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ABSTRACT

Background: There is a need for appropriate pain control in the geriatric hip fracture population to prevent diminished function, increased mortality, and opioid dependence. Multimodal pain therapy is one method for reducing pain postoperatively while also decreasing opioid use in the geriatric hip fracture patient. This study aimed to determine whether multimodal pain therapy could decrease opioid use without increasing pain scores in surgical geriatric hip fracture patients.

Methods: This was a before-and-after cohort study. The hospital implemented multimodal pain control order sets with a standardized pain regimen and performed retrospective chart review pre- and postorder set implementation for analysis.

Results: A total of 248 patients were enrolled in the study: 131 in the preorder set group and 117 in the postorder set group. The mean postoperative oral morphine equivalent (OME) was significantly lower in the postorder set group than in the preorder set group (45.1 mg vs. 63.4 mg, respectively, $p = .03$). Compared with the preorder set group, total OME and postoperative OME were decreased by 22.6% (95% confidence interval [CI] −44.9, −3.8), 1-tailed $p < .01$, and 53.6% (95% CI −103.4, −16.1), 1-tailed $p < .01$ respectively, in the postorder set group. There was not a statistically significant difference in mean pain scores at 6, 24, and 48 hr postoperatively ($p = .53$, .10, and .99), respectively.

Conclusion: Implementing a multimodal approach to pain management may help reduce opioid use and may be a critical maneuver in averting the national opioid epidemic.

Key Words

Acetaminophen, Geriatric, Hip fracture, Opioids, Pain

Nationally, there are over 300,000 hospital admissions per year for hip fractures in people 65 years and older, and greater than 95% of these are caused by falls (Centers for Disease Control and Prevention, 2016). Geriatric hip fracture is one of Medicare's most expensive diagnoses, costing approximately $17 billon to $20 billion in 2010 (Roberts, Brox, Jevsevar, & Sevarino, 2015). The aging process, including physical deconditioning, puts the geriatric hip fracture patient at a four times greater risk of mortality within the first 3 months (Bollinger et al., 2015). A contributing factor for mortality risk is diminished function, which results from impaired mobility following hip fracture (Chin, Ho, & Cheung, 2013; Dubljanin-Raspopović et al., 2013). Impaired mobility is further potentiated by uncontrolled pain (Bollinger et al., 2015; Chin et al., 2013; Dubljanin-Raspopović et al., 2013).

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The American Academy of Orthopedic Surgeons (AAOS) recommends operative intervention for hip fracture within 48 hr of admission (Roberts et al., 2015). Following surgery, pain can negatively impact mobility and functional outcomes (Dubljanin-Raspopović et al., 2013; Morrison et al., 2003). In a systematic literature review, Smith (2011) found that patients experienced moderate postoperative pain at a rate of 47%, and severe pain was experienced by 31%. A study of 400 geriatric patients found that, although scheduled dosing of tramadol and paracetamol after hip fracture surgery increased overall opioid consumption, functional outcomes were improved, thus impacting pain scores when compared with as-needed dosing (Chin et al., 2013). Pain can also extend past the acute hospitalization and into the rehabilitation phase of care and have negative consequences on functional recovery. A study of rehabilitation patients after hip fracture found that a standardized pain protocol helped with pain control and led to better functional outcomes (Morrison, Flanagan, Fischberg, Cintron, & Siu, 2009). These studies demonstrate the need for appropriate pain control in the geriatric hip fracture population.

Opioids are a common treatment for pain management in hip fracture patients. However, these agents are associated with many complications (Kolodny et al., 2015; Newton-Brown, Fitzgerald, & Mitra, 2014). In a matched cohort study, Oderda et al. (2003) found that patients were at a 2.6 greater risk of having an adverse drug event from opioids than all other drugs, leading to increased length of stay and patient cost. Pizzi et al. (2012) found that 54.2% of patients had at least one adverse effect, 18.4% had two, 7.2% had three, and as adverse effects accumulate, length of stay increased by 15%, 40%, and 82%, respectively. The most common adverse effects in patients receiving postoperative opioids were nausea and vomiting (36.1%), constipation (6.5%), and confusion (3.7%) (Pizzi et al., 2012).

The increase in opioid usage over the last two decades has spawned a public health crisis. In addition to opioid-related complications, older adults may be susceptible to opioid addiction. Chang (2018), in the study of adults 50 years and older, found approximately 35% abused their prescription opioids. Between 2014 and 2015, the rate of deaths among older adults due to drug overdose involving synthetic opioids, other than methadone, increased by 25% (Rudd, Seth, David, & Scholl, 2016). This rate increased to 50% from 2016 to 2017 for the same group (Scholl, Seth, Kariisa, Wilson, & Baldwin, 2019). Furthermore, the overall rate of opioid-related drug overdose deaths increased by 17.2%, whereas the rate of deaths related to prescription opioids increased by 10.5% in the geriatric population from 2016 to 2017 (Scholl et al., 2019). Opioids remain the preferred initial treatment of pain in geriatric hip fracture patients.

Multimodal therapy is one method for reducing pain postoperatively while also decreasing opioid use (Casey et al., 2017; Newton-Brown et al., 2014; Oderda et al., 2003). Multimodal therapy, in this study, includes using two modes of pain medication that begin with a nonopioid (oral or intravenous acetaminophen) and follows with opioids (morphine, hydromorphone, and oxycodone) reserved for unrelieved pain. The American Society of Anesthesiologists Task Force on Acute Pain Management (2012) guidelines recommended the use of multimodal pain management therapy whenever possible based on a large meta-analysis evaluating perioperative pain control in surgical patients. Additionally, the AAOS Clinical Practice Guideline recommended the use of multimodal analgesia postoperatively and cited strong evidence to support this recommendation (Roberts et al., 2015). Halaszynski (2013) identified that pain management continued to challenge physicians within both the elderly and surgical care settings, but those who received multimodal therapy for pain control had improved surgical outcomes. Nonopioids, including nonsteroidal anti-inflammatory drugs and acetaminophen, have been shown to decrease the amount of opioid needed for pain management (Herr & Titler, 2009; Lachiewicz, 2013). The primary objective of this study was to determine whether using multimodal therapy would decrease opioid use without increasing pain scores in surgical geriatric hip fracture patients.

METHODS

Study Design

This was a before-and-after cohort study. The study was approved by the hospital's institutional review board.

Study Procedure

The hospital implemented multimodal pain control order sets with a standardized multimodal regimen for pain control for geriatric hip fracture patients in November 2015. The regimen included 1,000-mg acetaminophen as the first option for pain control. Patients received one dose of acetaminophen preoperatively and up to three doses postoperatively as needed for pain. Patients received either oral or intravenous acetaminophen depending on their ability to take an oral diet. Pain medications, including acetaminophen, were included in all appropriate order sets (hospitalist admission order set, orthopedic preoperative order set, and orthopedic postoperative order set). The order sets were developed by the hip fracture coordinator in collaboration with a multidisciplinary team consisting of the hospitalist service, orthopedic surgeons, pharmacy, and nursing. Nurses and physicians received education on the new order sets, as well as strategies for opioid and nonopioid pain relief. The hip fracture coordinator rounded to provide daily education.

Study Setting and Population

The setting is a 440-bed, nonacademic, Level 2 trauma center in Fort Wayne, Indiana, verified by the American College of Surgeons, servicing a 100-mile radius, most of which is rural, with two rotor-wing air ambulances. The facility is Magnet-designated.

Patients were included in this study if they were 65 years and older from March 2015 to May 2016 and admitted for isolated hip fracture with operative intervention within 48 hr. Isolated hip fracture was defined as the *International Classification of Diseases, Ninth Revision, Clinical Modification* (*ICD-9-CM*) diagnosis code of 820.xx (transcervical or pertrochanteric fracture). Patients were excluded if age was less than 65, concomitant injuries, no operative intervention or operative intervention greater than 48 hr after admission, directly admitted to the operating room, admitted to the intensive care unit, expired, preorder set group receiving acetaminophen, or postorder set group not receiving acetaminophen (see Figure 1).

Sample

A total of 330 patients met the inclusion criteria. Sixty-nine patients were excluded from the study (see Figure 1). The

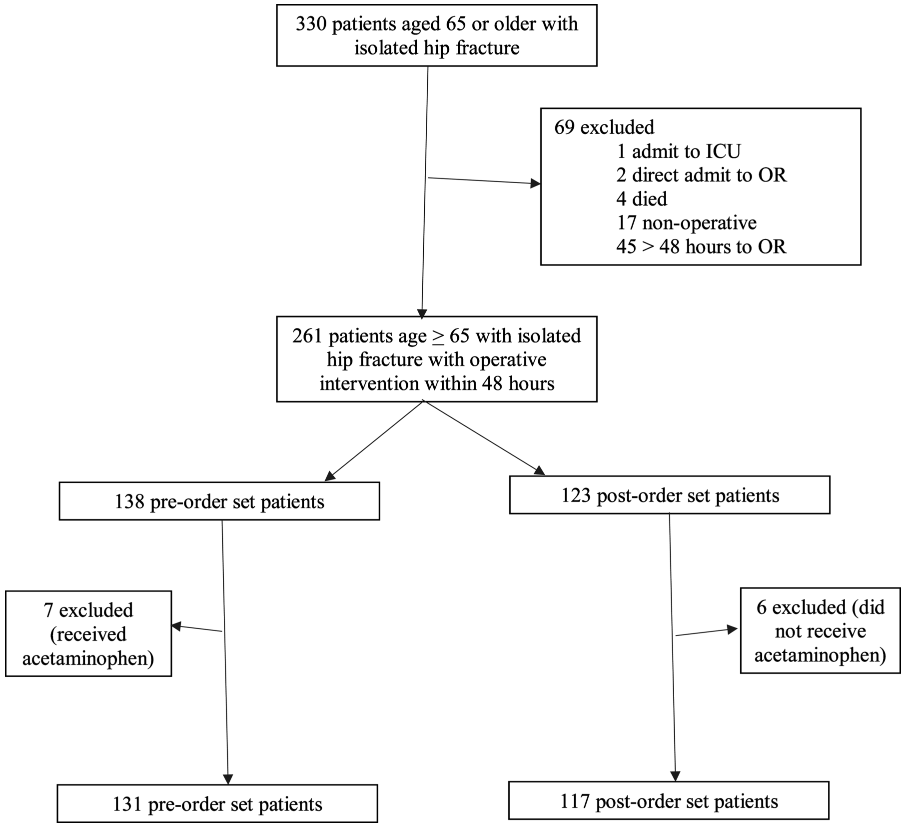

Figure 1. Study participant selection.

final sample consisted of 248 patients. The preorder set group consisted of 131 patients admitted between March 2015 and September 2015, prior to the implementation of the order set, who did not receive multimodal pain control. The postorder set group consisted of 117 patients admitted between November 2015 and May 2016, after implementation of the order set, who did receive multimodal pain control.

Data Collection and Management

Cases were manually reviewed by the principal investigator for the inclusion and exclusion criteria. Demographic and clinical variables were queried from the trauma registry (TraumaBase, Version 9.2) to describe and compare the two groups. The variables included age, gender, race, height, weight, comorbid conditions, mechanism of injury, diagnosis, procedure, length of stay, and complications. Body mass index (BMI) was calculated from height and weight. The electronic medical record from Epic was retrospectively reviewed for additional comorbid conditions, the admission pain level, postoperative pain levels, amount of opioids received, phase of care when opioid received, and adverse effects of opioids. The phases of care were emergency department (ED), preoperative, perioperative, and postoperative. The adverse effects of opioids were defined as decreased responsiveness, nausea and vomiting, and constipation, and identified as naloxone administration, antiemetic administration, and laxative administration, respectively. The cumulative effect of comorbid conditions was measured using the Charlson Comorbidity Index (CCI) score (Charlson, Pompei, Ales, & MacKenzie, 1987).

The CCI score was calculated by using the calculator provided by Hall, Ramachandran, Narayan, Jani, and Vijayakumar (2004). Oral morphine equivalents (OMEs) were calculated using equianalgesic dosage conversions for each opioid received (ClinCalc LLC, 2017). One researcher abstracted patient data for all variables, and an independent researcher abstracted the manually collected data on a random sample of 25 patients for validation purposes. There were no discrepancies between the two researchers. The data were placed in a Microsoft Excel spreadsheet.

Data Analysis

Statistical analysis was performed using SPSS (Version 25; IBM, Armonk, NY). The primary aim for analysis was to determine whether multimodal therapy would decrease opioid use without increasing pain scores in surgical geriatric hip fracture patients during each phase of care.

Univariate analysis of categorical variables was completed using frequency tables to see missing values and to determine whether narrower coding was needed. Bivariate analysis included an independent-samples *t* test to compare means (mean with standard deviation) for the continuous variables and a χ^2 test to determine percentages and odds ratios (ORs) (95% confidence intervals [CIs], unadjusted) for categorical variables. Linear regression was used to test for skewness of the distribution and normality of the outcome variables. Neither variable had a normal distribution on the histogram; consequently, they were transformed into their natural logarithms, and multiple linear regression was used to determine whether acetaminophen was an independent predictor in reducing OME. The covariates included age, gender, race, BMI, CCI, bleeding, hypertension, dementia, fracture type, procedure, and admitting pain score. The R^2 value for coefficient of multiple determination was used to indicate how much variation in the dependent variable is explained by the independent variables, and the *F* test was used to test for statistical significance of R^2. To compare the strength of effect of each individual independent variable on the dependent variable, the β coefficients were calculated. The normality assumption and regression standardized residual, with heteroscedasticity and multicollinearity, were used to check the independence of the error term. We followed the interpretation of β for log-level regression coefficient estimate results provided by Kephart (2013). A *p* value of less than .05 was used to determine statistical significance. We employed a one-sided test to improve statistical power for assessing if multimodal therapy would decrease opioid use without increasing pain scores in surgical geriatric hip fracture patients (Bruin, 2006).

RESULTS

A total of 248 patients were enrolled in the study (see Figure 1). The preorder set group was mostly female (102, 77.9%) and Caucasian (127, 96.9%) with a mean age of 83.6 years.

Likewise, the postorder set group was mostly female (82, 70.1%) and Caucasian (114, 97.4%) with a mean age of 83.5 years. Demographic characteristics of the two groups are shown in Tables 1 and 2. There were no statistically significant differences between the groups, except for the diagnosis of transcervical fracture (OR 0.44; 95% CI 0.22, 0.90).

Mean postoperative OME was significantly lower in the postorder set group than in the preorder set group (45.1 mg vs. 63.4 mg, respectively, p = .03), whereas mean OR OME was significantly higher in the postorder set group than in the preorder set group (38.6 mg vs. 30.4 mg, respectively, p = .01). However, the differences for the total OME, ED OME, and postoperative phase were not statistically significant (Table 3). After log-level regression analysis (Table 4), the independent variables that made a statistically significant contribution to total OME were admitting pain score, age, intervention, and BMI, and those that made a statistically significant contribution to postoperative OME were age, intervention, admitting pain score, and bleed.

Compared with the preorder set group, total OME and postoperative OME were decreased by 22.6% (95% CI −44.9, −3.8), one-tailed $p < .01$, and 53.6% (95% CI −103.4, −16.1), one-tailed $p < .01$, respectively, in the postorder set group. The independent variables with a significant effect on total OME were admitting pain score, age, and BMI. For every increase of age per year after 65 years in the postorder set group, the total OME decreased by 2.6% (95% CI −3.9, −1.5), one-tailed $p < .01$. Alternatively, as admitting pain score and BMI increased, the total OME also increased by 8.1% (95% CI 5.4, 11.0), one-tailed $p < .01$, and 1.7% (95% CI 0.0, 3.5), one-tailed p = .02, respectively. Age, admitting pain score, and bleeding disorder were the independent variables that had a significant effect on postoperative OME. For every increase of age per year after 65 years in the postorder set group, the postoperative OME decreased by 3.1% (95% CI −5.0, −1.2), one-tailed $p < .01$. As admitting pain score increased, postoperative OME increased by 5.4% (95% CI 1.0, 10.2), one-tailed $p > .01$, and if the patient was on chronic anticoagulation therapy, there was a 48.7%

TABLE 1 Patient Characteristics by Group: Continuous Variables

Variable	Preorder Set Group (n = 131)		Postorder Set Group (n = 117)		p Value
	M	*SD*	*M*	*SD*	
Age (years)	83.6	7.7	83.5	8.0	.94
Body mass index	25.4	5.2	25.2	5.6	.76
Charlson Comorbidity Index	2.0	1.8	1.7	1.6	.22
Admission pain score (0–10)	4.9	3.4	5.3	3.4	.41
Length of stay (days)	4.1	1.6	4.1	1.5	.91

TABLE 2 Patient Characteristics by Group: Categorical Variables

Variable	Preorder Set Group (n = 131)		Post-order set Group (n = 117)		Unadjusted OR	95% CI	
	n	%	*n*	%		LL	UL
Gender, male	29	22.1	35	29.9	0.67	0.37	1.18
Race, Caucasian	127	96.9	114	97.4	0.84	0.18	3.81
MOI, fall	130	99.2	116	99.1	1.12	0.07	18.12
Height of fall, ground level	121	96.8	97	92.4	2.50	0.73	8.53
Fracture type, transcervical	14	10.7	25	21.4	0.44	0.22	0.90
Surgical procedure, internal fixation	97	74.0	84	71.8	1.12	0.64	1.96
Direct admit, no	96	73.3	76	65.0	1.48	0.86	2.55
Payor source, Medicare	127	96.9	109	93.2	2.33	0.68	7.95

Note. *CI = confidence interval; LL = lower level; MOI = mechanism of injury; OR = odds ratio; UL = upper level.*

increase in postoperative OME (95% CI 5.0, 110.4), one-tailed $p = .01$.

There was not a statistically significant difference in mean pain scores at 6, 24, and 48 hr postoperatively (p = .53, .10, and .99), respectively (Table 3). After log-level regression analysis for postoperative pain scores at 6, 24, and 48 hr (Table 4), the independent variables that made a statistically significant contribution to pain at 6 hr postoperatively were admitting pain score (one-tailed $p < .01$, 95% CI 4.4, 28.9) and postoperative OME (1-tailed p = .02, 95% CI 0.4, 92.1). Admitting pain score was the only independent variable that made a statistically significant contribution to pain at 24 and 48 hr postoperatively (one-tailed $p < .01$, 95% CI 9.5, 41.9, and one-tailed $p < .01$, 95% CI 10.4, 42.0), respectively. There were no significant differences between naloxone administration, antiemetic administration, laxative administration, or complications (Table 5).

DISCUSSION

Our data show that the use of acetaminophen, as part of multimodal pain control order sets, was associated with less opioid use overall without a corresponding increase in pain scores in surgical geriatric hip fracture patients. Implementation of the standardized order sets was enhanced by a full-time hip fracture coordinator developing, implementing, and following up on the process. The hip fracture coordinator rounded daily on all geriatric hip fracture patients for order set adherence and in-the-moment education. It is difficult to discern whether the actual order set or the coordinator contributed to the results of this study.

TABLE 3 Outcome Variables by Group: Oral Morphine Equivalents and Pain Scores

Variable	Preorder Set Group (n = 131)		Postorder Set Group (n = 117)		p Value
	M	*SD*	*M*	*SD*	
Total OME (mg)	118.8	88.8	109.2	100.9	.42
ED OME (mg)	12.8	11.2	16.4	29.1	.27
Preoperative OME (mg)	16.3	24.9	15.3	21.0	.75
Perioperative OME (mg)	30.4	19.5	38.6	26.8	.006
Postoperative OME (mg)	63.4	66.3	45.1	63.8	.03
Postoperative pain score (0–10), 6 hr postoperatively	2.1	2.6	1.9	2.4	.53
Postoperative pain score (0–10), 24 hr postoperatively	3.3	2.9	2.7	3.1	.10
Postoperative pain score (0–10), 48 hr postoperatively	2.4	2.9	2.4	2.8	.99

Note. *ED = emergency department; OME = oral morphine equivalents.*

TABLE 4 Log-Level Regression Model Summary

Effect	Reduction/ Increase(%)	Estimate β (Log)	*SE*	95% CI LL	95% CI UL	One-Tailed *p*
Total OME, intervention	−22.6	−0.204	0.085	−44.9	−3.8	.009
Admitting pain score	8.1	0.078	0.013	5.4	11.0	.000
Age	−2.6	−0.026	0.006	−3.9	−1.5	.000
BMI	1.7	0.017	0.009	0.0	3.5	.024
Postoperative OME, intervention	−53.6	−0.429	0.142	−103.4	−16.1	.002
Age	−3.1	−0.031	0.142	−5.0	−1.2	.002
Admitting pain score	5.4	0.053	0.022	1.0	10.2	.001
Chronic anticoagulation	48.7	0.397	0.176	5.0	110.4	.013
Pain 6 hr postoperatively, intervention	−14.8	−0.138	0.352	−129.6	74.4	.348
Admitting pain score	16.1	0.149	0.054	4.4	28.9	.003
Postoperative OME	38.8	0.328	0.165	0.4	92.1	.024
Pain 24 hr postoperatively, intervention	−33.1	−0.286	0.431	−211.1	75.6	.254
Admitting pain score	24.6	0.220	0.066	9.5	41.9	.001
Pain 48 hr postoperatively, intervention	39.2	0.331	0.415	−63.1	215.8	.214
Admitting pain score	25.2	0.225	0.064	10.4	42.0	.001

Note. BMI = body mass index; CI = confidence interval; LL = lower level; OME = oral morphine equivalents; UL = upper level.

A multidisciplinary approach eases implementation while providing the best outcomes because it combines the expertise from each field to achieve a common goal (Riemen & Hutchison, 2016; Rocca et al., 2013). Rocca et al. (2013) found that the multidisciplinary approach provided a large degree of cooperation and communication between multiple services. The hip fracture coordinator facilitated multidisciplinary team meetings, which occurred routinely, to develop the order sets and overcome barriers. The primary barrier was placing intravenous acetaminophen on the order set due to higher medication cost than opioids. The increased cost of intravenous acetaminophen is a consistent theme in the literature (Kelly, Opsha, Costello, Schiller, & Hola, 2014; Malesker, Bruckner, Loggie, & Hilleman, 2015), but studies have demonstrated that adding acetaminophen to the pain regimen does not significantly increase hospital costs overall (Hanson, Pham, Strassels, Balaban, & Wan, 2016; Maiese et al., 2017).

There was a significant decrease in opioid usage during the postoperative phase of our study, which may be attributed to pain relief provided by the use of acetaminophen with similar results described in the literature (Blank et al., 2018; Bollinger et al., 2015; Casey et al., 2017; Jelacic et al., 2016; Newton-Brown et al., 2014;

TABLE 5 Outcome Variables by Group: Complications and Adverse Effects of Opioids

Variable	Preorder Set Group (*n* = 131) *n*	Preorder Set Group (*n* = 131) %	Postorder Set Group (*n* = 117) *n*	Postorder Set Group (*n* = 117) %	Unadjusted OR	95% CI LL	95% CI UL
Complications	8	6.1	2	1.7	0.27	0.06	1.29
Naloxone administration	3	2.3	2	1.7	0.74	0.122	4.52
Antiemetic administration	50	38.2	44	37.6	0.98	0.58	1.63
As-needed laxative administration	28	21.4	32	27.4	1.39	0.77	2.48

Note. CI = confidence interval; LL = lower level; OR = odds ratio; UL = upper level.

Tsang et al., 2013). To the best of our knowledge, this, however, is the first study to show that opioid reduction can occur by using a combination of oral and intravenous acetaminophen rather than intravenous acetaminophen alone. Our multimodal approach was associated with a 53.6% reduction in opioid usage during the postoperative phase, which reduced overall opioid consumption by 22.6%. This is especially important in light of the opioid epidemic and the negative consequences this has on the geriatric population (Chang, 2018; Daoust et al., 2018; Kolodny et al., 2015; Newton-Brown et al., 2014).

Additionally, our data demonstrate that a reduction in opioid consumption may occur without an increase in pain. Mean pain scores were reduced in the postorder set group at both 6 and 24 hr postoperatively, but this result was not significant. Tsang et al. (2013) found no significant difference in pain scores when using intravenous paracetamol versus intravenous opioids, and Bollinger et al. (2015) found that intravenous acetaminophen was a predictor for decreased pain scores. At 48 hr postoperatively, there was no difference in pain scores. This could be explained by the pharmacokinetics of intravenous versus oral acetaminophen. By 48 hr postoperatively, the majority of the patients in our study were taking oral acetaminophen rather than intravenous acetaminophen. Studies have demonstrated that intravenous acetaminophen reaches a higher peak plasma concentration and does so faster than oral acetaminophen, which provides better outcomes (Bollinger et al., 2015; Politi, Davis, & Matrka, 2017; Smith, 2011).

The predictors for opioid use were admitting pain score, age, BMI, and chronic anticoagulation therapy. Patients that had a higher admission pain score received more opioids overall, which was expected. Increasing age was a predictor for a decrease in opioid use overall and in the postoperative phase. This could be attributed to the increased risk for cognitive impairment as a person's age increases. Studies have shown that patients with cognitive impairment receive less analgesics (Adunsky, Levy, Mizrahi, & Arad, 2002; Sieber, Mears, Lee, & Gottschalk, 2011). The literature suggests that older adults tend to deny pain more frequently, and an accurate pain assessment is more difficult to obtain as people age, which could lead to undermedicating (Schofield & Abdulla, 2018).

Interestingly, increased BMI was a predictor for increased opioid consumption. This may be associated with increased pain due to comorbidities and/or lower pain thresholds in obese patients (Stone & Broderick, 2012; Tashani, Astita, Sharp, & Johnson, 2017). In the postoperative phase, chronic anticoagulation therapy was a predictor for increased opioid usage. It is possible that patients on chronic anticoagulation experienced more posttraumatic bruising that caused increased pain. It is also possible that these patients had other comorbidities that predisposed them to increased pain. Peter et al. (2015) found that the presence of three or more comorbidities was associated with more pain, which could lead to an increase in the amount of analgesia administered.

LIMITATIONS

As this was a retrospective study using a convenience sample, patients were not randomized, which imposed a bias in selection. Delirium screening was not routinely completed at the time of the study, so delirium was not measured as an outcome variable. This would be valuable data to include in future studies. Pain scores were retrieved from the medical record without regard to whether the patient was resting or active during the assessment. Furthermore, we did not take into account opioid use prior to admission to the hospital, which may have impacted the amount of opioids necessary during admission.

There were limitations to the order sets. The order sets were initiated at the time of hospital admission and not used in the ED. Patients were typically treated for pain prior to diagnostic work-up in the ED. Therefore, the choice of pain medication was dependent upon the ordering provider. Similarly, in the perioperative phase, the anesthesiologist determined which pain medication(s), if any, to administer. This may explain the increase in OME during these phases of care, as there was not a standardized approach in these departments. Preoperatively, there was a nonsignificant decrease in opioids. Because the AAOS recommends operative fixation within 48 hr (Roberts et al., 2015), the preoperative phase may last up to 2 days. However, the order set allowed only one dose of acetaminophen during that period, and acetaminophen was given orally unless the patient was unable to take medication by mouth.

CONCLUSION

This study offers insight on how to reduce opioid usage in the surgical geriatric hip fracture patient through a multimodal pain management approach. The findings highlight the advantages of multidisciplinary care management, order sets, and a hip fracture coordinator to reduce inpatient opioid usage while still managing pain. Implementing a multimodal approach to pain management may help reduce opioid use and may be a critical maneuver in averting the national opioid epidemic.

KEY POINTS

- Opioid reduction is an important consideration for patients of all ages, but especially for the surgical geriatric hip fracture patient.
- A multimodal approach to pain management can reduce opioid consumption in the surgical geriatric hip fracture patient.
- Opioid reduction can occur in surgical geriatric hip fracture patients without a corresponding increase in pain scores.

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