

Opioid-Sparing Nonsteroidal Anti-Inflammatory Drugs Protocol in Patients Undergoing Intramedullary Nailing of Tibial Shaft Fractures: A Randomized Controlled Trial.

Hans W. Hess-Arcelay¹, Jose Acosta, Gabriel Enrique Rivera, David E. Deliz-Jimenez, Daniel Efrain Deliz, Luis F Lojo-Sojo

¹Orthopaedic Surgery, University Of Puerto Rico School Of Medicine

INTRODUCTION:

Nonsteroidal anti-inflammatory drugs (NSAIDs) are effective and generally safe analgesic medications commonly used in fracture management. Although previously associated with delayed fracture healing, multiple studies have demonstrated their safety, especially with short-term use. Given the current opioid crisis in the United States, alternate pain control modalities could provide patients with adequate postoperative analgesia while reducing opioid consumption. This study aims to determine if the combination of oral Acetaminophen and intravenous (IV) Ketorolac is a viable alternative to opioid-based medication regimes for pain management in tibial shaft fractures treated with intramedullary nailing.

METHODS:

We conducted a randomized, controlled trial involving consecutive patients with closed tibial shaft fractures (AO/OTA 42) who underwent intramedullary nailing in a Level 1 trauma center. Patients under 21 years old, patients with multiple fractures, previous drug abuse diagnoses, chronic kidney disease, and open fractures were excluded. Through a 12-month study period, patients were randomly assigned to a NSAID-based postoperative pain control (52 patients) and an opioid-based pain control (44 patients) group. The patients were evaluated 12, 24, 36, and 48 hours after surgery. The primary outcomes were postoperative pain, measured through Visual Analog Scale (VAS) pain scores, and opioid consumption, measured through Morphine Milligram Equivalents (MMEs) at 12-hour postoperative intervals. Length of hospital stay was also recorded for each group.

RESULTS:

There was a statistically significant difference in average age between the NSAID group and the opioid group (p -value <0.009). No statistical differences were identified in other demographic data between both groups. In the intention-to-treat analysis, there was a statistically significant decrease in MME at every measured interval (12-hour, 24-hour, 36-hour, and 48-hour) in the NSAID group compared to the opioid group (p -value 0.002, 0.002, 0.004, 0.006; respectively). The VAS scores were significantly different at 12-hour, 36-hour, and 48-hour between the NSAID and opioid group (p -value 0.215, 0.12, and 0.083 respectively). However, there was a significant decrease in the NSAID group's VAS score at the 24-hour interval compared to the opioid group (p -value 0.041). The length of stay was similar for both groups.

DISCUSSION AND CONCLUSION:

Among patients undergoing intramedullary nailing for closed tibial shaft fractures, using an NSAID-based postoperative pain protocol led to a decrease in opioid consumption without affecting pain scores in the postoperative period. Due to the minimal risk of short-term NSAID use, there is a role in the postoperative management of tibia shaft fractures.