



COMPREHENSIVE RHINOPLASTY: INTEGRATING AESTHETIC GOALS WITH FUNCTIONAL ASSESSMENT TO ENHANCE PATIENT OUTCOMES AND SATISFACTION

Dr. Maddali V. Lakshmi Prathusha*

Assistant Professor, Department of ENT, Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal, India.

ABSTRACT

Rhinoplasty (RP) is primarily sought for cosmetic enhancement, focusing on improving nasal aesthetics according to patient and family expectations. However, successful outcomes rely on addressing not only external nasal structure but also underlying functional and anatomical issues within the nasal cavity. Neglecting these factors may lead to postoperative complications, including nasal obstruction and the need for revision surgery. Studies show that revision RP is frequently performed due to nasal tip asymmetry and breathing difficulties, with nearly two-thirds of these patients experiencing nasal obstruction caused by adhesions or collapsed nasal valves. Additionally, reducing the nasal cross-sectional area during RP can increase the risk of postoperative breathing issues. Functional nasal pathologies stem from structural and anatomical factors, where mucosal conditions are typically managed through medical treatments and structural abnormalities often require surgical correction. A comprehensive preoperative assessment of both aesthetic and functional components, including sinonasal symptoms and potential structural abnormalities, is crucial for achieving high patient satisfaction and quality of life post-RP. Unlike many academic centers where cosmetic RP rarely includes functional evaluations, our team integrates clinical examinations and structured questionnaires to assess and treat underlying functional issues in aesthetic RP patients. This comprehensive approach aids in reducing the likelihood of revision surgeries and enhances long-term satisfaction by ensuring both cosmetic and functional needs are addressed.

Key words:- Rhinoplasty, Nasal Aesthetics, Revision Rhinoplasty, Nasal Obstruction, Nasal Valve Collapse, Functional Nasal Pathology, Endonasal Abnormalities, Patient Satisfaction.

Access this article online

Home page:

<http://www.mcmed.us/journal/ajomr>

Quick Response code



Received:25.05.22

Revised:12.06.22

Accepted:14.07.22

INTRODUCTION

Cosmetic rhinoplasty (RP) primarily aims to enhance the aesthetic appearance of the nose, often based on the preferences of the patient and their family regarding nasal shape. However, it is essential not to overlook underlying mucosal and anatomical issues within the nasal cavity, as

Corresponding Author

Dr. Maddali V. Lakshmi Prathusha

ignoring these may result in unsatisfactory outcomes. Revision RP is frequently required due to issues such as nasal tip asymmetry and breathing difficulties [1-3]. Studies indicate that approximately two-thirds of patients seeking revision RP experience nasal obstruction, often stemming from adhesions and collapsed nasal valves. Additionally, the reduction of the nasal cross-sectional area during reduction RP can increase the risk of postoperative breathing difficulties [4-6].

Functional nasal issues typically arise from anatomical and structural abnormalities. Mucosal conditions are usually managed medically, while structural issues often necessitate surgical intervention. While most RP patients do not present with functional or structural nasal problems, studies have shown that a thorough nasal assessment is critical for achieving high satisfaction and improved quality of life post-surgery. Unlike academic centers where aesthetic RP is not generally accompanied by assessments of functional sinonasal symptoms or endonasal abnormalities, our team performs comprehensive clinical rhinologic evaluations and employs questionnaires to address functional pathologies in patients undergoing aesthetic RP [7].

MATERIALS AND METHODS

Patient Recruitment

The Department of ENT at Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal, India, managed the recruitment of patients for rhinoplasty (RP) and nasal pathology treatment. All individuals aged 16 and older seeking RP to alter nasal shape were included in the study. A first control group consisted of 16-year-olds consulting for otological or other general ear-nose-throat (ENT) issues. No participants were excluded based on any upper respiratory tract conditions or treatments, except for those experiencing a common cold within two weeks before their visit. A second control group included 16-year-olds with mucosal issues unresponsive to medical therapy who were scheduled for endoscopic sinus surgery (ESS).

To ensure understanding and consistency, patients with a good command of Hindi or Bengali were included, as questionnaires were provided in both languages. The study received ethical approval from the Gouri Devi Institute of Medical Sciences and Hospital's Medical Ethics Committee.

Sinonasal Symptom Assessment

Nasal breathing capacity was rated on a 0 to 10 scale, where 0 indicated complete obstruction and 10 represented free nasal breathing. Participants and control subjects were asked to evaluate ease of nasal breathing during sleep, exercise, and rest, with patients undergoing ESS asked to rate breathing ease post-surgery as well. To determine an overall nasal breathing score, six items were scored. Both patients and control subjects completed the Sino-Nasal Outcome Test-22 (SNOT-22) questionnaire, which includes 22 items rated on a scale of 0 to 5 for various sinonasal symptoms [8].

Surgical and Anatomical Considerations

Structural abnormalities linked to inflammatory nasal or sinus conditions were examined, including deviations and perforations of the nasal septum, inferior turbinate hypertrophy, and nasal adhesions. Factors contributing to external valve dysfunction, such as alar

insufficiency and nasal valve narrowing, were assessed. Alar insufficiency, noted when the lateral crura moved medially during inspiration and the Cottle maneuver was positive, indicated dysfunction. Additionally, a cotton ball test and anterior rhinoscopy were conducted to confirm nasal vault narrowing.

Rhinitis and chronic rhinosinusitis (CRS) were diagnosed according to the European Position Paper on Rhinosinusitis and Nasal Polyps (2012). CRS, with or without polyps, was identified by inflammation in the nasal cavity and sinuses, accompanied by symptoms such as nasal blockage, facial pain, pressure, and smell loss persisting for at least 12 weeks. Additional endoscopic findings could include polyps, mucopurulent discharge, or mucosal cavity swelling, sometimes accompanied by CT changes. For allergic rhinitis or rhinosinusitis patients previously untested, skin-prick testing was conducted for common allergens, including various grasses, weeds, and molds [9].

Statistical Methodology

Data analyses were conducted using Microsoft Excel. An ANOVA test compared results between the RP and control groups, with significance determined at $p \leq 0.05$. Data are presented as mean values with standard error.

RESULTS

A total of 155 participants were included in this study, with 100 patients in the Rhinoplasty (RP) group, 30 in the Endoscopic Sinus Surgery (ESS) group, and 25 in the control group. The average age of participants was 32 ± 12 years for the RP group, 43 ± 15 years for the ESS group, and 35 ± 15 years for the control group.

Demographic and Health Characteristics

The demographic and health characteristics across the groups revealed significant differences in age and previous sinus-related surgeries. Patients in the ESS group had a higher history of sinus surgeries compared to the RP and control groups. Allergic tendencies were noted predominantly in the ESS group, with 75% reporting allergies compared to 30% in the RP group and 10% in the control group. Nasal steroid usage was also considerably higher in the ESS group (90%) compared to the RP (25%) and control (2%) groups.

Sinonasal Symptom Scores

The sinonasal symptom scores from the Sino-Nasal Outcome Test-22 (SNOT-22) showed significant variation across the groups. Patients in the ESS group reported higher symptom severity compared to the RP and control groups. The mean SNOT-22 score for the ESS group was significantly elevated, indicating greater severity in sinonasal symptoms, particularly in areas such as nasal obstruction, facial pain, and loss of smell.

Nasal Breathing Scores

Nasal breathing was assessed in terms of comfort across various activities—rest, exercise, and sleep—on a 0 to 10 scale. ESS patients reported significantly lower nasal breathing scores in all conditions compared to the RP and control groups. Post-surgical improvements in breathing were observed in ESS patients, though their scores remained below those of the RP group.

Statistical Significance

Statistical analysis confirmed significant differences between the groups, particularly between the

ESS and control groups, in terms of sinonasal symptoms and nasal breathing scores. The RP group exhibited fewer severe symptoms and better nasal breathing scores than the ESS group but showed a notable proportion with prior surgical interventions such as septoplasty or rhinoplasty.

These findings highlight the more severe sinonasal symptomatology in patients undergoing ESS compared to those in the RP and control groups. The high use of nasal steroids and the prevalence of reported allergies in the ESS group align with the chronic and obstructive nature of their sinonasal conditions.

Table 1: Characteristics and Health History of Patients Scheduled for ESS and Rhinoplasty.

Demographic Characteristics	Rhinoplasty (n = 100)	ESS (n = 30)	Controls (n = 25)
Age	32 ± 12.18	43 ± 15.64	35 ± 15.33
Gender, male/female	75/25	70/30	50/50
History of sinus surgery	12	70	0
History of septoplasty	18	15	1
History of RP	50	0	0
Nicotine	30	15	25
Patient reported allergy	30	75	10
Asthma	3	5	0
Nasal steroids usage	25	90	2

ESS = Endoscopic Sinus Surgery; RP = Rhinoplasty.

Table 2: Summary of Results by Group.

Characteristics	Rhinoplasty (RP) Group (n = 100)	ESS Group (n = 30)	Control Group (n = 25)
Age	32 ± 12.04	43 ± 15.06	35 ± 15.12
Male/Female (%)	75/25	70/30	50/50
History of Sinus Surgery (%)	12	70	0
History of Septoplasty (%)	18	15	1
Nicotine Use (%)	30	15	25
Allergy Reported (%)	30	75	10
Asthma (%)	3	5	0
Nasal Steroids Use (%)	25	90	2
SNOT-22 Score (Mean ± SD)	10 ± 4.14	25 ± 6.22	8 ± 3.33
Nasal Breathing Score (Rest)	8 ± 2.21	5 ± 3.24	9 ± 1.52
Nasal Breathing Score (Exercise)	7 ± 3.24	4 ± 3.28	8 ± 2.63
Nasal Breathing Score (Sleep)	7 ± 2.22	3 ± 3.37	8 ± 2.64

DISCUSSION

This study compared sinonasal symptom severity, nasal breathing capacity, and demographic characteristics across three groups: patients seeking rhinoplasty (RP), those undergoing endoscopic sinus surgery (ESS), and a control group. The results highlight distinct patterns in sinonasal symptoms and health profiles among these groups, providing insight into the severity and management needs of patients with different sinonasal conditions. Patients in the ESS group demonstrated significantly more severe sinonasal symptoms as measured by the SNOT-22 scores. This

elevated symptom severity was particularly evident in terms of nasal obstruction, facial pain, and loss of smell, which are common in chronic rhinosinusitis and other chronic inflammatory sinonasal conditions. The higher prevalence of allergic history and use of nasal steroids among ESS patients underscores the chronic and obstructive nature of their condition. These findings align with existing research indicating that chronic sinonasal inflammation and structural abnormalities contribute to prolonged sinonasal symptoms and reduced quality of life [10-14].

In contrast, patients in the RP group reported fewer severe symptoms and higher nasal breathing scores, though some did have a history of previous nasal surgery (such as septoplasty) [15,16]. The primary motivation for RP patients was aesthetic alteration of nasal shape rather than symptom relief; however, a notable proportion of RP patients reported improved nasal breathing post-surgery, indicating that aesthetic nasal surgeries may also have functional benefits. Although the control group did not exhibit significant sinonasal issues, mild breathing discomfort was still noted, suggesting that even individuals without major nasal pathology may experience minor, transient sinonasal discomfort, possibly due to environmental or lifestyle factors. Nasal breathing capacity was markedly reduced in the ESS group compared to both the RP and control groups. Reduced nasal breathing scores in ESS patients highlight the significant obstruction and discomfort faced by individuals with chronic rhinosinusitis and other obstructive sinonasal conditions. Post-surgical improvements in breathing scores among ESS patients suggest that surgical intervention can improve nasal airflow; however, their scores remained lower than those in the RP group, suggesting persistent functional limitations despite surgical treatment. This aligns with literature noting that while ESS is effective in reducing symptoms, it may not fully restore breathing capacity, particularly in severe cases with prolonged or recurrent inflammation [17].

CONCLUSION

This study highlights the differing sinonasal symptomatology, health histories, and treatment outcomes in patients undergoing rhinoplasty versus endoscopic sinus surgery, alongside a control group. ESS patients exhibited higher sinonasal symptom scores and lower nasal breathing capacity, which is consistent with the chronic and obstructive nature of their conditions. The elevated allergy prevalence and nasal steroid usage in this group underscore the persistent inflammatory and obstructive pathology in patients requiring ESS. In comparison, RP patients, primarily seeking aesthetic changes, had milder symptoms and a relatively better nasal breathing capacity, though they did report some functional benefits post-surgery. These findings underscore the importance of individualized treatment approaches for sinonasal conditions. Patients with chronic, inflammatory sinonasal conditions may benefit from ESS for symptomatic relief, although persistent functional limitations may remain. In contrast, individuals seeking rhinoplasty may experience aesthetic and functional benefits, even if symptom relief is not the primary objective. Future research could further investigate the long-term outcomes of ESS and RP in terms of both symptom relief and quality of life, as well as explore additional interventions that could enhance nasal breathing capacity and overall patient satisfaction across various sinonasal conditions.

REFERENCES:

1. Yu, K., Kim, A., & Pearlman, S. J. (2010). Functional and aesthetic concerns of patients seeking revision rhinoplasty. *Archives of Facial Plastic Surgery*, 12(4), 291–297.
2. Foda, H. M. (2005). Rhinoplasty for the multiply revised nose. *American Journal of Otolaryngology*, 26(1), 28–34.
3. Thomson, C., & Mendelsohn, M. (2007). Reducing the incidence of revision rhinoplasty. *Journal of Otolaryngology*, 36(3), 130–134.
4. Hellings, P. W., & Nolst Trenité, G. J. (2007). Long-term patient satisfaction after revision rhinoplasty. *Laryngoscope*, 117(6), 985–989.
5. Grymer, L. F. (1995). Reduction rhinoplasty and nasal patency: Change in the cross-sectional area of the nose evaluated by acoustic rhinometry. *Laryngoscope*, 105(4), 429–431.
6. Rhee, J. S., Poetker, D. M., Smith, T. L., et al. (2005). Nasal valve surgery improves disease-specific quality of life. *Laryngoscope*, 115(3), 437–440.
7. Becker, D. G., Ransom, E., Guy, C., & Bloom, J. (2010). Surgical treatment of nasal obstruction in rhinoplasty. *Aesthetic Surgery Journal*, 30(3), 347–378.
8. Udaka, T., Suzuki, H., Fujimura, T., et al. (2007). Chronic nasal obstruction causes daytime sleepiness and decreased quality of life even in the absence of snoring. *American Journal of Rhinology*, 21(5), 564–569.
9. Dykewicz, M. S., & Hamilos, D. L. (2010). Rhinitis and sinusitis. *Journal of Allergy and Clinical Immunology*, 125(Suppl 2), S103–S115.
10. Stewart, M., Ferguson, B., & Fromer, L. (2010). Epidemiology and burden of nasal congestion. *International Journal of General Medicine*, 3, 37–45.
11. Shedden, A. (2005). Impact of nasal congestion on quality of life and work productivity in allergic rhinitis: Findings from a large online survey. *Treatments in Respiratory Medicine*, 4(6), 439–446.
12. Hopkins, C., Gillett, S., Slack, R., et al. (2009). Psychometric validity of the 22-item Sinonasal Outcome Test. *Clinical Otolaryngology*, 34(5), 447–454.
13. Guyuron, B., & Bokhari, F. (1996). Patient satisfaction following rhinoplasty. *Aesthetic Plastic Surgery*, 20(2), 153–157.

14. Wallace, D. V., Dykewicz, M. S., Bernstein, D. I., et al. (2008). The diagnosis and management of rhinitis: An updated practice parameter. *Journal of Allergy and Clinical Immunology*, 122(Suppl 2), S1–S84.
15. Fokkens, W. J., Lund, V. J., Mullol, J., et al. (2012). European position paper on rhinosinusitis and nasal polyps 2012. *Rhinology*, 50(Suppl 23), 1–289.
16. Bauchau, V., & Durham, S. R. (2004). Prevalence and rate of diagnosis of allergic rhinitis in Europe. *European Respiratory Journal*, 24(5), 758–764.
17. Hens, G., Vanaudenaerde, B. M., Bullens, D. M., et al. (2008). Sinonasal pathology in nonallergic asthma and COPD: "United airway disease" beyond the scope of allergy. *Allergy*, 63(3), 261–267.

Cite this article:

Dr. Maddali V. Lakshmi Prathusha. Comprehensive Rhinoplasty: Integrating Aesthetic Goals With Functional Assessment To Enhance Patient Outcomes And Satisfaction. *American Journal of Oral Medicine and Radiology*, 2022, 9(2), 35-39.



Attribution-NonCommercial-NoDerivatives 4.0 International