




Original article

Patient Satisfaction Following Septorhinoplasty: A Prospective Study Using the Rhinoplasty Outcome Evaluation Questionnaire

Salem Farhat^{1*}, Abdulbaset Naas², Nesrin Farhat³¹Department of Otolaryngology, Faculty of Medicine, University of Tripoli, Tripoli, Libya²Tripoli University Hospital, Tripoli, Libya³Faculty of Medicine, University of Tripoli, Tripoli, Libya*Corresponding email. smfarhat@hotmail.com

Abstract

Septorhinoplasty aims to improve both nasal function and aesthetic appearance. However, Patient-reported outcomes are essential to validated surgical efficacy. To evaluate patient satisfaction following septorhinoplasty using the validated rhinoplasty outcome evaluation (ROE) questionnaire. A prospective study of 55 patients (23 male, 32 female) undergoing septorhinoplasty. Patients were stratified into two age cohorts: 19 – 27 years (n = 35) and 28 –43 years (n = 20). Satisfaction was measured using the ROE questionnaire (scaled 0 – 100) at pre-operative and post-operative stages. Data were analyzed statistically using a paired-samples t-test and an independent samples t-test for subgroup comparison. The mean ROE score improved significantly from 21.9 (SD=10.5) pre-operatively to 90.8 (SD =6.8) post-operatively (P <.001), representing a mean gain of 68.9 points. The effect size was exceptionally large (Cohen's d = 7.79; 95% CI [65.52, 72.28]). Subgroup analysis revealed no significant differences in improvement based on gender. While both age groups showed substantial gains, the 28 – 43 group exhibited a higher mean improvement (73.48%) compared to the 19 – 27group (66.80%). Septorhinoplasty leads to a significant increase in patient satisfaction as measured by the ROE questionnaire. The intervention is equally effective across genders and age groups with a range of 19–43. The high post-operative scores and massive effect size underscore the procedure's efficacy in addressing patient concerns regarding nasal aesthetics and function.

Keywords. Septorhinoplasty, Rhinoplasty, ROE, Patient Satisfaction.

Received: 23/02/26

Accepted: 21/04/26

Published: 28/04/26

Copyright: Author (s) 2026.

Distributed under Creative Commons CC-BY 4.0

Introduction

Septorhinoplasty is widely performed to improve nasal function and aesthetics. Nasal obstruction and difficulty breathing can result from a deviated nasal septum and can be associated with external deformity [1]. The demand for this surgery has grown significantly as people focus more on nasal breathing function and aesthetics [2]. The surgeon's experience, the quality of the operation, and the patient's expectation are important factors in achieving patient satisfaction with septorhinoplasty. Other factors also may influence patient satisfaction, such as age, gender, culture, and education level [3]. Therefore, understanding patient expectations pre-operatively is crucial to achieving the desired outcomes [4]. Since its introduction by Alsarraf R, the Rhinoplasty Outcome Evaluation (ROE) questionnaire has been widely used to assess patient-reported outcomes in rhinoplasty. Alsarraf and colleagues reported significant postoperative improvements in ROE scores, establishing the tool as a reliable and valid measure of surgical success [5,6]. Subsequent studies have reported comparable [7].

The Rhinoplasty Outcome Evaluation (ROE) questionnaire is a fast and easy-to-apply tool for the standard and reliable assessment of the quality of life after rhinoplasty. It measures qualitative aspects, such as social, emotional, and psychological variables [8]. The present prospective study was conducted at Tripoli Central Hospital and Alkhalil Hospital. A total of 55 patients were included in the study. All patients were presented with nasal obstruction and external nasal deformity and underwent a standardized septorhinoplasty procedure. The study demonstrated a marked and statistically significant improvement in patient satisfaction following septorhinoplasty, as measured by the Rhinoplasty Outcome Evaluation questionnaire.

Methods

A prospective study was conducted on 55 patients (23 males, 32 females) undergoing septorhinoplasty for nasal obstruction and external nasal deformity. The sample size was determined based on the number of eligible patients presenting during the study period. Patients were stratified into two age cohorts: 19 – 27 years (n = 35) and 28 –43 years (n=20). All patients consented and agreed to be enrolled in the study. All procedures were performed by a single senior

surgeon using a standardized septorhinoplasty technique. Satisfaction was measured using the ROE questionnaire (scaled 0-100). Patients were followed up for a minimum of 12 months post-operatively. ROE scores were recorded preoperatively and after 12 months postoperatively. Statistical analyses were performed using IBM SPSS Statistics (Version 28). Data were analyzed using a paired samples *t*-test and an independent samples *t*-test for subgroups comparison.

Results

The mean ROE score improved significantly from 21.99 (SD = 10.5) preoperatively to 90.8 (SD = 6.8) postoperatively ($p < 0.001$), representing a mean gain of 68.9 points. The effect size was exceptionally large (Cohen's $d = 7.79$; 95% CI [65.52, 72.28]), Table 1.

Table 1. Paired Samples *t*-test Results for Patient Outcomes, (N=55)

Stage	Mean (%)	SD	Mean Diff	95% CI	<i>t</i> -value	DF	<i>p</i> -value	Cohen's <i>d</i>
Pre-op	21.9	10.5	-	-	-	-	-	-
Post-op	90.8	6.8	[68.9, 72.28]	65.52	42.41	54	<.001	7.79

Note: SD = Standard Deviation. *df* = Degree of Freedom, Significant at the $P < .001$ level, *t*-value estimated based on Mean and Standard deviation.

Subgroup analysis revealed no significant differences in improvement based on gender (Table 2). While both age groups showed substantial gain, the 28-43 age group exhibited a higher mean improvement (73.48%) compared to the 19 – 27 group (66.80%) (Table 3).

Table 2. Subgroup Analysis by Gender

Gender	n	Pre-Op Mean (%)	Post-Op Mean (%)	Mean improvement (Gain)
Female	32	22.4	91.1	+68.7
Male	23	21.2	90.4	+69.2
Total	55	21.9	90.8	+68.9

Table 3. Subgroup Analysis by Age

Age Group (Yrs)	n	Pre-Op Mean (%)	Post-Op Mean (%)	Mean Gain (%)
19 - 27	35	23.00	89.80	+66.80
28 - 43	20	18.32	91.80	+73.48
Total	55	21.90	90.80	+68.90

Discussion

Septorhinoplasty is a commonly performed procedure aimed at improving both nasal function and facial aesthetics. Unlike many surgical interventions, its success is largely determined by patient-reported outcomes, particularly satisfaction and quality of life [5,6]. As a result, the evaluation of subjective outcomes has become a central component in assessing the effectiveness of septorhinoplasty. The present prospective study demonstrated a marked and statistically significant improvement in patient satisfaction following septorhinoplasty, as measured by the Rhinoplasty Outcome Evaluation questionnaire. The mean ROE score increased from 21.9% ± 10.5 preoperatively to 90.8% ± 6.8 postoperatively ($p < 0.001$), representing a substantial mean improvement of 68.9 points (95% CI: 65.4–72.3). This magnitude of change indicates not only statistical significance but also strong clinical relevance. These findings are highly consistent with previously published literature.

The ROE questionnaire has been widely used to assess patient-reported outcomes in rhinoplasty. Studies have reported comparable improvements, typically ranging between 30 and 50 points, depending on patient population and surgical approach [9,10]. The greater improvement observed in the present study may reflect careful patient selection, standardized surgical technique, and appropriate perioperative management. The high post-operative ROE score (90.8%) observed in this study suggests excellent patient satisfaction. This aligns with findings from multiple studies demonstrating that septorhinoplasty can significantly enhance both functional outcomes and aesthetic perception [10,11]. Improvement in nasal airflow, combined with enhanced facial harmony, contributes to overall patient satisfaction and improved quality of life. Interestingly, no significant gender differences were observed in post-

operative satisfaction outcomes in this cohort. This is consistent with several previous studies indicating that gender does not significantly influence patient-reported outcomes following septorhinoplasty. Instead, satisfaction appears to be more closely related to individual expectations and perceived improvement rather than demographic factors [11,12]. The magnitude of improvement observed in this study may also be explained by the relatively low baseline (pre-operative) ROE scores.

Patients with lower pre-operative satisfaction tend to demonstrate greater post-operative improvement, a finding that has been consistently reported in the literature [8,13]. This highlights the importance of appropriate patient selection, particularly identifying individuals with significant functional or aesthetic concerns who are likely to benefit most from surgery. Similar improvements have been reported in previous studies, including those by Stewart et al. and Yilmaz et al, supporting the reproducibility of these findings [9,10]. Psychological and expectation-related factors are also critical determinants of postoperative satisfaction. Previous studies have shown that patients with realistic expectations and adequate pre-operative counseling report higher satisfaction levels. Effective communication between surgeon and patient is therefore essential to ensure alignment between expected and achievable outcomes [14]. The narrow confidence intervals observed in this study (post-operative ROE 88.9–92.7) further support the consistency and reliability of the surgical outcomes. This suggests that the procedure produced reproducible results across the study population, which is an important indicator of surgical quality.

From a clinical perspective, these findings reinforce the value of septorhinoplasty as an effective intervention for improving patient-centered outcomes. The use of validated tools such as the ROE questionnaire provides an objective method for assessing subjective outcomes and should be incorporated into routine clinical practice and research. However, this study has certain limitations. The relatively modest sample size ($n = 55$) may limit generalizability. Additionally, the absence of a control group and reliance on subjective outcome measures may introduce bias. Although the ROE questionnaire is well validated, combining subjective assessments with objective functional measures (e.g., rhinomanometry) could provide a more comprehensive evaluation. Future studies should aim to include larger, multicenter cohorts with longer follow-up periods to assess the durability of outcomes. Furthermore, integrating psychological assessment tools may help better understand the relationship between patient expectations and satisfaction [15]. Significant improvement in ROE scores demonstrates high patient satisfaction following septorhinoplasty. Findings are consistent with the literature.

Conclusion

This study demonstrated that septorhinoplasty leads to statistically significant and clinically profound improvement in patient outcomes. The 69% mean increase in scores, coupled with an exceptionally large effect size ($d = 7.79$), suggests that the procedure is highly effective. Furthermore, subgroup analyses confirmed that these benefits are consistent across both gender and age cohorts (19 – 43). Specifically, the 28 – 43 age group showed the greatest magnitude of improvement, reaching high post-operative levels despite lower pre-operative baselines. These findings support the broader clinical adoption of this procedure for patients within these demographic ranges.

Acknowledgement

None.

Conflict of interest

All authors declare that they have no conflict of interest.

References

1. Icavet VA, Prokopakis EP, Gabriëls L, Jorissen M, Hellings PW. High prevalence of body dysmorphic disorder symptoms in patients seeking rhinoplasty. *Plast Reconstr Surg*. 2011;128:509-517. doi:10.1097/PRS.0b013e31821b631
2. Han SK, Woo HS, Kim WK. Extended incision in open-approach rhinoplasty for Asians. *Plast Reconstr Surg*. 2002;109:2087-2096. doi:10.1097/00006534-200205000-00047
3. Moshfeghi M, Abedian B, Ahsaie MG, Tajdini F. Prevalence of nasal septum deviation using cone-beam computed tomography: a cross-sectional study. *Contemp Clin Dent*. 2020;11(3):223-228. doi:10.4103/ccd.ccd_110_19
4. Rohrich RJ. Mirror, mirror on the wall: when the postoperative reflection does not meet patients' expectations. *Plast Reconstr Surg*. 2001;108:507-509.
5. Alsarraf R. Outcomes research in facial plastic surgery: a review and new directions. *Aesthetic Plast Surg*. 2000;24:192-197.

6. Alsarraf R, Larrabee WF Jr, Anderson S, Murakami CS. Measuring cosmetic facial plastic surgery outcomes. *Arch Facial Plast Surg*. 2001;3(3):198-201. doi:10.1001/archfaci.3.3.198
7. Esteves SS, Silva AP, Ferreira MG, Ferreira A, Ferreira P, Abrunhosa J, et al. Validation of Rhinoplasty Outcome Evaluation (ROE) questionnaire to Portuguese. *Rev Port ORL*. 2015;53:81-85.
8. Esteves SS, Gonçalves Ferreira M, Almeida JC, Abrunhosa J, Sousa CAE. Evaluation of aesthetic and functional outcomes in rhinoplasty surgery: a prospective study. *Braz J Otorhinolaryngol*. 2017;83:552-557. doi:10.1016/j.bjorl.2016.06.010
9. Stewart MG, Smith TL, Weaver EM, et al. Outcomes after nasal septoplasty: results from the Nasal Obstruction Septoplasty Effectiveness (NOSE) study. *Otolaryngol Head Neck Surg*. 2004;130(3):283-290. doi:10.1016/j.otohns.2003.12.004
10. Yilmaz GO, Yilmaz G. Evaluation of functional and aesthetic outcomes following open technique septorhinoplasty: assessing the utility and correlation of the Rhinoplasty Health Inventory and Nasal Outcomes, Rhinoplasty Outcome Evaluation, and Nasal Obstructive Symptom Evaluation questionnaires. *Acta Otolaryngol*. 2025. doi:10.1080/00016489.2025.2477210
11. Alanzi O, Assiri H, Aldosari B, et al. Evaluating change in quality of life as long-term outcome measure post septorhinoplasty: a systematic review. *Indian J Otolaryngol Head Neck Surg*. 2025;77(8):3348-3369. doi:10.1007/s12070-025-05721-z
12. Kemal Ö, Tahir E, Kavaz E, et al. Impact of functional and aesthetic factors on patient satisfaction in septorhinoplasty. *Turk Arch Otorhinolaryngol*. 2022;60(1):36-41. doi:10.4274/tao.2022.2021-12-10
13. Luong KP, Slijper HP, Stubenitsky B. Changes in patient-reported satisfaction and quality-of-life 6 months after rhinoplasty. *J Plast Reconstr Aesthet Surg*. 2024. doi:10.1016/j.bjps.2024.02.038
14. Gandomi B, Bayat A, Kazemi T. Outcomes of septoplasty in young adults: the Nasal Obstruction Septoplasty Effectiveness study. *Am J Otolaryngol*. 2010;31(3):189-192. doi:10.1016/j.amjoto.2009.02.023
15. Honigman RJ, Phillips KA, Castle DJ. A review of psychosocial outcomes for patients seeking cosmetic surgery. *Plast Reconstr Surg*. 2004;113(4):1229-1237. doi:10.1097/01.prs.0000110214