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A Comparative Study Between Trans-Septal Sutures and Nasal Packing After Septoplasty

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ABSTRACT: **Background**: Correction of deviated nasal septum is one of the commonest nasal surgery done worldwide and it is associated with many complications post operatively that are reduced by nasal packing which is the most unpleasant part of the surgery to the patient.

Trans-septal sutures proposed as an alternative.

Objective: To compare post operative outcomes of trans-septal sutures and nasal packing after septoplasty.

Patients and Method: A prospective comparative study was conducted at Al Imamain Al Kadhimain Medical city. A sample of 50 patient with age ranging 18-46 years.25 of them had been undergone nasal packing and the other 25 had been undergone trans-septal sutures.Post operative bleeding, pain, headache, hematoma, post nasal drip, sleep disturbance, epiphora as well as synechia, crustations, perforation, were assessed over period of 4 weeks.

Results: Among fifty patients 33 (66%) of them were females and 17 (34%) were males. Group of trans-septal sutures reveals less post-operative pain, headache, post nasal drip, sleep disturbance and epiphora.

There was no significant difference in bleeding, hematoma, synechia formation. Only one patient of the nasal packing group developed septal perforation.

Conclusion: Trans-septal sutures show less post-operative pain and complications thus can be safely used as a substitute to nasal packing.

INTRODUCTION

The nasal septum serves several functions, separation of the nasal airway into 2 distinct chambers, support of the nasal dorsum, and maintenance of the shape of the tip. Traumatic deviation or developmental abnormalities of the nasal septum can lead to significant nasal airway blockage and cosmetic deformity. Poor airflow can lead to impaired olfaction, impaired humidification and filtering of the passing air, and decreased oxygen inflow. Anatomic septal deviation can also lead to chronic sinus disease and may result in an external nasal deformity[(1)] . Both the external and internal carotid arteries make the vascular supply of the nasal septum. The external carotid artery branches supplying the septum include the sphenopalatine and greater palatine arteries (branches of the internal maxillary artery). The sphenopalatine artery supplies the posteroinferior septum by a branch called the posterior septal artery. The posterior septal artery is the basis of the Naso-septal mucosal flap which is the pillar for endoscopic skull base reconstruction. The greater palatine artery enters the nose

through the incisive canal to supply the antero-inferior portion of the septum. The septal branch of the superior labial artery (branch of the facial artery) contributes to the vascular supply of the caudal septum and columella. The internal carotid artery branches feeding the septum include the anterior and posterior ethmoid arteries (branches of the ophthalmic artery). The antero-superior and postero-superior portions of the septum receive vascular supply from the anterior and posterior ethmoid arteries respectively. The anterior ethmoid artery, posterior septal artery and septal branch of superior labial artery contribute to Kisselbach's plexus which lie along the anterior nasal septum at Little's area.This region is formed by the anastomosis of these arteries which terminate as a rich vascular bed. The venous system drains via the sphenopalatine vessels into the pterygoid plexus posteriorly and into the facial veins anteriorly. Superiorly, the ethmoidal veins communicate with the superior ophthalmic system and there might be direct intracranial connections through the foramen caecum into the superior sagittal sinus[2].

Nerve supply of the nasal mucosa consists of both autonomic and sensory components. The autonomic nervous system controls the degree of vascular tone, turbinate congestion, and nasal secretions.Presynaptic parasympathetic fibers travel along the facial nerve and continue as the greater superficial petrosal nerve at the geniculate ganglion. These fibers then join the deep petrosal nerve to form the vidian nerve. Within the vidian nerve, the fibers travel to the sphenopalatine ganglion and synapse with the postganglionic neurons before innervating the nasal mucosa. Postsynaptic sympathetic fibers pass through the sphenopalatine ganglion and terminate in the mucosa. The 1st and 2nd divisions of the trigeminal nerve supply sensory innervation to the nasal mucosa. Trigeminal nerve fibers also pass through the sphenopalatine ganglion and transmit sensations of pain, temperature, and touch[1].

PATIENTS AND METHOD

Study Design: A prospective comparative cohort study was conducted on fifty patients age range (18-46) who underwent nasal surgery (Septoplasty). The Study conducted at Al-Imamain Al-Kadhimain Medical City, department of Otolaryngology-Head and Neck surgery/ from the 1st of November 2024 to the 1st of November 2025.

Ethical approval: Ethical committee approved has been obtained from the Scientific Iraqi Council of Otolaryngology. Informed consents were obtained after discussion with patients and their next of kin.

Sampling: 50 patients with septal deviation causing functional problems were noted.

Patients' assessment and surgical steps

Consent, clinical/endoscopic (0^\circ) nasal exam, routine lab/imaging workup, and pre-anesthesia clearance. **Surgical Technique:** Under GA, septoplasty was performed via a hemi-transfixion caudal incision. Flaps were elevated, deviated bone/cartilage resected (preserving support to avoid saddle nose), and incision closed with 4/0 Vicryl. No splints were used.

Study Groups:

Group I (Continuous Suture): Trans-septal continuous 4/0 Vicryl suturing (posterior-to-anterior). **No nasal packing. Group II (Nasal Packing):** 8 cm Merocele bilateral packs inserted and removed on POD 1.

Postoperative & Follow-Up:

Discharge: Morning of POD 1 with antibiotics, analgesics, and saline nasal washes (4–5x/day).

POD 1–2: Symptom assessment (pain, bleeding, PND, sleep, headache) via VAS (0–100), plus epiphora.

1 Week: Checked for septal hematoma, bleeding, and discharge.

30 Days: Evaluated for crusting, adhesions, and septal perforation.

Statistical analysis

Statistical package for social science (SPSS20) was used for data processing in this comparative study. Numerical data were reported as means and SD, while categorical data were expressed as count and percentages. t test used to assess association between variables statistical significance was set at $P \leq 0.001$.

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RESULTS

Age: The mean age of the sample is 25.8±7.62 years ranging from (18- 46) years.

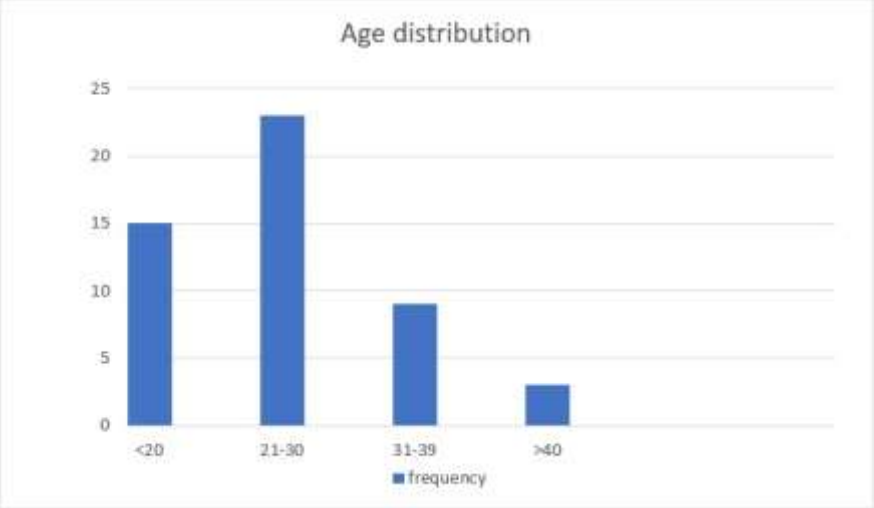


Figure 3-1: Age distribution Gender: Gender distribution females were 33 (66%) and males were 17 (34%) The Female: Male ratio is 1.9 :1

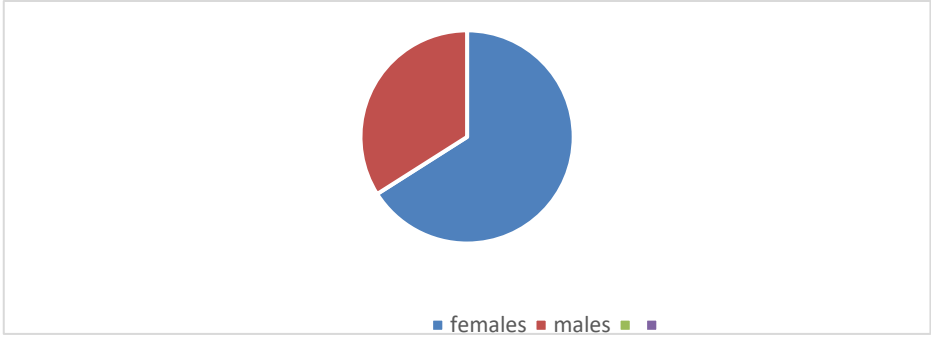


Figure 3-2: Gender distribution

Symptoms distribution: The study shows patients with bilateral nasal obstruction (due to S shape septal deviation) were 44% (22 cases), while Lt. sided nasal obstruction 32% (16 cases) and Rt. Sided obstruction 24% (12 cases)

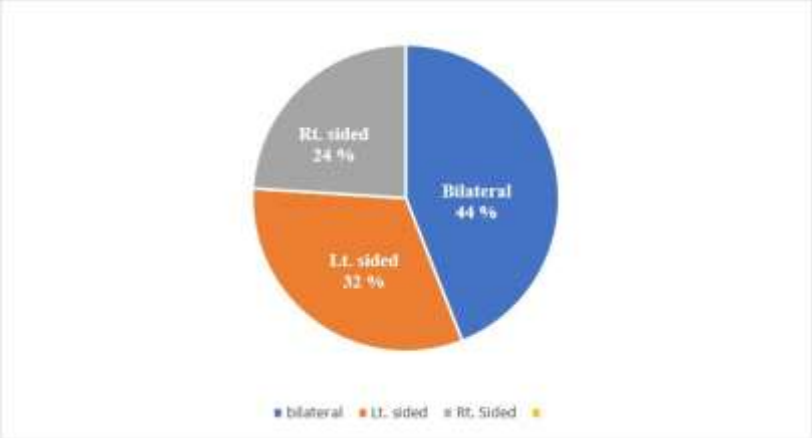


Figure 3-3: laterality of nasal obstruction

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All cases presented with nasal obstruction.

The majority of cases had snoring (82%), followed by post nasal drip (76%), crustation account for (64%), while facial pain / pressure represents (52%) of cases, sneezing (12%), epistaxis (4%).

Table 3-1: Descriptive symptoms and their frequencies

Symptoms	Number of cases	Percentage
Nasal obstruction	50	100%
Facial pain\ pressure	26	52%
Post nasal drip	38	76%
sneezing	6	12%
epistaxis	2	4%
crustation	32	64%
Snoring	41	82%

The mean duration of these symptoms was 3.02years

Table 3-2: Duration of symptoms

Duration (years)	No.	Percentage	Mean
1-3	36	72%	3.02 Years
4-6	10	20%	
7-9	4	8%	

Post-operative symptoms

Nasal pain: The outcome from the table reveals that the postoperative pain is significantly lower in quilting patients in the 1st and 2nd pod and the p-value is less than 0.001.

Table 3-3: Postoperative Nasal pain

		Quilting	Packing	P. value
Pod1	Mean	31.2	43.2	< 0.001
	SD	8.326	6.271	
Pod2	Mean	14.4	24	< 0.001
	SD	7.118	6.454	

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Nasal bleeding:

Table 3-4: Postoperative nasal bleeding

		Quilting	Packing	P. value
Pod1	Mean	10.8	14.8	> 0.001
	SD	4.932	5.859	
Pod2	Mean	2	5.2	> 0.001
	SD	4.082	6.531	

Post operative nasal bleeding is numerically different but statistically not significant (packing group more than quilting group were bleeding occurs after pack removal) in the 2 surgeries p value > 0.001.

Post-nasal drip:

Table 3-5: Postoperative postnasal drip

		Suturing	Packing	P. value
POD1	Mean	21.2	30	< 0.001
	SD	10.535	9.128	
POD2	Mean	13.2	26	< 0.001
	SD	6.271	6.454	

The results of the table show that the post nasal drip is lower in patients with sutures group than in the patients with packing group and the P. value is less than 0.001.

Post operative sleep disturbance:

Table 3-6: Post operative sleep disturbance

		Suturing	Packing	P. value
POD1	Mean	28.4	48.4	< 0.001
	SD	8.981	7.461	
POD2	Mean	13.2	16.4	> 0.001
	SD	6.271	5.500	

The results reveal that there is variation in sleep disturbance in the 2 groups where there is lower sleep disturbance in the quilting group and p value is < 0.001, this variation disappears in the 2nd POD after removal of nasal packing. Where p value > 0.001

Headache:

Table 3-7: Post operative headache

		Suturing	Packing	P. value
POD1	Mean	26	40.8	< 0.001
	SD	7.637	4.932	
POD2	Mean	10	13.1	> 0.001
	SD	4.082	6.90	

The table shows that post operative headache is higher in POD1 in the packing group (p value < 0.001) and there is no significant difference in both groups in POD2.

Postoperative epiphora:

Table 3-8: Postoperative epiphora and type of technique

Type of surgery	Yes	No	
Packing	23	2	
Quilting	1	24	
Sum	26	24	50

There is strong association between epiphora and type of surgery where 92% of patients from the packing group developed epiphora versus (4%) only of the quilting group who developed it.

Assessment of 1st post operative week:

Post operative nasal discharge:

Table 3-9: Post operative nasal discharge

	Mean	Sd
Suturing	6.8	4.7
Packing	7.2	4.5
P. Value	> 0.001	

In the 1st postoperative week there is no difference in nasal discharge in the two groups (the p- value was >0.001.)

Septal hematoma: Nasal bleeding was mild in both groups but no patient developed septal hematoma.

4th postoperative week:Nasal crustation:

Table 3-10: Nasal crustation

	Yes	No
Quilting	3 (12%)	22 (88%)
Packing	4 (16%)	21 (84%)

Nasal crustation developed in 3 patients of the quilting group (12%) while 4 (16%) of the nasal packing patients developed crust.

No patient develops **synechia nor septal perforation** after 4 weeks of operation.

DISCUSSION

Demographics & Clinical Presentation

Age & Gender: Mean age was 25.8 \pm 7.62 years (mostly 21–30 years), aligning with Syed M et al. (3). Female predominance (66%, 1.9:1 ratio)—possibly due to patient preference for female surgeons—contrasting with Majeed SA et al. 2021 (4) (male predominance).

Symptoms: Main presentation was bilateral nasal obstruction (44%), followed by snoring (82%) and postnasal drip (76%).

2. Postoperative Outcomes (Early Days)

Nasal Pain: Significantly lower in the quilting suture group on POD 1 & 2 due to avoiding pack pressure and removal trauma. This aligns with Wang D et al. 2020 (5), Isam M et al. 2017 (6), and Walikar 2011 (7).

Bleeding: No statistical difference between groups (sutures eliminate dead space while packing exerts pressure), agreeing with Majeed SA et al. (4) and Sah K et al. (8). Contrasts with Adeel MU et al. () and Günaydin et al. 2011 (10), who reported higher minor/major bleeding in suturing groups. Minor bleeding was managed with warm saline washes.

Postnasal Drip: Lower in the suture group (packing causes foreign body reaction/mucosal irritation), matching Khalaf UZ et al. (11).

Sleep Disturbance: Higher in the packing group due to airway obstruction and repeated awakenings (resolves after pack removal on POD 2), consistent with Majeed SA et al. (4) and Isam M et al. 2017 (6).

Headache: Higher on POD 1 in the packing group due to mucosal pressure, sinus obstruction, and foreign body sensation, fading by POD 2. Aligns with Zhang H et al. 2024 (12) and Wang D et al. (5).

Epiphora: Significantly higher in the packing group (92% vs 4%) due to nasolacrimal duct obstruction. Agrees with Adeel MU et al. (10) and Titirungruang CK (13).

3. Postoperative Evaluation (Weeks 1 to 4)

Nasal Discharge & Infection: No group variance (mild discharge covered by antibiotics). Aligns with Wang W et al. (14) (equivalent infection rates). Sah K et al. (15) noted minimal infection in both groups.

Septal Hematoma & Adhesions: 0% in both groups (dead space eliminated, proper flap alignment). Agrees with Majeed SA et al. (4). Sah K et al. (14) and Naik K et al. (15) reported lower/minimal synechia with suturing.

Nasal Crustation: 12% (sutures) vs 16% (packing), mainly due to poor compliance with nasal washes. Alrobian et al. (16) and Ramalingam V et al. (17) also noted less crusting with suturing.

Septal Perforation: 0% in both groups (avoided by loose knots spaced 1 cm apart). Agrees with Walikar BN et al. (7) and Özkırış M (16).

CONCLUSIONS:

Trans-septal sutures and nasal packing are effective in decreasing bleeding, synechia and septal hematoma.Nasal packing can cause pain, headache, sleep disturbance and epiphora which are less in trans-septal sutures.

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