

# Opioid-sparing Anesthesia during Laparoscopic Bariatric Surgery

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## INTRODUCTION

- > 200,000 bariatric surgeries performed annually.
- Higher risk for post-operative nausea and vomiting (PONV) and hypoventilation.
- Opioid use increases risk for PONV & hypoventilation.
- High degree of variation in provision of analgesic adjuncts, opioid dose, and anti-emetic medications.

## OBJECTIVES

- Evaluate PONV, pain control, and need for respiratory support after opioid-sparing anesthesia.
- Validate a threshold of opioid-sparing anesthesia based on intraoperative (intra-op) opioid dose.

## RESEARCH QUESTION

In adult patients aged 18 to 89 years undergoing elective bariatric surgery at four Midwest surgery centers, how often are clinically significant PONV, the need for post-operative pain control, and the need for post-operative respiratory support after opioid-sparing anesthesia, defined as use of 2 or more analgesic adjuncts and administration of 25 mg or less morphine milligram equivalents (MME), compared to non-opioid-sparing anesthesia between April 1, 2021 and April 30, 2023?

## METHODS

**Design:** Retrospective cohort study. This project was IRB Exempt, study 23-004518.

**Setting:** Hospital A, Hospital B, Hospital C, Hospital D

**Sample:** Adults aged 18-89, assigned an ASA score of I, II or III, who underwent non-emergent sleeve gastrectomy or Roux-en-Y between April 1, 2021 and April 30, 2023.

**Intervention:** Opioid-sparing (yes/no): intra-op opioid dose of 25 mg or less MME AND at least two preoperative or intra-op analgesic adjuncts.

**Data Collection:** Demographics, analgesic medications, opioid doses, anti-emetic medications, PACU pain scores, PACU episodes of nausea and vomiting, PACU LOS, hospital LOS, time to ambulation, post-operative (post-op) airway support

Data extraction by Anesthesia Clinical Research Unit from DataMart and manually by authors

## RESULTS

- Non-opioid-sparing group, n = 653**
  - Median intra-op opioid dose of 60 mg of MME
    - 1<sup>st</sup> quartile of 42 mg and 3<sup>rd</sup> quartile of 75 mg
  - 98% of patients received 2+ analgesic adjuncts
  - 24.4% experienced PONV
  - Median max post-op pain score was 7
  - Median post-op 22.5 mg MME
- Opioid-sparing group, n = 127**
  - Median intra-op of 0 mg MME
    - 1<sup>st</sup> quartile of 0 mg and 3<sup>rd</sup> quartile of 15 mg
  - 100% of patients received 2+ analgesic adjuncts
  - 37.2% experienced PONV
  - Median max post-op pain score was 7
  - Median post-op 22.5 mg MME

**Table 1**

Primary outcome and statistical significance

|                            | Odds Ratio (95% CI) | p-value |
|----------------------------|---------------------|---------|
| PACU Duration, minutes     | 1.09 (0.99, 1.19)   | .082    |
| Post-op Hospital LOS, days | 0.64 (0.41, 1.00)   | .052    |
| Maximum Pain Score in PACU | 1.03 (0.67, 1.58)   | .882    |
| Post-op Nausea/Vomiting    | 0.65 (0.38, 1.12)   | .123    |
| Time to Ambulation, hours  | 1.03 (0.87, 1.22)   | .762    |
| Post-op MME, mg            | 0.91 (0.63, 1.32)   | .613    |
| Unplanned Airway Support   | 0.17 (0.02, 1.35)   | .094    |

**Table 2**

Secondary Outcomes

|                                                  | Non-Opioid<br>Sparing Group<br>n = 653 | Opioid-<br>Sparing Group<br>n = 127 | Total<br>N = 780 |
|--------------------------------------------------|----------------------------------------|-------------------------------------|------------------|
| PACU Duration, minutes<br><i>Mdn (Q1, Q3)</i>    | 95 (68, 129)                           | 104 (80, 128)                       | 96 (70, 129)     |
| Post op Hospital LOS,<br>days n (%)              |                                        |                                     |                  |
| 1                                                | 339 (51.9)                             | 74 (58.3)                           | 413 (52.9)       |
| 2                                                | 225 (34.5)                             | 44 (34.6)                           | 269 (34.5)       |
| 3+                                               | 89 (13.6)                              | 9 (7.1)                             | 98 (12.6)        |
| Time to Ambulation,<br>hours <i>Mdn (Q1, Q3)</i> | 5.0 (3.3, 6.8)                         | 5.0 (3.4, 7.0)                      | 5.0 (3.3, 6.9)   |

Note. PACU = Post Anesthesia Care Unit, LOS = Length of Stay, Mdn = median, n = sample size., Q1 = first quartile, Q3 = third quartile

## DISCUSSION

- Nearly all patients received acetaminophen, and most received dexamethasone and ketamine.
- Most patients in the opioid-sparing group received dexmedetomidine.
- Primary outcome of PONV after opioid-sparing anesthesia decreased compared to non-opioid-sparing anesthesia, though not statistically significant.
- Pain outcomes similar between groups.
- Correlation between opioid-sparing anesthesia and hospital LOS. Significance unclear.

## CONCLUSIONS

- Opioid-sparing anesthesia can provide similar post-op pain control as non-opioid-sparing anesthesia.
- An alternative to opioid-based analgesia, a multimodal approach or opioid-sparing anesthesia may offer reductions in PONV and respiratory complication risk.
- Opioid-sparing anesthesia can transform care for patients undergoing bariatric surgery.

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## REFERENCES



Reference List



Paper

