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Original article

Study of Impact of Septoplasty on Quality of Life in Patients with Septal Deviation: A Prospective Study

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Abstract:

Background: Nasal septal deviation is a common anatomical variation that can lead to significant impairment in nasal airflow and quality of life. Septoplasty is a surgical procedure aimed at correcting septal deviation to alleviate symptoms and improve nasal function.

Methods: A prospective study was conducted over a one-year period, involving 60 patients with septal deviation who underwent septoplasty. Pre- and post-operative assessments included subjective quality of life measures (Rhinoplasty Outcome Evaluation [ROE] questionnaire, 36-item Short Form Health Survey [SF-36]), objective measures of nasal function (acoustic rhinometry, peak nasal inspiratory flow [PNIF]), and nasal obstruction symptom evaluation (NOSE) scale.

Results: Septoplasty resulted in significant improvements in subjective quality of life measures, as evidenced by increased ROE and SF-36 scores post-operatively. Objective measures of nasal function also showed improvement, with increased nasal volume and airflow post-septoplasty. These improvements were sustained over the one-year follow-up period.

Conclusion: Septoplasty is an effective treatment option for patients with septal deviation, leading to improvements in both subjective quality of life measures and objective measures of nasal function.

Keywords: Septoplasty, Septal deviation, Quality of life.

Introduction:

Nasal septal deviation is a common anatomical variation affecting the nasal cavity, often leading to significant impairment in nasal airflow and quality of life for affected individuals.(1) Septoplasty, a surgical procedure aimed at correcting septal deviation, has been widely adopted as a treatment modality to alleviate symptoms and improve nasal function. While the technical success of septoplasty is well-documented, its impact on patients' quality of life remains a topic of ongoing research and clinical interest.(2) Our prospective study aims to systematically investigate the effects of septoplasty on the quality of life in patients with septal deviation. By employing standardized assessment tools and longitudinal follow-up, we seek to elucidate the subjective experiences and functional outcomes associated with this surgical intervention. Understanding the holistic impact of septoplasty on patients' well-being is crucial for optimizing clinical management strategies and enhancing patient satisfaction.(3)

Methodology:

The study involved the recruitment of 60 participants diagnosed with septal deviation who met the inclusion criteria. Patients were consecutively enrolled from the Otolaryngology Department over period of one year.

Sample size was estimated with the help of online estimation calculator. Patients were selected using random sampling technique. Upon enrollment, each participant underwent a comprehensive pre-

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operative evaluation, including nasal endoscopy and objective assessments of nasal obstruction using validated tools such as the Nasal Obstruction Symptom Evaluation (NOSE) scale. Baseline demographic data, medical history, and subjective quality of life measures were also recorded.

Following the pre-operative assessment, all participants underwent septoplasty performed by experienced otolaryngologists using standardized surgical techniques. Post-operative care and follow-up visits were scheduled according to established protocols, with assessments conducted at regular intervals (e.g., 1 week, 1 month, 3 months, 6 months, and 12 months post-surgery).

At each follow-up visit, participants underwent clinical examination, nasal endoscopy, and completion of standardized quality of life questionnaires, such as the Rhinoplasty Outcome Evaluation (ROE) questionnaire and the 36-item Short Form Health Survey (SF-36). Objective measures of nasal airflow and obstruction were also assessed using acoustic rhinometry and peak nasal inspiratory flow (PNIF) measurements.

Data collection was completed for all participants within the one-year study duration, and statistical analyses were performed to evaluate changes in quality of life outcomes pre- and post-septoplasty.

Results:

Table 1: Demographic Characteristics of Study Participants

Variable	Mean ± SD / n (%)
Age (years)	38.5 ± 9.2
Gender	
- Male	35 (58.3%)
- Female	25 (41.7%)
Body Mass Index (BMI)	25.7 ± 3.6
Smoking Status	
- Non-smoker	45 (75.0%)
- Smoker	15 (25.0%)

The study enrolled 60 participants with septal deviation, with a mean age of 38.5 years (SD = 9.2). Gender distribution among the participants showed a slight predominance of males, comprising 58.3% (n = 35), while females accounted for 41.7% (n = 25). The mean Body Mass Index (BMI) of the cohort was 25.7 (SD = 3.6), indicating a predominantly normal weight status. In terms of smoking status, the majority of participants were non-smokers, constituting 75.0% (n = 45) of the sample, while smokers comprised 25.0% (n = 15).

Table 2: Pre-operative Nasal Obstruction Symptom Evaluation (NOSE) Scores

NOSE Score	Mean ± SD
Pre-operative	65.8 ± 12.6

The mean pre-operative Nasal Obstruction Symptom Evaluation (NOSE) score was 65.8 ± 12.6, indicating a moderate to severe level of nasal obstruction symptoms among the study participants prior to undergoing septoplasty.

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Table 3: Quality of Life Measures Pre- and Post-Septoplasty

Time Point	Rhinoplasty Outcome Evaluation (ROE) Score	SF-36 Physical Component Score	SF-36 Mental Component Score
Pre-operative	45.6 ± 8.3	48.7 ± 6.9	50.2 ± 7.5
Post-operative	82.4 ± 10.1	68.3 ± 9.2	72.9 ± 8.7

The table presents the quality of life measures, including the Rhinoplasty Outcome Evaluation (ROE) score, the SF-36 Physical Component Score, and the SF-36 Mental Component Score, both pre- and post-septoplasty. Significant improvements are observed in all measures following septoplasty, indicating enhanced quality of life outcomes among the study participants.

Table 4: Objective Measures of Nasal Function Pre- and Post-Septoplasty

Measure	Pre-operative Mean ± SD	Post-operative Mean ± SD
Acoustic Rhinometry (cm^3)	1.25 ± 0.18	2.40 ± 0.31
Peak Nasal Inspiratory Flow (L/min)	38.7 ± 5.6	54.2 ± 6.8

The table presents objective measures of nasal function, including acoustic rhinometry (in cubic centimeters) and peak nasal inspiratory flow (in liters per minute), both pre- and post-septoplasty. Significant improvements are observed in both measures following septoplasty, indicating enhanced nasal airflow and patency among the study participants.

Discussion

The findings of this prospective study shed light on the impact of septoplasty on the quality of life and nasal function in patients with septal deviation. Our results demonstrate significant improvements in both subjective quality of life measures and objective measures of nasal function following septoplasty. These findings have important implications for clinical practice and patient care.(5,6)

One of the key observations from our study is the substantial improvement in subjective quality of life measures following septoplasty. The Rhinoplasty Outcome Evaluation (ROE) scores showed a remarkable increase from a mean of 45.6 pre-operatively to 82.4 post-operatively. This dramatic improvement reflects the tangible benefits experienced by patients in terms of symptom relief, nasal airflow, and overall satisfaction with the surgical outcome. Similarly, the SF-36 scores revealed notable enhancements in both the physical and mental components of quality of life post-septoplasty. These findings corroborate previous research highlighting the positive impact of septoplasty on patient-reported outcomes and underscore the importance of addressing nasal obstruction to improve overall well-being.(7)

Furthermore, our study adds to the existing literature by providing objective evidence of improved nasal function following septoplasty. Acoustic rhinometry measurements demonstrated a significant increase in nasal volume post-operatively, indicating a widening of the nasal airway and reduction in obstruction. Similarly, peak nasal inspiratory flow (PNIF) measurements showed a substantial improvement in nasal airflow post-septoplasty. These objective findings complement the subjective reports of symptom relief and support the efficacy of septoplasty in restoring nasal function.

The observed improvements in both subjective and objective measures of nasal function highlight the multidimensional benefits of septoplasty beyond mere symptom relief. By addressing the underlying anatomical deformity and restoring nasal anatomy, septoplasty not only alleviates nasal obstruction but

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also enhances airflow dynamics, nasal patency, and overall nasal physiology. This comprehensive improvement in nasal function is crucial for optimizing respiratory function, sleep quality, and physical activity levels, thereby contributing to a better quality of life for affected individuals.

It is noteworthy that the benefits of septoplasty extend beyond immediate post-operative outcomes and are sustained over the long term. While our study assessed patients up to 12 months post-surgery, previous research has demonstrated the durability of septoplasty outcomes up to several years following surgery. Longitudinal studies with extended follow-up periods have shown persistent improvements in nasal function, quality of life, and patient satisfaction, reaffirming septoplasty as a durable and effective treatment option for septal deviation.

However, it is essential to acknowledge the limitations of our study and interpret the findings within this context. Firstly, the study design was prospective in nature, but lacked a control group for comparison. While the within-subject comparison pre- and post-septoplasty provides valuable insights into the efficacy of the intervention, future studies incorporating randomized controlled trials could further strengthen the evidence base. Additionally, the sample size of 60 participants may limit the generalizability of our findings, and larger-scale studies involving diverse patient populations are warranted to validate the observed outcomes.(9)

Furthermore, the subjective nature of quality of life measures introduces the potential for bias in self-reported assessments. Although standardized questionnaires such as the ROE and SF-36 are widely used and validated tools, the interpretation of results may be influenced by individual perceptions and expectations. Future studies could consider incorporating objective measures of quality of life, such as productivity indices or activity levels, to complement self-reported outcomes and provide a more comprehensive evaluation.

Conclusion:

In conclusion, our study contributes to the growing body of evidence supporting the efficacy of septoplasty in improving quality of life and nasal function in patients with septal deviation. The significant improvements observed in subjective quality of life measures, objective measures of nasal function, and long-term durability of outcomes underscore the importance of septoplasty as a valuable therapeutic intervention. Moving forward, continued research efforts focused on refining surgical techniques, optimizing patient selection criteria, and exploring adjunctive therapies will further enhance the effectiveness of septoplasty and improve outcomes for individuals with septal deviation.

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