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Abstract

Aim: Rhinoplasty is one of the most common types of plastic surgery. The recent years in Iran have witnessed a significant growth in the number of rhinoplastic surgeries. As a result, putting this country in the top global ranking. Bleeding and sore throat are the most common complications during and after rhinoplasty. Sore throat is a common post-operation complaint among patients. This sore throat is probably caused as result of different techniques utilized by anesthesiologists. The present research seeks to compare the frequency and level of sore throat in the oral-pharyngeal pack and nasopharyngeal pack methods among patients undergoing an elective rhinoplastic operation. Material and Method: This is a clinical trial research where as many as 76 female patients older than 18 who had resorted to private operation centers for elective rhinoplastic surgery were studied. Having determined the exclusion and inclusion criteria for the participants, they were divided into two equal groups. Pain measurement numerical scale system was used to measure pain score in recovery, while direct questioning was utilized 12 hours later. Complications such as coughing, vomiting and nausea and patient's status during the recovery period and 12 hours after operation were also documented. The results were analyzed using SPSS v.17. Chi-square test (a non-parametric statistical test) was utilized to study the data. The level of significance in this research (P-value) was set below 0.05. Results: The results indicate a statistically significant difference between different types of packs used in rhinoplasty in terms of clinical complications such as the level of sore throat, coughing, nausea, and vomiting (p-Value < 0.05). According to the results achieved in this research, it turned out that utilizing nasopharynx could result in a significant reduction of coughs, sore throat, nausea, and vomiting among those patients undergoing rhinoplastic surgery. Furthermore, a better state of recovery was observed among those individuals utilizing nasopharynx compared to those who had used oral-pharyngeal pack. Discussion: Considering the results achieved in this research, it is concluded that nasopharynx pack has a better performance in preventing severe sore throats and other complications of rhinoplastic surgery.

Keywords

Rhinoplasty; Sore Throat; Anesthesia; Oral-Pharyngeal Pack; Nasopharynx Pack.

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Introduction

Rhinoplastic surgery is one of the most common types of facial cosmetic surgeries, and it plays a major role in changing cosmetic proportions of the face [1]. Rhinoplasty is one of the most common types of plastic surgeries. Nose plastic surgery is a detailed job where the difference between good and bad may be 1 to 2 mm [2, 3]. We may say that rhinoplasty or nose plastic surgery is one of the most accurate and difficult types of plastic surgeries [4, 5]. The word rhinoplasty is formed by *rhino* meaning nose and *plasty* meaning reform or beautification. As many as 276 thousand cosmetic nose surgeries were reported in the US in 1998 [6]. Closer accounts report as many as 201 thousand cases of rhinoplasty in this country as of 2005 [7]. Rhinoplasty has experienced significant growth in Iran over the last few years putting this country on top rank in the world. According to statistics, there were as many as 35 thousand cases of rhinoplasty only in Tehran in 2006, while the total number of this surgery in the same year in England was only 6 thousand cases [8]. Bleeding and sore throat are the most common complications during and after rhinoplasty. Sore throat is considered to be a common post-operation complaint. The prevalence of sore throat after tracheal intubation was 14.4 to 50 percent [1-8] while using pharyngeal mask reduced this number to 5.8 to 34 percent [9-11, 5]. This great difference in prevalence is probably caused by different techniques used by anesthesiologists and differences between anesthesiologists and patients in terms of their description of the sore throat. Using an oral-pharyngeal pack or stomach suction at the end of operation can help reduce post-operation nausea and vomiting. Nasal packing is one of the therapeutic measures taken in order to control nose bleeding caused by injuries, post-paranasal sinus, and nasal cavity surgery bleedings [9]. The purpose of using a tampon in rhinoplasty is to control post-operation bleeding, prevent the formation of a hematoma in the septum, fix nasal septum in a direct line after the operation, and correct deviations [10]. Various materials such as strip gases (meshed or regular tampon) impregnated with antibiotic ointment, merocel, and ativan. Most strip gases used to pack the patient's nose are impregnated with Vaseline or antibiotic ointment [10]. Several researches have been conducted over this issue, and we will have a brief review of them. Elyassi et al. (2011) studied the prevalence of sore throat after rhinoplasty in two groups who had undergone general anesthesia (GA) and conscious sedation (CS). They utilized a numeric rating scale in a clinical trial in order to stud and assess the level of sore throat at the end of operation and 4, 12, and 24 hours after it. The prevalence of sore throat after operation and 4, 12, and 24 hours after rhinoplasty in CS group compared to GA group is reported here respectively: 34.9% and 34.9% (P = 0.99), 27% and 33.3% (P = 0.27), 14.3% and 22.2% (P = 0.10), and 10.3% and 15.9% (P = 0.19). They arrived at the conclusion that general anesthesia plays no independent role in controlling sore throat. The results of their researches also showed that using sedatives may increase the risk of post-operation sore throat. Thus, none of these two anesthetic methods are superior to the other one in terms of reducing levels of sore throat [11]. Turan et al. (2004) studied the efficiency and safety of using Gabapentin for those patients who had undergone rhinoplasty or sinus endoscopy. In this research, Gabapentin or placebo was used for patients one hour before the operation. 25 people in each group received Propofol, fentanyl, and local anesthesia. The pain and sedation scores within the 5th, 15th, 30th, 45th, and 60th minutes of operation and within 2, 4, 6, 8, 12, 16, 20, and 24 hours after operation were measured. An intramuscular injection of Diclofenac (75 mg) as an Analgesic was prescribed for everyone. They reported significantly lower pain scores during operation and within the 45th and 60th minutes of operation in the group who had received gabapentin. Compared to placebo, they reported a significant reduction of pain during and after operation as a result of utilizing gabapentin among those patients undergoing rhinoplasty or sinus endoscopy surgery. As a result, dizziness may be considered as a setback of this medicine [12]. Various experiences have pointed to the fact that the type of pack used in rhinoplasty can also influence the control or intensification of sore throat or other complications of surgery. The present research also seeks to study and compare the level of sore throat in oral-pharyngeal pack and nasopharynx pack methods for those patients undergoing elective rhinoplasty.

Material and Method

This is a clinical trial research conducted in order to measure and compare the level of sore throat in oral-pharyngeal pack and nasopharynx pack methods among patients undergoing elective rhinoplastic surgery. For this purpose 76 female patients older than 18 years who had applied for elective rhinoplastic surgery took part in the research. The patients were divided into 2 groups, each one composed of 36 people. An oral-pharyngeal pack was used for one group, while nasopharynx pack was used for the other. These patients who were in two classes of ASA 1 and 2 underwent GA. The following inclusion criteria were defined: no pre-operation sore throat, not smoking cigarettes, no previous history of head and neck trauma or surgery, no known cardiac, pulmonary, or digestive diseases or endocrine, no history of sensitivity or reaction to sedatives or anesthesia. Those with Mallampati 3 & 4 and laryngospasm during general anesthesia or CS and laryngoscopy were excluded from the research. Different criteria were studied by questionnaires including patient's age, sore throat, the length and existence of nausea and vomiting in recovery and 12 hours after surgery. All the information was registered in pre-defined papers by an anesthesiologist. GA was conducted by anesthesiologists. It should be noted that different surgeons performed the operations. In GA group, the patients had a supine position in operation room. Levels of saturated oxygen, pulse and the respiratory state of the patients were constantly monitored and studied in the operation room. The heart rate and non-invasive blood pressure of patients were also constantly monitored. Intravenous injections of 2-3 µg/kg Fentanyl, 0.05 mg/kg Midazolam, and 1-1.5 mg/k Lidocaine were conducted before anesthesia. Thiopental 5 mg/kg and Atracurium 0.5 mg/kg were used for anesthesia. Then low-cuff pressure PVC tracheal tube with a high volume (7-7.5 size based on the size of patient's glottis) was used for intubation (the cuff of trachea tube was filled by air with a pressure of 15-20 cm H_2O in order to have the minimum amount of leakage). An 85-bladed laryngoscope and Magill forceps were used to fix the wet pharyngeal

pack and nasopharynx pack. Anesthesia was maintained with a repetitive dose of Atracurium and minimum alveolar concentration of isoflurane (MAC 1-0.8). Systolic blood pressure was restricted to 75 to 100 mm, and intravenous nitroglycerin and propranolol were also used if necessary. When rhinoplasty was over, Atropine (0.02 mg/kg) and Neostigmine (0.04 mg/kg) were used to reverse muscle relaxants. After removal of pharyngeal pack and nasopharynx pack, the patients were completely extubated in awakened state. Using numeric rating scale, the level of post-operation sore throat was studied and measured. The raw data was analyzed by SPSS v.19. The normality of data was then studied for all variables, and appropriate statistical tests were used based on the normality status. Chi-Square (a non-parametric statistical test) was used to study and analyze the data. The level of significance in this research (P-value) was set less than 0.05.

Results

The present research studied 76 female patients who had resorted to a private operation center for face rhinoplasty. Different parameters were studied, and the following results were achieved. The participants in this research were equally divided into oral-pharyngeal pack and nasopharynx pack groups. The distribution of sore throat among patients in nasopharynx pack compared to those in oral pack in recovery was as follows: 42.2% compared to 22.2% slight sore throat, 47.5% compared to 55.6% moderate sore throat, 10% compared to 22.2% severe sore throat. Levels of sore throat were measured 12 hours after operation where no significant difference was observed with recovery stage. The following comparison was made in level of sore throat between those who had received nasopharynx pack and those who had utilized oral pack 12 hours after operation: 54% compared to 25% slight sore throat, 37% compared to 57% moderate sore throat, 8% compared to 17% severe sore throat [Figure 1]. These studies pointed to the fact that a significant interaction existed between the type of pack (oral-pharyngeal pack and nasopharynx pack) and sore throat in both the recovery phase and within 12 hours after operation ($p = 0.013$). A comprehensive study of the data derived from numeric frequency analysis of sore throat points to the conclusion that nasopharynx pack has had a better performance in preventing severe sore throats, and most participants in this group experience only slight and moderate pains.

We also studied coughing among the participants in the recovery phase and 12 hours after operation and classified it as slight, moderate, and severe. A comparison of the frequency of this complication in nasopharyngeal pack group and oral-pharyngeal pack group is as follows: 68% to 32% slight cough, 18% to 25% moderate cough, and 12% to 42% severe cough. According to the result, using nasopharynx pack in recovery phase can significantly prevent coughing among those undergoing rhinoplasty ($p < 0.05$). The frequency of coughing was also studied 12 hours after operation in both groups where a noticeable difference from recovery phase was observed. A comparison of the frequency of coughing in nasopharyngeal pack group and oral-pharyngeal pack group 12 hours after operation is as follows: 66% to 46% slight cough, 25% to 35% moderate cough, and 8% to 17% severe cough. Statistical tests failed to show that utilizing different packs could cause a significant difference in preventing coughs 12 hours after operation ($p > 0.05$). The results show that all participants in nasopharyngeal pack had a good recovery, while the recovery of those using oral-pharyngeal pack was far from being satisfactory (P-value < 0.05). Statistical tests could find a significant correlation between the type of pack (oral-pharyngeal pack and nasopharyngeal pack) and nausea-vomiting in both states of the patient (recovery phase and 12 hours after operation) ($p< 0.05$). In the recovery phase; 17.5% of the patients with nasopharyngeal pack and 69.4% with oral-pharyngeal pack experienced nausea and vomiting. Patients' status in both groups 12 hours after operation showed not much difference with recovery phase.). Twelve hours after operation 13% of the patients with nasopharyngeal pack and 60% of those with oral-pharyngeal pack were experiencing nausea and vomiting. The results showed that utilizing nasopharyngeal pack plays a major role in preventing nausea and vomiting.

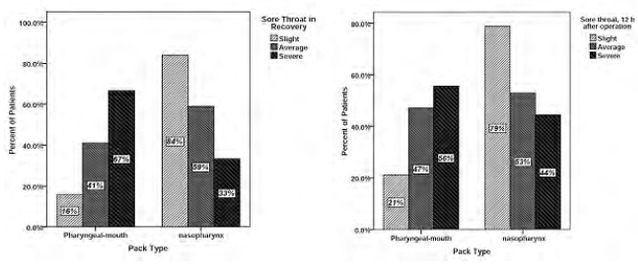

Figure 1. Frequency of the level of sore throat among patients in oral-pharyngeal pack and nasopharynx pack in recovery phase (left) and 12 hours after operation (right)

Discussion

Just like any other type of surgery, rhinoplasty is not without its side effects. The difference between these patients and other patients lies in the fact that rhinoplasty is conducted for the sake of beauty where complications must be prevented as much as possible [5]. Sore throat is a common minor side effect of anesthesia. Most applicants of rhinoplasty are very sensitive. Hence a minor complication might have an adverse effect on their satisfaction with surgery. Thus, preventing or solving this issue can boost patients' satisfaction. Various studies have dealt with sore throat. A study by Christensen et al. (1994) has studied complaints of sore throat within 6 to 24 hours after tracheal intubation. They arrived at the conclusion that occurrence of sore throat after Thyroid surgery among women is significantly more than what is observed among men (17% compared to 90%). They also reported a higher frequency of sore throat after intubation [13]. Jorgensen (1987) studied the effect of using suxamethonium in endotracheal anesthesia on occurrence of sore throat after operation. Sixty patients were selected for this purpose and divided into 2 equal groups (A & B). Anesthesia was accomplished using Fentanyl, Droperidol, N2O, Pancuronium. Participants in groups A were given Pancuronium before endotracheal intubation, while those in group B were given suxamethonium. No difference was observed between the two groups in terms of the intensity and occurrence of sore throat 20 to 30 hours after operation. They finally said their results were not in line with other researches which claimed a deterio-

rating effect for suxamethonium on sore throat [14]. In 1992, Herlevsen et al. conducted a research in order to study the effect of lidocaine aerosol on sore throat, hoarseness and cough correlated with endotracheal intubation. It was a double-blind randomized research conducted on 193 patients candidated for surgery divided into two classes of ASA I-II. The control group received lidocaine aerosol 100 mg 2 minutes prior to endotracheal intubation through a spray, but the control group received no spray. While leaving the recovery room and the following day, the patients were examined in terms of sore throat, coughing, and hoarseness. No significant difference showing that local anesthesia produces mucosa in air track was observed [15]. Another research by Dingley et al. (1994) studied the occurrence and duration of sore throat following an appropriate anesthesia using three different methods to control air tract including face mask, laryngeal mask, and laryngeal mask with insertion aid. In this prospective research, 150 patients were randomly divided into three groups. The following frequencies were reported for sore throat in each case: 8% for face mask, 18% for laryngeal mask with insertion aid, and 28.5% for laryngeal mask [16]. The results of our research also show that the type of pack used in rhinoplasty can significantly reduce the level of sore throat, coughing, nausea, and anesthesia compared to oral-pharyngeal pack ($p < 0.05$). It should also be noted that users of nasopharyngeal pack experienced a better recovery state than those who had used oral-pharyngeal pack. A review of the results of this research helps us conclude that nasopharyngeal pack has a better overall performance in preventing severe pains such as nasopharynx, facilitates the process of recovery, and prevents coughs.

Competing interests

The authors declare that they have no competing interests.

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