Babar Kayani BSc (HONS), MBBS, MRCS (Eng) UNITED KINGDOM
Vishal Rameshail Rajput MBBS,DNB orth,MRCS(Edinburgh,UK) UNITED KINGDOM
Dia Eldean Giebaly MBChB, MSc, FRCS, EMBA UNITED KINGDOM
Fares S. Haddad MCh(Orth), BSc, FRCS(Orth) UNITED KINGDOM

Summary:
This is the first study to use optical motion capture technology to quantify the change in FFD during robotic-arm assisted UKA.

Data:
Introduction Unicompartmental knee arthroplasty (UKA) is an effective surgical treatment for patients with unicompartmental knee arthritis. Residual fixed flexion deformity (FFD) may lead to worse functional outcomes, but the change in FFD with UKA remains unknown. The objective of this study was to assess the change in FFD in patients undergoing medial UKA. Methods This prospective cohort study included 63 patients with medial compartment arthritis undergoing robotic-arm assisted UKA at a single tertiary centre between 2018 and 2022. This study included 30 males and 33 females with a mean age of 62 ± 5.7 years. Patients were divided into four study groups based on the degree of preoperative FFD: < 3 degrees, 3 – 6 degrees, 6–9 degrees, and > 9 degrees. Intraoperative optical motion capture technology was used to assess pre- and postoperative FFD. The Oxford Knee Score (OKS) was assessed in all patients before surgery and at one-year follow-up. Results This study found statistically significant increase in mean preoperative to mean postoperative FFD for each of the four treatment groups: < 3 degrees: delta FFD = 0.53, post op FFD = 0.61 degrees, P = 0.004), 3 – 6 degrees (pre op FFD = 4.94 degrees, post op FFD = 3.71, P = 0.015), 6 – 9 degrees (pre op FFD = 7.96 degrees, post op FFD = 3.63, P < 0.001), > 9 degrees (pre op FFD = 11.63 degrees, post op FFD = 7.18, P = 0.001). All treatment groups showed statistically significant improvements from preoperative to postoperative OKS (p<0.001) at one year follow-up. There were no significant differences in OKS between the four treatment groups at one-year follow-up. Conclusion This is the first study to use optical motion capture technology to quantify the change in FFD during robotic-arm assisted UKA. The FFD was reduced by approximately half in all four treatment groups with no difference in functional outcomes based on the degree of preoperative FFD. These findings may help to modify existing clinical criteria for medial UKA.

Category: Knee - Arthroplasty

Image-free Robotic-Assisted Total Knee Arthroplasty Improves the Rotational Mismatch Between Femoral and Tibial Components, but Not Forgotten Joint Score 12 using three-dimensional computed tomography Measurements: A Consecutive Case Control Study

Abstract ID# 21801
All Authors:
Ayakane Yamamoto MD MD JAPAN
Takao Kaneko MD, PhD, JAPAN
Kazutaka Takadai MD MD JAPAN
Shu Yoshizawa MD MD JAPAN
Hiroyasu Ikemaki MD, PhD, Prof. JAPAN

Summary:
In robotic-assisted (RA) TKA, the accuracy of femoral component rotation placement was improved and there were fewer cases of the rotational mismatch, although, forgotten joint score-12 was lower in RA-TKA compared to conventional TKA.

Data:
Background: The primary aim of this study was to compare the postoperative short-term patient reported outcome measurements (PROMs) and component accuracy in conventional jig-based total knee arthroplasty (Conv-TKA) versus a robotic-assisted TKA (RA-TKA) using three-dimensional computed tomography (3DCT) measurements. Methods: This retrospective, consecutive case control trial included 83 patients with varus osteoarthritis of the knee undergoing Conv-TKA versus RA-TKA using bi-cruciate stabilized TKA (BCS) (Journey®BCS; Smith & Nephew, Inc. Memphis, TN, USA). PROMs (2011 Knee Society Score (KSS), Forgotten Joint Score 12 (FJS-12), patella score) were compared in patients who had been postoperative for at least 1 year and less than 2 years. Hip-knee-ankle (HKA) angle, component alignment (1989 knee society (KS); a, 6, 7, d angle), rotational angles of the femoral and tibial component and rotational mismatch between the two groups were compared using 3DCT measurements. Results: There were no statistically significant differences in the preoperative factors between the groups: age at surgery, BMI, preoperative range of motion (ROM), HKA angle, and 1989 Knee society knee and function score. Postoperative PROMs (pain, patient satisfaction, patient expectation, advanced activities in 2011 KSS) and patella score were not significantly different between the groups, but FJS-12 was significantly improved in Conv-TKA than in RA-TKA (p<0.01). Although there were no significant differences in postoperative HKA angle, a, 6, 7, d angles, and tibial rotation angle, the absolute value of femoral rotational angle and rotational mismatch were significantly smaller in RA-TKA group than in Conv-TKA group (p<0.01, p<0.01). Conclusions RA-TKA did not improve FJS-12 compared to Conv-TKA, but improved accuracy of femoral component rotational position and rotational mismatch.

Category: Knee - Arthroplasty

Initial Experience With a Novel Extended-Release, Dual-Acting Local Topical Anesthetic in TKA

Abstract ID# 22356
All Authors:
Alexander P. Sah MD UNITED STATES

Summary:
In this initial study, a topical anesthetic option appears to have lower cost, faster application, and similar or superior pain management effects compared to a long-lasting bupivacaine injection.

Data:
Introduction: The benefits of peri-articular injections for initial pain management after primary TKA are reflected by its nearly universal use. However, the many different cocktails currently available illustrates that there is no single solution to local pain management. In addition, peri-articular injections are limited by cost, consistent efficacy, and required specific technique in delivery. A novel needle-free topical dual-acting local anesthetic consisting of bupivacaine and meloxicam may provide an alternative option to the traditional limitations of peri-articular injections. Methods: Two-hundred consecutive primary TKA patients were evaluated prospectively with application of this dual-acting local topical anesthetic, and compared to the previous 200 patients where a long-lasting periarticular injection was used. Patients were evaluated for pain scores, opioid use, therapy goals, and need for rescue medication for 72 hours after surgery. Results: There were no intraoperative events with anesthetic application in either group. Application of the needle-free anesthetic was faster, compared to the periarticular injection group (1 vs 4 min, p<0.03). Pain scores between groups were similar upon entrance to the PACU after surgery. Patients receiving the topical anesthetic had less pain at discharge (p<0.05), 17% reduction in opioid use during the hospital admission (p<0.05), and fewer refill requests after discharge. Fewer patients had severe pain, and patients tolerated more PT after surgery compared to the control group. Incidence of adverse events were similar for the two groups. Discussion: This extended-release dual-acting local anesthetic showed improved analgesia for the first 72 hours after primary TKA compared to a peri-articular injection protocol. This reduction in pain led to a lower requirement of opioids in this same period. In this initial study, this topical anesthetic option appears to have lower cost, faster application time, and similar or superior pain management effects compared to a long-lasting bupivacaine peri-articular injection.

Category: Knee - Arthroplasty

Outcomes of Calipered Mechanically Aligned Versus Calipered Restricted Kinematically Aligned Bilateral Total Knee Arthroplasty - A Randomized Controlled Trial

Abstract ID# 22468
All Authors:
Roop Bhushan Kalia M.S (Orthopaedics) INDIA
Arghya Kundu Choudhury MS INDIA
Souvik Paul MBBS,MS,DNB, MCh, Dip SICOT INDIA
Balagovind S. Raja MS INDIA
Shivam Bansal MBBS INDIA
Aavrati Rastogi MPT INDIA

Summary:
No difference in patient reported outcome measures at 6 months follow-up between restricted kinematically aligned and mechanically aligned bilateral simultaneous Total knee arthroplasty.

Data:
Introduction: A recent focus on total knee arthroplasty (TKA) is primarily...