

Is Opioid Consumption Impacted by Study Participation? Maintenance of Fewer Opioid Refills with Reduced Prescription Quantity after Posterior Spinal Fusion for Adolescent Idiopathic Scoliosis

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INTRODUCTION: Postoperative opioid overprescribing can lead to nonmedical opioid use. In a previous prospective study, we showed that a standardized protocol involving preoperative education and reduced opioid prescriptions decreased opioid use in adolescent idiopathic scoliosis (AIS) patients following posterior spinal fusion (PSF). A potential limitation was the Hawthorne effect, where participant behavior may change due to observation. At the conclusion of the study, we continued the reduced opioid prescriptions but discontinued the formal preoperative education. This retrospective study aimed to assess if lower opioid refill rates persisted.

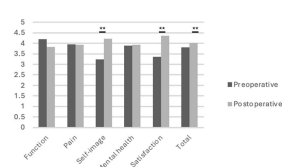
METHODS: The retrospective cohort (post-STUDY) comprised AIS patients aged 10 to 17 years who underwent primary PSF between January 2022 and December 2023 and were discharged with a prescription of ≤30 oxycodone doses. Patients were excluded if they had undergone previous spine surgery or were discharged with an opioid other than oxycodone. Demographics, intraoperative variables, opioid refill requests, and patient reported outcomes were collected. Data were compared with the previously published prospective cohort (STUDY).

RESULTS:

Our post-STUDY cohort included 67 patients (69% female). Average age at PSF was 13.9 years. Mean levels fused were slightly higher (10.9 vs 10.0, $p = 0.04$), and estimated blood loss was lower (211 vs 303, $p < 0.01$) compared to the STUDY cohort. Other demographics, preoperative major curve magnitude, surgery duration, and length of hospital stay were similar. The percentage of patients receiving opioid refills between the post-STUDY and STUDY cohorts was also similar [6/67 (9.0%) vs 3/49 (6.1%), $p = 0.30$].

DISCUSSION AND CONCLUSION: Reduced opioid prescriptions did not result in increased opioid refill requests in AIS patients undergoing PSF outside of a study setting. While preoperative discussions about postoperative pain control are important, other factors, such as multimodal pain management and increased societal awareness of the opioid crisis, likely influence opioid use. Further research should explore characteristics that predispose patients to requiring higher amounts of postoperative opioids.

Figure 1. Mean Post-STUDY SRS-22r Scores



** Statistically significant at $P < 0.05$
N = 24

Table 1. Comparison of patient characteristics in post-STUDY and STUDY cohorts

	Post-STUDY*	STUDY*	P
Age (years)	13.9 ± 1.8	14.08 ± 1.8	0.68
Sex			
Male, [n (%)]	21 (31)	13 (27)	0.58
Female, [n (%)]	46 (69)	36 (73)	
BMI (kg/m ²)	22.5 ± 5.3	22.9 ± 5.9	0.59
Age-Adjusted BMI Percentile	61.9 ± 32	NR	
EBL (mL)	212 ± 143	303 ± 213	<0.01**
Surgical duration (min.)	289 ± 92	283 ± 88	0.34
Length of stay (d)	2.16 ± 0.7	2.35 ± 0.8	0.18
Levels fused (n)	10.9 ± 2.4	10 ± 2.0	0.04**
Preoperative Major Curve (°)	60 ± 11	56 ± 12	0.08
Proportion receiving refills (%)	9.0 ± 2.9	6.1 ± 2.4	0.30

*Values are given as the mean ± standard deviation
**Statistically significant at $P < 0.05$
BMI – Body Mass Index; EBL – Estimated Blood Loss; NR – Not Recorded

Table 2. Opioid prescription and refill statistics in post-STUDY cohort

	Post-STUDY
# Pts with initial Rx ≥ 28 to 30 doses, [n (%)]	50 (75%)
# Pts with initial Rx < 28 doses, [n (%)]	17 (25%)
Proportion of patients receiving Rx refills (%)	9.0 ± 2.9*
Average # of Rx doses per refill	14.8 ± 4.3*

*Values are given as the mean ± standard deviation

Rx – Oxycodone Prescription

Table 3. Mean Post-STUDY SRS-22r Scores

	Preoperative*		Postoperative*		MD	P
	M	SD	M	SD		
Function	4.20	0.68	3.83	0.66	-0.35	0.33
Pain	3.96	0.87	3.93	0.84	-0.03	0.97
Self-image	3.33	0.80	4.21	0.54	1.02	<0.001**
Mental Health	3.90	0.84	3.94	0.71	0.17	0.19
Satisfaction	3.36	0.80	4.36	0.67	1.00	<0.001**
Total	3.80	0.50	4.02	0.49	0.28	0.04**

*Values are given as the mean ± standard deviation

**Statistically significant at $P < 0.05$

N = 24

M – Mean; SD – Standard deviation; MD – Mean Difference via paired t test