Original Article

Iraqi National Journal of Medicine. July 2025, Volume 7, Issue 2

Septoplasty without packing or splints: Our experience

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ABSTRACT

Background: Septoplasty is a common surgical procedure performed in otorhinolaryngology departments to correct nasal septum deviation. Traditionally, nasal packing or splints used to stabilize the septal mucosal flaps and promote adhesion. However, these can cause complications such as nasal obstruction until removal, dry mouth, watering of eyes, severe pain during pack removal, headache, difficulty swallowing, and hypoxia. **Methods**: This prospective longitudinal observational study conducted on 50 patients undergoing septoplasty for nasal obstruction without the use of nasal packing or splints. This study included 50 patients who presented to the ENT department with nasal obstruction over one year (October 2021 to October 2022). The septal mucosa was sutured using 4-0 poly glycolic with an initial few quilting sutures, followed by continuous sutures to approximate the flaps and prevent septal hematoma. Patients monitored on the day of surgery and during follow-ups for bleeding or hematoma. The severity of nasal obstruction assessed using the NOSE score preoperatively, then reassessed at one week and one month postoperatively. Follow-up examinations evaluated the nasal cavities for synechiae, hematoma, septal perforation, or residual deviation. **Results**: Among the 50 patients, 36 were male and 14 were female. The youngest patient was 15 years old, and the oldest was 57 years old. Minor bleeding occurred in two patients within a few hours postoperatively in the recovery room. These patients treated with intravenous tranexamic acid (500 mg) without requiring nasal packing. No complications occurred in the remaining patients, and no long-term complications were observed in any case. **Conclusion**: Septoplasty was performed using multiple continuous trans-septal sutures after initial quilting sutures for stabilizing the corrected septum with absorbable 4-0 Vicryl suturing material, without nasal packing or splints, is an effective method for preventing hematoma and synechiae. This technique also avoids the discomfort and complications associated with foreign material inside the nasal cavity. Thus, septoplasty can be safely performed as a daycare procedure.

Keywords: septoplasty; nasal packing; nasal splints; quilting sutures; continuous trans-septal sutures

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Disclaimer: The authors have no conflict of interest.

DOI: https://doi.org/10.37319/iqnjm.7.2.8

Received: 21 OCT 2024 Accepted: 9 MAR 2025 Published online: 15 JUL 2025

INTRODUCTION

Man is the only animal with a deviated septum.[1] Septoplasty is a common surgical procedure for nasal septum deviation, performed in any otorhinolaryngology department, either alone or in combination with other nasal surgeries.[2] Typically, a nasal pack or splints are used to stabilize and promote adhesion between the mucosal flaps of the septum.

However, this can cause complications such as nasal obstruction until the pack is removed, dry mouth, watering of eyes, severe pain during pack removal, headaches, difficulty swallowing, and even hypoxia.

Eski et al.[2] describe septoplasty as the third most common otolaryngologic surgery. It is also performed as part of septorhinoplasty by plastic surgeons. After surgery, the nose is typically sealed with pressure packing for a variable period, depending on the surgeon's preference, but for at least 24 hours. This nasal obstruction poses multiple challenges for both patients and anesthesiologists.

Textbooks indicate that suturing the nasal septum is an alternative method to avoid packing, splinting, or clips. Scott-Brown[3] states: There are different ways to keep the septal skeleton in place during healing. First of all, a dressing is placed inside the nose to bring the mucosa together. In this way, the septum is compressed between the blades, holding the skeleton in place. Mattress sutures have the same effect. Splinting with nasal splints effectively stabilizes more extensive reconstructions. Splints have the advantage of remaining in the nose while allowing the patient to breathe through them, thus prolonging the support provided to the septum. It should be noted that nasal packs are very uncomfortable for the patient.

Similarly, Ferguson[4] states: "Other surgeons prefer using mattress sutures passed through the mucoperichondrial flaps, while others rely on nasal packing. If packing is used, the gauze should be impregnated with antibiotics. Antibiotics should be administered systemically both intraoperatively and postoperatively."

Another textbook by Ramakrishnan[5] notes: "The mucosal incision is then closed with absorbable sutures. At this point, the septum can be quilted with absorbable sutures, or splints can be placed."

In Basic Septoplasty and Turbinate Reduction: Plastic and Reconstructive Surgery of the Nose, Elsahy[6] writes: "Hemostasis is achieved using quilting sutures, and light Telfa packing with antibiotics is inserted."

Packless septoplasty, using septal suturing, can eliminate the complications associated with nasal packing while still fulfilling its intended functions. Thus, septal surgeries will no longer be a nightmare with packless septoplasty.[7]

We conducted this prospective study on 50 patients undergoing septoplasty for nasal obstruction, none of whom received nasal packing.

MATERIALS AND METHODS

Inclusion Criteria

This study included all patients presenting with symptomatic nasal septum deviation who required septoplasty as determined by the senior author. Among these, eight patients also required additional procedures, such as polypectomy or turbinoplasty.

Exclusion Criteria

Patients with hypertension, diabetes, or conditions where significant bleeding was anticipated, such as those on antiplatelet therapy or with coagulation disorders, were excluded.

We studied 50 patients who presented to the otolaryngological department with complaints of nasal obstruction over a one-year period, from October 2021 to October 2022. All patients underwent septoplasty performed by the same surgeon. In three cases, septoplasty was combined with polypectomy, and in another three cases, endoscopic-powered turbinoplasty of the inferior turbinate was performed. No nasal packing was used in any of the cases.

Procedure

Septoplasty is performed using a standard technique under G.A. An initial infiltration with 2% xylocaine containing 1:100,000 adrenaline is administered 10 to 15 minutes before surgery. The anesthesiologist maintains the mean arterial pressure at approximately 65 mmHg

The standard septoplasty procedure is then carried out with care taken to avoid any septal tears. Finally, the incision made at the anterior end of the septum is sutured using 4-0 Vicryl absorbable sutures. Initially, a quilting suture is placed on the septum, starting from the wider side and proceeding to the narrower side before returning to the wider side. This technique helps pull the deviated septum toward the midline. Continuous sutures are then placed on the septum to hold the flaps together and prevent hematoma formation. A 4-0 Vicryl suture on a curved cutting needle is used, with a knot tied at the end. The needle is passed through the septum from one nasal cavity to the other, starting from the anterior end and progressing to the posterior end. The sutures are placed in a zig-zag manner, ensuring that all areas of the separated mucous membranes are securely closed.

Postoperatively, the patient's head is kept elevated, and saline nasal irrigation along with topical nasal decongestant drops is administered. Antibiotics and analgesics are also provided. A smooth recovery from anesthesia is crucial. If mild oozing is observed, an injection of tranexamic acid may be given, which typically stops the bleeding.

The patient is monitored for any bleeding in the postoperative room for one hour. If no complications arise, they can be shifted to the postoperative ward. Close monitoring is necessary to check for any bleeding or hematoma formation. Patients can be discharged the next day after suction clearance, with advice to avoid straining and to keep the head elevated for a few more days.

Patients were then followed up for one month to assess any complications related to this technique. Postoperatively, they were evaluated at one week and one month using the NOSE (Nasal Obstruction Symptom Evaluation) scale, and the improvement was recorded. The average time taken for septoplasty was 20 minutes, while the mean suturing time was 10 minutes, although it was initially longer in the first few cases. The mean arterial pressure of the patients was maintained at approximately 60–65 m.m.

The NOSE scale is a simple, validated five-question survey that uses a 20-point scale to assess breathing symptoms, with higher scores indicating more severe symptoms (Table 1).

Patients were asked to circle the response that best reflected their current symptoms. The circled responses were then summed, and the total was multiplied by five to convert the score to a scale of 100 for analysis.[7]

Data was analyzed using statistical package of social science version 22 (SPSS), and tests of significance were conducted. For comparative analysis between preoperative and postoperative scores, the Wilcoxon test was used. A p-value of < 0.05 was considered statistically significant.

Table 1: NOSE scale (Patients were asked to circle their responses preoperatively, one week after the operation, and one month after the operation).

Problem	Not a problem-0	Very mild problem-1	Moderate problem-2	Fairly bad problem-3	Severe problem-4	Final score
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 majority of cases were male, and most underwent septoplasty without additional surgical procedures. (Table 2). Most cases involved young adults (Table 3).

Only two cases (4%) required tranexamic acid to control bleeding while all the remaining 48(96%) cases with no complication. (Fig. 1)

Symptoms improved significantly after one week, and no symptoms were present after one month. There were no incidents of synechiae, hematoma, or perforation in any of the patients. Most were discharged the next day after suction clearance.

Postoperatively, the NOSE score was calculated at one week and one month, showing significant statistical improvement (P-value < 0.05). Table 4.

Clinical assessment revealed no hematoma, synechiae, perforation, or residual deviation.

Table 2: Distribution of cases according to the type of septoplasty.

Type of surgery	Male	Female	Total
Septoplasty	31	11	42
Septoplasty with polypectomy	3	2	5
Septoplasty with bilateral inferior turbinoplasty	2	1	3
Total	36	14	50

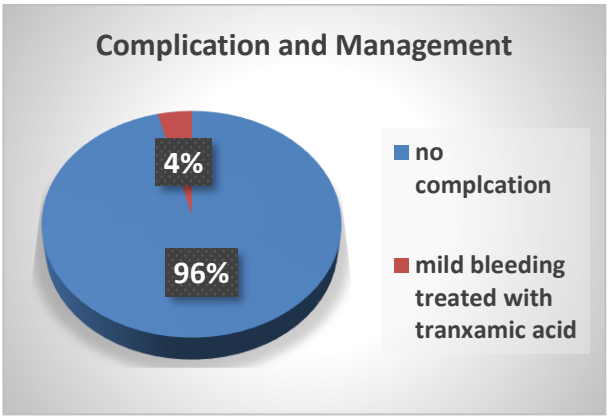

Figure 1: Complications and their managements

Table 3: Age and sex distribution.

Age interval	15–20	7
	21–40	30
	41–57	13
Sex	Male	36
	Female	14
Total		50

Table 4: NOSE scale results in the pre- and postoperative assessment criteria.

Problem	Pre-operative	First-week post-operative	One month later
Nasal congestion	2.6	1.4	0.9
Trouble breathing from the nose	3.7	1.8	0.7
Trouble sleeping	3.3	1.9	1.1
Unable to breathe in enough air by nose while exercising	4.1	2.1	0.8
Total NOSE score (out of 20)	17.6	8.9	4.1
%NOSE score (out of 100)	70.4	35.6	16.4
Wilcoxon Z value	2.03		
Wilcoxon p-value	0.04		

DISCUSSION

The final phase of stabilizing the septum following septal surgeries has traditionally been achieved using nasal packs (anterior nasal packing). Medicated packs such as ribbon gauze, fingerstall packs, polyvinyl acetate sponges (Merocel), cellulose sponges, and carboxymethylcellulose, as well as balloon tamponade, have been described by Rowan et al.[8] Other methods of septal stabilization include splints,[9] clips,[10] and various materials such as cotton tape, gauze, paraffin gauze, Tefla, Merocel, sponges, and silicone nasal splints, which have been recommended for this purpose.[11]

In septoplasty, the mucoperichondrial and mucoperiosteal flap layers on both sides of the septum are elevated, and the deviated portion of cartilage or bone is removed. The flaps are then repositioned in the midline. Packs are placed on either side of the septum to splint it in its new position and to compress the mucous membrane layers together, promoting

adhesion and preventing blood clot formation between them.

The first study on septal suturing in rabbit noses was published in 2004 by Erkhan et al.,[12] demonstrating that septal suturing is an efficient and effective method for securing the septal flap over the septal cartilage. Disadvantages commonly associated with anterior nasal packing include compromised nasal breathing, dry mouth, nasal pain, nasal valve narrowing, occasional ear block sensation, vestibulitis, crusting, synechiae, headache, watering from eyes, throat irritation, difficulty swallowing, and, in patients with obstructive sleep apnea syndrome, hypoxia and hypoxemia. Toxic shock syndrome is a rare complication.[8] Tight packing may also lead to septal perforation, adversely affect mucosal ciliary activity, and compromise vascularity, increasing the risk of septal perforation.

Awan et al.[13] reported that nasal pack removal is highly painful. In this study, trans-septal suturing was performed, avoiding these disadvantages. This technique is more comfortable for patients and reduces hospital stay.

A study by Cukurova et al.[14] involving 697 patients concluded that routine nasal packing is not justified. It also demonstrated that the suturing technique improves patient comfort after septoplasty, resulting in less pain and fewer complications.

A study by Pérez et al.,[15] concluded that transeptal suturing is an effective and safe alternative to traditional nasal packing in septal surgery. Additionally, it improves procedural efficiency by reducing costs.

Sashikanth et al.[16] reported that avoiding nasal packing or splints does not increase the incidence of postoperative bleeding complications while reducing associated morbidity and pain.

In a meta-analysis titled "Is nasal packing after septoplasty" Sarfaraz[17] found that most RCTs did not support the use of nasal packing, as it provided no significant benefit.

Melih et al.,[18] in their study "Comparison of totally occlusive nasal pack, internal nasal splint, and trans-septal suture technique after septoplasty in terms of immediate respiratory distress (RD) related to anesthesia and surgical complications," concluded that patients who underwent septoplasty with bilateral totally occlusive nasal packing experienced higher rates of immediate RD events compared to those who received the trans-septal suture technique or internal nasal splints.

In a study titled "The Effects on Cardiac Functions and Arterial Blood Gases of Totally Occluding Nasal Packs and Nasal Packs with Airway," Ehab et al.[19] reported that cardiac effects were not caused by nasal passage obstruction but rather by the pressure exerted on the nasal mucosa. This pressure increases vagal stimulation, potentially leading to cardiac complications, making close monitoring of patients with nasal packs essential.

Christos et al.[20] found that patient satisfaction with day-case septoplasty is high, which is achievable only with pack-free septoplasty. Similarly, Basha et al.[21] stated that routine nasal packing after nasal surgery is not justified and should be reserved for patients with significant postoperative oozing.

A study by Muhammad[22] concluded that the frequency of bleeding after septoplasty without nasal packing is low, suggesting that nasal packing should be reserved for selected cases. Maria et al.,[23] in a prospective study, challenged the routine use of anterior nasal packing, arguing that it lacks proven benefits.

Rajashri et al.[24] noted that nasal packing is traditionally used to stabilize the remaining septum and prevent complications such as bleeding, septal hematoma, and synechiae formation. However, quilting sutures can serve the same purpose while also reducing hospital stay. Simple deviated nasal septum (DNS); NOSE can be safely treated with septoplasty, and nasal packing should be reserved for selected cases.

Naik[25] reported that intranasal packing increases the incidence of adhesions and synechiae compared to the trans-septal through-and-through splint suturing technique. Based on these findings, the septal suturing technique is a valid alternative to intranasal packing following septal surgery.

Korkut[26] described continuous septal suturing as an easy-to-use technique in the nasal cavity, providing a minor modification to the standard procedure with only a slight increase in operating time.

Naghibzadeh[27] stated that septal suturing is a viable alternative to nasal packing and should be considered for patients without an increased risk of bleeding.

Erkan et al.,[28] in their study "Effects of Nasal Pack Use on Surgical Success in Septoplasty," concluded that nasal pack use does not impact surgical success or complication rates. They found that pack-free septoplasty using the trans-septal suture technique is an effective method for treating septal deviation.

In conclusion, many studies found that the septal suturing has better efficacy than nasal packing.

CONCLUSIONS

Septoplasty with multiple continuous trans-septal sutures, following one or two initial quilting sutures to stabilize the corrected septum, is a highly effective method for preventing morbidity and complications without the need for nasal packs or splints. This approach allows septoplasty to be performed as a same day surgery procedure without a need for hospital admission . Keeping nasal packs inside the nasal cavity in a conscious patient is largely unacceptable, as it is associated with increased complications and morbidity.

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