Original Article / Çalışma - Araştırma

Pack free septoplasty: functional outcomes and complications

Tamponsuz septoplasti: fonksiyonel sonuç ve komplikasyonlar

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ABSTRACT

Objectives: This study aims to evaluate the functional outcomes and complications of pack free septoplasty in adults.

Patients and Methods: Forty-nine consecutive patients (35 males, 14 females; mean age 37.7 years; range 18 to 63 years) who underwent septoplasty in our clinic between January 2011 and June 2013 were prospectively included in the study. Preoperative nasal obstruction was scored using the Nasal Obstruction Symptom Evaluation (NOSE). Nasal obstruction was reevaluated in the first and the third postoperative months. Postoperative complications were recorded. Pre- and postoperative NOSE scores were compared.

Results: Recovery rate was 81.63%. There was a statistically significant difference between preoperative NOSE scores and postoperative first and third-month NOSE scores ($p<0.05$). We observed minor hemorrhage in 17 patients (34.7%), nasal synechiae in three patients (6.1%), and flap overposition in two patients (4.1%).

Conclusion: Pack free septoplasty performed with transseptal suture technique is effective in the treatment of septum deviation and may be performed confidently in septum surgery.

Keywords: Pack; pain; septoplasty; suture.

ÖZ

Amaç: Bu çalışmada yetişkinlerde tamponsuz septoplastinin fonksiyonel sonuç ve komplikasyonları değerlendirildi.

Hastalar ve Yöntemler: Ocak 2011 - Haziran 2013 tarihleri arasında kliniğimizde septoplasti uygulanan ardışık 49 hasta (35 erkek, 14 kadın; ort. yaş 37.7 yıl; dağılım 18-63 yıl) prospektif olarak çalışmaya dahil edildi. Burun Tıkanıklığı Semptom Değerlendirmesi (NOSE) kullanılarak ameliyat öncesi burun tıkanıklığı puanlandı. Ameliyat sonrası birinci ve üçüncü aylarda burun tıkanıklığı yeniden değerlendirildi. Ameliyat sonrası komplikasyonlar kaydedildi. Ameliyat öncesi ve sonrası NOSE skorları karşılaştırıldı.

Bulgular: İyileşme oranı %81.63 idi. Ameliyat öncesi NOSE skorları ile ameliyat sonrası birinci ve üçüncü ay NOSE skorları arasında istatistiksel olarak anlamlı farklılık vardı ($p<0.05$). On yedi hastada (%34.7) minör kanama, üç hastada (%6.1) nazal sineşi ve iki hastada (%4.1) flep overpozisyonu izlendi.

Sonuç: Transseptal sütür tekniğiyle uygulanan tamponsuz septoplasti septum deviasyonu tedavisinde etkilidir ve septum cerrahisinde güvenle uygulanabilir.

Anahtar Sözcükler: Tampon; ağrı; septoplasti; sütür.

Septoplasty is the third most frequent otorhinolaryngological surgery.[1] Traditionally, nasal splints and packing are applied to maintain hemostasis, inhibit hematoma, prevent the displacement of bone or cartilage grafts and support septal flaps following septoplasty.[2] However, various complications, such as nasal synechia formation, septal perforation and

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postoperative infection are associated with nasal packing.

Studies questioning the routine use of packing have been published in recent years.[3,4] Alternately, pack-free septoplasty performed with transseptal sutures has been suggested as it reduces morbidity.[5] Studies that compare septoplasty with and without nasal packing are available.[3-5] However to our knowledge, there are no adequate controlled surveys evaluating the postoperative efficiency and complications of this technique.

In this study, we evaluated the functional outcomes and complications of pack-free septoplasty. The Nasal Obstruction Symptom Evaluation (NOSE) Scale was used to assess functional outcomes.

PATIENTS AND METHODS

This prospective randomized study was performed at İzmir Zübeyde Hanım Training and Research Center of Başkent University between January 2011 and June 2013, with the permission of the Research Council of the Faculty of Medicine at Başkent University and approval of the local ethics committee. Nasal obstruction was scored with the NOSE Scale (©AAO-HNS Foundation 2002), which is a disease-specific scale prepared to evaluate nasal obstruction by the American Academy of Otolaryngology - Head and Neck Surgery Foundation (Table 1).[5]

Forty-nine consecutive patients (35 males, 14 females; mean age 37.7 years; range 18 to 63 years) who underwent septoplasty were enrolled in this study. Patients were excluded if they had nasal polyps, allergic rhinitis or a systemic disease and a history of hemorrhagic diathesis, anticoagulant drug use or a previous nasal surgery. Patients were also excluded if additional surgical procedures were performed, such as rhinoplasty and concha surgery. Informed consent was obtained from all patients. Nasal obstruction was scored with the NOSE scale. The recovery rate was defined as 50% decrease in the NOSE score.

Septoplasty was performed under general anesthesia (sevoflurane/vecuronium bromide, thiopental sodium). Transseptal horizontal mattress sutures were placed using 4/0 polyglactin 910 (Rapid Vicryl, Ethicon Inc., Somerville, NJ, USA), without placing any nasal packs. Three to six transseptal sutures were placed in the septum. No splints or nasal packs were used. All operations were performed by the same surgeon. All patients who had surgery used prophylactic antibiotic (cefazolin sodium 1 g) and paracetamol 3x500 mg p.o., in the postoperative period. Nasal lavage started at the fourth postoperative hour. At two and five days postoperatively all patients underwent examination. During this examination we looked for any bleeding, septal hematoma and nasal synechiae. Daily nasal irrigation with saline solution (a mixture of 0.9% non-iodized sodium chloride and sodium bicarbonate with either purified or tap water warmed to around 98 °F/37 °C) was recommended five times daily for two weeks. Antihistaminic, nasal steroid, topical or oral decongestant drugs were not allowed for three months after the operation. Patients visited at the first and the third postoperative months and nasal obstruction was re-scored using the NOSE scale. Preoperative and postoperative NOSE scores compared. The complications were recorded. Statistical analyses were performed with PASW Statistics for Windows version 17.0 software program (SPSS Inc., Chicago, IL, USA). A value of $p<0.05$ was considered statistically significant.

Table 1. The nasal obstruction symptom evaluation scoring system

	Not a problem	Very mild problem	Moderate problem	Fairly bad problem	Severe problem
Nasal congestion or stuffiness	0	1	2	3	4
Nasal blockage or obstruction	0	1	2	3	4
Trouble breathing through my nose	0	1	2	3	4
Trouble sleeping	0	1	2	3	4
Unable to get enough air through my nose during exercise or exertion	0	1	2	3	4

RESULTS

The recovery rate determined as 81.6%. There was a statistically significant difference between preoperative and postoperative NOSE scores (Table 2).

We observed minor hemorrhage in 17 patients (34.7%), nasal synechiae in three patients (6.1%) and flap overposition (mucopericondrium not attached on septum) in two patients (4.08%). We did not observe major hemorrhage, septal hematoma or septal perforation. The flap overposition was located in the posterior section of the septum in both cases.

DISCUSSION

Various materials [such as Merocel® (Medtronic Xomed, Inc., Jacksonville, Florida, USA) and Telfa® (The Kendall Company, Boston, MA, USA)] are used following intranasal surgeries like septoplasty/septorhinoplasty in order to maintain hemostasis, inhibit hematoma and prevent synechiae formation. The negative impacts of these materials on quality of life have been shown in previous studies.[4-7] In this study, we assessed the efficiency of pack-free septoplasty using the NOSE scale. We determined the subjective recovery rate of 81.6%. Nasal synechia and flap overposition were the factors that decreased the rate of success in our study. In a study of 77 septoplasty + conchaplasty cases, Gandomi et al.[1] reported this rate as 89.5%. However, after septoplasty using nasal packing or splint this rate was reported as 63 to 85%.[8,9]

Guyuron[10] found a significantly higher percentage of persistent septal deviation in his study, but this study was performed with unpacked septorhinoplasty. We didn't find any persistent septal deviation in pack-free septoplasty. Lemmens and Lemkens[5] evaluated septal stability during postoperative pack-free septoplasty and only a single persistent septal deviation was noted in 226 subjects.

Table 2. Evaluation of cases in terms of nasal obstruction symptom evaluation score

	Mean±SD	*p*
Preoperative	14.15±1.02	
First postoperative month	5.74±1.15	0.032*
Third postoperative month	4.86±2.35	0.025*

SD: Standard deviation; * p<0.05.

Nunez and Martin[3] found no difference in the prevalence of nasal synechiae, crusting or granuloma formation between packed and unpacked groups. Deniz et al.[11] compared nasal splints and nasal packs on postoperative complications and they reported 19.71% nasal synechia and 11.26% septal perforations in the Merocel® packing group whereas there were no synechia and 10.16% septal perforations in the intranasal splint group. Nasal synechiae developed in three patients (6.1%) and no septum perforation was seen in our patients during follow-up of three months.

Flap overposition might become a problem in septoplasty without nasal packing. It particularly occurs in those cases where the mucoperichondrial flap is elevated until the posterior septum. We found this problem in two patients. In one patient suture + nasal packing was reapplied. No intervention was needed for the other patient. Flap overposition is the most important complication of pack-free septoplasty, especially in cases of posterior septal deviation. Absorbable supporting materials might be required in posterior flap elevations.

The rate of minor hemorrhage has been reported as 2.3% in pack-free septoplasty.[8] In our study, the rate was 34.69%. This rate, which may be regarded as high, might be due to the differences in assessment, as minor hemorrhages are frequent especially in the first postoperative hour. These hemorrhages can be controlled with minor interventions, and no nasal packing is required. We did not observe any major hemorrhage, septal hematoma or septal perforation.

Genc et al.[12] showed the similar histological effects of transseptal sutures and nasal packing in an animal experiment. In their study, no significant difference was detected between suture and nasal packing in terms of mucosal injury, cartilage thickness and fixation of mucoperichondrium. The absence of septal perforation in all patients in our study supported the safety of the suture technique.

Some absorbable materials that might be used instead of nasal packing after septoplasty have

been developed. They include fibrin glue, Floseal® and MeroGel®.[13,14] The use of these materials in endonasal surgeries significantly reduces morbidity.[13] Nevertheless, their expensiveness hinders their routine use. Absorbable materials might be used in the selected cases with the risk of flap overposition. This will both increase the rate of success of pack free septoplasty and decrease the risk of complications.

Although the use of nasal splints has been proposed to minimize postoperative complications such as hemorrhage, formation of synechiae and septal hematoma,[11] the use of septal splints is also associated with increased postoperative pain. The routine use of septal splints or any nasal packs does not appear to decrease postoperative complications or improve surgical outcomes when compared with less morbid techniques, such as pack-free septoplasty.[15]

Our findings showed the efficiency and complications of pack-free septoplasty and suggest that pack-free septoplasty by transseptal sutures is a successful and safe method with satisfactory subjective functional outcomes. This study is limited by a small study group and short follow-up. Further studies with a larger number and longer follow-up may show better effects of pack-free septoplasty.

Declaration of conflicting interests

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