

# SAAS 2024

## Submission Book (all submissions)



26<sup>th</sup> BIENNIAL CONGRESS OF THE  
SOUTH AFRICAN ARTHROPLASTY  
SOCIETY

13 - 15 MARCH 2024

Century City, Conference Centre, (CCCC) - Cape Town

**ID: 13409**

## **Accurate Planning Of Total Hip Arthroplasty: Is There Still A Role For Acetate Templating?**

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### **Submission:**

#### **Background**

Templating X-rays as part of pre-operative planning can improve the accuracy of prosthesis placement and minimise intra and post-operative complications. Digital templating requires purchasing specific software for the prosthesis used.

We aimed to establish if acetate-printed templates, superimposed on the computer screen, can accurately determine implant placement and sizes.

#### **Method**

Eighty primary total hip Arthroplasty procedures met the inclusion criteria. A 20mm ball bearing was placed at the level of the greater trochanter to ensure accurate radiograph calibration. Templates from all companies were supplied and templating was completed by two consultants and two registrars. Acetabular size (AS), horizontal femur offset (HFO), femur stem size (FSS), leg length discrepancy (LLD) and vertical greater trochanter to prosthesis shoulder height (VGPH) were measured. This was done pre/postoperatively.

#### **Results**

The mean difference in FSS templating and actual placement was within 1 size, usually smaller was placed than templated, with a median of 0.67 (-3 to 4). With regards to HFO, the median difference post-replacement was 2.78mm with a mean of 2 (-17 to 22). The LLD had a mean of 3.8mm difference post-operatively. The placement depth of the implant using the VGPH was placed at a mean of 0mm with an average implant placed of 1.24mm proud.

#### **Conclusion**

Our primary aim was to determine if accurate templating can still be done using acetate-printed templates for accurate prosthesis placement. We were able to accurately restore HFO to an average of within an average of 2mm. LLD is quoted as the largest reason for litigation post-hip arthroplasty, we were able to accurately restore LLD to within 3.8mm of the contralateral side. The FSS placement in our study was within 1 size of the templated size. However, the size of the stem can also be influenced by surgical technique. We believe that there is still a role for acetate templating as it is accurate, cheap and easily accessible.

**Category:** Hip Arthroplasty

**Country:** South Africa

**ID: 13417**

## **Increased Prevalence Of Valgus Constitutional Alignment Subtypes In A South African Arthritic Population Group Using The Coronal Plane Alignment Of The Knee (CPAK) Classification**

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### **Submission:**

#### **Background**

Knee alignment philosophies and patient specific models to improve patient reported outcomes are gaining increasing attention. The coronal plane alignment of the knee (CPAK) classification describes nine knee phenotypes and then proposes surgical alignment strategies to achieve constitutional alignment. The CPAK classification has been validated in Australian, European, Asian and North American population groups. To date no African data has been analyzed using CPAK.

#### **Method**

A total of 344 arthritic patients (608 knees) with appropriate long leg radiographs were classified based on the CPAK type. Measurements included mechanical hip-knee-angle(mHKA), medial proximal tibial angle (mMPTA) and lateral distal femoral angle (mLDFA) and the derived calculations of joint line obliquity (JLO) and arithmetic hip-knee-angle (aHKA).

#### **Results**

The sample population was 77.9% (n=268) female with a mean age of  $68.4 \pm 9.2$  years. The most common CPAK types in order were type 3 (n = 174; 28.6%), type 2 (n = 155; 25.5%), type 1 (n = 94; 15.5%) and type 6 (n = 80; 13.2%). The most common limb alignment types were valgus (CPAK types 3,6,9; 41.8%).

#### **Conclusion**

This study, which investigated arthritic patients from a single institution in South Africa, shows a divergence of CPAK phenotypic knee patterns relative to other international studies, with much higher proportions of valgus phenotypes (3 and 6). This regional difference should be further investigated in other South African and African population samples and used to adapt the surgical strategies employed by local surgeons.

**Category:** Knee Arthroplasty

**Country:** South Africa

**ID: 13418**

## **Comparison Of Outcomes In Obese And Non-Obese Patients Undergoing Robotic-Assisted Total Knee Arthroplasty Using A Handheld Imageless System**

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### **Submission:**

#### **Background**

Obesity is a risk factor for inferior clinical and functional outcomes in total knee arthroplasty (TKA) due to both biomechanical and physiological mechanisms. The interest in robotic-assisted surgery has been growing in recent years however there is limited research on the outcomes when using this technology in obese patients. This study compared short-term outcomes in patients undergoing elective primary robotic-assisted total knee arthroplasty (RA-TKA) stratified by BMI.

#### **Method**

We conducted a prospective study of 201 patients who underwent handheld imageless, RA-TKA for symptomatic osteoarthritis (OA) over a two-year period. Patients were classified as non-obese (BMI < 30) or obese (BMI > 30). The obese group was further stratified into obese (BMI 30-39.9) and morbidly obese (BMI > 40). Cohorts were compared using baseline demographic and clinical data, intraoperative and inpatient records as well as postoperative outcomes with mean 1.78 year follow-up.

#### **Results**

Cohorts were well-matched. Obese patients were more likely to have undergone a previous TKA ( $p=0.007$ ) and have advanced OA when assessed using the Kellgren and Lawrence Classification ( $p < 0.001$ ). They were more likely to have a lower intraoperative MASTI score ( $p < 0.001$ ), longer surgical duration ( $p < 0.001$ ), greater drop in Haemoglobin postoperatively ( $p=0.002$ ) and a longer length of stay (LOS) than non-obese patients ( $p < 0.001$ ). There were no statistically significant differences in VAS ( $p=0.153$ ), KSS ( $p=0.781$ ) or TUG scores ( $p=0.822$ ) between obese and non-obese groups. Satisfaction rates were similar ( $p=0.890$ ). Intraoperatively, morbidly obese patients were more likely to require more soft tissues releases ( $p=0.001$ ) and had with a greater difference between planned and achieved alignment ( $p=0.004$ ). Morbidly obese patients took a longer to achieve in-hospital physiotherapy-directed rehabilitation targets ( $p=0.018$ ) and had a longer LOS ( $p=0.002$ ). There were no other significant differences in outcomes between obese and morbidly obese patients.

#### **Conclusion**

At one year follow-up, there were no adverse events for RA-TKA irrespective of BMI. Clinical outcomes, including ROM, TUG, KSS and satisfaction rates following RA-TKA in obese and morbidly obese patients are equivocal to non-obese patients. Morbidly obese patients have greater variance in the planned versus actual alignment achieved, require more surgical releases to achieve balance and have increased LOS.

**Category:** Knee Arthroplasty

**Country:** South Africa

**ID: 13424**

## **Robotic Total Knee Arthroplasty Through A Value Lens**

**Author :** Duwayne Vermaak

### **Submission:**

#### **Background**

Robotic assisted surgery is a front runner in arthroplasty technology. However, the technique raises controversy with inconclusive evidence of improved outcomes, increased cost and a learning curve. The big question for stakeholders surrounding this technology is does it bring real value to arthroplasty and is it worth the investment? The study aims to evaluate robotic total knee arthroplasty (rTKA) through a value lens by reporting early patient outcomes and percentage cost increase, keeping the learning curve in mind.

#### **Method**

Report the first 22 rTKA cases of a single surgeon. All cases were completed in an Ambulatory Surgical Facility. Baseline metrics were calculated using conventional TKA data from the same surgeon and same facility. The rTKA results were compared to the conventional TKA baseline.

#### **Results**

Mean KOOS-PS decreased from 12.3 pre-operatively to 6.3 at 6 weeks post-operatively. All patients' expectations were met at 6 weeks, and all would do the outpatient pathway again. Patients rated each leg of their care experience which resulted in a median score of 30/30. The cost of consumables is increased by 154% for ROSA cases. There was also a 37% increase in surgical time between conventional and rTKA techniques. The baseline surgical time was 61.5 minutes. The surgical time for rTKA was  $79 \pm 15.1$  (range 61 – 123) minutes. The 80-minute mark has been broken consistently from case 14 onwards and surgical time has been consistently decreasing. The average time for case 1 to 13 was 84 minutes compared to 72 minutes from case 14 to 22.

#### **Conclusion**

This early experience study shows good short-term patient outcomes and care experience. However, there is an increased cost associated with adopting rTKA with respect to consumables and increased theatre time. Robotic TKA does shows promising outcomes and theatre times that can be tempered, meaning it holds the potential to be a value-add in total knee arthroplasty.

**Category:** Knee Arthroplasty

**Country:** South Africa

**ID: 13426**

## **Two Weeks of Rivaroxaban Venous Thromboembolism (VTE) Prophylaxis Is Associated With A Significantly Greater Incidence Of VTE Following Direct Anterior (DAA) Total Hip Arthroplasty (THA)**

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### **Submission:**

#### **Background**

VTE, comprising deep vein thrombosis and pulmonary embolism, remains a pertinent and preventable complication following THA. DAA THA has gained global popularity for its potential benefits; however, the optimal duration of postoperative VTE prophylaxis remains controversial. This study aimed to compare the efficacy of two weeks versus four weeks of rivaroxaban as postoperative VTE prophylaxis in patients undergoing DAA THA.

#### **Method**

We conducted a retrospective analysis of 526 consecutive patients who underwent elective primary THA via the DAA between January 2017 and December 2022. We compared the incidence of VTE, and the rate of complications associated with VTE prophylaxis within six months postoperatively in patients who received either a two- or four-week course of rivaroxaban as VTE prophylaxis following DAA THA.

#### **Results**

The study included 356 patients who received four weeks, and 170 patients who received two weeks of rivaroxaban as postoperative VTE prophylaxis. Both groups were equally matched for age, gender, co-morbidities, and preoperative VTE risk according to the Caprini Score. The overall incidence of VTE was 1.2% (n= 6), which included three DVTs and three PEs. Of the DVTs detected on duplex venous ultrasound, two were diagnosed as symptomatic DVTs, and one as an asymptomatic DVT. The incidence of VTE was statistically significantly higher in the two-week group compared to the four-week group ( $p=0.043$ ), and all patients in whom a VTE occurred had a Body mass index (BMI) of  $\geq 30$  kg/m<sup>2</sup> and a preoperative Caprini score of moderate or high risk. No statistically significant difference was noted in the rate of wound complications ( $p=0.40$ ) or the incidence of peri-prosthetic joint infections between the two cohorts ( $p=0.56$ ).

#### **Conclusion**

A four-week course of rivaroxaban demonstrated superior efficacy in reducing the incidence of VTE compared to a two-week regimen. Importantly, the extended duration of rivaroxaban prophylaxis did not result in a significant increase in the rate of complications associated with VTE prophylaxis. These findings underscore the potential benefits of a prolonged rivaroxaban regimen for optimizing postoperative VTE prevention in patients undergoing AMIS DAA THA.

**Category:** Hip Arthroplasty

**Country:** South Africa

**ID: 13427**

## **Current Total Knee Arthroplasty Trends Used By Joint Care Registered Surgeons**

**Author :** Ponky Firer

**Co-Author 1:** Antoine Dymond

### **Submission:**

#### **Background**

Joint Care is a global fee model business. For anonymous review purposes it records the surgeon's surgical techniques and approaches.

It is of interest to study the variation in techniques that South African surgeons have adopted in the past 2 years.

#### **Method**

Data from TKA cases done in 2022 (n=1600 cases by 95 surgeons) and 2023 (n= 2024 cases by 111 surgeons) with full records were examined. The following metrics were considered:

[1] Femur vs Tibia first approach.

[2] Surgical alignment technique: a) Mechanical Alignment (MA); b) Kinematic Alignment (KA) ; Bone Balancing (bone cuts to balance soft tissues without soft tissue releases) (BB); Constitutional Alignment (CA); Other Techniques (OT).

[3] Tibial cut: a) Neutral +/- 3 degrees; b) can aim for 3-5 degrees varus; c) accept > 5 degrees varus

[4] Femoral rotation: a) Based on axes; b) Gap balancing; c) Anatomic (i.e. KA)

[5] Technical assistance: a) CAS; b) PSI; c) Robotics

#### **Results**

[1] Tibia first stayed the same from 62.3% in 2022 to 60.8% 2023

[2] MA in 2022 was 43.9% and BB 47.2% changed in 2023 to MA 40.1% and BB 44.4%, with KA increasing from 5.6% to 8.4%

[3] A neutral tibial cut was preferred in 79.3% (2022) and 78% (2023). Only 1.6% accepted a tibial cut > 5 degrees varus which did not change.

[4] Gap balancing increasingly was preferred form of setting femoral rotation going from 47.7% in 2022 to 52.7% a year later. The use of axes decreased ( 45.2% to 39.9%)

[5] use of technology increased from 5.8% to 13.9% from 2022 to 2023.

#### **Conclusion**

The trend with South African surgeons that use the joint care pathway is to move away from MA towards more constitutional alignment techniques (BB & KA). A neutral tibial cut is still preferred while the setting of femoral rotation is moving away from the traditional use of axes towards a balanced approach. There is an increase in the use of technology. It will be interesting in further follow up to assess outcomes of the various approaches.

**Category:** Knee Arthroplasty

**Country:** South Africa

**ID: 13428**

## **Arthrodesis of The Knee Using A Vascularised Patella Autograft And Biplanar External Fixation.**

**Author :** Johan van der Merwe

**Co-Author 1:** Jacobus Erasmus

**Co-Author 2:** Kenneth Lesley

### **Submission:**

#### **Background**

Fusion of the knee joint, for the management of end stage infection, extensor mechanism dysfunction or severe bone loss, can be obtained by a multitude of surgical techniques.

The success rate is reported to be between 50 and 100 percent.

We report a novel technique of utilising the patella as a vascularised autologous bone graft combined with a bi-planar external fixator.

#### **Method**

We performed an arthrodesis of the knee on 7 consecutive patients from 2015-2022 using the same technique.

During the procedure the patella was not detached from its lateral retinacular pedicle but used as an anterior auto-graft crossing the patellofemoral joint.

Skeletal fixation was achieved with a biplanar external fixator technique using a short and long fixator applied at 90 degrees to each other.

Union was assessed at 6 weeks intervals for a period of 24 weeks. Radiographs were assessed with specific attention to the union of the patellofemoral and patellotibial junctions. Complications other than non-union were noted.

#### **Results**

In six of the 7 knees union was obtained at 18 weeks and in one patient at 24 weeks. In 4 cases the union of the femur to the tibia was preceded with union of the patella to the femur and the tibia.

In one case the patient developed severe pin site infection that required intra venous antibiotics for two weeks.

#### **Conclusion**

The described technique was successful in this small series.

Using the patella as a vascularised graft could add to the success rate of this operation, as suggested by the union of the patella to the femur and tibia preceding the fusion of the knee joint.

**Category:** General Arthroplasty

**Country:** South Africa



**ID: 13429**

## **The Magic Number Is SIXTY**

**Author :** Johan van der Merwe

**Co-Author 1:** Mareza Brink

### **Submission:**

#### **Background**

Current alignment strategies for Total Knee Arthroplasty require various techniques of cutting the proximal tibia at angles other than 90 degrees to the long axis. These cuts are difficult to perform accurately without robotic surgery or navigation.

We describe a simple mathematical formula to adjust the proximal tibial cutting guide incrementally, using conventional knee replacement instruments, and performed a study to validate this method.

#### **Method**

This technique was evaluated by simulating a Total Knee Arthroplasty on synthetic bone, combining the CORI robotic system and conventional instruments from Smith & Nephew®. According to our formula, adjustments of 1, 5 and 10 degrees of varus and valgus were made to the tibial jig. The angular deflections at the proximal tibial cutting guide were recorded by the robot. These were performed at tibial lengths of 300, 360 and 420mm.

#### **Results**

For varus and valgus adjustments of 1 degree the verification values by the robot were the same. For adjustments of 5 and 10 degrees there was an average difference of 0.2 degrees between the adjusted values and the robot values

#### **Conclusion**

This mathematical formula was accurate when used with synthetic bone modules. It is likely to be useful in the adjustment of proximal tibial cuts when using conventional Total Knee Replacement instruments.

**Category:** Knee Arthroplasty

**Country:** South Africa

**ID: 13432**

## **Changes In Hip Centre Of Rotation In Total Hip Arthroplasty At Groote Schuur Hospital**

**Author :** Marc Nortje

### **Submission:**

#### **Background**

Restoration of hip biomechanics is important for good clinical outcomes and longevity of the implants. One of the parameters is hip centre of rotation (COR), which is determined by the acetabular component and can be altered from the native position by reaming. We aim to find out how much we are changing the Hip COR at Groote Schuur Hospital in our total hip replacements (THR) for osteoarthritis.

#### **Method**

40 patients undergoing THR surgery for osteoarthritis with appropriate pre and postoperative radiographs were analysed. The COR was measured from the teardrop by two independent observers and the difference calculated.

#### **Results**

The intra class coefficient (ICC) for the two observers was 0.81. The post-operative COR was raised on average by 2.2mm ( $p < 0.05$ ). There were two patients with the COR raised more than 5mm. The average horizontal change was 1.3 mm medial and was not statistically significant .

#### **Conclusion**

At GSH using free hand reaming techniques during THR for osteoarthritis the change in COR is minimal with a raised COR of 2.2mm.

**Category:** Hip Arthroplasty

**Country:** South Africa

ID: 13433

## **X-ray Measurement Of Posterior Tibial Slope: Correlation Between Mechanical Axis Measurement And Short Film Measurement Methods**

**Author :** Praval Dawadi

**Co-Author 1:** Brad Gelbart

### **Submission:**

#### **Background**

The posterior tibial slope (PTS) is the angle formed between the tibial plateau and a line perpendicular to the axis of the tibia. Literature has reaffirmed the importance of the PTS. Orthopaedic surgeons typically obtain an Antero-posterior (AP) and lateral view of the knee together with a standing AP for pre-operative planning. Long leg lateral views are seldomly requested. The use of the standard lateral view has shown to overestimate the PTS by approximately 3° when compared to a full-length lateral view. Different methods of measuring the PTS have shown to have a high degree of interobserver variability. The aim of the study was to determine which method of measuring the PTS is best adopted in clinical practice.

#### **Method**

This was a prospective study where the PTS was measured using three different methods on a long leg lateral x-ray using the mechanical axis, anterior and posterior cortex. The PTS was also calculated using the "MPA" method as described by Utzschneider. The tibial plateau line remained constant in the measurements. Measurements were performed and data collected by the primary investigator. Statistical analysis was performed, one sample t-test and Bland-Altman plots were calculated to determine whether there was agreement in these different methods.

#### **Results**

The one-sample t-tests for the difference in scores between posterior and anterior tibial cortex and MPA with the mechanical axis were statistically significant (all p-values < 0.001). The mean difference of the one sample t-test indicated that the MPA method was closest in agreement of the three methods to the mechanical axis.

#### **Conclusion**

Results indicate that the three different measurement methods of PTS are statistically different to the mechanical axis measurement. Even though the posterior tibial cortex, anterior tibial cortex and MPA measurements do not agree with the mechanical axis measurements, the MPA method is closest in agreement. The recommendation is that if it is not feasible to use long leg lateral x-rays in your setting, to use the MPA method for measurement of the PTS.

**Category:** Knee Arthroplasty

**Country:** South Africa

**ID: 13435**

## **DAIR For Periprosthetic Joint Infections - One Week To Save The Joint?**

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### **Submission:**

#### **Background**

Predicting success of a Debridement, Antibiotics and Implant Retention (DAIR) procedure for Periprosthetic Joint Infection (PJI) remains a challenge. A failed DAIR might adversely affect the outcome of any future revision surgery for PJI. Hence, the ability to identify and optimise factors predictive of DAIR success would help target the procedure to the appropriate patient cohort and avoid unnecessary surgery for patients where a DAIR is unlikely to eradicate infection.

#### **Method**

A retrospective review of our prospective Bone Infection Group database was performed to identify all patients who underwent a DAIR of their hip or knee arthroplasty. All patients had a confirmed PJI as per MSIS 2013 criteria and an outcome according to the MSIS working group outcome-reporting tool. DAIR surgery was then grouped into “successful” or “unsuccessful” outcomes.

#### **Results**

Sixty-Four consecutive patients with an acute PJI underwent a DAIR procedure between 2009 and 2020. Treatment was successful in 44 (69%). The chance of a successful DAIR was significantly greater if performed within one week of symptom onset compared to greater than one week duration (adjusted odds ratio (OR) 0.11;  $p=0.027$ ; 95% CI [0.02-0.78]). The chances of a successful DAIR however was not influenced by whether the surgeon was an arthroplasty or non-arthroplasty surgeon (OR 0.28;  $p=0.13$ ; 95% CI [0.05-1.48]). Isolated Streptococcus infection had a success rate of 100%; followed by Coagulase-negative Staphylococci 71% and Methicillin-susceptible Staphylococcus Aureus 65%. Polymicrobial infection had the worst outcome with a success rate of 47%.

#### **Conclusion**

In our experience DAIR surgery performed within one week of symptom onset, significantly increased the chances of successful infection eradication.

Collaborative work is required to ensure arthroplasty patients access prompt appropriate surgical decision making as soon as concerns arise, remove barriers to early assessment and minimise delays to surgery.

**Category:** General Arthroplasty

**Country:** United Kingdom

ID: 13436

## **“Worse Than Death” – Awaiting Primary Hip And Knee Arthroplasty In SA.**

**Author :** Koos Jordaan

### **Submission:**

#### **Background**

Patients who have access only to public healthcare in South Africa for primary hip and knee replacements, are placed on a waiting list and most await several years before surgery can be offered. The EuroQol five-dimension (EQ-5D) questionnaire is an internationally validated tool used to assess quality of life (QoL) in patients. A score < 0 has been stated to reflect a state ‘worse than death’. The EQ-5D has also been validated with the Oswestry Disability Index and Roland-Morris Disability questionnaire to categorize the severity of disability for a score > 0. There is a paucity of data from Africa on the QoL awaiting joint arthroplasty.

#### **Method**

Review of all primary THR and TKR done at a single academic unit in South Africa in 2023. Patient demographics, days awaiting joint replacement, EQ-5D pre-operative and at 6/52 together with Oxford hip and knee scores were analysed. Data was collected in person by a dedicated non-medical data capturer for all patients. Exclusions were any trauma-related surgery, including NOF fractures and incomplete data samples.

#### **Results**

248 patients were included (132 THR & 116 TKR). The average time waiting on the waiting list was 1655 days (4,5yrs.). 29% of THR and 24% of TKR reflected a WTD quality of life. 90% of THR and 87% of TKR had a severe, cripple or bedbound disability. Females experience worse QoL compared to males. Oxford hip and knee scores confirm QoL data. There was a significant improvement in QoL at the 6/52 follow-up period.

#### **Conclusion**

Patients awaiting joint replacement in the public health sector in South Africa experience a health state WTD in 27.4% and severe disability in 89% of cases for multiple years. After joint replacement, there is a remarkable recovery in QoL and disability indexes.

**Category:** General Arthroplasty

**Country:** South Africa

**ID: 13437**

## **Return To Pre-fracture Walking Ability Post NOF Fracture Surgery in South Africa**

**Author :** Koos Jordaan

### **Submission:**

#### **Background**

Neck of femur (NOF) fractures are associated with high mortality and morbidity rates post-surgery. Less focus is placed on walking ability and there is no published data on this after NOF surgery in Africa. International studies vary from 60% return to walking at 6 months to only 30% return to pre-morbid function at 2 years. Only 24% return to independent ambulation.

#### **Method**

Retrospective review of all NOF fracture patients that underwent hip joint arthroplasty at a single academic unit for the period January 2023 – December 2023. Patient demographics, pre-and post-surgery walking assessment, EQ-5D and mortality rates were evaluated. Mobility assessment was done six weeks post-surgery. The surgical approach, implant used, and fixation (cemented or uncemented) were also reviewed.

#### **Results**

142 patients with an average age of 70 years were included. They were mostly female (55%). Bipolar hemi-arthroplasty (66%) followed by total hip replacements (34%) were used. Only 6% of dual mobility constraints were utilized. Surgery was performed via the direct anterior approach (93%) with predominant uncemented fixation (80%). In-hospital mortality was < 1%, 30-day mortality was 3.5% and 6/12 mortality was 6%. At the 6-week post-operative assessment, 70% of patients have regained their pre-operative walking ability. 26% were fully independent community mobilizers. 22% had an improvement in their walking ability post-surgery, compared to pre-fall status. 30% were still utilizing crutches of which only 2 patients detreated to become wheelchair bound.

#### **Conclusion**

An early (6-weeks) return to pre-fracture walking status and low mortality rates can be achieved in the majority of NOF fracture patients who received hip arthroplasty via the direct anterior approach.

**Category:** Hip Arthroplasty

**Country:** South Africa

**ID: 13439**

## **Radiographic Predictors Of Hip Abductor Tears**

**Author :** Johann Groenewald

**Co-Author 1:** Marc Nortje

### **Submission:**

#### **Background**

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

#### **Method**

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

#### **Results**

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

#### **Conclusion**

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

**Category:** Hip Arthroplasty

**Country:** South Africa

**ID: 13441**

## **The Medial Compartment Wear Pattern In Anterior Cruciate Ligament Deficient Knees Suitable For Unicompartmental Knee Arthroplasty**

**Author :** Christiaan Rudolf Oosthuizen

### **Submission:**

#### **Background**

The wear pattern of Anterior Cruciate Ligament deficiency (ACL-D) has been claimed to be pathognomonic as posteromedial on the tibia due to the loss of stability with increased translation and rotation of the tibia. This movement is relative to the femur with resultant posteromedial tibial chondral degeneration on the tibia.

The aim is to evaluate the wear pattern of ACL affected knees that received a Unicompartmental Knee Arthroplasty (UKA) compared to “normal” wear patterns.

#### **Method**

1708 knees suitable for UKA with ACL instability in their lifetime were evaluated during the surgical procedure.

The resected tibial plateau was evaluated by dividing it into thirds to evaluate the dominant area of wear whether Anterior, Central or Posterior.

Four groups were identified:

Group 1: Isolated single medial compartment Osteoarthritis (OA) with intact ACL (classic UKA knee) – 1379 knees, 81% of cohort.

Group 2: Coronal subluxation of the knee deemed to be due to ACL “weakness” (functional loss) – 206 knees, 12%.

Group 3: Previous ACL Reconstruction (ACL-R) – 20 knees, 1%.

Group 4: ACL-D – 103 knees, 6%.

#### **Results**

In Group 1, the wear area is predominantly anteromedial and central (26% and 68% = 94%).

In Group 2, the wear area is predominantly anteromedial and central (13% and 75% = 88%).

In Group 3, the wear area is split between antero-central (55%) and posterior (45%).

In Group 4, the wear area is split between antero-central (52%) and posterior (46%).

#### **Conclusion**

The results indicate that the dominant area of wear in the intact ACL patient is Antero-medial (Anterior and Central).

The spread of the wear area in a coronal subluxating knee with supposed ACL weakness is the same as the ACL intact group.

The spread of the wear area in the group with previous ACL-R is similar to the ACL-D group. This is contrary to the popular belief that posteromedial wear is the dominant pathology, but it is spread equally between the Anteromedial and the posterior areas.

**Category:** Knee Arthroplasty

**Country:** South Africa



ID: 13442

## **NEW INCENTIVES AND PITFALLS IN PATIENT-SPECIFIC 3D PRINTED PELVIC IMPLANTS**

**Author :** André Olivier

### **Submission:**

#### **Background**

Custom 3D printed implants can be anatomically designed to assist in complex surgery of the bony pe

#### **Method**

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

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

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

#### **Results**

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

#### **Conclusion**

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

**Category:** Hip Arthroplasty

**Country:** South Africa

**ID: 13443**

## **Current Screening Protocols For Arthroplasty In The Public Health Care Sector Does Not Promote Equitable Access To Surgery**

**Author :** Marisa Coetzee

**Co-Author 1:** Jacobus Daniël Jordaan

**Co-Author 2:** Amanda Clifford

**Co-Author 3:** Quinette Louw

### **Submission:**

#### **Background**

Knee replacement surgery can significantly improve the quality of life of patients with severe knee osteoarthritis. Equitable access to knee replacement surgery is of paramount importance to ensure that all patients, regardless of their socioeconomic status or geographical location, have fair and timely access.

#### **Method**

The aim of this study was to (1) describe the health equity profile and quality of life of patients awaiting total knee replacement at a single academic hospital in South Africa and to (2) describe the association between these health equity factors and the waiting time.

#### **Methods/design:**

A cross-sectional survey and retrospective record review of patients awaiting total knee replacement was conducted using the PROGRESS-Plus health equity framework. Chi-square statistics were used to calculate association between health equity factors and the waiting time.

#### **Results**

Three-hundred and two (n=302) patients (77% female; mean age 67 years) participated of whom one in three patients waited five years or longer for surgery. Elderly patients (> 70 years) and patients from lower socio-economic background were less likely to have equitable access to surgery.

#### **Conclusion**

The current screening protocol for TKR surgery in the public health care sector does not encourage equitable access to surgery. A more holistic screening approach alongside selective surgical prioritisation and rehabilitation could reduce the waiting list and facilitate equitable access to care.

#### **Clinical Implication:**

Health equity factors such as socioeconomic status, age and other patient characteristics such as life roles and employability should be taken into consideration when screening patients for the knee replacement waiting list.

**Category:** Knee Arthroplasty

**Country:** South Africa

**ID: 13446**

## **The Results Of The Modified Knee Osteoarthritis Grading System (mKOGS)**

**Author :** Christiaan Rudolf Oosthuizen

### **Submission: Background**

The Knee Osteoarthritis Grading System (KOGS) was validated and published in 2019 in the Journal of Arthroplasty as the first tri-compartmental osteoarthritic (OA) radiological decision tool that considered the various knee presentations for knee arthroplasty.

New publications followed to classify the multi-compartmental approach of the OA knee.

To improve the progress in acceptance of Partial Knee Arthroplasty, the severity of the complications was further classified with the Revision Partial Knee Classification System (RPKC).

The KOGS required modification to be relevant for future use and was adapted with compartmental pathology as well as the Anterior Cruciate Ligament (ACL) stability as prime conditions of degradation.

The goal of the study is to compare the results of the different categories as well as the different implants used for the specific categories.

### **Method**

The cohort consists of 2667 sequential knees (from 2006 to 2023), evaluated, and graded with the modified KOGS (mKOGS).

### **Results**

The results from each category will be presented.

mKOGS Grade 1A:

Medial tibia-femoral OA: 1379 cases (51.7% of cohort).

mKOGS Grade 1B:

Lateral tibia-femoral OA: 414 cases (15.5%).

Grade 1C:

Patellofemoral OA: 62 cases (2.3%).

Grade 2A:

Coronal Subluxation with intact ACL: 225 cases (8.4%).

Grade 2B:

ACL previously reconstructed: 23 cases (0.9%).

Grade 2C:

ACL deficiency: 121 cases (4.5%).

Grade 3A:

Medial tibia-femoral and patellofemoral OA: 36 cases (1.3%).

Grade 3B:

Lateral tibia-femoral and patellofemoral OA: 22 cases (0.8%).

Grade 3C:

Medial and lateral tibia-femoral OA: 21 cases (0.8).

Grade 4A:

Bi-compartmental OA with ACL involvement: 10 cases (0.4%).

Grade 4B:

Tri-compartmental OA with/without ACL involvement: 354 cases (13.3%).

### **Conclusion**

The grading of the knee with routine x-ray views can be an important tool to standardize the use and results of Unicompartmental Knee Arthroplasty as a definitive or staging tool in the different categories.

The various OA presentations are being refined with clinical and radiological selections tools. The mKOGS is such a tool that can be used for comparative studies and improve the selection of the different requirements. The use of Total Knee Arthroplasty as the panacea of all degenerative knee pathology is slowly receding despite robotic advancements in alignment and placement improvement.

**Category:** Knee Arthroplasty

**Country:** South Africa

**ID: 13447**

## **Core Decompression as Treatment Of Early Stage Osteonecrosis Of The Femoral Head**

**Author :** Chris Frey

**Co-Author 1:** Nabeel Moosa

**Co-Author 2:** Taps Ajodha

### **Submission:**

#### **Background**

Osteonecrosis of the femoral head is a crippling and debilitating disease. We see this condition at our institution commonly in young patients mainly due to retro viral disease. Core decompression is widely used for the treatment of early stage osteonecrosis to alter the disease outcome, reduce pain and improve function.

#### **Method**

In the passed 5 years we performed 838 hip arthroplasties at our institution. Of these 285 patients, 34% were diagnosed with osteonecrosis of the femoral head. The main risk factor was human immunodeficiency virus (HIV) with 117 of patients 41%. All patients that required total hip arthroplasty presented with late stage osteonecrosis with Ficat and Arlet stage III or IV.

During the same time period we treated only 9 patient with osteonecrosis of the femoral head that presented early with Ficat and Arlet stage 0 or 1. They were surgically treated with core decompression using the cannulated dynamic hip screw instrumentation set for core drilling under image intensifier. We treated 6 female and 3 male patients. Age group for 8 patients that suffered retroviral disease was between 30 years to 37 years, one patient was cortisone induced osteonecrosis at age 53. The average Harris Hip Score before surgery was 68.

#### **Results**

The outcome was very good. We found a marked clinical improvement after decompression. The average Harris Hip Score increased 3 months after the surgery to 95. To date none of the patients have come for total hip replacement surgery.

#### **Conclusion**

Early core decompression has at our institution a good success rate especially in young patients.

**Category:** Hip Arthroplasty

**Country:** South Africa

**ID: 13451**

## **Can Radiographic Peer Review Accurately Predict Revisions? Initial Findings**

**Author :** Ian Learmonth

**Co-Author 1:** Paul Firer

### **Submission:**

#### **Background**

Radiographic review is commonly done to assess hip and knee arthroplasties. The accuracy of radiographic review with regard to predicting revision risk was assessed, by comparing the results from a large scale radiographic peer review, with the actual revision outcomes reported.

#### **Method**

A retrospective study was done, with 1 year revision rates being compared between cases grouped according to their peer review scores. The survivorship data used was from the JointCare registry for the 5,401 primary arthroplasties (total hip, total knee, and uni) done between 2020 and 2022. The 33 case revisions which should not be predictable via radiographic review (i.e. infections) were excluded, leaving 61 cases where a revision was done. The 69 cases where the patient is now deceased were excluded too.

Comparisons were done between the 3,754 cases receiving the overall review score of Good (little room for practical improvement), the 1,524 cases with the score of Acceptable (some room for improvement), and the 123 cases which got the score of Sub-optimal (significant room for improvement).

1 year revision rates were calculated using the Kaplan-Meier estimator. Visual inspection of the survivorship curves and Welch T-tests were used to check for statistical significance.

Additionally cases which received a Sub-optimal peer review score were checked, to confirm the revision reasons indicated by the x-rays correlated to the actual revision reasons.

#### **Results**

The 1 year revision rates were 0.6% (95% CI: 0.3% to 0.8%) for the cases getting Good review scores, 1.3% (95% CI: 0.8% to 1.9%) for Acceptable scores, and 10.1% (95% CI: 4.5% to 15.4%) for the Sub-optimal scores. Cases receiving a sub-optimal review score from the JointCare peer review program, were therefore 17 times more likely to get revised compared to cases getting a good overall score (p-value < 1%).

#### **Conclusion**

Although radiographic review cannot definitively determine if a case will require a revision, it does appear able to predict cases at a significantly higher risk of revision. The predictive power may increase with longer term follow-up.

**Category:** General Arthroplasty

**Country:** South Africa

**ID: 13453**

## **Opinions Of South African Orthopaedic Surgery Registrars Regarding Robot-Assisted-Total Knee Arthroplasty And -Unicompartmental Knee Arthroplasty During Their Post-graduate Training In South African Universities.**

**Author :** Bayanda Ndindwa

**Co-Author 1:** Jurek Pietrzak

**Co-Author 2:** Nkodiseni Sikhauli

**Co-Author 3:** Lipalo Mokete

**Co-Author 4:** Allan Roy Sekeitto

**Co-Author 5:** Richard Almeida

### **Submission:**

#### **Background**

Worldwide, there are 364.6 million people afflicted with knee osteoarthritis (OA). Subsequently, the demand for TKA is set to increase by 85% by 2030 and 1.26 million cases will be performed annually worldwide. However, despite the significant demand for TKA, ultimately, the outcomes of TKA remain disappointing with reported dissatisfaction rates of 20%. Subsequently, the use of robot assisted technology to improve outcomes of TKA has garnered much international interest. But, the role of robot assisted TKA (RA-TKA) in Orthopaedic training remains ill defined. Therefore, we endeavoured to assess the opinions and beliefs of Orthopaedic Surgery Registrars undergoing post-graduate training in South African universities to RA-TKA

#### **Method**

A novel anonymous online survey was sent out to all seven training institutions in South Africa (SA). A bi-variate analysis was subsequently undertaken to establish factors which may influence a greater interest in RA-TKA during orthopaedic training.

#### **Results**

In total, there were 78 responses representing trainee Orthopaedic surgeons from 7 institutions. There were 55% (n=43) respondents who are currently senior registrars. There were 77% (n=60) who had completed their Arthroplasty rotation. There were 57% (n=44) who were actively exposed to robot-assisted technology during their training. Overall, 31% (n=24) of respondents believed that that RA-TKA ultimately improved the outcomes of TKA. Only, 1% (n=1) percent believed that RA-TKA was merely a marketing tool to attract patients. There were 70% (n=55) of respondents who wished there was greater access to RA-TKA in their training. Only 18% (n= 14) got any exposure, either robot-assisted or conventional, to unicompartmental knee arthroplasty (UKA) during their Orthopaedic training.

#### **Conclusion**

Orthopaedic Surgery registrars in South Africa certainly have an interest in robot assisted technology forming part of their formal surgical training. Exposure to RA-TKA, however, remains varied. Ultimately, however, the adoption of RA-TKA may be greater in future surgeons and universities have a responsibility to provide opportunities to access this technology.

**Category:** Knee Arthroplasty

**Country:** South Africa

**ID: 13454**

## **Anterior Cruciate Deficiency In Unicompartmental Knee Arthroplasty Surgery: To Reconstruct Or Not To Reconstruct**

**Author :** Hanan Wilson

### **Submission:**

#### **Background**

Being a key static stabiliser of the knee, Anterior Cruciate Ligament (ACL) deficiency in the arthritic knee poses a unique therapeutic challenge.

The aim of this study was to assess the clinical and implant survival outcomes of mobile bearing unicompartmental knee arthroplasty (UKA) performed in ACL deficient knees (ACL-D) with and without same setting ACL reconstruction (ACL-R).

#### **Method**

This retrospective review with prospective data collection, studied 121 UKAs (103 medial and 18 lateral) performed by a single surgeon over a 13-year period, of which 94 had no ACL reconstruction (ACL-R) and 27 had a same setting ACL-R.

The surgeon used age, less than 60 years, high functional demand, posterior tibial wear pattern and intra-operative anterior tibial translation of more than 5mm as indicators for ACL-R.

Complications or revisions according to the Revision partial knee classification system (RPKC) and function Oxford knee score (OKS) were measured.

Implant failure was defined as PR2B, PR3 or PR4 revisions.

#### **Results**

The ACL-R cohort achieved a 100% 13-year implant survival rate, 11% minor complication rate and mean improvement of the OKS from 27 to 41.

The no ACL-R cohort achieved a 99% implant survival rate, 10% minor complication rate and mean improvement of the OKS from 23 to 39. Two patients (2.1%) had a bearing dislocation in the no ACL-R group.

#### **Conclusion**

Excellent implant survival and patient function can be achieved with mobile bearing UKA in ACL deficiency, with same setting reconstruction in selected patients based on historical and intra-operative indicators.

**Category:** Knee Arthroplasty

**Country:** South Africa

**ID: 13455**

## **Sagittal Plane Assessment In Arthroplasty Patients**

**Author :** Tapeshwar Ajodha

**Co-Author 1:** Chris Frey

### **Submission:**

#### **Background**

Chris Hani Baragwanath Hospital is a high volume Arthroplasty centre, performing over 1000 hip replacements in a 6 year period. Novlkov showed 50% of revisions are potentially avoidable (The Bone and Joint journal 2019). Instability is the commonest indication for early revision (Vigdorchik, Journal of Arthroplasty 2022). Pelvic and spinal deformity as well as immobility can increase dislocations in high risk patients.

International literature shows that pelvic tilt can change by up to 40° with postural changes.

There is a paucity of data on our local population group regarding the incidence of spinal and pelvic deformity and immobility. This study sought to quantify the sagittal alignment parameters and explore the prevalence of high risk patients.

#### **Method**

A series of Xrays were taken on patients undergoing Arthroplasty in the centre to evaluate lumbar and pelvic deformity and mobility.

Measurements of parameters such as: Anterior pelvic tilt; Lumbar flexion and Lumbar lordotic angles and Pelvic incidence were done.

The incidences of different patient groups were quantified and values were compared to available literature.

#### **Results**

Degenerative changes resulting in imbalance was prevalent in our patient group and we found a higher rate of significant sagittal deformity compared to existing literature.

A high incidence of abnormalities were present in

- Lumbar lordosis,
- Lumbar flexion,
- Spino-pelvic tilt and
- Sacral slope.

#### **Conclusion**

A high rate of sagittal plane imbalance and immobility exists in our local population group. The causes of this are thought to be multi-factorial and include factors such as late presentation and prolonged time to arthroplasty surgery in the setting of a degenerative spine. Awareness and risk stratification through appropriate work-up is important to understand safe cup positioning and variation.

**Category:** Hip Arthroplasty

**Country:** South Africa



**ID: 13457**

## **A Rare Familial Cause Of Hip Avascular Necrosis**

**Author :** Tapeshwar Ajodha

**Co-Author 1:** Chris Frey

### **Submission:**

#### **Background**

Gaucher's disease is a rare condition, specifically in outside of Ashkenazi Jewish populations (who have the highest carrier and birth rate of the disease)

Named after Philippe Gaucher, who originally described it in 1882. This is a genetic disorder in which glucocerebroside accumulates in cells and certain organs.

Deficiency of the enzyme glucocerebrosidase causes accumulation of glucocerebroside.

Clinical presentation includes:

Splenomegaly, Hepatomegaly and dysfunction, neurological complications, lymphadenopathy nodes, anaemia, thrombocytopaenia, and yellow fatty deposits on sclera. Specifically notable is it is identified as a risk factor for Avascular Necrosis of the Femoral Head.

#### **Method**

This case study showcases a family of patients presenting with Avascular Necrosis of the Femoral Head.

The variation in age at the time the disease manifested as well as the series of progression. The family history of the disease spanning multiple generations is explored.

#### **Results**

X-ray, clinical and specific serological investigations are demonstrated.

#### **Conclusion**

This shows a case of multiple hip AVN in a local family, owing to a well-known but rarely encountered aetiology.

**Category:** Hip Arthroplasty

**Country:** South Africa

**ID: 13459**

## **Correlation Patella Tracking With Clinical Outcome**

**Author :** Werner van der Merwe

### **Submission:**

#### **Background**

Intra operative evaluation as well as post operative radiological parameters have been described to evaluate patella tracking in total knee arthroplasty. These findings have been described in the context of mechanical alignment of the knee.

With the advent of alternative alignment techniques these parameters and their correlation with post operative outcome need to be re-evaluated.

#### **Method**

A retrospective series of 100 consecutive functionally aligned total knee replacements were evaluated for intra operative patella tracking as well as patella position on post operative axial radiography. The findings were correlated with clinical outcome at 6 months post operatively including the Visual analogue score for pain, Oxford knee score, HSS patella, Kujala anterior knee score and Lille patellofemoral score.

#### **Results**

There was no correlation between clinical and radiological parameters of patella tracking and clinical outcome scores.

The average patella tilt angle exceeded the safe margin described patella tracking for mechanically aligned knees.

There was no case of clinical patella instability.

#### **Conclusion**

Existing guidelines to evaluate patellofemoral tracking after total knee arthroplasty might not be applicable to more current alignment techniques and parameters for maltracking of the patella need to be revisited.

**Category:** Knee Arthroplasty

**Country:** South Africa

**ID: 13460**

## **Can Ligament Laxity Between Different CPAK Types Of Knees Be Used To Enable Machine Learning For Robotic Knee Replacement Planning?**

**Author :** Allan van Zyl

**Co-Author 1:** Johan van der Merwe

### **Submission:**

#### **Background**

Ligament imbalance of knee replacement remains a major cause of dissatisfaction which could lead to revision of knee replacements.

Modern computer navigation with robotic assistance has lead to a better understanding and ligamentous balance of knee replacements with hopefully beter short and longterm results of knee replacement surgery. The planning of robotic surgery can however be difficult in certain knees and could possibly be improved if machine learning could be incorporated into robotic software.

#### **Method**

231 TKA (Persona PS) were done by a single surgeon, with the ROSA robotic assistant over a period of 20 months and all ligament laxities were recorded. Long leg x-rays were evaluated with calculation of LDFA (lateral distal femoral angle), MPTA (medial proximal tibia angle), aHKA (hip knee angle) and aJLO (joint line obliquity). These figures enabled classification of knee to one of the nine CPAK (Coronal Plane Alignment of the Knee) categories and correlated with the medial and lateral ligamentous space both in extension and 90 deg of flexion.

#### **Results**

Knee alignment was 44,9% varus, 12,4% neutral and 42,7% valgus. Percentage of knees within the CPAK classification: 1 = 33,7%, 2 = 7,9%, 3 = 32,6%, 4 = 11,2%, 5 = 4,5%, 6 = 7,9%, 7 & 8 = 0%, 9 = 2,2%. The joint line was in inward squint (distal apex) 74,2%, neutral 23,6% and outward squint (proximal apex) 2,2%. Ligament laxity (including bone loss) varied from 0mm - 22mm. Ligament laxity did not vary much between the various CPAK categories except for category 9 where significant more laxity was found.

#### **Conclusion**

There remains big differences of ligament laxities within each of the CPAK categories.

I do however believe that some type of machine learning would make planning of stability easier between the various alignment strategies that could save time. Having said this, I also believe that in most cases final planning will be needed by the treating surgeon due to the variability that exists.

**Category:** Knee Arthroplasty

**Country:** South Africa

**ID: 13461**

## **What Is The Compliance Of Low Molecular Weight Heparin In Total Joint Arthroplasty Patients?**

**Author :** Richard Peter Almeida

**Co-Author 1:** Nkhodiseni Sikhauli

**Co-Author 2:** Lipalo Mokete

**Co-Author 3:** Allan Sekeitto

**Co-Author 4:** Jurek Pietrzak

### **Submission:**

#### **Background**

Total Joint Arthroplasty (TJA) is the gold standard procedure described for end stage degenerative joint disease of the hip and knee joints. TJA continues to have significant global growth in demand and cases performed. Even though these are extremely successful surgeries, complications have not been completely eradicated and there remains a focus on preventing the associated complications. Venous thromboembolic events (VTE) remain a concern post-operatively despite the availability of multiple prophylactic therapies. The balance between bleeding risk and VTE prevention is required, however there is no consensus regarding the gold standard in VTE prophylaxis in TJA. Low Molecular weight Heparin (LMWH) is commonly used, with a new trend towards using oral anti-coagulants due to ease of administration. The aim of this study was to assess the adherence of LMWH and the effectiveness and safety of preventing VTE in TJA patients at a South Africa Tertiary Institution.

#### **Method**

This is a prospective study of a cohort of patients undergoing hip and knee TJA at a tertiary academic institution. All patients are discharged with daily doses of LMWH for 14 days. Patients were followed up at least 6 weeks post-operatively. The adherence of LMWH and the clinical features of VTE were assessed using a questionnaire completed by the attending orthopaedic surgeon. Patients who omitted 1 or more doses were classified as non-adherent.

#### **Results**

200 patients were followed up. The mean age was 67.8 years. 74% female patients. The compliance rate was 85 %. VTE was confirmed using radiological imaging in 4 patients (2%). 7 patients reported wound complications, with 4 (2%) patients requiring surgical intervention. 9 (4.5%) patients had the medication administered by health professional, 92 (46%) administered it themselves and 99 (49.5%) had the medication administered by family member.

#### **Conclusion**

The use of LMWH has a high compliance rate and is comparable with oral agents. It is a safe and effective agent in preventing VTE in a South African setting. Future high power prospective studies are needed to determine the optimal VTE prophylaxis protocol.

**Category:** General Arthroplasty

**Country:** South Africa

**ID: 13462**

## **Bone Balancing Technique For Total Knee Arthroplasty (TKA) Maintains The Medial Joint Spaces And Joint Line.**

**Author :** Ponky Firer

### **Submission:**

#### **Background**

Bone balancing in TKA is a technique in which the tibial cut is chosen based on the long leg x-rays. Then balanced and equal flexion and extension gaps are created by rotation of the posterior condylar cut and the valgus of the distal femoral cut respectively. There is growing evidence that maintenance of the medial compartment's stability by ensuring equal medial distal and posterior cuts equivalent to the thickness of the prosthesis, may give better outcomes.

This study looks at the medial compartment's bone cuts and the changes in joint line medially in a bone balanced technique.

#### **Method**

Prospectively stored data from the surgery of 100 consecutive TKA were analysed. A calipre was used to measure the amount of bone cut from the distal and posterior medial condyles. The difference was determined to assess the change in the medial compartment through flexion to extension. In addition, the shift of the medial joint line in flexion (posterior cut) and extension (distal) cut was measured by subtracting the thickness of bone cut off from the thickness of the components posterior and distal surfaces respectively. A positive value indicated an anterior and proximal shift respectively. An allowance of 1mm was made for kerf.

#### **Results**

There were 69 pre-op varus aligned and 31 valgus aligned knees.

The mean difference between the distal cut and the posterior cut was 1.41mm (range 5.5mm to – 2.5mm). The mean proximalization was 2.21mm (range +6.5mm to -2.5mm). 65% were within 2.5mm Mean anteriorization was 1.82mm (range +3.5mm to – 4). 75% were within 2.5mm

#### **Conclusion**

Using a bone balancing technique, the medial side bone cuts are within 1.41mm of each other on average. This suggests that this technique gives satisfactory medial compartment relationships through the range of movement. The joint line on average is minimally altered. This close correlation with the anatomical position of the joint line in flexion and extension may explain in part the high satisfaction reported by these patients

**Category:** Knee Arthroplasty

**Country:** South Africa

**ID: 13463**

## **What Is The Current Consensus Amongst Orthopaedic Surgeons In South Africa Regarding The Use Of Robotic Assisted Total Joint Arthroplasty?**

**Author :** Richard Peter Almeida

**Co-Author 1:** Nkhodiseni Sikhauli

**Co-Author 2:** Lipalo Mokete

**Co-Author 3:** Allan Sekeitto

**Co-Author 4:** Jurek Pietrzak

### **Submission:**

#### **Background**

Total joint arthroplasty (TJA), including total knee arthroplasty (TKA) and total hip arthroplasty (THA), are successful orthopaedic procedures with survivorship reported at 98 % at 10 years and 95 % at 20 years leaving a small gap for improvement. There has been an evolution in technology in an attempt to achieve the 'perfect' surgery, with the development of robotics to reduce complications and improve outcomes. The use of Robot-assisted Total Joint Arthroplasty (RA-TJA) is increasing, however little is known about the potential factors which may impact the decision of surgeons to integrate robot-assisted technology into their individual clinical practice. The aim of this study is to assess the opinions of orthopaedic surgeons in South Africa regarding RA-TJA.

#### **Method**

An anonymous online survey was distributed via email to all SAOA registered orthopaedic surgeons. Analysis was subsequently undertaken to establish factors which may influence opinions regarding RA-TJA.

#### **Results**

In total, there were 155 responses. 35.5 % respondents were fellowship trained in arthroplasty either nationally, internationally or both. 71% respondents were in private practice only and 5.2 % in state practice only and with 22.6 % in both. Of the surgeons using RA-TJA, 8.4 % used both RA-THA and RA-TKA, 1.9 % RA-THA only and 33.5 % RA-TKA only. The most common reason for using RA-TJA was higher precision in reproducibility of the procedure at 38.7 %, with other reasons including superior long term outcomes, superior patient satisfaction, marketing pressure, and pressure to maintain appearance. 10.3 % of respondents use RA-TJA 0-20 % of their practice, 7.1 % use 21-40 % of their practice, 7.1 % use 41-60 % of their practice, 5.8 % use 61-80 % of their practice, 11.6 % use 81-100 % of their practice.

#### **Conclusion**

RA-TJA is being utilized in both private practice and state institutions in South Africa for TKA and THA, with the most common reason for its use being the accuracy or reproduction of results. Future studies are needed to determine if the use of RA-TJA improve clinical outcomes to further motivate the use of RA-TJA in South Africa.

**Category:** General Arthroplasty

**Country:** South Africa

**ID: 13464**

## **Robotic Total Knee Arthroplasty In Haemophiliacs**

**Author :** Allan Roy Sekeitto

**Co-Author 1:** Richard Almeida

**Co-Author 2:** Jurek Pietrzak

**Co-Author 3:** Nkhodiseni Sikhauli

**Co-Author 4:** Lipalo Mokete

### **Submission:**

#### **Background**

Haemophilia is a hereditary X-linked recessive coagulopathy disorder resulting from blood clotting factor deficiency or dysfunction affecting the intrinsic pathway of blood coagulation. There are two predominate types; haemophilia A deficiency of clotting factor VIII and haemophilia B, deficiency of clotting factor IX. Haemophilic arthropathy(HA) is caused by repeated bleeding, resulting in joint degeneration, pain, deformity and disability. Advanced haemophilic knee arthropathy is a frequent and devastating manifestation of severe haemophilia with significant implications for activities of daily living. Total knee arthroplasty (TKA) is considered the gold standard treatment for patients with end-stage HA. TKA has been shown to significantly improve knee function, reduce pain and provide high patient satisfaction rates.

#### **Method**

We retrospectively reviewed the haemophilic patients that underwent robotic TKA at our tertiary academic institution over the past 10 years.

#### **Results**

We highlighted the associated deformities: fixed flexion deformities, coronal alignment, bone resection issues and how they addressed intra operatively utilising robotic assisted techniques. In addition to the complications and outcomes of our cohort.

#### **Conclusion**

We demonstrate the use of robotic technology as an invaluable adjunct in the setting of complex haemophilic total knee arthroplasty.

**Category:** Knee Arthroplasty

**Country:** South Africa

ID: 13465

## Using Short Limb Knee Radiographs And Full-limb Radiographs In Evaluating Coronal Alignment In Patients Requiring Unicompartmental Knee Arthroplasty

**Author :** Richard Peter Almeida

**Co-Author 1:** Christof Oosthuizen

### **Submission: Background**

Accurate and correct component placement in Unicompartmental knee arthroplasty (UKA) is needed to achieve optimal outcomes. There are two predominant philosophies that are used with UKA technique, kinematic alignment and mechanical alignment. The tibia is the foundational reference for component alignment and key in attaining the native kinematic pattern. Restoring the alignment referencing from the tibia is practical and cost effective. Determining the correct angle for the tibial component can be done using long limb (LL) x-rays or short limb (SL) x-rays, however there is debate whether SL x-rays are adequate enough to replace LL x-rays to assess limb alignment angles. The aim of this study was to determine the correlation between LL x-rays and SL x-rays in measuring the medial proximal tibial angle (MPTA).

### **Method**

This is a retrospective descriptive study of a cohort of patients undergoing medial UKA. Both short limb radiographs (Anterior-posterior and lateral) and long limb radiographs were reviewed. The medial proximal tibial angle (MPTA), the lateral distal femoral angle (LDFA) and the posterior tibial slope (PTS) were measured using the same software by a single observer.

### **Results**

41 knees were reviewed in total with 26 males and 15 females and a mean age of  $65,41 \pm 8,12$  years. Using Coronal plane alignment of knee (CPAK) classification, majority were CPAK I (58,5%) and CPAK II (26,8%). The mean pre-operative MPTA using LL x-rays was 85,62 o compared to MPTA of SL x-rays of 85,54 o , with a mean difference of 2,81 o. The correlation difference between LL x-rays and SL x-rays was 0.340 ( $p = 0.04$ ). The mean post-operative MPTA using LL x-rays was 84,08 o compared to MPTA of SL x-rays of 85,8 o , with a mean difference of 2,15o. The mean pre-operative PTS was 7,87 o compared to the mean post-operative PTS of 7,28 o.

### **Conclusion**

There is a difference between measuring MPTA in SL x-rays compared to LL x-rays , and this needs to be taken into consideration when utilising these radiographs as part of pre-operative planning for UKA. Future higher powered prospective studies assessing these differences and the post-operative clinical outcomes are needed.

**Category:** Knee Arthroplasty

**Country:** South Africa



**ID: 13478**

## **The Effect Of Preoperative Alignment On Outcomes Following Robot-assisted Total Knee Arthroplasty**

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### **Submission:**

#### **Background**

While total knee arthroplasty is a popular procedure, satisfaction rates lag behind that of total hip arthroplasty emphasizing the need to improve. One of the more popular concepts is that of kinematic alignment which lends itself to a more personalized approach with consideration of the individual's constitutional alignment and soft tissue balance. Robot-assisted TKA (RA-TKA) systems provide intraoperative feedback allowing for more precise assessment of the patients alignment and soft tissue balance and leading to a more individualised and refined approach. We wanted to assess if patients' preoperative alignment affects outcomes following primary RA-TKA.

#### **Method**

We conducted a review on the outcomes of 203 patients who underwent elective handheld imageless, RA-TKA for symptomatic osteoarthritis at a single institution. Patients were grouped based on their preoperative alignment, as either valgus or varus (including neutral), and were compared using baseline information, intraoperative and inpatient records and postoperative outcomes with a minimum one year follow-up.

#### **Results**

From the total of 203 patients included, 92 were in varus alignment and 111 had valgus alignment. Cohorts were well-matched in terms of age and sex. Patients in the valgus group had more comorbidities ( $p=0.002$ ), were more likely to have diabetes ( $p=0.004$ ) and to be smokers ( $p=0.011$ ). All of the 32 patients with rheumatoid arthritis had preoperative valgus ( $p=0.000$ ). HIV was more common in the varus cohort ( $p=0.024$ ).

There was no difference in the rates of previous arthroplasty, stage or extent of arthritis. Cohorts demonstrated no major variance in the difference between planned and achieved alignment, AM releases, decrease in haemoglobin, or mean MASTI score, however the mean surgical duration was lower for valgus patients ( $p=0.005$ ). Inpatient progress between cohorts was similar including time to attain physiotherapy targets and time to discharge.

Postoperative VAS scores, KSS and postoperative TUG scores which were similar across groups. The valgus cohort was noted to have a better preoperative ROM which persisted postoperatively ( $p=0.009$ ). The overall satisfaction rate was 86.7%

#### **Conclusion**

There are no major differences in outcomes following RA-TKA related to preoperative alignment.

**Category:** Knee Arthroplasty

**Country:** South Africa

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## **Does HIV Status On The Outcomes Following Robot-assisted Total Knee Arthroplasty Using A Handheld Imageless System?**

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### **Submission:**

#### **Background**

The interest in robotic-assisted surgery has been growing in recent years leading to its adoption in many areas of medicine. Total knee arthroplasty (TKA) is one of the most popular orthopaedic procedures utilising this technology. HIV, which has a high prevalence in South Africa is a risk factor for certain complications including venous thromboembolism, renal failure and increased length of stay. This study compared short-term intraoperative and postoperative outcomes in patients undergoing elective primary RA-TKA to assess the impact of HIV.

#### **Method**

We conducted an analysis the outcomes of 203 patients who underwent handheld imageless, RA-TKA for symptomatic osteoarthritis (OA) over a two-year period at a single institution. Patients were divided into groups based on HIV status and results compared using using baseline demographic and clinical data, intraoperative and inpatient records as well as postoperative outcomes over a minimum one year follow-up.

#### **Results**

Cohorts were well-matched in terms of age ( $p=0.570$ ) and sex ( $p=0.06$ ). HIV positive patients were more likely to have asthma ( $p=0.005$ ) and less likely to have hypertension ( $p=0.005$ ) than the HIV negative group. HIV negative patients were more likely to have undergone previous joint replacement surgery ( $p < 0.001$ ). There were no differences in severity ( $p=0.575$ ) or extent ( $p=0.104$ ) of OA however varus alignment was more common in HIV positive ( $p=0.015$ ). Intraoperatively the MASTI scores and number of AM releases were similar. There was no difference in mean surgical duration or change in Haemoglobin between groups. There was no difference in planned versus achieved alignment between groups ( $p=0.185$ ).

Postoperatively, inpatient rehabilitation yielded similar outcomes between groups in terms of time to reach physiotherapy targets and time to discharge. Outcomes were similar in groups when comparing change in VAS scores, change in KSS and TUG scores, however satisfaction was higher in HIV positive patients than HIV negative patients ( $p=0.021$ ).

#### **Conclusion**

At the minimum follow-up of one year there were no significant differences in outcomes between HIV positive and HIV negative patients. Of note was that HIV positive patients had slightly higher satisfaction rates.

**Category:** Knee Arthroplasty

**Country:** South Africa

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