RESEARCH PAPER

Incidence of Postoperative Nausea and Vomiting in Patients Following General Anaesthesia

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Abstract

Background: Postoperative nausea and vomiting (PONV) are among the most common and distressing complications experienced by patients following surgery under general anaesthesia. PONV can delay recovery, prolong hospital stay, and negatively affect patient satisfaction. Several patient-related, surgical, and anesthetic factors may influence the occurrence of PONV.

Aim: To study the occurrence of postoperative nausea and vomiting in patients undergoing surgical procedures under general anaesthesia.

Materials and Methods: This observational study was conducted in the Department of Anaesthesia at a tertiary care teaching hospital attached to Meenakshi Medical College, Kanchipuram. A total of 75 patients undergoing elective surgical procedures under general anaesthesia were included in the study. Patients were monitored for the occurrence of nausea, vomiting, or both during the first 24 hours postoperatively. Demographic characteristics, duration of anaesthesia, and postoperative outcomes were recorded. Statistical analysis was performed using appropriate statistical tests, and a p value less than 0.05 was considered statistically significant.

Results: The overall incidence of postoperative nausea and vomiting was 36%. Nausea alone occurred in 16% of patients, vomiting alone in 8%, and both nausea and vomiting in 12%. PONV was more common in female patients (43.9%) compared with male patients (26.5%) ($p = 0.041$). Patients with anaesthesia duration greater than 120 minutes showed the highest incidence of PONV (57.1%), and the association between anaesthesia duration and PONV was statistically significant ($p = 0.018$).

Conclusion: Postoperative nausea and vomiting are relatively common following surgery under general anaesthesia, particularly in female patients and in cases with prolonged anaesthesia duration. Early identification of high risk patients and appropriate preventive strategies may help reduce the incidence of PONV.

Keywords: Postoperative nausea and vomiting, general anaesthesia, postoperative complications, perioperative risk factors, recovery outcomes.

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Introduction

Postoperative nausea and vomiting (PONV) is one of the most common and distressing complications experienced by patients following surgery under general anaesthesia. It is often described by patients as more unpleasant than postoperative pain and may significantly affect overall patient satisfaction and recovery. The occurrence of PONV can delay recovery, prolong hospital stay, and increase healthcare costs due to the need for additional treatment and monitoring. Therefore, prevention and management of PONV remain important aspects of perioperative care in modern anaesthesia practice [1].

The reported incidence of postoperative nausea and vomiting varies widely depending on several patient related, surgical, and anesthetic factors. In the general surgical population, the incidence of PONV ranges from 20% to 30%, but it may increase to as high as 70% to 80% in high risk patients. Factors such as female gender, non smoking status, history of motion sickness, and use of postoperative opioids are well recognized risk factors for the development of PONV. In addition, the type and duration of surgery and the anesthetic technique used may influence the occurrence of this complication [2].

General anaesthesia is considered one of the major contributors to postoperative nausea and vomiting. The use of volatile anesthetic agents, nitrous oxide, and opioid analgesics during general anaesthesia has been associated with increased incidence of PONV. These agents may stimulate the chemoreceptor trigger zone and vomiting center in the brain, leading to nausea and

vomiting in the postoperative period. Furthermore, surgical manipulation and perioperative physiological changes may also contribute to the development of these symptoms [3].

PONV not only causes discomfort but may also lead to several clinical complications such as dehydration, electrolyte imbalance, wound dehiscence, aspiration of gastric contents, and delayed recovery. These complications can negatively affect postoperative outcomes and increase the burden on healthcare systems. Therefore, identifying patients at risk and implementing preventive strategies are essential for reducing the incidence of PONV [4].

Various pharmacological and non pharmacological strategies have been developed to prevent and manage postoperative nausea and vomiting. Antiemetic drugs such as serotonin receptor antagonists, dopamine antagonists, and corticosteroids are commonly used in clinical practice to reduce the incidence of PONV. In addition, modifications in anesthetic techniques, including the use of total intravenous anesthesia and reduction of opioid use, have been shown to decrease the occurrence of postoperative nausea and vomiting [5–7].

Despite advances in anesthetic techniques and antiemetic therapies, postoperative nausea and vomiting continue to be a significant concern in perioperative care. Understanding the incidence and associated factors of PONV in patients undergoing surgery under general anaesthesia is essential for improving patient management and enhancing postoperative recovery [8].

Therefore, the present study was undertaken to evaluate the occurrence of postoperative nausea and vomiting in patients following surgery under general anaesthesia.

Materials and Methods

This observational study was conducted in the Department of Anaesthesia at a tertiary care teaching hospital attached to Meenakshi Medical College, Kanchipuram, Tamil Nadu. The study aimed to evaluate the occurrence of postoperative nausea and vomiting (PONV) in patients undergoing surgical procedures under general anaesthesia.

A total of 75 patients undergoing elective surgical procedures under general anaesthesia were included in the study. Patients aged between 18 and 60 years and classified as American Society of Anesthesiologists (ASA) physical status I or II were considered eligible for inclusion. Patients with a history of chronic gastrointestinal disorders, those receiving antiemetic therapy before surgery, pregnant women, and patients undergoing emergency surgeries were excluded from the study.

All patients underwent a detailed preoperative evaluation including medical history, physical examination, and necessary laboratory investigations. Standard intraoperative monitoring such as electrocardiography, non invasive blood pressure monitoring, pulse oximetry, and respiratory rate monitoring was applied throughout the surgical procedure.

General anaesthesia was administered using standard anesthetic techniques according to institutional protocols. Induction of anaesthesia was performed using intravenous anesthetic agents, followed by maintenance with inhalational anesthetic agents and appropriate analgesics. The duration of anaesthesia, type of surgery, and anesthetic drugs used were recorded for all patients.

Postoperative nausea and vomiting were assessed in the postoperative period in the recovery room and during the first 24 hours after surgery. Patients were monitored for the presence of nausea, vomiting, or both, and the frequency of these symptoms was documented. The requirement for rescue antiemetic medication was also recorded.

All collected data were systematically recorded and entered into Microsoft Excel for analysis. Statistical analysis was performed using SPSS statistical software. Descriptive statistics including mean, standard deviation, frequency, and percentage were used to summarize the data. Associations between different variables and the occurrence of postoperative nausea and vomiting were evaluated using appropriate statistical tests such as the Chi square test. A p value less than 0.05 was considered statistically significant.

Results

A total of 75 patients undergoing elective surgical procedures under general anaesthesia were included in the study to evaluate the occurrence of postoperative nausea and vomiting (PONV).

Table 1: Demographic Characteristics of Study Participants (n = 75)

Variable	Frequency (%)
Mean age (years)	38.6 ± 10.4
Age 18–30 years	24 (32%)
Age 31–45 years	28 (37.3%)
Age 46–60 years	23 (30.7%)
Male	34 (45.3%)

Variable	Frequency (%)
Female	41 (54.7%)

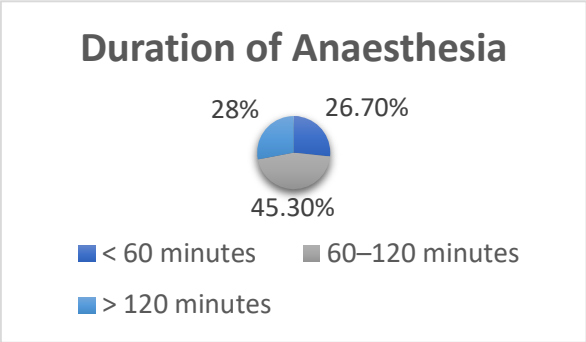
The mean age of the study participants was 38.6 ± 10.4 years. The majority of patients belonged to the 31–45 year age group (37.3%). Female patients constituted 54.7% of the study population.

Table 2: Type of Surgical Procedures

Type of Surgery	Frequency (%)
General surgery	28 (37.3%)
Gynecological surgery	18 (24%)
Orthopedic surgery	16 (21.3%)
ENT surgery	13 (17.3%)

General surgical procedures accounted for the largest proportion (37.3%), followed by gynecological surgeries (24%).

Figure 1: Duration of Anaesthesia



Most patients had anaesthesia duration between 60–120 minutes (45.3%), while 28% had anaesthesia lasting more than 120 minutes.

Table 3: Incidence of Postoperative Nausea and Vomiting

PONV Outcome	Frequency (%)
Nausea only	12 (16%)
Vomiting only	6 (8%)
Both nausea and vomiting	9 (12%)
No symptoms	48 (64%)

Postoperative nausea and vomiting occurred in 36% of patients, while 64% of patients did not experience any symptoms.

Table 4: Association Between Gender and PONV

Gender	PONV Present	PONV Absent	Total	p value
Male	9 (26.5%)	25 (73.5%)	34	**0.041**
Female	18 (43.9%)	23 (56.1%)	41	

Postoperative nausea and vomiting were more frequently observed in female patients (43.9%) compared with male patients (26.5%). The association between gender and PONV was statistically significant ($p < 0.05$).

Table 5: Association Between Duration of Anaesthesia and PONV

Duration of Anaesthesia	PONV Present	PONV Absent	Total	p value
< 60 minutes	4 (20%)	16 (80%)	20	0.018
60–120 minutes	11 (32.4%)	23 (67.6%)	34	
> 120 minutes	12 (57.1%)	9 (42.9%)	21	

The incidence of PONV increased with longer duration of anaesthesia. Patients with anaesthesia duration greater than 120 minutes had the highest incidence (57.1%). The association between anaesthesia duration and PONV was statistically significant ($p < 0.05$).

Discussion

Postoperative nausea and vomiting (PONV) remains one of the most common and distressing complications following surgery under general anaesthesia. Despite advances in anesthetic techniques and the availability of effective antiemetic drugs, the occurrence of PONV continues to be a significant concern in perioperative care. In the present study, the overall incidence of postoperative nausea and vomiting was 36%, with 16% of patients experiencing nausea alone, 8% experiencing vomiting alone, and 12% experiencing both symptoms.

In the present study, the incidence of PONV was higher among female patients (43.9%) compared with male patients (26.5%), and the association between gender and PONV was statistically significant ($p = 0.041$). This finding is consistent with the observations reported by Watcha MF et al [9], who identified female gender as one of the major risk factors associated with increased incidence of postoperative nausea and vomiting.

The duration of anaesthesia also showed a significant relationship with the occurrence of PONV in the present study. Patients with anaesthesia duration greater than 120 minutes had the highest incidence of PONV (57.1%), while patients with anaesthesia duration less than 60 minutes showed a lower incidence (20%). The association between duration of anaesthesia and PONV was statistically significant ($p = 0.018$). Similar findings were reported by Apfel CC et al [10], who demonstrated that prolonged exposure

to anesthetic agents significantly increases the risk of postoperative nausea and vomiting.

Several studies have emphasized that identifying risk factors is essential for predicting and preventing PONV. Tramer MR [11] reported that risk stratification plays an important role in reducing the incidence of PONV by allowing clinicians to implement appropriate prophylactic antiemetic therapy in high risk patients.

The pathophysiology of postoperative nausea and vomiting is multifactorial and involves stimulation of the vomiting center and chemoreceptor trigger zone in the brain. Kovac AL [12] highlighted that anesthetic agents, opioid analgesics, and surgical factors can stimulate these pathways, leading to nausea and vomiting in the postoperative period.

Risk factors for PONV have been widely studied in the literature. Gan TJ [13] reported that factors such as female gender, non smoking status, history of motion sickness, and use of postoperative opioids significantly increase the likelihood of PONV. These findings support the results of the present study, where female patients demonstrated a higher incidence of PONV.

Preventive strategies have also been investigated in various studies. Kranke P et al [14] reported that prophylactic antiemetic therapy and modification of anesthetic techniques can significantly reduce the occurrence of postoperative nausea and vomiting in high risk patients.

Furthermore, risk prediction models have been developed to identify patients who are more likely to develop PONV. Eberhart LHJ et al [15] evaluated different risk scoring systems and concluded that accurate prediction of PONV risk can improve perioperative management and reduce postoperative complications.

Overall, the findings of the present study are consistent with previous research demonstrating that female gender and prolonged duration of anaesthesia are important risk factors for postoperative nausea and vomiting. Early identification of high risk patients and implementation of appropriate preventive strategies may help reduce the incidence of PONV and improve patient comfort and recovery following surgery under general anaesthesia.

Conclusion

The present study demonstrated that postoperative nausea and vomiting remain common complications in patients undergoing surgery under general anaesthesia, with an overall incidence of 36%. The occurrence of PONV was significantly higher among female patients and in those with a longer duration of anaesthesia. Patients with anaesthesia durations greater than 120 minutes had the highest incidence of PONV (57.1%), and the association between anaesthesia duration and PONV was statistically significant ($p = 0.018$). These findings highlight the importance of identifying patients at higher risk for PONV and implementing appropriate preventive strategies, including careful anesthetic management and prophylactic antiemetic therapy, to improve postoperative comfort and recovery outcomes.

Conflict of Interest: Nil

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