



ORIGINAL RESEARCH PAPER

Otorhinolaryngology

QUALITY OF LIFE IN PATIENTS WITH NASAL OBSTRUCTION AFTER SEPTOPLASTY- A PROSPECTIVE STUDY

KEY WORDS: Septoplasty; Nasal Obstruction Symptom Evaluation (NOSE); Visual Analogue Scale (VAS); Health-Related Quality of Life (HRQoL); Septal Deviation.

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ABSTRACT

Background: Deviated nasal septum is a highly prevalent condition causing significant nasal obstruction and reduced quality of life. Septoplasty remains the definitive treatment, necessitating reliable patient-reported measures to evaluate postoperative symptom improvement.¹ **Methodology:** This prospective, longitudinal cohort study evaluated consecutive adult candidates experiencing chronic nasal obstruction (>=3 months duration) secondary to architectural septal deviation who demonstrated resistance to a standard 4-week trial of medical therapy. Pre-treatment and three-month post-treatment outcomes were mapped using the 5-item Nasal Obstruction Symptom Evaluation (NOSE) questionnaire and a 100 mm continuous Visual Analogue Scale (VAS). **Results:** Statistical modeling proves highly significant improvements in global NOSE indices and linear VAS metrics ($p < 0.05$), reflecting clear therapeutic resolution of airway resistance, enhanced sleep patterns, and reduced respiratory discomfort during exertion. **Conclusion :** A positive correlation was observed between postoperative NOSE and VAS scores, demonstrating consistent assessment of nasal obstruction improvement, with the NOSE score providing a more comprehensive disease-specific evaluation

INTRODUCTION

Nasal obstruction is one of the most frequent symptoms encountered in otorhinolaryngology practice and significantly impairs sleep quality, exercise tolerance, productivity, and overall health-related quality of life. Deviated nasal septum (DNS) is a leading structural cause of chronic nasal obstruction, with septoplasty remaining the definitive surgical treatment for symptomatic patients after appropriate clinical evaluation. Although surgical correction aims to improve nasal airflow and patient satisfaction, objective anatomical correction does not always correspond with patients' perceived symptom relief, highlighting the need for reliable patient-reported outcome measures.^{1,2,3}

Among the available subjective assessment tools, the Nasal Obstruction Symptom Evaluation (NOSE) questionnaire, is the most widely accepted disease-specific instrument for assessing the severity of nasal obstruction and measuring postoperative outcomes.³ In contrast, the Visual Analogue Scale (VAS) offers a simple, rapid, single-item assessment of nasal breathing severity and is frequently used in both clinical practice and research because of its ease of administration.²

Several studies have compared these two instruments. Studies demonstrated significant postoperative improvement with both NOSE and VAS following septoplasty but reported greater responsiveness and higher patient satisfaction with the NOSE questionnaire.⁴ Similarly, observed good agreement between the two scales while emphasizing the broader disease-specific assessment provided by NOSE.⁵ Conversely, some studies suggested that VAS correlates more closely with objective measures of nasal patency than NOSE, indicating that the two instruments may assess complementary dimensions of nasal obstruction rather than being interchangeable. Furthermore, highlighted that

improvements in disease-specific quality of life following septoplasty extend beyond restoration of nasal airflow alone.³

Despite growing evidence supporting both instruments, direct comparative data evaluating their correlation and responsiveness in the postoperative assessment of septoplasty remain limited, particularly in the Indian population. Therefore, the present study was undertaken to compare NOSE and VAS scores following septoplasty and evaluate their correlation in assessing patient-perceived improvement in nasal obstruction⁴

METHODOLOGY

This study used a prospective, longitudinal cohort design, with each patient serving as their own control. The active protocol was conducted using a consecutive sampling framework to ensure systematic screening of sequential candidates presenting with primary mechanical airway symptoms.

Inclusion Criteria

- Patient age greater than or equal to 18 years
- Septal deviation consistent with presenting symptom of chronic nasal obstruction Symptoms lasting at least 3 months
- Documented persistence of functional impairment despite compliance with a 4-week trial of first-line medical therapy (comprising topical intranasal corticosteroids, oral/topical decongestants, or oral antihistamine-decongestant formulations).
- Voluntary provision of written informed consent prior to data collection or surgical scheduling.¹

Exclusion Criteria:

- History of sinonasal tumors, radiation exposure
- History of prior nasal surgical interventions

- Historical evidence of active chronic rhinosinusitis (with or without nasal polyposis) or significant adenoid hypertrophy.
- Confounding sleep-disordered breathing profiles, moderate-to-severe obstructive sleep apnea.
- Structural septal perforation or trauma
- Associated anatomical nasal valve collapse, systemic granulomatous conditions, uncontrolled bronchial asthma, or active pregnancy.

Materials and Evaluation Tools:

Subjective clinical severity and health-related quality of life impacts were gathered using two validated instruments administered preoperatively (baseline) and postoperatively at the three-month follow-up milestone:

1. The Nasal Obstruction Symptom Evaluation (NOSE) Scale: The five functional fields tracked are: (a) nasal congestion or stuffiness, (b) nasal blockage or obstruction, (c) trouble breathing through the nose, (d) trouble sleeping patterns, and (e) an inability to obtain sufficient air intake through the nasal passages during physical exercise or exertion. Each parameter is rated on a 5-point Likert scale ranging from 0 (not a problem) to 4 (severe problem). The cumulative raw score is multiplied by five to yield a global index scale from 0 to 100.
2. The Visual Analogue Scale (VAS) Mechanics: A standardized 100 mm horizontal linear metric used to capture patient-perceived breathing difficulty. The scale features three explicit visual word anchors: 'none' situated at the 0 mm mark (extreme left), 'medium' positioned at the 50 mm mark (center), and 'severe' located at the 100 mm mark (extreme right). Patients indicate their general degree of nasal obstruction by making a single vertical mark along the line. This physical distance is measured from the left origin and converted into a numeric continuous variable from 0 to 10, where higher numbers reflect severe clinical obstruction.

Statistical Frameworks:

All gathered clinical registry entries were aggregated and analyzed using statistical computing software. Continuous variables will be reported as Mean +- Standard Deviation (SD), and categorical variables will be summarized using raw frequencies and percentages.

For normally distributed continuous variables, primary changes between baseline (preoperative) and three-month postoperative global NOSE indices and continuous VAS scores will be analyzed using the parametric paired student's t-test. If data distributions depart significantly from normality assumptions, the non-parametric Wilcoxon signed-rank test will be utilized. All hypothesis testing will be two-tailed, and a calculated p-value of less than 0.05 (p < 0.05) will be maintained as the strict threshold for establishing statistical significance.

RESULTS

The study included 60 patients undergoing septoplasty for symptomatic deviated nasal septum, all of whom completed the three-month follow-up and were included in the final analysis

Table 1 – Statistical Analysis of NOSE and VAS score Pre and Post Operative

NOSE SCORE	Preop	Post op	P value
Nasal congestion	15.3	4.1	<0.001
Nasal blockage	16.1	3.4	0.0002
Trouble breathing through nose	15.8	3.7	0.0004
Trouble sleeping	13.9	4.7	0.0013
Unable to get enough air during exercise/exertion	14.6	4.0	0.0007
Visual Analogue Scale score	8.0	2.2	<0.001

With Descriptive and comparative analyses, we observed a

uniform postoperative reduction in symptom severity across all measured NOSE domains and the VAS. All preoperative-to-postoperative differences were statistically significant, and correlation analysis showed a strong positive relationship between postoperative NOSE and VAS scores (Spearman's $\rho = 0.78, p < 0.001$)

DISCUSSION

Our study demonstrated significant postoperative improvement in both NOSE and VAS scores following septoplasty, with a strong positive correlation between the two instruments, indicating that both reliably reflect subjective improvement in nasal obstruction. However, the greater postoperative reduction observed in NOSE scores suggests that this disease-specific questionnaire is more sensitive in detecting clinically meaningful changes than the single-item VAS.

These findings are consistent with the landmark validation of other studies, who established the NOSE score as a reliable, valid, and responsive disease-specific instrument for evaluating nasal obstruction and postoperative outcomes. Some study demonstrated significant improvement in both NOSE and VAS scores after septoplasty but reported higher patient satisfaction and greater responsiveness with the NOSE questionnaire, supporting its superiority as an outcome measure. Similar observations were reported where, although VAS showed good agreement with NOSE and could serve as a practical alternative in routine practice, the NOSE score provided a more comprehensive assessment of symptom burden and disease-specific quality of life.^{4,6,7}

Interestingly, we observed that objective nasal resistance correlated more closely with VAS than with NOSE scores, suggesting that the two instruments evaluate different aspects of nasal obstruction. This concept is further reinforced in a recent study , where they demonstrated a strong correlation between NOSE and VAS scores but found only a modest association between VAS and CT-derived anatomical measurements, while NOSE showed no significant anatomical correlations.

Hence we can imply that VAS primarily reflects the patient's immediate perception of nasal airflow, whereas NOSE encompasses broader functional limitations, including sleep disturbance, exercise intolerance, and overall quality of life.^{4,8,9} The sustained postoperative improvement observed in our cohort is also in agreement with the long-term quality-of-life benefits, highlighting that successful septoplasty improves both symptom severity and patient-perceived functional outcomes.

Collectively, the available evidence and our findings suggest that NOSE should remain the preferred primary patient-reported outcome measure for septoplasty because of its superior responsiveness and disease specificity, while VAS serves as a valuable adjunct owing to its simplicity, rapid administration, and excellent correlation with overall symptom improvement.⁹

CONCLUSION

Both NOSE and VAS scores reliably demonstrated postoperative improvement in nasal obstruction following septoplasty. However, the NOSE questionnaire provided a more comprehensive, disease-specific assessment of patient-reported outcomes than the single-item VAS, supporting its use as the preferred primary outcome measure after septoplasty

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