

IV vs. Oral Acetaminophen as a Component of Multimodal Analgesia After Total Hip Arthroplasty: A Randomized, Double-Blinded, Controlled Trial

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Introduction: Multimodal analgesia, the administration of analgesic agents targeting multiple pain pathways, has seen increased popularity in pain management for total hip arthroplasty (THA) patients. Acetaminophen is a common non-opioid administered as part of multimodal panels due to its efficacy and minimal contraindications. Although intravenous (IV) acetaminophen presents pharmacokinetic benefits, such as increasing both serum blood and cerebrospinal fluid levels more rapidly, there is limited analysis of its clinical advantages compared to oral acetaminophen. The authors hypothesized that there would be a reduction in pain with activity, opioid usage, or opioid related side effects among patients receiving IV acetaminophen compared to oral acetaminophen.

Methods: In a double-blinded, controlled trial, 154 patients undergoing THA were randomized to receive oral acetaminophen plus IV placebo or IV acetaminophen plus oral placebo. Multimodal inpatient perioperative pain management consisted of a combined spinal-epidural and postoperative patient-controlled analgesia of bupivacaine and clonidine, intravenous ketorolac, oral meloxicam, and either tramadol for mild/moderate pain or oxycodone for severe pain. The primary outcomes were pain with physical therapy on postoperative day (POD) 1, measured on a 0-10 Numeric Rating Scale (NRS), the Opioid Related Symptom Distress Scale (ORSDS) score on POD 1, and cumulative opioid use over POD 1-3, converted to oral morphine equivalents (OME).

Results: There were no differences in ORSDS scores ($p=0.212$) or NRS pain scores with physical therapy ($p=0.384$) between groups. The IV acetaminophen group had a mean OME of 119mg compared to 100mg among the oral group. This was not significantly different ($p=0.428$).

Conclusions: Despite the similar outcomes, patients in both groups had low pain scores with activity, minimal opioid-related side effects, and limited opioid usage (OME of 120mg corresponds to six doses of tramadol 100mg over 3 days). This highlights multimodal analgesia as an effective method of pain control for THA.