Preoperative Opioid Use Is Associated with Many Preoperative Predictors of Poor Outcome in the Trauma Patient Population

***Shea Comadoll**; Boshen Liu, MD; John Dunseith King, MD; Cale Jacobs, PhD; Paul Edward Matuszewski, MD*
University of Kentucky, Lexington, KY, United States

Purpose: Preoperative opioid use increases the risk of poor outcomes after orthopaedic trauma. However, the relationship between this poor predictor and other factors that can also affect outcome have not been well established. The purpose of this study was to investigate if preoperative opioid use is associated with other predictors of poor outcome and the effect of these factors on postoperative complications. We hypothesized that preoperative opioid use is associated with increased rates of postoperative complications.

Methods: An IRB-approved retrospective review of patients with traumatic lower-extremity injuries treated at our Level-I trauma center for 2 consecutive years was performed. Patient demographics (age, sex, body mass index [BMI], tobacco use, history of substance abuse (HSA), medical history, ISS, treatment, and return for further medical care including postoperative hospital admissions, emergency room (ER) visits, and reoperations were collected. These values were then compared between patients considered opioid naive (ON) and those who had prior opioid use (POU). Regression analysis was used to determine the additive of effects of combined risk factors on complications.

Results: The final study cohort consisted of 452 patients of whom 81% were ON and 19% had POU. Patients who had POU were predominantly male ($P < 0.001$), older (ON 36.8 ± 19.6 vs POU 43.5 ± 16.9, $P = 0.004$), smoked tobacco (ON 36.3% vs POU 70.6%; $P < 0.001$), higher American Society of Anesthesiologists (ASA) class (ASA >3, POU 8.2% vs ON 2.5%, $P < 0.001$) and higher BMI (ON 27.2 ± 7.1 vs POU 29.5 ± 8.6, $P = 0.01$). HSA was more common in the POU cohort (ON 14.5% vs POU 30.1%, $P = 0.001$). 71.8% of POU smoked tobacco or had an HAS, while 27.1% had both. The POU patient cohort had prolonged opiate use at 6 months (56.2%) and 1 year (26.0%), higher rates of postoperative readmissions, ER visits, reoperations, and increased rate of complications (odds ratio [OR]: 2.5, $P < .01$). The risk of complications increased with the addition of other predictors: less than a high school education (OR: 3.6, $P = 0.01$) and ASA grade >2 (OR: 3.8, $P = 0.004$). All 3 increased risk of complication significantly (OR: 7.5, $P = 0.004$). In combination with preoperative smoking, POU and increased BMI were predictive of postoperative ER visits ($r2 = 0.14$, $P < 0.001$).

Conclusion: Our study demonstrates that many commonly known predictors of poor outcome (male gender, age, tobacco use, BMI, HSA, ASA ≥3) frequently accompany POU. POU combined with many of these predictors independently increases the risk of complication. Patients with POU should be targeted with multidisciplinary interventions aimed to modify these risk factors to prevent complication and ultimately improve outcome.