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ORIGINAL RESEARCH—SINONASAL DISORDERS

Effectiveness of hypopharyngeal packing during nasal and sinus surgery in the prevention of PONV

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OBJECTIVE: Evaluate the hypopharyngeal packing effectiveness on prevention of postoperative nausea and vomiting (PONV) in nasal surgery.

STUDY DESIGN AND SETTING: A randomized clinical trial was conducted from July 2004 to October 2005. The intervention group was submitted to hypopharyngeal packing after orotracheal tube placement. The control group had no hypopharyngeal packing. Occurrence of nausea, vomiting, use of antiemetic drugs, and throat pain were checked blindly on recovery period.

RESULTS: One hundred forty-four patients were included in the study. There was no difference related to postoperative nausea (RR 1.34; CI 0.72-2.48), vomiting (RR 0.52; CI 0.19-1.47), use of antiemetic drugs (RR 1.54; CI 0.80-2.95), and throat pain (RR 0.91; 0.62-1.34) between both groups. A beta error could not be excluded.

CONCLUSION: Results suggest there is no benefit in hypopharyngeal packing on PONV prevention in nasal surgery. New studies with a greater number of patients should be carried out in order to confirm these results.

Postoperative nausea and vomiting (PONV) are frequent complications of nasal and paranasal sinus surgeries. Otolaryngological surgeries have a PONV incidence that is four to six times greater than surgeries of other specialties, and may reach as high as 80% among higher-risk patients.[1,2] We know that the occurrence of PONV is multifactorial and has to do with anesthetic, surgical, and individual factors of the patient.

The nose and paranasal sinuses are well-vascularized structures; therefore, surgeries in this region can frequently present considerable bleeding. Empirically it is believed that the blood swallowed during this surgery is one of the causes of or increases the occurrence of these postoperative events. Hypopharyngeal packing after orotracheal intubation is a common practice among anesthetists and surgeons as an attempt to keep blood from being swallowed during surgery and consequently prevent the occurrence of PONV. However, there are no studies available evaluating the effectiveness of this procedure.

Hypopharyngeal packing is not a completely risk-free procedure. Though controversial, Marais indicates an increase in postoperative pain when using these packs.[2,3] Furthermore, though rare, there is also the possibility of complications related to foreign body aspiration.[4,5]

The objective of this study is to evaluate the effectiveness of hypopharyngeal packing in the prevention of the occurrence of PONV after nasal and sinus surgeries.

PATIENTS AND METHODS

Inclusion Criteria

Included in the study were all patients submitted to nasal and/or paranasal sinus surgeries under general anesthesia in the otolaryngology department of Hospital de Clínicas in Porto Alegre from July 2004 until October 2005, who were older than 12 years of age.

Exclusion Criteria

The following patients were excluded from the study: those submitted to another intervention at the same time (adenoidectomy, tonsillectomy); those with a serious systemic disease (acquired immunodeficiency syndrome, leukemia, lymphoma, or other neoplasias under chemotherapy treatment); those presenting contraindications for using nonsteroid anti-inflammatory drugs; those undergoing surgery under ambulatory conditions; those presenting a tumor as the motive for the surgery.

Calculation of the Sample Size

In order to analyze the relation between hypopharyngeal packing in nasal surgery and the occurrence of postoperative nausea and vomiting, it is estimated that 71 patients would be needed in the intervention group and 71 in the control group, which would be a total of 142 patients. The software EpiInfo6 was used to make this calculation, estimating the incidence of outcome at 30% in the control group and 10% in the intervention group, as well as setting an alpha error of 5% and a statistical power of 80% (beta error = 20%).

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Study Design

The study was a randomized clinical trial.

METHODS

All of the patients that met the selection criteria were included in the study. These were blindly randomized into two groups.

The intervention group was submitted to hypopharyngeal packing after orotracheal intubation. The packing was done with two damp gauzes joined at one of its extremities by a knot. The tampon was put in place by the anesthetist by direct visualization in such a way that the gauzes were positioned on both sides of the endotracheal tube and the knot on the midline next to the uvula. The control group received no hypopharyngeal packing.

The anesthetic protocol was standardized and was the same for both groups of patients (Table 1). The postoperative analgesia was with paracetamol and dipyrone and the use of opioids was avoided because of their potentially pro-emetic effect.

Outcomes

The main outcome was the occurrence of nausea and vomiting in the first 24 hours after surgery. These were recorded by the nursing team and registered in a standard way by a trained investigator. Both the nursing staff and the investigator were blind as to the intervention.

Vomiting was defined as the expulsion of gastrointestinal content from the mouth. The use of symptomatic medication was available for all the patients and its use was evaluated among the groups, being considered an intermediate outcome. The occurrence of postoperative throat pain was considered as a secondary outcome.

Before the hospital discharge, the patients underwent a standard interview with a single trained and blind interviewer who recorded the reports of the patient as to the occurrence of the outcomes under study.

Statistical Considerations

The database was stored in the program SPSS. The χ^2 test was used for the qualitative variables. The *t* test for independent samples was used for the comparisons of averages.

Table 1
Anesthetic protocol

8- to 10-hour fast before surgery
Anesthetic induction with midazolam, propofol, and atracurium
Maintenance with inhalation anesthesia with continual endovenous isoflurane and remifentanil
Dexamethasone 0.05 mg/kg
Tenoxicam 40 mg
Prophylactic metoclopramide or ondansetron were not used

Table 2
Baseline characteristics

Characteristics	All n = 144	Intervention n = 70	Control n = 74
Age			
Mean	35.5	35.4	34.6
Range	12-77	12-77	13-73
Women (%)	36.8	34.2	39.1
Active smoker (%)	15.2	15.7	14.8

$P > 0.05$ for all variables.

Ethical Aspects

The patients included in the study signed a term of informed consent. The project was approved by the Ethics in Research Committee of Hospital de Clínicas in Porto Alegre.

RESULTS

A total of 144 patients were included in the study. Table 2 shows the baseline characteristics of the patients after the randomization. There was no statistically significant difference between the two groups concerning these characteristics.

The nasal surgeries carried were 51 (35%) septoplasty or rhinoseptoplasty, associated or not with submucous cauterizing of inferior conchae; 45 (31%) partial inferior turbinectomy associated or not with septoplasty; and 48 (33%) endoscopic sinus surgeries, associated or not with septoplasties.

Table 3 demonstrates the incidence of the outcomes studies between both groups, along with the relative risks and reliability intervals obtained. The use of hypopharyngeal packing did not significantly reduce the PONV risk or the use of symptomatic medication. The occurrence of postoperative throat pain also did not differ between both groups. The results were similar when stratified by type of surgery.

DISCUSSION

Hypopharyngeal packing is a common technique used in the prevention of postoperative nausea and vomiting during nasal and sinus surgeries, despite the absence of any evidence of efficacy.

However, there are various reports of problems related to this packing such as forgetting to take it out and its migration, with potentially serious results. The occurrence of postoperative sore throat related to the packing has also been studied.[5]

In the attempt to evaluate the role of blood swallowed after tonsillectomy, a randomized clinical trial studied the effect of gastric aspiration in the prevention of the occurrence of PONV. Here also there was no difference in the incidence of PONV between the patients submitted to postoperative gastric aspiration when compared to the control group.[3] This fact causes one to consider that the swallowing of blood during this

Table 3
Results: outcomes analysis

Outcomes	All n = 144	Packing n = 74	Control n = 70	Relative risk	CI (95%)*
Vomiting	15 (10.4)	5 (7.1)	10 (13.5)	0.52	0.19-1.47
Nausea	32 (22.2)	18 (25.7)	14 (18.9)	1.34	0.72-2.48
Need of					
Metoclopramide	30 (20.8)	18 (25.7)	12 (16.2)	1.54	0.80-2.95
Morphine	34 (23.6)	16 (22.8)	18 (24.3)	0.93	0.53-1.71
Throat pain	60 (41.6)	28 (40)	32 (43.2)	0.91	0.62-1.34

*Confidence interval 95%.

surgery may not be a determining factor in the occurrence of PONV, contrary to the prevailing idea today.

The occurrence of PONV is considered to be multifactorial.[7-9] In a study involving otolaryngological surgeries, the following characteristics were identified as independent risk factors: female gender, young age, smoking habit, previous history of PONV, and length of surgery.[6] In our study these characteristics did not statistically differ between the two groups studied, which indicates an effective randomization resulting in homogenous groups.

The literature presents the PONV incidence as varying from 10% to 80% depending on the number of risk factors present in the patient's profile.[6] Based on this information, we assume, for purposes of calculating the sample size, a PONV incidence of 30% in the control group and of 10% in the group that received the hypopharyngeal packing. However, our group of patients presented a lower PONV incidence, causing the outcome to be less common. Because of this, it is not possible to exclude the presence of a beta error in our study. Therefore, new clinical trials with greater numbers of patients should be conducted in order to confirm these results.

CONCLUSION

These results suggest there is no benefit in hypopharyngeal packing on PONV prevention in nasal surgery. New studies with a greater number of patients should be carried out in order to confirm these results.

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AUTHOR CONTRIBUTIONS

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FINANCIAL DISCLOSURE

None.

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