

INTRODUCTION

The use of opioids after surgery has contributed to a significant health crisis. Reduction of opioid use after bariatric surgery is a key component in optimizing patient care. A proprietary mixture of bupivacaine and meloxicam in biochronomer time-controlled release solution (Zynrelef®) provides localized analgesia beginning 6 hours postoperatively, with effects lasting up to 72 hours^{1,2}. In efforts to decrease narcotic use, CMS reimburses this medication at a higher rate than cost. This study evaluates the impact of intraoperative administration of Zynrelef® on post-operative narcotic consumption in bariatric surgery patients.

METHODS

A retrospective observational study was conducted at a single institution from June 2023 to March 2025. 506 bariatric surgery patients aged ≥18 years. Patients with allergies to Zynrelef® components, prior narcotic contracts, or opioid use disorder were excluded.

107/506 Patients received Zynrelef®. The medication was injected into the port sites under laparoscopic visualization at the end of the case, prior to skin closure.

Using 1:1 coarsened exact matching on sex, age, BMI, procedure type, and time frame of surgery, 107 patients receiving Zynrelef® were matched to 107 comparison patients.

Narcotic use was measured in morphine milligram equivalents (MME):

- Intraoperative
- Post-anesthesia care unit (PACU)
- Post-operative Inpatients

Post operative pain scores, discharge opioid prescription rates, and outpatient MMEs prescribed were also analyzed. Statistical tests included Wilcoxon rank sum, chi-square, and linear mixed models.

RESULTS

TABLE 1. Summary of demographic variables between the matched groups, with and without Zynrelef®.

Characteristic	Overall N = 214	Zynrelef® during surgery?		p-value ²
		Yes N = 107	No N = 107	
Age at surgery	45 (12)	45 (11)	46 (12)	0.7
Legal sex				0.6
Female	163 (76%)	80 (75%)	83 (78%)	
Male	51 (24%)	27 (25%)	24 (22%)	
Race				>0.9
White	212 (99%)	106 (99%)	106 (99%)	
Other	2 (0.9%)	1 (0.9%)	1 (0.9%)	
Unknown	0 (0%)	0 (0%)	0 (0%)	
Ethnicity				>0.9
Hispanic, Latino/a or Spanish origin	7 (3.3%)	3 (2.8%)	4 (3.7%)	
Not Hispanic, Latino/a or Spanish origin	207 (97%)	104 (97%)	103 (96%)	
Unknown	0 (0%)	0 (0%)	0 (0%)	
Procedure code				0.8
43644 (Gastric Bypass)	82 (38%)	40 (37%)	42 (39%)	
43775 (Sleeve Gastrectomy)	132 (62%)	67 (63%)	65 (61%)	
Smoking status				0.029
Former	102 (48%)	59 (55%)	43 (40%)	
Never	112 (52%)	48 (45%)	64 (60%)	
BMI at surgery	46 (8)	46 (8)	46 (9)	0.7
Length of stay (days)	1.29 (0.23)	1.29 (0.23)	1.29 (0.23)	0.14
Type 2 diabetes DX	49 (23%)	26 (24%)	23 (21%)	0.6
Hypertension DX	99 (46%)	45 (42%)	54 (50%)	0.2
GERD DX	101 (47%)	61 (57%)	40 (37%)	0.004
Morbid obesity DX				
Yes	214 (100%)	107 (100%)	107 (100%)	

¹Mean (SD); n (%)

²Wilcoxon rank sum test; Pearson's Chi-squared test; Fisher's exact test

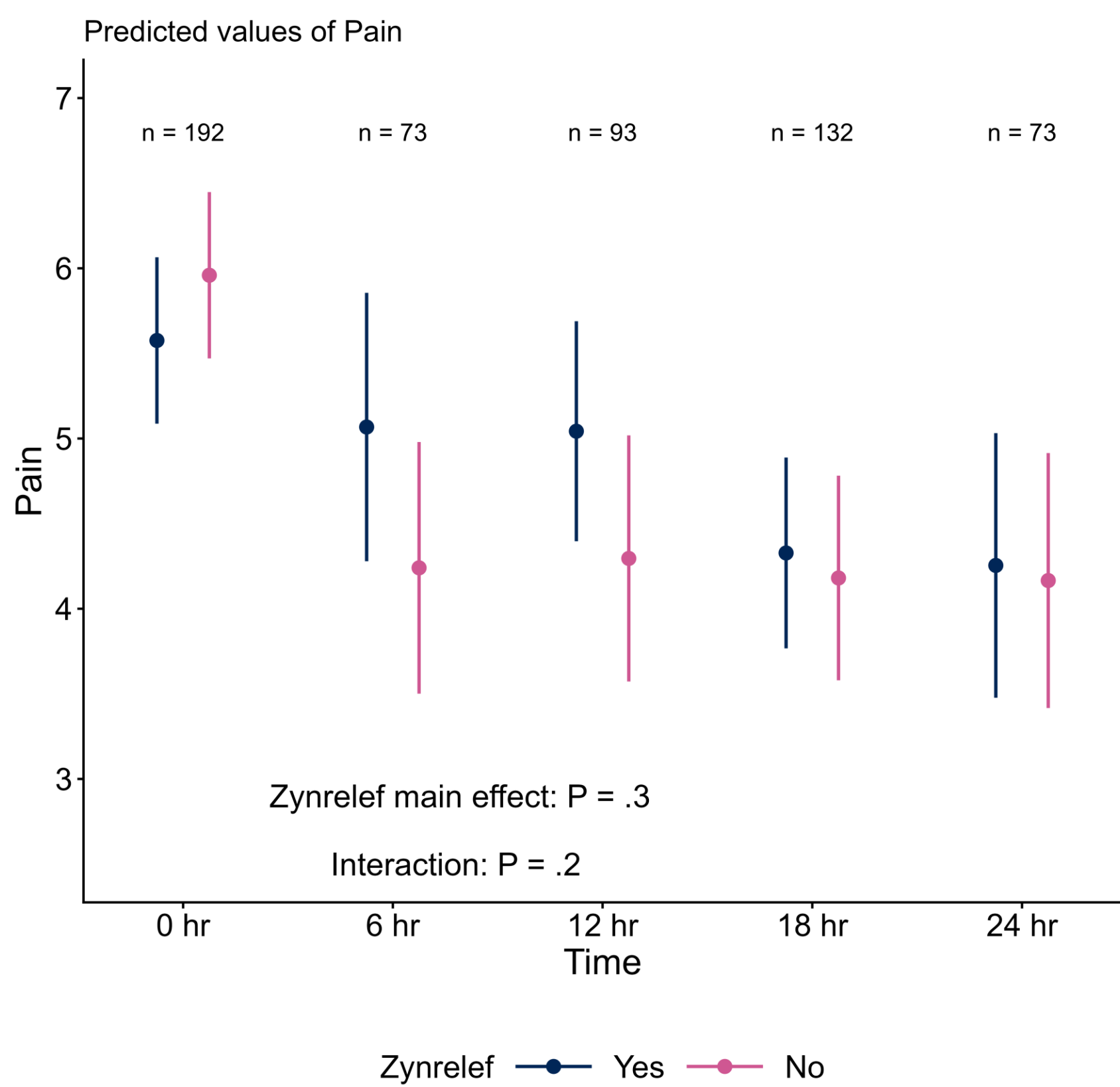


FIGURE 1. Post Operative Patient Pain Scores

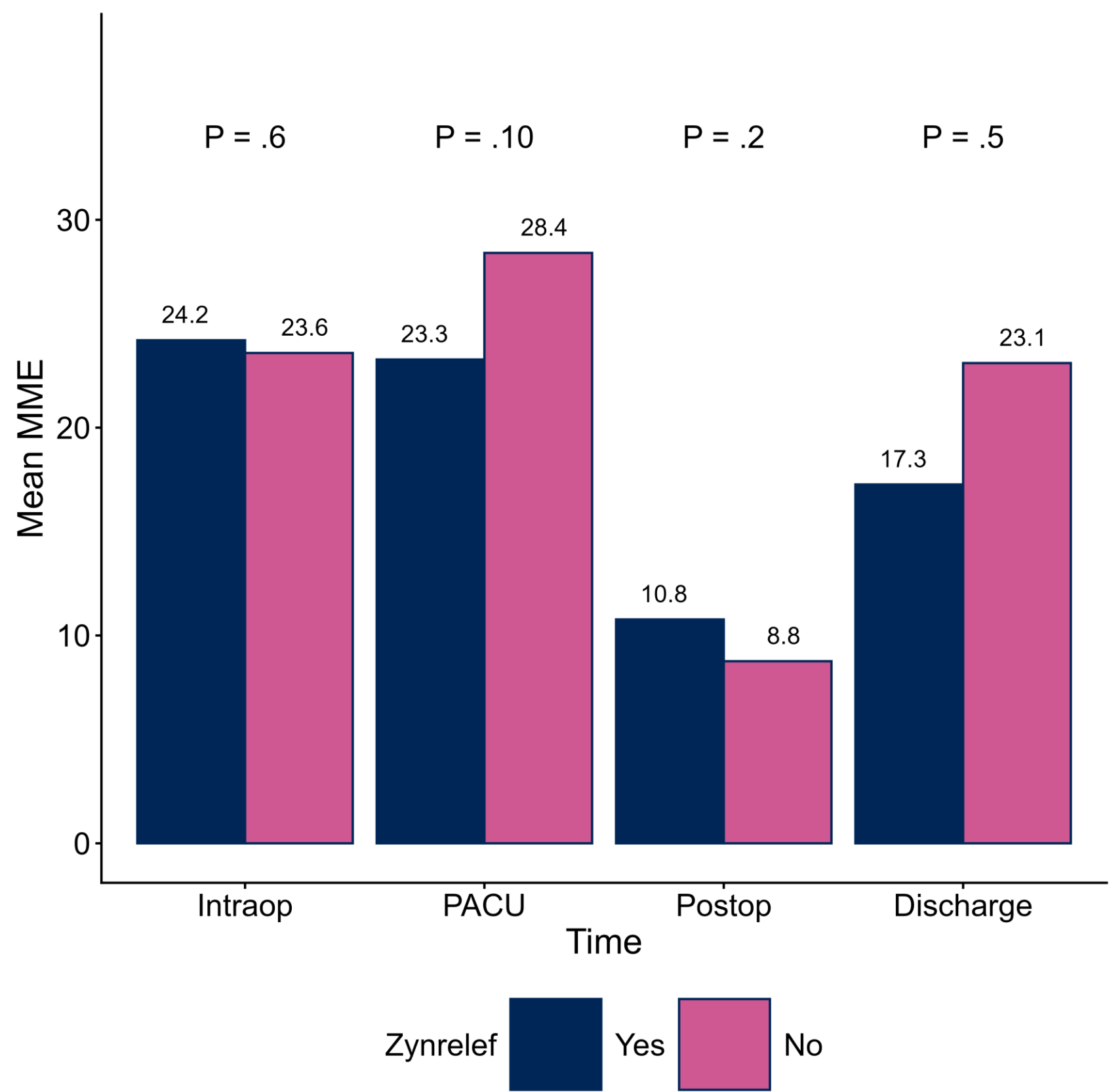


FIGURE 2. Morphine Milli Equivalents Per Patient

RESULTS

Matched groups were balanced in demographics and clinical variables. No significant differences were observed in narcotic consumption in the post-operative period with and without Zynrelef®, respectively:

- Intra-op MME: 24 vs 24, p=0.6
- PACU MME: 23 vs 28, p=0.1
- Post-op Inpatient MME: 11 vs. 9, p=0.2
 - < 6 hours: 27 vs 31, p=0.15
 - > 6 hours: 2.9 vs 2.1, p=0.3
- Outpatient MME prescribed: 17 vs 23, p=0.5

- No difference in frequency of patients receiving:
- Any MME > 6 hours post-operatively (33% vs 28%, p=0.5)
 - Percentage of patient prescribed an opioid at discharge (20% vs 24%, p=0.4)

Postoperative pain scores did not differ significantly between groups (main effect p=0.3; interaction p=0.2).

CONCLUSIONS

Based on matched analysis, intraoperative Zynrelef® administration was not associated with a decrease in the rate of inpatient opioid use or opioid prescriptions at discharge in this population of bariatric surgery patients.

REFERENCES

- Zynrelef® [package insert]. San Diego, CA: Heron Therapeutics Inc; 2024.
- Ottoboni T, Quart B, Pawasauskas J, Dasta JF, Pollak RA, Viscusi ER. Mechanism of action of HTX-011: a novel, extended-release, dual-acting local anesthetic formulation for postoperative pain. Reg Anesth Pain Med. Published online December 16, 2019. doi:10.1136/rapm-2019-100714