Preinjury Opiate Use Associated with Over 2-Fold Increase in Deep Infection Following Intramedullary Nailing of Tibia Fractures

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Purpose: The purpose of this study was to investigate the relationship between preinjury opiate use and prevalence of deep surgical site infection following inpatient surgical treatment of tibial fractures using intramedullary nailing (IMN).

Methods: After IRB approval, a retrospective review was performed. Patients identified by CPT code 27759 (tibia fracture treated with IMN) at 2 academic urban Level I trauma centers from January 2015 to January 2022 were included; patients without initial emergency department (ED) presentation or without surgical data were excluded. Demographics, operative details, postoperative complications (including deep infection defined as surgical site infection requiring operative debridement), and opiate use status were collected through review of medical records and hospital billing data. Opiate use status was defined per admission notes at time of initial presentation. Opiate and non-opiate use groups were compared using chi-squared analysis ($P<0.05$ was considered significant).

Results: 1017 patients were identified, with 937 patients meeting inclusion/exclusion criteria—778 (82.6%) having no significant preinjury opiate use and 159 (17.4%) having documented preinjury opiate use. The opiate use group was stratified into prescription opiates (54.5%), IVDU (intravenous drug user)/heroin (15.4%), medications to manage opiate dependence (ie, methadone, buprenorphine) (16.8%), or other (13.3%). There were no significant differences in demographics (age, sex, body mass index) or comorbidities including diabetes between non-opiate vs opiate use groups. Additionally, there were no significant differences in fracture characteristics (AO/OTA classification, open vs closed fracture) between groups. Patients with preinjury opiate use, compared to those without, had an increased rate of deep surgical site infection requiring surgical debridement (11.3% vs 5.5%, $P = 0.0070$). Among those with opiate use, infection rates were similar between patients with active IVDU/heroin (12.5%) and prescription opiates (10.3%), while medications to manage opiate dependence (4.0%) were not associated with increased risk of infection.

Conclusion: Following IMN of tibia fractures, patients with preinjury opiate use were more than 2 times as likely to sustain surgical site infection requiring operative debridement when compared to patients without preinjury opiate use. This increased risk affected patients using oral or prescribed opiates as well as intravenous opiates. Orthopaedic surgeons should be cognizant of this risk in order to appropriately counsel patients and optimize care. Further work on the mechanism of this relationship between opiates and surgical site infection may be warranted.