e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2026; 18(7); 485-492

Original Research Article

Functional Outcome of Septoplasty with and Without Inferior Turbinate Surgery in Patients with Deviated Nasal Septum

Shraddha Sharma[1], Sunita Pachar[2], Pooja Dhayal[3], Vikas Devra[4]

[1]Assistant Professor, Department of ENT, Pandit Deendayal Upadhyay Govt Medical College, Churu, Rajasthan, India

[2]Senior Resident, Department of ENT, Pandit Deendayal Upadhyay Govt Medical College, Churu, Rajasthan, India

[3]Senior Resident, Department of ENT, Pandit Deendayal Upadhyay Govt Medical College, Churu, Rajasthan, India

[4] Professor and Head of Department, Department of ENT, Pandit Deendayal Upadhyay Govt Medical College, Churu, Rajasthan, India

Received: 01-04-2026 / Revised: 15-05-2026 / Accepted: 21-06-2026

Corresponding author: Dr. Vikas Devra

Conflict of interest: Nil

Abstract

Background: Deviated nasal septum (DNS) with inferior turbinate hypertrophy is a common structural cause of chronic nasal obstruction. Although septoplasty is the standard surgical treatment for symptomatic DNS, the additional benefit of inferior turbinate reduction remains controversial. Objective- To compare the functional outcomes of septoplasty alone and septoplasty combined with inferior turbinate reduction.

Methods: This prospective comparative observational study was conducted in the Department of Otorhinolaryngology and Head & Neck Surgery, Government Medical College, Churu, Rajasthan. Sixty patients aged 18–55 years with symptomatic DNS associated with inferior turbinate hypertrophy were enrolled and allocated into two groups of 30 patients each: Group A underwent septoplasty alone, while Group B underwent septoplasty with inferior turbinate reduction by submucosal resection and outfracture. Functional outcomes were assessed using the NOSE score preoperatively and at 2 weeks, 1 month, and 3 months postoperatively.

Results: Baseline demographic and clinical characteristics were comparable between the groups. Both groups demonstrated significant postoperative improvement; however, the combined procedure group achieved significantly lower NOSE scores at 2 weeks, 1 month, and 3 months ($p<0.05$). At 3 months, the reduction in NOSE score from baseline was greater in the combined group (88.5%) than in the septoplasty-alone group (80.1%). A patent nasal airway was observed in 96.7% of patients undergoing combined surgery compared with 86.7% following septoplasty alone. Residual turbinate hypertrophy (3.3% vs. 16.7%) and persistent nasal obstruction (3.3% vs. 13.3%) were less frequent in the combined group.

Conclusion: Both procedures effectively relieved nasal obstruction; however, septoplasty combined with inferior turbinate reduction provided superior functional outcomes, better endoscopic results, and fewer residual obstructive findings without increasing postoperative complications. Careful preoperative evaluation of inferior turbinate hypertrophy should be incorporated into surgical planning, and concomitant turbinate reduction may be considered in appropriately selected patients.

Keywords: Deviated Nasal Septum, Inferior Turbinate Hypertrophy, Nasal Obstruction, Nasal Obstruction Symptom Evaluation (NOSE) score, Septoplasty.

DOI: 10.25258/ijcpr.18.7.77

Introduction

Breathing is the most fundamental physiological requirement for survival and plays an important role in maintaining physical health, productivity, and overall quality of life. Nasal obstruction is one of the most common presenting complaints encountered in otorhinolaryngology practice. It significantly affects sleep quality, daily activities, and overall well-being, prompting a large number of individuals to seek medical attention. It is estimated to affect approximately 9.5–15% of the general population, while up to one-third of individuals experience symptoms of nasal obstruction during their lifetime. [1] Inferior turbinate hypertrophy and deviated nasal septum (DNS) are the most common structural causes of chronic nasal obstruction. [2] Among these, DNS is

the most frequently encountered anatomical abnormality leading to impaired nasal airflow. [3] Although nearly 80% of individuals have some degree of septal deviation, only a small proportion develop clinically significant nasal obstruction requiring surgical intervention. [4] The reported prevalence of DNS ranges from 30.9% to 65%, depending on the diagnostic criteria and study population. [5] Septoplasty remains the standard surgical procedure for correcting septal deviation and improving nasal patency in symptomatic patients. When septal deviation causes persistent nasal obstruction despite appropriate medical treatment, surgery becomes the treatment of choice. Inferior turbinate hypertrophy frequently coexists with DNS and may contribute significantly to nasal airway compromise. Various turbinate reduction procedures have therefore been developed to enlarge the nasal airway while preserving turbinate function. Despite successful septal correction, some patients continue to experience postoperative nasal obstruction. Persistent symptoms are often attributed to untreated inferior turbinate hypertrophy. [6] Inferior turbinate reduction techniques, including outfracture and submucosal resection, have been widely employed to improve nasal airflow while preserving the physiological functions of the turbinate mucosa.

Several studies have demonstrated superior functional outcomes when inferior turbinate reduction is combined with septoplasty. Nevertheless, the routine addition of turbinate surgery remains controversial. While some authors have reported spontaneous regression of compensatory turbinate hypertrophy following septoplasty alone, others have suggested that turbinate hypertrophy involves both mucosal and bony components and therefore requires simultaneous turbinate reduction to achieve optimal nasal airflow. [7-9]

Assessment of surgical outcomes has evolved from objective anatomical evaluation to include patient-reported measures of symptom improvement. The Nasal Obstruction Symptom Evaluation (NOSE) scale is a validated, disease-specific questionnaire consisting of five items that assess nasal blockage, nasal congestion, difficulty in breathing through the nose, sleep disturbance, and difficulty in obtaining sufficient nasal airflow during physical activity. It provides a reliable assessment of symptom severity and quality of life and is widely used to evaluate functional outcomes following nasal surgery. [10,11] Diagnostic nasal endoscopy plays an important role in the preoperative assessment by identifying the severity of septal deviation, inferior turbinate hypertrophy, and the degree of narrowing within the nasal cavity.

Although septoplasty is an effective procedure for relieving nasal obstruction, it is associated with potential complications such as bleeding, septal hematoma, septal perforation, infection, intranasal adhesions, persistent nasal obstruction, and sensory disturbances involving the upper teeth or lip. [12]

In view of the ongoing controversy regarding the routine management of inferior turbinate hypertrophy during septoplasty, further evidence is required to determine whether concomitant inferior turbinate reduction provides additional functional benefit over septoplasty alone. Therefore, the present study was undertaken to compare the functional outcomes of septoplasty alone and septoplasty combined with inferior turbinate reduction using the NOSE score and postoperative endoscopic evaluation in patients with symptomatic deviated nasal septum associated with inferior turbinate hypertrophy.

Materials and Methods

This hospital-based, prospective comparative observational study was conducted to compare the functional outcome of septoplasty alone with septoplasty combined with inferior turbinate reduction in patients with symptomatic deviated nasal septum associated with inferior turbinate hypertrophy, in the Department of Otorhinolaryngology and Head & Neck Surgery, Pandit Deendayal Upadhyay Govt medical College, Churu, Rajasthan. The study was conducted over a period of 18 months, including patient recruitment, surgical intervention and postoperative follow-up.

Patients attending the outpatient department with complaints of persistent nasal obstruction due to deviated nasal septum were screened for eligibility. Patients fulfilling the inclusion criteria and willing to participate in the study were enrolled consecutively. Patients between 18 and 55 years of age, of either sex, presenting with symptomatic deviated nasal septum associated with unilateral or bilateral inferior turbinate hypertrophy and persistent nasal obstruction despite adequate medical treatment were included in the study. Diagnosis was confirmed by clinical examination and diagnostic nasal endoscopy. Only those patients who were fit for surgery, provided written informed consent and agreed to attend postoperative follow-up visits were enrolled.

Patients with previous septal or nasal surgery, septorhinoplasty, nasal trauma, septal perforation, allergic rhinitis with active symptoms, vasomotor rhinitis, chronic rhinosinusitis, nasal polyps, sinonasal tumours, granulomatous diseases of the nose, craniofacial anomalies, adenoid hypertrophy causing nasal obstruction, pregnancy, bleeding disorders, severe uncontrolled systemic illness or any other condition likely to influence nasal airway function were excluded. Patients who were

unwilling to participate or were unlikely to complete follow-up were also excluded.

A total of 60 patients were included in the study. They were divided into two groups comprising 30 patients each.

- **Group A:** Septoplasty alone (30 patients)
- **Group B:** Septoplasty with inferior turbinate reduction (30 patients)

Preoperative Assessment: A detailed history was obtained from every patient regarding duration of nasal obstruction, laterality of symptoms, nasal discharge, headache, facial pain, postnasal drip, epistaxis, mouth breathing, snoring and previous medical treatment. Smoking history and associated medical illnesses were also recorded.

All patients underwent complete general physical examination and otorhinolaryngological examination. Nasal examination included anterior rhinoscopy followed by diagnostic nasal endoscopy using a 0° rigid nasal endoscope after topical nasal decongestion and local anaesthesia. The type and side of septal deviation, presence of septal spur, contact points, inferior turbinate hypertrophy and any associated nasal pathology were documented.

Computed tomography of the paranasal sinuses was performed only when clinically indicated, particularly in patients with suspected sinonasal disease or anatomical variations requiring further evaluation.

Surgical Technique: Septoplasty was performed through a hemitransfixion or Killian incision depending on the location of the septal deviation. Mucoperichondrial and mucoperiosteal flaps were elevated carefully and the deviated cartilaginous and bony portions of the septum were corrected while preserving adequate dorsal and caudal support. Quilting sutures were placed after repositioning of the mucosal flaps.

Patients in Group A underwent septoplasty alone. Patients in Group B underwent septoplasty followed by inferior turbinate reduction by submucosal resection with outfracture. After infiltration with lignocaine containing adrenaline, a submucosal tunnel was created in the hypertrophied inferior turbinate. Excess submucosal soft tissue with a limited amount of turbinate bone was removed while preserving the overlying mucosa. The turbinate was then gently lateralized by outfracture to increase the nasal airway. Care was taken to preserve the turbinate mucosa in order to maintain normal nasal physiology. At the end of surgery, haemostasis was achieved and bilateral nasal packing was performed according to the surgeon's preference. Nasal packs were removed after 24 to 48 hours.

Postoperative Care: All patients received intravenous antibiotics and analgesics during the immediate postoperative period followed by oral medications as required. Saline nasal irrigation was started after removal of nasal packing. Patients were advised to avoid nose blowing, heavy physical activity and nasal trauma during the healing period. Endoscopic suction clearance of crusts was performed whenever required during follow-up.

Outcome Assessment: Functional outcome was assessed using the Nasal Obstruction Symptom Evaluation (NOSE) score, which is a validated disease-specific questionnaire for assessment of nasal obstruction.

The questionnaire consists of five items:

- Nasal congestion or stuffiness
- Nasal blockage
- Difficulty in breathing through the nose
- Trouble sleeping because of nasal obstruction
- Difficulty in getting enough air through the nose during physical activity

Each item was scored from 0 (not a problem) to 4 (severe problem). The total raw score ranged from 0 to 20 and was multiplied by 5 to obtain a final score ranging from 0 to 100, with higher scores indicating more severe nasal obstruction.

Diagnostic nasal endoscopy was also performed during follow-up to assess septal position, nasal airway patency, healing of the inferior turbinate and postoperative complications such as crusting, synechiae, septal perforation and persistent turbinate hypertrophy.

Follow-up: Patients were evaluated preoperatively, 2 weeks, 1 month and 3 months after surgery. At every follow-up visit, patients underwent clinical examination, diagnostic nasal endoscopy and assessment using the NOSE questionnaire. Any postoperative complications were recorded and managed appropriately.

Statistical Analysis: The collected data were entered into Microsoft Excel and analysed. Continuous variables were expressed as mean ± standard deviation, while categorical variables were presented as frequency and percentage. Baseline characteristics between the two groups were compared using the independent Student's t-test for continuous variables and the Chi-square test or Fisher's exact test for categorical variables. Changes in NOSE scores within each group during follow-up were analysed using the paired t-test, whereas differences between the two groups at each follow-up visit were analysed using the independent Student's t-test. A p-value of **<0.05** was considered statistically significant.

Results

[Table-1] The baseline demographic and clinical characteristics were comparable between the two groups. The majority of patients belonged to the 26–35 years age group, with a slight male predominance. Left-sided septal deviation was the most common finding, and the mean duration of symptoms was similar in both groups. No statistically significant differences were observed in the baseline variables ($p > 0.05$). [Table-2] The distribution of inferior turbinate hypertrophy grades was similar in both groups. Grade III hypertrophy was the most common finding, followed by Grade II and Grade IV. No significant difference was observed between the groups ($p = 0.960$). [Table-3] The preoperative NOSE scores were comparable between the two groups. Both groups showed progressive improvement after surgery; however, the septoplasty with inferior turbinate reduction group demonstrated significantly lower NOSE scores at 2 weeks, 1 month, and 3 months compared with the septoplasty alone group ($p < 0.05$). [Table-4] Both groups showed a progressive reduction in NOSE scores during follow-up. The percentage improvement was consistently greater in the septoplasty with inferior turbinate reduction group at all postoperative visits. [Table-5] The majority of patients in both groups had a patent nasal airway at three months. Residual turbinate hypertrophy and persistent nasal obstruction were observed more frequently in the septoplasty alone group, while the incidence of other postoperative findings and complications was low and comparable between the groups. No patient developed postoperative infection or septal perforation. [Table-6] At three months, most patients had mild residual symptoms according to the NOSE severity classification. All patients in the septoplasty with inferior turbinate reduction group had mild NOSE scores, whereas two patients in the septoplasty alone group had moderate residual symptoms. No patient had severe or extreme NOSE scores at the final follow-up.

Table 1: Baseline demographic and clinical characteristics of the study participants

Variable		Septoplasty alone (n=30)	Septoplasty with inferior turbinate reduction (n=30)	p-value
Age group (Years)	18–25	8 (26.7)	7 (23.3)	0.991
	26–35	12 (40.0)	13 (43.3)	
	36–45	7 (23.3)	7 (23.3)	
	46–55	3 (10.0)	3 (10.0)	
Age (Mean±SD, Years)		31.9 ± 8.2	32.6 ± 7.9	0.738
Sex	Male, n (%)	19 (63.3)	18 (60.0)	0.791
	Female, n (%)	11 (36.7)	12 (40.0)	
Side of deviation	Right	11 (36.7)	10 (33.3)	0.96
	Left	14 (46.7)	15 (50.0)	
	S-shaped/bilateral component	5 (16.7)	5 (16.7)	
Duration of symptoms (Mean ±SD, months)		23.8 ± 10.6	24.5 ± 11.1	0.804

Table 2: Grade of inferior turbinate hypertrophy

Turbinate grade	Septoplasty alone (n=30)	Septoplasty with inferior turbinate reduction (n=30)	Total n (%)
Grade II	10 (33.3)	11 (36.7)	21 (35.0)
Grade III	15 (50.0)	14 (46.7)	29 (48.3)
Grade IV	5 (16.7)	5 (16.7)	10 (16.7)
Total	**30 (100.0)**	**30 (100.0)**	**60 (100.0)**

$\chi^2 = 0.082$, df = 2, $p = 0.960$

Table 3: Comparison of NOSE scores between groups

Assessment time	Septoplasty alone (n=30)	Septoplasty with inferior turbinate reduction (n=30)	Mean difference	p-value
Preoperative	74.7 ± 8.6	75.9 ± 7.8	−1.2	0.574
2 weeks	40.9 ± 8.8	34.8 ± 7.5	6.1	0.005
1 month	25.8 ± 7.0	18.2 ± 5.9	7.6	<0.001
3 months	14.9 ± 5.4	8.7 ± 4.1	6.2	<0.001

Table 4: Reduction in mean NOSE score from baseline

Follow-up	Septoplasty alone (n=30)	Percentage reduction	Septoplasty with inferior turbinate reduction (n=30)	Percentage reduction
2 weeks	33.8	45.20%	41.1	54.20%
1 month	48.9	65.50%	57.7	76.00%
3 months	59.8	80.10%	67.2	88.50%

Table 5: Post-Operative findings at three months

Post-Operative findings		Septoplasty alone (n=30)	Septoplasty with inferior turbinate reduction (n=30)	p-value
Post-Operative Endoscopic finding	Patent nasal airway	26 (86.7)	29 (96.7)	0.353
	Residual turbinate hypertrophy	5 (16.7)	1 (3.3)	0.195
	Crusting	3 (10.0)	2 (6.7)	1
	Synechiae	2 (6.7)	1 (3.3)	1
	Septal perforation	0	0	—
Post-Operative Complications	Bleeding requiring intervention	1 (3.3)	1 (3.3)	1
	Crusting	3 (10.0)	2 (6.7)	1
	Synechiae	2 (6.7)	1 (3.3)	1
	Persistent nasal obstruction	4 (13.3)	1 (3.3)	0.353
	Infection	0	0	—
	Septal perforation	0	0	—

Table 6: Functional outcome at three months

Three-month NOSE severity	Septoplasty alone (n=30)	Septoplasty with inferior turbinate reduction (n=30)	Total n (%)
Mild, 0–25	28 (93.3)	30 (100.0)	58 (96.7)
Moderate, 30–50	2 (6.7)	0	2 (3.3)
Severe, 55–75	0	0	0
Extreme, 80–100	0	0	0
Total	**30 (100.0)**	**30 (100.0)**	**60 (100.0)**

Discussion

The present comparative study evaluated functional outcomes following septoplasty alone and septoplasty combined with inferior turbinate reduction in patients with symptomatic deviated nasal septum and inferior turbinate hypertrophy.

Baseline demographic and clinical characteristics: The present study demonstrated that both groups were comparable with respect to age, sex, side of septal deviation, and duration of symptoms, indicating that the baseline characteristics were well matched and unlikely to influence the postoperative outcomes. Most patients belonged to the 26–35 years age group, with mean ages of 31.9 ± 8.2 years and 32.6 ± 7.9 years in the septoplasty-alone and combined-procedure groups, respectively.

A slight male predominance was observed in both groups. The predominance of young adults may be because nasal obstruction has a greater impact on daily activities, work performance, and quality of life during this age, leading patients to seek surgical treatment more frequently.

These findings are in agreement with Hakami et al [13], who also reported that septoplasty was more commonly performed in young adults, although their study included a younger population, with 44.0% of patients aged 18–25 years and a higher proportion of males (72.7%). Similarly, Karodpati et al [14] and Harkare et al [15] reported comparable baseline demographic characteristics between the study groups before surgery, supporting the validity of postoperative comparisons.

In the present study, left-sided septal deviation was the most common pattern, followed by right-sided and S-shaped deviation, while the mean duration of symptoms was approximately two years in both groups, reflecting a comparable chronicity of disease prior to surgical intervention.

Grade of inferior turbinate hypertrophy: In the present study, Grade III inferior turbinate hypertrophy was the most common finding in both groups, followed by Grade II and Grade IV hypertrophy, with no significant difference in distribution between the groups ($p = 0.960$). This indicates that the severity of turbinate hypertrophy was comparable at baseline, allowing an unbiased comparison of postoperative outcomes.

The predominance of Grade III hypertrophy suggests that inferior turbinate enlargement contributed substantially to nasal obstruction in most patients. Persistent turbinate hypertrophy, particularly when associated with bony enlargement, may not resolve completely following septoplasty alone and therefore may require additional surgical reduction.

Compensatory enlargement of the inferior turbinate commonly develops on the side opposite the septal deviation. This response may initially maintain physiological airflow distribution, but persistent enlargement can involve both mucosal tissue and turbinate bone. Mucosal enlargement may partly respond to decongestion or medical therapy, whereas fixed osseous hypertrophy is less likely to

regress completely after septoplasty alone. This provides a physiological basis for adding turbinate reduction in selected patients.[4,5]

Hakami et al [13] reported bilateral inferior turbinate hypertrophy in 57.4% of patients and found that higher grades of turbinate hypertrophy were more frequently managed with concomitant turbinoplasty ($p < 0.001$). Unlike their study, the present study included a similar distribution of turbinate grades in both groups to ensure comparability between the treatment arms.

Devseren et al [16], in a randomized study of patients with septal deviation and compensatory inferior turbinate hypertrophy, demonstrated greater subjective improvement when submucous turbinate resection was added to septoplasty. Similarly, Grymer and Illum showed that patients with anterior septal deviation and compensatory turbinate hypertrophy may benefit from turbinate surgery, particularly when turbinate enlargement contributes objectively to the narrowed nasal passage. [17] These findings support the importance of careful preoperative assessment of inferior turbinate hypertrophy and selective turbinate reduction in patients undergoing septoplasty.

Comparison of NOSE scores between groups: In the present study, the preoperative NOSE scores were comparable between the two groups (74.7 ± 8.6 vs. 75.9 ± 7.8; $p = 0.574$), indicating a similar severity of nasal obstruction before surgery. Both groups showed progressive improvement during follow-up; however, patients who underwent septoplasty with inferior turbinate reduction demonstrated significantly lower postoperative NOSE scores at 2 weeks, 1 month, and 3 months ($p < 0.05$). Correspondingly, the reduction in NOSE score from baseline was consistently greater in the combined procedure group, with an overall improvement of 88.5% at 3 months compared to 80.1% in the septoplasty-alone group. These findings suggest that correction of both septal deviation and inferior turbinate hypertrophy provides greater functional improvement than septoplasty alone. The additional benefit is likely due to improved nasal airway patency achieved by addressing both structural causes of obstruction. Our findings are consistent with those of Dinesh Kumar R et al [18], who reported significantly greater improvement in standardized NOSE scores following septoplasty with partial inferior turbinectomy compared with septoplasty alone ($p \leq 0.001$). Although their postoperative NOSE scores were lower than those observed in the present study, this difference may be attributed to the longer follow-up period and the use of partial turbinectomy instead of a mucosa-preserving turbinate reduction technique. Similarly, Harkare et al [15] demonstrated significantly better postoperative NOSE scores in patients undergoing septoplasty with inferior turbinoplasty than in those undergoing septoplasty alone. Karodpati et al [14] also reported superior improvement in overall NOSE scores following combined surgery, particularly with respect to nasal blockage, congestion, sleep quality, and breathing during exertion. Likewise, Samarei et al [19] observed greater symptomatic relief after septoplasty combined with inferior turbinoplasty, supporting the additional functional benefit of treating compensatory inferior turbinate hypertrophy.

The present findings are also in agreement with Hakami et al [13], who reported significantly lower postoperative NOSE scores following septoplasty with turbinoplasty than septoplasty alone.[1] However, their postoperative septoplasty-alone scores were higher than those observed in the present study, possibly because of the retrospective study design, variable follow-up duration, and differences in patient characteristics. Alanazy et al [20] reported significant improvement in NOSE scores after septoplasty, although they did not analyse outcomes separately according to the performance of turbinoplasty, limiting direct comparison. Furthermore, a recent systematic review and meta-analysis concluded that adding inferior turbinate reduction to septoplasty provides superior subjective improvement compared with septoplasty alone, although the authors highlighted the need for further high-quality randomized studies to strengthen the available evidence. [21]

Postoperative endoscopic findings and complications: At the three-month follow-up, a patent nasal airway was observed in 86.7% of patients who underwent septoplasty alone and 96.7% of those who underwent septoplasty with inferior turbinate reduction. Although the difference was not statistically significant ($p = 0.353$), patients in the combined procedure group showed fewer cases of residual turbinate hypertrophy (3.3% vs. 16.7%) and persistent nasal obstruction (3.3% vs. 13.3%). This suggests that addressing inferior turbinate hypertrophy at the time of septoplasty may provide better postoperative airway patency by eliminating the residual structural component of nasal obstruction.

These findings are comparable with those of Karodpati et al [14], who reported superior postoperative endoscopic outcomes following septoplasty with turbinectomy, with all patients in the combined group demonstrating adequate bilateral nasal airway compared with persistent narrowing after septoplasty alone. The greater endoscopic improvement reported in their study may be related to the use of turbinectomy, which provides a more extensive reduction in turbinate size than the mucosa-preserving technique used in

the present study. Postoperative complications were infrequent in both groups.

Crusting, synechiae, and bleeding occurred at low rates, while no patient developed postoperative infection or septal perforation. Similar observations were reported by Thrupthi et al [22], who found no significant increase in crusting or other complications following microdebrider-assisted inferior turbinoplasty, attributing this to preservation of the turbinate mucosa. [11]

Likewise, Hakami et al [13] reported that revision surgery and long-term complications were more common after septoplasty alone than after septoplasty with turbinoplasty, supporting the favourable outcomes observed in the present study. Although a recent meta-analysis by Lajdam et al [21] suggested a slightly higher risk of adverse events with turbinate reduction, the complication rates in the present study remained low and comparable between the two groups, possibly due to the conservative surgical technique and relatively short follow-up period.

Functional outcome at three months: At the three-month follow-up, 93.3% of patients in the septoplasty-alone group and all patients in the septoplasty with inferior turbinate reduction group had mild residual symptoms according to the NOSE severity classification.

Only two patients (6.7%) in the septoplasty-alone group continued to have moderate symptoms, while no patient in either group had severe or extreme symptoms. These findings indicate that both procedures were effective in relieving nasal obstruction, although the addition of inferior turbinate reduction resulted in a more favourable overall functional outcome.

Similar findings were reported by Harkare et al [15], who observed that 97% of patients undergoing septoplasty with inferior turbinoplasty had mild postoperative symptoms compared with 50% in the septoplasty-alone group. Alanazy et al [20] also demonstrated significant improvement in postoperative NOSE scores, with symptom severity approaching that of healthy individuals three months after surgery.

Overall, the present findings are consistent with previous studies suggesting that inferior turbinate reduction, when performed in appropriately selected patients, provides additional functional benefit without compromising postoperative recovery.

Conclusion

Both septoplasty alone and septoplasty combined with inferior turbinate reduction significantly improved nasal obstruction in patients with symptomatic deviated nasal septum. However, the addition of inferior turbinate reduction resulted in greater improvement in postoperative NOSE scores, better endoscopic findings, and fewer cases of residual turbinate hypertrophy and persistent nasal obstruction, without increasing postoperative complications.

These findings suggest that addressing inferior turbinate hypertrophy at the time of septoplasty provides additional functional benefit in appropriately selected patients. Therefore, careful preoperative evaluation of the inferior turbinates should be an integral part of surgical planning. Inferior turbinate reduction may be considered when clinically significant hypertrophy is present. Further multicentric studies with larger sample sizes, longer follow-up, and objective assessments of nasal airflow are recommended to validate these findings and establish long-term outcomes.

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