reduction in upper gastro-intestinal bleeding following PPI prophylaxis and one was retrospective (n=1038) and showed reduced 90-day mortality in patients on prophylaxis.

Conclusion
PPIs are generally safe, cost effective and based on available evidence, their prophylactic use is justifiable in elderly patients with hip fractures and we suggest that they be prescribed routinely perioperatively. Further level one studies on the subject will allow for firmer recommendations.
The Aetiology Of Patients Presenting For Elective Total Hip Arthroplasty (THA) In South Africa - A Retrospective Review Of 1400 Consecutive Patients

Introduction

Currently there are 450 patients per 100 000 population presenting to a primary care facility with hip pain each year. Globally, 1 million THA’s are performed annually, placing a massive financial burden on the healthcare system. Ultimately, several factors contribute to patient outcomes and complications including the preoperative diagnosis. The aim of this paper was to describe the aetiologies of hip pathologies in patients presenting for primary elective THA.

Methods

We retrospectively reviewed 1,400 consecutive patients presenting for elective primary THA to a tertiary South African academic hospital between January 2016 and December 2019. Ethical approval was granted by the ethics review board of the University of the Witwatersrand. Clinical notes and radiological x-rays were evaluated by a senior orthopaedic consultant and medical officer. Basic demographic data was correlated with clinical notes, examination findings, and radiological records.

Results

There were 2176 pathological hips planned for elective THA. Bilateral pathology was present in 776 (56%) patients of which 92% had the same pathology. There were 427 (31%) Males and 937 (69%) females with an average patient age of 58.80 ± 14.13 years and average BMI of 28.01 ± 5.13. The incidence of primary osteoarthritis (1OA) was 638 (29%), Secondary OA 198 (9%) and 289 (13%) with fameroacetabular
impingement (FAI). Almost 1 in 5, (24%) of patients presented for avascular necrosis (AVN). The primary reasons for AVN included: HIV (50%), trauma (42%) and alcohol (28%). Patients presenting with AVN were statistically significantly younger ($p < 0.003$) and had a lower BMI ($p < 0.002$) in comparison to patients presenting for other pathologies.

**Conclusion**
The aetiology of patients presenting for elective THA in a South African context differs significantly from those in developed countries. 1 in 5 patients presented with AVN of the hip of which the majority are HIV related. Patients presenting with end stage HIV related hip pathology are statistically younger than patients presenting with other hip pathologies. We therefore believe measures need to be implemented in future on trying to earlier identify AVN in HIV positive patients to alleviate the burden of disease in the South African context.
Introduction
Iliocapsularis muscle overlies the anteromedial hip capsule and is an important landmark in anterior approaches to hip arthroplasty. Previously believed to be part of the iliacus muscle, few publications describe the prevalence, attachments, fibre direction, blood supply, innervation, and size of iliocapsularis. This study aimed to determine these anatomical features using embalmed bodies and whether they vary between sides, sex, and age.

Methods
A cross-sectional observational dissection study was conducted on 38 formalin-fixed adult bodies (25 male and 13 female) with a mean age of 45.0 ± 4.0 years. The prevalence of iliocapsularis was determined on both body sides, and the presence of a connective tissue raphe between iliocapsularis and iliacus was investigated. Muscle origin and insertion points, fibre direction, blood supply, and innervation were documented. Length and width were measured, and significant differences were investigated using paired- and independent-samples t-tests.

Results
Iliocapsularis was present in all bodies examined, originating from the inferior border of the anterior inferior iliac spine and inserting 20 mm distal to the lesser trochanter in 54 muscles (71%). Iliocapsularis was supplied by a thin branch from the femoral nerve, and by branches of the lateral circumflex femoral and deep femoral arteries and veins. Muscle fibre direction was from superolateral to inferomedial. Mean length was 116.8 ± 11.2 mm and mean width was 12.8 ± 3.1 mm, with no significant differences between sides, sex, and age.

Conclusion
Data obtained confirms previous findings regarding the prevalence, attachments, and arterial supply. This study was the first to document the venous drainage and compare the dimensions with sides, sex, and age, using adult bodies. However, the true function of iliocapsularis is still unknown. Iliocapsularis is a constant muscle, distinct from the iliacus, which is relevant to orthopaedic surgeons and physical rehabilitation therapists, particularly for postoperative patient care.
Diagnostic Implications Of A Cold Hip On Isotope Bone Scanning In The Paediatric Patient

Introduction
Diagnosing a child with hip pain or limping is challenging. Isotope bone scanning is often utilised to diagnose or exclude septic arthritis where diagnostic difficulty remains. The aim of this study was to determine the diagnostic implications of a cold hip on bone scan, as well as the overall accuracy of bone scans in the setting of septic arthritis of the hip.

Methods
A retrospective review of all patients who underwent bone scans for suspected septic arthritis of the hip, over a 10-year period, was performed. All patients that demonstrated a cold hip were included. Demographic and clinical data were extracted from medical records. Patients with septic arthritis and a cold hip were compared to those who had different diagnoses in order to determine indications for surgical intervention. Sensitivity and specificity data analyses of all patients that underwent a bone scan to diagnose or exclude hip septic arthritis were performed.

Results
We included 59 patients of whom 29 demonstrated a cold hip on bone scan. Septic arthritis was present in 17 (58%) of patients who had a cold hip. There was a significant difference in clinical and haematological variables between patients with septic arthritis and those with other diagnoses. The sensitivity and specificity of a cold hip on bone scan for the diagnosis of septic arthritis were 81% and 68% respectively. The positive predictive value was 59% and the negative predictive value 87%. The overall sensitivity and specificity of bone scan to diagnose hip septic arthritis was 95% and 66% respectively.

Conclusion
A cold hip on bone scan is diagnostic of septic arthritis of the hip in the presence of typical clinical and haematological features of infection. The sensitivity and negative predictive value of this investigation is very good but more targeted investigations should be performed in cases of doubt.
An Audit On The Accuracy Of Freehand Cup Positioning In Total Hip Arthroplasty With Direct Lateral Approach At A Tertiary Institution Over 7 Years

Introduction
The direct lateral approach for total hip replacement have been traditionally reserved and described for neck of femur fractures. Advantages of this approach include technically easy access to the acetabulum and femur and low incidence of hip dislocation. Imperfect positioning of the acetabular component leads to increased risk for dislocations, accelerated wear, reduced range of motion and increased revision rate. Freehand technique has been the gold standard for many decades, but newer technologies like computer navigation and robotic assisted surgery have shown to improve the accuracy of cup placement. This study reports on the accuracy of freehand cup positioning via the direct lateral approach with mention of the dislocation rate.

Methods
We retrospectively reviewed 253 patients who had total hip replacements done via the direct lateral approach. The patients’ files were evaluated for patient parameters, demographic details, aetiology of hip pathology, confirmation of approach used, comorbidities and history of previous relevant surgery. The post-operative radiographs were analysed for acetabular component position inclination and ante version. Dislocation rates were calculated as a secondary objective.

Results
The radiographic analysis was performed using the Liaw method based on trigonometry of the eclipse generated. This showed a mean cup inclination of 42.3° (95% CI: 41.3° - 43.3°) and ante version of 12.7° (95% CI: 12.0° - 13.7°). A total of 57% of the acetabular cups were within the safe zones described by Lewinnek. Seventy-eight percent (78%) were in the 30-50 degree range for inclination and seventy-three (73%) in the 5-25 degree range for ante version. There were 10 dislocations within one year from the index procedure, a dislocation rate of 4.0% (95% CI: 2.8% - 8.5%).

Conclusion
The freehand technique using the direct lateral approach for acetabular cup placement produces a poor overall accuracy of only 57%. Although our study only commented on 10 dislocations, the rate (4%) is significantly worse compared to the 0.43% reported in literature for direct lateral approach. The radiographic results for inclination and ante version are comparable to other freehand techniques, regardless of the approach used, but significantly worse than results achieved with navigation and robotics.
Access Gate Related Lower-Limb Fractures In Children And Adolescents Treated At A Tertiary Hospital

Registrar: yes

Paper/Poster: Paper

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Submission:
Introduction
Musculoskeletal trauma accounts for a large proportion of paediatric injuries, with fractures comprising 10–25% of all injuries in children. The fractures occurring in and around the home as a result of collapsing access gates present frequently to the Emergency Unit at Dr George Mukhari Academic Hospital (DGMAH). Evidence on injuries resulting from access gate accidents is limited in the literature and injury patterns are poorly defined. We conducted this study to evaluate lower-limb fracture patterns, concomitant injuries and treatment outcomes in children and adolescents resulting from access gate accidents.

Methods
We conducted a retrospective review of patients aged 12 years and below presenting with lower-limb fracture at DGMAH between 1 January 2017 to 31 December 2020 (48 months period). A total of 403 patients were identified. The prevalence of access gate related fractures was 11% (n=43). We reviewed hospital folders and radiology records for fracture patterns and associated injuries in patients with lower limb fractures related to access gate injury mechanism. Eleven patients with fractures secondary to access gate were excluded due to incomplete data.

Results
A total of 32 patients with 35 fractures met the inclusion criteria. The mean age was 5.4 years (SD ±3.04). We observed higher incidences in children aged 6 years and below (72%), with male predominance (75%). Most of the injuries were related to manually operated access gates (93.75%). Majority of the patients had isolated femur fractures (50%). The incidences of tibia-fibula and; Foot and ankle fractures were observed to be the same (18.8%). Most of the fractures were diaphyseal (68.8%), with an oblique fracture pattern (40.6%). Open fractures were prevalent in the foot (75%, n=3) and the tibia (50%, n=4). All fractures of the ankle involved growth plate injury. Associated head injuries were observed in 12.5% (n = 4) of the study population. Surgical fracture fixation was required in 93.7% (n=30), and the complications were observed in 3 patients (12.5%).

Conclusion
Access gate related lower-limb fractures are common in younger children and are often related to manually operated gates. Most of these fractures were diaphyseal and length unstable, requiring surgical stabilisation.
Pressure Sores Demographics From The ASCI Database Groote Schuur Hospital

Introduction
Pressure sores are an unfortunate sequela of spinal cord injury and place a huge burden on the cost of care of SCI patients. SCI patients who are surgically stabilized and fit for rehabilitation are not accepted by the rehabilitation unit with bedsores which results in a bottleneck in the SCI pathways.

We reviewed our database to unpack the demographics of the ASCI Unit pressure-sores and causative factors to better understand the problem.

This will help strategize effective prevention and management.

Methods
A retrospective review of the prospectively collected ASCI database was done 2016 -2020 and the data was anonymized.

Search queries included age, gender, ASIA Score, diagnosis and ICD10, injury aetiology, neurological level, admission and discharge dates, presence of pressure sores, ventilation status and referral hospital.

Results
Total of 733 patients were admitted 2016-2020, of these 582 had no ulcers and 152 patients had ulcers. Of ulcer, 8 were females and 144 males. Average length of stay with pressure sore was 88.3 days vs 35.7 days without bedsores. 51% ulcer patients were ventilated vs 49% non-ventilated. 65% ulcer patients had complete SCI vs 35% incomplete SCI. 61% patients developed pressure ulcers in the referral hospitals and 39% occurred at GSH. Based on daily ward cost of R5000 per patient, the average cost of hospital stay for ASCI patients was R178 000 which increased to R441 500 with the presence of bedsores.

Conclusion
Prolonged hospitalization of ulcer patients causes logjams along the spinal care pathways, in turn restricting access to care for new SCI patients who may have a better prognosis.

Pressure sore management is costly and complicated and is best managed by prevention which is cheap and effective. Unfortunately, poor administrative management of SCI patients, non-adherence to hospital policies and lack of consequence allow this preventable condition to persist.

We aim to develop a more effective strategy for SCI patients with a unified standard of care across the province to help manage the increasing burden of disease.
The Clinical Significance Of The Corona Mortis Within A South African Sample

Introduction
The Modified Stoppa approach to the pelvis offers an extensive exposure to the anterior column of the pelvic bone which is especially vital during the repair of pelvic ring and acetabular fractures. Definitive pitfalls of this procedure are the adverse effects resulting from the inadvertent severing of the Corona Mortis (CM) vessels, a clinical term referring to the anastomosis between the obturator vessels and the external iliac vessels typically via an accessory obturator vessel.

Methods
This study investigated the incidence and variations of the CM and the constituent vessels in a South African sample using 63 adult cadavers from the Department of Anatomy, University of Pretoria and 73 patient computed tomography (CT) angiograms from the Department of Diagnostic Radiology, Universitas Hospital. The cadaver study involved careful dissection of the pelvic blood supply, thereafter, incidence and distance of the CM in relation to bony landmarks encountered during anterior approaches to the pelvis were documented. These landmarks included the pubic tubercle, pubic symphysis and the anterior inferior iliac spine. The angiogram study consisted of precise observation of pelvic CT scans at the superior pubic ramus in order to record the incidence and distances of the CM to the above mentioned bony landmarks. These distances were applied to create ‘safe zones’ for pelvic exposure during orthopaedic procedures. The accuracy of the safe zones were then validated via a cadaver simulation of the Modified Stoppa approach on two adult cadavers from the Department of Anatomy, University of Pretoria to prove the CM lies outside of the safe zone.
Results
The incidence of the CM was observed as 67.5% of the cadaver study sample and 33.1% of the angiogram sample. The CM safe zones related to the pubic tubercle resulted in 60.3 mm for the cadaver study and 49.1 mm for the angiogram study. Discrepancies between the anatomical and clinical study were evident as a significant difference between the results of the cadaver and angiogram studies was calculated.

Conclusion
Therefore, it is recommended that angiogram study of the CM should be limited to diagnostic purposes when confirming the presence of the CM which should be deemed clinically significant.
Demographic And Clinical Characteristics Of The Multiligament Knee Injuries/ Knee Dislocation At Chris Hani Baragwanath Academic Hospital (CHBAH)

Registrar: no

Paper/Poster: Paper

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Submission:

Introduction
Multiligament knee injury and knee dislocation are often used interchangeably in the literature which leads to poor reporting of the incidence, patient demographics and subsequent clinical and functional outcomes. Multiligament knee injuries and/or knee dislocation are reported as a rare problem in many studies, with an incidence of 0.02% to 0.2% of all orthopaedic conditions. High index of suspicion should be maintained in managing these injuries because presentations vary from a simple condition to a severe complex instability and potential limb or life-threatening complication.

Methods
Primary aim is to evaluate patient demographics, injury patterns, and associated injuries based on the modified Schenk knee dislocation and energy-velocity based classification. Secondary aim is to identify the incidence of neurovascular injuries and mechanism of injury. Single centre level I trauma hospital Prospective cohort of 44 patients awaiting surgery were included were for the study. All patients either presented with injury to at least two or more ligaments of the knee and/or radiological confirmed knee dislocation. Demographics and clinical data were analysed.

Results
In 44 patients included, the study revealed a mean age of 37 years at the time of injury. Majority (70%) of patients were female, with a mean BMI of 61 kg/m. Of note, 52% presented in a single year as a pure knee dislocation (45%), 22% had associated comorbid disease of which 11% includes HIV disease. Preferred immobilisation techniques with an external fixator in 25% of patients, 46% of the injuries were lateral side. At least 9% had a combined neurovascular injury (vascular 27%, peroneal nerve injury 25%). The mechanism of injury was fairly distributed between high energy injuries of 37% and ultra-low injuries of 32%.

Conclusion
Female patients with high BMI are at risk of knee dislocation. Lateral sided bicruciate ligament injuries are the most common injury pattern in our study. Neurovascular injuries (combined)were equally noted.
Introduction
Acute lateral ankle injuries are commonly repaired using the Broström surgical procedure. Augmentation of this procedure using suture tape has been reported to improve ankle stability and physical patient outcomes.

Methods
This is a retrospective study of 30 patients with grade II-III anterior talofibular ligament instability, treated with augmented Broström-Gould suture tape procedure.

The patients were followed up a minimum of 14.4 months post surgery using AOFAS and RAND 36-item Short Form scores. We also evaluated ability and time to return to previous level of activity or sport following surgery and rehabilitation.

Results
Overall patients showed excellent results, with an average AOFAS score of 92.7. According to the SF-36 scale patients perceived low levels of pain (80.6) and good physical functioning (88.3), with 86.7% of patients in the study being able to return to their previous level of activity or sport on average 10.94 weeks post surgery.

Conclusion
Augmented Broström with suture tape showed excellent AOFAS and favourable RAND SF-36 outcomes in the short term with a good indication of functional outcomes in patients’ ability to return to previous levels of activity or sport.
Introduction
The diagnosis of prosthetic joint infections (PJI) remains a complex and intricate process. Imaging modalities such as computed tomography (CT) and magnetic resonance imaging are affected by the presence of implant artefacts making image interpretation difficult even when metal artefact reduction software is used.

Bone scintigraphy has the advantage of being highly sensitive and not affected by the presence of orthopaedic implants. However, its drawback is poor specificity.

Labelled leucocyte scintigraphy (LLS), also known as a “white cell scan”, has much greater specificity. Most of the literature on the diagnostic performance of the LLS is from studies done on PJI of the lower limb (hips and knees).

The literature on the diagnostic performance of LLS for shoulder and elbow PJI is scanty and controversial. This study aimed at establishing the sensitivity and specificity of LLS for shoulder and elbow PJI at our institution.

Methods
Retrospective review of all prosthetic shoulder and elbow patients who underwent LLS for suspected PJI between 2014 and 2020.

Joint biopsy results where available were used as reference for diagnosis of PJI.

Biological investigations and clinical outcome at final review were used as reference where biopsies were not obtained.

Results
Thirty-three patients underwent LLS for suspected PJI. (3 elbows and 30 shoulders)
Only 23 patients met the inclusion criteria.
Five of these patients were proven infected on biopsy.
LLS was positive in 2 of the 5 infected joints. There were no false positives.
LLS was negative in 3 of the infected joints (3 false negatives)
There were 18 true negative LLS.
The sensitivity was 0.4 or 40% (95% CI of 0.072 to 0.8).
The specificity was 1 or 100% (95% CI of 0.78 to 1).
Positive predictive value was 100% and negative predictive value was 86.3%.

**Conclusion**

Labelled leucocyte scintigraphy was not able to reliably exclude periprosthetic joint infection of the shoulder and elbow. The retrospective nature of the study and the small sample size are the limitations of this study.
Effectiveness Of VAC And Jelonet Dressing In Paediatric Foot Degloving Injuries Post MVA

Introduction
Paediatric degloving injuries of the foot involve the management of extensive tissue and osseous damage secondary to significant forced avulsion of soft tissues which can present a major challenge for the surgeon. Surgical procedures involving split/full thickness skin grafts and rotational flaps can result in negative consequences such as donor site comorbidities, grafts failure, contractures and psychosocial implications when the patient returns to daily life. An alarming number of patients have been encountered in our centre. The aim or purpose of the study is for Alertness of the increasing incidence of Paediatric degloving foot injuries post motor vehicle accidents, the devastating complications, Psychosocial burden and long hospital stays as a results of such injuries

Effective management of paediatric foot degloving injuries without involving multiple surgical or plastics procedures and Cost effectiveness of Gelonet and Vac dressings as definitive treatment.

Methods
Retrospective study conducted in Tembisa Hospital, from 01 November 2019 to 31 November 2020, 45 patients with foot degloving injuries post PVA with average age of 2-12 years old both males and females were treated and followed up in our Centre.

Results
38 of the 45 (84%) were successfully treated conservatively with VAC dressings and gelonet dressing for time period of 4-6 weeks depending on their severity, 7 patients (15%) involved skin grafts and of the 7, 3 experienced complications such as graft failure and sepsis, donor site sepsis and foot contractures

Conclusion
This is one of the few studies where foot degloving injuries are successfully treated conservatively with VAC and gelonet dressings without surgical procedures, and patients were cosmetically and functionally doing well when returning to daily life.
Introduction
Fractures of the tibia are most common long bone fractures worldwide following trauma. The vast majority of these fractures are managed operatively especially with intra-medullary tibial nailing. Anterior knee pain is a considered the most common complication of this treatment technique.

Methods
This study was conducted as a prospective, quantitative observational cross-sectional study. The patients selected for the study were patients post intra-medullary tibial nailing regardless of the time since their operation. Nail prominence and surgical approach were factors investigated for their contribution to anterior knee pain. The patients were assessed at the Dr George Mukhari Academic Hospital orthopaedic outpatients’ department. Adult patients of both genders who were post intra-medullary tibial nailing using both trans patellar or para patellar techniques and had their control X-rays on the picture archiving system were assessed. A total of 165 patients were assessed and the severity of their knee pain graded using the Lysholm knee score. Measurements of the superior and anterior nail prominence were also documented for each patient.

Results
The superior nail prominence had a range of 3.17-32.14mm. The anterior nail prominence had a range of 0.3mm to 9.79mm. The Lysholm knee score was used to assess the degree of post-surgery anterior knee pain and divided into mild of which were 86.1% of patients, moderate of which 13.3% and severe of which only 1 patient was in this category. The superior nail prominence and anterior nail prominence did not have any statistically significant correlation with post-surgery knee pain

Conclusion
Our study demonstrated that the prevalence of anterior knee pain post intra-medullary tibial nailing is 13.9%. A number of factors were studied as possible contributors to this pain. The study concluded that intra-medullary tibial nailing has favourable outcomes at Dr George Mukhari Academic Hospital.
Femoral neck fractures are common in the elderly and ever increasing worldwide. The incidence does correlate with seasonality and various postulations have been made including vitamin D and parathyroid levels, slippery wet conditions in the Northern Hemisphere. Winter months has been identified to have an increase not only in the incidence but also in mortality rates. The majority of hip fractures in South Africa are managed in public health care hospitals.

Recently, publications from high income countries highlight the effect of the Covid-19 pandemic on the incidence of hip fractures. There is no published data on the seasonal variability and the effect of the Covid-19 pandemic on hip fractures in South Africa.

The public health impact of a constant and predictable fluctuation influences resource allocations.

Methods
Retrospective review of intracapsular neck of femur fractures undergoing arthroplasty at a tertiary hospital in a metropole from 2015 to 2020. Data was extrapolated and organized according to calendar months for each year and a comparative analysis done.

The effects of the Covid-19 pandemic from March 2020 – December 2020 were compared to the previous 5 year period (2015 - 2019).

Results
A total of 762 patients presented with intracapsular hip fractures over the 6 year period at a mean of 127 per year. The average age was 73.8 + 12.4 years (95% CI 72.4 - 75.2; range 37 – 105 years) and 69.1% were women. Three spikes of increased incidence were identified over the months of April, July - Aug and December - January.

The effect of the Covid Pandemic was negligible with a constant presentations of an average of 14 hip fractures each month, over this period.

Conclusion
Seasonal variability and fluctuation is an important confounder to femoral neck fracture incidence. The exact reason for this remains unknown in South Africa. If identified, resources can be appropriately allocated to anticipate and pre-empt the burden of disease. Covid-19 pandemic had no impact on the yearly fracture trends and seasonal ebb and flow in our cohort of cases.
The Healthcare Actor In Orthopaedic Device Innovation In South Africa

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Methods
Orthopaedic devices are conceptualized as a technological field and a technological innovation system (TIS) framework is applied to the study. The orthopaedic devices TIS is defined as the networks of actors interacting under a set of institutional infrastructures and are involved in the generation, diffusion and use of orthopaedic devices in South Africa.

Case studies are used to explore knowledge dynamics in the orthopaedic devices TIS. The primary data source for case studies were interviews with university, healthcare and industry actors. Secondary data sources include social network analysis, a review of institutions, literature and archival data.

Results
Drivers of knowledge development and exchange among actors in the TIS were: inter-sectoral collaboration, especially with the healthcare actor; availability of resources; affordability of available devices; and positive externalities of allied TISs (e.g. additive manufacturing). Barriers to inter-sectoral collaboration included unmatched expectations, different views on IP ownership, and burdensome university administration. The prominent role of the healthcare actor was supported by the social network analysis, where healthcare actors, particularly academics hospitals, where identified as key contributors to scientific knowledge production, and private healthcare actors, contributed to many patents. The healthcare actor’s role in the innovation system, however, was not met by supportive institutions.

Conclusion
The findings of this study may inform policy and institutional strategies towards the promotion of knowledge development and exchange for orthopaedic device innovation. This may extend to suggest that healthcare actors be recognised as innovators and co-creators in the innovation ecosystem.
Elastic Modulus Biomechanics Of The Tendinous And Capsular Layers Of The Rotator Cuff Complex: A Comparative Study

Introduction
The insertion of the rotator cuff (RC) muscles can be described as a singular, bi-layered, and interdigitated complex attaching to the proximal humerus in which the tendinous and capsular layers display unique biomechanical properties. Elastic modulus is an important biomechanical property that indicates stiffness, or elasticity, of a particular material and may have a considerable effect on the outcome of surgical intervention on the separate layers of the RC. This study therefore analyzed a sample of 8 fresh tissue human arms to test and compare the elastic modulus for both the tendinous and capsular layers taken from supraspinatus (SSP), infraspinatus (ISP), and subscapularis (SSC) (Ethical clearance 384/2018).

Methods
Upon reverse dissection of the RC muscles to their insertion site, 1 cm x 1 cm strips were retained and separated into the two layers; still attached to their insertion on the humerus. Digital Image Correlation (DIC) was employed to visualize the deformity of the tendinous and capsular portions of each of the three muscles and after post-processing elastic modulus values were obtained.

Results
The tendinous layers for SSP, ISP, and SSC yielded observably higher average elastic moduli readings (72.34 MPa, 67.04 MPa, and 59.61 MPa respectively) when compared to their capsular components (27.38 MPa,
Conclusion
These varying biomechanical properties need to be taken into account during surgical intervention considering that, should the layers be repaired to adhere to one another, the less elastic capsular layer may be placed under greater strain, possibly leading to post-operative re-tearing. Based on the results it is therefore recommended that surgeons consider and repair each layer independently for more optimal postoperative biomechanical integrity.
Average Length Of Stay Following Total Joint Arthroplasty At Dr George Mukhari Academic Hospital

Introduction

Primary end-stage arthritis has been on the rise especially in developed and now in developing countries, because of the improved and improving life expectancy. As a result, total joint arthroplasty has become the solution in treating patients with end-stage arthritis. Due to the high demand for this treatment, it remains important to find ways of reducing cost (without compromising patient outcomes). Reducing the length of hospital stay following total joint arthroplasty is an important strategy in reducing the overall costs of treatment.

Methods

A retrospective observational study of 174 patients, who underwent total joint arthroplasty (hips and knees only), was conducted at Dr. George Mukhari Academic hospital from 01 January 2017 to 31 December 2018. Permission to conduct the study was sought from Sefako Makgatho Health Sciences University Ethics Department (Ethics number: SMUREC/M/255/2020: PG)

Results

A total of 174 patient records were reviewed for this study, but only 102 met the inclusion criteria. Of the 102 patients, with 75.49% (n = 77) of the patients being female and 24.51% male (n = 25). The average age was 63.47 ± 9.87 years (Table 1). The majority of the patients 70.59% (n = 72) had their procedure done on Friday compared to Wednesday with 29.41% (n = 30). Among the 102 patients 84.31% (n = 86) had an ASA score of 2, whereas 15.69% (n = 16) had an ASA score of 1. There were 52 patients (50.98%) who underwent TKR and 50 patients (49.02%) who underwent THR. The average number of days taken by patients within the facility after a given procedure was 6.97 ± 4.11 days

Conclusion

The average length of hospital stay following total joint arthroplasty at Dr. George Mukhari Academic Hospital is 6.97 ± 4.11 days which is higher than acceptable. Our study demonstrates that prolonged length of hospital stay is directly linked to advanced age, a higher ASA score, and the day of operation which is later in the week (Friday).
Conservative Management Of Pertrochanteric Fractures: Indications, Treatment Protocol And Outcomes

Registrar: no

Paper/Poster: Paper

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Submission:
Introduction
Traditionally, conservative management of pertrochanteric fractures consisted of 6 weeks of skin traction in hospital. Hornby et al showed that this treatment resulted in mal-unions and significant morbidity due to the prolonged recumbency in the elderly patients.

Indications for such treatment are restricted to the medically moribond patients who are not fit for surgery. Logistic challenges in our setting led us to develop a non operative treatment protocol for stable and undisplaced pertrochanteric fractures.

This study aims to:

1) assess outcomes of non-operative management of stable pertrochanteric fractures.
2) establish appropriate indications and possible contra-indications for this treatment protocol

Methods
Retrospective medical records and radiographic imaging review of all pertrochanteric fractures treated non operatively from September 2017 to February 2021 at our district hospital.

All patients who have sustained stable pertrochanteric fractures (AO classification 31A1.2) were offered an aggressive non-operative treatment protocol. Our aggressive treatment protocol excluded bed rest and skin traction.

The main outcomes measured included:

- Length of hospital stay
- 90 day Mortality and morbidity rate and profile
- Union rate
- Malunion rate(neck shaft angle and shortening)

Results
242 pertrochanteric fractures were admitted for management. 12 (4.9%) fractures were classified as AO 31A1.2(stable) and were offered the aggressive non operative
management.
Two females (16%)
Average age 51 (range 28 – 83).
Average hospital stay 4 days (range 3 to 6)
The average follow up length 11 weeks (range 8 weeks to 12 weeks)
10 (84%) patients united within 6 weeks of injury
2 patients (16%) failed the treatment protocol and required surgery.
The neck shaft angle was on average within 3 degrees of the contralateral hip (varus or valgus) with a range of 0 to 5 degrees.
2 patients had a measurable shortening of 5mm at union. There was no medical morbidity recorded. All patients had a mild painless limp on the affected side.

Conclusion
Only a small group of pertrochanteric fractures (AO 31A1.2) is amenable to an aggressive non operative treatment protocol. Satisfactory fracture healing can be expected in more than 80% of the cases. Epileptic, demented patients and patients who are unable to follow instructions are contra-indications to this treatment protocol.
Educational Value Of Mobile Health In The Management Acute Fractures: A User Survey

Registrar: no

Paper/Poster: Paper

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Submission:
Introduction
A WhatsApp orthopaedic referral group (ORG) was created in 2017 by orthopaedic specialists at a district hospital in Cape Town, South Africa to provide support for primary healthcare doctors in managing traumatic fractures. This study sought to determine the usability of ORG and its potential as an e-learning platform.

Methods
This was an online, cross-sectional survey conducted among active users of ORG from May to June 2021. Demographic information of users, usability of ORG and respondents perceived improvement in managing closed fractures were captured using descriptive and inferential statistics.

Results
There were 80 respondents with 50% females. The median age was 30 (28-35) years, duration of practice was 5(3-10) years and length of ORG use was 10 (5-24) months. Seventy-two (90%) participants perceived ORG to be a useful platform for receiving timely advice for orthopaedic case management and 75 (93.8%) an easy referral tool. A large number (76.3%) felt that the advice, pictures and videos shared on ORG taught novice doctors to successfully complete fracture reduction. The proportion of participants who felt very capable in the management of the following fractures increased after ORG membership: extra-articular distal radius fracture (12.5% to 45.0%, p < 0.001); bimalleolar ankle fractures (16.3% to 43.8%, p < 0.001)) and shoulder dislocation (35.0% to 61.3%, p=0.001).

Conclusion
The WhatsApp orthopaedic referral group is a useful platform for management, referral, and teaching of acute orthopaedic conditions for primary health doctors. Similar platforms can be introduced in settings where orthopaedic specialists are scarce while large scale feasibility and effectiveness study involving other specialities and settings could also be conducted.
New Horizons In The Laboratory Diagnosis Of Tuberculosis Of The Spine- The Role Of Whole Genome Sequencing

Introduction
TB spine is a medical disease. It is important that surgeons who treat TB be aware of all the methods of diagnosing the disease. The workstream for TB diagnosis involves isolation and culture of the organism, and drug resistance testing using phenotypic methods. GeneExpt is a genetic-based method that tests for Mtb DNA in the rpoB gene that codes for Rif resistance. Whole Genome Sequencing is a newer genetic-based method, testing beyond the rpoB gene to test the whole genome of the bacterium.

We included WGS for diagnosis in a series of patients with TB spine. Our aim was to see its utility in TB spine drug resistance and to see if there are organism factors responsible for the organism to settle in the spine.

Methods
Multicentre study of 61 consecutive patients operated for spine tuberculosis. Tissue was sent to the laboratory to confirm diagnosis. Histologic examination and GeneExpt were done and tissue cultured. The DNA of the cultured bacteria was sent to the National Institute for Communicable Disease for whole genome sequencing. The test bacterial genome was compared to a reference strain of pulmonaryTB. Some specimens could not reach the various workstations on time and thus were excluded from those workstations.

Results
Acid Fast Bacilli identified in 9 /58 (15.5%). Granulomas typically TB in 25(43.12%), probably TB in 30(51.7%) and poorly formed in 3 (5.1%).
No growth after 42 days of incubation in 30 patients (51.7%), Positive in 28 patients (48.3%). Average time to culture 18.7 days (range 11-32 days).
GeneExpt positive in 47(85%), negative in 8(15%), Rif-resistance in 4.
21 of the cultured specimens suitable for WGS. 45% of the strains belonged to lineage 2 (East-Asian). One patient MDRTB. We could not confirm any genomic difference between pulmonary and spine TB strains.

Conclusion
WGS is method of the future for diagnosis of TB and TB spine. It can diagnose multi drug resistant TB immediately. No mutations identified between TB spine and pulmonary TB bacteria.
The Burden Of Road Traffic Accident-related Trauma To Orthopaedic Healthcare And Resource Utilisation In Steve Biko Academic Hospital: A Cost Analysis Study

Introduction
Road Traffic Accident (RTA), the second commonest cause of trauma in SA is on the rise, it is therefore, important to study and understand the burden of RTA-related injuries on our Orthopaedics health care and healthcare in general, in order to devise new prevention strategies to minimize the numbers of RTA.

Methods
A retrospective analysis of data from Orthopaedics trauma intake records was done for patients admitted with RTA-related injuries to the Orthopaedic department at Steve Biko Academic Hospital, between February 2019 and January 2020. Hospital records and PAC systems were analysed for radiological studies done. The Unified Patient Fee Schedule (UPFS) was analysed for individual costing of all variables being studied.

Results
There were 642 patients seen and managed with RTA-related injuries included in this study. Seventy-one percent (71%) of them were males with an average age of 35 years. The majority (76,2%) were motor vehicle occupants whereas 17% were pedestrians. Seventeen percent (17) of them had polytrauma. Four hundred and sixty-two (76%) patients required some form of surgical intervention spending an average of 171 minutes in theatre per procedure.

Ten percent of these patients required ICU/HCU admission for an average of 13 days. The total length of hospital stay was an average of 21.8 days. The majority of patients (67%) had some form of Orthopaedic implant inserted with an average of 1.3 implants per patient. The average cost per patient was R92 737.39. The major cost drivers were hospital stay, ICU/HCU stay, implant cost, radiological studies and theatre utilization, respectively.

Conclusion
Management of road traffic accident-related trauma puts a significant burden on the Orthopaedic healthcare management and resource utilization. While we may not be able to directly influence other factors influencing high costs, reducing the use of temporary external fixators may help reduce the cost of managing Road Traffic Accident victims.

These findings provide scientific data which will help support the implementation of preventative measures aimed at minimizing the numbers of road traffic accident we see on our roads, thereby minimizing the burden this puts on our healthcare system.
Artificial Intelligence In Diagnosing Cervical Spine Injuries

Machine-learning algorithms (Artificial Intelligence) have demonstrated remarkable progress in image-recognition tasks, especially in the medical field. Doctors visually assess cervical x-ray images for injuries, often they are junior personnel working after hours in busy emergency departments, leaving room for radiological errors. AI could prove to be the ideal diagnostic tool where swift and accurate diagnosis of cervical spine injuries are required.

Machine-learning networks originally developed for other tasks can be applied to skeletal x-rays with minimal intervention. Machine-learning is increasingly being used in diagnosis and can be expected to gradually change clinical practice, assisting clinicians, and improving inter-rater reliability.

We aim to evaluate the diagnostic accuracy of AI in interpreting lateral cervical spine x-rays.

Methods
From the GSH PACS database, images from 2015-2020 were searched for patients between ages of 18-45 who had cervical spine X-rays and CT scans. 924 lateral c-spine images were exported in a standardized format and annotated on a spreadsheet with descriptors for the various conditions we wanted to include in machine learning.

To interpret the X-rays, deep neural networks (DNN) were used. For each labelled condition a separate DNN was trained to predict whether that pathology was present, but not exactly where on the X-ray the pathology occurred. This allows for a human-in-the-loop style of AI, which brings doctors into the prediction process, by using the DNN prediction as a guide doctors can then diagnose the exact location of the pathology.

Results
This data-set was unbalanced, most labels having less than 10% positive examples. The preliminary results from looking only at fracture pathology, found 14.18% positive examples. The DNN achieved an accuracy of 89.21% with a precision of 72.73% and recall of 40%.

Conclusion
The preliminary results observed for the fracture pathology were promising in terms of accuracy and precision, however the recall was low. Preponderance of negative x-rays made it harder to learn the positive cases, so while positive predictions were mostly correct, it was less likely to identify true positives due to the data imbalance. We hope to improve the recall by weighting the true positives significance in the deep neural network.
Orthopaedic Surgical Training Exposure At A South African Academic Hospital - Is The Experience Diverse And In Depth?

Registrar: no

Paper/Poster: Paper

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Submission:
Introduction
Service demands and resource limitation in the public sector increasingly creates challenges for adequate surgical training.

We undertook to ascertain whether our clinical orthopaedic surgery training platform is providing adequate surgical exposure, both in case diversity as well as the level of trainee participation

Methods
The orthopaedic surgery database containing all cases, other than Hands, was interrogated for theatre procedures logged for the 12 month period 1 January to 31 December 2018. The registrar trainee participation, after hours, elective or trauma nature as well as the sub-discipline was assessed.

Results
3147 orthopaedic surgical procedures were logged with an even split of elective (51.1%) and trauma (49.9%). Adults predominated trauma yet the paediatric service contributed most to the elective cases, followed by arthroplasty and spine.

Overall 25.5% were performed by consultants and 74.5% by registrars. Registrars were more frequently the primary surgeon in trauma cases (90%) compared to elective procedures (59%) (p < 0.00001). Of the elective cases, 37% were performed by registrars as supervised unscrubbed and 22% supervised scrubbed.

Overall 17.5% of cases were performed after hours, with 31.7% of trauma surgeries occurring after hours and only 2.9% of elective surgeries.
Registrars were the primary surgeon in 98.7% of after hour trauma cases and 58% of after hour elective cases as supervised unscrubbed.

**Conclusion**
Our study presents the surgical experience and level of participation available to orthopaedic surgical trainees in a South African training hospital where there is an equal number of elective and trauma cases.

The vast majority of the cases were performed by the registrars in the supervised unscrubbed capacity although the more complex, elective cases were performed by consultants.

Almost all after hour trauma cases were performed by registrars.

This suggests the platform allows for a high level of registrar surgical participation and training despite the challenges.

Further review is required to assess achievement of trainee competency and whether in fact the current experience is adequate.
Dislocation Rate After Total Hip Arthroplasty At Steve Biko Academic Hospital

Registrar: yes

Paper/Poster: Paper

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Submission:
Background and Aim: Total Hip Arthroplasty (THA) is one of the most performed and most researched procedures worldwide. Early dislocation after THA remains a serious and costly problem. A limited number of THA outcome studies are available locally despite the ever-growing demand for THA in an already resource constraint system. This study aims to calculate the incidence of dislocation post-THA and to identify risk factors for dislocation after THA in a South African Academic Hospital.

Methods
Patients and Methods: In this retrospective cohort review, files and radiographs of 543 patients were reviewed for dislocation during the first year after primary THA. The reason for the THA, the surgical data, the implant data and whether and when the dislocation occurred was recorded for each patient. Logistic regression analysis was performed to model the association between variables and a patient’s odds of experiencing a dislocation after THA.

Results
Twenty (3.7%) out of 543 THAs dislocated during the first year, 17 within the first 3 months. The surgical approach used was not shown to be a significant risk factor (p=0.672) for dislocation although the Hardinge Approach was used in all 20 dislocations. Similar dislocation rates (p=0.967) were found between THAs done for Displaced Neck-of-femur (NOF) fractures (3.6%) and elective THA (3.7%). Trauma THA made up more than half (55%) of our study population. Femur Head Sizes ≤ 32mm (p=0.231) and a Single mobility design (p=0.494) were both associated with a higher dislocation rate. Surgeon experience did not prove significant for our study population (p=0.570).

Conclusion
Despite a dislocation rate nearly 8 times higher than expected for the Hardinge Approach, we achieved a dislocation rate lower than reported locally and internationally for NOF THA, and a rate similar to international standards for elective THA. Surgical approaches that reduce dislocation risk should be used and done well for primary THA. The implant design and size that offers the most stability should be used for high-risk patients. South African Academic centres can offer outcomes comparable to international literature.
Introduction
The aim of the study was to determine the diagnostic accuracy of MRI for adult tuberculous spondylitis, and to describe the distinguishing features of TB spine and differentials on MRI.

Methods
A retrospective consecutive series of 100 adult patients that presented to a single institutions spinal service between 2013 and 2015 for biopsy of presumed infectious spondylodiscitis were identified. Diagnosis was made by PCR, culture and histology. All patients had an MRI of the spine.

MRI features were recorded by two independent observers blinded to patient identification data and clinical information.

MRI features recorded included primary spinal column site, non-contiguous lesions; number of vertebra involved; oedema and loss of height in 10th’s for involved vertebra; posterior element involvement; kyphosis; extent of disc involvement; ALL and PLL involvement; CSF effacement and cord / conus compression; abscess location, characteristics and volume; abscess wall thickness and characteristics; extraspinal pathology; and MRI signal intensity for bone, end plate, disc and cord at the primary site of pathology.

Results
Of the one hundred cases identified, 77 were confirmed TB, 16 were confirmed pyogenic (Staphylococcus aureus 7, Stapyhlococcus other 2, Streptococcus sp 4, Escherichia coli 2, Pseudomonas 1), and 7 "other" (metastatic spread 3, lymphoma 2, 1 plasma cell dyscrasia, and 1 insufficiency fracture)

Overall accuracy of MRI for diagnosing TB spine was 89% (sensitivity 92.2%, specificity 78.3%, PPV 93.4%, NPV 75%).

There was moderate agreement between the reviewers (Krippendorf’s alpha = 0.596), being more likely for TB +ve cases.

A stepwise model selection was performed using an AIC criterion. Partial disc involvement, abscess loculation, T2W vertebral body hyperintensity, and loss of vertebral body height yielded a Nagelkerke R2 = 0.67 and AIC = 38.93

Conclusion
MRI has a high diagnostic accuracy for the diagnosis of TB spondylodiscitis and moderate inter-observer variability. Features favoring a diagnosis of TB in our patient population are: the involvement of two or more
vertebral bodies, partial intervertebral disc involvement, the presence of a well-defined abscess with a smooth regular border containing loculations, and T2W hyperintensity of the spinal cord or conus adjacent to the level of involvement.
Adolescent Idiopathic Scoliosis (AIS): Shoulder Height And PROMs

Introduction
Shoulder balance is regarded by surgeons as one of the major indicators of successful scoliosis surgery as it influences cosmesis. However this may not be so from a patient perspective.

We undertook to review AIS surgical outcome in terms of radiographic and patient reported outcome measures (PROMs), assessing the relationship with shoulder balance.

Methods
A retrospective study of 97 AIS patients who underwent single stage corrective fusion scoliosis by the senior author between 2011 and 2017 and had one year follow-up was performed.

The average age at surgery was 15.0 (10.9 – 20.7 ± 2.08).

Pre-operative radiographic assessment included standard whole spine erect postero-anterior (PA) and lateral views as well as supine bending views. Cobb angles were measured for all the curves. Flexibility and correction index was calculated. Curves were classified according to the Lenke system (43 type 1, 14 type 2, 11 type 3, 12 type 4, 12 type 5 and 5 type 6) Shoulder balance was assessed by T1 tilt angle, Clavicle angle and shoulder height.

Scoliosis Research Society-22 (SRS-22) questionnaires pre- and post-op were analyzed.

Results
In Lenke 1-4, the main thoracic scoliosis pre-operative Cobb’s angle was 64.4° (26 – 99 ±15.69) with flexibility index of 28%. At one year follow up, the average Cobb’s angle was 22.8° (6 – 62 ± 11.4) with a correction index of 65%.

The Lenke 5-6 thoracolumbar pre-operative Cobb’s angle was 56.8° (30 – 88 ± 13.94), with a flexibility index of 46%. At one year follow up average Cobb’s angle was 12.7° (0 – 34 ± 7.87), with correction index of 78%.

A low (-10° to +10°) T1 tilt angle was associated with better SRS self-image.
Clavicle angle and shoulder height showed no difference in SRS-22 score.

Overall post-op satisfaction score was high 9.6 (6-10 ± 0.90) with overall SRS-22 score, as well as self-image, mental health domains showed significant improvement.

**Conclusion**
Surgery improved SRS – 22 overall scores as well as self-image and mental health domains. Patients were satisfied irrespective of radiographic shoulder balance with no relationship between radiographic shoulder balance and patient reported outcome.
Introduction
Post traumatic osteoarthritis of the ankle is a condition that often affects the younger population with a higher functional demand. Our study aims to assess the patient outcomes and union rates after ankle arthrodesis using the current protocol of crossed cannulated screws and an anterior small fragment plate.

Methods
Prospective and retrospective longitudinal observational study was done on patients who received an ankle arthrodesis for post traumatic osteoarthritis. Using a standard anterior approach ankle arthrodesis is done with a combination of two crossed 7.3mm cannulated screws and an anterior 5-hole small fragment recon plate. Pre-operatively Visual Analogue Scores and Ankle-Hindfoot Scores are taken and then scores repeated a minimum of one year post operatively. Ankle radiographs are taken at post operative follow ups and assessed for fusion across the arthrodesis site.

Results
Forty-one patients took part in the study, of which three were lost to follow up. Patients were reviewed up to 7 years post operatively with a minimum follow up of one year post arthrodesis. Of the remaining thirty-eight patients 100% showed radiographic bony union by one year follow-up. One patient (2%) showed union at six weeks, thirty-one (81%) showed union at twelve weeks, five (13%) showed union at six months and one (2%) showed union at one year. Of the 38 patients, 24 patients had FAOS done after a minimum of 1 year. Of the 24 patients all but one patient had increased scores, demonstrating improved function. Although overall patients showed good outcomes there were some complications that need mentioning. One patient (2%) developed septic hardware one year post fusion that healed well after debridement and hardware removal, one patient (2%) had poor compliance to non weight bearing and developed AVN of the talus and one patient (2%) developed a malunion that healed well after arthrodesis was revised. A total of 3 patients (7.8%) developed adjacent level disease and needed subsequent surgery to address the issue.
Conclusion
Crossed cannulated screws combined with an anteriorly placed small fragment plate offers a viable fixation option for ankle arthrodesis.
Introduction
The demand for hip arthroscopy (HA) worldwide has intensified. The impact of previous HA on post-operative clinical and functional outcomes of THA remains controversial. The study compared Patient-Reported Outcomes Measures (PROMs), satisfaction rates and complication rates after Conversion THA ( > 1 previous HA) with patients after Index THA (no previous HA).

Methods
A retrospective case review of 898 consecutive primary THA patients using Direct Anterior Approach, functional outcome data was at minimum 3-year follow-up. Clinical complication, re-operations and implant survival rate was calculated using Kaplan-Meier analysis. Statistical significance was p < 0.05.

Results
This study included 804 (89.53%) Index THA (mean age 56.54 years; BMI 28.54 kg/m2) and 94 (10.47%) Conversion THA patients (mean age 47.53 years; BMI 29.91 kg/m2). There were 73 (8.12%) single HA patients and 21 (2.34%) multiple HAs prior to THA. Satisfaction rates were similar for Index and Conversion THA patients (93.78% vs. 91.49%; p=0.009). The Patient Joint Perception (PJP) scores were “Native/Natural joint” for 68.78% of Index THA and 63.83% for Conversion THA patients (p=0.046). Improvement in mean pain score (p=0.003), modified Harris Hip Score (mHHS) (p=0.001) and Forgotten Joint Score-12 (p < 0.000) significantly favoured Index THA over Conversion THA patients. Single HA Conversion THA patients were 1.2-fold more likely to have a “Native/Natural joint” PJP compared to multiple HAs (OR 1.42, 1.18; p=0.008). Single HA Conversion THA patients are 2.01-fold more likely to have mHHS ≥80 compared to multiple HAs (OR 3.3, 1.64; p=0.018). Surgical complication rate was 7.45% for Index THA and 8.64% for Conversion THA (p=0.075). Deep PJI incidence for Index THA was 0.50% compared to 1.06% for Conversion THA (p=0.087). Total implant survival at 3 years was 97.9% (SE 0.005; 95%CI 96.9-98.9) for Index THA and 96.6% for Conversion THA (SE 0.019; 95%CI 92.9-1.00).

Conclusion
Despite good clinical outcomes in conversion THA, significant pain and functional improvements exist for index
THA patients at medium-term follow-up. Conversion THA following multiple HA’s show an increased risk for poor patient clinical outcomes and complications compared to THA after single HA.
Burnout Amongst The South African Orthopaedic Community: A Cross-sectional Study

Registrar: no

Paper/Poster: Paper

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Introduction
Burnout is epidemic amongst physicians but orthopaedic specialists have amongst the highest rates of burnout in international studies. In South Africa, physicians have higher burnout rates than comparable global cohorts, but the burnout rate of South African orthopaedic surgeons has not been investigated. This study aimed to determine the prevalence of burnout in South African Orthopaedic surgeons and trainees, to assess their perceived causes and coping mechanisms, and to evaluate for independent risk factors for the development of burnout.

Methods
We conducted a cross-sectional secure online survey, of members of the South African Orthopaedic Association. The survey assessed demographic characteristics, workload, professional fulfilment, burnout, causes for and coping strategies for burnout. Respondents did not have to complete all the questions. Statistical analysis was performed to assess for independent associations with burnout.

Results
156 respondents participated, 90% (n=139) male, 10% female (n=16) of median age 46.5 years (IQR 37-57). 17% (n=27) were registrars and 83% (n=128) were specialists with a median 17 years of experience (IQR 9-28). 60% (n=76) practice in private, 17% (n=22) in public and 23% (n=29) in both. The most frequent subspecialists represented were arthroplasty 31% (n=37), shoulder and elbow 18% (n=22) and general 12% (n=14). The burnout rate was 72% (n=113). Burnout was associated with younger age, fewer years in practice and fewer hours per week participating in sport and hobbies. Being a registrar (p=0.009) or paediatric subspecialist (p=0.02) had a significant association to burnout. Gender, practice setting and hours of sleep had no association to burnout. ‘Too many bureaucratic tasks’ 70% (n=107) and ‘lack of compensation’ 41% (n=63) were the most frequently sited causes for burnout. The majority of respondents cope with burnout by participating in sport 68% (n=105), hobbies 57% (n=88) and taking leave 64% (n=99). The concurrent experience of the COVID pandemic at the time of running the survey had a minimal effect on the responses.

Conclusion
The burnout rate in the South African Orthopaedic Community is 72%. Trainees were found to be a particularly vulnerable group. Further research should be directed to investigate and manage this susceptible group in
more depth.
The Correlation Between Clinical Findings And Radiological Severity Of Osteoarthritis Of The Knee In Patients Treated At A Tertiary Hospital, Gauteng

Introduction
Osteoarthritis of the knee is a common cause of knee pain. Appropriate management is based on clinical as well as radiologic features of the disease. Pain, deformity and functional impairments are major clinical factors considered over radiological findings when taking management decisions in these patients. Because of the possibility that a discordance between radiologic severity and clinical presentation exists, there is a clear need to identify if such correlation exists.

Methods
A prospective cross-sectional study of 52 patients with primary osteoarthritis of the knee managed conservatively and following up at Dr George Mukhari Academic Hospital Arthroplasty clinic was conducted between 01/05/2021 and 31/06/2021. Permission from the hospital gatekeeper and ethical clearance was obtained prior to conducting the study. (SMUREC/M/51/2021: PG)

English speaking patients with primary osteoarthritis were identified during their follow up visits to the arthroplasty clinic. Informed consent was obtained. Thereafter they were asked to complete a standard questioner.

Pain and functional impairment were assessed using Wong-Baker Faces pain scale, The Knee Society Score (KSS) and Western Ontario and McMaster Osteoarthritis Index (WOMAC).

Plain X-rays form part of standard care of these patients. The X-rays were anonymized and two independent consultant orthopaedic surgeons were tasked with grading them according to Kellgren and Lawrence (KL) as well as Ahlbach.

The severity of the functional impairment and pain was then compared to the radiological grading to determine if any correlation exists.
Results
The mean age of participants were 62 years old. A good correlation between the KSS and WOMAC scores were reported, with higher WOMAC scores correlating with lower KSS.

No correlation between the self-reported pain and severity of radiological grading were noticed. Nor was any correlation between either the KSS or WOMAC scores when compared to the radiological severity of either KL or Ahlbach.

Conclusion
No clear correlation between the severity of pain and functional impairment compared to radiological severity could be obtained. This is in keeping with many international studies of the same nature.
Outcome Of Debridement, Antibiotics And Implant Retention (DAIR) For Periprosthetic Joint Infection Of Hip Or Knee Is Not Affected By Compliance With International Consensus Recommendations: An Audit Of Practice

Registrar: yes

Paper/Poster: Paper

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Submission:
Introduction
Periprosthetic joint infection (PJI) can have devastating consequences. Of the various treatment options, debridement, antibiotics and implant retention (DAIR) is a less invasive surgical option. Still, it is only recommended to be performed within three months of the index surgery and three weeks of symptoms.

Methods
A retrospective audit was conducted with a cohort of fourteen patients to firstly determine the compliance with these recommendations and secondly whether there was any significant difference in practice between those with successful DAIR procedures and those with failures.

Results
The overall success rate was 35.7%, and there was no statistically significant differences between the success and the failure cohorts, including time from index surgery and length of symptoms. The cohort of patients who had a DAIR of a hip hemiarthroplasty had 100% success rate, however there were only two in this group.

Conclusion
The current audit reporting an overall low level of success for DAIR procedures, with no change in outcome with regards to timing of surgery, grade of surgeon or isolation of S. aureus. If the lack of effect of compliance with the recommendations on DAIR outcome is also replicated across multiple sites, that may indicate a need for a change in guidelines.
A Guide To An Improvised Femoral Traction Splint In A Resource-Limited Setting

Introduction
A femoral traction splint is a mechanical device that uses traction to align and provide stability to femoral fractures. The use of this device has many benefits however there is still limited availability in low- and middle-income countries. This article provides the reader with a step by step guide to improvise a femoral traction splint built from recyclable materials readily available in most hospitals. The authors’ concept will give patients access to a potentially life-saving device in a resource-limited setting.

Methods
Link to article published in African Journal of Emergency Medicine

https://authors.elsevier.com/sd/article/S2211-419X(21)00016-1

Results
Not applicable

Conclusion
Not applicable
category: General

ID: 11356

Surgical Site Marking For Trauma Surgery In Trauma And Orthopaedics A District Hospital: An Audit

Registrar: yes

Paper/Poster: Paper

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Submission:
Introduction
The WHO Guidelines for Safe Surgery 2009, a product of its “Safe Surgery Saves Lives” program, outlines 10 essential objectives for safe surgery. Objective number one is that “the team will operate on the correct patient and at the correct site”. While wrong site surgeries are rare, their consequences can be devastating. Available data shows that orthopaedic surgery tops the list of specialties with the most wrong site surgeries.

Methods
A ‘surgical site marking checklist’ was created based on the NatSSIPs standards that were relevant to Trauma and Orthopaedic surgery (statement 3, 5, 6, 7, 8 and 9) and the WHO guidelines for safe surgery on marking. These checklists were filled out for each Trauma and Orthopaedic case by their respective lead or assistant surgeon, most of them being specialist registrars in the department. Data was collected over a 1-month period in and re-audited after interventions.

Results
Improvement in no of patients meeting standards for surgical site marking pre-operatively.

Conclusion
Surgical site markings should meet the guidelines set out by the WHO and NaTSSIPs by being in indelible ink, clear, and visible after draping and be done by the operating surgeon or a delegate who will be at the surgery at the least till after skin incision.
The Evidence Based Anatomy Of Persistent Median Artery

**Introduction**
Median artery is present during human foetal development and frequently degenerates in the 8th week of gestation. Nonetheless, it may not regress and is called persistent median artery (PMA). It might develop to be the main blood supply of the median nerve and contiguous structures of the forearm. PMA is specifically important for orthopaedic surgeons as a consequence of greater risk of damage during operations performed on the carpal tunnel. The aim of this study was to evaluate the anatomical characteristics and clinical relevance of the persistent median artery.

**Methods**
Two independent researchers conducted comprehensive search through major medical databases (PubMed, Embase, ScienceDirect, Web of Science, SciELO, BIOSIS, Current Content Connect, Korean Journal Database and Russian Citation index). Subsequently, performed the articles quality assessment using AQUA rules and data extraction. There were no date or language-based exclusions applied. Statistical analysis was performed with usage of MetaXL 5.0 software.

**Results**
The study involved 71 articles (total of 12 082 limbs). The general pooled prevalence equaled 9.4% (95% confidence interval [CI]: 7.2 - 12.0). The PMA was more likely to find in cadaveric studies compared to radiologic and ultrasonographic studies and equaled (9.2%; 95% CI: 6.9 - 11.8), (6.7% 95% CI: 3.7 - 10.6), (7.2%; 95% CI: 3.7 - 11.7) respectively. Moreover, in 3 papers evaluating infants the prevalence was 34.6% (95% CI: 5.5 - 70.7), significantly higher than among adults (8.6% (95% CI: 6.6 - 10.8).

**Conclusion**
PMA is a very common structure in the general population and the highest in infants. The clinical significance of this data and high risk of complications combined with artery injury, should always be kept in mind while performing surgeries on the carpal tunnel.
The Treatment Of Tibia Fractures By Intramedullary Nails: Do We Match International Standards?

Introduction
Tibial shaft fractures are the most common long bone fractures in young adults, and intramedullary nailing of these fractures consumes a considerable amount of theatre resources. Although there is substantial international literature on the accuracy of this treatment method, no prior study has been conducted at our institution to determine whether our results are comparable with international norms. We conducted this study to assess whether tibial fractures are being treated appropriately with intramedullary nails at our institution, with adequate reductions that do not undergo early loss of position.

Methods
We conducted a retrospective chart review of patient files and radiographs for patients who received a tibial nail between 01 April 2016 and 31 March 2018 at a single level one trauma centre in a major metropolitan area. Demographic and injury data were collected from the files. Radiographs were measured digitally at two time points, immediately post-operatively and after the six weeks follow-up. The data were analysed to determine whether these fractures were adequately reduced at both time points. We then conducted a statistical analysis to ascertain if there were any factors that were correlated with unacceptable reductions.

Results
There were 158 patients with 163 tibial fractures that met our inclusion criteria. The majority of tibial fractures occurred in young male patients (65.82%) and the most common mechanism of injury was a pedestrian vehicle accident (49.69%). The majority of these fractures were closed injuries involving the midshaft of the tibia (42.33%). Surgeon experience was shown to be significant both for theatre time usage and also for the adequacy of reduction, although this did not follow a linear pattern. Multiple procedures done in one sitting were also associated with a longer surgical time, but not with the quality of the reduction. There were 46 (22.28%) patients who were identified to have inadequate reductions at follow-up, 15 (9.20%) of whom had lost reduction from their initial post-operative measurements. Malalignment was most common in fractures of the proximal third of the tibia.

Conclusion
The majority of patients had adequate reductions that were maintained until follow-up. The rate of unacceptable reductions is in keeping with the international data.
Profile Of Patients Awaiting TKR In The Public Health Care System In South Africa – Physiotherapy Helping Surgeons

Registrar: no

Paper/Poster: Paper

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Submission:
Introduction
Long waiting times for arthroplasty can lead to deterioration in the function of the patient prior to surgery and negatively influence the post-operative outcomes. Pre-operative rehabilitation strategies have shown to improve function and pain intensity which is associated with better post-operative outcomes. Very little is known about the profile of the individuals awaiting total knee replacement (TKR) in South Africa. The expected increase of individuals diagnosed with knee osteoarthritis (OA) as well as the growing surgical waiting list in the public health care sector has made it imperative to understand our knee arthroplasty population profile to improve and contextualise pre-operative rehabilitation. This study aims to provide a description of the clinical and self-reported profile of the population awaiting knee arthroplasty in SA.

Methods
A cross-sectional review of all patients awaiting primary TKR in a single academic hospital in South Africa.

Results
The waiting list of 29 March 2021 had 769 awaiting primary TKR in 586 individual patients (n=183 awaiting bilateral TKR). The mean age was 67 years and 381 (65%) of patients were female. The median waiting time on the list was 1509 days (4.13 years) and the median clinical urgency score was 66/100. Clinical data for the first 57 cases (n=96 knees) showed the median combined OARSI radiographic severity score as 9. Varus deformity was prevalent in 43.8% (n=42), valgus deformity in 35.4% (n=34) of which 79.4% female and windswept deformity in 17.5% of patients. Concomitant hip pain is present in 40.1%, with 56.8% of patients being dependant on assistive walking devices. Most patients reported moderate to severe impact on quality of life with more than half experiencing severe to extreme functional problems and severe levels of pain.

Conclusion
This is the first descriptive data on the profile of patients awaiting TKR in the public health care sector in South Africa. We aim to use this data to develop a supported self-management program unique to the context patients and monitor the effect on ability to work, social roles and outcomes post TKR.
Does Humeral Bracing For Humeral Shaft Fractures Have Acceptable Clinical And Radiological Outcomes In A District Hospital Orthopaedic Unit?

Registrar: no

Paper/Poster: Paper

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Submission:

Introduction
Humeral shaft fractures have acceptable clinical, radiological and functional outcomes when managed non-operatively using humeral bracing in many Orthopaedic centres globally.

Operative management of closed humeral shaft fractures is common in South Africa. This study aims to assess the efficacy of humeral bracing in patients with humeral fractures at Khayelitsha District Hospital.

Methods
We performed a retrospective cohort study of 75 patients in adults (over 17 years of age) who sustained a humeral shaft fracture presenting to Khayelitsha District Hospital over a 37 month period (2017-2021). All patients had initial non-operative treatment with a U slab converted to a functional brace (fibreglass or Plaster of Paris moulded casts or prefabricated Sarmiento type brace). Inclusion criteria included all shaft fracture anatomical sites, fracture patterns and evidence of radial nerve palsy. Patients were followed for clinical and radiological evidence of fracture union with serial X-rays for an average of 3 months post injury.

Results
The mean patient age was 36.2 years (17-67 years). In 75 fractures there were 19 proximal shaft, 24 midshaft and 32 distal shaft fractures. There were 16 transverse, 28 spiral, 22 oblique, 5 segmental and 4 comminuted fractures. 35 patients were managed in clinician moulded functional braces and 40 in prefabricated Sarmiento type braces.

In the clinician moulded brace group: 3 patients were lost to follow up, 25 patients united, 1 developed non-union and 6 had surgery. Mean radiological findings at final follow up were 8.3 deg sagittal plane angulation and 12.1 coronal angulation in this group.

In the Sarmiento type brace group 6 patients were lost to follow up, 26 patients united, 1 developed a non-union, 4 had surgical intervention and 3 patients are under review. Mean radiological follow up at final follow up was 4.7 deg sagittal plane angulation and 13.1 deg coronal plane angulation.
Conclusion
Our results demonstrate humeral shaft fractures can be managed safely, predictably and effectively with humeral bracing with radiological outcomes similar to those published in the literature. We would recommend this management modality especially in a resource constrained environment with limited access to theatre time, implants and staff.
Evidence Based Antimicrobial Use In High Risk Groups With Acute Hand Infections

Registrar: yes

Paper/Poster: Paper

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Submission:
Introduction
Acute hand infections carry significant risk for morbidity which is amplified by immunosuppression and emerging antibiotic resistance. Diabetic and HIV-infected individuals are prone to atypical presentations caused by polymicrobial or gram negative organisms. Evidence based research guiding the type of empiric antibiotics, in these high-risk groups can improve morbidity. We reviewed the amputation rates, microbial spectrum and antibiotic sensitivity of bacteria causing acute hand infections in high-risk patients.

Methods
Retrospective data of 1035 patients were collected over the past five years (2016-2020) at a single tertiary institution. Records of specimens of patients with acute hand infections were analysed to determine the pathogen, antibiotic sensitivity and amputation rates. The sample population was divided into three groups and compared. Group A consisted of patients who had no known co-morbidities. Group B consisted of patients known with HIV infection. We further recorded their CD4 counts for subgroup analysis. Group C consisted of patients known with uncontrolled diabetes mellitus defined as an HBA1C of more than 6.5%. We analysed that the presence of gram positive and gram negative bacteria depended on the immune characteristics of the groups using chi-squared test. Statistical significance was set at p < 0.05.

Results
The presence of gram positive and gram negative bacteria were found to be dependent (p < 0.05) on the immune characteristics of our cohorts. The presence of gram negative bacteria did not statistically differ (p > 0.05) if an individual belonged to the HIV positive group with CD4 counts > 500 or to the HIV negative group. Whereas gram negative bacteria was significantly increased (p < 0.05) if the patient had a CD4 count < 500. The presence of amputations were similar in the immunocompetent group and the HIV positive group irrespective of their CD4 count. Gram negative bacteria and amputation rates were found to be significantly increased (p < 0.05) in the diabetes mellitus group.

Conclusion
Diabetic and HIV subgroups with CD4 counts of < 500 showed higher rates of gram negative organisms cultured in comparison with the patients without any known co-morbidities. The practitioner should consider including an empiric antibiotic to cover for gram negative strains in these high-risk subgroups in an attempt to
possibly decrease the amputation rates.
Biomechanical Comparison Of Hexapod Frame Configurations: Approximating The All-Wire Frame

Introduction
To determine the percentage strain at a simulated fracture between four different TL-Hex frame configurations as compared to the classic ring-block construct.

Methods
Five frame constructs were created using a bone substitute with a 20mm fracture gap: a classic ring-block all-wire frame (control) and four frames seen in clinical practice. Test configurations included an all-wire ring-block with smaller wire crossing angles (Cr); two different ring-block and half-pin, fine wire configurations (Ct1 and Ct2); and a half-pin and fine wire virtual ring-block construct (Cv). Constructs were axially loaded through spherical connectors in a Schenck Universal Testing Machine to a total load of 750N. Displacement was measured at six fixed points with a caliper. Strain was calculated between the midpoints of the two fracture ends in three planes using a mathematical model.

Results
At load the axial strain difference between the smaller angle all-wire ring-block and the control was -55.0% ±0.5% vs -43.3% ±1.3% (mean ± SD), which was significant (p < 0.001). The virtual ring-block construct had significantly increased axial strain compared to the control -55.6% ±1.3% vs -43.3% ±1.3% (p < 0.001), and increased strain in the antero-posterior plane reached significance.

Both ring-block and half-pin, fine wire constructs (Ct1 and Ct2) allowed significantly less axial strain than the control -35.9% ± -0.54% (Ct1), -36.2% ± -0.39% (Ct2) vs -43.3% ±1.3% at 750N (p < 0.001). Compared to the control both Ct1 and Ct2 showed lower strain in medial-lateral plane (p < 0.03 and p < 0.001), with Ct2 also having a significant difference in strain in the anterior-posterior plane (p < 0.001).

Conclusion
In this experimental design both the ring-block with smaller wire crossing angles and virtual ring-block confer significantly less stability at the fracture site compared to the control. Two ring-block half-pin test configurations showed significantly less strain in the different planes than that of the control, indicating that modifying frame design in specific ways can reduce strain over the fracture site.

These laboratory-based findings contribute to the understanding of the biomechanical characteristics of fixator-bone construct variations.
Introduction
Treatment of significant bone loss in the forearm is a challenging problem to manage, as failure to reconstruct the relationship between radius and ulna will affect the proximal and distal joints, leading to severe functional impairment. The aim of this retrospective case series was to describe a novel approach for the reconstruction of complex forearm infected non-unions, salvaging both the radius and ulna independently and to report the radiological and functional outcomes.

Methods
Four adult patients with infected non-unions of the radius and ulna with significant bone loss treated at a specialized limb reconstruction unit were included in this retrospective case series. The radius and the ulna in each patient were reconstructed using external fixator based segmental bone transport. They were reconstructed independently to maintain pron- and supination function. Radiological evidence of union was assessed. Functional outcomes were investigated at a final follow-up using the Quick Disabilities of the Arm, Shoulder and Hand (QuickDASH) questionnaire and a series of questions concerning pain and patient satisfaction together with an range of motion of the elbow and wrist joints were recorded.

Results
Union was achieved in all four patients. At final follow-up (18-64 months post frame removal), all patients showed no form of infection and reported low pain scores (range, 0-3) with none using any analgesics related to the forearm reconstruction. Reasonable functional outcome was achieved with a mean QuickDASH score of 19.3 (range, 11.4 - 25). Patient satisfaction scores ranged from reasonable to highly satisfied and all patients scored good or excellent according to the 10-point score system used by Peterson et al. All patients had less than 10° loss of elbow motion, less than 20° loss wrist motion and less than 50% loss of forearm rotation.

Conclusion
The outcomes of this study suggest that significant bone loss of both the radius and the ulna in adult patients can be successfully reconstructed using independent segmental bone transport. A standardized staged treatment protocol of debridement, external fixation, soft-tissue management, distraction osteogenesis, and functional rehabilitation is demonstrated.
Single-Use Instrumentation In Total Knee Arthroplasty Is Safe, Reproducible And Effective: An Exploratory Prospective Report From A South African Academic Institution

Registrar: no

Paper/Poster: Paper

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Submission:
Introduction
The direct costs of Total Knee Arthroplasty (TKA) have increased $20 685 per case since 2009. This is expected to increase as the demand for TKA increases globally. The COVID-19 pandemic has also resulted in dramatic changes to the majority of international arthroplasty practices and South Africa has not been spared. New and innovative ways need to be explored to reduce costs, improve productivity and manage resources more effectively. As opposed to traditional metal instruments, single use instruments for TKA are delivered sterile and are available for immediate use without the need for autoclave sterilization, packing while subsequently reducing other direct processing costs.

Methods
We aimed to assess the safety and efficacy of patients undergoing TKA using single-use instrumentation at an academic institution. We assessed the intra-operative use of single use instrumentation in 25 consecutive varus mal-aligned patients undergoing TKA. We analyzed operative times, speed and efficacy of TKA implantation, radiological and subsequent short-term clinical outcomes. Results of this pilot study were compared with previous analyses conducted in the unit evaluating the more traditional metal multi-use instrumentation.

Results
There were 20 females and 5 males. There were 16 (60%) Kellgren-Lawrence Grade 4 and 5 (20%) Grade 3 primary OA knees respectively and 4 rheumatoid arthritis patients. The average age was 64.32 ± 5.9 years with an average BMI of 32.75. The operative time was 79 ± 8.3 minutes. There was intra-operative “breakage” of only 1 instrument necessitating opening traditional metal set. Tibial tray alignment, and slope were ≤ 3° varus and posterior respectively in all cases. There was less door opening (p=0.04) and fewer air particles (p=0.05) intra-operatively in single-use instrumentation cases Only 1 tibial tray was oversized. All patients were discharged home at 3.42 days (1-7 days). There were 1 post-operative ooze and no 30-, 60- or 90-day readmissions.
Conclusion
Single use –instrumentation is safe, effective and reproducible. In the context of a local Arthroplasty resource-constrained environment they demand less electricity, water, man-power and operational costs. This paper also explores different points at which “unnecessary” costs are spared with single-use instrumentation in comparison with more traditional metal multi-use instrumentation.
Gunshot Related Injuries To The Shoulder Girdle And Proximal Humerus In A High-volume Trauma Center

**Registrar:** no

**Paper/Poster:** Paper

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**Introduction**  
The Western Cape is known for high volume trauma with specifically gang and gun shot related violence. Recent studies highlighted the financial burden on the health system with the prevalence mirroring that of war zones. In recent time the South African defense force has been deployed in certain areas of the Western cape to try curb the violence. The aim of the study was to investigate the burden and management of shoulder girdle and proximal humerus gunshot wounds in our setting

**Methods**  
A retrospective review of all the trauma unit records indicating orthopaedic related gunshot injuries between January 2014 and December 2017 was performed. All shoulder girdle and proximal humerus injuries was included to determine the burden of injuries, demographic profile of affected patients, the presence of associated injuries and management thereof.

**Results**  
A total of 128 patients were identified with 131 shoulder girdle injuries and 34 associated orthopaedic related injuries ranging from metacarpal fractures to spinal column injuries. The average age of affected patients was 29 (range 12-65) and 96% of the patients were male. The anatomical areas involved included 22 clavicles; 1 acromioclavicular joint; 2 acromion; 2 glenoid; 39 scapula; 46 proximal humerus and 19 soft tissue injuries. Of these, 11 patients had associated spinal injuries. Twelve percent of the patients required blood transfusions and 58 units packed red cells was transfused. Nerve injuries was present in 8% of patients and mostly associated with soft tissue wounds. Only 6 vascular injuries were noted 24% of the 128 patients needed surgical management ranging from bullet removal and arthrotomy to open reduction and internal fixation.

**Conclusion**  
Gunshot related injuries places a heavy burden on an already strained public health sector with extensive resources being used in the management of these injuries. Further strategies in the prevention of this trauma burden is urgently required.
Cemented Femoral Stems In Minimally Invasive Direct Anterior Approach Total Hip Arthroplasty Are Safe And Effective With Good Mid-Term Clinical And Radiological Outcomes

Introduction
The Direct Anterior Approach (DAA) to Total Hip Arthroplasty (THA) is gaining in popularity worldwide. Many reports, however, exist of increased complications of the femoral component including periprosthetic fractures, early aseptic loosening and improper sizing and placement of the femoral component. This may be associated with the greater complexity of attaining adequate exposure of the femoral canal and subsequent limitations in cement fixation of the femoral component.

Methods
We retrospectively analyzed the clinical, radiological and complication profile of 180 consecutive cemented femoral stems performed via the DAA by a single, high volume surgeon from January 2016 to January 2019. The adequacy of the cement mantle was assessed using the Barack Classification. Results were subsequently compared with those of 350 consecutive uncemented THAs performed during the same time period.

Results
All 180 patients with hybrid THA fixation were assessed at a mean of 2.45 years. There were 130 females (72.2%) and 50 males (27.8%) at an average age of 72.2 ± 8.3 years. The average BMI was 28.1 ± 7.6 kg/m2. The cement mantle was reported as Barack A in 152 (83.9%) patients and Barrack B in 29 (16.1%). The femoral offset compared to the contralateral side showed that 55 patients (30.6%) had less than 5mm difference and 130 (72.2%) patients had a post-operative leg length discrepancy less than 5mm. There was a Grade 1 Bone Cementation Implantation Syndrome (BCIS) in 31 (17.2%) of patients.

In comparison with uncemented THA, the surgical time is 12 ± 3.2 minutes longer (p=0.03) but intra-operative blood loss is 38 ± 12 mls (p=0.05) less. Despite the patients who received hybrid fixation being older (p=0.04) their time to discharge is not dissimilar to uncemented fixation patients (3.45 vs 3.12 days; p=1.00). The overall complication rate in patients who had cemented femoral stems is 6.13%. At final follow-up no cases were revised and the readmission rate at 90 days was 3.33%.

Conclusion
Cementation of femoral stems using the DAA is effective and reproducible with a low side-effect profile despite a minimally-invasive surgical approach.
Patients Awaiting Total Joint Arthroplasty Show Significant Deterioration In Pain Scores And Functionality Due To Surgical Postponement In Response To The COVID-19 Pandemic

Registrar: no

Paper/Poster: Paper

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Submission:
Introduction
Elective total joint arthroplasty (TJA) procedures have been postponed as part of the coronavirus disease 2019 (COVID-19) response to avert healthcare system collapse. Total hip arthroplasty (THA) and total knee arthroplasty (TKA) procedures comprise the highest volume of elective procedures performed at healthcare facilities worldwide.

We therefore sought to determine the demand for TJA despite the pandemic and the impact of surgery postponement on physical and mental health.

Methods
We conducted a prospective cross-sectional telephonic interview-based study on patients awaiting THA and TKA at an academic institution in South Africa. The questionnaire consisted of four sections. The first section recorded baseline demographic data and medical co-morbidities, the length of time spent awaiting TJA, and the patients’ desire to undergo elective surgery despite the COVID-19 pandemic. Section 2 and Section 3 assessed the patients’ current physical and mental health, respectively, as a consequence of deferred surgical intervention. The last section established the patients’ perception of the healthcare system’s response to the COVID-19 pandemic and necessity to postpone elective surgery.

Results
We included 185 patients (65.95% female; mean age: 50.28 years) awaiting TJA for a mean of 26.42 ± 30.1 mo. Overall, 88.65% of patients wanted TJA despite the COVID-19 pandemic. Patients awaiting TJA for 1-3 years were 3.3-fold more likely to want surgery than those waiting < 1 year (P < 0.000). Patients with comorbidities were 8.4-fold less likely to want TJA than those with no comorbidities (P = 0.013). After receiving education, the patients wanting TJA decreased to 54.05%. Patients who changed their opinion after education had less insight on the increased morbidity (P = 0.046) and mortality (P = 0.001) associated with COVID-19. Despite awaiting TJA for shorter period (24.7 ± 20.38 mo), patients who continued to demand TJA had greater pain (P < 0.000) and decreased function (P = 0.043) since TJA postponement.
Conclusion
There is deterioration in health for patients, who have had elective procedures postponed during the COVID-19 pandemic. Waiting lists should be prioritized for urgency with the re-initiation of elective surgery.
Delayed Presentation For Patients With Acute Long Bone Fracture, Pelvic Fracture And Spinal Fracture In Tertiary Hospital: Incidence Of Deep Venous Thrombosis

Registrar: yes

Paper/Poster: Paper

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Submission:
Introduction
The reported incidence of deep venous thrombosis varies with method of detection, mode of prophylaxis, location of thrombus, and sample size, thus resulting in a wide range of numbers in the literature. A significant number of patients are transferred to tertiary institution more than 48 hours after being injured. This includes adults with long bone fractures, pelvic fractures and spinal fractures with a doppler ultrasound done within 7 days of admission. The aim of the study is to evaluate the incidence rate for deep venous thrombosis in this population group.

Methods
A prospective observational study was performed of all patients admitted 48 hours post injury at our institution trauma department over an 18 month period. Data collected presenting details, clinical course were collected and special investigations analysed.

Results
A total of 92 patients (50 female 54% and 42 male 46%) were included, with a mean age of 61 years and a standard deviation 20 years. With fifty (54%) low energy injury followed by fifteen (16%) high energy injury. Time of injury to presentation had a mean of 11 days with standard deviation 15 days and thirty 32% of the study group presented on day three of injury. Doppler tests were done in forty-one (44.6%) of the 92 cases. Of these, four (9.8%) were confirmed for thrombosis. Angiograms were performed in eight (8.7%) of the 92 cases and three (37.5%) were confirmed for pulmonary embolisms. All patients had pharmacological treatment with a mortality of two (2%).

Conclusion
The incidence of deep venous thrombosis was identified as 9.8% in our population study group, which agrees with reports in other literature. Routine ultrasound screening in patients with delayed presentation to exclude deep venous thrombosis in asymptomatic patient may not be necessary and cost effective.
Intra-articular Distal Humerus Fractures: An Epidemiological Review Of Patients Treated At Livingstone Tertiary Hospital In The Eastern Cape Province Of South Africa

Registrar: yes

Paper/Poster: Paper

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Submission:
Introduction
Adult distal humerus fractures are regarded as fragility type fractures with incidence proportionate to age. While this data is well reported in international literature, there is no available data on adult type distal humerus fractures in the South African population. The aim of this study was therefore to determine the basic epidemiology of intra-articular distal humerus fractures within a South African sub-population.

Methods
A retrospective review of medical records over a 3-year period was undertaken. All patients residing within the hospital drainage area, whom were over the age of 20, sustained an intra-articular distal humerus fracture and underwent surgical treatment during the review period were included in the study. Data variables obtained included age, gender, mechanism of injury, fracture classification and co-morbid health conditions. Age and gender specific incidences were calculated as well as mechanisms of injury and fracture type frequencies determined.

Results
A total of 131 adult patients with intra-articular distal humerus fractures met the inclusion criteria. The median age was 38 years with the oldest patient being 78 years old. The overall crude incidence rate was 5.1 fractures / 100 000 people per year. Females made up 73% of the total number of patients who sustained intra-articular distal humerus fractures. Females had a peak incidence rate of 9.6 / 100 000 in the 30-39-year age group while males experienced a peak incidence of 5.8 / 100 000 in the 6th decade of life. AO Type C complete intra-articular fractures were the most common fracture pattern making up 84% of the cases while 67% of those were sustained by low energy falls. Despite poor data records on co-morbid health conditions, an HIV prevalence of 27.5% was noted.

Conclusion
The overall crude incidence rate of intra-articular distal humerus fractures was comparable to other populations. Age and gender related distribution, however, differed markedly, with a higher incidence occurring in younger age groups compared to the international literature. The overwhelming majority of these injuries were fragility type fractures caused by low energy falls, which raises concerns about causes of poor bone health and possible osteoporosis in a much younger population than traditionally described.
Restoration Of Lumbar Lordosis And Clinical Outcomes For Lumbar Spine Fusion Using TLIF In Degenerative Disease

Introduction
Posterol lumbar spine fusion is a common operation for treatment of lumbar degenerative diseases. Failure to restore lumbar lordosis, thus causing a flat-back syndrome, results into backpain due to the loss of sagittal balance. Addition of an anterior fusion increases the fusion rate. The use of an anterior spacer in the anterior fusion is said to increase or preserve the lumbar lordosis. A transforaminal lumbar interbody fusion (TLIF) is one of the methods used to introduce an anterior spacer to the fusion. There are however conflicting results on whether this does relieve back pain. The aim of the study is to assess the extent of correction of lumbar lordosis in spine fusion for degenerative disease and correlation of the correction to clinical outcomes.

Methods
Retrospective study of 57 patients who had a one level fusion for degenerative lumbar spine disease, using a TLIF. We recorded the patient demographics, the level of the surgery and the height of the spacer used. On the pre-op and follow-up radiographs we measured the lumbar lordosis and the segmental lordosis. At final follow-up the Oswestry Disability Index (ODI) and the Visual Analogue Score (VAS) were assessed telephonically by an independent observer. Statistical analysis was done using 95% CI and Paired t-test for comparison.

Results
The mean age was 60.2yrs. The mean final follow-up was done at 22.4 months (range 6 to 88 months). The pre-op lumbar lordosis was 170 - 650 (mean 39.380), post-op 170-670 (mean 42.350). The segmental lordosis at the level of the surgery was 30 - 390 (mean 15.010), post-op 50 – 370 (mean 20.680). The change in lordosis from pre-op to post-op was -250 to 320 (mean 4.720). Change in segmental lordosis -90 – 280 (mean 6.210)
Height of cage used ranged from 7mm to 15mm (mean 12.39mm)
The ODI was 0-92%(31.43%) and VAS 0-10(mean 2.57)

Conclusion
TLIF slightly improves lumbar lordosis and gives moderate functional outcomes
The Prevalence Of Flexor Digitorum Superficialis And Its Coexistence With Palmaris Longus

Introduction
Flexor digitorum superficialis [FDS] consists of two heads - the humeroulnar and radial head, which pass laterally and medially respectively to the median nerve as well as the ulnar artery. FDS enables flexion movement of the index, middle, ring and little finger. Palmaris longus [PL] originates from the medial epicondyle of the forearm and connects with flexor retinaculum and palmar aponeurosis. Prevalence of both FDS and PL varies among the studies. This study aimed to present the prevalence of the presence of the FDS tendon to the little finger, its laterality, functional assessment during the physical examination, coexistence with the PL and probing for sources of heterogeneity.

Methods
Search through the major medical online databases was conducted by the authors, who further enhanced it by checking the references of the primarily identified studies. The studies that met the inclusion criteria had their data extracted and analysed in this Meta-analysis. The AQUA tool applied whilst evaluating the quality of the included studies.

Results
31 studies (13 538 hands) were assessed in this study. The overall PPE of the presence of the FDS tendon to the fifth digit was 92.7% (95% CI: 88.5-96.0) slightly more often in cadaveric studies (97.7%, 95% CI:95.1-99.4) than in the physical examination (90.4% 95% CI: 84.9-94.8). It was the most common in (94.6%, 95% CI: 82.9-100.0) and slightly more common in male patients (90.8%, 95% CI: 79.5–98.2). In the functional assessment, the FDS to the little finger was predominantly independent (62.5%, 95% CI: 47.0-73.6), but the common function was also frequent (29.9%, 95% CI: 17.4-42.2). Both FDS and the PL were present in 81.0% (95% CI: 62.3-89.5), but the presence of the FDS with the absence of the PL was (11.7%, 95% CI: 2.7-23.6).
Conclusions
This study showed that the FDS to the little finger is predominantly present. Notwithstanding, the common function was very frequent (29.9%), what facilitates the need to be vigilant whilst evaluating clinically its function and not necessarily assuming the tendon’s absence when a patient has troubles with flexing the proximal interphalangeal joint without the help from the flexor digitorum profundus.
Outcomes Of Diaphyseal Femur Fractures Managed In Children 11 Years And Younger At An Academic Hospital

Registrar: yes

Paper/Poster: Paper

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Submission:

Introduction
Paediatric femur fractures have a bimodal presentation. Children under the age of six are generally treated with non-operative management, while those older than ten have been shown to do better with surgical fixation. The management of the intermediate age group of six to ten years remains controversial, with a recent move supporting surgical fixation. At our institution, a clearly defined protocol was established in patients under 11 years. Those that do not meet defined indications for surgery are managed in skin traction, with the knee flexed over a pillow. At clinical and radiological signs of union, patients are discharged to weight-bear on crutches as tolerated. The aim of this study was to ascertain if this protocol and treatment method could be safely promoted in our peripheral hospitals that do not have access to orthopaedic expertise.

Methods
We conducted a retrospective review of paediatric orthopaedic patients treated in skin traction for femur fractures between 2016 and 2018. X-rays were assessed on PACS in those patients that met the inclusion criteria. Patients were recalled at a minimum of 24 months to assess outcomes, according to Flynn’s criteria. Other variables assessed included length of hospital stay and rotational profiles.

Results
Over the period, 179 patients were admitted to the paediatric orthopaedic ward with a femur fracture. Sixty-nine patients met the inclusion criteria, of which 31 were available for follow up. Twenty-four patients achieved excellent outcomes, with 6 satisfactory and 1 poor outcome. No patients reported any subjective concerns or complaints with the outcome. Time on traction was found to average the child’s age expressed in weeks. Twenty-three of the patients were found to be in neutral rotational alignment, with 8 patients having a measurable rotational discrepancy between limbs.

Conclusion
Seventy-seven percent of patients treated conservatively went on to an excellent outcome, with all patient-reported outcomes being excellent. The findings in this study show that there is a role for promoting our protocol of treatment to surrounding regional and peripheral hospitals, to offload our central hospital.
Antibiotic Targeted Cement Rods In Chronic Osteomyelitis, Short-term Outcomes From A Level One South African Trauma Centre

Introduction
Chronic osteomyelitis is a difficult disease to treat with long therapy processes affecting patient lifestyle and impacting on hospital services with recurrent visits and admissions. Due to the high trauma load we suffer in our setting and patient factors; chronic osteomyelitis is regularly inadequately treated. The aim of this study is to assess the efficacy of an alternative treatment protocol to what is generally used in our setting. This treatment protocol involves antibiotic, specific to the cultured organism, used in a cheaply, effectively and easily made cement rod. Meta analyses and systematic reviews have not found a gold standard of treatment for this disease however the literature reviews various treatment options.

Methods
This was a retrospective record review of 40 patients diagnosed with chronic osteomyelitis secondary to a long bone fracture whom were treated via a specified treatment protocol at Chris Hani Baragwanath Academic Hospital between January 2017 and December 2018. This treatment protocol involved staged surgery with the use of antibiotics and antibiotic tailored cement rods. Data was collected and statistically analysed.

Results
Of those who had a positive microbiology result before treatment, 75.7% were negative post treatment; demonstrating the degree of microbiological resolution. 84.2% of the included patients had a good clinical outcome in terms of sinus resolution, skin changes, pain and function. Of those who had microbiological resolution after the intervention, 89.7% had a good clinical outcome, 6.9% had an average clinical outcome and 3.4% had a poor clinical outcome. Inflammatory markers (White cell count, Erythrocyte Sedimentation rate and C-Reactive protein(CRP)) had an overall decrease in trend post treatment protocol, however only CRP had a statistically significant decrease.

Conclusion
Results demonstrate that treatment had a successful clinical, microbiologic and serological outcome. This treatment protocol is a feasible treatment option for patients with chronic osteomyelitis. Results are en par and comparable to other similar international studies. Going forward, longer term follow up could strengthen the data.
Use Of Biodegradable Temporizing Matrix Grafts In Complex Wounds In Orthopaedics

Registrar: no

Paper/Poster: Paper

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Submission:

Introduction
Complex wounds are a challenge for Orthopaedic Surgeons in the District and Metro setting. Plastic Surgery expertise is often not available for large full thickness skin loss due to post traumatic, infective or surgical wounds.

Biodegradable Temporizing Matrix (BTM) grafts are a modality that can assist in the management of these patients.

Methods
This was a retrospective case series of 6 patients over a 12 month period. The wounds were managed with initial debridement, deep specimens for culture and antibiotic sensitivities and empirical antibiotics commenced if required. Once all wound beds were deemed healthy by the treating Consultant Surgeon, a Polysorb BTM graft was applied in Theatre under aseptic conditions. The graft was fixed to the wound edge by absorbable sutures or skin staples. At 7 days the upper film was removed in the Outpatient Clinic and further wound care continued until full wound healing.

Results
6 patients were included with a variety of wounds. 2 upper limb wounds: 1 palmar hand wound (degloving injury), 1 extensive arm/cubital fossa/forearm wound (degloving injury) and 4 lower limb wounds including 3 ankle wounds (1 MRSA sepsis ankle ORIF, 2 septic pilon ORIF) and 1 foot wound (degloving injury). 1 patient required return to theatre for ongoing deep infection but did not require flap coverage.

Conclusion
Biodegradable Temporizing Matrix grafts are efficacious, safe and cost-effective in the management of complex wounds. Negative pressure therapy dressings / machines / aftercare and hospital stay with multiple theatre visits are offset by the cost of this graft. Furthermore, there is no patient donor site morbidity and permanent skin scarring at the split skin graft harvest site.

BTM grafts should be a modality to consider in complex wounds in selected patients.
The Future Of Female Orthopaedic Surgeons

Introduction
In the last 30 years, the number of British women entering medical school has risen from 53.4% to 60.9%. Despite this only, 11% of orthopaedic surgeons (UK) are female. In our study we aimed to identify the driving factors and deterrents for female junior doctors when considering Trauma and Orthopaedics as a career.

Methods
A 20-item questionnaire was designed on Google Forms and circulated nationally in the UK via emails to Training Programme Directors. In addition to social media and messaging services to UK and Non-UK junior doctors wishing to pursue orthopaedic surgery. Data was collected on the participants’ demographics, orthopaedic experience and factors influencing and dissuading a career in orthopaedics.

Results
223 female participants responded. 69.5% and 30.5% of female respondents were from the United Kingdom and outside the United Kingdom, respectively.

The most common reasons for wanting to pursue an orthopaedic career was job satisfaction (60%), positive role models (47%), good patient outcomes (43%) and the practical and technical nature of the speciality (37%). The deterrents for pursuing a career on orthopaedics were the perception of work life balance (73%), the lack of female role models within the orthopaedic specialty (44.3%) and the perception of requiring excess physical strength (14.8%).

Other concerns include raising children, radiation risk during pregnancy, stigmatisation due to size, concerns about potential bullying from colleagues, length of training and family commitments, as well as concerns regarding fitting in within a male dominant specialty. The commonest sub-specialities women tend to consider includes hand, paediatrics and foot and ankle.

Conclusion
Although the diversity within Orthopaedics is ever changing, there is still a significant amount of work to do. Our study suggests that future aspiring female surgeons across the world do want to pursue Orthopaedics but share similar concerns.

Increased mentorship and early exposure within orthopaedics in medical school and improving accessibility to orthopaedic training and teaching courses will help acquire interest in orthopaedics, as well as attract a diverse group of future orthopaedic trainees.
Resumption Of Elective Primary Total Joint Arthroplasty During The COVID-19 Pandemic Was Safe And Effective With Good Patient Satisfaction And Improved Joint Functionality

Registrar: yes

Paper/Poster: Paper

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Submission:

Introduction
In response to the COVID-19 pandemic, elective primary Total Joint Arthroplasty (TJA) was postponed to control the spread of the disease, conserve limited hospital resources and decrease the strain on the healthcare system. Patients, however, reported increased pain and deteriorating joint function as a consequence of delayed surgery. Subsequently, elective TJA was reintroduced briefly during the first and second wave in our academic referral institution in Southern Africa. This paper sought to determine the efficacy and safety of ensuing TJA in the midst of this global pandemic.

Methods
We conducted a telephonic interview of 65 consecutive patients who underwent TJA during the resumption of elective surgery between the first and second COVID-19 waves. All interviews were conducted after a minimum of 6 months post-operatively. Hospital records and laboratory data were evaluated for subsequent COVID-testing, readmissions and re-operations.

Results
The study included 34 (52.3%) patients who underwent Total Hip Arthroplasty (THA) and 31 (47.7%) who had Total Knee Arthroplasty (TKA). Patients were aged 64.48 ± 7.12 years with a BMI of 34.63 ± 8.63 kg/m2. There were 42 (64.62%) patients who had been on the waiting list for 13-24 months and 19 (29.23%) patients for more than 25 months. No patients received a peri-operative blood transfusion. The overall length of hospital stay was 3.22 days and all patients were discharged directly home. The satisfaction rate for all patients was 93.85% with 87.67% reporting improved joint functionality. The 30-day readmission rate was 3%, with both patients being readmitted for COVID-related pulmonary complications. The 6 month mortality rate was 1.53%. There were no surgical complications. There were 14 (21.54%) of patients who needed subsequent COVID-testing. There were 25 patients (38.46%) of who were too anxious to go to subsequent outpatient and physiotherapy post-operative appointments.

Conclusion
Resumption of elective primary TJA during the COVID-19 pandemic was safe and effective at a minimum of 6
months follow-up with a low complication rate. A small proportion of patients became infected with COVID-19 upon discharge yet related anxiety linked to the disease precluded appropriate follow-up in a number of patients.
The Next Generation Of UK And Non-UK Orthopaedic Surgeons: Influences, Concerns And Aspirations

Registrar: no

Paper/Poster: Paper

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Submission:

Introduction
Orthopaedic surgery is one of the largest surgical specialties in the world. It is an ever-changing technologically driven specialty. Competition for doctors to enter this specialty can be fierce and requires a lot of determination. The aim of this study was to look at the factors that influence junior doctors in the United Kingdom (UK) and across the world wanting to pursue an orthopaedic career, their concerns and career aspirations.

Methods
Methods: A 20-item questionnaire was designed on Google Forms and circulated nationally in the UK via emails to Training Programme Directors. In addition to social media and messaging services to UK and Non-UK junior doctors wishing to pursue orthopaedic surgery. The following data was collected on participants’ demographics, orthopaedic experience and factors influencing and dissuading them from an orthopaedic career.

Results
Results: 724 individuals responded to the survey, 61.5% (445) were based in the UK and 39.5% (279) were Non-UK based (spanning 50 countries across the globe). 69% of all respondents were male. 41% of participants were of Asian origin. 87% were heterosexual. 62% were single. The commonest influences in pursuing an orthopaedic career were: practical and technical specialty (70%), job satisfaction (50%), good patient outcomes (49%) and positive role models (42%). The commonest concern about the career was the financial impact related to training (49%) followed by work-life balance (36%). The top two alternative specialties that participants would consider were plastic surgery (42%) and general surgery (30%). However, the third commonest alternative specialty was interventional radiology in the UK compared to emergency medicine across the world. Across the board, the doctors had the most exposure to trauma, hips and knees. These were also the top three sub-specialties they were most likely to pursue.
Conclusion
There are multiple factors that can influence and dissuade people from pursuing an orthopaedic career. In order for the specialty to flourish, it needs to address the concerns of its future generation and become more diverse and inclusive. Increased exposure to various sub-specialties, having diverse role models and experiences during medical school and early years as a doctor would enhance the individual’s desire to pursue an orthopaedic career.
Revision Septic Total Hip And Total Knee Arthroplasty Utilising The Lautenbach Method And Lautenbach Suction-instillation System

**Introduction**
Periprosthetic joint infections are a devastating complication of total joint arthroplasty. Various treatment modalities exist. A retrospective study was embarked upon to evaluate the outcome of the Lautenbach technique and the Lautenbach suction-instillation system in the eradication of infection within total hip and total knee arthroplasty patients.

**Methods**
Ethics approval was obtained. Between 2008 and 2019, 101 patients (n=46 total hip arthroplasty (THA) and n=55 total knee arthroplasty (TKA)) were identified, who met the criteria of a periprosthetic joint infection. The study population included 52 male patients and 49 female patients, with a mean age of 66.4 years (65 years in the THA group and 67.8 years in the TKA group).

All patients underwent the Lautenbach method of treatment, which included the use of the Lautenbach suction-instillation system, performed by the same primary surgeon. Eradication of infection was assessed according to the MSIS criteria, with a minimum two year follow-up.

**Results**
An average of 2.9 different infective organisms were isolated from the total hip arthroplasty patients and an average of 2.16 organisms were isolated from the septic total knee arthroplasty patients. Multiple preceding revision surgeries had been performed in many cases; 16 two-stage and 4 single-stage re-revisions within the THA group and 2 two-stage and 2 single-stage re-revisions within the TKA group.

Infection was successfully eradicated in 45 out of 46 septic total hip arthroplasty patients (98%) and in 53 out of 55 septic total knee arthroplasty patients (96%). Altogether, 98 out of 101 patients (97%) remained free from infection.

**Conclusion**
These data support the use of the Lautenbach method and Lautenbach suction-instillation system in the management of septic total hip and total knee arthroplasties.
Introduction
This study aimed to look for the incidence of radial head fracture in adults who presented to Riyadh Care Hospital Emergency department (ED) with elbow dislocation. The aim of this study was to determine the incidence of radial head fracture in adults who present with an elbow dislocation, and compare the rate of the annual incidences of dislocation in our institution with the published data in the literature and in Saudi Arabia in particular if any.

Methods
This is a retrospective, descriptive cohort study with an internal comparison which was conducted in a single tertiary trauma centre looking for traumatic elbow dislocation in adults from July 2015 till July 2018 in Riyadh, Saudi Arabia. Patients were identified through a detailed review of our hospital electronic X-ray database. The search was done for the elbow x-ray code. All elbow x-rays done at our institute between July 2015 till July 2018 were included in the study for primary evaluation.

Results
Out of 2283 cases, 45 patients were included in the study. Multiple data variables were collected in our study. It was found that the number of radial head fractures among traumatic elbow dislocations was 21 (47%) out of 45 patients, while 53%, were not associated with radial head fractures.

Conclusion
This study showed that the mean age at injury was 38 years, men were most commonly injured and 60% of patients were manual workers.

Radial head fracture was present in 47% of elbow dislocations, based on X-rays alone. Missing these injuries can have detrimental consequences.

Advanced imaging such as CT scan can be of benefit, to detect such fractures, but its role in surgical planning is clear.

Based on Mason classification the majority of radial head fractures were Mason type 3 with almost (62%), followed by type 2 (24%) while the least common type was type 1 (14%).

Surgeons must be prepared preoperatively to deal with type 3 fractures as the majority will need radial head replacement.
Evaluation Of The Attitudes Of Patients Awaiting Total Joint Arthroplasty Postponed Due To A Massive Fire At An Academic Referral Institution

Introduction
On the 16th April 2021 a devastating fire lead to the evacuation of almost 1000 patients in an academic referral institution in Johannesburg, South Africa. Subsequently, all elective primary Total Joint Arthroplasty (TJA) was postponed as the hospital was closed indefinitely. Postponement of TJA and prolonged time spent on the waiting list has been shown to lead to inferior outcomes and poorer satisfaction rates. The study aimed to determine the reaction of patients waiting for TJA to the closure of the hospital and cessation of services by the Arthroplasty Unit. Secondarily, the study sought to evaluate how patients would react to the potential reintroduction of surgical services at another institution.

Methods
A prospective telephonic interview of 135 patients awaiting TJA was conducted by 3 independent researchers after getting institutional ethics clearance. Subsequent results were compared with a previous, similar investigation of the patients’ response to the postponement of surgery due to the COVID-19 pandemic.

Results
There were 81 (59.9%) females and 56 (40.1%) males, aged 62.98 ± 10.87 years contacted and who consented to be interviewed. The average time on the waiting list for TJA was 18.8 ± 11.7 months. There were 93.4% (n=128) who were aware of the fire while only 50.4% were subsequently aware that elective TJA had been halted. More than half the patients (55.5%) felt more could have been done to contact and explain the situation to patients. There were 20.4% (n=28) who believed that postponement of surgery was less necessary than when it happened in response to the COVID-19 pandemic. There were 25.5% (n=35) who no longer wanted elective TJA with 62.9% citing that they only wanted to be operated at the old institution. There were 92 patients who would consider surgery at another institution with 52.6% of these only doing it if the surgeons remained the same and only 7.9% concerned about the COVID-19 pandemic.

Conclusion
The majority of patients believed that postponement of elective TJA due to a devastating fire at a large academic, referral hospital was vindicated. Despite some anxiety almost three-quarters would support being
operated on at another institution.
The Cape Town Modified Squat And Smile Test: Correlation With Fracture Union In Long Bone Fractures Of The Lower Limb

Registrar: yes

Paper/Poster: Paper

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Submission:

Introduction
The ability to squat is one of the most basic functional movements that is required to perform activities of daily living and religious tasks. It involves lowering the hips from a standing position while bending the knee and ankle joint and returning to standing position.

Determining whether a fracture has united is one of the most important aspects of orthopaedic fracture care. However, there are no standardized methods of assessing fracture union, which in turn has created significant disagreement among orthopaedic surgeons in both clinical and research settings. The ideal fracture assessment tool would be quick and easy to use, accurate and inexpensive. The ability to use this tool remotely would be of further benefit, especially in resource constrained environments. The Squat and Smile test (S&S) was developed to measure functional recovery in a limited resource setting.

The aim of our study was to compare the Modified Squat and Smile test to union in intramedullary nailed tibia and/or femoral fractures.

Methods
This is a retrospective cohort study in which patients who had their Cape Town Modified Squat and Smile test recorded following intramedullary nailing for femur and/or tibia shaft fractures selected from the HIV in Orthopaedic Skeletal Trauma (HOST) Study database.

Video footage of patients performing the Squat and Smile test at their routine clinic follow up was collected and scored by two independent observers and recorded. The overall score, as well as the individual score of each component was compared to union, as determined by the RUST score. We also compared the score to the EDQ5 and DRI scores.

Results
106 videos of patients performing the S&S test were analysed. The test had reasonable correlation to fracture union using RUST as the gold standard.

Conclusion
The Cape Town modified Squat and Smile test might have some value in monitoring fracture union in lower limb long bone fractures.
Radial Tunnel Syndrome As A Cause Of Resistant Tennis Elbow: A Case Series And Review Of The Literature

Introduction
Radial tunnel syndrome is an uncommon cause of lateral forearm pain. It is a poorly understood and difficult to diagnose clinical entity which often presents as the “Resistant tennis elbow”. Left untreated it can lead to considerable morbidity. Astute clinical diagnosis is necessary to distinguish this from other causes of forearm and elbow pain and differentiate it from Posterior Interosseous Nerve Syndrome.

We define the relevant anatomy, sites of surgical compression as well as surgical approaches. We further review recent and controversial aspects of the literature including special investigations, clinical diagnostic criteria and surgical technique.

Methods
We present a clinical case series of 17 patients managed with surgical decompression in an upper limb practice. We review the epidemiology, demographics, clinical findings and pre and post operative outcomes and complications.

Results
A case series of 17 patients were evaluated pre and post operatively with regards to pain score, grip strength and patient satisfaction. All patients showed significant improvement after surgical decompression.

Conclusion
Radial tunnel syndrome is a distinct clinical entity which left untreated can lead to considerable morbidity. Accurate diagnosis is crucial and surgical release can lead to complete resolution of symptoms and return to function.
Outcomes Of Surgical Management Of Patients With Chronic Shoulder Dislocations

Registrar: no

Paper/Poster: Paper

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Introduction
The purpose of this study was to evaluate the demographic distribution, reasons for delayed presentation and outcomes of patients with chronic shoulder dislocations treated surgically at a tertiary hospital level.

Methods
This is a retrospective review of 22 patients with chronic shoulder dislocations treated from 01 January 2019 to 30 May 2021 at Dr George Mukhari Academic Hospital. We reviewed clinical and radiology records of these patients for mechanisms of injury, demographic data, medical history, reasons for delayed presentation, the surgical treatment offered and outcomes of surgery. For the purpose of this study, chronic dislocation was defined as an injury period of more than 10 days. Clinical outcomes were evaluated using patient-reported outcome measures at minimum 3 months follow-up period.

Results
The majority of the patients were males (72%). The group mean age was 57.5 years (median; 23 - 80 years). Only 1 patient presented a posterior dislocation. In those with anterior shoulder dislocation, 9.5% (n=2) of the patients had subclavicular dislocations and 90.5% had subcoracoid anterior dislocations. Falls was the commonest mechanism of injury, accounting for 36% of the cases. Missed diagnosis in the acute setting was the commonest reason (50%) for delayed presentation in these patients. The majority of the patients with anterior dislocation were treated with open reduction and anterior bone block (Eden-Hybinette procedure; n=9 and latarjet procedure; n=4). The other patients were treated with reverse shoulder arthroplasty (n =3) and open reduction and soft tissue repair (n = 3). One patient treated with soft tissue repair had a redislocation on immediate post-operative x-rays and he refused further surgery. One patient with subclavicular anterior shoulder had axillary artery injury during surgery and the definitive procedure was abandoned to save the limb. The majority of the patients reported good outcomes with a mean subjective shoulder value (SSV) of 70% (median; 50%-90%) at 3 months follow-up period.

Conclusion
Surgical management is safe in patients with chronic shoulder dislocations. This study reports good short-term results, with a low risk of complications and neurovascular injury.
Introduction
The current study aims to determine the accuracy of intraoperative predicted acetabular inclination angles among different levels of surgeon's experience and across different hospitals in South Africa.

Methods
A cross-sectional study was done across 9 different hospitals in 4 provinces in South Africa on 89 patients between May 2018 and December 2018 for a period of 10 weeks and the surgery was performed by surgeons with different levels of experience. Intraoperative and post-operative acetabular inclination angles were obtained. The measurements were statistically compared using a Shapiro-Wilk test in IBM SPSS. The cut-off for statistical significance was set at p < 0.05.

Results
The average intraoperative predicted angle for experienced surgeons was 41 degrees and the average post-operative angle was 39 degrees. The average intraoperative predicted angles for less experienced surgeons was 41 degrees and the average post-operative angles were 42 degrees.

The average intraoperative predicted angles for tertiary hospitals was 37.6 degrees and the average post-operative angle was 42 degrees, the average intraoperative predicted angles for secondary hospitals were 44 degrees and average post-operative angles were 43 degrees.

From this study, we found that there was no significant difference (p > 0.05) among the different hospitals and different levels of surgeon experience when comparing the accuracy of predicted inclination angles.

Conclusion
There were no significant statistical differences in the expected and actual inclination angle among surgeons of different surgical experiences or the hospital level where the surgery was done.
MBChBb 5th Yr Student Response To E-Learning Within Orthopaedic Surgery During Covid-19

Registrar: yes

Paper/Poster: Poster

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Submission:

Introduction
The paper is aimed at identifying the learners’ perceptions and feelings towards online learning, and then further correlating these subjective findings with the cohorts end of block results. It will highlight whether e-learning facilitates comparable levels of confidence amongst students to that of traditional methods. Through identifying strengths and weaknesses of online learning through the students’ feedback, we can potentially construct a refreshed teaching program in line with modern online electronic methods. It will provide data specifically relevant to our local setting and may potentially serve as the catalyst to standardise an approach to orthopaedic undergraduate teaching within in Southern Africa

Methods
Multiple cross-sectional sectional survey analysis involving prospectively analysing the 5th year MBChB students end of block evaluations and end of block marks for their orthopaedic rotations from 2016-2019 (Pre-COVID) to 2020 (COVID - online learning)

Results
Subjectively the student’s response to e-learning was positive as many of them welcomed the usefulness and stimulation of the online media as a study tool. With comparable outcomes in terms of student confidence and final marks it further encourages a move towards formulating a novel blended learning curriculum. Students strongly agreed that the online course was more relevant, well presented, it was easier to participate in, and attend. Even though they did not agree that the course adequately prepared them for the end of block assessment, the results from the summative assessments were similar to previous years.

Conclusion
With consistent outcomes in respect of student confidence and final marks (compared to traditional teaching in previous years), these results further encourage the formulation and establishment of a novel blended-learning curriculum. With comparable levels of confidence between traditional and blended methods as demonstrated in this paper, we can now confidently set out in developing a standardised blended learning curriculum in South Africa incorporating local research, evidence and practices. Given this foray into blended learning there are numerous complexities which need investigation when implementing these structural changes.
Introduction

Bilateral segmental femur fractures secondary to high velocity trauma is exceedingly rare and current literature on the outcomes and approach to management is scanty. Because of the high velocity required to produce such extensive trauma, these patients tend to have concomitant, multi-systemic injuries rendering them more unstable on initial presentation.

We report a previously healthy adult male who presented to our unit with bilateral intertrochanteric and mid-shaft femur fractures as well as a left medial femoral condyle and a left lateral tibial plateau fracture. Furthermore, we discuss nuances involved in the management of our patient following current recommendations of case reports found in the literature.

Methods

A literature search reveals only case reports and case series. The largest of which published in 1993 involving three patients with bilateral intertrochanteric and subtrochanteric fractures. The first patient receiving early total care, but needing to abandon halfway through due to haemodynamic instability intraoperatively, the second requiring five days of ICU and optimisation prior to bilateral fixation and the third developing fat embolism syndrome necessitating delayed fixation.

Results

In our patient’s initial resuscitation he was found to be haemodynamically unstable requiring two units of cross matched blood. Further monitoring from trauma surgery for a non expanding retroperitoneal haematoma, an improving acid-base status and general condition required a further five days of observation and optimisation prior to his first staged procedure of intramedullary fixation of both femurs. The patient then started to mobilise with physiotherapy before a second staged procedure seven days later. The patient had a good outcome following surgery.

Conclusion

We conclude that these patients require a damage control approach with close cooperation between surgical teams in resuscitation and ongoing management. Optimisation and planned surgery in these patients is paramount with life saving surgeries performed first, a period of optimisation for three to five days and then staged surgeries aimed to minimise length of recumbency and promoting mobilisation as early as possible. Therapy and surgical management should be tailored on an individual basis guided by physiological and biochemical parameters.
Giant Chondrosarcoma Of The Clavicle - A Case Report And Literature Review

Registrar: no

Paper/Poster: Poster

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Submission:

Introduction
The most common tumours of the clavicle are Myeloma and Ewing’s sarcomas while chondrosarcomas being a relative rarity at this location. However, a clavicular chondrosarcoma enlarges more insidiously that other more frequently occurring tumours at this location and outcomes are considered more favourable compared to the traditional more challenging locations such as the pelvis, femur and humerus. The subcutaneous location of the clavicle facilitates early detection and thus has a more favourable prognosis. A further favourable consideration is that a complete claviculectomy can be performed without incurring significant morbidity while maintaining reasonable functionality of the shoulder.

Methods
We reported an adult male patient who presented to our unit with a massive clavicular chondrosarcoma with radiological spread to the retro-pectoral lymph nodes.

Results
A total claviculectomy was performed with en bloc removal in the first stage followed by local lymph node clearance by general surgery at second stage and adjuvant chemotherapy and radiotherapy facilitated by the oncology department. At one year follow up no recurrence was noted and the patient had good functions of the shoulder.

Conclusion
We recommend total claviculectomy as the surgical procedure of choice for clavicular chondrosarcomas.
Catastrophic Ceramic Femoral Head Failure: A Case Report

Registrar: yes

Paper/Poster: Poster

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Submission:
Introduction
Ceramic-on-ceramic bearing surfaces has excellent tribological characteristics including the lowest wear rate of all bearings, scratch resistance, extreme hardness and good wettability.

A rare but devastating disadvantage of ceramic bearings is the risk of fracture. The fracture risk of fourth generation ceramics are as low as 0.05% for femoral heads and 0.013 - 1.1% for acetabular liners.

Fractured ceramic components require urgent, mandatory revision, if delayed can cause greater fragmentation and damage to metal tapers as well as increased metallosis which can lead to poorer results following revision

Methods
We present a case of an 80 year old female patient with a previous total hip replacement in 1996 that presented to our institution following a fall onto her hip.

A fractured ceramic femoral head was diagnosed and revision surgery was done.

Results
Her current implants were a ceramic femoral head on a polyethylene liner. The macroscopic fragments were removed, synovectomy and thorough joint lavage was done.

Due to minimum damage to the trunnion and good stability of the femoral stem the decision was made to leave the current stem in situ and only revise the acetabular component with a new polyethylene liner. The patient did well post operatively and was discharged one week later.

Conclusion
With fractured ceramic components it is usually impossible to remove all microscopic fragments which can lead to rapid and significant wear. When revising fractured ceramic components, extensive synovectomy, irrigation and capsular excision should be done.

Ceramic-on-ceramic is the best option for revision following catastrohpic failure although a highly crosslinked polyethylene liner with a ceramic femoral head can be used as an alternative.

Loose, malpositioned and damaged components should be revised. A well fixed femoral stem with minimal or no trunnion damage may be left in situ but an obligatory metallic sleeve should be placed over the trunnion. Apart from ceramic fractures, ceramic-on-ceramic bearings have shown good results in revision surgery in cases with osteolysis, adverse local tissue reaction and recurrent instability where other bearing surfaces were used.
A Rare Coronal Fracture Of The Articular Distal Humerus With A Complete “capitello-trochlea” Fragment – A Case Report And Literature Review

Introduction
Fractures of the capitellum are exceedingly uncommon and represent < 1% of all elbow fractures. They result from a coronal shear force across the distal humerus and have a propensity to displace - due to minimal soft tissue attachments. Often resulting in a free articular fragment. We report a case of a patient who sustained a fracture of the capitellum and entire trochlea of the distal humerus.

Methods
A 28-year-old female presented with a painful and swollen left elbow after falling onto a semi-flexed elbow the previous day. Patient is a right-hand-dominant domestic worker with no medical co-morbidities and a normal body-mass-index. A closed fracture of the capitellum was found and a computed tomography scan done. This revealed a coronal fracture of the capitellum involving the entire trochlea, anteriorly displaced and angulated but still attached to the distal humerus at the proximal end. The radial head perched beneath the fragment with no comminution present.

The patient underwent early open reduction and internal fixation through a lateral Kocher approach and a separate medial approach to access the trochlea. After an anatomical reduction was achieved fixation was completed with three anterior-to-posterior headless cannulated compression screws. No other associated injuries were found. Patient was immobilised in an above elbow splint for 2-weeks after which early physiotherapy and range of motion was permitted.

Results
Wound healing was uneventful. Patient regained excellent function and range of motion at 12-weeks. Elbow flexion-extension of 8–130 degrees on the left versus 0–130 degrees on the right with equal pronation of 70 degrees and supination of 80 degrees bilaterally. The patient’s DASH score was 0.

Conclusion
This Fracture pattern did not fit within the Bryan & Morrey, Orthopaedic Trauma Association or Dubberley Classifications and a similar pattern could not be identified in our literature search. We found at open
reduction that a medial approach in addition to the lateral approach aided in anatomical reduction and fixation of the trochlea. These fractures are challenging injuries to treat and a stable fixation allows early range of motion. We hope this report creates awareness for clinicians who diagnose and manage these rare injuries.
Establishing The Safe Use Of The Bridging Infix Method For Anterior Pelvic Fixation. An Anatomical Study - Preliminary Results

Introduction
Established subcutaneous internal fixation techniques have shown reduced wound complications, better quality of life, and reduced pain. However, these techniques still have specific indications, contraindications and complications. The most significant known complication for these techniques is injury of the lateral femoral cutaneous nerve (LFCN). A novel minimally invasive modified technique, the Bridging Infix, has been proposed to further assist in the reduction of the negative effects of anterior fixation of unstable pelvic fractures. The exact potentially at-risk anatomical structures during the novel procedure are currently unknown. Therefore, the aim of the study is to determine the relationship between the Bridging Infix implant and at-risk neighboring anatomic structures within a South African sample.

Methods
A total of fifty formalin-fixed cadaveric specimens (N=50) and two fresh frozen cadaver specimens (N=2) will be utilized in the full study. Any cadavers with evidence of previous pelvic or abdominal surgery, visible pelvic pathology or pelvic damage will be excluded from the study. In the preliminary sample of ten cadavers (N=10), the pelvic bridging infix was placed by surgeons as per the technique guide. Superficial and deep dissection were completed and measurements of the distance between adjacent structures and the implant as well as bony landmarks were taken to determine safe zones.

Results
The current sample (N=10) was analysed. The mean distance from the most medial implant screw to the LFCN on the left and right was 44.70mm (SD: 14.26) and 40.49mm (SD: 11.05), respectively. The iliohypogastric nerve was the closest structure to the rod-to-rod connector with a minimum distance of 14.26mm (Mean: 20.36; SD: 6.26) on the left and 3.60mm (Mean: 15.57; SD: 7.23) on the right. The ilioinguinal nerve was a minimum distance of 20.20mm on the left (Mean: 29.99; SD: 6.79) and 7.12mm (Mean: 22.83; SD: 10.15) on...
the right.

**Conclusion**
The Bridging Infix has showed no damage to important adjacent anatomical structures. Thus, the surgical procedure can be considered safe if the screws are directing inserted on the iliac crest and no pressure is applied within three finger breaths from the anterior superior iliac spine or pubic tubercle along the inguinal ligament.
Correlation between low back pain and the Schmorl nodes – a meta analysis

Introduction
Intervertebral disc herniations, known as Schmorl nodes (SN), are highly prevalent lesions found in imaging of thoracolumbar spine. They tend to appear more commonly in deformed spine, typically in Scheuermann’s kyphosis. The low back pain (LBP) is the most common symptom of spine pathology and it mostly results from the injury. The co-occurrence between LBP and SN has been examined by several studies but no clear relationship between those pathologies has been established. The aim of our study was to perform meta-analysis to check the incidence of SN and assess its association with LBP.

Methods
Major medical databases were extensively searched and all articles covering topics of SN and LBP co-occurrence were found. Relevant data was extracted and statistically analyzed. PRISMA guidelines were strictly followed during the research.

Results
6 articles (total of 2504 patients) were included in the study. Mean pooled prevalence of SN in all groups regardless of LBP equalled 19.3% (95%CI:12.6-27.0), it was 22.8% (95%CI:14.9-31.8) among people with LBP, compared to 17.0% (95%CI:8.8-27.1) of patients without LBP. The pooled odds ratio was 1.45 (95%CI: 0.86-2.42).

The prevalence of SN in LBP patients equalled 19% (95%CI: 12.3-26.7) in European studies and 25.3% (95%CI: 12.9-40.0) in Asian articles. Moreover, occurrence of SN in asymptomatic patients was 13% (95%CI: 4.4-24.5) in papers from Europe and 20.6% (95%CI: 9.1-35.0) in the Asian ones.

Conclusion
The study revealed SN to be a common finding. However, no statistically significant relationship was found between LBP and SN. Consequently, surgeons or radiologists shouldn’t treat SN as an explanation for LBP with unclear etiology. To our knowledge no meta-analysis on that subject has been conducted before.
An Unusual Presentation Of Combined Closed Humeral Shaft Fracture, Median Nerve Palsy And Brachial Artery Laceration Following Non-Penetrating Injury: A Case Report

 Registrar: yes

Paper/Poster: Poster

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Submission:
Introduction
Humeral shaft fractures are closely associated with radial nerve injury. Median nerve and brachial artery injuries are rare in patients with closed humerus fracture. We report an unusual case following a high energy motor vehicle accident, of a patient presenting with closed humerus shaft fracture and median nerve fall-out, with associated brachial artery laceration missed on initial presentation and diagnosed intra-operatively.

Methods
This is a case study of an unusual presentation of humerus fracture which was associated with a median nerve palsy and brachial artery injury. A thorough literature review was done to search for similar case presentation.

Results
The patient underwent a successful open reduction and internal fixation of the humerus shaft fracture as well as repair of the brachial artery and neurolysis of the median nerve. The brachial artery remained patent post repair, the fracture united three months post injury and the median nerve successfully recovered six months post repair.

Conclusion
Due to intimate anatomical relationship between the median nerve and the brachial artery, injury to one of these structures should race a suspicion of a possible injury to the other. Therefore clinicians should have a high index of suspicion when dealing with these injuries.
Use Of Distraction Osteogenesis In Patients With Severe Müller-Weiss Disease

Introduction
Müller-Weiss Disease (MWD) is a rare complex idiopathic foot condition characterized by chronic mid- and hind-foot pain and radiographic evidence of talonavicular joint destruction and navicular fragmentation. Studies reveal no consensus on its pathogenesis nor a treatment gold standard. Abnormal compressive forces due to a congenital deformity and spontaneous avascular necrosis of the navicular have been postulated as possible etiology. The disease is classified according to Maceira and Rochera measuring Méary’s angle radiographically, into mild (stage 1), moderate (stage 2,3), and severe (stage 4,5). Surgical management options include talonavicular arthrodesis, calcaneal lengthening, triple arthrodesis, and complete excision of the navicular. The aim of this study was to report on outcomes for mid- and hind-foot pain and deformity correction after management by distraction osteogenesis.

Methods
We present 2 cases with typical radiographic features of severe MWD. Both patients had radiographic features of severe MWD (Maceira stage 4/5). This included navicular compression and dorsal protrusion with subsequent depressed Meary’s angle and pes planus. Surgical technique involved achieving a gradual correction using a midfoot osteotomy and a hexapod fixator.

Results
Favorable outcomes were achieved both clinically and radiographically. Patients followed-up were assessed pre- and post-operatively utilizing the Visual Analog Scale (VAS) scores for pain on walking, and activities on daily living utilizing the Foot and Ankle Outcome Scores (FAOS). Radiographic parameters were analyzed pre- and post-operatively which also showed deformity improvement. Improvements were shown in the American Orthopaedic Foot and Ankle (AOFAS) score and radiographic parameters. VAS and FAOS scores were also favourable

Conclusion
MWD is a foot condition of unknown etiology affecting the mid- and hind-foot resulting in chronic pain and deformity, with no gold-standard in treatment. We consider distraction osteogenesis to be a suitable treatment modality in patients with severe (stage 4,5) MWD, and it is worth exploring the technique further.
The Impact Of The COVID-19 Pandemic On Hand Surgery In Johannesburg

Registrar: no

Paper/Poster: Poster

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Submission:

Introduction
The first COVID-19 case was documented in South Africa at the beginning of March. Since then, the pandemic has imposed challenges on the practice and delivery of hand surgery services. The aim of this study was to determine the impact of the COVID-19 pandemic as well as the effect of the national lockdowns on hand surgery at our institution.

Methods
A prospective analysis was conducted on all patients requiring hand surgery services at our tertiary hospital from the beginning of the COVID-19 pandemic in March 2020 until June 2021. Data on the number of outpatient clinic visits, emergency admissions and surgical procedures was collected from March 2020 to June 2020. This data was compared to pre-COVID-19 departmental data that was collected retrospectively between March 2018 and June 2019.

Results
A total of 1,907 patients required emergency admission during the COVID-19 pandemic between March 2020 and June 2021, compared to 1,995 patients prior to the pandemic (4.41% reduction). Outpatient clinic visits decreased from a total of 12,870 patients, before the pandemic, to 8,176 patients during the pandemic period (36.47% reduction). A total of 1,222 emergent surgical procedures were done during the pandemic compared to 1,354 procedures done prior to the pandemic (9.74% reduction). Elective hand procedures decreased from 1,771 cases, before the pandemic, to 1,297 cases during the pandemic (27.66% reduction). The data revealed a strong negative correlation between the lockdown level and the number of emergency admissions and surgical procedures done. There was a moderate negative correlation between the number of active COVID-19 cases and the number of emergency admissions. Negligible correlation existed between the number of active COVID-19 cases and the number of outpatient visits.

Conclusion
Despite the reduction in the number of elective surgery and outpatient volumes during the COVID-19 pandemic, the requirement for emergent hand services remain high throughout the COVID-19 pandemic and periods of national lockdown. With these demanding circumstances necessitating the reallocation of healthcare resources, it is necessary to restructure existing practices to ensure that the provision of adequate surgical services is fulfilled.
A Rare Find: Isolated Trapexium Dislocation

Introduction
Isolated trapezium dislocations are rare. Less than 20 cases have been reported in literature since 1950 and are often associated with high energy injuries. This case report of a open trapezium dislocation in a male patient.

Methods
A 39 year old male patient presented in casualty with a history of being involved in a motor vehicle accident, as a restrained driver, sustaining an injury to his right hand. He presents with pain, swelling and an open injury on the dorsal-radial area of his right hand. He is otherwise neurovasculary intact.

X-ray confirms a trapezium dislocation of the right side.

Immediate management is a washout in casualty as well as antibiotics, anti-tetanus toxid and immobilization.

The patient was taken to theatre within 24 hours. A debridement and reduction was done and the patient had K-wire stabilization in the following configuration - metacarpal thumb to trapexium and Trapezium to Trapezoid/Capitate.

Results
The open wound was managed in the ward with VAC dressing to promote granulation.

The patient was planned for wound closure with skin graft with subsequent two stage reconstruction of the ligaments and soft tissue.

The patient unfortunately signed a refusal of hospital treatment prior to the above plan.

The Patient returned 4 months later with residual pain and stiffness of the thumb and has subsequent notable decreased abduction of the thumb.

Conclusion
Though rare in nature, principles of carpal dislocation should apply with injuries such as these. The added complication of the above case being an open injury does add to the complexities. Literature states that the outcomes of a dislocated trapezium are good and that the patients do well. This case has had a poorer outcome, with residual stiffness and pain though, though the confounder of the soft tissue injury as well as defaulting management will add to the overall picture.
Heterotropic Ossification Following Severe COVID-19 Infection. A Case Study And Literature Review

Introduction
With the emergence of the COVID-19 worldwide pandemic, we are only beginning to realize potential late sequelae and complications that patients can sustain post infection.

Methods
We present a case of heterotropic ossification (HO) involving bilateral hips, following a severe COVID-19 infection. The patient is a 46-year-old male patient with no pre-existing co-morbidities. He required prolonged mechanical ventilation and high flow oxygen therapy for two months in the intensive care unit as per the treatment protocol for patients with severe COVID-19 infection. The patient presented with a one month history of progressive painful and stiff hips which affected his mobility. Examination revealed a decreased range of motion in both hips with an associated fixed flexion contracture and shuffling gait. On x-rays bilateral progressive myositis ossificans were noted, Brooker II on the right and III on the left-hand side. He was treated conservatively with bisphosphonates, non-steroidal anti-inflammatories and physiotherapy to protect the range of movement, while awaiting maturation and surgical excised at a later date.

Results
The aetiopathogenesis of HO in covid-19 patients is still unclear. Those with severe infection are critically ill and thus suffer from prolonged immobilization; which is a key factor in the development of HO. Tissue hypoxia during mechanical ventilation has been proposed to act as a triggering factor for the developing HO. In addition to the above theories, the influx of systemic inflammatory cells in COVID-19 patients has also been proposed as a significant contributing factor to the development of HO post-covid. A high index of suspicion should be maintained in at risk patients as this will allow for early diagnosis and appropriate management. Early HO may be seen on MRI or CT-scan of the affected area, while biochemistry results indicative HO includes a raised alkaline-phosphatase and creatine-kinase and a decrease in calcium.

Conclusion
With COVID-19 likely to remain a prominent illness in our health care system, we should be aware of potential complications in those that require intensive care. Patients with severe acute respiratory syndrome due to covid-19 should be followed-up and monitored for the development of HO.