

The Effect of Obesity on Postoperative Analgesia Practices and Complications Following Endoscopic Sinus Surgery: A Propensity Score-Matched Cohort Study

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Background

- Post-operative pain is an important management principle in surgical specialties, and may be influenced by patient characteristics and provider biases [1]
- There is growing concern regarding over-prescription of narcotic pain medication following ambulatory otolaryngologic surgery, contributing to the ongoing opioid crisis
- Obese patients may have altered postoperative pain thresholds due to numerous underlying mechanisms, including alterations in galanin, ghrelin, and leptin signaling [2]
- Opioid use in obese patients is associated with significant respiratory morbidity [3]
- Little is known about the analgesic prescribing practices following functional endoscopic sinus surgery (FESS) of obese patients in comparison to non-obese patients.

Objective

To compare the rates of opioid versus non-opioid prescriptions, the need for steroids, and post-operative adverse events between obese and non-obese adult patients undergoing endoscopic sinus surgery.

Methods

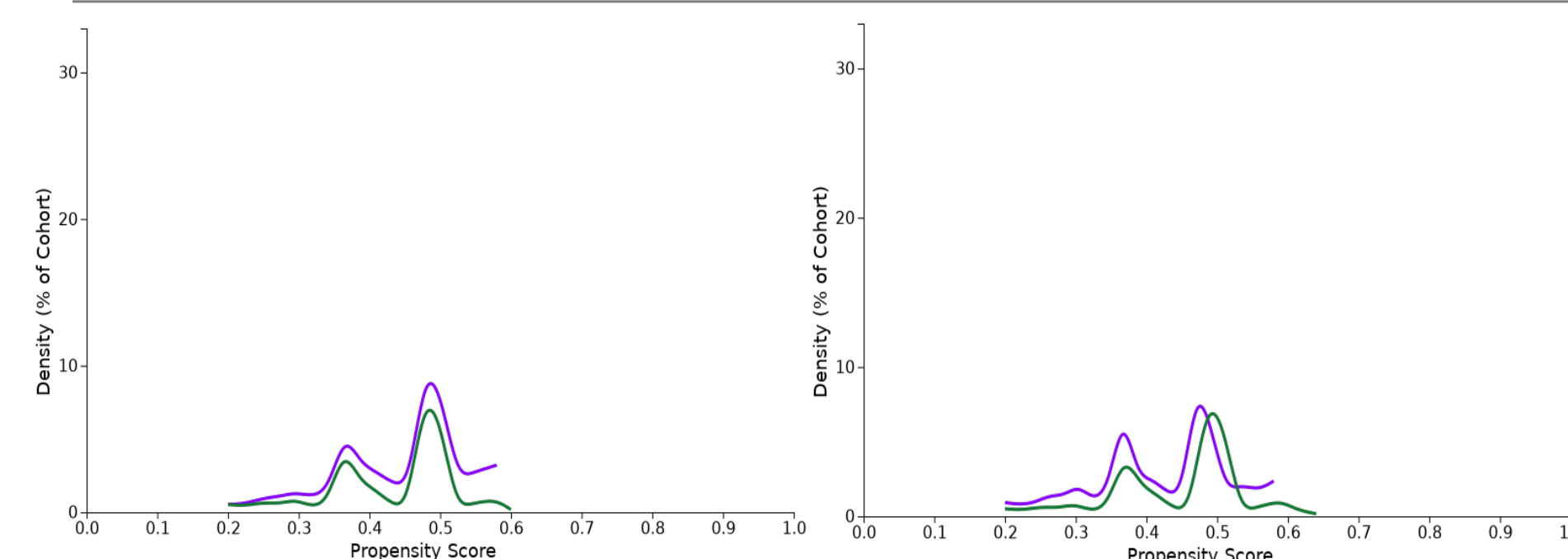
TriNetX Live Database

- Single institution – University of Tennessee Health Science Center in Memphis, TN
- Patients studied:
 - Patients aged ≥ 18 who underwent functional endoscopic sinus surgery (n=1870) between January 2014 and December 2022.
- Cohorts:
 1. Obese (BMI ≥ 30 kg/m²)
 2. Nonobese (18.5 kg/m² \leq BMI < 30 kg/m²)
- Cohorts were 1:1 propensity score-matched for age, gender, race, and comorbidities, including asthma, nicotine dependence and sleep apnea.

Cohort 1 and cohort 2 patient count before and after propensity score matching

Cohort	Patient count before matching	Patient count after matching
1 - >18 FESS Obese	760	560
2 - >18 FESS Non-Obese	590	560

Propensity score density function - Before and after matching (cohort 1 - purple, cohort 2 - green)



- Data extracted/ analyzed:
 - Rates of non-opioid analgesic prescriptions
 - Rates of opioid analgesic prescriptions
 - Rates of steroid use
 - Post-operative adverse events and complications between cohorts
- Data within the first 14 days after FESS was analyzed using risk ratios

Results

Outcomes in a cohort of 560 obese patients were compared to a propensity score-matched cohort of 560 nonobese patients in the first 14 post-operative days following endoscopic sinus surgery. The obese cohort was significantly more likely to be prescribed opioid analgesics (21.4% vs 14.3%; risk ratio [RR]: 1.50, 95% confidence interval [95% CI]: 1.16-1.94, p = 0.0018) and non-opioid analgesics (21.4% v 14.3%; RR: 1.50; 95% CI: 1.16-1.94, p = 0.0018) in comparison to nonobese patients.

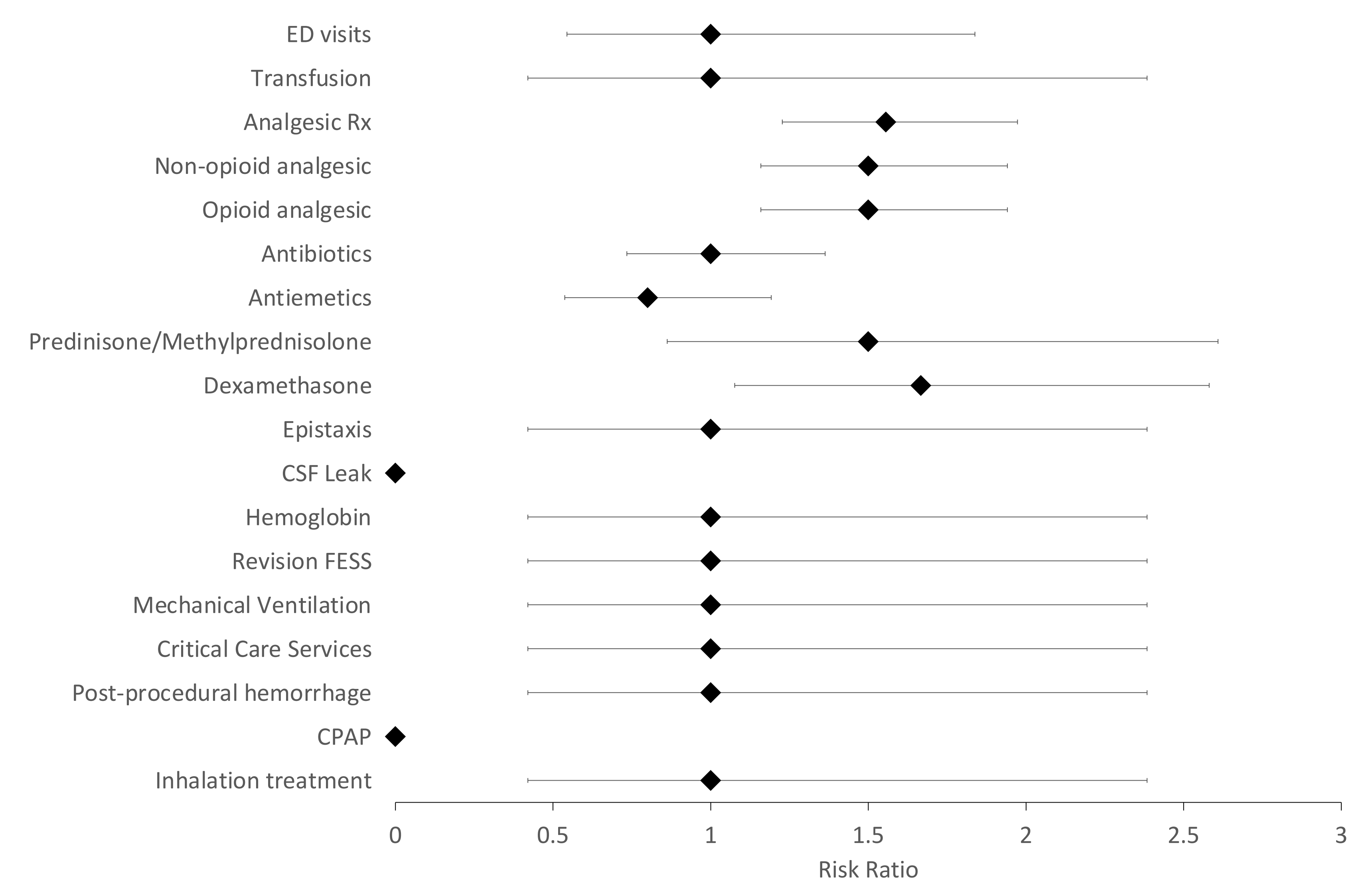


Figure 1. Forest plot showing the Risk Ratios and 95% confidence intervals for each outcome category when comparing the obese patients (cohort 1) to non-obese patients (cohort 2) that underwent FESS.

Obese patients were also more likely to be prescribed dexamethasone than non-obese patients (8.9% vs 5.4%; RR: 1.67; 95% CI: 1.08-2.58). There were no differences between cohorts in rates of post-procedural hemorrhage, epistaxis, need for transfusion, need for antibiotics, revision sinus surgery or emergency department visits. In terms of airway management, there was no differences in need for mechanical ventilation or inhalation airway treatments. There were not enough instances of cerebrospinal fluid leak and CPAP to draw any statistical conclusions.

Conclusions

- Obese patients undergoing endoscopic sinus surgery were significantly more likely to be prescribed non-opioid and opioid analgesia and dexamethasone in the first 14 days post-operatively in comparison to non-obese patients.
- There were no differences in post-operative adverse events.
- Despite no differences in ventilatory or antibiotic requirements, our data suggests that extra attention may need to be paid to the usage of post-operative opioids and steroids in obese patients undergoing endoscopic sinus surgery, especially in patients with comorbid sleep apnea and/or diabetes.
- Otolaryngologists should be aware that obese patients are at an increased risk of opioid induced airway obstruction, as well as steroid induced hyperglycemia, which can slow wound healing and cause infection [3].
- Multi-modal pain management with an increased emphasis on non-opioid analgesics should be advocated for in this population.

Acknowledgements

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References

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