Standardized Pain Regimen in Orthopaedic Trauma Patients Reduces Opioid Use and Length of Stay: A Prospective Pilot Study

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Purpose: Appropriate pain management in orthopaedic trauma patients is important, particularly in the setting of the opioid crisis. Very few studies have prospectively evaluated a standardized multimodal pain management strategy. We implemented a standardized multimodal analgesia regimen for patients with isolated orthopaedic injuries to assess short-term outcomes and opioid use.

Methods: This study was a single-center, prospective, observational study on orthopaedic trauma patients requiring surgery in an urban Level-I trauma center. Patients with isolated orthopaedic injuries between the ages of 18 and 65 years recruited from February 2018 to April 2018 were placed on a standardized pain regimen postoperatively consisting of scheduled celecoxib, acetaminophen, and gabapentin, with tramadol then oxycodone as needed. At discharge, patients received standardized prescriptions for meloxicam, acetaminophen, and tramadol, with or without additional oxycodone depending on inpatient morphine equivalent use. Patients with a prior history of opioid use were excluded. A post-discharge follow-up call was conducted within 72 hours of discharge to assess for pain control and complications. The primary end points were pain scores at 12, 24, 36, and 48 hours postoperatively and morphine milligram equivalents (MME) on postoperative day 1, day 2, and day 3. Secondary end points included hospital length of stay (LOS) and readmission rates on post-discharge day 7 and day 14. Patients were compared to a historical cohort of opioid-naïve orthopaedic trauma patients from August 2017 to October 2017. A Mann-Whitney U test was used to calculate significance for continuous data and a Fisher's exact test was used for categorical data.

Results: A total of 62 patients were screened for inclusion. Of these, 30 patients were enrolled. Demographic and injury characteristics were not significantly different. There was no difference between the historical group and the protocol group in the number of nerve blocks (70% vs 77%, $P = 0.77$). The MME on postoperative day 1 was 89.4 ± 67.6 mg in the historical group and 38.2 ± 37.8 mg in the protocol group ($P = 0.003$). Average pain scores at 12, 24, 36, and 48 hours were no different postoperatively between the 2 groups. LOS was 3.5 ± 2 days in the historical group and 2.6 ± 1.6 days in the protocol group ($P = 0.08$). 63% of patients had successful post- discharge follow-up calls. Of these, 100% reported a pain level between 2 and 4, and 30% had stopped taking opioids. There were no readmissions in either group.

Conclusion: Our standardized pain management regimen was safe and effective in reducing opioid use with equivalent pain management, and a trend towards reduced LOS. Multimodal analgesia should be considered in the management of pain in orthopsedic trauma patients. Larger studies are needed to determine cost- effectiveness and efficacy.