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Incidence of Synechiae after Conventional Septoplasty Without Internal Splint: A Prospective Cohort Study

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Abstract
Background: Intranasal synechiae are common complications following septoplasty and can cause significant postoperative morbidity. While internal nasal splints are widely used to reduce this risk, they are often associated with patient discomfort and an increased risk of infection.
Objective: To evaluate the incidence of synechiae formation following septoplasty performed without the use of intranasal splints.
Study Design: A prospective observational cohort study was conducted on 100 patients undergoing conventional (non-endoscopic) septoplasty at two hospitals in Tripoli, Libya, between 2018 and 2024. All procedures utilized a standard hemitransfixion incision and concurrent inferior turbinate surgery. Short-duration glove-finger nasal packing (12–24 hours) was applied, and no internal nasal splints were used. Postoperative endoscopic assessment for synechiae was performed at 2 weeks, 4 weeks, 3 months, 6 months, and 12 months.
Results: Out of 100 patients (95 primary, 5 revision cases), only one patient (1%) developed synechiae, which required minor division in an outpatient setting. No recurrences were observed. The observed incidence was significantly lower than the commonly reported literature rate of approximately 10% ($p < 0.0001$; 95% CI: 0.18–5.45%).
Conclusions: In this prospective cohort, septoplasty without internal splints was associated with a remarkably low rate of postoperative synechiae when combined with meticulous surgical technique and short-duration nasal packing. These findings suggest that routine splinting may not be necessary for all patients and support a reconsideration of their use in evidence-based postoperative care.

Keywords: Septoplasty, Synechiae, Internal splint.

Introduction

Nasal septum deviation is a common condition and can cause significant impairment of nasal breathing and can be associated with recurrent sinusitis. The prevalence of septal deviation ranges from 62 – 89.2 % [1]. Evaluation of severity of the septal deviation is required before considering septoplasty. Mladina`s classification is a recognized way and it described seven types, with type I being mild and type VII the most severe [2].
Septoplasty is a commonly performed surgical procedure to correct nasal septal deviation and improve nasal airflow. While generally safe, postoperative complications can occur, with intranasal synechiae (adhesions between the nasal septum and turbinates) among the most frequent. These adhesions can cause nasal obstruction, discomfort, and may necessitate further intervention.
To reduce the incidence of synechiae, many surgeons employ internal nasal splints, which act as a physical barrier to mucosal contact during the healing period. However, splints are associated with several drawbacks, including patient discomfort, increased cost, potential for infection, and the need for a second procedure for removal.
Recent studies have explored alternative approaches, such as minimal packing and suture-based stabilization, yet the evidence remains mixed. Moreover, very few prospective studies have evaluated synechiae outcomes in patients managed without internal splints but with meticulous surgical technique and conservative nasal packing. [4,5]
Various studies about the incidence have been published in the literature with an incidence ranging between 2.5 – 36% without splint [3,5.6.7]
The objective of this study was to assess the incidence of postoperative synechiae in patients undergoing conventional septoplasty performed without the use of internal splints, using glove-finger nasal packing retained for 12 to 24 hours

Material and methods

This was a prospective observational study including 100 consecutive patients who underwent septoplasty at Tripoli Central Hospital and Alkhalil Hospital between 2018 and 2024. 5 patients of the group underwent revision surgery and 95 patients underwent primary septoplasty (Figure 3). Turbinate surgery was carried out on all patients. All surgeries were performed by using a conventional, non-endoscopic technique.

Inclusion Criteria

- Patients ≥18 years with symptomatic nasal obstruction due to septal deviation (Figure:1)
- Fit for general anesthesia
- Willing to comply with follow-up protocol

Exclusion Criteria

- Presence of active infection
- Patients who failed follow-up

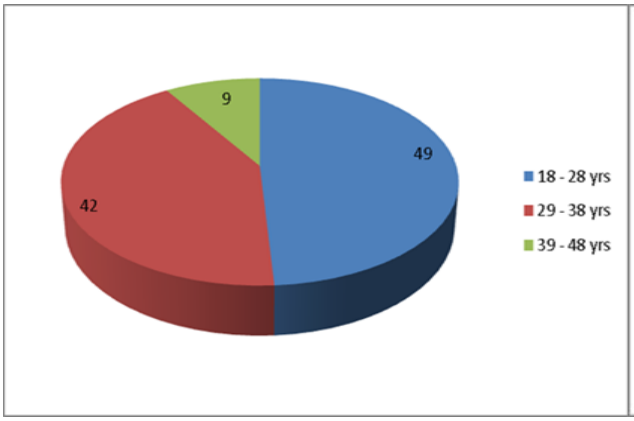

Figure 1: Age distribution of the patients.

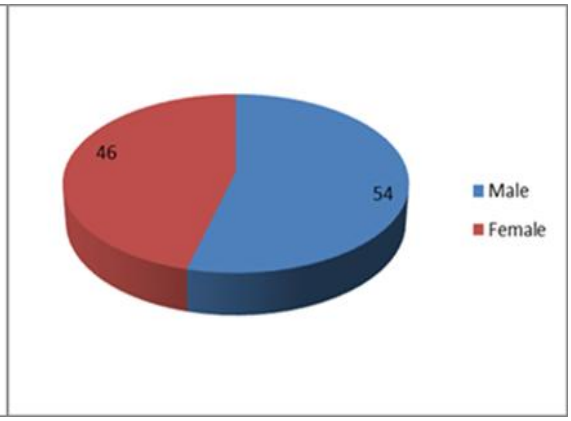

Figure 2: Gender distribution of the patients.

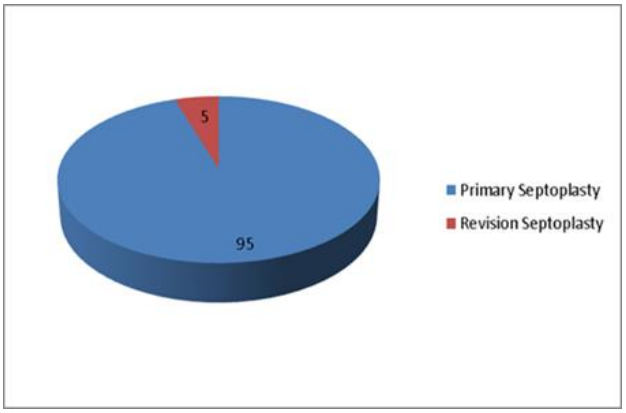

Figure 3: Primary & Revision Surgery.

Surgical Technique:

All procedures were carried out under general anesthesia. Xylomethazoline nasal drop and infiltration with 2% lignocaine in 1:100000 epinephrine were used in all cases. The surgery was performed through a hemi-transfixion incision using traditional instruments. Muco-perichondrial flap elevation and septal correction were performed with attention to preserving mucosal integrity. Any mucosal tears were repaired intraoperatively using absorbable sutures. In all cases, turbinate surgery (either outfracture with submucosal diathermy or formal turbinoplasty) was performed concurrently.

Postoperative Management:

A glove-finger nasal pack (custom rolled gauze in glove finger) covered with Fucidin cream was inserted into each nostril and removed within 12 to 24 hours postoperatively. No internal nasal splints or sutured septal quilting were used. All patients were discharged on saline nasal douching and routine analgesia.

Follow-Up and Outcomes:

Patients were evaluated postoperatively at 2 weeks, 4 weeks, 3 months, 6 months, and 12 months. At each visit, anterior rhinoscopy and nasal endoscopy were performed to assess healing and detect synechiae. Adhesions were documented regarding location and severity. Intervention, if required, was recorded. Only one patient of the primary surgery group developed synaechiae which was treated by dividing the adhesions under local anaesthetic in the outpatient setting. (Figure 5).

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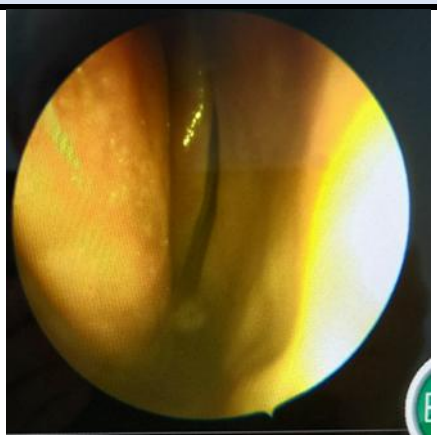

Figure 4: Endoscopic view after 3 months

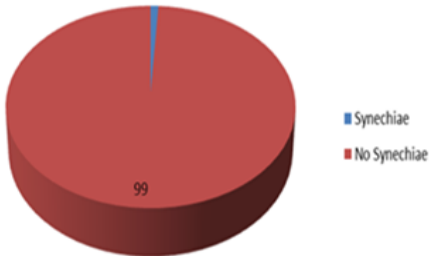

Figure 5: Incidence of synechiae (1%), shows good mucosal healing

Table 1. Comparison of Synechiae (Adhesions) Rates After Septoplasty in Selected Studies.

Study	Year	Use if internal splints	Adhesion rate
Kim et al	2008	without	8.7 %
Wetha et al	2012	mixed	7 -15%
Ardehali & Bastminejad	2010	with	3.2 %
Ali et al	2022	without	46.9%
This study	2025	without	1%

Statistical Analysis

Descriptive statistics were used to report the incidence of synechiae. A one-sample z-test was performed to compare the observed synechiae rate with the commonly reported literature rate of 10%. A 95% confidence interval for the observed proportion was calculated using the Wilson method. A p-value < 0.05 was considered statistically significant.

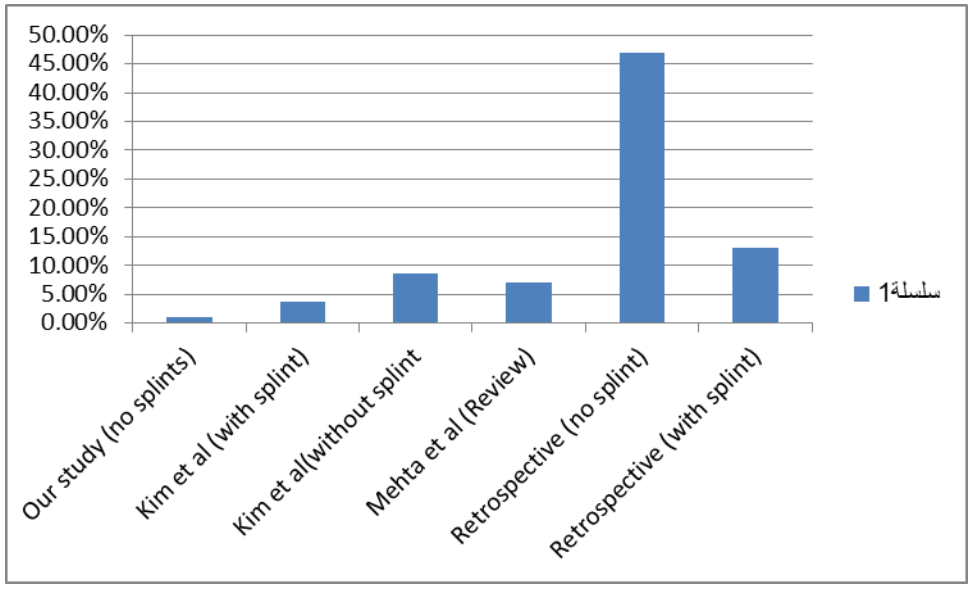

Figure 6. Comparison of synechiae incidence rates following septoplasty from various studies. Our study demonstrates the lowest rate (1%) among the compared cohorts

Discussion

Deviated Nasal Septum (DNS) is a leading cause of nasal obstruction, with an estimated prevalence of 86%. Septoplasty is the definitive treatment for improving nasal breathing and is considered more effective than conservative, non-surgical management [1].

The development of intranasal synechiae remains a significant postoperative concern resulting from improper mucosal healing. Various methods have been explored to mitigate this risk; for instance, Mitomycin-C has been utilized to reduce adhesions by inhibiting fibroblast activity [3].

Internal nasal splints are still widely employed in clinical practice. Different types of splints have been used either as an alternative or an adjunct to nasal packing. Various studies in the literature have reported conflicting results regarding their efficacy in preventing adhesions and their association with other postoperative complications [7, 8, 9, 10, 11].

Septoplasty is frequently performed in conjunction with inferior turbinate surgery. In our study of 100 patients (95 primary and 5 revision cases; Figure 3), all patients were assessed endoscopically in the outpatient clinic and classified according to Mladina's classification (Types II to VII). All participants underwent conventional non-endoscopic septoplasty. Notably, no internal splints were used; instead, the nasal cavity was packed with glove-finger packs coated with fusidic acid cream.

In our cohort, only one patient from the primary surgery group developed synechiae. Statistical analysis of our "splint-free" results demonstrated a remarkably low rate of synechiae compared to previously published data, even when compared to studies utilizing splints (Table 1 and Figure 6). These findings suggest that routine splinting may not be essential for successful outcomes. However, further studies involving larger patient populations are recommended to confirm these observations.

Conclusion

This prospective study demonstrates that a remarkably low rate of postoperative synechiae (1%) can be achieved following septoplasty without the use of internal nasal splints, provided that meticulous surgical technique and short-duration glove-finger nasal packing are employed. These results challenge the necessity of routine internal splinting, suggesting it may not be required for all patients. Further randomized controlled trials are warranted to validate these findings across broader surgical settings and diverse patient populations.

Ethics Statement

This study was approved by the Institutional Ethics Committee of Tripoli Central Hospital (Approval No: [NCB:019.H.25.019]).

Acknowledgement

None.

Conflict of Interest

The authors declare that they have no conflict of interest.

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