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Nausea and Vomiting after Septorhinoplasty Using Alfentanil or Remifentanil

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ABSTRACT

Introduction: The aim of this study was to compare Alfentanil with Remifentanil regarding postoperative nausea and vomiting.

Materials and Methods: In this double-blind randomized controlled trial, we studied 60 patients, between 17-48 years old with American Society of Anesthesiologists class I or II undergoing septorhinoplasty. The patients signed informed consent and then were randomly divided into two groups. Induction was started similarly in both groups using Midazolam, Propofol and Atracurium whereas group one Alfentanil group (AL group) received Alfentanil and group two Remifentanil group (R group) received Remifentanil. We used Alfentanil with Propofol in the AL group or Remifentanil with Propofol in the R group as maintenance drugs. We assessed nausea and vomiting with Visual Analogue Scale (VAS) from the extubation time until 24 hours after the surgery. We used ondansetrone to relieve nausea.

Results: Our patients had a mean age of 25.7±5.4. 75% were female and 25% were male. Duration of surgery had a mean time of 167.5±15.8 minutes and there was not statistically any difference between the two groups. We assessed nausea and vomiting incidence and severity on Visual Analogue Scale score in 0-1 hour, 1-6 hours and 6-24 hours after surgery. The highest nausea and vomiting incidence was in 1-6 hours after the surgery and the two groups were statistically the same.

Conclusion: Our results did not show a statistically significant difference between using Alfentanil and Remifentanil as induction and maintenance drugs, regarding nausea and vomiting in the 24 hours post operation period.

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Introduction

Generally, postoperative nausea and vomiting is being reported in (20-30%) of patients and is considered the second most common complaint during postoperative period. It is unpleasant for the patients and they mention it worse than pain. Studies have shown that about 56 U.S Dollars is spent for each patient to relieve these symptoms in high risk patients.

Preventing nausea and vomiting will result in increased patient satisfaction (1, 2, 3). Postoperative nausea and vomiting may result in complications such as aspiration, esophageal tearing, subcutaneous emphysema, pneumothorax and wound dehiscence.

These complications may postpone discharge from recovery or the ward (4, 5)

Many studies have shown multiple risk factors for postoperative nausea and vomiting and drugs have a major role in this list. Postoperative nausea and vomiting etiology is multifactorial and complicated (6.7). It includes: 1-Patient related factors such as age, sex, obesity, anxiety, history of motion sickness, history of postoperative nausea and vomiting and gastric paralysis, 2-Surgical technique and type 3-Anesthesia technique and drugs (local and general anesthesia and monitored anesthesia care), 4- Post surgery factors (pain, dizziness, oral intake and narcotic drugs); Hemodynamic status (Pulse rate and blood pressure) and oxygen saturation are also involved.

Narcotic drugs used during the surgery are also effective but debatable (8, 9).

Postoperative pain is not usual in rhinoplasty patients therefore we do not use long acting narcotics; So we chose Alfentanil and Remifentanil in septorhinoplasty

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patients and we compared the incidence of postoperative nausea and vomiting. The result of this study may help us choose between the two drugs, considering the cost of Remifentanil.

Materials and Methods

This double-blind randomized controlled trial study was performed in Ghaem and Imam Reza Hospitals in Mashhad University of Medical Sciences on 60 patients between 17-48 years old. Patients were candidates for septorhinoplasty surgery with American Society of Anesthesiologists (ASA) class I or II, underwent general anesthesia.

Exclusion criteria were: Allergy to any of the medications used, history of chronic nausea or vomiting, history of nausea or vomiting in the 24 hours before anesthesia, using antiemetic drugs in the 24 hours before anesthesia, Body Mass Index (BMI)>35, age under 16 years or over 60 years, Pregnancy, history of smoking or substance abuse, history of motion sickness or migraine.

The ethic committee of Mashhad University of Medical Sciences approved the study. We took informed consent and randomized the patients to two groups.

The patients received crystalloid serum 5ml/kg after routine monitoring, then induction was started by Midazolam (0/04mg/kg), Propofol (2mg/kg) and Atracurium (0.5mg/kg). In one group we used Alfentanil (25 µg/kg) and in the other group we used Remifentanil (1µg /kg) during induction as analgesic.

For maintenance of anesthesia we used Propofol (50-150µg /kg/min) with Alfentanil (0.5µg/kg/min) in the first group and Propofol (50-150µg /kg/min) with Remifentanil (0.1µg/kg/min) in the second.

Routine monitoring including noninvasive blood pressure control, Electro Cardio Graph (ECG), pulse oximetry and capnography was performed for all patients.

At the end of the surgery all patients were reversed by neostigmine (0.04mg/kg) and atropine (0.02mg/kg) and nausea was assessed by Visual Analogue Scale (VAS) in which zero was no nausea and ten was the worst nausea imagined.

The patients marked a point in the VAS line considering their degree of nausea. Nausea and vomiting and its severity were recorded by recovery or ward nurses during the 24 hours (in 0-1 hour, 1-6 hours and 6-24 hours) after the surgery period. Nausea and vomiting incidence was then compared between the two groups. We used ondansetrone as rescue medication for patients with nausea or vomiting who had VAS score greater than two and we assessed the need for ondansetrone in the two groups.

We used SPSS Version 16 and appropriate analytical and descriptive tests and the results are in presenting tables and charts. To compare the mean between the two groups we used T-test and for categorical variables we used chi square or fisher exact test.

Results

Our patients were between 17 and 48 years old.

There was no statistically significant difference in age distribution between the two groups using T-test (p=0.691). The mean age was 25.7±5.4.

In group one (Alfentanil group) the mean age was 25.4±4.6 years and in group two (Remifentanil group) the mean age was 25.9±6.2. In our study we had 15 male and 45 female patients. In group one, nine patients (30%) were male and 21 patients (70%) were female. In group two, six patients (20%) were male and 24 patients (80%) were female. There was no statistically significant difference between the two groups (p=0.37).

Duration of the surgery was also compared between the two groups and there was no statistically significant difference (p=0.62) (Table 1).

Table 1: Age, sex and duration of surgery in patients

		Alfentanil group	Remifentanil group	P-value
Age		25.4+/-4.6	25.9+/-6.2	0.691
Sex	Male	9(%30)	6(%20)	0.37
	Female	21(%70)	24(%80)	
Duration of surgery (minutes)		166.6+/-15.4	168.6+/_16.4	0.62

We studied postoperative nausea and vomiting in 0-1 hour, 1-6 hours and 6-24 hours after the surgery. In 0-1 hours and 6-24 hours after the surgery all the patients in the two groups had no nausea or vomiting and the groups had no statistically significant difference regarding Postoperative Nausea and Vomiting (PONV) (p>0.99). In the 1-6 hours post-operative period three patients (5%) had nausea and vomiting.

Two patients in the Remifentanil group and one patient in the Alfentanil group had nausea and vomiting. There was no statistically significant difference between the two groups (p= 0.55) (Table 2).

Table 2: Nausea or vomiting incidence in 24 hours after the surgery period

	Alfentanil group	Remifentanil group	P-value
Nausea or vomiting 0-1 hours	0	0	>0.99
Nausea or vomiting 1-6 hours	1Patient(%3.33)	2Patients(%6.66)	0.55
Nausea or vomiting 6-24 hours	0	0	>0.99
Need for ondansetrone	1Patient(%3.33)	2 Patients	0.55

Discussion

Using narcotics during surgery may cause Postoperative Nausea and Vomiting (PONV) and choosing between them still remains debatable. In this study we compared postoperative nausea and vomiting when Alfentanil or Remifentanil was used. We used Visual Analoge Scale (VAS) to evaluate nausea and

vomiting in 0-1 hour, 1-6 hours and 6-24 hours after surgery. The highest nausea and vomiting rate was in 1-6 hours after the surgery and the two groups were not statistically different in this time interval.

Eberhart's studied 120 female patients undergoing endonasal surgery. The patients were randomly receiving one of four antiemetic regimes: placebo, dimenhydrinate, metoclopramide, or the combination of both drugs. The drugs were administered intravenously after induction of anaesthesia and repeated six hours after the first administration. They concluded that in this setting, both metoclopramide and dimenhydrinate were ineffective to reduce the incidence and the severity of PONV.

The combination of both drugs revealed no additional synergistic effect (10). Khalili's studied 34 patients with supratentorial brain tumors in 2012, and randomly divided them into two groups with 17 patients. The first group received Propofol and Fentanil, while the second group received Propofol and Remifentanil (11). The two groups were not statistically different. In 2008, Ryu's studied 30 hysteroscopy patients using Fentanil or Remifentanil as maintenance drugs and found no difference in nausea or vomiting rate between the two groups (12). Rama-Maceiras's studied 60 patients undergoing plastic surgery in 2005 and showed that using Remifentanil causes lower nausea rates comparing with fentanyl (13). Langevin's showed lower nausea and vomiting when Alfentanil was administered comparing with Fentanil or Sufentanil for patients treated on an outpatient basis (14).

In 2002 in a double–blind randomized controlled trail in Turkey, Ozkose's studied 40 patients who were candidates for lumbar discectomy. They considered the effects of Alfentanil and Remifentanil on post-operative pain, recovery, nausea and vomiting and showed that in similar doses with our study there was no difference between the two groups (15).

In 2011 in Isfahan Jabalameli compared Remifentanil and Fentanil for cesarean surgery and found no difference in post-operative pain or PONV (16). Dershwitz's in 2002 studied arthroscopy patients and had similar results, consistent with our results (17).

Conclusion

Our study showed that using Alfentanil or Remifentanil for induction and maintenance of anesthesia in septorhinoplasty patients did not cause a statistically significant difference in nausea or vomiting rate in the 24 hours postoperative period.

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