



NASAL SEPTAL PERFORATION – A TERTIARY CARE EXPERIENCE

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ABSTRACT

Background: Nasal septal perforation, (a full-thickness defect), can cause crusting, epistaxis, nasal obstruction, and whistling. Etiology is multifactorial, with iatrogenic injury being the most common. Management ranges from conservative therapy to surgical repair. This study evaluates the clinical profile, etiology, and management outcomes of patients with nasal septal perforation. **Methods:** A prospective observational study was conducted on 13 patients with clinically and endoscopically confirmed septal perforation at a tertiary care hospital from January 2024 to January 2026. Data on demographics, symptoms, etiology, perforation site and size, and management strategy were collected. Patients were treated conservatively or surgically based on symptom severity and perforation characteristics. Outcomes were assessed using symptomatic improvement, endoscopic closure status, and postoperative complications over a minimum 6-month follow-up. **Results:** Patients' mean age was 36.8 years, with male predominance (61.5%). Common symptoms included crusting (76.9%), epistaxis (53.8%), and nasal obstruction (46.1%). Anterior septal perforations predominated (69.2%), and medium-sized defects were most frequent (38.5%). Iatrogenic causes, mainly prior septal surgery, accounted for 46.1% of cases. Conservative management in seven patients resulted in significant symptom relief in 71.4%. Six patients underwent endoscopic surgical repair, achieving complete closure in 66.7%, partial closure in 16.7%, and surgical failure in 16.7% (large perforation). Postoperative complications were minimal. **Conclusion:** Management of septal perforation should be individualized. Conservative therapy is effective for small, mildly symptomatic perforations, while surgical repair provides satisfactory outcomes for medium-to-large defects. Early diagnosis, careful patient selection, and meticulous surgical technique are essential for optimal results.

KEYWORDS

Nasal septal perforation, Endoscopic repair, Interposition graft

INTRODUCTION

Nasal septal perforation is a full-thickness defect involving the mucosa, cartilage, and/or bony components of the nasal septum, resulting in an abnormal communication between the two nasal cavities¹. The nasal septum plays a crucial role in supporting the nasal dorsum, regulating laminar airflow and maintaining structural integrity of the nose². Any disruption in septal continuity can therefore lead to both functional and structural consequences.

Septal perforations vary widely in size, location³. They most commonly occur in the anterior cartilaginous septum, an area particularly vulnerable due to its relatively limited blood supply and exposure to external trauma². Posterior perforations are less common and are mostly with systemic or granulomatous diseases.

The etiology is multifactorial and may be broadly categorized into iatrogenic, traumatic, inflammatory, infectious, neoplastic, and substance-related causes³. Iatrogenic injury, especially following septal surgery remains the most frequently reported cause¹. Aggressive cauterization for epistaxis, nasal packing, and repeated instrumentation may also compromise septal vascularity³. Traumatic causes include nasal fractures and digital trauma². Chronic use of intranasal medications (topical decongestants and corticosteroids) can result in mucosal atrophy and subsequent perforation. Substance abuse, (intranasal cocaine,) is well-known cause due to intense vasoconstriction and ischemic necrosis.

Systemic conditions such as granulomatous and autoimmune disorders (e.g., granulomatosis with polyangiitis), chronic infections (e.g., tuberculosis, syphilis), and rarely malignancies must be considered, especially in atypical or progressive cases. Identifying the underlying etiology is essential not only for management but also to prevent recurrence and address potentially serious systemic disease.

Many septal perforations are asymptomatic³. Symptomatic cases present with nasal crusting, dryness, recurrent epistaxis, nasal obstruction, and whistling during respiration. Larger perforations may disturb normal airflow dynamics, leading to turbulence, mucosal desiccation, and secondary infection.

Diagnosis is clinical by anterior rhinoscopy and confirmed by

diagnostic nasal endoscopy (DNE)². Detailed history-taking is must to ascertain causative factors, including prior nasal surgery, trauma, drug use, occupational exposure, and systemic illness³. In selected cases, laboratory investigations and biopsy may be warranted to exclude granulomatous or malignant pathology.

Treatment strategies range from conservative therapy to surgical repair³. Conservative measures is humidification, saline irrigation, and topical emollients². Surgical repair is local mucosal flaps, interposition grafts, and endoscopic approaches¹. Success depends on careful patient selection, meticulous surgical technique, and control of underlying etiological factors³.

MATERIALS AND METHODS

Study Design

A prospective observational clinical study conducted in the Department of ENT for 24 months including 6 months follow-up from January 2024 to January 2026. The study was designed to evaluate the etiological factors, clinical presentation, management strategies, and treatment outcomes.

Sample Size

A total of 13 patients with septal perforation were included in the study. All eligible patients presenting during the study period and meeting the inclusion criteria were enrolled after obtaining informed consent.

Inclusion Criteria

- Patients aged 18 years and above
- Presence of septal perforation confirmed by anterior rhinoscopy and diagnostic nasal endoscopy
- Symptomatic patients willing to undergo treatment and follow-up
- Patients medically fit for surgery (for those undergoing surgical repair)

Exclusion Criteria

- Septal perforations secondary to malignancy
- Patients with uncontrolled systemic illness (e.g., uncontrolled diabetes, hypertension)
- Patients unwilling to participate or lost to follow-up

Data Collection

Data were collected using a structured case record form. Information -

demographic details (age and gender), symptoms (crusting, epistaxis, nasal obstruction, whistling), history of prior nasal surgery, trauma, intranasal medication use, substance abuse, and associated systemic illness. Clinical findings such as site, size (small <1 cm, medium 1–2 cm, large >2 cm). Details of management (conservative or surgical), surgical technique used, and intraoperative findings were noted. Outcomes were assessed based on symptomatic improvement, endoscopic closure status (complete, partial, or failure), postoperative complications, and follow-up duration. All data were compiled and analyzed using descriptive statistics.

RESULTS

13 patients with septal perforation were included in the study, with a mean age of 36.8 years. There were 8 males (61.5%) and 5 females (38.5%), showing a male predominance.

Clinical Presentation

The common presenting symptom was nasal crusting, observed in 10 patients (76.9%). Recurrent epistaxis in 7 patients (53.8%), nasal obstruction in 6 patients (46.1%), whistling sound in 4 patients (30.8%). 1 patient (7.7%) was asymptomatic. The duration of symptoms ranged from 3 months to 4 years, with most patients presenting within the 1st year of symptom onset.

Etiological Factors

A history of previous nasal surgery, particularly septoplasty, was the most common etiological factor and was identified in 6 patients (46.1%). Nasal trauma accounted for 3 cases (23.1%). Chronic use of topical nasal medications in 2 patients (15.4%). 1 patient (7.7%) had a history suggestive of chronic infection, and in 1 case (7.7%), no definite cause could be established (idiopathic).

Site And Size Of Perforation

On DNE, the majority of perforations were in the anterior cartilaginous septum (9 patients, 69.2%), 3 perforations (23.1%) were located in the middle septum, and 1 case (7.7%) involved the posterior septum.

Based on size classification:

- Small perforations (<5 mm) were observed in 4 patients (30.8%).
- Medium perforations (5–10 mm) were seen in 5 patients (38.5%).
- Large perforations (>10 mm) were noted in 4 patients (30.8%).

Most perforations were oval in shape with well-defined margins. Surrounding mucosa showed crusting and dryness in 8 patients (61.5%), while mild inflammation was present in 3 patients (23.1%). 2 patients (15.4%) had relatively healthy surrounding mucosa.

Management Distribution

Out of the 13 patients, 7 (53.8%) were managed conservatively. 6 patients (46.2%) underwent surgical repair due to persistent symptoms and medium-to-large perforations.

Outcomes Of Conservative Management

Among the 7 patients treated conservatively using saline irrigation, topical emollients, antibiotic ointments. Significant symptomatic improvement was observed in 5 patients (71.4%), particularly in reduction of crusting and epistaxis. 2 patients (28.6%) had persistent symptoms but opted to continue non-surgical management. No increase in perforation size was noted during follow-up.

Outcomes Of Surgical Management

6 patients underwent endoscopic surgical repair with mucosal advancement flaps, with interposition graft placement in selected cases.

Postoperative outcomes were as follows:

- Complete closure was achieved in 4 patients (66.7%).
- Partial closure with marked symptomatic improvement was noted in 1 patient (16.7%).
- Surgical failure or recurrence occurred in 1 patient (16.7%), involving a large perforation (>10 mm).

Better surgical success rates were observed in small-to-medium perforations compared to large defects.

Complications And Follow-up

Postop complications were minimal. Mild crusting during the early

postoperative period was observed in 3 surgical patients (50%), which resolved with saline irrigation and topical care.

All patients were followed for a minimum of 6 months. Symptomatic relief was sustained in the majority of patients during the follow-up period.

DISCUSSION

Previous nasal surgery was most common etiological factor for septal perforation (46.1%), which is consistent with existing literature that recognizes septoplasty and submucosal resection as leading causes due to mucoperichondrial injury and compromised septal vascularity. Kridel et al.¹ emphasized that bilateral mucosal tears during septal surgery significantly increase the risk of ischemic necrosis and perforation. Trauma and chronic use of topical vasoconstrictive nasal sprays were other contributing factors in our series, findings that are also supported by Brain³, who highlighted iatrogenic and traumatic causes as predominant in modern practice.

Nasal crusting was the most frequent presenting symptom (76.9%), followed by epistaxis and nasal obstruction. These symptoms are due to turbulent airflow through the perforation leading to mucosal desiccation and crust formation. Goh and Hussain⁴ noted that anterior septal perforations tend to be more symptomatic due to altered airflow dynamics, which correlates with our finding that the majority of perforations were located in the anterior cartilaginous septum. Romo et al.⁵ similarly described crusting and recurrent epistaxis as common complaints in symptomatic patients.

With regard to size distribution, medium-sized perforations were most common in our study, and surgical success was higher in small-to-medium defects compared to large perforations. Lee and Lee⁶ have reported that perforation size is a critical determinant of surgical outcome, with significantly better closure rates in defects less than 10 mm. Our surgical closure rate of 66.7% falls within the range reported in the literature (60–90%), depending on technique and case selection. Fairbanks² and Romo et al.⁵ emphasized that meticulous flap elevation, tension-free closure, and adequate vascular supply are essential for successful repair, principles that were adhered to in our surgical cases.

Overall, the findings of this study are consistent with established literature regarding etiology, clinical presentation, and management outcomes of septal perforation.

CONCLUSION

The study highlights that treatment must be individualized based on perforation size, location, symptom severity, and underlying etiology. Early diagnosis, careful patient selection, meticulous surgical technique, and appropriate postoperative care are critical to achieving optimal outcomes.

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