The Role of a Multidisciplinary Approach to Opioid Reduction for Orthopaedic Trauma: Tibial Plateau, Pilon, and Calcaneus Fractures

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INTRODUCTION: Opioids are effective for pain management in post-operative patients but are also potentially harmful given their strong addictive qualities. Orthopaedic surgeons rank highly among opioid prescribers, and studies suggest that a multimodal approach to pain is more effective and safer for patients. This study assessed if a multidisciplinary approach in tibial plateau, pilon, and calcaneus fracture patients decreased in-and-outpatient opioid usage while still providing effective pain management.

METHODS:

A retrospective comparative study was conducted on patients admitted to an academic level-1 trauma center for tibial plateau, pilon, and calcaneus fracture management during the years 2018 (pre-implementation) and 2020 (post-implementation). Inpatient opioid consumption during post-operative days (POD) 1-4, outpatient opioid prescriptions within 90 days of discharge, and resting pain scores during POD 1-4 were compared. Opioid consumption was measured in morphine milligram equivalents (MMEs). Linear mixed modeling was used to investigate the effect of the opioid reduction plan implementation on the trends of opioid prescriptions post-surgery while controlling for covariates.

RESULTS: 188 patients (96 in 2018, 92 in 2020) were identified. 83.70% of patients in 2018 were under the age of 65 versus 73.60% in 2020 ($p=0.090$). Opioid use did decrease with successive POD both in 2018 and 2020 ($p<0.0001$), but between group comparisons were not statistically significant when controlling for age ($p=0.1091$). Inpatient opioid utilization decreased from a mean 133.37 to 118.94 MMEs in 2018 and from a mean 78.57 to 51.18 MMEs in 2020. There was no difference in postoperative pain scores ($p \geq 0.2633$). Opioid prescriptions in the first 90 days post-discharge decreased but not significantly between groups ($p=0.302$). Outpatient opioid utilization decreased from a mean 333.47 to 50.38 MMEs in 2018 and from a mean 282.01 to 18.45 MMEs in 2020.

DISCUSSION AND CONCLUSION: The multimodal pain management program resulted in decreased in-and-outpatient opioid utilization without a change in pain scores but this did not reach statistical significance. Further research is imperative to evaluate, and improve the effectiveness of this multimodal approach to opioid reduction in these and other fracture patterns.

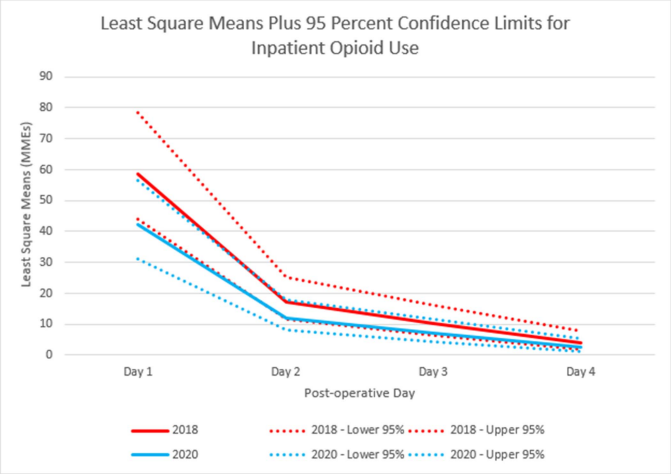

Figure 1. Post-operative inpatient opioid use (MMEs) by least square means with 95 percent confidence limits.