CLINICAL STUDY

EFFECT OF NASAL PACKS ON PATIENTS' ANXIETY AND PAIN INTENSITY FOLLOWING SEPTOPLASTY

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SUMMARY

Aims: We aimed to investigate the effects of three different types of nasal packs on patients' anxiety and pain intensity following septoplasty.

Materials and Methods: One hundred twenty-four patients who underwent septoplasty were enrolled in the study. All patients were evaluated by otorhinolaryngological examination and randomly allocated into three groups as group A (merocel group), group B (silicone splint group), and group C (merocel in a glove finger group) according to usage of nasal packing type after surgery. All patients completed the Beck Anxiety Inventory before septoplasty, right after the removal of nasal packing and after 3 hours of removal. The pain intensity was graded by patients according to visual analog scale at different periods of time.

Results: Anxiety score of silicone splint group right after removal of nasal packing reached statistically significantly lower levels than other groups ($p < 0,05$). Furthermore the difference in anxiety scores between nasal packing removal after 3 hours and other time zones reached statistical significance for all groups ($p < 0,05$). The pain scores right after removal of nasal packing and after 3 hours of removal were highest for merocel group.

Conclusion: Our results demonstrate that anxiety levels of patients were high in the preoperative period and decreased after the operation, especially after removal of nasal packing. Additionally another important contribution of this study is that using silicone nasal septal splint after septoplasty may reduce anxiety scores of patients which may also lead to less postoperative pain.

Keywords: Septoplasty, nasal packing, Beck Anxiety Inventory, intranasal splint, merocel, merocel in a glove finger, anxiety, pain intensity

SEPTOPLASTİ SONRASI KULLANILAN NAZAL TAMPONLARIN HASTANIN ANKSİYETESİ VE AĞRI ŞİDDETİ ÜZERİNE ETKİSİ

ÖZET

Amaç: Çalışmamızda septoplasti sonrası kullanılan üç farklı nazal tamponun hastanın anksiyetesi ve ağrı şiddeti üzerine etkisini araştırmayı amaçladık.

Materyal ve metod: Septoplasti uygulanan 124 hasta çalışmaya dahil edilmiştir. Tüm hastalara otolarengoloji muayenesi uygulanmış ve hastalar cerrahi sonrası kullanılan tampon çeşidine göre rastgele bir şekilde grup A (merosel grubu), grup B (silikon splint grubu) ve grup C (eldiven parmaklı merosel grubu) olmak üzere 3 gruba ayrılmıştır. Septoplasti öncesi, nazal tampon çekildikten hemen sonra ve 3 saat sonra Beck Anksiyete Skalası doldurulmuştur. Ağrı şiddeti farklı zaman aralıklarında hastalar tarafından vizüel analog skalası ile derecelendirilmiştir.

Bulgular: Nazal tampon çekildikten hemen sonra bakılan anksiyete skoru silikon splint grubunda diğer gruplardan anlamlı oranda daha düşüktür ($p < 0,05$). Ayrıca tüm gruplar için, tampon çekildikten 3 saat sonraki anksiyete skoru diğer zaman dilimlerinden anlamlı oranda daha düşüktür ($p < 0,05$). Tampon çekildikten hemen sonra ve 3 saat sonraki ağrı skoru en yüksek oranda merosel grubundadır.

Sonuç: Bizim sonuçlarımız göstermiştir ki; preoperatif dönemde hastaların aksiyete oranları yüksektir ve cerrahi sonrası, özellikle de nazal tamponlar çıkarıldıktan sonra azalmaktadır. Ayrıca çalışmamızın diğer önemli katkısı, silikon nazal splint kullanımın hastaların anksiyete oranını azalttığı ve daha az postoperatif ağrıya neden olduğunu göstermiş olmasıdır.

Anahtar Sözcükler: Septoplasti, nazal tampon, Beck Anksiyete Skalası, intranazal splint, merosel, eldiven parmaklı merosel, anksiyete, ağrı şiddeti

INTRODUCTION

Septoplasty is a frequent operation performed in otorhinolaryngology practice. Nasal packs are used by some surgeons in order to support septal flap apposition and to avoid complications.

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However there is controversy on packing practices those applied after routine nasal surgery. Some authors propose nasal septal suturing as an alternative method owing to the fact that the pack itself can be the source of problems resulting in significant mucosal injury and loss of ciliary function[1].

There are many clinical studies about comparison of nasal packing types and complication

rates or pain scores[2-5]. For instance Acioglu et al. demonstrated that merocel had the highest pain potential during removal as well as the highest rate of bleeding afterwards[5], in a review septal sutures were found to be associated with less postoperative pain versus other methods[6], and Jung evaluated the effect of septal splint on adhesion and mucosal healing and suggested silastic septal splint as a routine procedure[7]. All these materials have own advantages and disadvantages. In daily practice, we use merocel, silicone nasal septal splint, and merocel in a glove finger in our centre.

Recently within new healthcare system, with its emphasis on quality improvement, surgeons should care both physical and emotional well-being of the patients. However septoplasty operation may cause patients to express anxiety due to impairment of nasal respiration by using nasal packs. Additionally patients consider removal of nasal packing as one of the most stressful and painful parts of septoplasty[2]. Depending on these facts, patients may have problems in deciding about undergoing surgery.

To our knowledge, only one study had explored the hospital anxiety in patients who underwent nasal surgery[8], in literature, however there isn't any reported data regarding comparison of types of nasal packs and anxiety level. Based on the absence of data, we aimed to find out whether different types of nasal packs alter the level of anxiety in patients who underwent septoplasty by using Beck Anxiety Inventory (BAI) before and after surgery and we also compared the efficacy of different types of nasal packs on pain intensity.

MATERIAL and METHODS

The study was a double-blind prospective randomized trial. Approval for the study was obtained from the local ethics committee and all patients signed the agreement to participate in the study.

Study population

The study group consisted of 124 patients who underwent septoplasty operation under general anesthesia. Exclusion criteria were a history of nasal surgery, allergy, paranasal sinus pathologies, systemic disorders such as diabetes mellitus and wegener's, and patients younger than 18 years old. Additionally patients who had perioperative or postoperative complications such as mucosal perforation, excessive bleeding, septal hematoma or infection were excluded from the study.

Study design

All patients were evaluated by otorhinolaryngological examination and septal deviation was confirmed by nasal endoscopy.

All patients completed the BAI before septoplasty. Three groups as group A (merocel group), group B (silicone splint group) and Group C (merocel in a glove finger group) were designed using simple randomization method. After septoplasty, bilateral standard 8-cm Merocel nasal packs without airway (Medtronic Xomed, Jacksonville, FL) were applied to group A, and silicone nasal septal splints with integral airway (in each nostril, sutured to septum; Invotec, Jacksonville, FL) were applied to group B and Merocel in a glove finger were applied to group C for postoperative packing. All packs were removed on the 48th hour after the surgery. Patients were asked to determine pain intensity using visual analog scale (VAS), a 10-cm scale where 0 indicates no pain and 10 indicates the most severe pain. The pain scores were recorded at 1, 2, 8, 12, 24 h postoperatively and right after removal of nasal packing and also after 3 hours of nasal packing removal. Additionally all the patients were asked again to complete BAI right after removal of nasal packing and after 3 hours of nasal packing removal. BAI is a 21-item self-report inventory designed to assess clinical anxiety that focuses predominantly on the physiological aspect[9,10]. Each item is rated on a 4-point scale ranging from 0 (not at all) to 3 (severely). In the present study, BAI was used to evaluate the severity of anxiety in patients who underwent septoplasty. Surgery was performed by one senior author. Analysis was carried out by another author who was blinded to the patients and interventions. Additonally patients had not been informed about the type of nasal packs.

Surgical procedure

Patients with deviation of nasal septum underwent septoplasty under general anesthesia. Our approach briefly consisted of Killian incision, creation of subpericondrial tunnels via a closed approach, and correction of the deviated segment.

Statistical analysis

Statistical analyses were done using SPSS for Mac (version 20.0; SPSS, Inc, Chicago, IL). Data were expressed as mean ±SD. Paired samples t-test and Student's t test were used to assess significance for the results. The values of $p < 0.05$ were considered statistically significant.

RESULTS

Patient distribution

Out of 124 patients included in the study, 95 were male and 29 were female, and the mean age was 28,8±11 years. Group A (merocel group) consisted of 35 patients, group B (silicone splint group) 59 patients, and group C (merocel in a glove finger group) 30 patients. All of the patients successfully completed the survey.

Beck Anxiety Inventory scores

There were no statistically significant difference between 3 groups in terms of preoperative BAI scores. The preoperative BAI scores of group A, B, and C was 7,5 (±8,98), 6,72 (±10,2), 7,8 (±6,91), respectively; 10,7 (±6,85), 5,2 (±6,42), 6,3 (±8,98) right after removal of nasal packing and 2,3 (±2,59), 2,7 (±5,83), 2,3 (±4,32) after 3 hours of nasal packing removal (Table 1).

Comparison of nasal packs based on Beck Anxiety Inventory scores

The difference in BAI scores between the 3 hours after nasal packing removal and other time zones reached statistical significance for all groups ($p < 0,05$), in other words anxiety levels were high in the preoperative period and decreased after removal of nasal packing. Furthermore BAI score of group B (silicone splint group) right after removal of nasal packing reached statistically significantly lower levels than other groups ($p < 0,05$). However the difference between the BAI scores of all nasal packing materials did not show statistical significance at the 3 hours after nasal packing removal ($p > 0,05$).

Pain intensity

The comparison of postoperative pain of three nasal packing materials are given in Table 2. Visual analog scores in patients with Merocel packing were statistically higher than patients with silicone splint packages at the time of packing after 8, 12, 24 hours, during removal of package and 3 hours after nasal packing removal ($p< 0,05$). When we compared group A and group C, Group C had lower scores in all periods ($p< 0,05$). But there was no statistical significance between splint and merocel in a glove finger group at all time periods ($p>0,05$).

Table 1: Demographic data and comparison of different types of nasal packs with anxiety scores gathered at different periods of time. St.Dev.; Standart Deviation.

		Nasal packing materials					
		Merocel		Splint		Merocel in a glove finger	
Number of patients		35 patients		59 patients		30 patients	
		Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.
Mean age		23,5	±8,98	29,2	±10,89	34,3	±10,76
Anxiety Score	Preoperative period	7,5	±6,32	6,72	±10,2	7,8	±6,91
	During removal of nasal packing	10,7	±6,85	5,2	±6,42	6,3	±8,98
	After 3 hours of nasal packing removal	2,3	±2,59	2,7	±5,83	2,3	±4,32

Table 2: Comparison of different types of nasal packs with postoperative pain scores gathered at different periods of time. St.Dev.; Standart Deviation.

		Nasal packing materials					
		Merocel		Splint		Merocel in a glove finger	
Number of patients		35 patients		59 patients		30 patients	
		Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.
Mean age		23,5	±8,98	29,2	±10,89	34,3	±10,76
VAS Score	Packing after 1 hour	4,7	±3,33	4,1	±2,41	3,2	±1,64
	Packing after 2 hours	4,5	±3,07	3,4	±2,19	2,7	±1,56
	Packing after 8 hours	4,4	±3,09	2,9	±1,86	2,3	±1,66
	Packing after 12 hours	4,3	±3,2	2,9	±1,87	2,2	±1,7
	Packing after 24 hours	4,3	±3,13	1,9	±1,94	2	±1,67
	During removal of nasal packing	6,1	±2,58	2,7	±2,27	3,4	±2,03
	After 3 hours of nasal packing removal	2,2	±1,94	1,2	±1,55	1	±1,1

DISCUSSION

Nasal packs which are commonly used to support septal flap apposition and to avoid complications may lead the patients to have an anxiety in association with impairment of nasal respiration due to nasal packs. Although a number of different nasal packing materials had been described in the literature, there is a lack of consensus regarding the ideal material. There are various studies regarding comparison of nasal packing types and complication rates or pain scores[3-5]. Acioglu et al. investigated the effects of nasal packs with respect to pain, nasal fullness and postoperative bleeding following septoplasty and found that Merocel had the highest pain potential during removal as well as the highest rate of bleeding afterwards[5]. This result is consistent with our findings. Additionally some authors suggest insertion of septal splint after septoplasty as a routine procedure[3,7,11]. In contrast, Quinn et al. reported that septal sutures were associated with less postoperative pain when compared with other methods[6] and Eşki et al. suggested pack-free septoplasty with transeptal sutures as an effective method[12]. In daily practice, we use merocel, silicone nasal septal splint, and merocel in a glove finger which are compared in the present study. Our results demonstrated that highest pain scores were recorded by patients with merocel packing. Although patients with silicone splint reported less pain intensity than merocel in a glove finger during removal of nasal packing, it did not reach statistical significance.

All nasal packs were left in place for up to 48 hours and then removed in this study. This is because some studies showed that risk of bacteremia after nasal septal procedure increases after 48 hours[13,14]. Additionally San et al. revealed increased biofilm formation over the surfaces of the intranasal silicone splints by time especially after 48 hours[15].

In case of nasal surgery, especially septoplasty, anxiety could be observed in patients related to nasal packing and to additional problems owing to the surgery and hospitalization[16]. Additionally patients consider removal of nasal packing to be one of the most stressful and painful parts of septoplasty[2]. Recently intranasal splint has been proposed more by some studies concerning that they might be associated with less morbidity as they maintain septal stability and allow nasal breathing postoperatively through integral airways[3,7,11]. Depending on this knowledge, in the present study we aimed to find out whether different types of nasal packs alter the anxiety scores of patients who underwent septoplasty by using BAI applied before and after septoplasty. Patients had not been informed about the type of nasal packs before surgery to avoid bias.

Bayar Muluk et al. investigated emotional disorders in 50 adult patients who underwent nasal surgery (functional endoscopic sinus surgery and/or septoplasty) by using Hospital Anxiety and Depression (HAD) Scale in patients who underwent nasal surgery. In that study, all the patients were completed HAD scale 1 day before surgery and 1 day

after surgery, with anterior nasal packing bilaterally during the hospital stay. They reported no statistically significant difference between pre- and postoperative anxiety and depression levels and they noted that if the patients were well informed about the operation and the necessity of nasal packing, no additional psychological problems would be observed[8]. Differently in this study we selected only the patients who underwent septoplasty operation and we used BAI to evaluate anxiety levels of patients as BAI was designed to measure the severity of anxiety in adults that minimizes the overlap between depression and anxiety scales. Furthermore patients were also asked to complete BAI right after removal of nasal packing and after 3 hours of nasal packing removal in addition to preoperative period. Our findings are inconsistent with this overview and demonstrated that anxiety levels were high in the preoperative period and decreased after the operation, especially after removal of nasal packing.

To the best of our knowledge, this is the first study investigating the effect of different types of nasal packs on the anxiety scores of patients who underwent septoplasty. Our results indicated that BAI scores of group B (silicone splint group) right after removal of nasal packing reached statistically significant lower levels than other groups. Additionally our findings showed that it may also result in less postoperative pain. Depending on the knowledge that patients consider removal of nasal packing as one of the most stressful and painful parts of septoplasty[2], our data may support that using silicone nasal septal splint after septoplasty may reduce anxiety and pain scores of patients more prominently than other nasal packs.

The weakness of the present study is that number of patients in group B was larger than the other groups. This is because we used simple randomization method however it might be better to use computer programming to do the randomization. We tried to clarify the effects of different types of nasal packs on patients' anxiety following septoplasty and wanted to be initiator of any further studies on this subject.

CONCLUSION

Our results demonstrate that anxiety levels of patients were high in the preoperative period and decreased after the operation, especially after removal of nasal packing. Additionally another important contribution of this study is that using silicone nasal septal splint after septoplasty may prominently reduce anxiety scores of patients right after removal of nasal packing and it may also minimize pain intensity. Based on our findings, we could define a new hypothesis that if otorhinolaryngologists could use silicone nasal septal splint after septoplasty and explain in more details about type of nasal packing and its necessity to the patients preoperatively, this information may help to reduce patients' anxiety more. Based on the fact that patients had not been informed about the type of nasal packs before surgery in this study; future studies concerning the new hypothesis should be performed.

REFERENCES

1. Shaw CL, Dymock RB, Cowin A, Wormald PJ. (2000) Effect of packing on nasal mucosa of sheep. J Laryngol Otol 114:506-509.
2. Ozcan C, Vayisoglu Y, Kilic S, Görür K. (2008) Comparison of rapid rhino and Merocel nasal packs in endonasal septal surgery. J Otolaryngol Head Neck Surg 37:826-831.
3. Dubin MR, Pletcher SD. (2009) Postoperative packing after septoplasty:is it necessary? Otolaryngol Clin North Am 42:279-285.
4. Yilmaz MS, Guven M, Buyukarslan DG, Kaymaz R, Erkorkmaz U. (2012) Do silicone nasal septal splints with integral airway reduce postoperative eustachian tube dysfunction? Otolaryngol Head Neck Surg 146(1):141-5.
5. Acioglu E, Edizer DT, Yigit O, Onur F, Alkan Z. (2012) Nasal septal packing:which one? Eur Arch Otorhinolaryngol 269(7):1777-81.
6. Quinn JG, Bonaparte JP, Kilty SJ. (2013) Postoperative management in the prevention of complications after septoplasty:a systemic review. Laryngoscope 123(6):1328-33.
7. Jung YG, Hong JW, Eun YG, Kim MG. (2011) Objective usefulness of thin silastic septal splints after septal surgery. Am J Rhinol Allergy 25(3):182-5.
8. Muluk NB, Oguzturk O, Ekici A, Koc C. (2005) Emotional effects of nasal packing measured by the Hospital Anxiety and Depression Scale in patients following nasal surgery. J Otolaryngol 34(3):172-177.
9. Ulusoy M, Sahin NH, Erkmen H. (1998) Turkish version of the Beck Anxiety Inventory: Psychometric properties. Journal of Cognitive Psychotherapy 12(2):163-172.
10. Beck AT, Epstein N, Brown G, Steer RA. (1988) An inventory for measuring clinical anxiety: Psychometric properties. J Consult Clin Psychol 56(6):893-897.
11. Aksoy E, Serin GM, Polat S, Kaytaz A. (2011) Removing intranasal splints after septal surgery. J Craniofac Surg 22(3):1008-9.
12. Eşki E, Güvenç IA, Hızal E, Yılmaz I. (2014) Effects of nasal pack use on surgical success in septoplasty. Kulak Burun Bogaz Ihtıs Derg. Jul-Aug;24(4):206-10.
13. Hajiioannou JK, Bizaki A, Fragiadakis G, Bourolias C, Spanakis I, Chlouverakis G, Bizakis J. (2007) Optimal time for nasal packing removal after septoplasty. A comparative study. Rhinology.Mar; 45(1):68-71.

14. Caniello M, Passerotti GH, Goto EY, Voegels RL, Butugan O. (2005) Antibiotics in septoplasty: is it necessary?. Braz J Otorhinolaryngol. Nov-Dec;71(6):734-8.

15. San T, Ertugay OC, Catli T, Acar M, Ertugay CK, Dag I, Cingi C. (2015) Effects of surfactant on biofilm formation on silicone nasal splints. Eur Arch Otorhinolaryngol. Feb;272(2):345-9.

16. Razavi D, Delvaux N, Farvacques C, Robaye E. (1990) Screening for adjustment disorders and major depressive disorders in cancer in patients. Br J Psychiatry 156:79-83.