The Effect of a Multidisciplinary Approach to Opioid Reduction for Geriatric Hip Fracture Patients

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Purpose: The opioid epidemic is a growing problem. Recent literature suggests that multimodal pain management protocols are highly effective. The purpose of this study was to determine if a multidisciplinary approach to opioid reduction reduced postoperative inpatient and outpatient opioid use among geriatric hip fracture patients.

Methods: A retrospective comparative study was conducted at an academic Level I trauma center before and after implementation of a multidisciplinary opioid reduction protocol. This protocol included standardized order set changes, consistent language when discussing pain management, a new functional pain scale, and educational computer-based training modules for providers. Patients aged 60+ years admitted to the inpatient orthopaedic unit with surgically treated hip fractures were identified. Inpatient and outpatient opioid use were recorded in morphine milligram equivalents (MME). Average visual analog scale (VAS) pain scores for each postoperative day were calculated from nursing assessments. Inpatient and outpatient opioid usage were compared between patients treated in 2018 (pre-implementation) and 2020 (post-implementation) using analysis of variance for continuous variables and logistic regression for binary variables. All models controlled for age, sex, American Society of Anesthesiologists (ASA) status, and primary procedure.

Results: A total of 159 patients in 2018 and 166 patients in 2020 with surgically treated hip fractures were identified. There were no significant differences in patient demographics between groups. Total inpatient opioids administered during postoperative days 1-4 significantly decreased between 2018 and 2020 (P = 0.028). This was driven by a significant decrease in opioid use on postoperative day 1 (median: 17.4 MME in 2018 vs 12.4 MME in 2020 (P = 0.035)). There was no significant difference in average pain scores over the first 4 postoperative days when comparing pre- and post-implementation groups. Similarly, no significant differences between groups were identified in opioid prescriptions at discharge or within the first 90 days post-discharge.

Conclusion: A multidisciplinary protocol for opioid reduction in geriatric hip fracture patients significantly decreased postoperative inpatient opioid use without increasing subjective pain scores. Future research investigating the expansion of this protocol to a broader orthopaedic trauma population is warranted.

Variable	2018 (n=159)*	2020 (n=166)*	p-value	p-value**
Days 1-4 Total MMEs	37.5 (8.5 - 105.8)	24.1 (3.8 - 61.6)	0.014	0.026
Day 1 Total MMEs	19.3 (5.3 - 45.6)	12.4 (3.8 - 28.6)	0.021	0.019
Day 2 Total MMEs	15.0 (3.8 - 37.5)	11.2 (0.0 - 30.0)	0.111	0.088
Day 3 Total MMEs	13.1 (2.9 - 30.0)	7.5 (0.0 - 19.7)	0.05	0.183
Day 4 Total MMEs	7.5 (0.0 - 22.5)	3.8 (0.0 - 15.6)	0.412	0.39
Post Discharge Days 1-30 Opioid Use - Yes	73 (45.9%)	65 (39.2%)	0.263	0.272
Post Discharge Days 30-60 Opioid Use - Yes	33 (20.8%)	28 (16.9%)	0.45	0.371
Post Discharge Days 60-90 Opioid Use - Yes	18 (11.3%)	16 (9.6%)	0.753	0.6
Post-operative Day 0 Average Pain	4.3 (2.6)	4.2 (2.5)	0.926	0.835
Post-operative Day 1 Average Pain	4.0 (2.3)	4.0 (2.5)	0.941	0.746
Post-operative Day 2 Average Pain	3.5 (2.1)	4.0 (2.5)	0.14	0.135
Post-operative Day 3 Average Pain	3.1 (2.5)	3.4 (2.5)	0.501	0.755
Post-operative Day 4 Average Pain	3.3 (2.2)	3.5 (2.2)	0.649	0.408

Table 2. Summary of inpatient and post-discharge opioid consumption and inpatient pain scores by year.
* reported as median (IQR), N (%), or mean (SD)
** multivariate p-value when controlling for age, sex, ASA, and primary procedure; in multivariate analysis MME was log-transformed to meet regression model assumptions

The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device they wish to use in clinical practice.