

**Risk Factors for Increased Opioid Use Following Orthopaedic Trauma: A Multicenter Study**

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**Purpose:** Trauma and orthopaedic surgery have been linked to an increased susceptibility of opioid dependence. We hypothesized that there were injury patterns and patient characteristics that increase the likelihood of opioid addiction. To evaluate this hypothesis we investigated risk factors in orthopaedic trauma patients at 2 Level-I institutions and analyzed their association with prescribed narcotic use.

**Methods:** Following IRB approval, we performed a retrospective review of trauma patients at 2 Level-I trauma centers. Inclusion criteria were patients age 18-60 years with orthopaedic injuries requiring surgical management with a minimum 6-month follow-up. Head and spine injuries, pregnant females, and prisoners were excluded for 517 eligible patients. We obtained the following data: age, gender, blunt versus penetrating trauma, ISS, single or poly-system orthopaedic trauma, and addiction services used. The state prescription drug monitoring program (PDMP) database and toxicology screening was used to determine prior and duration of opioid use for up to 12 months after injury. Total opioid consumption was converted to standard morphine milligram equivalents (MME) to allow for uniform comparison per patient. Statistical analysis was run using SAS.

**Results:** Mean opioid use for females was  $10,117.4 \pm 34,978.8$  MME, which was significantly greater than males  $5289.4 \pm 21,433.3$  MME ( $P = 0.006$ ). Patients with opioid use 6 months prior to their injury consumed  $13,173.6 \pm 45,261.0$  MME, compared to opioid-naive patients  $3812.6 \pm 8665.3$  MME ( $P < 0.001$ ). Linear regression demonstrated an increase of 1.6% MME per year of age consumption, total MME increased by 1.6% (95% confidence interval [CI]: 0.7%-2.6%), which was significant ( $P < 0.001$ ). Increasing integer ISS score elevated total MME by 1.3% ( $P = 0.07$ ). Only 2.1% of patients received inpatient services, while 1.2% received outpatient addiction services. There was a slight increase in the opioid use in blunt versus penetrating trauma but this did not reach statistical significance.

**Conclusion:** There were statistically significant differences with the types of trauma and demographics associated with increased opioid use in orthopaedic trauma patients. Age and sex were significant predictors of greater opioid use after surgery with females and older patients requiring a greater number of total MME. The more severe injuries had greater opioid use, which approached statistical significance. There was no significant difference between blunt and penetrating trauma with regard to the MME consumption of opioids. We found that 145 out of 517 patients did have preoperative opioid use and these patients required an almost 4-times greater amount of opioids. Very few patients received addiction services.