affecting postoperative clinical outcomes, evidence regarding the relationship between spinopelvic alignment and the knee ROM or clinical outcomes after knee arthroplasty is lacking. We aimed to evaluate whether the anteroposterior alignment of the lower extremity and sagittal spinopelvic alignment affect the postoperative knee ROM and clinical outcomes after medial unicompartamental knee arthroplasty (UKA). Patients and Methods: Thirty-two patients (total of 37 knees: 6 men, 7 knees; 26 women, 30 knees) who underwent navigation-assisted UKA were included in this retrospective study. Preoperative radiographic examinations of the anteroposterior hip-knee-ankle (HKA) angle were conducted and lateral spinopelvic parameters, including sagittal vertical axis, lumbar lordosis, sacral slope, pelvic tilt (PT), and pelvic incidence, were calculated. Correspondingly, the relationship of the knee ROM at 1 year after UKA and the postoperative new Knee Society Score (KSS) with radiographic parameters was investigated. Results: At 1-year post-UKA, the postoperative knee flexion angle was found to be significantly associated with the postoperative knee flexion angle (p = 0.041, 95% confidence interval [CI]: 0.025–0.141) and the preoperative HKA angle (p = 0.012, 95% CI: -2.377–0.342) in the multiple linear regression analysis. A knee extension restriction angle = 10° was significantly correlated with the PT (p = 0.007, 95% CI: 0.772–0.959) in the logistic regression analysis. When the cutoff value of the PT was 24.5° for a postoperative knee extension restriction angle = 10°, the sensitivity was 70.4% and the specificity was 100% based on receiver-operating characteristic curves. The PT in patients with postoperative knee extension restriction < 10° (32.0° ± 6.6°) were significantly greater than that in patients with postoperative knee extension restriction < 10° (19.3° ± 5.0°) (p = 0.001). There was no significant relationship between the KSS and the HKA angle or spinopelvic parameters. Conclusion: Patients with a greater posterior tilt of the pelvic alignment had restrictions in knee extension postoperatively. Moreover, those with a greater varus alignment of the lower extremity preoperatively had a lower knee flexion after UKA.

Category: Knee - Arthroplasty

Prognostic Analysis of Surgeon Placed Nerve Block and Continuous Indwelling Catheter in the Adductor Canal In TKA

Abstract ID# 21380

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Summary:
The purpose of this study was to investigate the safety, efficacy, efficiency and cost effectiveness of a novel surgeon placed single injection and catheter placement for a continuous regional nerve block in Total Knee Arthroplasty.

Data:
Background: Total Knee Arthroplasty (TKA) can be a very painful surgery and traditionally has required parental opioid analgesics and an inpatient setting for 2-3 days. Significant improvements have been made in pain management over the past decade leading to a reduction in opioid use and decreasing the need for extended inpatient care. Regional block anesthesia has played a most predominant role in this regard. Methods: Fifty-six (56) patients were entered prospectively into a study cohort. Each patient underwent TKA by a single surgeon utilizing a novel surgeon placed single shot Adductor Nerve catheter block and placement of an indwelling catheter into the adductor canal through direct visualization of the muscles that make up the borders of the adductor canal. Patient reported outcomes were entered into an outcomes data base and then analyzed. Results: At 1-year post-UKA, the postoperative knee flexion angle was found to be significantly associated with the postoperative knee flexion angle (p = 0.041, 95% confidence interval [CI]: 0.025–0.141) and the preoperative HKA angle (p = 0.012, 95% CI: -2.377–0.342) in the multiple linear regression analysis. A knee extension restriction angle = 10° was significantly correlated with the PT (p = 0.007, 95% CI: 0.772–0.959) in the logistic regression analysis. When the cutoff value of the PT was 24.5° for a postoperative knee extension restriction angle = 10°, the sensitivity was 70.4% and the specificity was 100% based on receiver-operating characteristic curves. The PT in patients with postoperative knee extension restriction < 10° (32.0° ± 6.6°) were significantly greater than that in patients with postoperative knee extension restriction < 10° (19.3° ± 5.0°) (p = 0.001). There was no significant relationship between the KSS and the HKA angle or spinopelvic parameters. Conclusion: Patients with a greater posterior tilt of the pelvic alignment had restrictions in knee extension postoperatively. Moreover, those with a greater varus alignment of the lower extremity preoperatively had a lower knee flexion after UKA.

Impact of Soft Tissue Balance on 2-year Outcomes in TKA

Abstract ID# 21591

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Summary:
Joint balance and laxity targets were identified for improved pain scores at 2-year post; No association was found between alignment and outcome, indicating joint balance may have a greater impact on outcome than alignment.

Data:
Introduction Sensor augmented robotic assisted surgical platforms can quantitatively achieve a balanced joint in total knee arthroplasty (TKA). Attempts to define optimal joint balance have met with some success, however, the confounding impact of component alignment and relevance of these targets on 2-year outcomes has not been investigated. In this study we investigate if intra-operative joint balance is associated with midterm outcomes and aim to define optimal balance targets for KOOS pain scores 2 years post-TKA. Additionally, we investigate how final alignment impacts outcome. Methods 212 patients were enrolled in a prospective cohort and received robot assisted posterior-cruciate-ligament sacrificing TKA with an ultra-congruent tibial insert utilizing a tibia-first gap-balancing approach. Demographics were captured pre-operatively and KOOS pain questionnaires were captured at 2-years post-op (747±101 days). Joint laxity throughout flexion was measured under a load of 70–90% during trialing. All tibial and femoral resection angles were recorded. Quadratic correlations between intra-operative joint gaps, alignment, and 2-year KOOS pain scores were investigated and informed threshold values for improved outcomes. Laxity is defined as the gaps between TKA components under load, and balance is the medial gap minus the lateral gap. Mann-Whitney-U tests were used to compare groups. The proportion of knees which satisfy the Patient Acceptable Symptom State (PASS) (87.5 points) is used to determine the clinical utility of the targets for achieving improved patient outcomes. Results Demographics of the population are: 58%F, 67±8 years, BMI of 32±5 kg/m2, coronal deformity of 5.2±6.2° varus. Joint balance and laxity correlated significantly with KOOS Pain score at 2-years throughout flexion. Balance and laxity targets with maximum and minimum thresholds for improved pain scores were identified in extension (med. laxity: -1 to 2.5 mm, balance: 2.5 mm med. tight to 1.5 mm lat. tight), midflexion (avg. laxity: 0 to 2.5 mm, balance: 1.5 mm med. tight to 1.0 mm lat. tight) and flexion (avg. laxity: 0 to 2.5 mm, balance: 2.0 mm med. tight to 1.5 mm lat. tight) and are shown in Table 1. When all targets are satisfied, a higher pain score was achieved compared to those which did not (93.8 vs 88.0, p=0.0001). The proportion of knees which satisfied the PASS criterion was highest in knees which satisfied all targets (83%) and reported a 26% improvement compared to knees which did not satisfy all targets (p=0.008). No associations were identified between femoral or tibio-femoral component alignment and outcome at 2 years post-op. Conclusions Joint balance and laxity targets were identified for improved pain scores at 2-year post. No association was found between alignment and outcome, indicating joint balance may have a greater impact on outcome than alignment.