

The Analgesic Impact of Adding Intrathecal Ketamine to Spinal Anaesthesia for Hip or Knee Arthroplasty: A Clinical Audit

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Abstract : Spinal anaesthesia has been identified as the “gold standard” for primary elective total hip and knee arthroplasty, which is most commonly performed using longer-acting local anaesthetics, such as hyperbaric bupivacaine, to prolong the duration of anaesthesia and analgesia suitable for these procedures. Ketamine is known to have local anaesthetic effects with potent analgesic properties and has been evaluated as a sole anaesthetic agent via intrathecal administration; however, the use of intrathecal ketamine as an adjunct to intrathecal hyperbaric bupivacaine, morphine, and fentanyl has not been extensively studied. The objective of this study was to identify the potential analgesic effects of the addition of intrathecal ketamine to spinal anaesthesia and to compare the efficacy and safety of adding intrathecal ketamine to spinal anaesthesia for hip- or knee arthroplasty with spinal anaesthesia for hip- or knee arthroplasty without intrathecal ketamine. The medical records of patients who underwent elective hip- or knee arthroplasty under spinal anaesthesia performed by an individual anaesthetist with either intrathecal hyperbaric bupivacaine, morphine and fentanyl or intrathecal hyperbaric bupivacaine, morphine, fentanyl and ketamine between June 4, 2020, and June 4, 2022, were retrospectively reviewed. These encounters were reviewed and analyzed from a perioperative pain perspective, with the primary outcome measure as the oral morphine equivalent (OME) usage in the 48 hours post-spinal anaesthesia, and secondary outcome measures including time to breakthrough analgesia, self-reported pain scores at rest and during movement at 24 and 48 hours after surgery, adverse effects of analgesia, complications, and length of stay. There were 26 patients identified who underwent TKR between June 4, 2020, and June 4, 2022, and 25 patients who underwent THR with the same conditions. It was identified that patients who underwent traditional spinal anaesthesia with the addition of ketamine for elective hip- or knee arthroplasty had a lower mean total OME in the 48 hours immediately post-spinal anaesthesia yet had a shorter time to breakthrough analgesia administration. The proposed mechanism of action for intrathecal ketamine as an additive to traditional spinal anaesthesia for elective hip- or knee arthroplasty is that it may prolong and attenuate the analgesic effect of traditional spinal anaesthesia. There were no significant differences identified in comparing the efficacy and safety of adding intrathecal ketamine to spinal anaesthesia for hip- or knee arthroplasty with spinal anaesthesia for hip- or knee arthroplasty without intrathecal ketamine.

Keywords : anaesthesia, spinal, intra-thecal, ketamine, spinal-morphine, bupivacaine

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