Original Article / Çalışma - Araştırma

Effects of nasal pack use on surgical success in septoplasty

Septoplastide burun tampon kullanımının cerrahi başarıya etkisi

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Objectives: This study aims to evaluate the effects of nasal packs on surgical success and related complications in septoplasty.

Patients and Methods: Thirty-eight patients (21 males, 17 females; mean age, 36.6 years, range 18 to 61 years) were included in the study. Septoplasty candidates were prospectively divided into two groups. Nasal packing and transseptal suture technique was applied to patients in group 1 (n=16) and group 2 (n=22), respectively. Postoperative pain was assessed with the visual analog scale. The success of surgery was questioned using the Nasal Obstruction Septoplasty Effectiveness (NOSE) scale. Surgical success was defined as a 50% decrease in the NOSE scores.

Results: There was no statistically significant difference in surgical success and complication rates between the groups (p>0.05). Pain scores were significantly higher in group 1 (p=0.015).

Conclusion: Our study results suggest that nasal pack use does not affect surgical success and complication rates in septoplasty. Pack-free septoplasty with the transseptal suture technique is an effective method in the treatment of septal deviation.

Keywords: Nasal pack; nasal septum; pain; septoplasty; transseptal suture.

Amaç: Bu çalışmada septoplastide burun tamponlarının cerrahi başarı ve ilişkili komplikasyonlara etkisi değerlendirildi.

Hastalar ve Yöntemler: Çalışmaya 38 hasta (21 erkek, 17 kadın; ort. yaş, 36.6 yıl, dağılım 18-61 yıl) dahil edildi. Septoplasti adayları ileriye dönük olarak iki gruba ayrıldı. Grup 1 (n=16) ve grup 2'deki (n=22) hastalara sırasıyla nazal tampon ve transseptal dikiş tekniği uygulandı. Cerrahi sonrası ağrı görsel analog ölçeği ile değerlendirildi. Cerrahi başarı Burun Tıkanıklığı Septoplasti Etkinliği (NOSE) ölçeği ile sorgulandı. Cerrahi başarı, NOSE skorunda %50'lik azalma olarak tanımlandı.

Bulgular: Gruplar arasında cerrahi başarı ve komplikasyon oranları açısından istatistiksel olarak anlamlı bir fark saptanmadı (p>0.05). Ağrı skorları grup 1'de anlamlı düzeyde yüksekti (p=0.015).

Sonuç: Çalışma bulgularımız, septoplastide burun tamponu uygulamasının cerrahi başarı ve komplikasyon oranını etkilemediğini gösterdi. Transseptal dikiş tekniği ile uygulanan tamponsuz septoplasti septum deviasyonunun tedavisinde etkili bir yöntemdir.

Anahtar Sözcükler: Nazal tampon; nazal septum; ağrı; septoplasti; transseptal dikiş.

Available online at
www.kbbihtisas.org
doi: 10.5606/kbbihtisas.2014.82160
QR (Quick Response) Code

Received / *Geliş tarihi:* November 25, 2013 Accepted / *Kabul tarihi:* February 20, 2014

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Nasal packing is widely used in nasal surgeries such as septoplasty and septorhinoplasty, to maintain hemostasis, inhibit hematoma formation, prevent displacement of bone or cartilage grafts and support septal flaps.[1] There are various types of nasal packs. An ideal nasal pack should be hemostatic and absorbable, and should not exert any negative effect on wound healing. However, such an ideal pack material is not yet available. Despite their beneficial effects, existing nasal packs increase the postoperative morbidity of patients, causing pack-based pain[2] and although rare, toxic shock syndrome.[3] The lack of firm evidence to support nasal packing efficacy should call its routine application into question. The trans-septal suture technique has been recommended instead of nasal packing, as it reduces morbidity. However, the postoperative effectiveness of the trans-septal suture technique has not yet been evaluated by a controlled study.[1-4]

The aim of this study is to evaluate the effect of nasal packs and trans-septal suture technique on the complication and subjective surgical success rate after septoplasty.

PATIENTS AND METHODS

Thirty-eight patients (21 males, 17 females; mean age 36.6 years; range 18 to 61 years) who underwent septoplasty at Baskent University were included in the study. All patients were randomized prospectively into two groups. Group 1 consisted of 16 (42.10%), and group 2 consisted of 22 (67.90%) patients. Both groups displayed a similar distribution in terms of age and gender. Nasal obstruction was scored with the Nasal Obstruction and Septoplasty Effectiveness (NOSE) scale, which is a disease-specific scale prepared to evaluate nasal obstruction by the American Academy of Otolaryngology Head and Neck Surgery (Table 1).[5] The study protocol was approved by the Baskent University Ethics Committee for Clinical Research.

Those with nasal polyps, allergic rhinitis, systemic disease, history of hemorrhagic diathesis, anticoagulant drug use or previous nasal surgery were excluded from the study. Patients who had additional surgical procedures, such as rhinoplasty or turbinate surgery, were also excluded. All patients gave their informed consent.

Septoplasty was performed using Cottle's technique, under general anesthesia. At the end of the operation, nasal packs (Merocel Standard Nasal Dressing, Medtronic Xomed, Inc., FL, USA) covered with nitrofurazone-vaseline ointment were placed bilaterally, into the nasal cavities of the patients in group 1. In group 2, trans-septal horizontal mattress sutures were placed using 4/0 polyglactin 910 (Vicryl, Ethicon Inc., Somerville, NJ, USA), without placing any nasal packs. Three to six trans-septal sutures were placed through the septum.

Cefazolin sodium 1 gr. intravenous peroperatively and paracetamol 500 mg peroral x 3 in the postoperative period, were administered. Nasal packs were removed after 48 hours. Nasal lavage was recommended to these patients following pack removal, and to the second group of patients after the fourth postoperative hour. Daily nasal irrigation with buffered saline solution (a mixture of 0.9% non-iodized sodium chloride and sodium bicarbonate in either purified or tap water warmed around body temperature) was recommended five times daily for two weeks. No antihistaminies, nasal steroids, topical or oral decongestant drugs were allowed for three months after the operation. Subjective pain was scored in all patients using visual analog scale (VAS, from 1 to 10), at four hours and on days one and two after the operation. Nasal obstruction was re-scored in the postoperative first and third

Table 1. The nasal obstruction and septoplasty effectiveness 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

Table 2. A comparison of both groups in terms of the nasal obstruction and septoplasty effectiveness scores

NOSE score	Group 1 (pack)	Group 2 (suture)	*p*
	Mean±SD	Mean±SD	
Preoperative	10.08±2.12	16.15 ± 1.02	0.784
Postoperative 1st month	3.64±1.80	6.74±2.15	0.647
Postoperative 3rd month	2.34±1.40	4.56±2.35	0.284

NOSE: Nasal obstruction and septoplasty effectiveness; SD: Standard deviation.

months using the NOSE scale. Preoperative and postoperative NOSE scale and VAS scores for both groups were compared.

Statistical analysis was performed using SPSS for Windows version 17.0 software program (SSPS Inc., Chicago, IL, USA). P value less than 0.05 was considered to be statistically significant.

RESULTS

A 50% decrease in the NOSE score was regarded as successful. The subjective success rates for group 1 and group 2 were 93.75% and 95.45%, respectively at the end of the third month. There was no statistically significant difference between the NOSE scores of group 1 and group 2 in the first and third postoperative months (p>0.05). The NOSE score variations of both groups are presented in Table 2.

The VAS pain scores were significantly higher in group 1 than in group 2 (p=0.015). The VAS scores of both groups at different time periods are given in Table 3.

Minor hemorrhage (not requiring additional nasal pack) was observed in five cases of group 1, and in seven cases of group 2. Hemorrhages in group 1 were observed following pack removal on the second postoperative day, while hemorrhages in the second group were observed in the early postoperative hours. One case had syncope during removal of the nasal pack. Flap apposition, septal hematoma or nasal synechia was not observed. There was no statistically significant difference between groups in terms of complications (p>0.05).

DISCUSSION

Nasal packing is routinely used following intranasal surgeries such as septoplasty and septorhinoplasty, in order to maintain hemostasis, inhibit hematoma formation, prevent displacement of bone or cartilage grafts and support septal flaps.[2] Negative effects of nasal packs on quality of life have been previously shown.[6,7] In agreement with the literature, postoperative pain scores of patients in the nasal packing group were significantly higher than in the pack-free group in our study. Pack-based pain and negative personal experiences of other patients that had been operated on before may prevent people from having an operation. We observed in our clinical practice that the patients who are informed about pack-free septoplasty accept surgery more easily.

In pack-free septoplasty, minor hemorrhages are observed in the first postoperative day. However, they generally do not cause major problems. Similar minor hemorrhages also take place following pack removal. In our study, we did not detect any serious nasal pack-based complications. However, major side effects like toxic shock syndrome limit the routine use of packs in septoplasty.[8]

As some studies have upheld nasal packing to prevent septal hematoma after septoplasty,[1,2,4] others have claimed the contrary.[6] Awan and Iqbal[6] found the incidence of septal hematoma to be 6.8% in the packing group, with no hematoma detected in the pack-free group. This outcome was attributed to the packing itself that exerts a traumatic effect and causes buckling of the septum. Though we did not observe any septal hematoma in either group, studies with greater

Table 3. Evaluation of the cases in terms of postoperative pain

VAS/pain	4 hour	Day 1	Day 2
	Mean±SD	Mean±SD	Mean±SD
Group 1 (pack)	6.12±2.78	5.38±1.11	4.23±1.87
Group 2 (suture)	2.34±1.76	1.82±0.74	0.42±0.12

VAS: Visual analog scale; SD: Standard deviation.

numbers of patients are needed in order to deduce superiority, equal ranking or inferiority of trans-septal suturing regarding septal hematoma.

The use of packs in nasal surgery has recently been questioned.[7] In order to alleviate patients' discomfort, studies recommending the use of modified nasal packs have been made.[9,10] Among different packing materials, ribbon gauze seems to be the most painful on removal. Foam packings are absorbable or non-absorbable materials that rapidly increase in volume upon hydration. Absorbable gelatin sponge (Gelfoam) does not require removal because of its self-disintegrating property. However it has been reported to lead to inflammation with subsequent scar formation in ear and lacrimal surgery. A non-absorbable material, Merocel® (Medtronic Xomed, Inc., FL, USA) is shown to decrease postoperative adhesions and crusting though significant pain and bleeding can be seen on removal. Pack modification with an airway may decrease postoperative morbidity.[10] Among packing materials Rapid Rhino® (ArthroCare® Corporation, Sunnyvale, CA, USA) is associated with less pain and tolerated more easily than Merocel®.[11] Although modified packs, such as glove-finger and Rapid rhino®, may increase the patient's comfort in the early postoperative period, both have a negative influence on pulmonary function.[10] In the same way Surgicel Nu-Knit® (ArthroCare® Corporation, Sunnyvale, CA, USA) is associated with less pain and bleeding than Merocel®, but one patient required general anesthesia to remove it.[12] Modified packs such as Rapid rhino® or Surgicel Nu-Kit® may be more tolerable than Merocel® but no study shows the effect of these packs on surgical success.

Apart from pack modifications, one of the alternative recommendations to packing is the trans-septal suture technique.[9] Genç et al.[1] showed similar histological effects of trans-septal suture and packs in an animal experiment. In this study, no significant difference was found between suture and pack groups in terms of mucosal injury, cartilage thickness and fixation of mucoperichondrium. In a study with 114 cases, where post-septoplasty packing and suture technique were compared in terms of complications, no superiority of pack to suture could be detected.[13] Furthermore, it was posited that post-septoplasty pack application increased oxidative stress as compared to suture.[14] Especially in patients with cardiac problems, nasal packs may cause deterioration, so trans-septal suture is advantageous for such patients. Other absorbable materials used instead of post-septoplasty packs have been developed. They include fibrin glue, floseal and merogel.[15] Although these materials reduce morbidity significantly, their costs limit their routine use. In addition, their negative effects on wound healing have been shown in animal experiments.[16,17]

Depending on the literature review, there is no study that evaluates nasal packing and trans-septal suture techniques in terms of effectiveness. In 1989 Guyuron published a significantly higher percentage of persistent septal deviation with pack free septoplasty, but this study was performed in the context of septorhinoplasty.[8] In this study, we compared both techniques in terms of surgical success in septoplasty alone. We did not find persistent septal deviation. The success rates for both techniques were comparable and satisfactory. In our clinic, pack-free septoplasty is frequently applied and recommended.

The NOSE scale, which could be used in different surgical techniques, was suggested by Stewart et al.[18] for estimating nasal obstruction. They had stated that the NOSE scale is valid, reliable, responsive to change in clinical status and used in groups of patients, not individuals. In the literature, there are limited studies using the NOSE scale. Stewart et al.[19] and Gandomi et al.[20] used it after septoplasty, while Harrill et al.[5] after radiofrequency turbinate reduction. Their common opinion is that the nose scale is the top point of patient's perception of their response to therapy. We first used this scale in a different standpoint for septoplasty, to compare sutures and packs. Eventually we decided that the NOSE scale is useful, practical and reliable.

On the other hand the smaller number of patients involved is a limitation of this study. In the study of Doğan et al.[21] larger number of patients were involved and negative influence was observed on pulmonary function in finger glove packing group compared to nasal septal suturing.

In summary many studies have detected more comfortable packs than Merocel®. But these packs have other problems. A future study with a larger number of patients and longer follow up period would allow more precise identification of the

effect of nasal packs or trans-septal sutures on septoplasty success.

In conclusion, nasal packing does not affect subjective surgical success. Moreover, it reduces quality of life. Therefore, its common use should be avoided. Pack-free septoplasty with trans-septal sutures is a successful and effective method for treatment of septal deviation.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

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