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Septorhinoplasty with and without Nasal Packing: A Comparative Study from North of Iran

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ABSTRACT

Septorhinoplasty are the most common nose surgical procedures widely used the world over. The main aim of this study was comparing the results of septorhinoplasty with and without nasal packing. This case control interventional study was conducted on patients who underwent septorhinoplasty in an ENT university hospital in north of Iran. Two separate groups, with or without nasal tampon (each group consisted of 35 patients) were includedin the study. Open surgical approach for repairment was executed for all and nasal packing (ie. tetracycline impregnated mesh, that was removed after 48 hours) for 35 patients inserted postoperatively.Patients were studied in three time periodsfor pain (using Visual Analogue Scale) and other postoperative signs and symptoms and convenience and overall satisfaction. No significant difference for postoperative bleeding, ecchymosis, hematoma and rhinorrhea was founded between the groups (p>0.05), but there was a significant difference in short-term outcomes in terms of convenience (p=0.006), edema two days after surgery (p= 0.001), right side and left side edema (p=0.002). The overall satisfaction was significantly higher in patients without nasal packing (p= 0.002). In assessment of the pain rate one week after surgery, there was no significant difference in various age and sex groups (p>0.05). Based on our findings routine nasal packing is not working well in septo-rhinoplasty cases and it is recommended to be avoided in these patients.

Key words: Septorhinoplasty, Nasal Packing, Complication, Satisfaction

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INTRODUCTION

Septoplasty and rhinoplasty are the most common nose surgical procedures widely used the world over. Rhinoplasty has grown rapidly in Iran and reached the first in rank amongst cosmetic surgeries in recent years. More than 35000 cases of rhinoplasty were conducted in 2006 alone in Tehran-capital of Iran- as compared to 6000 rhinoplasty cases conducted in England in the same year [1-3].

The nasal packing (nasal tampon) is widely used in endonasal surgeries including septoplasty, turbinectomy and paranasal sinus surgeries [4, 5]. Also, nasal packing is one of the procedures which is performed for epistaxis control resulted from diverse causes; including nasal injuries [4-6]. The purpose of inserting tampons in rhinoplasty is to control postoperative bleeding and prevent synechiae and hematoma formation, maintaining deviated nasal septum in a straight line, aberration correction and closing dead space between the cartilage and the sub-perichondrial flaps [7]. Various types of postoperative tampons are used in the nose and sinuses surgery including different types of gases with or without medication, Telfa, cellulose and foam, absorptive gelatin sponge, Merocel, internal nasal splint, polyethylene oxide gel and alginate [8]. Nasal packing is performed using materials such as strip gauze (mesh or regular tampon) impregnated with petroleum jelly or antibiotic ointment (Ribbon gauze packing), Merocel, Aviten and Rhino rocket [8]. Selection of the nasal packing materials depends on the surgeon's preference and experience.

Pain is one of the most important problems of nasal packing especially when it is removed after some surgeries [9, 10]. There are various risks and the potential complications of nose packing. Some of the most considerable complications include mucosal damage, nasal septum perforation, obstructive sleep apnea, granuloma caused by paraffin, impaired nasal breathing, dry mouth, sore nose, tightness of the nasal valve, vestibulitis, synechiae, headaches, tearing eyes, ears obstruction, sore throat, difficulty in swallowing, hypoxia, and secondary infection, material displacement and aspiration, allergy, toxic shock syndrome and other complications associated with postoperative infections. It also may increase hospitalization period of the cases [11-13].

Several authors have studied nasal packing in view of pain, patient's convenience and satisfaction, bleeding control and nose surgery complications and different results have been obtained; it so appears that there is no ideal nasal packing and each method has pluses and minuses. Several recentstudies have suggested avoiding nasal packing because of discomfort at the time of its removal [14,15]. Given these conflicting results and the lack of similar studies in our country, we aimed to design a study to compare the results of septorhinoplasty with and without nasal packing.

MATERIALS AND METHODS

In an interventional case control research study, totally based on sample size statistical formula $[(Z_{1-\alpha/2}+Z_{1-\beta})(S_1^2+S_2^2)/Deviate^2]$, 70 patients between 18-50 years old who underwent septorhinoplasty were included in 2 groups after taking written informed consent: with or without nasal tampon (35 patients in each group).The first consecutive 35 participants having no exclusion criteria were grouped for nasal packing as cases and the next 35 patients underwent surgery without postoperative nasal packing considered as controls. Stages of procedures were described for both group members preoperatively. Exclusion criteria were underlying diseases such as diabetes mellitus, heart problems, high blood pressure and blood dyscrasia, history of nasal polyposis, drug abuse, and apparent history of nasal allergies and consumption of blood-thinning drugs such as aspirin. Cases of nasal turbinate surgery, patients with deviated-curved nose, perforated septum, saddle deformity and revision cases were also excluded from the study.

The study protocol was approved by the Guilan University of Medical Sciences at Rhino-Sinus Diseases Research Center and also by the ethical committee of Guilan University of Medical Sciences by code of 1394.78(IR.GUMS.REC. 1394.78).

All patients underwent surgical procedures by an expert ENT specialist (AFH) and all patients were operated by open rhinoplasty approach. Running suture was used in both groupsfor re-approximating septal flaps. In the nasal packing group, tetracycline impregnated mesh was used. Tampon was removed after 48 hours. Oral antibiotics, nasal irrigation with normal saline and antibiotic ointment for one week were prescribed for both groups.

Patients were studied in three periods of time (2 days, one week, and one mounth after procedure) by blinded ENTsenior residency. In short term (i.e. 2 days postoperatively, as soon as nasal packing removal), the patients were assessed in terms of convenience, bleeding, ecchymosis, edema, satisfaction and hematoma. In medium-term, patients were checked for bleeding, mucosal lesions, satisfaction from surgery, respiratory disorders, pain, secondary infection and hematoma one week after the operation. Finally, one mouths after operation, thepatients were investigated for granuloma, adhesion, bleeding, patient's satisfaction, nasal valve stenosis, and secondary infection.

Visual Analogue Scale (VAS) was used to measure the severity of patient's pain. Pain score on the basis of pain VAS was classified from zero to 10, so that, the zero equaled to no pain and 10 meant maximum imaginable pain forthe patient.

The patient satisfaction was analyzed at the 7th and 30th day after surgery, by aLikert scale from 1 (very satisfied) to 5 (very dissatisfied).

Edema and ecchymosis, were estimated 24h after surgery, by the Surgeon Periorbital Rating of Edema and Ecchymosisscale(SPREE), from 0 to 5.
Data analysis was done using SPSS software version 16, and chi square test and fisher's exact test were used to compare the frequency of variables such as bleeding, discomfort and nasal obstruction in the groups. To compare the amount of pain in the groups, independent t-test or nonparametric Mann-Whitney U-test was useddepending having normal distribution or not.

Level of significance was considered P<0.05 and tests were two-sided.

Table 1: Comparison of short- term outcomes-2 days after surgery- in patients

Short-term outcomes		Studied group				P value
		Without nasal packing		With nasal packing		
		Number	Percentage	Number	Percentage	
Convenience	Level 1	0	0	4	11.4	0.006
	Level 2	2	5.7	3	8.6	
	Level 3	5	14.3	6	17.1	
	Level 4	14	40	18	51.4	
	Level 5	14	40	4	11.4	
Bleeding	YES	3	8.6	3	8.6	0.9
	NO	32	91.4	32	91.4	
Ecchymosis	NO	4	11.4	0	0	0.3
	Level 1	13	37.1	11	31.4	
	Level 2	3	8.6	5	14.3	
	Level 3	11	31.4	19	54.3	
	Level 4	4	11.4	0	0	
Right ecchymosis	NO	4	11.4	1	2.9	0.739
	Level 1	15	42.9	18	51.4	
	Level 2	6	17.1	4	11.4	
	Level 3	7	20	12	34.3	
	Level 4	3	8.6	0	0	
Left ecchymosis	NO	6	17.1	0	0	0.1
	Level 1	12	34.3	14	40	
	Level 2	6	17.1	3	8.6	
	Level 3	9	25.7	18	51.4	
	Level 4	2	5.7	0	0	
Edema	NO	6	17.1	0	0	0.001
	Level 1	16	45.7	10	28.6	
	Level 2	8	22.9	10	28.6	
	Level 3	5	14.3	15	42.9	
	Level 4	0	0	0	0	
Right edema	NO	6	17.1	0	0	0.002
	Level 1	16	45.7	11	31.4	
	Level 2	9	25.7	13	37.1	
	Level 3	4	11.4	11	31.4	
	Level 4	0	0	0	0	

RESULTS

In this study, 70 patients (35 patients in each group) who underwent rhinoplasty or septo-rhinoplasty were assessed. Mean age and standard deviation in two groups was 26.9 ± 7.2 and 25.1 ± 5.3 years, respectively. Most patients were in ages between 20 to 30 years old (45.7% in group without packing and 60% in packing group). Totally 87.1% of cases were women (In group of without nasal tampon 82.9% and 91.4% in packing group). Both groups showed no significant differences in terms of age and gender distribution (p>0.05).

Table 2: Comparison of medium- term outcomes- one week after surgery- in patients

Medium-term outcomes		Studied group				P value
		Without nasal packing		With nasal packing		
		Number	Percentage	Number	Percentage	
Bleeding	Yes	0	0	0	0	0.9
	No	35	100	35	100	
Mucosal lesions	Yes	1	2.9	7	20	0.02
	No	34	97.1	28	80	
Patient Satisfaction	Yes	34	97.1	31	88.6	0.1
	No	1	2.9	4	11.4	
Good nasal Breathing	Yes	8	22.9	4	11.4	0.2
	No	27	77.1	31	88.6	
Secondary infection	Yes	0	0	0	0	0.9
	No	35	100	35	100	
Hematoma	Yes	0	0	1	2.9	0.3
	No	35	100	34	97.1	
Rhinorrhea	Yes	5	14.3	2	5.7	0.2
	No	30	85.7	33	94.3	
Pain(Standard deviation ± Mean, Maximum and Minimum)		1.69 ± 1.97 and 1-6		1.07 ± 1.71 and 1-6		0.999

Outcomes between two groups in terms of convenience (p=0.006), edema two days after surgery (p= 0.001), right side (p=0.002) and left side edema (p=0.002) and also percentage of satisfaction (p=0.024) had significant differences. In other short-term outcomes, there were no significant differences (Table 1).

In one week after surgery, the percentage of mucosal lesions was 2.9% in patients without packing, but this rate was 20% in the group with nasal packing, and the difference was significant (p=0.024). In other results, including the pain there were no significant differences (Table 2).

The comparison of long term- one month-postoperative outcomes showed no difference in the two groups (p>0.05) (Table 3).

Regarding gender of participants, There was no statistically significant difference in resultsfor short-term outcomes between males in two groups, however, females showed differences for postoperative convenience (p=0.009), ecchymosis (p=0.048), general edema (p<0.0001), edema in right side (p<0.0001) and left side (p<0.001).

Table 3: Comparison of long- term outcomes -1 month after surgery- in patients

Long-term outcomes (1 month after surgery)		Studied group				P value
		Without nasal packing		With nasal packing		
		Number	Percentage	Number	Percentage	
Granuloma	Yes	0	0	1	2.9	0.3
	No	35	100	34	97.1	
adhesion	Yes	0	0	0	0	0.9
	No	35	100	35	100	
Satisfaction	Yes	1	2.9	2	5.7	0.5
	No	34	97.1	33	94.3	
Nasal valve stenosis	Yes	33	94.3	32	91.4	0.6
	No	2	5.7	3	8.6	
cutting the marginal	Yes	0	0	0	0	0.9
	No	35	100	35	100	
Hematoma	Yes	0	0	0	0	0.9
	No	35	100	35	100	
Secondary infection	Yes	1	2.9	0	0	0.3
	No	34	97.1	35	100	
Septum perforation	Yes	0	0	0	0	0.9
	No	35	100	35	100	

Similar findings also were obtained about medium-term outcomes in men while these finfdings were in lined with those for females except for frequency of mucosal lesions (p=0.03). Interestingly, there was observed any differences in the long-term outcomes in both studied sex groups with and without packing (p>0.05).

Comparing the consequences of short, medium and long term in the age group below 20 years showed that there were significant differences in patients with and without packing in ecchymosis two days after the operation (p=0.04), left side ecchymosis (p=0.03), overall edema (p=0.006), right side edema (p=0.02) and left side edema (p=0.01).

None of the outcomes were significant in the short-term outcome of the study in the age group 21-30 years old. Significant difference was observed in right side edema two days after surgery in both groups of patients older than 30 years (p=0.02). Other outcomes were not statistically significant.

Patients younger than 20 years old had not significant consequences in the medium term (one week after the operation) consequences, but in the age group 21-30 years old significant difference was seen in mucosal lesions (p=0.019). Age group over 30 years old had not any significant consequences. Comparison of long term outcomes in patients with and without packing in age groups showed no significant differences.

In assessment of the pain rate 1 week after surgery there was no significant difference in various age and sex groups (p>0.05).

DISCUSSION

In our study, most patients were in the age group of 20 to 30 years.Mean and standard deviation in patients with and without packing were 25.1±5.3 and 26.9±7.2 years respectively. Up to 87.1 % of patients were women in which 82.9% were without packing and 91.4% were belong to packing group.

In the study of Rajashri and colleagues, 82% of patients were men with mean age of 18-31 years [15]. Also, in the study of Walikar BN et al, 72% of patients without packing and 60 % of packing group were men with mean age of 21-30 years [16]. Despite the most participants in the present study were women, but those studies were consistent with the present study in terms of age group.

Our findings showed that there was no significant difference in postoperative bleeding, ecchymosis, hematoma and rhinorrhea between patients with and without packing, but significant difference was seen in terms of convenience, satisfaction and postoperative edema in both groups; as the convenience in 4 and 5 Levels in patients without packing was higher than patients with packing and satisfaction rate in patients without packing was higher than packing patients.

In the medium-term outcomes (rhinorrhea, mucosal lesions, satisfaction, breathing, secondary infection, hematoma, bleeding and pain) significant differences only was observed in mucosal lesions between patients of both groups one week after surgery, so that the percentage of mucosal lesions in without packing was 9.2 % but this rate was 20% in packing group.

Comparing long-term consequences (bleeding, granuloma, adherence, satisfaction, septal

perforation, wound marginal, secondary infection and nasal valve stenosis) after surgery, no difference in the both groups was seen.
Walikar BN. et al in a study reported that patients without packing had less pain, headache, discomfort and fewer sleep disturbances than patients with packing. In the follow-up, both groups had no significant differences in any of the side effects four and six weeks after surgery. But packing patients stayed longer in hospital [16].

Also, there was no difference in both groups in comparing of long-term outcomes after surgery. In the study of Rajashri et al, pain, discomfort, nasal obstruction, nasal breathing, snoring and sleep apnea were the major complains of patients with packing. Two of the cases in the group without packing had the least postoperative bleeding that was controlled by topical coagulant and ice. Patients with nasal packing had more pain than in those without packing. All patients were satisfied in the postoperative follow-up three months after surgery [15]. Evan et al in a study examined the complications in patients who had undergone septoplasty with and without packing. The complications such as bleeding, formation of adhesions and hematoma were decreased in patients without packing in compare to packing group. Also, patients with packing had significantly more postoperative pain, headache, burning sensation, dysphagia and sleep disorders than patients without packing. Also examination of the mouth and nose of patients without packing had fewer complications such as bleeding, hematoma and localized infections than patients with nasal packing 7 days after surgery [17]. In contrast, in our study the complications were similar in both groups.

Bjaj *et al.,* in 2009 in the UK studied the 78 patients who underwent septoplasty without nasal packing after the operation. The majority of patients (64.1 %) were discharged the day of surgery and the rest were discharged the day after surgery. The postoperative bleeding rate was 7.7%; only 3.78% of patients were found to require nasal packing. At 3 months follow-up after surgery, 84.6 % of patients were satisfied [18].

Ali Maeed et al reported that the pain scores in patients with packing were significantly more than the group without packing. As patients with nasal packing had more tearing eyes, headache and sleep disturbances than patients without packing after surgery. Considerable differences were not observed between two groups in terms of hematoma, bleeding from the nose or adhesion. None of patients in both groups had postoperative nasal valve stenosis or local infection [19].

In a comparative study of Sajadi *et al* which carried out in term of pain, convenience and problems of patients after the operation between two types of tampons Merocel and normal (Mesh), the pain of case group at the time of packing removal (64.3 ± 13.4) was less than control group (83.6 ± 14) (p= 0.01). Also, Discomfort (p= 0.01), breathing problems and nausea in the case group was less than control group (p= 0.02). No significant differences were observed between two groups in rates of nasal bleeding and other complications. Although Merocel tampons compared to regular tampon might not cause a significant decrease in rates of nasal bleeding, but its use in nasal surgery caused less pain and more convenience for the patient [20].

Limitation
This study was performed among patients indicated for nasal surgery. The larger number of participants would manifest more accurate results.

CONCLUSION

Based on our findings it is recommended that, routine nasal packing is avoided in majority of patients, but can be used with confidence that patient-reported outcome is not being compromised.

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