Prolonged Opioid Use After Open Reduction and Internal Fixation of Tibial Shaft Fractures

***Zakaria Chakrani, BA**; Husni Alasadi, BA; Brocha Stern, PhD; Nicole Zubizarreta, MPH; Jashvant Poeran, MD; David Forsh, MD*
Icahn School of Medicine at Mount Sinai, New York, New York, UNITED STATES

Purpose: The purpose of this study was to determine the rate of prolonged opioid use and associated risk factors following opioid exposure after tibial shaft surgery.

Methods: This retrospective cohort study used IBM MarketScan national claims data (2014-2017). We identified 1951 adult patients who filled a perioperative opioid prescription after open reduction and internal fixation (ORIF) of a tibial shaft fracture, including an opioid-naïve subgroup of 1508 patients. The primary outcome, prolonged opioid use, was defined as filling an opioid prescription between 91 and 180 days postoperatively. Adjusted odds ratios (OR) with 95% confidence intervals (CIs) were calculated using multivariable logistic regression with backward selection to identify the association of different factors with prolonged opioid usage.

Results: Among patients undergoing ORIF after a tibial shaft fracture, prolonged opioid use occurred in 15.7% (n = 307) of patients (this was 10.1% among opioid-naïve patients). Factors significantly associated with increased odds of prolonged opioid use included age (OR, 1.03; 95% CI, 1.01-1.04; P<0.001), perioperative opioid dose (in oral morphine equivalents) >75th percentile (OR, 2.48; 95% CI, 1.67-3.70; P<0.001), perioperative morphine use (OR, 1.93; 95% CI, 1.04-3.58; P = 0.037), perioperative tramadol use (OR, 2.18; 95% CI, 1.43-3.31; P<0.001), Charlson-Deyo comorbidity score of 2 (OR, 3.56; 95% CI, 1.64-7.73; P = 0.002), smoking (OR, 1.63; 95% CI, 1.09 to 2.44; P = 0.017), mood disorders (OR, 1.68; 95% CI, 1.08-2.62; P = 0 .021), and preoperative opioid use (OR, 3.91; 95% CI, 2.96-5.15; P<0.001). In the opioid-naïve subgroup, age, perioperative opioid dose >75th percentile, perioperative tramadol, smoking, other pain disorders, and drug and substance use disorders were significantly associated with increased odds of prolonged opioid use.

Conclusion: Our data indicate that prolonged opioid use is not uncommon in this population and that preoperative opioid use was the strongest factor associated with prolonged opioid use. Importantly, common risk factors exist between the full ORIF cohort and those that were opioid-naïve, including age, perioperative opioid dose >75th percentile, perioperative tramadol, and smoking. Physicians should consider these risk factors when prescribing opioids regardless of patients' opioid use history.