Pesquisa Brasileira em Odontopediatria e Clínica Integrada 2019, 19(1):e4386
DOI: http://doi.org/10.4034/PBOCI.2019.191.56
ISSN 1519-0501

ORIGINAL ARTICLE

Effect of Pharyngeal Pack on Postoperative Nausea and Throat Pain in Patients Undergoing Rhinoplasty

Seyed-Ahmad Arta[1], Mohammad-Ali Ghavimi[2], Mahdi Rahbar[3], Yashar Ali-Maddadi[4], Ali Zarandi[5]

[1]Department of Oral and Maxillofacial Surgery, Dental School, Tabriz University of Medical Sciences, Tabriz, Islamic Republic of Iran. 0000-0001-6901-7036
[2]Department of Oral and Maxillofacial Surgery, Dental School, Tabriz University of Medical Sciences, Tabriz, Islamic Republic of Iran. 0000-0002-6638-2799
[3]Department of Operative and Esthetic Dentistry, Dental School, Tabriz University of Medical Sciences, Tabriz and Research Center for Prevention of Oral and Dental Diseases, Baqiyatallah University of Medical Sciences, Tehran, Islamic Republic of Iran. 0000-0002-9049-8169
[4]Department of Oral and Maxillofacial Surgery, Dental School, Tabriz University of Medical Sciences, Tabriz, Islamic Republic of Iran. 0000-0001-7289-7951
[5]Department of Periodontics, Dental School, Tabriz University of Medical Sciences, Tabriz, Islamic Republic of Iran. 0000-0003-1336-1692

Author to whom correspondence should be addressed: Ali Zarandi, Department of Periodontics, Dental and Periodontal Research Center, Dental School, Tabriz University of Medical Sciences, Tabriz, Iran. Phone: +98 912 454 5699. E-mail: dr.alizarandi@gmail.com.

Academic Editors: Alessandro Leite Cavalcanti and Wilton Wilney Nascimento Padilha

Received: 19 September 2018 / Accepted: 15 February 2019 / Published: 01 March 2019

Abstract

Objective: To evaluate the effect of pharyngeal pack on postoperative throat pain and nausea in rhinoplasty patients. **Material and Methods:** Twenty-eight patients were randomly selected and divided into two groups (n=14). The participants were randomly divided into two groups: G1 - the pharyngeal pack was used (Intervention group) and G2: not used (Control group). Both groups were anesthetized by the same protocol. Throat pain was measured by visual analog scale and nausea by presence / absence. Fischer's exact test, ANOVA, Friedman and Wilcoxon test were used. **Results:** There was no significant difference in mean pain and presence or absence of nausea between the two groups ($p>0.05$). But there was a significant difference in mean pain and the presence or absence of postoperative nausea with the intervals ($p<0.05$). Mean pain had a significant difference 2 hours postoperatively with other times, 6 hours postoperatively with 24 and 72 hours postoperatively, and 24 hours postoperatively with 72 hours ($p<0.05$). There was no significant difference in the presence or absence of postoperative nausea, between 2 hours and 6 hours postoperatively ($p>0.05$). The presence or absence of postoperative nausea had a significant difference between 2 hours postoperatively with 24 and 72 hours postoperatively and 6 hours postoperatively with 24 and 72 hours postoperatively ($p<0.05$). There was no significant difference in nausea between 24 hours and 72 hours postoperatively ($p>0.05$). **Conclusion:** None of the two groups were significantly superior in terms of reduction of pain and nausea, but because of the possible effectiveness of the pharyngeal pack in preventing aspiration of objects and tissues during the operation, the use of pharyngeal pack is recommended in patients.

Keywords: Pain, Postoperative; Nasal Surgical Procedures; Visual Analog Scale.

CC BY

Introduction

Today, surgical operations are one of the commonly used methods for treating various diseases that lead to recovery and favorable physical and mental conditions [1,2]. However, this type of treatment has complications due to direct trauma to the patient and different treatment conditions, which usually leads to patient's negative attitude towards surgery. Throat pain and nausea/vomiting are among the most common complications observed in most surgeries, especially those with anesthesia and in head and neck area [3,4].

Accordingly, one of the main factors in postoperative satisfaction of patients, especially in "rhinoplasty", which is today performed for various reasons mainly elective and by the patient's request for esthetic purposes and less for treatment purposes, is lack of nausea/vomiting and throat pain [3,5].

Pain, one of the factors studied in the present study, is an unpleasant feeling with different types, divided into two general groups of pathologic and physiological or physical and psychological, which mostly occurs by stimulation of the relevant free nerve terminals (mechanical, chemical, temperature, etc.) by harmful factors and compels the living creature to evade them [1,6].

Nausea, another influential factor studied in this project, is a commonly disgusting and negative mental phenomenon that occurs usually by various causes, such as different diseases, digestive problems, poisoning, and infections, causing an unpleasant sensation in the back of the throat in the epigastric region, which, if intensifies or continues, leads the patient to vomiting defense, during which the patient may empty the gastric and duodenal contents from mouth with pressure to get rid of the problem, which not always means the end of nausea and a desirable outcome [5,7,8].

The complications listed above create barriers and problems, based on the conditions it makes for the patient, like delayed discharge from the hospital, and increased costs. These complications delay the hospital discharge of about 30% of patients [9]. Additionally, the need for specific anti-emetic drugs imposes weekly costs for patients; except this 30%, 25% of patients discharged earlier than 24 hours after surgery have nausea/vomiting, which imposes additional cost of specific therapies to treatment cost of patients [9].

Postoperative pain and nausea/vomiting, in addition to the above-mentioned problems, have other consequences, like aspiration of the vomited contents into the lung or in the pathway, when the patient has a low level of consciousness, which severely increases the risk of choking or body dehydration due to various reasons that cause electrolyte disturbances in the entire body and damage to the surgical site. All of the above, along with the treatment costs, can lead to anxiety and dissatisfaction of the patient [10].

With regard to the above-mentioned causes, the main cause of nausea and throat pain is pharyngeal stimulation, greatly affected by insertion of pharyngeal pack and intubation. The pharyngeal pack is inserted in posterior pharyngeal space after intubation, which, according to different studies and objective evidence, reduces the risk of aspiration by absorbing some blood and

CC BY

preventing penetration and aspiration of isolated tissues and bones and was believed to reduce the risk of surgery, and nausea/vomiting. But recent studies show that the pharyngeal pack, may not be as effective as thought and may even cause postoperative throat pain and nausea. Currently, there is no evidence of the effectiveness of routine use of pharyngeal pack in rhinoplasty or evidence of increased complications by not inserting one. The purpose of this study was to compare the effect of pharyngeal pack on reducing postoperative nausea/vomiting and throat pain in patients undergoing rhinoplasty, compared to patients without pharyngeal pack.

Material and Methods

Sample

Twenty-eight patients were selected according to the inclusion and exclusion criteria by simple random sampling from patients who referred to Imam Reza Hospital of Tabriz for rhinoplasty. The participants were randomly divided into two groups: G1: the pharyngeal pack was used (the intervention group) and G2: not used (control group). All patients were evaluated in terms of throat pain and nausea, both by objective and subjective methods.

Inclusion Criteria

Adult patients (aged 18 to 40), with ASA class 1, 2 and 3, Mallampati class 1 and 2, without swallowing problem (pain and movement), without a cold for at least the last 6 weeks, without any type of coagulopathies, without more than once history of laryngoscopy (maximum 15 seconds), without problems regarding intubation or in the airway and gastrointestinal tract (trachea and esophagus), and surgery time > 2 hours.

Data Collection

For anesthesia, the same drugs were used for both groups: 2 μg/kg fentanyl, 2 mg midazolam, and 3 mg/kg propofol by inhalation and one IV dose of 4 mg ondansetrone during surgery. In addition, spiral tubes were used for intubation in all patients. Finally, patients were evaluated in terms of postoperative throat pain and nausea in the pharyngeal area at intervals of 2, 6, 24, 72 hours after surgery using a checklist prepared by standard visual analog scale. Meanwhile, in the event of vomiting, the volume was also recorded.

Statistical Analysis

Data were analyzed using descriptive statistics (absolute and relative frequencies, mean and standard deviation). Statistical analysis was performed using IBM SPSS Statistics for Windows Software, version 17 (IBM Corp., Armonk, NY, USA). Fischer's exact test was used to examine the relationship between the presence or absence of postoperative nausea in the groups. To investigate the effect of the studied groups on mean pain at different intervals, the repeated Measures ANOVA test was used. Friedman test was used to assess the association between the presence or absence of

postoperative nausea in the participants at the four intervals. To determine this significant difference was between which of the two intervals, Wilcoxon test was used. Significance level set at 5%.

Ethical Aspects

This research was approved by the Ethics Research Committee of the Tabriz University of Medical Sciences.

Results

The distribution of participants' sex was as follows: in the intervention group, 5 were female and 9 were male, and in the control group, 8 were female and 6 were male; mean and standard deviation of age in the intervention group was 23.42 ± 5.09 and that in control group was 26.71 ± 9.48 years. There was no significant relationship between sex and age of the participants (p>0.05). The mean and standard deviation of the pain variable evaluated at different times and study groups are presented in Table 1.

Table 1. Mean and standard deviation of pain in different time intervals in the study groups.

Intervals	Group	Mean (SD)
2 Hours After Surgery	With Pharyngeal Pack	5.00 ± 1.24
	Without Pharyngeal Pack	4.78 ± 2.19
6 Hours After Surgery	With Pharyngeal Pack	2.28 ± 1.72
	Without Pharyngeal Pack	2.6429 ± 1.78
24 Hours After Surgery	With Pharyngeal Pack	1.00 ± 1.35
	Without Pharyngeal Pack	0.92 ± 1.63
72 Hours After Surgery	With Pharyngeal Pack	0
	Without Pharyngeal Pack	0

There was no significant difference in the mean pain between the two study groups (p>0.05). The interactive effect of the group and intervals on mean pain was not significant, in other words, the effect of the intervals and study groups on the mean pain were similar in both groups (p>0.05). There was a significant difference between the mean pain and the intervals (p<0.001) (Figure 1).

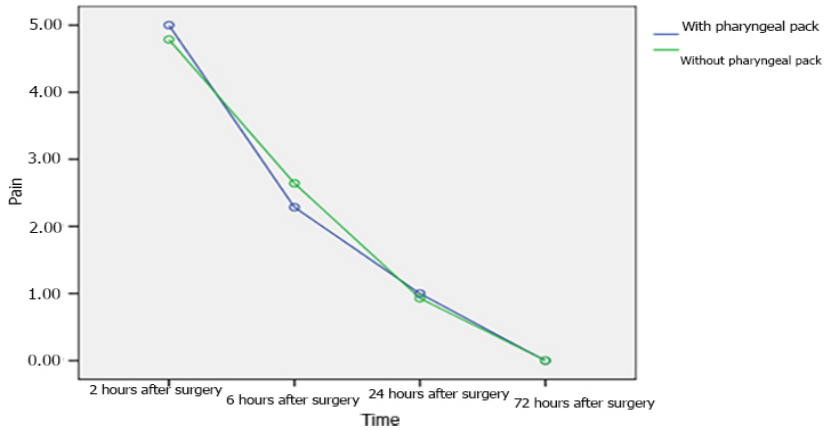


Figure 1. Distribution of mean pain evaluated at different times and groups.

To evaluate the differences accurately and pairwise, LSD was used, the results of which showed that the mean pain was different 2 hours postoperatively than 6, 24, and 72 hours postoperatively, 6 hours postoperatively than 24 and 72 hours postoperatively, and 24 hours postoperatively than 72 hours postoperatively ($p<0.05$). In all four evaluation times, there was no significant relationship between the presence or absence of postoperative nausea in the study groups ($p>0.05$) (Figure 2).

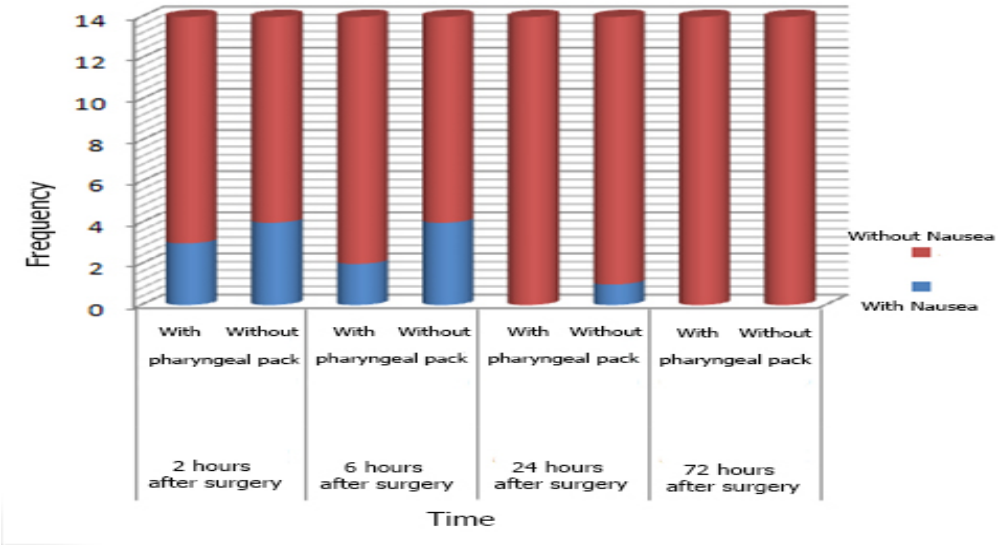


Figure 2. Distribution of the presence or absence of postoperative nausea in the two study groups.

Regarding the association between the presence or absence of postoperative nausea it was observed a significant difference between the presence or absence of postoperative nausea and the intervals ($p = 0.001$). However, there was no difference between the presence or absence of postoperative nausea, 2 hours than 6 hours postoperatively ($p>0.05$). There was a significant difference between the presence or absence of postoperative nausea, 2 hours postoperatively with 24 and 72 hours postoperatively ($p<0.05$). There was a significant difference between the presence or absence of postoperative nausea, 6 hours postoperatively with 24 hours and 72 hours postoperatively ($p<0.05$). There was no significant difference between the presence or absence of postoperative nausea, 24 hours postoperatively with 72 hours postoperatively ($p>0.05$).

Discussion

Insertion of the pharyngeal pack on patients' throat is one of the main stages in surgery, particularly in ear, throat and nose and mouth procedures, performed by the surgeon or anesthesiologist. In this study, it was first assumed that the pharyngeal pack had no effect on throat pain and nausea after rhinoplasty.

Previously, few studies addressing nausea and vomiting separately, mostly as a clinical trial, have considered a maximum of 24 hours after surgery and only a few articles attempted to

investigate throat pain due to the surgical procedures in the affected areas simultaneously or separately.

Therefore, due to the lack of extensive studies in this field, we decided to investigate this issue. The main difference between this study and previous studies is its descriptive nature, and examining cases of throat pain and nausea/vomiting simultaneously and for a longer time (up to 72 hours) after surgery. The results of the study were consistent with the initial hypotheses.

In a previous study, 12.3% of the intervention group had postoperative nausea/vomiting and 44.4% of the control group; postoperative pain was observed in 56.8% of patients with pharyngeal pack [3], although percentages were not mentioned separately, but in the current study, nausea was observed in 21.4% of patients with pharyngeal pack and in 28.6% of those without. In the first 2 hours after the operation, all patients reported throat pain. Statistically, the results of these two studies are not consistent. However, the first stage of data collection was in the recovery room, where most patients are not completely conscious and their perception of pain and nausea is under the effect of anesthetics and analgesics before and during surgery, which seems to be a confounding factor [3], while in the current study, we attempted to correct this and considered the first step 2 hours after the operation. Given the above, according to the statistical results, it is not possible to conclude whether or not this study is consistent with the current study. However, according to the final results reported, considering consistency of the results of this and current study is the best possible consideration [3].

A clinical trial was conducted to assess throat pain in the recovery room, and 4, 12, and 24 hours after surgery, by general anesthesia and sedation with the pack. The pain in the groups with and without the packs were similar in the recovery room (34.9%) and in the subsequent stages, the pain in general anesthesia was 5%, 8% and 4% more than in sedation, which indicated no significant differences [4]. In the current study with general anesthesia a greater pain has been reported, in comparison to general anesthetic cases of the above study, which could be due to the differences in the measurement method [4].

The rate of postoperative nausea and vomiting (PONV) and throat pain in rhinoplasty was studied and compared, and the results showed that both studies were consistent [5]. A previous study analyzed the effect of the pharyngeal pack on the rate nausea/vomiting, aspiration, and throat pain showed that the pack had no significant effect on PONV and did not even reduce aspiration and vomiting. The results of this study, in line with the results of current study, indicated that the pack had no effect on PONV and postoperative throat pain [7].

The results obtained by some authors differ from the findings described here and the use of a pharyngeal package was recommended to reduce nausea / vomiting postoperatively [11]. In general, the results of the majority of studies in this field are consistent with the results of the current study and there seemed to be no significant difference or significant and direct effect of the pharyngeal pack on throat pain and postoperative nausea/vomiting, although there were differences in the assessment methods, like how to reduce throat pain and nausea. For example, in the present

CC BY

study, although throat pain was slightly higher in the group with pharyngeal pack within the first 2 hours after surgery, the rate of pain reduction and recovery rate was higher in this group, but the pain results were similar after 24 hours in both groups. Also nausea was slightly less in the group with the pharyngeal pack, but the recovery process was the same after 24 hours.

Overall, it seems that the reason for no difference noticed in postoperative throat pain and nausea between the two groups with and without pharyngeal packs could be stated as follows: first, the throat mucosa originates from pharynx, where the pack is located, and can possibly return to the previous state quickly and withstand high pressure. The second factor could be the pharynx itself, because the pack is soft and takes the shape of the pharynx; this property makes it possible to absorb the force and reduce the force imposed to the pharynx and as a result stimulates the area less and have fewer complications.

Conclusion

None of the two groups (with or without pharyngeal pack) had a significant improvement in terms of recovery, decrease in pain and nausea, but because the speed of reduction of throat pain in the first 6 hours was a little more in the group with pack than the group without, and the pharyngeal pack has the potential to prevent aspiration of the objects and tissues during operation, it is better to use pharyngeal pack in these patients.

Financial Support: Dental and Periodontal Research Center, Faculty of Dentistry, Tabriz University of Medical Sciences.

Conflict of Interest: The authors declare no conflicts of interest.

References

[1] Gunter J, Rohrich RJ, Adams WP. Dallas Rhinoplasty: Nasal Surgery by the Masters. 3rd. ed. Florida: CRC Press, 2014. 1706p.

[2] Ghavimi MA, Taheri Talesh K, Ghoreishizadeh A, Chavoshzadeh MA, Zarandi A. Efficacy of tranexamic acid on side effects of rhinoplasty: A randomized double-blind study. J Craniomaxillofac Surg 2017; 45(6):897-902. https://doi.org/10.1016/j.jcms.2017.03.001

[3] Razavi M, Gilani MT, Bameshki AR, Behdani R, Khadivi E, Bakhshaee M. Pharyngeal packing during rhinoplasty: Advantages and disadvantages. Iran J Otorhinolaryngol 2015; 27(83):423-8.

[4] Elyassi H, Mousavinasab M, Rambod M, Hashemian MR, Dabbagh A. The effects of anesthesia method on throat pain after elective rhinoplasty. Int J Prev Med 2011; 2(4):275-9.

[5] Karbasforushan A, Hemmatpoor B, Makhsosi BR, Mahvar T, Golfam P, Khiabani B. The effect of pharyngeal packing during nasal surgery on the incidence of post operative nausea, vomiting, and sore throat. Iran J Otorhinolaryngol 2014; 26(77):219-23.

[6] Malamed SF. Manual de anestesia local. 6th. ed. Rio de Janeiro: Elsevier Brasil, 2013. [In Portuguese]

[7] Basha SI, McCoy E, Ullah R, Kinsella JB. The efficacy of pharyngeal packing during routine nasal surgery – A prospective randomised controlled study. Anaesthesia 2006; 61(12):1161-5.

[8] Kasper DL, Braunwald E, Fauci AS, Hauser SL, Longo DJ, Jameson JL. Harrison's Principles of Internal Medicine. 16th. ed. New York: McGraw-Hill, 2005. 2607p.

[9] Korkut AY, Erkalp K, Erden V, Teker AM, Demirel A, Gedikli O, Saidoglu L. Effect of pharyngeal packing during nasal surgery on postoperative nausea and vomiting. Otolaryngol Head Neck Surg 2010; 143(6):831-6. https://doi.org/10.1016/j.otohns.2010.08.030

[10] Erkalp K, Korkut YA, Meric A, Kahya V, Gedikli O, Su OK, Saitoglu L. Pharyngeal packing is a predisposing factor for postoperative aphthous stomatitis in nasal surgery. Otolaryngol Head Neck Surg 2010; 142(5):672-6. https://doi.org/10.1016/j.otohns.2009.12.040

[11] Fennessy BG, Mannion S, Kinsella JB, O'Sullivan P. The benefits of hypopharyngeal packing in nasal surgery: A pilot study. Ir J Med Sci 2011; 180(1):181-3. https://doi.org/10.1007/s11845-010-0601-4