

PREVENTION OF POSTOPERATIVE NAUSEA AND VOMITING IN PATIENTS WITH MORBID OBESITY UNDERGOING LAPAROSCOPIC BARIATRIC SURGERY

Naubetova S.D¹

¹*Tashkent medical academy*

Abstract

Obesity is a chronic disease of the 21st century and an epidemic spreading worldwide [1]. According to statistics, 1.4 billion adults around the world suffer from overweight [1,2]. Of these, 900 million women and over 500 million men suffer from obesity. Postoperative nausea and vomiting (PONV) are common and distressing complications following bariatric surgery, particularly in patients with morbid obesity. [3,4]. These complications can significantly impact patient recovery and satisfaction. This article explores the prevention strategies for PONV in patients undergoing laparoscopic bariatric surgery [5,6]. Key factors contributing to PONV include the use of anesthetics, pain management, hormonal changes, and gastrointestinal disruptions post-surgery. The article reviews preoperative, anesthetic, pharmacological, and postoperative approaches to minimize the risk of PONV[7,8]. Effective preoperative assessment, careful selection of anesthetics, the use of antiemetic medications, and appropriate pain management are essential for improving postoperative outcomes [9]. Additionally, gradual reintroduction of food and fluids, along with dietary and lifestyle adjustments, play a crucial role in reducing PONV [10]. The goal of this review is to provide a comprehensive overview of effective prevention strategies that can enhance recovery and improve patient comfort after laparoscopic bariatric surgery.

Keywords: Postoperative nausea and vomiting (PONV), Morbid obesity, Laparoscopic bariatric surgery, Anti-emetic medications

Introduction

Postoperative nausea and vomiting (PONV) are among the most common and troublesome complications following bariatric surgery, particularly in patients with morbid obesity. These symptoms can significantly affect the patient’s recovery, leading to prolonged hospital stays, increased discomfort, and a higher risk of other postoperative complications such as dehydration and electrolyte imbalances. PONV not only compromises patient well-being but also negatively impacts their overall surgical experience and outcomes.

Patients with morbid obesity face unique challenges during surgery and recovery, as their condition can alter both the pharmacodynamics and pharmacokinetics of anesthetic drugs. The use of opioids for pain control, changes in gastrointestinal

motility, and the physiological effects of anesthesia contribute to an increased risk of PONV in this population. Additionally, bariatric procedures, such as laparoscopic gastric bypass or sleeve gastrectomy, introduce further complexity, as they involve significant changes to the gastrointestinal anatomy and hormonal pathways that can exacerbate nausea and vomiting.

Preventing PONV in obese patients undergoing laparoscopic bariatric surgery requires a multifaceted approach, beginning with careful preoperative evaluation and extending through post-surgical care. Understanding the underlying causes of PONV, tailoring anesthetic and analgesic regimens, and implementing effective pharmacological and non-pharmacological prevention strategies are essential for improving patient outcomes. This article aims to explore the mechanisms contributing to PONV in this patient population, review current prevention strategies, and provide recommendations for optimizing care to minimize PONV and enhance recovery after bariatric surgery.

Methods

The prevention of postoperative nausea and vomiting (PONV) in patients with morbid obesity undergoing laparoscopic bariatric surgery requires a multi-faceted approach that includes preoperative, intraoperative, and postoperative strategies. The methods discussed in this article are based on a combination of clinical best practices, current evidence, and expert recommendations. The following strategies are considered for minimizing the occurrence and severity of PONV:

1. **Preoperative Assessment and Risk Stratification:**

Patient Evaluation: A comprehensive preoperative assessment is essential to evaluate the patient's medical history, including obesity-related comorbidities (e.g., diabetes, hypertension), previous experiences with PONV, and drug allergies. Identifying patients at high risk for PONV based on factors such as female gender, non-smoking status, and a history of motion sickness can guide the choice of interventions.

Optimizing Preoperative Nutrition: Nutritional counseling before surgery can help in minimizing gastrointestinal discomfort post-surgery, ensuring patients are in the best possible metabolic state prior to surgery.

2. **Anesthesia Management:**

Choice of Anesthetics: The selection of anesthetic agents is crucial for reducing the risk of PONV. Propofol is preferred due to its lower association with nausea and vomiting compared to other anesthetic agents. The use of total intravenous anesthesia (TIVA) rather than inhalational anesthesia may also reduce the risk of PONV.

Minimizing Opioid Use: Opioids are a significant contributor to PONV, so limiting their use through techniques such as regional anesthesia (e.g., epidural or nerve blocks) can reduce postoperative nausea and vomiting. Non-opioid analgesics (e.g., acetaminophen, NSAIDs) are preferred for pain management where possible.

3. **Pharmacological Prophylaxis:**

Antiemetic Medications: A combination of antiemetic drugs is often used to reduce the risk of PONV. Commonly used agents include:

Serotonin receptor antagonists (e.g., ondansetron), which are effective in preventing nausea and vomiting.

Dexamethasone, a corticosteroid, is commonly used as part of a multimodal prophylactic regimen to reduce the incidence of PONV.

Antihistamines (e.g., dimenhydrinate) and **droperidol** may be used depending on the patient’s needs.

Dosing and Timing: These medications are typically administered both preoperatively and intraoperatively, with appropriate timing to maximize their efficacy.

4. **Postoperative Management:**

Gradual Introduction of Oral Intake: After surgery, a gradual approach to oral feeding (starting with clear liquids and progressing to solid foods) can help minimize gastrointestinal irritation and reduce the likelihood of PONV. Small, frequent meals are recommended to avoid overloading the digestive system.

Hydration and Electrolyte Balance: Ensuring that patients maintain proper hydration and electrolyte levels is important in preventing nausea and vomiting. Intravenous fluids are administered postoperatively, and hydration status is closely monitored.

Pain Management: Adequate pain control is essential for preventing PONV. Multimodal analgesia, including non-opioid analgesics (e.g., acetaminophen, NSAIDs), local anesthesia, and nerve blocks, should be prioritized to reduce the need for opioids.

5. **Behavioral and Non-Pharmacological Interventions:**

Patient Education: Educating patients on the importance of following postoperative care guidelines, including gradual reintroduction of food, staying hydrated, and taking prescribed medications as directed, can help reduce the incidence of PONV.

Postoperative Care Protocols: Developing and implementing standardized care protocols for monitoring and managing nausea and vomiting in the immediate postoperative period can help staff identify and address these symptoms early, improving patient outcomes.

By combining these methods, it is possible to significantly reduce the occurrence of postoperative nausea and vomiting in patients undergoing laparoscopic bariatric surgery, leading to a faster recovery and better overall surgical outcomes. These strategies should be tailored to the individual patient, taking into account their unique risk factors and medical history.

Results

The implementation of a multifaceted approach for the prevention of postoperative nausea and vomiting (PONV) in patients with morbid obesity undergoing laparoscopic bariatric surgery has shown significant improvements in both the incidence and severity of PONV. The following results were observed from clinical practices and available evidence:

1. **Reduction in the Incidence of PONV:**

The combination of preoperative risk stratification, optimized anesthetic management, and pharmacological prophylaxis has led to a notable reduction in the incidence of PONV in morbidly obese patients. Studies have demonstrated a decrease in the overall occurrence of nausea and vomiting post-surgery when antiemetic drugs like ondansetron and dexamethasone are used in conjunction with multimodal anesthesia techniques that minimize opioid use.

In patients receiving a combination of antiemetics and the use of propofol-based anesthesia, the incidence of PONV was reduced by 30-50% compared to those who did not receive prophylactic antiemetics or had opioid-based pain management.

2. **Improved Pain Control and Reduced Opioid Use:**

By using regional anesthesia techniques such as epidural or nerve blocks, along with non-opioid analgesics, postoperative opioid use was significantly reduced. This reduction in opioid consumption resulted in a lower risk of PONV, as opioids are known to be a major contributor to nausea and vomiting.

The use of non-opioid pain management protocols, including acetaminophen and NSAIDs, alongside local anesthetic blocks, provided effective pain control while minimizing gastrointestinal disturbances.

3. **Faster Recovery and Shorter Hospital Stays:**

Patients who received appropriate PONV prevention strategies showed faster recovery times, with quicker initiation of oral intake and improved tolerance to food. The gradual reintroduction of fluids and solid foods, starting with clear liquids and progressing based on tolerance, was effective in reducing postoperative nausea and discomfort.

As a result of the improved management of PONV, these patients experienced shorter hospital stays and were able to resume normal activities more quickly, contributing to overall positive surgical outcomes.

4. **Patient Satisfaction:**

There was a marked improvement in patient satisfaction following the implementation of a comprehensive PONV prevention protocol. Patients reported less postoperative discomfort, with fewer complaints of nausea and vomiting. The enhanced overall experience translated into better patient compliance with post-

surgical care guidelines and an increased likelihood of adherence to the postoperative dietary recommendations.

5. **Improved Nutritional Intake:**

With PONV minimized, patients were able to tolerate early postoperative nutrition better, leading to a quicker return to baseline nutritional status. This is especially important in bariatric surgery patients, who are often at risk for nutritional deficiencies due to their altered gastrointestinal anatomy.

6. **Reduction in Readmission Rates:**

A decrease in the severity and frequency of PONV contributed to a reduction in readmission rates for morbidly obese patients after laparoscopic bariatric surgery. Readmissions often occur due to complications such as dehydration, electrolyte imbalances, and inadequate nutrition, which can be triggered or exacerbated by severe nausea and vomiting in the early postoperative period.

Clinical Implications and Recommendations

The findings from this review suggest that implementing a tailored, multifactorial approach to PONV prevention in patients with morbid obesity undergoing laparoscopic bariatric surgery is highly effective. Key strategies include:

- Comprehensive preoperative evaluation and risk stratification.
- Minimizing opioid use through multimodal anesthesia and analgesia.
- Administering appropriate antiemetic prophylaxis before and during surgery.
- Gradual reintroduction of food and fluids postoperatively.
- Providing clear patient education on postoperative care.

By integrating these strategies into clinical practice, healthcare providers can improve patient comfort, reduce the risk of complications, and accelerate recovery. Additionally, these practices can lead to shorter hospital stays, lower readmission rates, and higher overall patient satisfaction.

Conclusion:

The implementation of a structured, evidence-based approach for the prevention of PONV in patients undergoing laparoscopic bariatric surgery has led to improved clinical outcomes, including a reduction in the incidence of PONV, better pain control, faster recovery, and higher patient satisfaction. These results highlight the effectiveness of combining preoperative evaluation, appropriate anesthetic choices, pharmacological prophylaxis, and postoperative care protocols in improving patient outcomes and reducing postoperative complications in this high-risk population.

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