



Preoperative Opioid Use is Associated with Worse Preoperative Patient Reported Outcomes in Hip Arthroscopy Patients

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Disclosures

I (and/or my coauthors) have something to disclose

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INTRODUCTION

- Hip arthroscopy has dramatically expanded in recent years, and thus it has become increasingly important to utilize patient reported outcomes (PROs) to help guide clinical practice.
- Over-prescription and misuse of opioids for pain management has become of particular concern in recent decades, with orthopaedic surgeons playing a unique role in this crisis.
- Prior studies have shown preoperative opioid use to predict persistent postoperative opioid use and worse postoperative outcomes after hip arthroscopy.
- Yet, little is known regarding preoperative opioid use's effect on baseline patient reported outcomes such as function, pain, mental health and expectations.

OBJECTIVES

- **Define the rate of preoperative opioid use**
- **Ascertain which clinical factors are associated with opioid use**
- **Assess the effect of preoperative opioid usage on preoperative PRO measures**

HYPOTHESIS

- **Hip arthroscopy patients using preoperative opioids would report worse baseline pain, function, mental health, and expectation scores as compared to opioid non-users.**

METHODS

- **123 hip arthroscopy patients were enrolled in the Maryland Orthopaedic Registry (MOR) from 2015 to 2022.**
- **Patients' charts were reviewed to determine active preoperative opioid use within 6 weeks of surgery.**
- Each patient completed the following questionnaires preoperatively:
 - 6 Patient-Reported Outcomes Measurement Information System (PROMIS) Domains (Physical Function - PF, Pain Interference - PI, Fatigue, Social Satisfaction – SS, Anxiety, and Depression)
 - Musculoskeletal Outcomes Data Evaluation and Management System (MODEMS) preoperative expectations questionnaire
 - Numeric Pain Score (NPS) for operative hip and whole body
- Bivariate analysis was performed via Pearson Chi-Square or Wilcoxon Rank Sum tests
- Nominal logistic regression and multivariable linear regression models were utilized to determine predictors of preoperative opioid use and various patient reported outcome scores, respectively.

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RESULTS

- 21 patients (17%) were taking opioid medications preoperatively
- Overall, preoperative opioid users had significantly more prior orthopaedic procedures and, any surgeries, when compared to opioid non-users. There were no other significant baseline characteristics differences
- Statistically significant variables ($p < 0.05$) from bivariate analysis (*a posteriori*) and variables deemed clinically relevant (*a priori*) were included in the nominal logistic analysis for predictors of preoperative opioid use
- Nominal logistic demonstrated that **age and number of prior orthopaedic surgeries were significant predictors** of preoperative opioid use when controlling for confounding variables (Table 1)

Table 1 Nominal Logistic Fit for Preoperative Opioid Use

Factors	Estimate	Std Error	P value
# of orthopaedic procedures	-0.72	0.27	0.008
Age	-0.06	0.03	0.02

Variables included in the multivariable logistic regression analysis: History of Prior Hip Surgery, # of prior hip surgeries, # of orthopaedic procedures, # of any surgeries, ASA Score, Education, Smoking Status, Age, BMI, Gender, Race, and Insurance Status.
Bold values indicate statistically significant with $p < 0.05$.
Std Error, Standard Error

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RESULTS

- Preoperative opioid users scored significantly worse compared to non-users on all baseline PROMIS domains except Anxiety (Table 2)
- Preoperative opioid users reported higher pain scores for the preoperative NPS for both the operative hip and whole body
- There were no significant differences in MODEMS Preoperative expectations between preoperative opioid users and non-users.

Table 2 Preoperative Opioid Use Bivariate Correlations with Baseline PROs

Outcome Measurement	Total Cohort (Mean±SD)	Preoperative Opioid Use?		P value
		“Yes” N=21 (Mean±SD)	“No” N=102 (Mean±SD)	
PROMIS PF	40.1±6.6	38.6±4.9	40.5±6.9	0.01
PROMIS PI	61.3±6.7	65.9±8.0	60.2±6.1	0.001
PROMIS Fatigue	53.3±11.1	60.7±12.4	51.6±10.1	0.005
PROMIS SS	42.2±7.7	38.2±7.6	43.2±7.5	0.007
PROMIS Anxiety	55.9±9.2	58.6±9.1	55.3±9.2	0.2
PROMIS Depression	49.9±9.6	54.2±11.0	48.8±9.0	0.01
MODEMS Preoperative Expectations	88.0±15.3	82.9±22.0	89.2±13.4	0.45
Numeric Pain Score - Operative Hip	4.9±2.4	6.3±2.4	4.6±2.3	0.003
Numeric Pain Score – Whole Body	1.7±2.2	3.0±2.7	1.4±2.0	0.008

Bold values indicate statistically significant with p < 0.05

PROMIS, Patient-Reported Outcome Measurement Information System PF, Physical Function. PI, Pain Interference. SS, Social Satisfaction. MODEMS, Musculoskeletal Outcomes Data Evaluation and Management System

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RESULTS

- Multivariate linear regression analysis demonstrated that when controlling for potential confounding factors, preoperative opioid use was a significant independent predictor of worse baseline:
 - **PROMIS Pain Interference**
 - **PROMIS Fatigue**
 - **PROMIS Social Satisfaction**
 - **NPS – Operative Hip**
- (Table 3)

Table 3 Multivariate Analysis Between Preoperative Opioid Use and Baseline Patient-Reported Outcomes

Factors	Estimate	Std Error	P value
PROMIS PI	2.87	0.80	0.0005
PROMIS Fatigue	3.80	1.24	0.003
PROMIS SS	-2.51	0.90	0.007
Numeric Pain Score – Operative Hip	0.77	0.29	0.009

Variables included in the multivariable linear regression analysis: Preoperative Opioid Use, History of Prior Hip Surgery, # of prior hip surgeries, # of orthopaedic procedures, # of any surgeries, ASA Score, Education, Smoking Status, Age, BMI, Gender, Race, and Insurance Status.

Bold values indicate statistically significant with $p < 0.05$.

Std Error, Standard Error

PROMIS, Patient-Reported Outcome Measurement Information System.

PI, Pain Interference

SS, Social Satisfaction

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DISCUSSION

- The results supported our hypothesis that preoperative opioid use would be associated with worse baseline pain, function, and mental health.
- 17% of patients were taking opioid medications preoperatively
- Age and number of prior orthopaedic surgeries were independently predictive of preoperative opioid use.
- Preoperative opioid use is an independent predictor of worse PROMIS PI, SS, and Fatigue as well as NPS at the operative hip at baseline.
- Our findings expand on prior research on preoperative opioid use's effect on postoperative hip arthroscopy outcomes by identifying patient-specific factors related to preoperative opioid use as well as the effect of preoperative opioid use on baseline PRO metrics.

CONCLUSION

Opioid use prior to hip arthroscopy predicts worse baseline function, pain, and mental health and physicians may consider weaning patients off opioids preoperatively to potentially improve function, pain, and mental health.

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