Paper #5



A Large 3-Arm RCT of Peripheral Nerve Blocks, Periarticular Ropivacaine or Liposomal Bupivacaine in Total Knee Arthroplasty

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Introduction: Two pain management strategies after TKA are peripheral nerve blocks (PNB) and peri-articular injections (PAI). Further debate surrounds PAI and the use of standard local anesthetics or a liposomal-bound bupivacaine. This investigator-initiated, independentlyfunded 3-arm RCT sought to determine the effectiveness of: 1) PNB with a continuous femoral catheter and singleshot sciatic block; versus 2) PAI with ropivacaine, ketorolac, epinephrine (PAI-Ropi); versus 3) PAI with liposomal bupivacaine (Exparel[®]), ketorolac, epinephrine (PAI-Lipo) after TKA.

Methods: 165 consecutive adults undergoing unilateral primary TKA at a single institution were randomized to the three intervention arms using dynamically-balanced computerized randomization. Sample size was calculated based on an MCID of 1.2 for VAS pain. All patients had a contemporary multimodal analgesia pathway using preop and postop oral. Differences in pain and opioid consumption were collected. Intention-to-treat analysis was employed.

Results: The PNB group had less pain on POD 0 (day of surgery) compared to the PAI-Ropi and PAI-Lipo groups (mean 0.6, 1.7, 2.4, respectively; p<0.001). Maximum POD 1 morning pain scores were lower in the PNB group (3.0) compared to the PAI-Lipo group (4.5; p=0.011) and similar to the PAI-Ropi group (4.0; p=0.112). Opioid consumption was less on POD 0 in the PNB group compared to the PAI-Ropi (p=0.004) and PAI-Lipo groups (10, 17.5, 25 moeq, respectively; p<0.001). On POD 1, the PNB and PAI-Ropi had similar opioid consumption, while the PAI-Lipo group had more opioid consumption (22.5, 37.5, 45 moeq, respectively; p=0.16 and p=0.006)

Conclusions: In this large RCT, all 3 modalities provided good pain relief with mean pain scores less than 3.7 and mean maximum scores less than 6 in the first three days after TKA. On POD 0 and 1, the least pain and use of opioid medications was consistently found in the PNB group, while slightly higher pain and greater opioid use was found in the PAI-Lipo group. At no time interval did the PAI-Lipo group have less pain or opioid consumption than the PAI-Ropi group.

Notes