

Evaluation of the Effects of Using Nasal Pack with Lidocaine Pomade on Postoperative Pain and Bleeding in Patients Undergoing Septoplasty

Septoplasti Yapılan Hastalarda Lidokainli Pomad ile Birlikte Nazal Tampon Kullanımının Postoperatif Ağrı ve Kanama Üzerine Etkisinin Değerlendirilmesi

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ABSTRACT Objective: This study aims to find out the effect of the topical lidocaine pomade application on postoperative bleeding and pain control following a septoplasty procedure. **Material and Methods:** We enrolled 82 (45 male, 37 female) patients with a mean age of 31.8±8.58 (range 16-51) who underwent septoplasty. Forty five (56.88%) of them received Doyle nasal splint with a %5 lidocaine pomade, and 37 (42.12%) patients received Doyle nasal splint only. Visual analog scale (VAS) was used to measure postoperative pain intensity on the first, 2nd, and 3rd days after septoplasty before taking painkillers. Duration of postoperative bloody nasal discharge time (hours) and hospitalization period were recorded. Complications were also recorded. **Results:** There was no significant difference between nasal pack groups in terms of hospitalization period (p=0.383). There was a significant difference between nasal pack groups in terms of first, 2nd, and 3rd postoperative day VAS scores. VAS scores in Doyle nasal pack group were significantly higher every 3 days. When VAS scores of postoperative first, 2nd, and 3rd days were compared, there was a significant difference between all of the groups. While the first day's VAS score was the highest, the 3rd day was the lowest. Duration of the postoperative bloody discharge period was found significantly lower in patients with Doyle splint with lidocaine pomade (p<0.001). **Conclusion:** Consequently, using lidocaine pomade covered nasal silicone splints is a comfortable, reasonable and cost-effective option for patients who underwent septoplasty. It helps postoperative pain management and shortens the duration of the postoperative bloody discharge time.

Keywords: Nasal pack; VAS; lidocaine; pain; septoplasty

ÖZET Amaç: Bu çalışmanın amacı, septoplasti cerrahisi sonrası kullanılan nazal tampon üzerine uygulanan lidokainli pomadın, ameliyat sonrası kanama ve ağrı kontrolü üzerine etkisini araştırmaktır. **Gereç ve Yöntemler:** Bu çalışmaya, 16-51 yaş aralığında (ortalama 31,8±8,58) 82 hasta dâhil edilmiştir. Hastaların 45'i erkek, 37'si kadındır. Kırk beş (%56,88) hastaya, üzerine %5 lidokainli pomad uygulanan Doyle tampon yerleştirilmiştir. Otuz yedi (%42,12) hastaya sadece Doyle tampon yerleştirilmiştir. Hastaların ameliyat sonrası ağrı şiddetleri 1, 2 ve 3. günlerde ağrı kesici almadan önce vizüel analog skala (VAS) ile değerlendirildi. Ameliyat sonrası burundan kanlı akıntı süresi (saat), hastanede kalış süresi ve komplikasyonlar kaydedildi. **Bulgular:** Hastanede kalış süresi açısından gruplar arası anlamlı fark görülmedi (p=0,38). Ameliyat sonrası 1, 2 ve 3. günde ölçülen VAS skorlarında gruplar arasında anlamlı fark görüldü. Sadece Doyle tampon kullanılan grupta her 3 günde de ölçülen VAS skorları anlamlı olarak yüksek bulundu. Her bir grup için ameliyat sonrası 1, 2 ve 3. günde ölçülen VAS skorları birbirleri arasında karşılaştırıldığında, her 3 ölçüm arasında da anlamlı fark görüldü. En yüksek VAS skorları 1. günde ölçülürken, en düşük skorlar 3. günde ölçüldü. Ameliyat sonrası izlenen kanlı akıntı süresi lidokain pomadlı Doyle nazal tampon kullanılan hastalarda anlamlı olarak kısa bulundu (p<0,001). **Sonuç:** Septoplasti yapılan hastalarda lidokain pomadlı nazal silikon splint kullanımı konforlu, makul ve uygun maliyetli bir seçenektir. Postoperatif ağrı yönetimine ve postoperatif kanamalı taburculuk süresinin kısalmasına yardımcı olabilir.

Anahtar Kelimeler: Nazal tampon; VAS; lidokain; ağrı; septoplasti

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Septoplasty for deviated nasal septum is one of the most frequent procedures in otorhinolaryngology practice. In most cases, nasal packing has been used to prevent postoperative bleeding and septal hematoma. Nasal packs also support mucoperiosteal flaps and reduce the risk of adhesions and stabilize the septum. But there are also some disadvantages of nasal packs such as postoperative pain, mucosal injury, nasal obstruction, allergic reactions, dysphagia and eating difficulties. Different kinds of nasal packing can be preferred such as polyvinyl acetate sponge (Meroce[®], Medtronic Xomed, Jacksonville, FL) and silicone nasal splints.¹⁻³ Doyle is one of the most widely used nasal splints made of silicone.

The most common drugs used after septoplasty are nonsteroidal anti-inflammatory drugs to reduce discomfort. As pain is a major problem after septoplasty, some authors suggest using local anesthetic agent soaked nasal packs. Lidocaine in the amide group is one of the most frequently preferred anesthetic agents for that purpose. The onset time of the anesthetic effect is fast and the duration of anesthetic effect is medium.^{4,5}

In this study, we aimed to evaluate the effect of the topical lidocaine pomade application on postoperative bleeding and pain intensity following septoplasty operation.

MATERIAL AND METHODS

This study was approved by the Scientific Research and Publication Ethics Committee of Toros University (date: January 14, 2020, no:20/11). The study has been conducted in accordance with the Declaration of Helsinki. In this study, we enrolled 82 (45 male, 37 female) patients with a mean age of 31.8 ± 8.58 (range 16-51). Patients with chronic systemic diseases including hypertension and coronary artery disease who use antihypertensive and anticoagulant agents were excluded from the study. Patients were asked to fill out an informed consent form before the surgery.

SURGICAL PROCEDURE

All operations were performed by the same surgeon under general anesthesia. Infiltration anesthesia was

done with lidocaine (20 mg/1 mL) and adrenaline (0.0125 mg/mL) (Jetokain[®], Adeka, Türkiye) to reduce perioperative bleeding. Surgery started with a hemitransfiction incision, followed by elevation of the mucoperichondrium on the septal cartilage. The deviated parts of the septal cartilage were corrected with excisions and sutures. 4/0 vicryl was used for suturing. After septoplasty operations, 45 patients received Doyle nasal splint with a 5% lidocaine pomade (Anestol[®], Sandoz, Türkiye) (54.88%). Thirty seven patients received Doyle nasal splint only (45.12%). Doyle splints were removed on the 3rd or the 4th day after surgery. In case of severe postoperative pain, dexketoprofen (50 mg/2 mL, intravenous) (Arvels[®], İbrahim Ethem, İstanbul, Türkiye) was used for postoperative analgesia. As septoplasty is a clean-contaminated procedure, we didn't use routine antibiotics for prophylaxis.

Visual analog scale (VAS) was used to measure postoperative pain intensity on the first, 2nd, and 3rd days following septoplasty before taking painkillers. Duration of postoperative bloody nasal discharge time (hours) and hospitalization period were recorded. Complications were also recorded. The patients were told that they could leave the hospital when they felt comfortable enough to leave.

STATISTICAL ANALYSIS

R studio version 3.6.2 (<https://www.r-project.org/>) was used for statistical data analysis.⁶⁻⁹ Shapiro-Wilk test was used to determine the distribution of the continuous variables. Mann-Whitney U test was used to compare Doyle+lidocaine and Doyle nasal pack groups. Friedman test was used to compare 3 dependent groups which are post-operative VAS scores of 3 days following surgery. Post-hoc Conover test was used for pairwise comparisons. Median, minimum, and maximum values were preferred to express the quantitative variables in this study.

RESULTS

In this study, we enrolled 82 [45 (54.88%) male, 37 (45.12%) female] patients with a mean age of 31.8 ± 8.58 (range 16-51). There was no significant difference between groups in terms of age ($p=0.08$). There was no significant difference between nasal

pack groups in terms of hospitalization period ($p=0.383$). The VAS scores at the first, 2nd, and 3rd postoperative days were compared between nasal pack types. Doyle group was found significantly higher in all 3 VAS scores ($p<0.001$). Duration of postoperative bloody discharge period was also found significantly higher in patients with Doyle splint ($p<0.001$) (Table 1). When VAS scores of postoperative first, 2nd, and 3rd days were compared, there was a significant difference between all of the groups. While the first-day VAS score was the highest, the 3rd-day was the lowest (Figure 1, Table 2). Two patients who received Doyle splint with lidocaine pomade suffered from complications. One patient suffered from septal hematoma and the other had septal perforation.

DISCUSSION

Nasal packs are widely used after septoplasty to prevent postoperative bleeding and septal hematoma and to support bony fragments and septal cartilage. There are lots of absorbable nasal pack are available such as Nasopore (Polyganics, Groningen, the Netherlands), and nonabsorbable packs such as Merocel and silicone nasal splints.¹⁰

To improve the quality of the postoperative period, relieving the pain is the main goal. Some authors suggest using anesthetics soaked nasal pack to comfort the patient.⁵

In this study, we aimed to evaluate the effect of lidocaine pomade used with silicone nasal splint in

TABLE 1: Descriptives in terms of nasal pack types. VAS 1, VAS 2, VAS 3 and bloody discharge hours were found statistically significant ($p<0.001$).

	Doyle+lidocain		Doyle		Test stats.*	p value	Cohen's d
	Mean±SD	Median (minimum-maximum)	Mean±SD	Median (minimum-maximum)			
Hospitalization (hours)	6.33±4.58	5 (4-24)	5.46±3.38	4 (4-24)	-0.873	0.383	-0.214
VAS 1	4.27±1.71	4 (2-9)	6.03±0.96	6 (5-8)	-5.135	<0.001	1.238
VAS 2	3.11±1.67	3 (0-8)	4.41±1.04	4 (2-8)	-4.204	<0.001	0.911
VAS 3	1.71±1.52	1 (0-7)	3.03±0.93	3 (1-6)	-4.929	<0.001	1.024
Bleedy discharge time (hours)	11±11.58	6 (4-48)	15.54±9.87	12 (4-48)	-3.603	<0.001	0.419

*Mann-Whitney U test; SD: Standard deviation; IQR: Interquartile range; VAS 1: Visual analog scale on the first postoperative day; VAS 2: Visual analog scale on the second postoperative day; VAS 3: Visual analog scale on the third postoperative day; Min: Minimum; Max: Maximum.

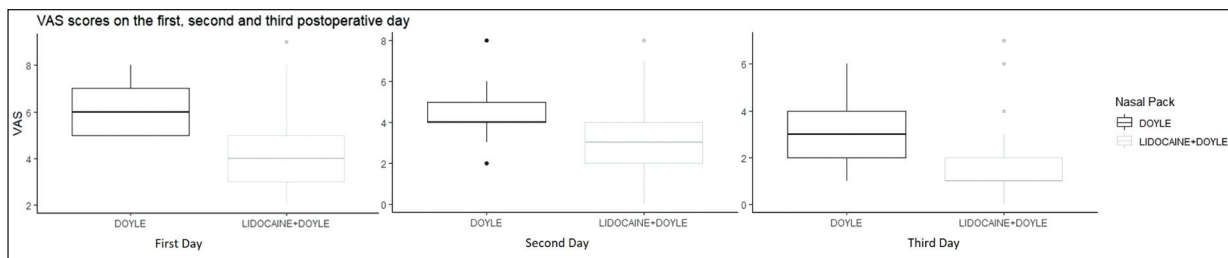


FIGURE 1: VAS scores on the first, 2nd and 3rd postoperative days were shown according to nasal pack types. VAS: Visual analog scale.

TABLE 2: Changes in VAS scores in different nasal pack groups. In both groups, VAS 1, VAS 2 and VAS 3 scores were found statistically significant ($p<0.001$), while VAS 1 was the highest and VAS 3 was the lowest.

	VAS 1	VAS 2	VAS 3	Test stats.	p value
	Median (minimum-maximum)	Median (minimum-maximum)	Median (minimum-maximum)		
Doyle+lidocain	4 (2-9) ^a	3 (0-8) ^b	1 (0-7) ^c	82.592	<0.001
Doyle	6 (5-8) ^a	4 (2-8) ^b	3 (1-6) ^c	69.524	<0.001

*Friedman test; There is a significant difference between groups containing different letters; VAS: Visual analog scale.

terms of postoperative pain, bloody discharge and hospitalization period.

Simsek et al. compared tramadol and lidocaine soaked Merocel nasal packs and suggested that tramadol soaked nasal packs result better in terms of postoperative pain.¹¹

Karaman et al. compared 1% lidocaine+0.000625% adrenalin, 0.375% ropivacaine, and 0.25% bupivacaine and suggested using bupivacaine soaked Merocel nasal packs to reduce postoperative pain. Also, they found no significant difference between any of the groups in terms of postoperative hemorrhage.⁵ To the best of our knowledge, there is no study available investigating the correlation between postoperative pain and duration of postoperative bleeding time following septoplasty. However, Sarny et al. investigated the effect of postoperative pain after tonsillectomy operations and found a positive correlation between pain and increased postoperative bleeding risk.¹² The sympathetic activity caused by acute pain increases blood pressure.¹³ In our study, the duration of the postoperative bloody discharge period was found significantly lower in Doyle splint with lidocaine pomade group relative to only Doyle split used group in which VAS score is higher. Despite the exclusion of patients with hypertension and coronary artery disease, the current study has limitations regarding the length of the postoperative bloody discharge period because postoperative blood pressure measurements were not done. When the nasal pack groups were compared with each other, the hospitalization period was shortest in Doyle splint with lidocaine group. This may be because of reduced pain and feeling much more comfortable leaving the hospital.

Sung et al. used lidocaine before nasal pack removal in patients who underwent rhinoplasty. They compared the effect of 2% lidocaine and saline solutions with rehydrating the nasal packs 20 minutes before removal. They also had another group of patients without rehydrated nasal packs before removal. They found VAS scores in patients with lidocaine soaked nasal packs significantly lower than the others which are consistent with our findings.¹⁴

Garzaro et al. compared 10 centimeter non-absorbable lidocaine-soaked nasal packs with 10 cen-

timeter non-absorbable packs covered with a finger of a latex-free glove that has been immersed in saline water, in terms of postoperative VAS scores. They found VAS scores significantly lower in the glove finger covered nasal pack group who didn't receive lidocaine.¹⁵ It can be claimed that the surface features of the nasal pack are much more important than the local anesthesia itself during the postoperative period. But, nasal packs such as Doyle have also smooth surfaces preventing adhesion to the nasal mucosa, and with lidocaine ointment they can be much more comfortable during postoperative period.

Gencer et al. compared the effect of lidocaine, bupivacaine, and prilocaine during nasal pack removal. They had the lowest VAS scores in the lidocaine group compared to others.¹⁶ There is no cream or pomade form of bupivacaine and a cream form containing only prilocaine is not available on the market. There is a combination of prilocaine and lidocaine in cream form. Luckily, we have the pomade form of lidocaine to use with nasal packs which have the best outcome.

We compared the VAS scores on the first, 2nd, and 3rd postoperative days. As expected, VAS scores on the first day were highest and on the 3rd day lowest. The first postoperative day VAS score of the Doyle splint group was significantly higher. The same result was also observed on the 2nd and 3rd postoperative day. The duration of lidocaine is about 2 hours. So the higher VAS scores on 2nd and 3rd day in Doyle group may be because of increased anxiety followed by postoperative pain on the first day. Some authors claim that anxiety increases the perception of pain.¹⁷

Mutlu et al. compared the effect of 2% lidocaine plus adrenaline, 2% tetracaine, and 4% articaine plus adrenaline applied to Merocel nasal packs. They had the best pain management with articaine plus adrenaline group.⁴ Articaine can be applied to Merocel packs but there is no pomade or cream form of articaine which limits the usage of articaine on the skin or mucosa.

We haven't observed massive postoperative hemorrhage in any of the patients. We have only one patient with septal hematoma. Dadgarnia et al. stated

that they observed postoperative hemorrhage and septal hematoma in trans-septal suture group more than nasal pack group.¹⁸ In this case, nasal packing still seems the best option although a rare complication can happen.

CONCLUSION

As a result, lidocaine pomade covered nasal silicone splints, decreasing postoperative pain intensity and hospitalization period, are a reasonable and cost-effective option for patients who underwent septoplasty.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that pro-

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Ceren Karaçaylı, Secattin Gülşen, Burak Erden; **Design:** Ceren Karaçaylı, Secattin Gülşen, Burak Erden; **Control/Supervision:** Ceren Karaçaylı; **Data Collection and/or Processing:** Secattin Gülşen, Burak Erden; **Analysis and/or Interpretation:** Ceren Karaçaylı; **Literature Review:** Ceren Karaçaylı; **Writing the Article:** Ceren Karaçaylı; **Critical Review:** Ceren Karaçaylı, Secattin Gülşen, Burak Erden.

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