Assessing quality of life in septorhinoplasty patients with two different instruments

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Abstract. Assessing quality of life in septorhinoplasty patients with two different instruments. Objective: Quality of life (QOL) assessment in patients with nasal obstruction has not been well studied. The main objectives of this study were to determine the QOL of patients after septorhinoplasty, to measure the efficacy of septorhinoplasty with a validated quality-of-life instrument – the Nasal Obstructive Symptoms Evaluation (NOSE) scale – and with the Glasgow Benefit Inventory (GBI) QOL scores comprising patient assessments of nasal function.

Patients and methods: The patient population consisted of a consecutive series of 50 patients who underwent septorhinoplasty at the ages of 18 to 48 years between 2009 and 2011. Quality of life was assessed with the NOSE scale (pre- and postoperatively) and with GBI scores (postoperatively). Demographic data, along with patient assessments of nasal obstruction with a linear analogue scale, were recorded.

Results: The mean patient age was 28.3 ± 14.6 years (age range, 18-48 years). Twenty-eight patients were male (56%) and 22 (44%) were women. Evaluation of each of the 5 items on the NOSE scale individually revealed that patients experienced improvement in all areas. In this study, there was a statistically significant fall in all five parameters (p = 0.000 <0.05). The mean total GBI score was 34.89 ± 22.53 and the mean general subscale score was 38.25 ± 24.31. The mean social support score was 19.67 ± 33.79 and the mean physical health score was 36.67 ± 27.97. Each patient had improved QOL scores on the GBI and NOSE scales (P<0.05).

Conclusions: This study found improved QOL after rhinoplasty in Turkish adult patients. With proper pre-operative assessment and selection, excellent functional and psychosocial outcomes can be expected. NOSE and GBI are valuable tools for the assessment of benefit from nasal septal surgery for nasal obstruction and may be applicable in clinical practice.

Introduction

Septorhinoplasty is facial plastic surgery that is used for cosmetic purposes and reconstruction. Nasal obstruction and deformation are the most common complaints of patients in otolaryngology and facial plastic surgery practices. Nasal deformity leads to devastating psychological problems, mostly in younger people. The ideal septorhinoplasty should improve cosmetic appearance whilst preserving nasal function. Although frequently used, functional septorhinoplasty is a difficult procedure for patients and surgeons. This is a troubling problem given the necessity of objective measurement as a fundamental component of clinical investigation and evidence-based medicine.

In all fields of medicine, there has been a growing awareness of the importance of health-related quality of life (QOL) in the assessment of disease processes and their management. This is based on the assumption that the impact of disease on patients includes impairment of their well-being or aspects of life that are considered important. An improvement in the areas of a patient’s life affected by the disease, the disease-specific QOL, becomes the primary goal of treatment. There is no ideal disease-specific QOL instrument designed for nasal shape and function.

Several studies have attempted to measure outcome after septoplasty or rhinoplasty, or both, using quantitative techniques such as rhinomanometry, acoustic rhinometry and nasal peak flow as ways of objectively measuring the severity of nasal obstruction and changes associated with treatment. However, these measures often do not correlate with patients’ perceptions of obstruction.

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We have aimed to evaluate the functional effects of age, gender and personal differences on changes in QOL.

Patients and methods

The study was conducted with 50 patients who underwent septorhinoplasty at the Istanbul Education and Research Hospital ENT Department between 2009 and 2011, with approval from the Human Subjects Committee. Patients with a previous history of rhinoplasty or septoplasty were excluded from the study. Patients were aged 18 or over. Further inclusion criteria for this study were: no history of nasal trauma or surgery in the previous year, symptoms of nasal obstruction lasting at least one year as the result of an identifiable anatomical cause such as septal deviation, internal valve collapse, or external valve collapse. Pre-operative images were taken in all patients from seven different angles: right and left oblique, lateral, frontal, basal and cross-view. Facial analysis was performed. Nasal examinations were conducted routinely and all pathologies were recorded. All procedures were open (n = 34) and closed (n = 16) septorhinoplasties under general anaesthesia (GA). Patients were asked to return for follow-up between 6 and 24 months postoperatively. The mean follow-up period (between surgery and postoperative questionnaire administration) was 18 months.

The Nasal Obstructive Symptoms Evaluation (NOSE) scale and the Glasgow Benefit Inventory (GBI) questionnaire for the assessment of septorhinoplasty outcomes were adapted to Turkish people and used for this study. All patients completed a NOSE questionnaire before and after surgery for the purposes of assessing septorhinoplasty. All patients also completed a GBI questionnaire after surgery. Before and after surgery, nasal obstruction and indirect changes of QOL were evaluated using nasal obstructive symptoms evaluation scales.

The NOSE scale was used to assess disease-specific QOL. It ranges from 0 to 100, with higher scores indicating more severe nasal obstruction. The NOSE scale was scored as 0 = 0, 1 = 25, 2 = 50, 3 = 75, 4 = 100 points. Baseline NOSE scores were obtained during a pre-operative consultation and follow-up NOSE scores were obtained during postoperative consultations.

The GBI questionnaire contained 18 questions based on a 5-point Likert scale ranging from high health status to low health status intended to identify the patient benefit from an intervention. To obtain additional information about the change experienced by the patient, the GBI contains three subscales measuring general benefit (12 questions), social support (3 questions), and physical health status (3 questions). Factor analysis of the overall pattern of responses was used to identify the underlying relationship between questions, which, in turn, was used to generate the three subscales. The GBI was used to assess the potential improvement in health status experienced by septorhinoplasty patients.

The study hypothesis was that functional septorhinoplasty improves disease-specific QOL (such as nasal obstruction symptoms) measured postoperatively. As part of the same questionnaire, patients were asked to indicate the severity of their nasal obstruction on a visual analogue scale (Figure 1). The results were converted to numerical scores ranging from 0 to 10, with 10 representing the most severe obstructive symptoms.

Statistical analysis

A total of 50 rhinoplasty patients were identified as eligible for the study between 2009 and 2011. All 50 patients were successfully contacted and volunteered to participate in the study. Patients were invited to attend a consultation at least 6 to 24 months postoperatively. However, patients unable to attend on a specific date were seen at their convenience. The data obtained were analysed by a blinded statistician using SPSS statistical software. Statistical analyses were carried out with Chi-square testing, and averages were compared using the Mann-Whitney U test and the Kruskal-Wallis test. The pre-operative and postoperative evaluations of patients by analysis of variance were compared with repeated measures. Differences were considered significant when there was a 95% confidence interval.

Results

This study evaluated 50 patients with nasal deformities and nasal obstruction. The mean patient age was 28.3 ± 14.6 years (age range, 18-48 years). Twenty-eight patients were male (56%) and 22 (44%) female. There was no statistically significant difference between the male and female rates (p = 0.369 >0.05). There was no statistically
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The severity of their nasal obstruction on the NOSE scale (Figure 2).

The individual evaluation of each of the five items on the NOSE scale revealed that patients experienced improvement in all areas. In this study,

significant difference between the mean ages of males (29.5 ± 16.4) and females (26.7 ± 11.2) (p = 0.268 >0.05).

Each patient was asked during the pre-operative and postoperative consultations to indicate the severity of their nasal obstruction on the NOSE scale (Figure 2).
there was a statistically significant fall in all of the five parameters (p = 0.000 <0.05).

The pre-operative values for nasal congestion or stuffiness (80.5 ± 35.41) changed postoperatively (19.0 ± 27.77).

Pre-operative nasal blockage or obstruction values (76.5 ± 39.65) changed postoperatively (7.0 ± 26.8).

The pre-operative values for difficulty in nasal breathing (85.0 ± 49.49) changed postoperatively (9.0 ± 24.24).

The pre-operative values for trouble with sleeping (76.0 ± 37.74) changed postoperatively (2.5 ± 15.5).

The pre-operative values for being unable to get enough air through the nose during exercise or exertion (41.5 ± 65.94) changed postoperatively (5.5 ± 20.92) (Figure 2). Mean NOSE scores were lower in all patients who underwent functional septorhinoplasty.

The question relating to “difficulty with nasal breathing” was answered pre-operatively by the patients, who were asked to state numerical scores ranging from 0 to 10. The average of the results was 6.56 ± 2.18 points.

The mean total GBI score was 34.89 ± 22.53 and the mean general subscale score was 38.25 ± 24.31. The mean social support score was 19.67 ± 33.79 and the mean physical health score was 36.67 ± 27.97 (Figure 3).

The general benefit subscale score was 40.91 ± 24.45 for females and 36.16 ± 24.43 for males.

The social support score was 21.21 ± 37.15 for females and 18.45 ± 31.54 for males.

The physical health score was 39.39 ± 20.92 for females and 34.52 ± 27.94 for males.

The mean total GBI score was 37.37 ± 20.87 for females and 32.94 ± 23.95 for males.

There were no significant differences in the total score (p = 0.261 >0.05), the general subscale score (p = 0.357 >0.05), the social support score (p = 0.617 >0.05), or the physical health score (p = 0.219 >0.05) relating to gender and mean age (Figure 4).

The results of the GBI questionnaire for the assessment of septorhinoplasty show that there were no statistically significant differences between male and female groups with the exception of the fifth and tenth questions.

In this study, the social support scores were markedly lower than general benefit and physical health scores (p<0.05).

There were no statistically significant differences in general benefit, social support and physical health status related to gender and mean age. Patients between the ages of 40 and 50 benefited most from septorhinoplasty on physical health subscales. Social support sub-scales for these groups were not affected by the surgery. The benefit found in the social support sub-scales was most pronounced in patients between the ages of 30 and 40. Our study showed that septorhinoplasty has a positive effect on two different QOL scales. This finding indicates that septorhinoplasty is a more functional operation for the middle-age population (Figure 5).
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Objective measures have been developed and discussed in the medical literature. However, they tend to concentrate on only one aspect of nasal form or are complicated and cumbersome to administer. Ultimately, their correlation with patient benefits, which is the primary concern, has not been verified.

We simultaneously used two different QOL instruments adapted to Turkish people to conduct a prospective examination of a larger group of patients in order to make a further assessment of the efficacy of septorhinoplasty intervention.

The NOSE scale is a validated, disease-specific, QOL instrument that has been used to measure the effectiveness of septoplasty and turbinate reduction. It was designed for measuring nasal obstruction, and is therefore an ideal instrument for measuring the effectiveness of functional septorhinoplasty.

Discussion

The pre-operative consultation process between the surgeon and patient is essential to establish realistic expectations and goals, and for an exploration of patient motivation, maturity, and support. However, it is not always possible to understand or predict what the outcome will be for every case before the operation. Claes et al. found significant differences between patient and surgeon opinions in the post-operative evaluation of why the results of surgery are positively appreciated.

There is no consensus about the impact of septorhinoplasty on QOL. It is difficult to understand how QOL can change after septorhinoplasty. Reliable objective methods for assessing the results of plastic surgery, and specifically facial plastic surgical procedures, remain elusive. Numerous objective measures have been developed and discussed in the medical literature. However, they tend to concentrate on only one aspect of nasal form or are complicated and cumbersome to administer. Ultimately, their correlation with patient benefits, which is the primary concern, has not been verified.

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techniques. It has been used recently for the prospective examination of the efficacy of specific nasal reconstructive techniques.

Treating nasal obstruction represents a challenge for the septorhinoplasty surgeon. The cause of nasal obstruction is multifactorial. Non-surgical causes of nasal obstruction must first be identified and treated. While retrospective analyses of functional septorhinoplasty have shown some beneficial effects, the efficacy of these techniques has not been examined prospectively with a disease-specific QOL instrument.

Miman et al. attempted prospective studies to measure changes in nasal airflow with quantitative techniques. With pre-operative and postoperative NOSE and postoperative linear scale assessments, Most et al. found significant improvements in QOL in 41 patients who underwent disease-specific rhinoplasty.

Stewart et al. used prospective QOL NOSE scales pre-operatively and 3 months postoperatively, and 6 months postoperatively in 49 patients who underwent septoplasty. They found a statistically significant correlation between the pre-operative results and the results 3 months postoperatively but no significant correlation between the results 3 and 6 months postoperatively. Rhee et al. applied prospective QOL NOSE scales pre-operatively and in the third and sixth postoperative months in 20 patients who underwent nasal valve surgery and functional rhinoplasty. They found a significant correlation between pre-operative findings and the findings in the third and sixth postoperative months; and there was a significant correlation between third-month postoperative findings and sixth-month postoperative findings. These studies are useful because they measure volumetric changes in the nasal cavity but do little to measure the subjective sensation of nasal obstruction or airflow in patients. In our study, all five parameters in the NOSE scale underwent statistically significantly improvements after functional septorhinoplasty.

The GBI was found to be a reliable tool in the retrospective measurement of QOL after surgery and it should result in a more accurate assessment of patient benefit from surgery than either subjective or objective measurements.

Chauhan et al. have reported significant improvements in multiple parameters of the GBI among adolescents patients. The mean total GBI score found was 53.8 in a possible score range of –100 to +100. It suggests a markedly positive result that represents an overall improvement in health status attributable to the rhinoplasty operation. The results of this study with adolescent rhinoplasty patients demonstrated that successful outcomes are indeed achievable. Draper et al. reported on the retrospective measurement of QOL GBI after rhinoplasty in 78 patients. The mean total GBI score was found to be +20. The subscale analysis of the results found higher scores for the general benefit subscale than for the social support and physical health status scales at +25, +10.2 and +9.9 respectively.

Mckierman et al. used GBI scores on the basis of indications in patients who underwent septorhinoplasty (cosmetic, functional, both). The GBI scores of the patients who had the procedure for cosmetic reasons were found to be significantly higher than other groups’ scores.

In our patient series, the mean total GBI score was 34.9. This markedly positive result represents an overall improvement in health status that is attributable to the septorhinoplasty operation.

The subscale analysis of the results shows higher scores for the general benefit subscale than for the social support and physical health status scales (+38.25 vs +19.67 and +36.67 respectively). We usually decided to proceed with surgery in patients suffering from functional nasal problems so our general benefit subscale score is higher than our social support subscale score.

Patient age is an important factor in quality of life. The relation between the mean age of study groups and QOL has been discussed by many other researchers. The mean age in the studies of Robinson et al., Most et al., Draper et al., Klassen et al., Alsarraf et al. and Hern et al. was 36, 41.5, 33, 32.6, 48 and 38 years respectively. In this study, our mean age of 28.3 years and patients between the ages of 40 and 50 benefited most from septorhinoplasty on physical health subscales.

In the study by Most et al. the male/female rates for were 27/41. In addition, male/female rates were 18/27 and 75/96 in the Hern et al. and Robinson et al. studies respectively. We found this rate in 28/22.

The pre-operative consultative process is essential to the establishment of realistic and mutual goals and expectations for patient and surgeon. Detailed and interactive discussions with patients are critical in preventing future misunderstandings and
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determining whether patient expectations are clear and realistic. From this point of view, systematic patient-oriented assessments of the care provided would seem to be a promising approach.

Conclusion

This study showed that successful outcomes are indeed achievable in septorhinoplasty. Lower QOL scores were improved in patients who underwent septorhinoplasty. To confirm this, it may be useful to conduct studies involving larger numbers of patients. The use of prospectively designed studies such as this study should ultimately prove beneficial, both for patients undergoing rhinoplasty and their surgeons. Patients with nasal obstruction demonstrated greater QOL scores than did patients with nasal deformity problems alone. The NOSE scale appears to be a more sensitive instrument for patients with nasal obstruction. Existing quantitative techniques such as rhinomanometry, acoustic rhinometry, and nasal peak flow may lack sensitivity for assessing the QOL of patients with nasal obstruction. Existing general rhinological QOL instruments alone are not sufficient for patients undergoing septorhinoplasty. The complexities involved in managing these patients require two or more QOL instruments to be used at the same time to be confident about the results.

References


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