Factors Associated with Prolonged Opioid Use After Ankle Fracture Surgery

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Purpose: Opioid exposure after orthopaedic trauma, such as ankle fracture surgery, can result in prolonged use, contributing to the burden of the opioid epidemic. This study assessed factors associated with prolonged opioid use after surgical repair of an ankle fracture, including individuals with and without opioid use prior to surgery.

Methods: This retrospective cohort study used the MarketScan database. Patients aged 18-64 years who underwent open reduction and internal fixation of an ankle fracture from January 2016 to June 2020 and who filled a perioperative opioid prescription from 14 days before to 7 days after surgery were included. Demographic (eg, age), clinical (eg, comorbidities), and medication-related factors (eg, perioperative oral morphine equivalents) were extracted. The primary outcome, prolonged opioid use, was defined as filling an opioid prescription between 91 and 180 days postoperatively. Adjusted odds ratios (ORs) with 95% confidence intervals (CIs) were calculated using multivariable logistic regression to identify factors associated with prolonged use.

Results: Among 12,038 patients included 8% (n = 931) had prolonged opioid use; this was 4% (393/9839) among the subset of opioid-naïve patients. In the full cohort, preoperative opioid use (OR = 4.83, P<0.001), age (OR = 1.02, P<0.001), Charlson-Deyo Comorbidity Index (1 vs 0: OR = 1.42, P = 0.002; 2+ vs 0: OR = 1.77, P = 0.021), mental health disorders (mood: OR = 1.55, P = 0.005; substance abuse: OR = 1.64, P = 0.001), perioperative oral morphine equivalents (2nd quartile vs 1st: OR = 1.34, P = 0.025, 3rd quartile vs 1st: OR = 1.77, P<0.001, 4th quartile vs 1st: OR = 3.32, P<0.001), and perioperative tramadol (OR = 1.27, P = 0.026) were significantly associated with increased odds of prolonged use. In contrast, hospital region (Northeast vs South OR = 0.51, P<0.001), obesity (OR = 0.80, P = 0.097), and perioperative oxycodone (OR = 0.75, P = 0.004) were significantly associated with decreased odds of prolonged use. While there were some overlapping findings in the opioid-naïve cohort, no perioperative medication type was significantly associated with prolonged use.

Conclusion: This analysis highlights multiple types of characteristics, including demographic, clinical, and medication-related variables, that are associated with prolonged opioid use after surgical repair of an ankle fracture. These factors can be considered when developing patient-specific postoperative analgesic regimens.