

Factors Determining Patient Satisfaction in Rhinoplasty: Analysis of 506 cases with Rhinoplasty Outcome Evaluation

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ABSTRACT

Objective: The aim of this study was to assess patients' satisfaction on the basis of their demographic features, postoperative follow-up duration and the surgeon's experience level by using the Rhinoplasty Outcomes Evaluation.

Material and Methods: The study was designed as a retrospective observational study and a total of 506 patients who underwent rhinoplasty were investigated. Rhinoplasty Outcomes Evaluation questionnaire was performed to evaluate patient satisfaction after rhinoplasty operation.

Results: The sample included 255 (50.4%) males and 251(49.6%) females. The mean age of the patients was 27.49 years and the mean follow-up duration was 48.5 months. In the whole study group; the mean Rhinoplasty Outcomes Evaluation score was 69.7. It was observed that the satisfaction scores of the patients who were <30 years old were higher than the scores of those ≥30 years old ($p=0.041$). There was no statistically significant correlation between the ROE score and gender ($p=0.170$). The satisfaction scores were higher in the short-term follow-up group (1-6 months) than the mid-term follow-up group (7-12 months) whereas the scores of the prolonged follow-up group (above 12 months) were the lowest ($p=0.026$). The percentage of the patients who defined their results as unsuccessful was 8.6% and 28.7% respectively in consultant surgeon and resident surgeon groups ($p<0.001$).

Conclusion: Patients' quality of life and satisfaction level might be influenced by some subjective factors such as patient's perception of the pre and post operative appearance, patient's expectations and temperament. We conclude that the Rhinoplasty Outcomes Evaluation questionnaire is a simple and useful tool for evaluating outcomes of rhinoplasty. Young age, experienced surgeon and short follow-up duration are the factors that have positive effects on the satisfaction scores of rhinoplasty patients, while gender does not have a significant effect.

Keywords: Rhinoplasty, patient satisfaction, quality of life, patient reported outcome measures

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INTRODUCTION

Rhinoplasty is one of the world's most frequently performed cosmetic surgical procedures.

Great interest is placed on the surgical methods, various approaches, operative techniques, complications and second-look operations in rhinoplasty. However, very little has been studied about the assessment of the final rhinoplasty result, especially from the patient's viewpoint.

There are many areas in otolaryngology specialty in which outcomes researchers are very popular such as head and neck oncology and sleep disorders discipline. In these subspecialties, outcomes can be measured in terms of hospitalization period, morbidity

and mortality. However in facial plastic surgery, the procedures are generally elective and performed for cosmetic purposes; thus, the outcome should be evaluated on the basis of qualitative measurements. Definitely, the ultimate goal of any aesthetic operation is the satisfaction of patients about their appearance. So, the evaluation of surgical results by the help of self-reported outcomes is very important, especially in plastic surgery [1].

The quality of the surgery, the expertise level of the surgeon and, most importantly, patient's level of expectation are major factors in patient satisfaction. The basis for patient satisfaction may differ

according to the age, gender, and cultural and educational background of the patient [2]. Patient satisfaction also depends on subjective factors such as patient's perception of pre and post operative appearance, and patient's expectations and temperament. Therefore, standardized questionnaires were designed to measure quality of life and self-image. Those are crucial in the assessment of the success of facial plastic operations in that whether it failed to meet the patient's expectations or not. Patient-reported outcomes are increasingly recognized as an important tool in clinical trials and in the process of evaluating the effectiveness of medical procedures. Thus, there is increasing interest in patient-reported outcomes studies in facial plastic surgery.

Alsarraf et al. were the first to create and test a questionnaire with reliability, internal consistency and validity for several plastic surgeries, including rhinoplasty [3]. This questionnaire, the Rhinoplasty Outcomes Evaluation (ROE), allowed measurement of qualitative aspects such as social, emotional and psychological variables. The Alsarraf ROE questionnaire was published in 2001 and it became increasingly popular for rhinoplasty surgery evaluation.

The aim of this study was to evaluate the satisfaction of patients who underwent rhinoplasty in a tertiary centre, by using the ROE questionnaire preoperatively and postoperatively and to determine the factors that influence the degree of patient satisfaction.

MATERIALS and METHODS

This retrospective study was conducted to evaluate patient satisfaction after rhinoplasty operation by using ROE questionnaire. Out of 2037 patients who had undergone rhinoplasty between January 2006 and December 2016; 506 completed the ROE questionnaire. All questionnaires were administered by same author and patients who had primary open technique rhinoplasty and were accessible by telephone and were included in the study. The exclusion criteria were as follows: age under 16, inability to understand the questionnaire, having undergone a revision surgery, closed technique rhinoplasty, concomitant functional endoscopic sinus surgery, or other nasal airway procedure. The medical charts of all patients included in the study were revised for demographic characteristics, experience level of the surgeon and follow-up time after the surgery.

The data was divided into groups according to gender, age (<30, ≥30), experience of the surgeon

(consultant, resident), postoperative follow-up time (1-6 months, 7-12 months, >12 months) and satisfaction scores (<50, 50 to <75, ≥75).

The validated Turkish version of the ROE questionnaire, which is composed of six questions (5 about nose shape and 1 about nasal breathing), was used. Each ROE question was answered on a scale of 0 to 4, where 0 stands for the most negative and 4 for the most positive. The answers to each question were added up and the total was divided by 24 and multiplied by 100 to obtain a result that ranged from 0 to 100 (0 = minimum satisfaction, 100 = maximum satisfaction). The final result was divided into 3 groups according to their quartile: 0 to <50 (no success), 50 to <75 (good), and 75 or more (excellent).

Statistical Analysis

Data analysis was carried out by using IBM SPSS Statistics for Windows Version 20 (Armonk, NY: IBM Corp.) software. Pearson's Chi-squared test was used to compare mean satisfaction scores between different groups. A p value < 0.05 was considered statistically significant. Institutional ethics committee approval was obtained with a number of GO 17/187

RESULTS

The forty female patients and 113 male patients were included in our study group. Mean age of the population was 57 ± 40 years and median age was 60 (range between 17-91). Other baseline characteristics are listed in table 1.

Table 1: ROE scores according to age.

Age	Unsuccessful (<50)	Good (50 to <75)	Excellent (≥75)
<30 years	65 (17.8%)	130 (35.5%)	171 (46.7%)
≥30 years	65 (17.8%)	61 (43.6%)	48 (34.3%)

*Satisfaction scores of the patients who were <30 years old were higher than the ones who were ≥30 years old (p=0.041).

The ninety seven extracted devices were implantable cardiac defibrillator (the number of biventricular devices, dual-chamber and single-chamber ventricular devices were 38, 34 and 25 respectively) and 56 devices were pacemaker (the number of biventricular devices, dual-chamber and single-chamber ventricular devices were 3, 35 and 18 respectively). The mean duration of implanted device 61.1 ± 340 months. Other device characteristics are listed in table 2.

Most common lead extraction causes were lead and/or pocket infection (Figure 2) and lead dysfunction. Both causes were present in 69 patients. Other extraction causes were upgrading pacemaker to ICD, mastectomy on the same side due to malignancy, lead dysfunction and upgrade strategy in 11 patients (7 of them upgraded to CRT-D device and 4 of them upgraded to implantable cardiac defibrillator), 1 patient and 1 patient respectively. 2 patients presented with pocket infection and we realized that there were also lead dysfunction. The total number of extracted leads were 275 (1.85 leads per patient). The total number of extracted atrial leads, ventricular pacemaker leads, ventricular shock leads, and coronary sinus leads was 90,59,93 and 33 respectively. There After inclusion and exclusion criteria were met, 506 patients agreed to respond the questionnaire and participated in this study. The sample was composed of 255 (50.4%) male and 251(49.6%) female patients. The average age of the patients was 27.49 years (range 16-63). The mean follow-up time was 48.5 months (range 1-92 months). The mean satisfaction score was 69.7 (0-100%).

The population was divided into 2 groups according to their age; patients aged less than 30 years (n: 36) and patients who were 30 or older (n: 140). These groups were compared according to their satisfaction scores. Patients who were <30 years scored their satisfaction level as follows: 65 (17.8%) unsuccessful (<50), 130 (35.5%) good (50 to <75) and 171 (%46.7) excellent (≥ 75). On the other hand; patients who were ≥ 30 years old scored their satisfaction level as follows: 31 (%22.1) unsuccessful (<50), 61 (%43.6) good (50 to <75) and 48 (%34.3) excellent (≥ 75). It was observed that the satisfaction scores of the patients who were <30 years old were higher than the ones who were ≥ 30 years old ($p=0.041$) (Table 2). The satisfaction scores were also evaluated in different gender groups. 53 (21.1%) females and 43 males (16.9%) were unhappy with their results. Percentage of the patients who reported excellent outcome was 54% in females and 41.6% in males. There was no statistically significant correlation between the ROE score and gender ($p=0.170$).

The satisfaction scores were higher in the short-term follow-up group (1-6 months) than the mid-term follow-up group (7-12months) whereas the scores of the prolonged follow-up group(above 12 months) were the lowest

Table 2: ROE scores according to follow-up duration.

Follow-up period	Unsuccessful (<50)	Good (50 to <75)	Excellent (≥ 75)
Early	1 (3%)	12 (36.4%)	20 (60.4%)
Mid	5 (11.4%)	15 (34.1%)	24 (54.5%)
Late	90 (21.0%)	164 (38.2%)	175 (40.8%)

† The satisfaction scores were higher in the short-term follow-up group (1-6 months) than the mid-term follow-up group (7-12months) whereas the long-term follow-up group's scores (above 12 months) were the lowest ($p=0.026$).

($p=0.026$) (Table 2).

The patients were also categorized into 2 different groups according to the experience level of the surgeon (consultant or resident). Two hundred and sixty one (51.6%) patients were operated by ear, nose and throat residents under supervision while 245 (48.4%) were operated by consultants.

Out of 245 patients operated by a consultant, 155 (63.3%) reported excellent satisfaction level whereas in patients operated by a resident (n: 261) the number of the ones reporting excellent results was only 64 (24.5%). The patients who defined their result as unsuccessful was 8.6% and 28.7% respectively in consultant surgeon and resident surgeon groups. The satisfaction scores of the patients were found to be higher in the group operated by consultants ($p<0.001$) (Table 3).

Table 3. ROE Scores according to the experience level of surgeon.

Surgeon	ROE Score		
	Unsuccessful (<50)	Good (50 to <75)	Excellent (≥ 75)
Consultant	21(8.6%)	69 (28.2%)	155 (63.3%)

‡The satisfaction scores of the patients were found to be higher in the group operated by consultants ($p<0.001$).

DISCUSSION

Rhinoplasty is the leading operation in facial plastic surgery discipline and it is commonly performed. Since patient satisfaction is the principal outcome measure of success in all facial cosmetic procedures, surgeons should use quantitative methods to assess patient satisfaction (4). Patient reported outcome measures (PROM) which assess the quality of treatment delivered from the patients' perspective, are becoming increasingly popular in documenting the effectiveness of aesthetic interventions by using quantitative methods (5). The Rhinoplasty Outcomes Evaluation (ROE) questionnaire is a widely used and validated PROM tool which is useful to evaluate patient satisfaction [3].

The disease-specific quality of life assessment methods such as Nasal Obstruction Symptoms Evaluation (NOSE), Rhinoplasty Outcomes Evaluation (ROE) and visual analog scale (VAS), are useful to evaluate patients esthetic and functional satisfaction [4,5]. In the present study we preferred to use the ROE questionnaire because it easy to perform, short and validated in Turkish [6]. This questionnaire quantifies the outcome from the operation; assesses respiratory function, quality of life and cosmetic results. Surgeon and patient are not always equally pleased with the outcome procedure, since the expectations and opinions are different. Therefore, understanding patients' expectations preoperatively is essential to

achieve the patient satisfaction. Patient's satisfaction may be influenced by gender, age social background, education level and psychological status [5, 7]. In a recent study conducted by Esteves et al.; patients' satisfaction and quality of life seemed to have improved significantly after rhinoplasty. Gender, age, the type of surgical approach and additional nasal procedures had no influence on post-operative satisfaction scores. Also, patients with lower literacy level were more satisfied with the procedure [8].

Age may be a significant factor determining patient satisfaction score. Balikci et al. and Litner et al. found lower satisfaction scores in younger patients and they interpreted that younger patients have higher expectations thus have difficulty in accepting changes to their self-image [10, 11]. Arima et al. reported that the satisfaction scores were lower in patients younger than 30 years than in those 30 years or older (9). We also grouped patients according to their ages (<30, ≥30) and we found that younger patients (age <30) had higher satisfaction rates on contrary to the abovementioned studies.

Arima et al. also found that there was no significant difference in satisfaction increment between the patients followed up for 12 to 60 months and those followed up more than 60 months. Although the duration of follow-up was shorter in our study, we found that the satisfaction scores were higher in the short-term follow-up group (1-6 months) than the prolonged follow-up group ($p=0.026$).

In our study; gender had no significant effect on ROE scores. Previous studies demonstrate that, general satisfaction rate after rhinoplasty was higher in women than in men [12-14]. In a study of Cingi et al., both male and female patients experienced improvement in ROE scores, with larger differences between pre- and postoperative ROE scores in male patients compared with female patients [15]. Baser et al. found no statistically significant influence of gender on preoperative and postoperative measurements of NOSE, ROE, functional VAS, and aesthetic VAS [16]. The impact of the demographical characteristics such as age and gender is a controversial issue in the current literature. There is no documented universal result that appeals equally to all patients. So, every operation should be tailored to each individual patient especially in facial plastic surgery.

Biggs et al. evaluated 141 consecutive patients undergoing septorhinoplasty in a university hospital. Their study's mean ROE score was 73.3% (± 23) with a range of 16.7–100% (9). The mean satisfaction score was 69.7 in our study. Biggs et al. also divided cases into different age, sex, follow-up time groups as in our study [17]. The total ROE score and its correlation with age (<30 vs. ≥30 years), sex (male vs female), follow-up duration (<36 vs. ≥36 months) and surgery type (primary vs. revision) in these subgroups were not statistically significant ($p>0.05$). Our study revealed that short follow-up time (1-6 months) is a factor that is related to higher satisfaction scores. Scores of the prolonged follow-up group (above 12 months) were the lowest ($p=0.026$).

Brandel et al. conducted a study about rhinoplasty and they concluded that cases operated by residents had an acceptable complication rate and good patient satisfaction in compare to cases operated by experienced surgeons [18]. However they did not compare the residents or consultants as we did in our study.

One of the leading study in this area belongs to Freiberg et al. In their survey, they evaluated patient's satisfaction in cases who underwent various aesthetic procedures besides rhinoplasty such as mammoplasty and blepharoplasty. They obtained more favorable results when patients were operated by more experienced surgeons [19]. In our study; the percentage of patients who defined their result as "unsuccessful" was 8.6% and 28.7% respectively in consultant surgeon and resident surgeon groups. The satisfaction scores of the patients were found to be higher in the group operated by consultants ($p<0.001$). Rhinoplasty is much more difficult to teach than other aesthetic procedures because of the morphologic nature and complexity of the operation. It is not surprising that the outcomes happen to be more favorable in cases of senior surgeons of considerable experience.

This study was conducted in an otolaryngology department in a tertiary center and all the patients were operated by ENT surgeons. The mean satisfaction score was 69.7 and 63.3% of cases operated by consultants reported "excellent" result. These results might be interpreted to indicate that rhinoplasty performed by ENT surgeons yield satisfactory outcomes in experienced hands.

Limitations of our study include the lack of a preoperative evaluation; and also disease-specific and procedure-specific evaluation. Since preoperative body dysmorphic disorder determines postoperative satisfaction and quality of life in rhinoplasty; preoperative assessment should also be considered. This study was conducted in a retrospective pattern while prospective studies are more valuable to assess results in an objective pattern. This study was performed in an otolaryngology department of a university hospital composed of experienced senior specialists and young residents. Another limitation of the study, therefore, is that rhinoplasty is performed by different surgeons with different levels of expertise and patients' prejudices in this respect in the preoperative and postoperative period may affect the outcomes. Since the expertise level increases in time, especially during residency period, the difference between a senior and junior resident might have an influence on the outcomes. Single center studies cannot be generalized to whole population; so, a multicenter study on larger populations might have more value.

It is unrealistic to achieve 100% patient satisfaction but new surgical techniques and awareness about the patients' needs developed over the past decade. PROMs are beneficial tools in assessing the benefit of surgery from the patients' point of view. In this context, QOL instruments have the potential to identify further factors influencing the outcome especially in rhinoplasty patients (20). Satisfaction with facial appearance and improved quality of life are key outcomes for patients undergoing

rhinoplasty. Therefore, validated PROM instruments should be used by rhinoplasty surgeons [21]. The disease-specific quality of life assessment forms are beneficial and should be handled in future studies on facial plastic surgery. In this study we were able to demonstrate that some demographic variables are potential predictors of the degree of patient satisfaction. We conclude that the ROE questionnaire is a simple and useful tool for evaluating outcomes of

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CONFLICT OF INTEREST:

The authors state that there is no conflict of interest regarding this manuscript.

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