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Effectiveness of Gastric Decompression in Reducing Postoperative Nausea and Vomiting Following Ear, Nose, and Throat Surgery: A Comparative Study

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Abstract
This study investigated the incidence and severity of postoperative nausea and vomiting (PONV) in patients undergoing ear, nose, and throat (ENT) surgery, with a focus on the role of gastric decompression (GD) in mitigating these symptoms. A cohort of over two hundred patients who had undergone ENT operations was divided into two groups: Group I, where GD was administered before extubation, and Group II, where GD was not utilized post-surgery. The occurrence and severity of PONV were assessed at various time intervals postoperatively. Results revealed a significantly higher incidence of PONV in Group II compared to Group I at the second, fourth, eighth, and twelfth postoperative hours, with PONV also being more severe in Group II. Additionally, patients in Group I with PONV ratios exceeding 10 were significantly more likely to experience PONV in the second hour compared to those with aspirated gastric contents of less than ten milliliters. However, there were no statistically significant differences in PONV occurrence or severity between the two groups at subsequent time points. These findings underscore the efficacy of gastric decompression in reducing PONV following ENT surgery.

Introduction

Various risk factors associated with surgery and patient characteristics may contribute to the development of postoperative nausea and vomiting (PONV) [1]. ENT surgery increases the risk of PONV by 30–70%, while general PONV incidence is 20–30% [2–4]. Some of the contributing factors include late adolescence, female sexuality, tobacco addiction, type of surgery applied, previous PONV before surgery, bowl diseases, gastroparesis, excess of weight, and the use of opioid analgesics in the postoperative period [5]. An antiemetic dose, steroid treatment, and intravenous fluid administration are all included in the management of PONV [6]. Furthermore, it would be advantageous to reduce the use of opioid analgesics in postoperative pain management and to replace them with non-opioid analgesics [6]. The P-6 acupuncture point can also be stimulated in addition to perioperative gastric decompression (GD) [7, 8]. The procedure of ENT surgery involves passive blood flow. The literature has shown that GD can reduce PONV incidence in some studies, but also that it can exacerbate it in other studies [9, 10]. PONV severity and GD incidence were correlated in our study, along with aspired stomach contents.

Material and Method

An ethics committee approved and patient permissions were obtained before 274 patients underwent ENT surgery in an ENT room. A study involving 18 to 65-year-old patients with ASA risk conditions of 1, 2, and 3 was conducted over a period of six months.

In the study, participants with PONV, motion sickness, antiemetic drug allergies, Meniere's syndrome, major cancer surgery, a short period of hunger before surgery, kidney and liver diseases, upper respiratory system

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pathologies, antiemetic drug usage, morbid obesity, or pregnancy were excluded. The study excludes patients who have suffered major surgical complications or who are taking antiemetic and steroid drugs after surgery.

Before each operation, anesthesia was examined in all cases. A variety of laboratory tests were conducted on all patients to check their blood counts, coagulation parameters, electrolyte levels, liver enzyme levels (SGOT, SGPT), BUN, creatinine, and hunger blood glucose levels.

Through a closed envelop method, a nurse divided the patients into two groups in the preparation room. In the case of GD, the study group is comprised of 140 patients, while the control group consists of 135 patients.

Inflating the suction catheter distal end into the stomach and monitoring passive air drainage is conducted. A feeding injector containing 50 mL was then used to aspirate the contents of the stomach. An injector was used to measure the amount of stomach content suctioned with an intraluminal volume of CA14, fifty three cm suction catheter of five millilitres. The catheter was detach after the gastric contents had been drained through suction. In Group II, oral airways (number 3) were also placed, but GD was not used. In patients with spontaneous breathing beginning after the GD, atropine was taken and neuromuscular block was provided as 0.01 mg/kg. Patients were extubated when spontaneous breathing had been sufficient. As soon as patients were extubated, they were placed in a head-up position and were given oxygen at a rate of 6 liters/minute. Throughout the first, fourth, eighth, and 24th hours, PONV was evaluated in terms of presence or absence based on severity. Povnant disease can be classified into mild, moderate, and severe severity levels, including mild (vomitting twice, mild nausea without an external stimulant, and nausea induced by eating, drinking, or moving). Metoclopramide 10 mg was administered intravenously as antiemetic medication to patients with moderate or severe PONV. Neither the intraoperative nor the postoperative periods of the study involved the use of opioids or antiemetic medication.

As part of the supplementary statistics, we used mean values, standard deviation levels, ratios, and frequency values. Kolmogorov-Smirnov was used to control the distribution of variants. A Mann-Whitney U test and an independent sampling t-test were used in analyzing quantitative data. A chi-square test was conducted on the qualitative data; when a chi-square test could not be conducted, a Fischer test was conducted. Statistical significance was determined by a P value of 0.05.

Results

Averaging 126.94 x 46.04 seconds, Group I had a GD duration of 126.94 x 46.04 seconds. A higher percentage of patients in Group II were found to have PONV in the second, four, eight, and twenty four hours following operation compared to Group I. Among those who aspirated more stomach content than those who aspirated less in Group I, the severity of PONV was significantly higher in Group II than in Group I. A statistically significant difference does not exist between gastric content aspired and PONV ratio the particular time period in hours.

Table 1: Group I and II PONV severity.

PONV	Group I		Group II		P
	n	%	n	%	
1st hour	14	11.2%	70	51.9%	0.000
2nd hour	26	17.9%	44	63.8%	0.000
8th hour	16	11.6%	16	63.9%	0.000
24th hour	6	3.9%	10	26.1%	0.000

Table 2: It is the amount of stomach contents in Group I and II that determines PONV.

PONV	The amount of stomach content				P
	Less than 10ml		More than 10ml		
	n	%	N	%	
1st hour	4	3.8%	10	22.1%	0.019
2nd hour	20	20.7%	6	12.9%	0.398
8th hour	12	11.9%	4	8.6%	0.594

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24th hour	6	6.1%	0	0.0%	0.547

Discussion

Patients undergoing ENT surgery may be more likely to develop PONV by up to 75%. It is important to determine PONV in patients who undergo inpatient surgery quite frequently. As well as these complications, PONV may also cause obstructions of the airways, aspiration pneumonias, subcutaneous emphysema, bleeding, and delays in the healing of incisions. A number of factors contribute to elevated intracranial pressure, including dehydration, electrolyte imbalance, malnutrition, prolonged hospitalization, and psychological effects.

The occurrence of PONV is fairly common among patients who undergo ENT surgery as a result of blood flow to their stomachs during surgery and postoperatively, as well as surgical interventions performed during surgery. It is also possible to induce PONV through direct stimulation of chemoreceptor trigger zones by causing mucosal damage and pharyngeal edema. The trigeminal nerve stimulates oropharynx and stomach chemoreceptors as well as mechanoreceptors, resulting in PONV. A number of factors may contribute to PONV, including postoperative pain, anxiety, vertigo, early mobilization, early intake of oral medication, and prescription opioids. It has also been reported that when the air pressure increased over 25 cm H2O during ventilation with a mask, the risk of PONV associated with gastric distension may be increased.

The incidence of PONV in ENT surgery has been reduced by a number of methods. Antiemetics are most commonly used for prevention and treatment purposes. In gastric decompression, anesthesiologists often use this technique. All anesthesiologists should administer GD to patients regardless of whether they are aware they are doing so. A nasal approach is more difficult, dangerous, and less common than an orogastric approach. In our study, gastric decompression was applied via the orogastric method. Neither during nor after application, we encountered any complications.

GD applications in ENT surgery are seldom studied for impact on PONV incidence, according to the literature. According to Pasternak, placing a gastric tube can eliminate the risk of PONV and aspiration pneumonia. In Ferrari and Donlon's study on young patients undergoing tonsillectomy, PONV incidence was found to be 48% in the presence of metoclopramide, and 70% in the absence of the drug. We found that the PONV ratio in patients treated with prophylactic antiemetics together with GD is almost double that of patients treated with GD alone (22%). In our study, we analyzed patients who underwent a variety of ENT surgeries and found a low PONV rate. PONV rates were 55% in the GD treatment group and 48% in the control group in patients undergoing surgery in different branches, and it was argued that GD had no effect on PONV rates.

Conclusion

Accordingly, GD applied just before extubation after ENT surgery for patients whose PONV factors were minimized reduces the severity and incidence of PONV. As more stomach content is aspirated, PONV is more likely to occur and to be more severe. A more comprehensive study should be conducted on the use of GD in different surgical types, patient groups, and at different times, in addition to in cases where there are risk factors. It is an effective alternative to pharmacological treatment for adults with problems with their ears, nose, and throat, as it is inexpensive, easy to apply, has low complications, and does not require special skills.

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