*Nanotechnology Perceptions*
*ISSN 1660-6795*
*www.nano-ntp.com*

# Prevalence and Incidence of Postoperative Nausea and Vomiting in Maxillofacial Surgeries

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Life-threatening events and severe complications are, for the most part, rare after orthognathic surgery. Improved surgical techniques, development of short acting reliable anesthetic drugs and sophisticated monitoring equipment are among the main reasons this procedure is safer today than in the past. Despite these advances, postoperative nausea and vomiting (PONV) remains one of the most common and distressing complications for both inpatients and outpatients undergoing virtually all types of surgery. The incidence of PONV, during the ether era, ranged from 75% to 80%, improving gradually to approximately 9% to 43% over the past 40 years. PONV occurs primarily within the first 24 hours and can lead to significant morbidity, delayed hospital discharge, increased hospital costs and perhaps most importantly, poor patient satisfaction. We found PONV had a high prevalence among patients undergoing orthognathic surgery. Further studies are needed to develop effective protocols for preventing this common and unpleasant problem.

**Keywords:** Postoperative Nausea, vomiting, maxillofacial surgeries, unpleasant problem.

## 1. Introduction

Life-threatening events and severe complications are, for the most part, rare after orthognathic surgery. (1) Improved surgical techniques, development of short acting reliable anesthetic drugs and sophisticated monitoring equipment are among the main reasons this procedure is safer today than in the past. Despite these advances, postoperative nausea and vomiting (PONV) remains one of the most common and distressing complications for both inpatients and outpatients undergoing virtually all types of surgery. The incidence of PONV, during the ether era, ranged from 75% to 80%, improving gradually to approximately 9% to 43% over the past 40 years.(2) In spite of the current research and ever evolving pharmacologic therapies to minimize this unpleasant event, the overall incidence of PONV during the first 24 hours after surgery varies between 20% and 30%.(3)

The aetiology and consequences of PONV are complex and multifactorial, with patient-, medical- and surgery-related factors. A thorough understanding of these factors, as well as the

neuropharmacology of multiple emetic receptors [dopaminergic, muscarinic, cholinergic, opioid, histamine, serotonin (5-hydroxy-tryptamine; 5-HT)] and physiology [cranial nerves VIII (acoustic-vestibular), IX (glossopharyngeal) and X (vagus), gastrointestinal reflex] relating to PONV are necessary to most effectively manage PONV. Commonly used older, traditional antiemetics for PONV include the anticholinergics (scopolamine), phenothiazines (promethazine), antihistamines (diphenhydramine), butyrophenones (droperidol) and benzamides (metoclopramide). These antiemetics have adverse effects such as dry mouth, sedation, hypotension, extrapyramidal symptoms, dystonic effects and restlessness. The newest class of antiemetics used for the prevention and treatment of PONV are the serotonin receptor antagonists (ondansetron, granisetron, tropisetron, dolasetron). These antiemetics do not have the adverse effects of the older, traditional antiemetics. Headache and dizziness are the main adverse effects of the serotonin receptor antagonists in the dosages used for PONV. The serotonin receptor antagonists have improved antiemetic effectiveness but are not as completely efficacious for PONV as they are for chemotherapy-induced nausea and vomiting. The aim of this study is to evaluate incidence of postoperative nausea and vomiting after Oral and Maxillofacial Surgery.

## 2. MATERIALS & METHODS:

Study Type : Pilot study.

Study area : Oral and Maxillofacial Surgery Department, SaveethaDental College.

Samples: Patient undergoingmajor surgeries in SaveethaDental College.

Scheduling : Between November 2022 to January 2023

Study instrument: A well tested structured proforma was used for this study to evaluate the pre and post anaesthetic effects. The proferma consists of two parts, 1st part was to record the demographic details of the patient, the 2nd part was to evaluate the pre, intra and post operative effect.

Statistics:Data was entered in Microsoft excel spread sheet and analyzed using SPSS software (version 20)

Descriptive statistics test were used. A p value of $< 0.05$ was considered

## 3. RESULTS :

A total of 15 patients were included in this survey;

However, all patients met the inclusion

criteria. out of which 9 patient underwent OGS, 5 trauma and 1 ankylosis surgery patient. Data collected from the medical charts were temporally divided into 3 sections: preoperative, intraoperative and postoperative assessments .

Preoperative assessment (Patient characteristics)

Intraoperative (Surgical and Anesthetic characteristics):

Postoperative assessment (PACU and SSU): nursing notes made in the postanesthesia recovery room

(PACU) and the short-stay units (SSU),

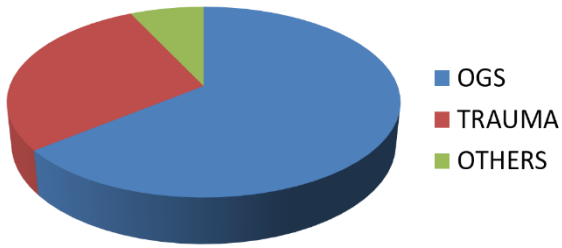


Figure 1: Distribution on types of surgery

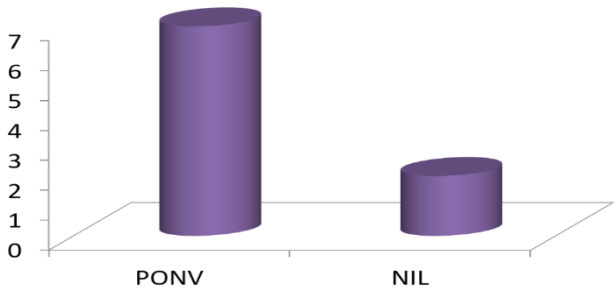


Figure 2: Distribution of PONV in OGS patients

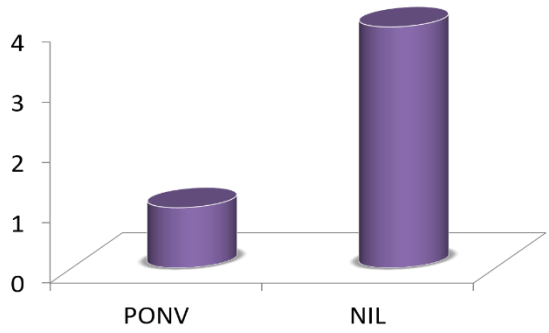


Figure 3: Distribution of PONV in Trauma patients

## 4. DISCUSSION :

Nausea is an unpleasant transient sensation causing discomfort which gives the feeling of the impending need to vomit or retch, followed by active retching or tachycardia and increased salivation. Vomiting is the involuntary, forceful expulsion of the contents of the stomach

through the mouth and/or nose [11] .

The epidemiology of PONV is well described in the literature with regard to abdominal; gynecological; plastic; ear, nose and throat; and other types of surgeries. However, until now, no study has specifically analyzed the prevalence of PONV, and related risk, among orthognathic surgery patients. Although recent studies have suggested that nausea and vomiting are 2 biologically different phenomena and therefore should be studied separately (4) Generally, the risk factors can be divided into non anesthetic or preoperative- related factors, anesthetic or intraoperativerelated factors and postoperative-related factors. ( 5 )

Preoperative-related factors :

Many patient characteristics can influence the incidence of PONV. Among these are: age, gender, previous history of PONV, motion sickness, vertigo or migraine headaches. In our population, we found a statistically significant relationship between age and PONV. The younger the patient, the more likely they were to experience PONV. Sinclair et al ( 6 ) described similar results, pointing out that age decreased the likelihood of PONV by 13% for every 10-year increase. Although some studies have suggested that obese patients have a higher prevalence of PONV, especially after long operations (longer than 3 hours)(7) we did not find BMI to be a predictive factor for PONV. Some investigators have hypothesized that the generous fatty tissue in obese patients could act as a long-term storage area, thus prolonging the adverse effects of some lipid soluble emetogenic drugs. This relationship remains controversial.

INTRAOPERATIVE-RELATED FACTORS:

The etiology of PONV is complex and involves a number of interrelated pathways. Clearly, operative and anesthetic factors play a major role in its occurrence ( 8 ) Apfel et al, ( 10 ) comparing the number of risk factors and the incidence of PONV, suggested that for patients with 2 predictive factors (risk of PONV 40%), it would be wise to avoid volatile general anesthetics. If 3 or 4 risk factors were present (60% to 80%), a multimodal approach with several different antiemetics would be the best choice. Visser et al ( 11 ) recommended that multimodal therapies be used only in high-risk patients (ie, 3 or 4 risk factors).

POST OPERATIVE-RELATED FACTORS:

Factors affecting the incidence of postoperative nausea and

vomiting.

Factors not under the control of the anaesthetist

1) Age

2) Sex

3) History of previous PONV or motion sickness

4) Smoking

5) Surgical procedure

6) Duration of surgery and anaesthesia

7) Patient and parental anxiety

Factors under the control of the anaesthetist

1) Premedication

2) Type of anaesthesia

3) Intraoperative anaesthetic drugs

(a) Nitrous oxide

(b) Intravenous agents

(c) Inhalation agents

(d) Antagonists of non-depolarising neuromuscular blocking drugs

4) Postoperative management

(a) Pain management

(i) Local anaesthetics

(ii) NSAIDs

(iii) Opioids

(b) Movement

(c) Oral intake

(d) Non-pharmacological – acupressure/acupuncture

5) Antiemetic drugs

6) Other factors – hypovolemia, gastric distension

A total of 15 patient met with an inclusion criteria out of which 9 patient underwent OGS, 5 trauma and 1 ankylosis surgery patient. Data collected from the medical charts were temporally divided into 3 sections:preoperative, intraoperative and postoperative assessments. Factors that may have influenced the risk of PONV were analyzed and included . The results of this study showed a high prevalence of PONV among orthognathic surgery patients during their hospital stay. Associated lip numbness, orofacial swelling, and swallowing blood are common in the early postoperative period after orthognathic surgery, especially those surgeries in which the maxilla was involved. The combination of all these factors may be associated with a higher prevalence of PONV. Stress also a factor to cause increase in the PONV among OGS patient who are in young age. So proper pre operative counselling is necessary to minimize the PONV.

## 5. CONCLUSION

PONV occurs primarily within the first 24 hours and can lead to significant morbidity, delayed hospital discharge, increased hospital costs and perhaps most importantly, poor patient satisfaction. We found PONV had a high prevalence among patients undergoing orthognathic

surgery. Further studies are needed to develop effective protocols for preventing this common and unpleasant problem.

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