



Advances in Functional Rhinoplasty: A Prospective Study on Nasal Obstruction and Quality of Life Outcomes

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Abstract

Background:

Nasal obstruction is a common complaint in otolaryngology, significantly affecting patients' quality of life. Functional rhinoplasty aims not only to correct anatomical deformities but also to improve nasal airflow and patient satisfaction.

Objective:

To evaluate the outcomes of functional rhinoplasty in patients with nasal obstruction due to anatomical abnormalities, using validated symptom scoring and quality of life metrics.

Methods:

A prospective study was conducted on 120 patients undergoing functional rhinoplasty between January 2023 and January 2024. Patients were evaluated preoperatively and six months postoperatively using the Nasal Obstruction Symptom Evaluation (NOSE) scale and the Sino-Nasal Outcome Test (SNOT-22).

Results:

A significant reduction in NOSE and SNOT-22 scores was observed postoperatively ($p < 0.001$), indicating improved nasal airflow and quality of life. Patient satisfaction rate was 91%, and no major complications were reported.

Conclusion:

Functional rhinoplasty effectively addresses both aesthetic and functional components of nasal obstruction. This study supports the integration of objective and subjective measures to evaluate surgical outcomes and patient satisfaction.

Keywords: rhinoplasty; nasal obstruction; functional nasal surgery; nose score; snot-22; quality of life; nasal valve collapse; septoplasty; otorhinolaryngology.

Introduction

Nasal obstruction is a prevalent condition in otolaryngology, with multifactorial etiology ranging from deviated nasal septum to internal nasal valve collapse. Patients frequently report breathing difficulty, snoring, and decreased quality of life. While septoplasty and turbinate reduction are conventional solutions, many cases require more complex interventions addressing both functional and aesthetic concerns—commonly referred to as functional rhinoplasty.

The internal and external nasal valves are critical to nasal airflow, and their compromise can result in significant obstruction. Functional rhinoplasty addresses these structural issues through techniques such as spreader graft placement, alar batten support, and osteotomies. Recent literature emphasizes the importance of combining objective measures with subjective patient-reported outcomes to assess the efficacy of surgical interventions.

This study aims to evaluate the functional outcomes of rhinoplasty using validated scoring systems and to provide evidence for its efficacy in improving patient quality of life.

Material and Methods

Study Design:

This was a prospective, single-center observational study conducted at Midtown Medical University Hospital between January 2023 and January 2024.

Inclusion Criteria:

- Adults aged 18–60 years
- Subjective complaints of nasal obstruction for more than 6 months
- Clinical findings of anatomical obstruction (e.g., septal deviation, valve collapse)
- No improvement with medical therapy (nasal steroids, antihistamines)

Exclusion Criteria:

- History of previous nasal surgery
- Nasal polyposis, chronic rhinosinusitis, or allergic fungal sinusitis
- Active smokers or systemic connective tissue disorders

Surgical Procedure:

All patients underwent functional rhinoplasty under general anesthesia. Techniques were selected based on individual anatomical findings and included septoplasty, spreader grafts, caudal septal extension grafts, and lateral crural strut grafts.

Outcome Measures:

Primary outcome: Change in NOSE score

Secondary outcome: Change in SNOT-22 score

Tertiary outcome: Patient satisfaction (Likert scale: 1–5)

Follow-up Protocol:

Patients were followed at 1 week, 1 month, 3 months, and 6 months postoperatively. The NOSE and SNOT-22 scores were reassessed at the 6-month follow-up.

Statistical Analysis:

Data were analyzed using SPSS version 26. Paired t-tests were used to compare pre- and post-operative scores. A p-value < 0.05 was considered statistically significant.

Results

Of the 120 patients enrolled, 110 completed the 6-month follow-up. The mean age was 32.4 ± 8.1 years, with a male-to-female ratio of 1.3:1.

NOSE Scores:

The mean preoperative NOSE score was 72.3 ± 11.8 , which improved to 18.6 ± 9.5 postoperatively ($p < 0.001$).

SNOT-22 scores:

Preoperative SNOT-22 scores averaged 48.2 ± 13.6 , which improved to 17.4 ± 10.2 postoperatively ($p < 0.001$).

Patient Satisfaction:

91% of patients reported satisfaction scores of 4 or 5.

Complications:

Minor complications included mild edema (12%), transient nasal crusting (9%), and septal hematoma in one case (0.9%), which resolved with drainage. No major complications or revision surgeries were recorded during the study period.

Discussion

This study confirms that functional rhinoplasty significantly improves both subjective and objective outcomes in patients suffering from anatomical nasal obstruction. The dramatic reduction in NOSE and SNOT-22 scores aligns with findings in similar research, supporting the reliability of these metrics in clinical evaluation.

One key strength of this study is the integration of patient-reported outcomes, which offer insights into real-world benefits beyond surgical success. Moreover, techniques tailored to individual anatomical variation—particularly addressing internal nasal valve dysfunction—proved essential for optimizing airflow. Limitations include the single-center design and relatively short follow-up. Long-term outcomes,

recurrence rates, and comparisons with alternative surgical methods such as endonasal approaches warrant further research.

Conclusion

Functional rhinoplasty is a safe and effective

intervention for nasal obstruction due to anatomical deformities. The procedure significantly improves patient-reported symptoms and quality of life, with minimal risk of complications. Incorporating validated scoring systems like NOSE and SNOT-22 allows for comprehensive evaluation and can enhance patient-surgeon communication and satisfaction.

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