

The Effect of Opioid-Free Anesthesia on Postoperative Nausea and Vomiting: A Systematic Review

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What is the effect of OFA on PONV incidence in patients undergoing laparoscopic surgery?

Abstract

Objective: This review aimed to determine the effect of opioid-free anesthesia (OFA) versus standard, opioid-containing anesthetic regimens (e.g., fentanyl, morphine, hydromorphone) on postoperative nausea and vomiting (PONV) in adults aged 18 and older undergoing laparoscopic surgical procedures.

Background

- PONV is one of the most common side effects of anesthesia
- Previous studies on OFA during colorectal and bariatric surgeries were associated with decreased PONV incidence

PONV	
Risk Factors	Complications
1. History of PONV 2. Female sex 3. Nonsmoking status 4. Perioperative opioid use 5. Laparoscopic surgeries	•Wound dehiscence •Bleeding •Dehydration •Electrolyte abnormalities <i>Can result in delays in discharge and increased rehospitalization rates</i>

- Benefits of OFA
 - Reduced risk of opioid related side effects, such as nausea, vomiting, constipation and respiratory depression
 - Lower incidence of postoperative pain and opioid addiction
 - Improved recovery and discharge times

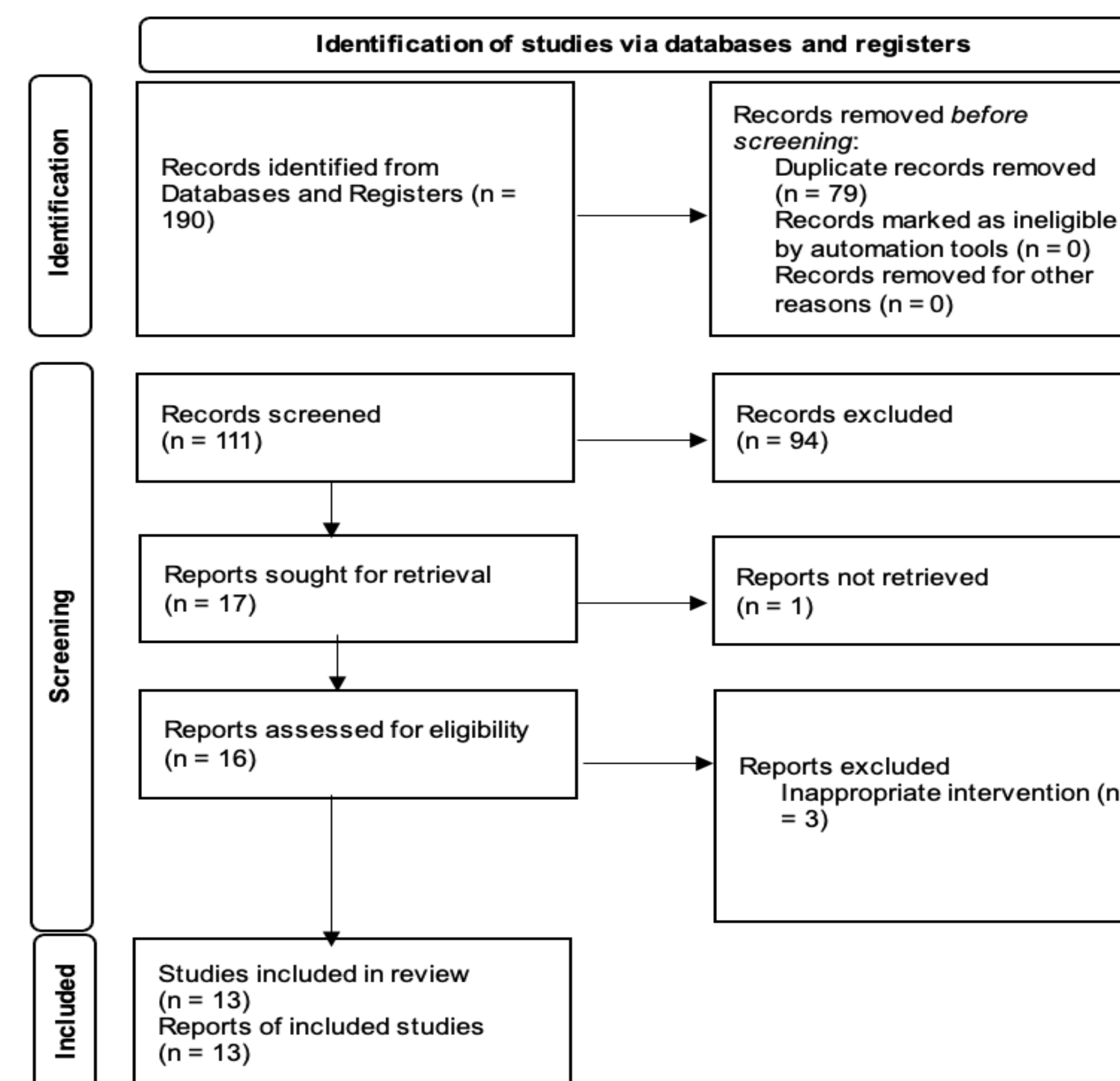
- Medications used for OFA include
 - Local Anesthetics
 - Alpha 2 Agonists: Dexmedetomidine/Clonidine
 - Magnesium sulfate
 - Ketamine
 - NSAIDS

Methods

Databases: MEDLINE, Embase, CINAHL, and PubMed

Keywords: *Laparoscopy; opioid-free; postoperative nausea and vomiting; systematic review*

Search Strategy:

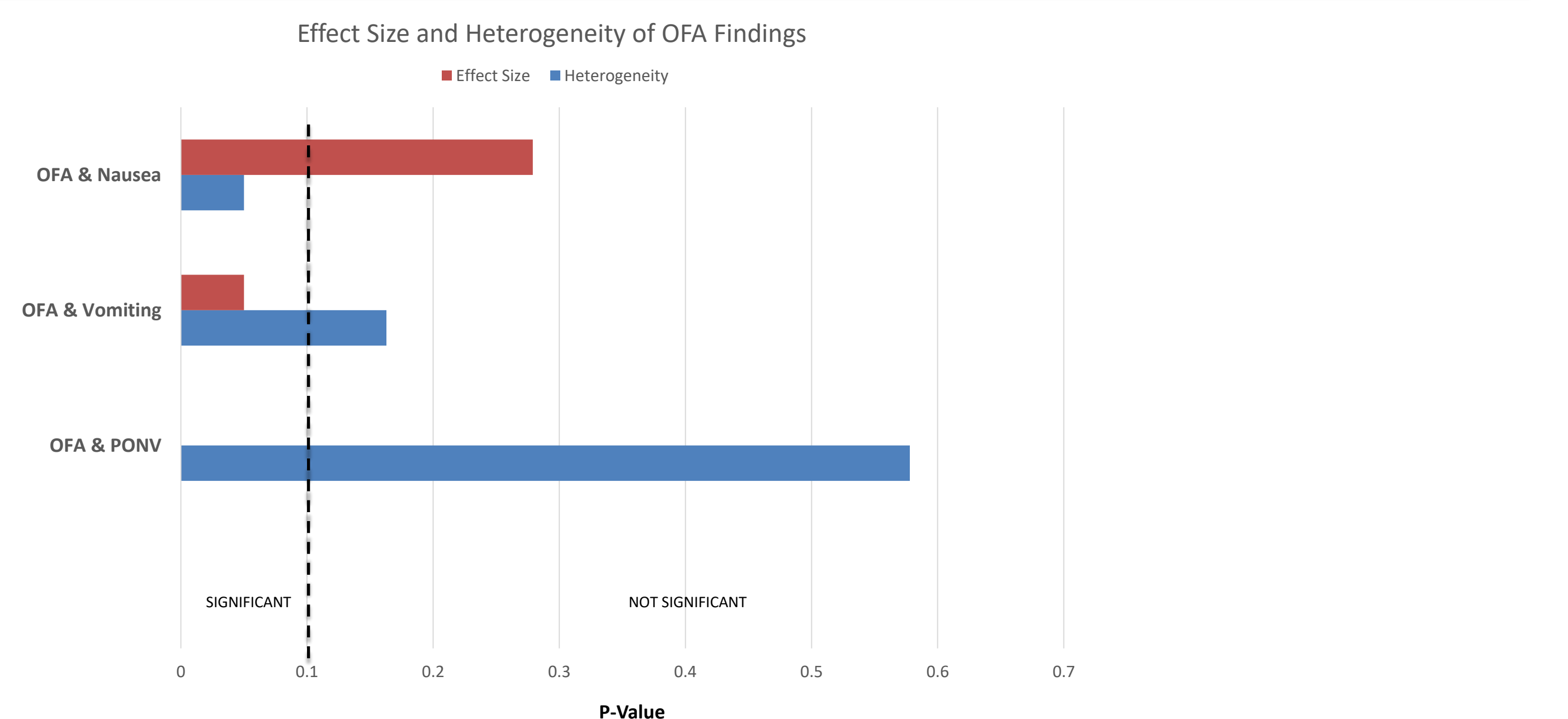


Statistical Analysis: A random-effects model meta-analysis using SPSS software was conducted to assess relevant outcomes.

Statistical Tests Used

Model: Random-effects model
Heterogeneity: Tau-squared, H-squared, I-squared statistics
Homogeneity: Cochran's Q test
Overall effect size: Z-score

Results



- The effect of OFA on nausea did not test statistically significant when compared to the control group (log odds ratio: -0.461; 95% CI: -1.295 to 0.373, p = 0.279)
- Meta-analysis demonstrated a statistically significant reduction in vomiting in the OFA group compared to control (log odds ratio: -0.986; 95% CI: -1.677 to -0.295, p = 0.005).
- A reduction in PONV in the OFA group tested statistically significant compared to control (log odds ratio: -1.085; 95% CI: -1.512 to -0.659, p < 0.001).

Discussion

- Our review supports the use of OFA as a potential anesthetic modality aimed towards reducing the incidence of PONV in patients undergoing laparoscopic surgery
- Standardization of PONV assessment was universally lacking in previous literature

Limitations

- Search strategy for articles only in English
- The OFA regimens were not standardized and varied between studies
- Most studies had a small number of participants, which may potentially affect the validity of findings which limits generalizability.

Conclusions

- The findings of the systematic review support the use of OFA in reducing PONV incidence in laparoscopic surgeries
- The high degree of heterogeneity in the meta-analysis of effects of OFA on nausea in patients undergoing laparoscopic surgery suggests that the results should be interpreted with caution
- OFA modalities can be effective in reducing PONV but the lack of validated scales or tools in most studies makes the findings susceptible to report and observation bias
 - Only two studies included the PONV impact scale, a validated tool in assessing PONV.
 - Other assessment scales, such as the verbal response scale, rely on the individual patient's experience to grade nausea severity.
- Clinicians should consider OFA to improve the post-operative experience for patients undergoing laparoscopic surgery

Recommendations for Future Studies

- Further research is needed to establish the effectiveness of OFA in decreasing PONV in other surgical populations
- Studies should be designed to examine the effect of OFA on PONV as the primary outcome in laparoscopic surgery
- Future studies should focus on standardizing OFA treatment regimens to allow for
- Further research on OFA and PONV should prioritize the use and development of a standardized measure for PONV as many studies did not use a validated scale or tool.



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