



A Randomized Controlled Trial Comparing Adductor Canal and Intra-articular Catheters for Pain Management after Primary Total Knee Arthroplasty

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Introduction: There are multiple modalities of pain control after total knee arthroplasty (TKA). Peripheral nerve blocks, such as adductor canal catheters (ACC), reduce opioid consumption and have less quadriceps weakness compared to femoral nerve blocks. Intra-articular catheters (IAC) decrease pain in TKA patients compared to intravenous or intrathecal opioids while preserving quadriceps strength. To date, no randomized controlled trials have compared the efficacy of ACC and IAC in TKA patients.

Methods: After IRB approval, 66 primary TKA were randomized to receive intraoperative IAC (30 patients) or postoperative ACC (36 patients). The IAC group received a constant infusion of 0.5% bupivacaine at 4 ml/hr, while the ACC group received 0.2% ropivacaine at 10 ml/hr. The primary outcome was pain using a visual analog scale (VAS) measured during physical therapy (PT) on postoperative day (POD) 1. Secondary outcomes were opioid consumption at 24 and 48 hours, time spent in the postanesthesia care unit (PACU), sedation used, number of falls, length of stay, and opioid tolerance.

Results: Opioid consumption was significantly reduced in the ACC group compared to the IAC group at 24 hours ($23.4\text{mg}\pm 4.3$ vs. $35.8\text{mg}\pm 3.4$, $p=0.021$) and 48 hours ($31.7\text{mg}\pm 5.6$ vs. $47.2\text{mg}\pm 5.5$, $p=0.047$). VAS pain was significantly reduced in the ACC group measured prior to (3.1 ± 0.4 vs. 4.4 ± 0.4), during (4.6 ± 0.4 vs. 5.5 ± 0.4), and after (4.1 ± 0.4 vs. 4.8 ± 0.3) PT on POD 1 ($p=0.046$). There were no differences between groups with respect to age, body mass index, sedation used, falls, time spent in the PACU, length of stay, and opioid tolerance.

Conclusions: ACC provided better pain control on postoperative day 1 prior to, during, and after TKA patients first physical therapy session compared to IAC. In addition, ACC significantly reduced oxycodone consumption at 24 and 48 hours. Although these data are preliminary, we have shown evidence supporting ACC use over IAC for TKA.