Total Knee Arthroplasty Outcomes Following the IPACK Nerve Block: A Systematic Review and Meta-analysis of Randomized Controlled Trials

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Total Knee Arthroplasty (TKA) is a common surgical procedure, and postoperative pain remains a significant concern. The IPACK (Infiltration between the Popliteal Artery and Capsule of the Knee) block, often utilized in combination with other nerve blocks, aims to enhance analgesia and reduce opioid consumption. This meta-analysis investigates the efficacy of IPACK in TKA outcomes by analyzing pain scores, opioid consumption, and functional outcomes. METHODS:

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed. A literature search in Ovid Medline and Embase was used to search for randomized controlled trials and relevant studies were included and had their data collected and sorted. Data on visual analogue scale (VAS) pain scores, opioid consumption, timed-up and go (TUG) test, quadriceps strength, knee range of motion (ROM), and ambulation distance for patients after TKA were collected. Statistical analysis included overall mean calculation and variability measures to generate forest plots.

RESULTS:

24 randomized controlled trials (RCTs) with 1331 patients met inclusion criteria. No significant differences were found in VAS scores for IPACK+Adductor Canal Block (ACB), IPACK+sham, and IPACK+Femoral Nerve Catheter (FNC) at various time intervals. Total calculated morphine consumption was 40.54 oral morphine equivalents (OMEs). Functional outcomes showed an average ROM of 92.19 degrees of flexion, average quadriceps strength of 3.75, average TUG test time of 73.87 seconds, and average ambulation distance of 55.91 feet.

DISCUSSION AND CONCLUSION:

This meta-analysis suggests that IPACK may not provide any advantages in pain management and functional outcomes compared to other analgesic approaches in TKA. There may be some benefit to oral morphine equivalents after TKA with IPACK, although clinical significance is uncertain. These findings call for further research to refine study designs and address existing gaps so that arthroplasty surgeons might better understand the role of IPACK in optimizing TKA outcomes.