

## **Ketorolac Administered in the Recovery Room for Acute Pain Management Does Not Affect Healing Rates of Femoral and Tibial Fractures**

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**Background/Purpose:** Ketorolac is a nonsteroidal anti-inflammatory drug that is used effectively as a postoperative analgesic. Orthopaedic surgeons have been reluctant to use this medication in the setting of fracture repair because its mechanism of action disrupts the first phase of bone healing, and therefore may increase the risk of nonunion. The purpose of this study is to compare the healing rates of acute femoral and tibial shaft fractures in patients who were administered ketorolac in the postanesthesia care unit (PACU) to the healing rates in patients who did not receive ketorolac.

**Methods:** This was a retrospective review of skeletally mature patients who underwent intramedullary rodding of a femoral shaft (OTA 32) or a tibial shaft (OTA 42) fracture at a single institution from 2003 to 2013. Patients were divided into two groups: those who received ketorolac in the PACU or on the floor within the first 24 hours after the surgical procedure (Group 1), and those who did not (Group 2). Minimum 1-year clinical and radiographic follow-up was required. The primary end points were reoperation for repair of a nonunion and time to union. Data collection included age, gender, extent of soft-tissue injury, diabetes, smoking status, and dosage of ketorolac. Statistical analysis utilized Fisher's exact test for categorical variables and Mann-Whitney U test for continuous variables with significance set at P value less than or equal to 0.05.

**Results:** Group 1 consisted of 80 patients (52 tibia, 33 femur) and Group 2 consisted of 233 patients (139 tibia, 94 femur). Patient demographics were similar between the two groups. Average time to union of the femur was 147 days for group 1 and 159 days for group 2 ( $P = 0.57$ ). Average time to union of the tibia was 175 days for Group 1 and 175 days for Group 2 ( $P = 0.57$ ). There were three femoral nonunions (9%) in Group 1 and eleven femoral nonunions (11.7%) in Group 2 ( $P = 1.00$ ). There were three tibial nonunions (5.8%) in Group 1 and seventeen tibial nonunions (12.2%) in Group 2 ( $P = 0.29$ ). All patients with a nonunion in the study group were current smokers. The average dose of ketorolac given to the patients who developed a nonunion and those who went on to heal was 47 mg and 98 mg, respectively.

**Conclusion:** Ketorolac administered in the first 24 hours after acute fracture repair for acute pain management does not appear to have a negative impact on time to healing or incidence of nonunion for femoral or tibial shaft fractures.