Intraoperative vs Ultrasound Adductor Canal Nerve Block After Total Knee Arthroplasty

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Summary:
Intraoperative adductor canal block is the gold standard for postoperative nerve blocks in TKA. Recent description of an intraoperative technique has proven to be safe but not been tested compared to the standard ultrasound guided block. In a randomized blinded control trial we found no difference regarding pain management and motor activity between both techniques.

Data:
Introduction Total knee arthroplasty (TKA) is a successful alternative to treat late-stage knee osteoarthritis (OA). Adductor canal blocks (ACB) have been proposed as an alternative of reducing opioid consumption and decreasing postoperative pain. Standard ACB block is performed under ultrasound guidance after surgery completion, still in the operating room (OR). Recent literature has shown the anatomic feasibility of intraoperative ACB via blunt suprapatellar dissection in standard medial parapatellar TKA approach. We sought to determine the effectiveness of standard ultrasound guidance ACB compared with intraoperative ACB following TKA. Materials and Methods Randomized controlled trial, recorded in Clinical Trials. Inclusion criteria were (I) age older than 50 years; (II) primary, unilateral TKA; and (III) indication of TKA due to late-stage OA. Sequence of randomization was blinded and we generated a closed envelope for each patient. The OR nurse prepared two seemingly identical syringes, giving one to the surgeon for intraoperative nerve block and the other to the anesthesiologist for the post-operative ultrasound guided nerve block. Patients could be randomly determined to two groups: intraoperative nerve block with bupivacaine (15 ml of 0.25% bupivacaine), and post-operative ultrasound saline solution injection (15ml of 0.9% NaCl) injection (intraoperative group); or intraoperative saline solution injection (15ml of 0.9% NaCl) and post-operative ultrasound guided bupivacaine (15 ml of 0.25% bupivacaine) nerve block (ultrasound group). We measured pain using a visual analog scale every 4 hours during the first 24 hours, PCA requests during the first 24 hours, length of stay and time up and go results at 24 hours post-surgery. Normally distributed data is expressed as mean (and standard deviation), while non-parametric data is shown as median (and interquartile range). We studied the association of group assignment with all demographic data and outcome variables using chi-square or Fisher’s exact test in categorical variables, and Student’s T test or Wilcoxon’s ranked test for continuous outcomes. Results We prospectively enrolled 80 patients, 40 in the intraoperative group and 40 in the ultrasound-guided group. We found no difference regarding sex (76% vs 86% females respectively, p 0.24), age (68.6 vs 67.6 years old respectively, p 0.54) nor time of surgery (104 vs 101.2 minutes respectively, p 0.57). Regarding our main outcome, morphine consumption did not differ among both groups (median of 79 vs 70 seconds; p 0.73). Conclusions ACB has proven to deliver optimal analgesia for patients following TKA. The development of an intraoperative alternative could lead to a breakthrough for health centers that do not have access to this kind of procedure.

Category: Knee - Arthroplasty

Trochlear Recreation Impacts Patient Outcomes Two Years Following Total Knee Arthroplasty

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Summary:
Failure to accurately restore the trochlea anatomy in total knee arthroplasty leads to poorer functional outcomes following total knee arthroplasty.

Data:
The variation in recreation of the trochlear when a standardised implant design is applied to variable patient anatomy and its impact on patient outcomes is not fully understood. The aim of this study was to analyse if a relationship existed between recreation of the trochlear and patient outcomes following total knee arthroplasty (TKA). Methods This was a retrospective cohort study of consecutive patients presenting for primary TKA who had pre and post-operative CT knee scans performed. Patients with minimum 2-year follow-up were included for analysis. Patient reported outcomes (PROMs) were evaluated. 3D implant and bone models from the preoperative CT scans were registered to the post-operative CT scan. Cross-sectional slices at increments of 10° from 0° to 30° of flexion on the femoral component were used to compare offset differences between the pre-operative bone and post-operative implant position at the medial and lateral peaks and the trough of the trochlear groove. Trochlea offset was graded into 5 groups (≤ 0mm under-stuffing, 0.25 - 0mm under-stuffing, 0.01 - 2.5mm over-stuffing, 2.5 - 5.0mm over-stuffing and > 5.0mm over-stuffing). Outcomes were compared between grades. Results Following exclusions and loss to follow-up a total of 232 were analysed. Mean BMI was 29.2 ± 5.0, mean age was 74.4 ± 7.7 and mean follow-up time was 41.5 ± 13.7 months. 12.5% of patients were dissatisfied. Implant-bone offset differences were higher medial to lateral and superior (0° to 30°) to inferior at all 3 points. At the trochlea apex (0° flexion), mean implant-bone offset differences were 5.12mm (medial condyle apex), 1.43mm (sulcus apex) and 1.42mm (upper lateral condyle apex). The mean offset differences at 30° flexion were -0.01mm medial condylar apex, -1.99mm sulcus base and -3.11mm lateral condylar apex. Pearson’s correlation indicated a significant correlation between medialisation of the trochlea with KOOS pain scores (-1.62 p = 0.030) and the mean lateral apex offset difference and several PROM scores (FJS 0.158 p = 0.016, KOOS pain 0.190 p = 0.004, Kujala 0.176 p = 0.007) and KSS satisfaction -0.132 (p = 0.045). Grade 5 (n = 20) lateral condyle offset (mean 6.2mm of over-stuffing) was significantly correlated with a lower FJS, Kujala and KOOS scores. Patients below the KOOS patient acceptable symptom state (PASS) score (< 84.5) had a groove medialized by a mean of 2.4 ± 1.0 mm compared to those with better pain scores had groove medialized less, 1.8 ± 1.0mm (p = 0.012). Analysis of implant position and patient characteristics between grades of lateral apex offset grades found no statistically significant differences between groups for all 3 planes of femoral tibial component positioning or tibio-femoral rotation, BMI, age, gender, time from surgery, pre or post-operative alignment or...