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Abstract title: Survey of the management of acute cervical spine dislocations with closed traction reduction in the Western Cape region South Africa

Abstract:
Summary
This was a retrospective study assessing regional practices in acute cervical reduction. Most medical facilities had no written protocols, no formal training and considered cervical reduction risky for neurological deterioration. Most clinicians preferred to refer these patients but felt that with adequate training they would attempt closed reduction.

Hypothesis
Most emergency room doctors have little training or lack equipment to attempt closed cervical reduction and have the perception that the risk of neurological deterioration is high.

Design
Peripheral hospitals in the Western Cape region were included in the study. A questionnaire was distributed to the head of the casualty unit and the results retrieved and analysed.

Introduction:
In acute cervical dislocations, urgent reduction is mandatory. Almost all of these injuries require definitive surgical stabilization. Even under ideal circumstances it takes a few hours to get a patient onto the operating table whereas an urgent closed reduction could take place immediately after diagnosing the problem. Reduction by closed cervical traction is a rapid mechanism of indirectly relieving cord compression. The literature reports less than 1% incidence of worsening neurology and we consider it a safe procedure and a skill which should be available to all qualified doctors. Our experience is however that referring hospitals are not attempting reductions and prefer to transfer these patients with subsequent delays in cord decompression.

Methods:
All peripheral hospitals in the Western Cape were included and the head emergency room clinicians were consented to participate. Data collection was via SurveyMonkey, an online email based survey tool. Medical staff voluntarily completed the survey with respect to protocols in place, equipment, knowledge and experience and specialists available. No patient names were recorded and this survey was anonymous.

Results:
80% of hospitals had no policies, 50% had equipment available but no formal training. 93% considered deteriorating neurology to be the main indication for reduction but only 50% would attempt the reduction. Only 7% thought reduction was safe. 80% would attempt reduction if given training.
Conclusion:
Most Western Cape hospitals had inadequate protocols, training and equipment for cervical reductions. With training, most clinicians would attempt cervical reduction if indicated.

**Paper 6**
Presenter: S Clarke
Authors: C Brown, T Shakespeare, R Gasser, S Waring, S Clarke, C Goyal

**Abstract title:** The Orthopaedic Rock Concert: Is there a risk of Noise Induced Hearing Loss during Hip and Knee Arthroplasty?

**Abstract:**

**Purpose of study**
Occupational noise induced hearing loss (ONIHL) is defined as a permanent, irreversible hearing impairment. Previous studies have demonstrated noise generation can be influenced by the type of power tools and saw blade used and that personal protective systems (‘space suits’) are ineffective in reducing noise exposure.

The aims of our study were to analyse if there is a risk of ONIHL in Orthopaedic Surgery during hip and knee arthroplasty surgery and to ascertain if all members of the Orthopaedic Surgery operating team are at risk of ONIHL?

**Description of methods.**
This ethically approved, prospective, cohort study was completed from September to October 2014. All participants were given an information leaflet and gave written informed consent to participate. The noise dosimeter (Bruel + Kjaer Type 4448) was clip-on, lightweight and was secured 10cm from the ear on the surgical scrub shirt on the side closest to the surgical field beneath the personal protective clothing/helmet in a standardised manner for the Surgeon, Scrub Nurse and Anaesthetist. The noise dosimeter continuous data recorded was analysed including peak and average noise exposure to each member of staff.

**Summary of results**
18 consecutive cases were performed (12 primary THR, 2 primary TKR, 4 hip hemiarthroplasty) with a mean operative time of 125 min. Mean A-weighted noise levels were within the national recommendations (under 85dB). Peak C-weighted noise levels were within the national recommendation (no reading above 140dB)

However, all 3 participants are at risk of hearing loss due to the fact the mean duration above the 110dB threshold of hearing was greater than 2 minutes.

**Conclusion**
This small, prospective, observational study has identified that peak noise levels generated during hip and knee arthroplasty may be deleterious to hearing to all members of the Operating Team.

**Paper 7**
Name: I Rhoma
Authors: S Hoppe, M Keel, N Rueff, I Rhoma, M Held, S Maqungo

**Abstract title:** Early versus delayed application of Thomas splints in patients with isolated femur shaft fractures: The benefits quantified.
Abstract:

Aims
To investigate and quantify the clinical benefits of early versus delayed application of Thomas splints in patients with isolated femur shaft fractures.

Materials and Methods:
Level IV retrospective clinical and radiological analysis of patients presenting from January to December 2012 at a Level 1 Trauma Unit. All skeletally mature patients with isolated femur shaft fractures independently of their mechanism of injury were included. Exclusion criteria were: ipsilateral fracture of the lower limb, neck and supracondylar femur fractures, periprosthetic and incomplete fractures. Their clinical records were analysed for blood transfusion requirements, pulmonary complications, surgery time, duration of hospital stay and analgesic requirements. We defined ‘early application’ as the application of a Thomas splint at the accident scene or in hospital prior to obtaining any radiological investigations and ‘delayed application’ as the application after radiological investigations had been obtained.

Results:
A total of 106 patients met our inclusion criteria. There were 74 males and 32 females. Fifty seven (54%) patients were in the ‘early splinted’ group and 49 patients (46%) were in the ‘delayed splinted’ group (p >0.05). The need for blood transfusion was significantly reduced in the ‘early splinted’ group (P=0.04). There was also a significantly higher rate of pulmonary complications in the ‘delayed splinted’ group (P=0.008). All other parameters were not different between the two groups.

Conclusion:
The early application of Thomas splints for isolated femur fractures in non-polytraumatised patients has a clinically and statistically significant benefit of reducing the need for blood transfusions and the incidence of pulmonary complications.

Paper 8
Name: TL Hilton
Authors: TL Hilton, N Kruger, S Maqungo

Abstract title: Gunshot Tibia's: Results of Treatment with Intramedullary Nailing

Abstract:
Introduction
In South Africa the number of injuries caused by gunshot wounds (GSWs) and the cost of their treatment is immense. GSWs to the tibia pose unique concerns regarding union, alignment and the risk of osteomyelitis. In the past the majority have been treated with external fixation to best manage these issues. However as trauma surgery and instrumentation continues to improve, more of these patients are now being treated with internal fixation methods. This paper reviews the clinical and radiological outcomes of tibia fractures caused by GSW treated with intramedullary nailing (IM).

Methods
A retrospective descriptive folder review of all adult patients treated with an IM nail for a GSW tibia fracture between 2009 and 2014 at a tertiary level hospital was undertaken. Fractures with intra-articular extension, Gustillo Grade 3 open fractures or patient's loss to follow-up were excluded. Management included local wound care, prophylactic antibiotics and fracture stabilization with locked, reamed intramedullary nailing. Primary wound closure was performed where possible,
otherwise closure was staged. Follow-up was until clinical and radiological union. Anatomical alignment, deep sepsis and time to union were reviewed as the primary outcomes, with time to theatre and span of fracture comminution taken into account.

Results
A total of 11 patients, 10 male and 1 female, at an average age of 31 years (20 – 51), were included. Median time to theatre was 17 hours and 35min. 10 of the 11 had definitive fixation at initial surgery. 6 patients required staged closure with interim vacuum dressing. Acceptable alignment was achieved in all patients. Median zone of comminution was 101mm (36 – 230mm). Mean time to union 25 weeks (10 - 46) and 2 patients (18%) developed deep sepsis, which was treated successfully with removal of instrumentation once union had occurred.

Conclusion
Low velocity GSWs of the tibia may be treated with intramedullary nailing to reliably achieve alignment and union in an acceptable time period, despite considerable fracture span and extensive comminution. The infection rate in both this cohort and indeed any open fracture is a concern and the importance of adherence to proven sepsis reducing interventions cannot be overemphasised.

Paper 9
Presenter: D Chivers
Authors: D Chivers, S Swanepoel, W Leong, S Maqungo, S Roche

Abstract title: Intramedullary nailing of subtrochanteric femoral fractures caused by low velocity gunshots

Abstract:
Purpose of study
Subtrochanteric femur fractures remain challenging injuries to treat. There is paucity of literature evaluating their outcomes and complications following low-velocity civilian gunshots. The purpose of this study was to evaluate the results of intramedullary nailing of subtrochanteric femoral fractures caused by low-velocity gunshots.

Description of methods
A retrospective review of clinical and radiological data was performed on all patients who sustained subtrochanteric femur fractures (AO/OTA type 32C3) caused by low-velocity civilian gunshots treated at a single institution between March 2008 and December 2014. Data was analysed to determine time to union, postoperative complication rates, and patient outcomes. Radiographic evidence of healing was defined as bridging callus on three of four cortices on AP and lateral views.

Summary of results
Fifty-one patients (48 men and 2 women) were identified. Twenty-one patients had adequate radiographic and clinical follow-up data suitable for analysis. The average follow-up period was 24.8 weeks. Mean age was 29.6 years (range 16-47). All fractures healed without need for additional surgery. The predominant method of fixation was a cephalomedullary nail in eighteen patients (86%). The mean time to union was 17.2 weeks (7 – 40 weeks). No wound infections occurred. Sciatic nerve palsies [3 patients (14.2%)] were the most common complications with no recovery of function at time of union.

Conclusion
This study demonstrates that cephalomedullary nail fixation of subtrochanteric femur fractures caused by low-velocity civilian gunshots is an acceptable option for the treatment of these injuries.
**Paper 11**

Name: TL Hilton
Authors: TL Hilton, K Hosking

**Abstract title: Endoprosthetic Treatment of Primary Bone Tumours with Pathological Fractures.**

Abstract:
Primary bone tumours that are associated with a pathological fracture are rare and as a group have a worse prognosis than their non-fractured counterparts. Traditionally it was advised that this problem should be treated with limb ablation to prevent local recurrence, reduce incidence of metastases and improve survival. More recent studies have shown that with careful selection of patients, initial immobilisation and neo-adjuvant chemotherapy where indicated, leads to a degree of healing and facilitates adequate resection of margins subsequently. The majority of primary bone sarcomas occur around the knee and usually involve a joint as well as diaphysis. The reconstructive option here is usually with a mega- or allograft prosthetic composite which gives the patient a good cosmetic and functional result compared with amputation. We present a retrospective review of a series of 6 patients referred to our unit with pathological fractures. These were treated by initial traction and neo-adjuvant chemotherapy in osteosarcoma patients and subsequent resection and endoprosthetic replacement. The age range of our series is from 20 to 81, with 4 males and 2 females. All had femur involvement with a 60% incidence of osteosarcoma and 40% chondrosarcoma. 3 patients required total femur resection due to extensive involvement. Our results show 100% of patients had clear margins at post-operative histology. Due to the aggressive nature of these types of tumours they carry a worse long term prognosis and as such we had 3 deaths in our series. 1 patient died of a myocardial infarction post-operatively and 2 patients developed lung metastases and died 2 years later. Despite this our conclusion is that one can achieve safe local eradication of the tumour and use endoprosthetic replacements for primary bone tumours with pathological fractures.

**Paper 12**

Presenter: J D Arndt
Authors: J F van der Merwe, W van der Merwe, J D Arndt

**Abstract title: The Effect of Popliteus Tendon Division in Total Knee Arthroplasty**

Abstract:
Introduction
The popliteus tendon may be divided during total knee arthroplasty of the varus knee in one of two scenarios: as treatment for the tendon snapping over the prosthesis or inadvertently. Only a few in vivo studies have been done on the effect of its division. None of these used an accurate measuring tool to determine the resultant instability. We wanted to use computer assisted surgery (CAS) to determine the amount of instability caused by dividing the popliteus tendon during normal arthroplasty surgery.

Methods
Fourteen successive patients with osteoarthritic varus knees were operated on doing fifteen total knee arthroplasties using CAS. The gap balancing technique was used. The gap information was recorded in millimeters at 0°, 30°, 45°, 60° and 90° of flexion with varus and then valgus stress. The popliteus tendon was then divided and the same gap information was recorded and compared with the previous values.
Results
For the different tests of flexion, the mean increase in gap size varied from 0mm to 0.967mm. The biggest difference in gap size was noted at 90° flexion. The standard deviation of differences ranged from 0.327 to 1.172.

Conclusion
Dividing the popliteus tendon intra operatively in varus osteoarthritic knees during total knee arthroplasty does not lead to significant immediate instability.

Paper 13
Presenter: A Younus
Authors: A Younus, T Nakale, D Allie, AA Aden

Abstract title: Safety and Efficacy of Percutaneous Screw Stabilization of Unstable Fractures of the Thoracic and Lumbar spine

Abstract:
Introduction:
The occurrence of thoracolumbar spine injuries has increased substantially over the past few decades as a result of high energy MVA. Surgical management of these injuries has traditionally been by open means with instrumented and fusion. Over the last few decades however, there has been a shift towards percutaneous pedicle fixation of thoracolumbar injuries in an attempt to cut down on complications associated with open surgery. Percutaneous pedicle fixation has been shown to be an effective and safe option, but is limited by lack of long-term data. Also no local data from South Africa in particular or Africa as a whole is available on this subject. This study was aimed at generating local data that will validate claims that the percutaneous technique is a safe and effective method of managing unstable thoracolumbar fractures. This retrospective study will take place at Helen Joseph Hospital, Johannesburg and will be over a period of 18 months.

Material and methods:
The aim of this study is to evaluate the efficacy and safety of minimally invasive percutaneous pedicle screw fixation for unstable burst thoracolumbar fractures with or without neurology. Over 18 months, we did 14 case of thoracic and lumber spine. There were 10 male and 4 female patients. Their age range from 23 to 60 years with average age of 42.14 years. The most common level was found to L1 level and wedge compression type. Three of the patient had other associate injuries. Nine of these patients have no neurology and five of them had mild to moderate neurology. All of these patients were treated with closed reduction and percutaneous stabilization by screw and rod. The blood loss ranged from 80 ml to 220 ml with the average of 137.5 ml. These patients were follow-up for 6 to 12 months.

Results:
All of these patients showed stable fixation and no loss of reduction of thoracic and lumber spine in follow-up at 12 months. Their blood loss was also found to be minimal. The average stay in hospital following this procedure was also decreased to 3 to 4 days. There was no case in which neurology was worsened. The duration of operation averaged 134.14 minutes. It was also found that the duration of x-ray radiation the patients were exposed to be more then the normal open fusion method. The average VAS Score was 4.3. We had three complications, one where the screw was found to be outside the body of the vertebra, in another patient has bending of the trocar and deep wound infection.
Discussion:
Percutaneous pedicle screw fixation for thoracic and lumbar vertebrae has been an attractive alternative to typical open techniques. The procedure can be challenging however, once mastery of this procedure has been achieved, it offers a safe, less invasive, less traumatic, more aesthetically acceptable method for performing fusion. Other attractive features of this method are that the duration of hospital stay is shortened and there is less bleeding. In our patients we achieve good results with this method. All of our patients had less pain post-operatively; therefore they could mobilize early and subsequently an early discharge.

Paper 15
Presenter: M Laubscher
Authors: M Laubscher, C Mitchell, A Timms, D Goodier, P Calder

Abstract title: Outcome of femoral lengthening: a comparison of the Precice intramedullary lengthening nail and the LRS external fixator lengthening system

Abstract:
Background
External fixators are not as well tolerated around the femur when compared to the tibia. Lengthening with an intramedullary device is therefore attractive.

Method
We reviewed all cases of femoral lengthening performed at our unit from 2009 to 2014. Cases of non-unions, concurrent deformities, congenital limb deficiencies and lengthening with an unstable hip were excluded. This left 33 cases for review. Healing index, implant tolerance and complications were compared.

Results and Discussion
In 20 cases the Precice lengthening nail was used and in 13 cases the LRS external fixator system. The desired length was achieved in all cases in the Precice group and in 12 of the 13 cases in the LRS group. The Precice group had a more rapid return to full weight bearing. The mean healing index was 31.3 days/cm in the Precice and 47.1 days/cm in the LRS group. There was an increased incidence of complications with LRS lengthening, including pin site infections and regenerate deformity. Implant tolerance and the patients' perception of the cosmetic result were better with the Precice treatment.

Conclusion
We conclude excellent functional results with fewer complications and greater patient satisfaction in femoral lengthening with a Precice intramedullary nail.

Paper 17
Presenter: MA Roussot
Authors: MA Roussot, WJ Moolman, G Grobler, M Nortje

Abstract title: The hip-ATHON and knee-ATHON program: overcoming challenges in primary arthroplasty waiting times in a resource limited setting

Abstract:
Background:
Arthroplasty waiting lists are a challenge for most centres. In a resource limited setting these lists can run into the thousands and result in patients waiting several years for surgery. A novel strategy
for overcoming this challenge in the context of primary hip and knee total arthroplasty (THA and TKA) has been utilized at a resource limited arthroplasty centre - the “hip-ATHON” and “knee-ATHON” program.

Objective:
To evaluate the impact of the “hip-ATHON” and “knee-ATHON” program in a resources limited setting.

Methods:
In May 2014 the arthroplasty waiting list consisted of 780 patients awaiting arthroplasty for 1128 joints, including 426 primary THAs and 650 primary TKAs. The program consisted of 4 “hip-ATHON” lists (16 THAs) and 6 “knee-ATHON” lists (24 TKAs). The 5 components required to realize these extra lists were: Appropriate patients (primary arthroplasty, uncomplicated anaesthetic), a dedicated Team (orthopaedic surgeon, anaesthetist, operating theatre support staff), existing Hospital facilities (operating theatre, pre- and post-operative beds, ward staff), Orthopaedic implants (discounted rates negotiated with implant company), and funding.

Results:
The primary THA waiting list has been reduced by 8% or 4 months (from 4.3 years to 3.9 years) at a total cost of R1,000,000 for the program. This equates to R25,000 per joint.

Conclusion:
It is possible to make a reduction in the waiting time for primary hip and knee arthroplasty in a resource limited setting with the hip-ATHON and knee-ATHON strategy; however, in order to reduce the waiting list to 6 months, this program would need to be repeated 11 times. A sustainable increase in capacity for arthroplasty is required in the long term to improve service delivery.

Paper 18
Presenter: P Naude
Authors: R Dachs, T De Wet, P Naude, T Trevor, D Chiba, JP Du Plessis, B Vrettos, S Roche

Abstract title: Comparison of Coracoid and Glenoid Size between Males and Females: a CT Analysis with Reference to the Impact on Latarjet Outcomes

Abstract:
Aim:
To compare coracoid process and glenoid dimensions between males and females, with specific reference to the implication for Latarjet surgical outcomes.

Methods:
CT scans with 3D reconstructions of the scapulae of 31 females and 30 males were reviewed. The coracoid process was measured from 2D cuts with reference to a predefined base point. Width, height, and length of the coracoid were measured at this point. The anterior-to-posterior (AP) and superior-to-inferior diameters of the glenoid were measured using 3D reconstructions. Ratios of coracoid width and height to glenoid AP diameter were calculated.

Results:
All coracoid and glenoid measurements were statistically significantly larger in males. The ratio of coracoid width to AP diameter in both groups was found to be similar, (p = 0.46), whereas the ratio of coracoid height to AP diameter was significantly lower in females (p = 0.0021).
Conclusion:
Differences between South African male and female coracoid and glenoid sizes were found to be significant and could, theoretically, have an impact on surgical outcomes.

**Paper 19**
Presenter: AH van Niekerk
Authors: AH van Niekerk, Prof JG Myburgh

**Abstract title: Review of the symptoms, causes and treatment of Autonomic Dysreflexia in the South African Spinal Cord Injured population**

**Abstract:**
**Purpose of the study:**
Autonomic dysreflexia (AD) is a medical emergency and potentially life threatening condition. Awareness of the triggers of AD is the key to prevention, and early recognition of an episode will lead to appropriate management.

Current cognisance of the nature of this problem and potential risk among spinal cord injured (SCI) individuals is not known.

The aim of the study was to assess the current knowledge of AD among participants, the incidence of the common associated symptoms and causes, and where treatment was received.

**Methods:**
Descriptive, cross-sectional study. A web-based questionnaire was distributed to members of the Southern African Spinal Cord Association (SASCA). Questionnaires were also distributed at the spinal outpatient and rehabilitation clinics. All prospective participants were informed about the nature of the study and anonymity was ensured.

**Results:**
From a sample size of 96 participants, 73% have spinal cord injuries at or above T6. 38.1% of patients had no prior knowledge of AD. Nasal congestion (54.1%, P-value 0.01), piloerection (41.9%, P-value 0.01) and sweating above the level of the injury (41.5%, P-value 0.01) were the most common symptoms frequently experienced in the high SCI group. A blocked catheter (62.7%), bowel impaction (62.5%) and UTI (61.7%) were the most common associated triggers. A general practitioner alone was most frequently consulted for treatment in 20.5% of cases. In 77.8% of respondents, symptoms improved once the cause was identified and treated. The diagnosis of AD were made in 30.3% of cases.

**Conclusion:**
Recognition of AD is crucial for individuals and their caregivers to facilitate timely and appropriate management. The incidence of AD amongst our participants is higher than expected. The current level of awareness of AD among the SCI population is inadequate, despite current awareness campaigns.

**Paper 22**
Presenter: MA Roussot
Authors: WJ Moolman, MA Roussot, M Nortje, B Dower, G Grobler
Abstract title: Analysis of the waiting list at a resource-limited arthroplasty centre - are we keeping up with demand?

Abstract:
Background:
Our arthroplasty center has witnessed an increasing number of patients awaiting primary hip and knee arthroplasty, which may be explained in part by the growth of our population, the increase in life expectancy, and improved access to health care. The unit is currently making an attempt to keep up with demand and reduce the waiting time for surgery.

Objective:
To quantify the demand for hip and knee arthroplasty and develop a strategy for keeping up with demand in a resource limited arthroplasty centre.

Methods:
A digital database of patients awaiting primary and revision hip and knee arthroplasty has been instituted since January 2012. Patients are scored according to the modified New Zealand Scoring System and prioritised accordingly. We determined our institutions monthly capacity to perform hip and knee arthroplasty and compared this to the rate of new patients added to the database each month during the last 3 years.

Results:
Since January 2012, 859 patients (1271 joints) were recorded on the waiting list with a ratio of knees to hips of 2:1. An average of 15.4 new patients per month have been added in 2013, 17.4 new patients per month in 2014, and is projected to be 26.5 new patients per month by 2017. Waiting time for primary arthroplasty is approximately 4 years. Our current capacity equates to 25 arthroplasties per month. With current demand and capacity it would take 17 years to eliminate our waiting list. With projected demand, our capacity will be exceeded in 2017 and the waiting list will continue to increase.

Conclusion:
Demand for primary hip and knee arthroplasty is increasing and will exceed our capacity by 2017. An immediate solution is necessary to reduce waiting times and a long-term increase in capacity is required to keep up with demand. Knee arthroplasty should be performed twice as often as hip arthroplasty.

Paper 24
Presenter: AH van Niekerk
Authors: AH van Niekerk, FF Birkholtz


Abstract:
Purpose of the study:
To evaluate the complications and outcomes of various treatment modalities for long bone defects in a busy limb reconstruction orthopaedic practice. The use of antibiotic cement spacer induced membranes, combined with bone transport principles and augmentation with grafting techniques has made the routine salvage of massive skeletal defects possible. Our current understanding of the outcome of this treatment option is still limited and needs to be explored further.

Methods:
Descriptive, retrospective audit of medical records of all consecutive patients who underwent limb reconstruction from 2007-2014.

Results:
53 patients underwent limb reconstruction an average 7.93 months following the primary injury. The mean bone defect size was 6.02 cm.

Seventeen defects were treated with antibiotic cement spacer Masquelet technique before distraction osteogenesis, with 5 septic nonunion cases requiring Lautenbach irrigation. Open docking augmented with autograft was performed in 29 cases.

The mean ex-fix time (EFT) was 9.23 months with a mean ex-fix index (EFI) of 1.86 months per centimetre bone defect. The mean residual leg length discrepancy (LLD) was -8.23mm with four patients having a residual LLD of ≥ 2.5cm.

Successful limb salvage and union was achieved in 51 cases. Eventual amputation was performed in 2 cases. There were no recurrent or residual infections. One refracture of the regenerate required refixation, with another regenerate progressive deformity undergoing ex-fix assisted plating. One docking site stress fracture was noted, and one revision ankle arthrodesis performed following refracture. 2 resistant non-union cases were fixated after lengthening was performed.

To treat the bone defect and complications, a mean of 3.8 operations per patient was required.

Conclusion:
Our results compare favourably with other published accounts of distraction osteogenesis. Although management of long bone defects remains difficult, a structured approach can provide predictable and successful solutions to these challenging and common problems.

Paper 25
Presenter: S Smith
Authors: S Smith, A Aden

Abstract title: Assessing litigation risks in patient-doctor interactions

Abstract:
Introduction:
Medical malpractice lawsuits continue to be filed at an alarming rate, with billions of Dollars being paid out across the globe. Most of these claims, defendable or not, are often settled out of court. These uncontrolled medical claims continue to push up the costs of medical liability insurance, which in turn pushes up the cost of health care. These pressures are felt most by the "high risk" specialties namely, Obstetrics and Gynaecology, Neurosurgery and Orthopaedics. South Africa has not escaped the wave of medico-legal lawsuits, and may be headed towards greater challenges than its first world counterparts. With the introduction of the new consumer protection act, and having one of the world's most enlightened constitutions, makes the South African medical fraternity an easy target. Litigation involving South African orthopaedic surgeons suggests that the majority of claims filed are due to poor patient-doctor interaction, accounting for 13.35% of all claims.

Methodology:
A prospective study conducted in 2014. Using a tailored patient satisfaction questionnaire, post operative orthopaedic patients were able to give insight into their satisfaction regarding their personal patient-doctor interactions. Each question was correlated to an area of patient-doctor
interaction, that in the past had led to litigation. This was used to assess which areas of patient-

doctor interactions were lacking in a typical resource starved state hospital.

Results:
Nearly 20% of patients are considering legal action at point of discharge, with no demographic data playing any significant role in this decision. All areas of patient-doctor interactions showed a significantly lower score, in those considering litigation versus those who were not. The two highest risk areas were related to doctor availability and consent taking. This study emphasizes the importance of proper communication between doctors and patients in preventing litigation, and the need for doctors to focus on improving their individual doctor-patient relationships.

Paper 26
Presenter: N Mhlongo
Authors: N Mhlongo, MV Ngcelwane

Abstract title: Outcomes in femur fractures treated with external fixation and converted to intramedullary nailing in polytrauma patients: A retrospective study

Abstract:
Introduction
Damage control management of closed femur fractures in polytrauma patients includes external fixation, skeletal traction and a small diameter intramedullary device. The external fixator is the early stabilization tool of choice because it allows quick, less invasive technique to achieve stabilization with minimal insult to the patient’s physiological status.

The main complication of this method is pin tract infection which may delay conversion to a definitive intramedullary nail. Literature quotes an infection rate of 3.6% if the external fixator is used as a temporary device.

Aim
To determine the infection rate in our institution when using the external fixator as a damage control device and to see if there are any factors that predispose to infection.

Materials and Methods
Retrospective study of polytrauma patients with closed femur fractures over 6 years. We excluded all patients with a follow up period less than three months. All have Injury Severity Score more than 22. We documented length of follow up, ward they were admitted in after external fixation, number of days it took to convert to intramedullary fixation and evidence of infection at last follow up.

Results
We had 32 patients for review. Average stay before conversion to intramedullary nail was 11days (2-42 days). Most of the patients were in ICU whilst awaiting conversion. Our infection rate was 3 in 32 patients (9.3%).

Conclusion
Our infection rate is much higher than that in the literature. We attribute this to the delay in conversion to an intramedullary device and exposure to the bacterial flora in the ICU.

Paper 27
Presenter: MN Iqbal
Abstract title: Postoperative hypermetabolic state in children with Osteogenesis Imperfecta; A local audit.

Abstract:

Purpose:
Osteogenesis Imperfecta (OI) is a rare, genetically inherited syndrome involving connective tissue. It results in extremely fragile bones and patients are susceptible to bone fractures and often require surgery and anaesthesia. Perioperative malignant hyperthermia has been reported in patients with OI due to hypermetabolism as well as abnormal calcium metabolism. It has been suggested by these reports that OI patients are at increased risk of perioperative hypermetabolic state and even malignant hyperthermia. We have had no cases of malignant hyperthermia. The purpose of this study was to evaluate risk of postoperative hyperthermia in OI patients undergoing orthopaedic procedures.

Method:
This retrospective audit reviewed inpatient hospital records of patients who underwent orthopaedic procedures for bone fractures & deformity from January 2012 to March 2015. Records reviewed included age, type of procedure and 6 hourly postoperative temperatures for the first 48 hours.

Results:
20 patients were identified and 16 patients met criteria for inclusion. 19 procedures were performed in 16 patients. 3 patients had two procedures each. The age of the patients ranged from 3 to 19 years with 8 female & 8 male patients. Three patients had a single temperature spike of 38 Celsius (100.4F) & the rest of the patients had normal temperatures fluctuating between 36 and 37C 48-72 hours postoperatively. All patients recovered postoperatively without any complications.

Conclusion:
In our retrospective study we did not observe any hypermetabolic state in our patients with OI undergoing anaesthesia & surgery. We conclude that with advancement in anesthetic medications & thorough preoperative evaluations, complication rate is minimal but we still recommend careful postoperative monitoring of temperatures.

Abstract title: Soft tissue masses of the Hand - audit of clinical diagnostic accuracy

Abstract:
Soft tissue masses are commonly encountered in the hand. An in-depth knowledge of those frequently encountered is essential in ensuring correct investigation and treatment thereof. Despite the fact that the majority of these tumours are benign, misdiagnosis and incorrect treatment of malignant lesions can be catastrophic to the patient. To date, no published studies to our knowledge have emerged around tumours of the hand encountered in South Africa. All soft tissue tumours consecutively excised between January 2013 to December 2014 were retrospectively reviewed at the Chris Hani Baragwanath Academic Hospital Hand Unit in order to gain a more comprehensive knowledge and to guide the treating hand surgeons on how to deal with these tumours – concentrating on the most common including ganglion cysts, giant cell tumours of the tendon sheath and pyogenic granulomas. We ascertained the incidence of all these masses, as well
as comparing intra-operative clinical diagnosis and post-operative histopathological diagnosis so as to provide guidelines on whether all tumours should be sent for routine histological examination. A total of 231 masses were excised. Ganglions were the most common accounting for 51% Other common tumours were pyogenic granuloma and giant cell tumour of the tendon sheath (GCTTS), both amounting to 6% respectively. The clinical diagnosis correlated to histopathology in 93% of cases for all ganglions while diagnostic accuracy for pyogenic granuloma amounted to 66% and 55% for GCTTS. Malignant masses accounted for 2.1% Of concern, however, was the fact that 3 of the 5 malignancies were mistaken for benign lesions intra-operatively. It is our recommendation therefore that all soft tissue masses about the hand, be sent for routine histopathological screening. This is essential in avoiding detrimental misdiagnosis leading to morbidity and possible mortality.

**Paper 29**  
**Presenter:** M N Rasool  
**Author(s):** M N Rasool

**Abstract title:** Non Traumatic Ischaemia of the foot in infants

**Abstract:**

**Introduction:**  
Ischaemia of the foot in infants is a cause for concern leading to gangrene, amputation and medico-legal enquiry. The causes are usually multifactorial.

**Aim:**  
To highlight our experience with non-traumatic ischaemia of the foot in infants and increase the awareness of underlying factors in the causes.

**Methods:**  
The records of 8 infants with ischaemia, seen between 1996 and 2015 were reviewed retrospectively. The age ranged from 1 week to 2.5 years. Three had unilateral foot involvement, and in 5, the involvement was bilateral. Three children were treated for club feet (surgically n=2, plaster cast=1). The remainder, with gangrene, were referred to the unit for amputation.

**Results:**  
Bacterial septicaemia was diagnosed as an underlying cause in 5 infants. Organisms cultured were (E.coli, N. meningitidis, S. aureus) and viral infection in 2. One baby had constriction band syndrome. Metabolic and biochemical disturbances were seen in 6 infants. Two infants underwent midfoot amputations (bilateral n=2, unilateral n=1), Symes (n=2) and below-knee unilateral amputation (n=3). One patient improved and healed with scarring of the foot. Follow-up is 6 months to 19 years. One patient had multifocal areas of growth arrest and underwent numerous procedures. Claims of negligence were unsuccessful in 2 cases.

**Conclusion:**  
Non-traumatic ischaemia of the foot in infants is complicated and multifactorial. The gangrenous changes in orthopaedics are usually attributed to mechanical factors such as plaster casts, circumferential dressings and surgery to the foot. However, bacterial and viral infections resulting in septicaemia, dehydration, shock, metabolic derangements and cellular hypoxia may be the underlying causes. Abscesses in the metaphyseal vessels can cause chondro-osseous damage resulting in growth disturbances later. It is important that the orthopaedic surgeon is involved in treatment planning, as soon as gangrene is observed. The paediatrician should be involved early to rule out underlying infections and metabolic derangements.
**Paper 30**
Presenter: N Mahomed
Authors: N Mahomed, F Birkholtz

**Abstract title: The surgical outcome of hypertrophic non-union after closed distraction with a circular external fixator**

Abstract:
**Introduction:**
Hypertrophic non-unions, usually result from insufficient fracture stabilization. The non-union tissue and the local environment are well vascularized, but the biologic process to union is inhibited by lack of stability. The fibrocartilaginous tissue in the non-union site has an osteogenic potential that is realised when torsional, axial, and shearing instabilities are eliminated by establishment of a stable osteosynthesis construct. Usually compression is necessary for the healing of a hypertrophic non-union; however, distraction can aid healing as well, when a mechanically stable setting is established (mechanobiology).

**Methodology:**
This retrospective study will focus on the surgical outcome of ring fixation in the treatment of non-union of long bones without opening the fracture site and no bone grafting. The study will comprise of patients who developed a non-union of a long bone after a fracture. All closed distractions of non-unions over a period of 8 years.

**Results:**
From the 30 patients, the average age was 47 years with M:F ratio of 3:1. There were 26 tibia fractures, 2 femur fractures, 1 humerus fracture and 1 foot fracture. A hexapod ring fixator was used in ninety percent of cases. 25/30 united (83%) with closed distraction only; the others needed bone graft and 1 underwent amputation.

**Conclusion:**
We have >80% success rate in our cohort of patients. With mechanobiologic modulation using ‘Perrens’ stress and strain theory you get mesenchymal cell recruitment with ossification of chondrous tissue.

**Paper 31**
Presenter: N Mogale
Authors: N Mogale, N Briers, SAS Olorunju, S Matshidza.

**Abstract title: The comparative anatomy of minimally invasive total hip arthroplasty surgical procedure using the anterior approach.**

Abstract:
Hip arthroplasty is founded upon the principles laid by Henry Park. This method of correcting the problems of ankylosed hips has changed from rudimentary principles to intricate methods. This study assessed the anatomy underlying the anterior approach, while considering structural damage that might occur during the procedure. Variations in the branching pattern of the lateral circumflex femoral artery (LCFA) and the lateral cutaneous femoral nerve (LCFN) were noted.
Forty-five cadavers (90 legs) were dissected and measurements from the LCFN ad LCFA in relation to the anterior superior iliac spine, the pubic tubercle (PT) and the anterior capsule of the hip joint (ACHJ) were taken.

Significant distances between the PT and the LCFA, PT and the medial border of the rectus femoris muscle (MBRF) were indicated when comparing cadavers below and above age 50. The distance from ACHJ to the LCFA bifurcation was significant in cadavers of BMI between 18-25 kg/m² and >25 but <30kg/m².

Significant differences were detected between individuals with a BMI 18-25 kg/m² and those of BMI >25 (T-test, p<0.05) but <30kg/m². The distances are from the ACHJ to the LCFA bifurcation. For the age ranges, differences were seen between PT and LCFA as well as between PT and MBRF (T-test, p<0.05).

Although variations to the LCFA branching pattern were noted; only the distances from the ACHJ to the LCFA bifurcation, PT to LCFA and PT to MBRF were significant. Therefore anterior approach to hip arthroplasty can be performed with little anatomical complications.

**Abstract title: POST INJECTION QUADRICEPS MYOFIBROSIS – Treatment recommendations based on clinical study in 21 patients**

**Abstract:**

**Background:** QUADRICEPS MYOFIBROSIS is seen in young children and is characterised by fibro fatty replacement of the Quadriceps muscle. It manifests either as stiffness of the knee or habitual dislocation of the Patella. Many aspect of this clinical entity like aetiology, pathology, pathomechanics, clinical features and the optimal treatment are still not fully understood and many orthopaedic surgeons are still unaware of this entity. This clinical study was conducted to throw more light into this condition and to evaluate the result of surgical treatment.

**Methods:**

Out of the 21 patients in the study, 12 had retrospective and 9 had prospective study. Patients had clinical and radiological evaluation and observations were recorded and analysed. Contracture at birth, those secondary to neurologic conditions, trauma and infections were excluded. All patients were treated with distal Quadriceps plasty.

**Results:**

All 3 cases in stiff knee group and 4 in the dislocation Patella group had history of injections into the thigh. Results were good in patients below age of 5 and when there was less delay between onset of symptoms and surgery. Secondary changes in the knee were seen after the age of 10 years. Patients in the dislocation patella group who did not have lengthening of the quadriceps tendon as part of the distal Quadriceps plasty had poor outcome. Patella Baja was observed in 6 patients in the dislocation Patella group which got worse after lengthening of the Quadriceps tendon.

**Conclusions:**

Early treatment at young age gives better results. In those with dislocation patella, distal Quadriceps plasty should include lengthening of the Quadriceps tendon. Those cases with patella
Paper 39
Presenter: L Wood
Authors: L. Wood, Dr G Firth, Dr Y Ramguthy, Prof J Potterton


Abstract:
Purpose:
To determine the outcomes of SEMLS in children in a public healthcare facility, looking at children with Cerebral Palsy (CP) and HIV encephalopathy

Methods:
Ten children with spastic diplegia were enrolled (six with CP, four with HIV encephalopathy). All children underwent SEMLS at Chris Hani Baragwanath Academic Hospital and received therapy at a local clinic or hospital or a special needs school. Therapy consisted of predominantly a home-based exercise program. All children were followed up for a period of twelve months. The primary outcome measures were the Gross Motor Function Measure (GMFM), the Functional Mobility Scale (FMS) and the Edinburgh Visual Gait Score (EVGS).

Summary of results:
There were improvements in the EVGS in both the CP group and the HIV encephalopathy group. There was a small change in scores from the six month follow-up period to those seen at the one year follow-up period. The GMFM scores showed an initial deterioration of 2.49 in the CP group and 0.95 in the HIV encephalopathy group, with an improvement of 2.11 and 2.30 respectively at the one year follow-up period. Similarly initial deterioration was seen in the FMS scores of 1 with the mean FMS scores returning to the pre-operative mean at the one year follow-up period.

Conclusion:
Greater improvements were seen in the gait pattern of children receiving SEMLS and physiotherapy at the 6 month follow-up, than at the one year follow-up period, whereas function continued to improve with time. There was little difference seen between the outcomes of the CP group and the HIV encephalopathy group. Further research will need to be done looking at the outcomes of these children post SEMLS at long term follow-up.

Paper 41
Presenter: A Botha
Authors: A Botha, R Dunn

Abstract title: Vertebral Column Resection in the paediatric population

Abstract:
1. Purpose of the Study:
To review the demographic data, indications for surgery, intra-operative data as well as the correction achieved post-operatively of all patients under the age of sixteen years who underwent vertebral column resection surgery.
2. Description of Methods:
Ethics approval R039/2013 was obtained to retrospectively review a prospectively kept database of the senior author. Demographic data and intra-operative parameters were collected from the database. Radiological images were assessed to quantify the severity of the pre-operative deformity and the correction achieved post-operatively.

3. Summary of results:
18 Patients were included in the study from April 2008 to April 2015. The average age was 11 years (Range 2 - 16 years), levels fused 6 (Range 2 - 9), surgical time 306min (Range 160 - 490min) and blood loss 822ml (Range 250 - 1901ml).

The average pre-operative coronal deformity was 25 degrees (Range 2 - 50 degrees), and the sagittal deformity 71 degrees (Range 20 - 128). Post-operatively the coronal deformity improved to an average of 12 degrees, and the sagittal deformity improved to 29 degrees on average.

Complications included proximal junctional kyphosis in 1 patient which needed revision, 1 pleural injur, 1 incidental durotomy and 1 screw pull out that needed revision.

4. Discussion
Vertebral Column Resection is defined as a 3 column circumferential vertebral osteotomy creating a segmental defect with sufficient instability to require provisional instrumentation as defined by Lenke et al. It is a technically demanding procedure with a steep learning curve.

This review reports on the authors experience with vertebral column resections in the pediatric population.

Paper 42
Presenter: MA Roussot
Authors: MA Roussot, C Scott

Abstract title: Challenges in the diagnosis and management of fibrodysplasia ossificans progressiva

Abstract:
Background: Fibrodysplasia ossificans progressive (FOP) is a rare genetic disorder characterised by congenital abnormalities of the toes, progressive heterotopic ossification (HO) of skeletal muscle and subsequent immobility. The diagnosis is frequently missed with devastating consequences, especially following unnecessary biopsy of bony lesions.

Objective:
To report on the diagnostic clinical features, treatment challenges, and success of the fracture management in patients with fibrodysplasia ossificans progressive.

Methods:
We reviewed our series of 10 patients with FOP in terms of presenting features, disease progression, management of “flare-ups”, and challenges in the treatment of fractures, with a minimum of 1 year follow up.

Results:
Average age at diagnosis was 7, with 3 patients undergoing unnecessary biopsy, and 1 patient undergoing multiple biopsies prior to referral, which resulted in accelerated ossification. Diagnostic features in all patients included easily recognisable abnormalities of the greater toes with a bony
mass on the upper back and neck. One patient underwent surgical correction of Hallux Valgus at 6 months. Three patients presented with advanced disease and profound disability. One patient sustained a displaced proximal tibia fracture, which required reduction and internal fixation. This was performed through a minimally invasive technique, accompanied by chemoprophylaxis and radiotherapy to prevent HO. Follow up at 1 year demonstrated return to pre-morbid activity levels and no signs of HO on radiographs.

Conclusion:
FOP is rare, but easy to diagnose clinically. Avoiding unnecessary biopsy and subsequent deterioration in mobility is essential. Fractures present a challenge – most can be managed non-operatively, but if internal fixation is required then a minimally invasive technique accompanied by HO chemoprophylaxis and single dose radiotherapy is recommended.

Paper 43
Presenter: CM Keen
Authors: CM Keen, Y Ramguthy, GB Firth

Abstract title: Recurrence of clubfeet post Ponseti casting at a South African Clubfoot clinic

Introduction
The current preferred method for congenital talipes equinovarus (CTEV) treatment is the Ponseti method. Recurrence of CTEV varies between 12 and 50% worldwide. The purpose of this study is to investigate the recurrence rate of CTEV post Ponseti casting as well as causes of recurrence in a tertiary level South African hospital.

Objective
This retrospective study used data collected from January 2012 to September 2014 from a dedicated CTEV clinic at an academic hospital. All patients with CTEV, both idiopathic and teratologic were included. Recurrence of CTEV in this study was defined as any foot corrected by the Ponseti method that had a recurrent deformity requiring at least repeat casting.

Method
332 patients (507 feet) with idiopathic CTEV were seen during the time period in this study. Demographics, brace compliance and social status indicators were recorded for each patient. As the patients were followed up on a recurrent basis, a database recorded relevant data.

Results
The overall recurrence rate for the group was 39.8%. In the teratological groups, including myelomeningocoele, arthrogryposis and amniotic band syndrome had recurrence rates of 50%, 18.2% and 16.7% respectively. Recurrent CTEV demographics were as follows: 12.9% had a positive family history; 56.1% of primary caregivers had a level of education of greater than grade 9; 71.8% lived in brick houses with all amenities; and 75.6% were unemployed. Significantly, 70.8% of all patients with recurrence, had poor compliance to Steinbeek abduction brace wear.

Conclusion
In conclusion the recurrence rate of 39.8% at this South African clubfoot clinic is in keeping with worldwide data. There is little significant difference between social economic standing and recurrence in this population group. Non-compliance with brace wear was shown to be the greatest predictor of recurrence within this population. Future studies should address poor brace compliance in an effort to reduce the recurrence rate.


**Paper 45**

Presenter: A Ngcakani
Authors: A Ngcakani, Y Ramguthy, A Robertson, GB Firth

**Abstract title: Assessment of Femoral deformity in BLOUNT’S DISEASE**

Abstract:

Introduction
Femoral deformity in patients with Blount's disease, (infantile, juvenile and adolescent types) is not commonly described in the literature. The purpose of the study was to establish if there were compensatory changes in the distal femur in response to the proximal tibia varus that occurs in Blount's disease.

Methods:
This was a retrospective review of patients from 2 academic hospitals in South Africa. The data included plain radiographs taken between January 2000 and December 2014. 76 patients met the inclusion criteria, (17 infantile, 34 juvenile and 25 adolescent). The measurements of the anatomic lateral distal femoral angle (aLDFA) from long-leg plain radiographs were done, and used to determine if there were compensatory changes in the distal femur.

Results:
The aLDFA was increased (more varus) in most patients in the infantile group (Mean 89 degrees, Range 83-112 degrees). In the juvenile group it was variable showing (valgus) in 34% of the patients (Mean 86 degrees, Range 73-100). In the adolescent group, only one patient had a decreased aLDFA (Mean 88 degrees, Range 73-95 degrees).

Conclusion:
This study suggests that in this population, patients with infantile Blount's disease may have additional contributory varus from the distal femur. Further studies are needed to assess the response of this varus to corrective High Tibial Osteotomy.

**Paper 50**

Presenter: NJ Kauta
Authors: NJ Kauta, M Held, S Dlamini, S Kalula, I Ross, A Kalla, S Maqungo

**Abstract title: The Management of Hip fragility fractures, a quality assessment project**

Abstract:

Introduction
Osteoporosis is often underdiagnosed by orthopaedic surgeons. Worldwide, it is reported that less than 20% of patients with fragility fractures will have a dexa scan and most will not be treated for osteoporosis.

Aims
To evaluate our compliance with the NICE guidelines of treating hip fragility fractures and investigating these patients for osteoporosis.

Methods
Retrospective review of clinical and radiological records of all adult patients who were admitted with hip fragility fractures between January and December 2014. Patients with pathological fractures were excluded.
Results

Ninety eight patients with hip fragility fractures were indentified. There were fifteen (15.3%) males and 83 (84.6%) females. Their mean age was 71.6 years (range 40-93). The average time from admission to surgery was 49 hours (range 9 to 120). All patients received enoxaparin from the time of admission. Low dose morphine, tramadol and paracetamol were the only mode of perioperative analgesia for all patients.

Only 2 (2.04%) patients had a dexta scan but they were not referred for treatment.
None of the patients received calcium and vitamin D supplementation.
None of the patients were started on biphosphonate therapy.

Fifteen patients (15.3%) presented with a second fragility fracture in the contralateral hip and 2 patients (2.04%) patients presented with a third fragility fracture with no prior or subsequent evaluation and treatment of osteoporosis.

Conclusion

Osteoporosis evaluation and management remains the main challenge in the management of fragility fractures of the hip and a multidisciplinary approach is required to address this issue. There is a need for increased awareness about this problem amongst orthopaedic surgeons as they are often the first port of call.

Paper 51

Presenter: P Jordaan
Authors: P Jordaan, R Magampa, S Roche, S Maqungo, G McCollum

Abstract title: Open reduction and internal fixation of calcaneus fractures through a sinus approach - short term results

Abstract:

Introduction:
The wound complication rate for open reduction and internal fixation of calcaneus fractures through the extensile approach is 30%. Due to this high rate of wound complications, many surgeons prefer conservative management. In patients who require a subtalar fusion for post traumatic arthritis, the results are better if the posterior facet has been reduced, because it eliminates the need for a bone block fusion. The sinus tarsi approach utilises a much smaller incision and indirect reduction techniques to reduce the need for a large incision while still providing good exposure of the posterior facet.
The purpose of this study is to present the technique for open reduction and internal fixation through a sinus tarsi approach and to assess the adequacy of reduction as assessed on post-operative radiographs. The secondary aim is to report on the rate of wound complications.

Methods:
A retrospective chart and x-ray review was performed of all patients who had an open reduction and internal fixation of the calcaneus performed since 2013. We report on the interim results of the adequacy of reduction and wound complications and in cases with longer follow up we report on maintenance of reduction.

Results:
Twelve procedures were performed in this time. The Bohler’s angle improved from a median of 9.5° pre operatively to 27° (p<0.001) post-operatively. The Angle of Gissane improved from a median of
125.5° to 110° (p<0.001). Two patients had minor wound complications, both of which were managed without surgery.

Conclusion:
Open reduction and internal fixation of calcaneus fractures through a sinus tarsi approach allows adequate reduction with less wound complications.

**Paper 52**
Presenter: P Naude
Authors: R Dachs, M Zinn, P Naude, JP Du Plessis, B Vrettos, S Roche

**Abstract title: Reliability of the classification and treatment of Acromioclavicular Joint Injuries: An Assessment of inter-observer reliability among South African Shoulder Surgeons**

**Abstract:**
Aim:
To investigate the reliability of the Rockwood classification of acromioclavicular joint (ACJ) injuries. We evaluated interobserver reliability of the classification and treatment of dislocations amongst South African shoulder and elbow specialists.

Methods:
Thirty South African orthopaedic surgeons who are members of the South African Shoulder and Elbow Society completed an online survey where they were presented with 11 cases of acute ACJ injuries. Plain radiographs and a clinical scenario for each case were provided. The surgeons were asked to classify the injuries using the Rockwood classification system and recommend treatment. Four unrelated questions were asked to gain insight into the individual clinical and surgical habits of the surgeons.

Results:
Inter-observer reliability for diagnosis had a correlation coefficient of 0.120 and a treatment correlation coefficient of 0.130.

Conclusion:
This study suggests an overall lack of reliability of the Rockwood classification of ACJ dislocations and of decisions regarding their treatment. There is poor inter-observer agreement in both the diagnosis and treatment of acromioclavicular joint injuries amongst shoulder and elbow surgeons. A better classification system would remove ambiguity and improve consensus between specialists.

**Paper 54**
Name: JDC. Heymans
Authors: JDC Heymans, P De Lange, F Birkholtz

**Abstract title: Circular External Fixation: Safety And Efficacy In Treatment Of Closed Distal Third Tibia Fractures**

**Abstract:**
Circular External fixation: Safety and efficacy in the treatment of closed distal third tibial fractures – Abstract
The purpose of the study is to determine whether circular external fixation is a safe and effective method of managing closed distal third tibial fractures. These fractures are conventionally treated with plaster casts, intramedullary nails or plate fixation. The complication rates for these treatment modalities have been described in literature as follows: malunion up to 16%, non-union up to 12%, and deep infections up to 17%.

Description and Methods:
Retrospective descriptive study of 30 patients with closed extra-articular distal third tibial fractures, treated with circular fixator systems. Patients were followed up for the following: time to union, malunion and pintract- and deep- infection. Distal third fractures which were extra articular are included. (AO 43 A, and AO 42 A + B, deemed to be in the distal third). Patients with intra-articular fracture extension (AO 43 B and 43 C) and complex distal tibial fractures (AO 42 C) are excluded.

Summary of results:
The average time to union in these patients was 16 weeks (11-33 weeks). The non union rate was 3.33% in comparison to 12% with conventional treatment. The malunion rate was 0% compared to 16% with conventional treatment. The incidence of pintract infection was 16.6%, but no deep infections were noted, whilst conventional treatment shows deep infection to be 17%.

Conclusion:
Circular external fixation is a safe and efficient option in the treatment of distal tibial fractures. The incidence of complications is significantly reduced in comparison to conventional treatment.

Abstract title: The impact of clubfoot treatment on parents and caregivers of affected children: a comparison of two urban populations in Europe and Africa

Abstract:
Introduction
Congenital clubfoot deformities are common and occur in about two per 1000 live births. The Ponseti method is an effective and relatively inexpensive method with good outcomes. It is a long and arduous journey for parents and it is this prolonged treatment regimen that may impact families. We aimed to determine how Ponseti treatment influences the lives of parents and caregivers and what coping strategies are used by them during the casting and later, the bracing phases of the treatment. Secondarily, we aimed to identify any potential differences between two urban referral centres for clubfoot: one in the United Kingdom and one in South Africa.

Materials and methods
A total of 70 parents affected with idiopathic clubfoot were recruited and included in two geographic groups. All children were in the bracing phase of treatment and under 5 years of age.
The participants were asked to complete questionnaires twice: retrospectively for the serial casting stage and then for the bracing period. The impact on family scale (IOFSS), the multidimensional scale of perceived social support (MSPSS), and the brief COPE scores were scored and analyzed.

Results
The negative impact of clubfoot treatment is significantly higher during the casting than the bracing period in both populations.
The South-African population used coping strategies more than the British in both phases of treatment: denial, emotional and instrumental support and religion. Active coping, venting, positive reframing, planning and humour were used during the casting phase only.
When comparing coping between the two treatment phases: no difference was found in the British population, however, South-Africans used more strategies during the casting phase.

Conclusion
The role of the caregivers is vital in the successful treatment of clubfoot as the compliance to treatment is directly linked to the incidence of recurrence.
Awareness of parental impact is fundamental and we advise on offering additional resources to those parents we anticipate to have difficulties, inadequate support structure, lower level of education and poor coping strategies.

Paper 56
Presenter: AA Van Zyl
Authors: AA van Zyl, F Erasmus

Abstract title: Change of antibiotic prophylaxis, with problems

Abstract:
Our hospital infectious disease committee pressurised us to change prophylactic antibiotic regime from the standard, Rocephin (Cephtriaxone) 2g, 2 hours preop IVI as a single dose to divided doses of Kefzol (Cephazolin) 2g, 1 hour pre-op and subsequent 3 doses 6 hourly x 3.

Over a 9 months period, 212 primary joint replacements (95 THR and 117 TKR) were performed during this period of change. All TKR were cemented, and 83 of the THR were hybrids (only 13 uncemented). Cement used was Palacos G cement. Follow-up was for a minimum of a year with 100% follow-up with 18 patients only having a telephonic follow-up.

During this period we saw a change with an increase of wound redness (angry wounds) necessitating additional consultations as well as a dramatic increase in early wound sepsis. 6 cases develop deep sepsis 2,83% (3 THR and 3 TKR). 4 of these had debridement and poly exchange but 2 had a 2 stage revision with early eradication with more than a year of follow-up.

We have subsequently changed back to our old protocol, which we have used for the last 24 years. An audit was done on what caused this problem with the change to Cephazolin (which is probably the most commonly used prophylactic antibiotic world wide).

After a extensive forensic search for the source of the increased infections, we identified numerous problems with the divided dose antibiotics:
1. First dose given longer than 2 hours prior to surgery (79,25% of cases)
2. The second does was given beyond 7 hours after the initial dose (81,1% of cases)
The result of this was that in more than 70% of cases the antibiotic levels dropped below the MIC for Staphylococci which was probably the cause of our increased sepsis rate.

This problem has opened a whole can of worms concerning divided dose prophylactic antibiotics and other drugs, as slip-ups by ward staff or inadequate systems can lead to a disastrous increase of surgical site infections.

We have subsequently changed back to our old protocol, which we have used for the last 24 years nl. single dose of Cephtriaxone 2g, 2 h pre-op. 312 primary joint replacements were done in the last year with 0% infections.

**Paper 57**  
Presenter: HW Jacobs  
Authors: HW Jacobs, I Zondagh

**Abstract title: Thromboprophylaxis in spinal surgery: A survey of current practice in SA**

**Abstract:**  
**Background**  
Thromboprophylaxis in spinal surgery is controversial with very little evidence based guidance from literature. A balance between DVT/PE prevention and bleeding and haematoma formation is important. There is no consensus on the management and current practice in South Africa is not documented.

**Study design & Method**  
A fifteen question anonymous survey was conducted and all South African surgeons attending SASS congress were included. This will be the first South African study and to our knowledge by far the largest survey internationally to date with 115 surgeons participating and questionnaires completed.

**Objective**  
The objective is to investigate the current practice of thromboprophylaxis in spinal surgery in South Africa and if a standardized protocol will be beneficial.

**Results**  
Some of the results are mentioned below but the full article will have all the results and cross-analysis.

Protocols (own or published) regarding thromboprophylaxis in spinal surgery were used by 76% of participants and 37% based their management on personal experience.

Although literature is clear on the use of mechanical prophylaxis with low morbidity more surgeons used chemical prophylaxis (86% and 93%) routinely with much higher morbidity risks.

Interestingly surgeons that encountered DVT/PE more than bleeding/haematoma postoperatively used chemical prophylaxis more aggressively.

**Conclusion**  
It is clear that current practice of thromboprophylaxis in spinal surgery is not standardized. Although literature proposes otherwise chemical prophylaxis is surprisingly used more than mechanical and more than 1/3 of spinal surgeons base their management on personal experience and not on scientific evidence.
It is clear that spinal surgeons will benefit from a standardized protocol with 89% surgeons that responded in favour of this.

Further evidence based studies are needed on this topic but this study's data will help in formulating a standardized protocol with regards to thromboprophylaxis in spinal surgery.

**Paper 59**

Presenter: JRT Pietrzak

Authors: A Strydom, JRT Pietrzak, N Fang, Y Guidozzi, S Bhika, L Mokete

**Abstract title: The use of an instant messaging platform to improve the efficiency in the running of an Arthroplasty Unit in an Academic Hospital**

**Abstract:**

**Introduction:**

In our institution, communication between members of the unit is by speed dial or personal cellular telephone. However, only senior doctors are allocated speed dials. Communication is, therefore, often difficult with resultant time delays, personal expense and frustration. The hospital provides no financial remuneration for the use of private phones. In order to streamline decision-making, reduce personal expense and allow vertical integration of communication in the Arthroplasty Unit we implemented the WhatsApp messaging system as the preferred method of communication. This internet based messaging platform provides a closed, instantaneous platform to share unlimited pictures and messages with only invited and accepted participants free of charge. Members of the Arthroplasty Unit including 2 consultants, 3 registrars, a medical officer and intern used the WhatsApp platform for 6 months from 1 July – 30 December 2014. We reviewed the use of this messaging platform.

**Results:**

2910 messages including 180 pictures were sent during this period. There were 698 discussions which included statements and questions. These discussions were generated at all levels in the unit hierarchy (intern 148, medical officer 11, registrar 261, junior consultant 143 and senior consultant 34 discussions raised. The issues raised related to a variety of problems grouped as follows: 325 administrative issues, 36 anaesthetic related concerns, 73 theatre list issues, 140 patient-clinical problems and 25 personal problems. The pictures sent included 89 x-rays and 43 clinical photos (2 with identifiable patients). In the 599 discussions a patient was named 260 times. The average time to reply to any question was 7 mins (range: 5 seconds to 89 hours). All questions received some answer.

**Conclusion:**

The use of WhatsApp allowed quick, easy and seamless communication among all members of the Arthroplasty Unit. Inexpensive seamless interaction allowed more prompt correct patient care and efficient running of the unit. However, there are both ethical and legal implications for social networking and electronic media use. These include civil liability, (e.g. for defamation), criminal liability (e.g. for cyber bullying) and ethical issues (e.g. a lawful disclosure made before the relevant party has knowledge of it, such as information sent to a colleague about complications of an operation performed by another colleague). Although it has a definite place in improving efficiency, it is important for professionals to reflect on what impact their use of social media may have on others as well as the legal consequences of their participation.

**Paper 60**
Abstract title: Tibialis anterior transfer; Experience at University of Witwatersrand, Johannesburg.

Abstract:
Purpose:
Recurrent club foot is a common disorder in our institution; with the majority of cases occurring due to treatment fallout. Relapse of idiopathic clubfoot deformity after treatment can be effectively managed with repeat casting and tibialis anterior tendon transfer. We evaluated the effects on foot function after tibialis anterior tendon transfer for relapsed idiopathic clubfoot deformity.

Method:
In this retrospective review, we reviewed inpatient hospital records of patients who underwent tibialis anterior transfer between the period 2012 to 2014. We evaluated patient based on the foot function index and functional rating system for clubfoot.

Results:
16 patients were identified over a 2 year period. All patients were satisfied with the outcome procedure postoperatively with regards to pain, walking and functionality. All patients would have the procedure again given the option and would recommend it to others.

Conclusion:
Tibialis anterior transfer is a successful procedure for recurrent clubfoot deformity with high patient satisfaction.

Paper 62
Presenter: M Sidhu
Authors: M Sidhu, K Mangat, B Machani

Abstract title: Outcomes of an Integrated Surgical and Anaesthetic Trauma Surgery Service

Abstract:
Optimal outcomes for trauma patients requiring surgery are achieved by efficient and appropriate treatment. This requires the engagement of an experienced multidisciplinary theatre team, optimal utilisation of theatre capacity and adequate preparation of pre-operative patients. Frequent changes in lists and late cancellation are often avoidable. Given the challenges facing the NHS, it is important that theatre resources are used effectively, keeping any inefficiency to an absolute minimum.

Sandwell and West Birmingham Hospitals provide a level 2 trauma service, serving a population of 550,000, performing 2500 trauma operations annually. To ensure efficient patient care throughout, significant changes were introduced to the trauma service infrastructure. This involved active engagement between the anaesthetists, orthopaedic surgeons, and multidisciplinary team. A consultant anaesthetist covered lists for a week at a time alongside their surgical colleagues, rather than daily change. This allowed effective communication to highlight and resolve any problems in a timely manner. Also, the first patient listed for the following day was ‘locked’, following review by the anaesthetic and surgical teams. We compared a period of this working practice (January-March 2015) to that of the previous year (January-March 2014). In particular we noted the impact upon theatre start times, the level of anaesthetic seniority, the number of late cancellations, average number of cases per day, and the impact upon timely surgery for hip fracture patients.
The mean time that the first patient arrived in the theatre complex was found to be 0850hrs in the first 3 months of 2015, compared with 0908hrs in the corresponding months in 2014. In the current system, a consultant anaesthetist was present for all cases, compared with 82.0% during the previous period. There were fewer cancellations in 2015 (49) compared with the corresponding period in 2014 (59). Following the change, the mean number of cases performed was greater, 3.41 per day (307 total), compared with 3.10 per day (276 total) the previous period. With regards to hip fracture patients, surgery was performed within 36 hours of admission for 82.9% (68/82) of patients following the changes, compared with 72.9% (78/107) previously.

This integrated approach resulted in numerous advantages. Preparing theatre lists the previous day allows the anaesthetic and surgical team to identify any potential problems, which can be resolved in a timely manner. We found fewer cancellations, a greater throughput of cases, and earlier start times; these can only be a benefit to patients whilst reducing the burden upon NHS resources.

Paper 63
Presenter: M Held
Authors: M Held, M Laubscher, S Hoppe, S Mears, S Dix-Peek, H Zar, R Dunn

Abstract title: Distribution and Epidemiology of Musculoskeletal Tuberculosis at Groote Schuur and Red Cross Hospitals

Abstract:
Background
Of all TB cases, 1% - 3% have involvement of the skeletal system. Reported distribution of TB are spine (50%), hip (20%), knee (10%), ankle and foot (5%), hand and wrist (3%), elbow (2%), shoulder (1%), bursal sheaths and other bones (8%).

Methods:
We conducted a prospective epidemiological study of all patients presenting to our hospitals in the last 18 months with clinic-radiologic features of tuberculosis. TB was confirmed on tissue culture, histology and/or automated PCR testing (GeneXpert). Data was analysed according to the location of the disease, the age and the HIV status.

Results:
The total number of patients with musculoskeletal TB was 102 (53 females, 52%) 14% were children. 28.4% were HIV infected, 49% were HIV uninfected and in 20.5% the HIV status was unknown. 84.3% of patients had spinal disease, TB of the hip and knee was diagnosed in 4% each, 3% had TB of the elbow and less than 2% had TB of the wrist, ankle, bone or shoulder joint. 6% were multidrug resistant TB cases.

Conclusion:
A large portion (1/3) of TB patients in our hospitals are HIV co-infected. Distribution in favour of spinal disease is higher then reported previously.

Paper 64
Name: NW Gibson
Authors: NW Gibson

Abstract title: Developing an arthroplasty service in a resource constrained environment
Abstract:
Purpose of study
To present the steps taken in developing an arthroplasty service in a resource constrained environment

Description of methods
A review of the results of arthroplasty performed in this hospital in 2011 revealed an unacceptable infection rate of 6%. The service was suspended dependant on an improved environment in which to perform elective surgery. This study documents the steps taken that resulted in an arthroplasty unit being established. One of the steps taken was to perform an initiative list to perform 50 joint replacements on alternating Sundays between February and July 2014. The results of this program showed that hip and knee arthroplasty can be safely performed at this hospital. In addition, the formation and implementation of a strategic and business plan can result in a commitment from hospital management and department of health to endorse and support the creation of this service

Summary of results
We completed the initiative program. The hospital now has a dedicated 10 bed arthroplasty ward, a full day weekly arthoplasty theatre list as well as a weekly arthroplasty clinic. The theatre list is in addition to the trauma service and does not compete with it. The arthroplasty waiting list has been uploaded onto a spreadsheet and patients are brought in from this spreadsheet to the clinic for assessment for replacement surgery. In addition, one of our registrars, on completion of his training outside the province was encouraged to travel overseas to complete a fellowship in hip arthroplasty. He subsequently completed another year of arthroplasty fellowship in an established unit in South Africa. He returned to this hospital in September 2014 and has been tasked with further developing this service

Conclusion
It is possible to create an environment in which arthroplasty can be performed safely in a resource constrained environment

Paper 65
Presenter: G Conradie
Authors: G Conradie, G van Staden, Johan van der Merwe

Abstract title: Medial malleolus fractures: are we fixing them in the right way?

Abstract:
Introduction:
Conventional treatment of displaced medial malleolar fractures in patients with osteopenic bone can lead to loss of primary fixation and subsequent non-union. This study describes the technique of placing screws engaging the posterior cortex of the distal tibia for medial malleolus fractures. The pull-out strengths of these screws were compared with screws placed into the cancellous bone alone.

Method:
In 17 cadavers 34 medial maleoli were osteotomised to simulate displaced fractures. These were divided into two groups. In the unicortical (UC) group the osteotomy was fixed with a 3,5mm partial threaded screw placed in the cancellous metaphyseal bone, as described by the AO guidelines. In the bicortical (BC) group the similar screws were aimed through the posterior cortex of the tibia. Axial traction was applied until the fixation failed (2mm separation).
Results:
The pull-out strength of the BC screws were on average 48.6% greater than the UC group. The mean force needed to distract the fixation was 126 newton in the UC and 402 newton in the BC group.

Conclusion:
The results show a significant improvement in the pull-out strength of screws placed through the posterior cortex.

Paper 66
Name: M Maku
Authors: MV Ngcelwane, MM Maku

Abstract title: Infection following conversion of an external fixator to intramedullary nail of open tibia fractures

Abstract:

Introduction:
In our hospital, Gustillo and Anderson (G/A) grade 1-3A fractures are treated by debridement, external fixation, and the converted into intramedullary device if the wound allows, otherwise grade 3b are treated with debrided and treated with a definitive external fixator system. We have however seen some of our patients with grades 1-3a treated in this manner presenting with infection.

Aim:
To determine the rate of infection in open fractures treated by conversion of external fixation into nail, and to see if we can identify contributing factors to the infection.

Materials and Methods:
Retrospective review of all patients treated in our institution for open fractures with external fixators, later converted to intramedullary nail. We recorded the fracture classification, time interval from injury to debridement, time interval from admission to debridement, antibiotics administration in casualty, time interval from external fixation to conversion into intramedullary nail, presence or absence of infection at last follow.

We excluded patients with peripheral vascular disease, diabetes, chronic illnesses, skeletal immature patients and those with inadequate records.

Results:
We enrolled 46 patients in total. Their G/A Grade 1=6, G/A Grade2=34, Grade 3a=6.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Number</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Grade 1</td>
<td>4/46</td>
<td>8.8%</td>
</tr>
<tr>
<td>Grade 2</td>
<td>8/46</td>
<td>17%</td>
</tr>
<tr>
<td>Grade 3A</td>
<td>3/46</td>
<td>6.5%</td>
</tr>
<tr>
<td>Total Number of Infections</td>
<td>15/46</td>
<td>32%</td>
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</table>

Conclusion:
Our results show a slightly higher infection rate as compared to literature. Analysis show that what was classified to be a simple grade 1 soft tissue injury was in fact a grade 2 or 3 on further assessment of the nature of injury. We recommend that the Gustillo and Anderson classification be done again at debridement to decide whether the treatment should be early conversion to a nail, or definitive treatment with an external fixator.
This would mean that either fractures have to be re-classified before definitive treatment is instituted and the soft tissue component of the fractures seem to be the determining factor of the definitive treatment.

**Paper 68**

Name: Dr Catherine Keen  
Authors: CM Keen, Y Ramguthy & Dr GB Firth

**Abstract title: Clubfoot demographics at a South African hospital Clubfoot Clinic**

**Abstract:**

**Introduction**  
Congenital talipes equinovarus (CTEV) commonly known as clubfoot is a common congenital abnormality. Globally, it occurs in 1-2 per 1000 live births.

**Objective**  
The purpose of this study is to establish the demographics of a CTEV population attending an academic South African Ponseti CTEV clinic.

**Method**  
Data was collected retrospectively between January 2012 and June 2015. Information regarding the patient, patient’s primary caregiver and management was collected. The patients were followed up weekly during the casting phase, then three and six monthly.

**Results**  
622 Patients (952 feet) were seen during this period. 89.55% of patients had idiopathic clubfeet whilst 10.45% were teratological. Overall 13.01% had a positive family history. 65.92% were male and 33.76% female. 20.58% were left CTEV only, 26.37% right only and 53.05% bilateral. 81.23% cases used some form of public transport, 9.38% used private transportation. 74.23% lived in houses with all amenities and 25.77% lived in informal housing with no running water. 13.26% of cases were on child support grants and 42.82% had either one or both parents employed. 35.76% were raised by single parents. 44.26% of primary caregivers had a matric certificate. The average number of consecutive Ponseti casts done was 4.9.

**Conclusion**  
The vast majority of cases that attended the CTEV clinic were idiopathic CTEV and came from a low socioeconomic background. This has potential implications for compliance and recurrence. Future formation of Satellite clubfoot clinics may concomitantly help to alleviate the burden on this facility and help care-givers to have this treatment more accessible, potentially increasing compliance.

**Paper 74**

Name: A Naidoo  
Authors: A Naidoo, MN Rasool

**Abstract title: Perthes Disease : Varizing Osteotomy**

**Abstract:**

**Purpose of Study**
The aim of operative treatment of Perthes Disease is for containment of the femoral head and allowing it to develop by preventing further deformation. We evaluate the use of an open wedge varus osteotomy and bone graft stabilised with a plate in 14 children, and the radiological and clinical outcomes

Materials and Methods
Fourteen children between the ages of 6 and 10 years old with Perthes Disease were included in the study. They were treated between 2011 and 2015 by arthrogram, adductor tenotomy and Varizing osteotomy with opening wedge. An iliac crest graft was harvested and stabilised with a plate including epiphysiodesis of the greater trochanter. A hip spica was applied for 6 weeks and thereafter weightbearing encouraged. Their clinical and radiological findings were assessed and documented preoperative and postoperative.

Results
There were 11 boys and 3 girls. The girls presented at an earlier age than the boys. Leg length discrepancy improved in all patients with a gradual improvement in range of movement of the hip. Radiographs showed containment of the head with remodeling as the head healed. One patient complicated with chondrolysis post op.

Conclusion
The varizing osteotomy is a useful procedure for containment of the femoral head

Paper 75
Name: P Naude
Authors: P Naude, S Roche, B Vrettos, J du Plessis, R Dachs

Abstract title: Comparing the impact of different angles of inclination used in beach chair positioning during shoulder surgery on cerebral oxygenation

Abstract:
Introduction:
Positioning patients in the beach chair position for surgery has come under increasing scrutiny during the last few years. Recent research has indicated that there may be an inherent risk involved with this practice. There have been reports of devastating neurological events following surgery in the beach chair position. The pathophysiological basis for this is speculated to be related to cerebral hypoperfusion. Previous research have shown that performing surgery under general anaesthesia in the beach chair position have led to a significant number of cerebral desaturation events. Patients were placed at 70° angulation.
We postulated that decreasing the angle of inclination would improve cerebral oxygenation.

Materials and methods:
This was a prospective, single blind study to examine the impact of different angles of inclination in beach chair position on cerebral oxygenation.
The study enrolled 30 patients undergoing shoulder surgery in the beach chair position. They were randomised to the standard angle of inclination used by the surgeon or to a 30° angle.
All patients received a standardised general anaesthesia with an interscalene block. Baseline cerebral oxygenation levels were measured along with mean arterial pressure, heart rate and arterial oxygenation saturation. These parameters were recorded every 5 minutes and all interventions to address changes to these parameters were recorded.
A goal of maintaining mean arterial pressures and cerebral oxygenation levels within 80% of the patient’s baseline was established.

Results:
Data recorded for the two groups revealed that both groups required similar number of interventions for decreases in MAP, 75% in the standard inclination and 69% in the 30° group. Only two patients required intervention for decreased cerebral oxygenation. They were both in the 30° group (15%).

Conclusion:
Positioning patients at lower angles during beach chair positioning decreases the number of cerebral desaturation events when compared to previous research.

Paper 76
Presenter: AK Swan
Authors: PH Naude, S Maqungo, S Roche, AK Swan

Abstract title: The management of low velocity transarticular gunshot wounds: A prospective randomized study

Introduction
The literature does not offer firm recommendations on the management of low velocity (civilian) transarticular gunshot injuries that do not require skeletal fixation. The question of whether these injuries should be treated conservatively or washed out surgically remains poorly addressed.

Aims
To investigate the clinical outcomes of patients with transarticular low velocity gunshot injuries that were treated either conservatively or with a formal arthrotomy and washout.

Methods
We performed a prospective, randomized, non-blinded study of all adult patients presenting to a single institution between November 2011 and January 2015 that sustained a transarticular gunshot wound with no definite indication for surgery. We defined ‘indications for surgery’ as: retained bullet or bullet fragments that required surgical removal and the presence of skeletal injuries that required surgical fixation.

Patients were randomized into 2 treatment groups. The conservative treatment group received tetanus toxoid and antibiotics alone and the surgical treatment group received tetanus toxoid, antibiotics as well as formal arthrotomy, debridement and irrigation.

Both groups were followed up for signs of superficial wound and intra-articular infection.

Results
We identified 29 transarticular gunshot wounds in 28 patients with an average age of 30 years (range 18 – 74 years). Sixteen (55%) were treated conservatively and 13 (45%) had a formal arthrotomy and washout. The average follow-up period was 39 days (range 5 – 84 days). No wound or intra-articular sepsis was observed for any of the 28 patients.

Conclusion
Low velocity transarticular gunshot injuries can be managed non-operatively with no risk of infection.
**Paper 77**  
Name: SP Maelane  
Authors: SP Maelane, SMatshidze

**Abstract title:** Failure of an arthroplasty waiting list at a Central Hospital

**Abstract:**  
A retrospective single center observational study was performed at a Central Hospital to assess and explain the reasons for cancellations of elective orthopaedic operations. Patients included in the study were all the elective patients scheduled for foot & ankle surgery, arthroscopy and joint replacement surgery from January 1, 2012 to December 31, 2014, whose procedure was cancelled at least once. The average cancellation rate was found to be 32.4% throughout the study period. Reasons included: poor preparation (15%), institutional factors (80%), and surgeon related factors (1%). Our conclusion was that strategies aimed at reducing these cancellations would go a long way in improving the efficiency of the system. This would also serve to decrease the numbers of those awaiting operative surgery and the morbidity associated with prolonged waiting times for elective surgery. Future interventions such as a centralized booking system and the upgrading of most health facilities would also go a long way in improving the status quo.

**Paper 79**  
Presenter: DHS Badenhorst  
Authors: DHS Badenhorst and C van der Westhuizen

**Abstract title:** The management of unstable ankle fractures using a novel intramedullary fixation device

**Abstract:**  
**Introduction**  
Until recently, stabilization of unstable ankle fractures was achieved exclusively with plate and screw fixation. Complication rates range between 5% - 30%. The risk of soft tissue complications post-operatively resulted in the need to delay surgery to allow soft tissue ressussitation in most cases. Recently an intramedullary fibula nail has been introduced as an alternative method of treatment. The aim of this study was to investigate union rate and functional outcomes 3 months and 6 months after treatment of unstable ankle fractures with a novel intramedullary fibula nail.

**Methods**  
Eighty one patients (33 men, 48 women, mean age 45 ± 13 years) with unstable ankle fractures (Weber classification B, n= 54, and C, n= 27) were included in the study. Patients were operated at presentation regardless of time post fracture. Range of motion in the affected ankle, compared to the unaffected ankle, and Olerud and Molander score were used to evaluate functional outcome at 3 months and 6 months post-operatively. Differences in ROM were evaluated using a Friedman’s ANOVA and Dunn’s post-hoc test and changes in Olerud and Molander scores evaluated using a Wilcoxon matched-pairs test. Significance was accepted at p <0.05.

**Results**  
All 81 patients achieved union of their fractures. One patient had superficial wound dehiscence but resolved with proper wound dressings. For plantar flexion, dorsiflexion, inversion and eversion movements, there was no significant change in ROM from 3 months to 6 months post-operatively and ROM remained less than that of the unaffected ankle at both time points. There was a
significant improvement in Olerud and Molander score from 3 months to 6 months (median [IQR] 80 [66-90] vs. 90 [85-100], p <0.0001).

Conclusion
In this review the fibula nail provided an effective modality of treatment. Successful fracture union was achieved. The functional outcomes achieved were favourable in comparison with the normal ankle. A very low complication rate was achieved in spite of normal soft tissue resuscitation protocols not being followed. It is proposed that the fibula nail negates the need to wait for soft tissue settling before surgical treatment. However, a randomized controlled trial comparing its efficiency to anatomical plating is needed.

Paper 80
Name: L Mokete
Authors: L Mokete, JRT Pietrzak, D van der Jagt

Abstract title: Why the South African Arthroplasty Registry Failed

Abstract:
Introduction
Total joint replacement has proven to be highly cost-effective and rewarding with projected demand expected to increase exponentially in the next two decades. However, despite all the success, outcomes are still not universally favorable. A plethora of implants is available to the South African arthroplasty surgeon and we are continuously exposed to modifications in surgical techniques and seduced into exploring what are purported to be advances on a regular basis.

National joint replacement registries have proven invaluable in providing essential information to guide evidence-based practice for arthroplasty surgeons. They provide an early warning mechanism for implants and techniques with a high risk of failure and arm surgeons with the necessary information to make the best implant and technique choices. The South African Orthopaedic Association recognized these benefits at the turn of the century and efforts to establish a registry culminated in the launch of the first registry for hip and knee replacements in 2005. However, the registry was short-lived.

Aim
We aim to explore the reasons for failure of the initial registry initiative.

Methods
We conducted in-depth interviews with the surgeons that were the primary drivers of the hip and knee registry launched in 2005.

Results
The chief reasons for failure of the registry were lack of funding and poor uptake by the arthroplasty community. Funding was insufficient to allow employment of crucial full-time administrative staff. The registry was initially paper-based but was improved to a computer based input method. The interface may have proved unwieldy and discouraged surgeons from participating. The practice of South African surgeons having material interests in implants may have also discouraged participation for fear of potential association with poorly functioning implants. This is the case with a select number of high volume surgeons in private practice. Participation of these surgeons who also happened to be key opinion leaders was crucial to the viability of the registry as most arthroplasty procedures in South Africa are performed in private practice. Surgeons also expressed concerns about their individual data being used in a negatively destructive manner.
Conclusion
The benefits of a National arthroplasty registry for South Africa are unquestionable. As we embark on a revival of the registry with the recent re-launch in 2014, ensuring maximal participation is of paramount importance. We owe the arthroplasty community an explanation for the reasons for the failure of the 2005 initiative.

PLEASE NOTE: Information correct at time of going to print