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Objective Versus Subjective Assessment for Rhinoplasty

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ABSTRACT

Background: Rhinoplasty has become one of the main performed cosmetic surgeries. This fact is reflected in the Egyptian population where plastic surgeons often deal with a high percentage of patients seeking cosmetic rhinoplasty. One of the main success factors for this type of surgeries is patients' satisfaction; some of the patients are hardly satisfied with the post-operative results. This dissatisfaction may be due to thick skin over the tip region, post-operative persistent edema, incomplete correction of the deformity, or wrong surgical techniques. Sometimes even without the existence of all these dissatisfactory factors, patient are still unhappy with their final results due to psychological disorders. Therefore finding effective evaluation tools for subjectively and objectively assess the rhinoplasty result is of great importance for both patients and surgeons.

Patients and Methods: This study had been done on 40 patients (35 females) and (5 males) presented at the outpatient's clinic of the Plastic Surgery Department, Assiut University Hospitals seeking for rhinoplasty. The patients were evaluated by three methods objectively and subjectively.

Results: There was a highly significant difference between patients' and surgeons' satisfaction scores pre and post-operatively. Patients, more than 20 years old, were more satisfied than the younger ones. The nasal parameters were measured showing a significant difference in both the angles and ratios pre and post-operatively.

Conclusion: In conclusion, this study along with other studies emphasizes the importance of using the evaluative tools to subjectively and objectively assess patients seeking rhinoplasty.

INTRODUCTION

The nose is the central part of the face and it is very important for attractiveness in all societies. Rhinoplasty is one of the most frequently performed plastic surgery operations **[1]**. Mostly, the reason for seeking this procedure is to please other people and for social or professional ambition; therefore, the surgeon has a great responsibility, which is to accept or refuse the patient's request **[2]**.

Some patients will likely be dissatisfied with their result, no matter how extensive surgery they undergo. The emotional dissatisfaction supersedes technical failure as the most common cause of poorly perceived results in our practice **[3]**. It is now broadly accepted that proper patient selection becomes even more important to the entire surgery process. Choosing the right candidate for rhinoplasty can help prevent dissatisfaction **[4]**.

The assessment of the intervention's final result was not very much studied under the patient's viewpoint, and such analysis is very important because patient satisfaction is the prevailing factor for surgical success **[5]**. In the recent decade, few papers have been published in order to validate a reliable questionnaire to be employed in patients submitted to cosmetic surgery, with the goal of measuring patient satisfaction after the procedure **[6]**.

Therefore, this study aims at evaluating the clinical post-operative results according to patients and doctors satisfaction (subjective) and comparing that with the parameters of the ideal aesthetic nose that measured on the postoperative computer image (objective).

PATIENTS AND METHODS

This study had been done on 40 patients presented at the outpatient's clinic for the Plastic Surgery Department of Assiut University Hospitals seeking for rhinoplasty, in the period between May 2007 and May 2009.

Inclusion criteria: Patients seeking rhinoplasty either denovo, revision of previous rhinoplasty or septal deviation correction.

Exclusion criteria: Patients who underwent rhinoplasty because of major trauma, medical pathology, or congenital anomalies. Informed written consent was obtained individually from all patients under the study.

Age of the patients ranged from 14 to 34 years; there were 35 females and 5 males. Patients were photographed in a standard scientific different

views both pre and post operatively. Follow-up visits then arranged after one week, 3 months, 6 months and 12 months.

Patients were evaluated by three methods: One objectively and two subjectively.

Patient's subjective evaluation was through one of the quality of life questionnaires designed by Alsarraf in 2000, the Rhinoplasty Outcome Evaluation questionnaire (ROE) to measure the pre and post-operative patient satisfaction [7].

This questionnaire comprises of six questions, each question was answered with scores within a scale between zero and four (zero being the most negative answer, and four being the most positive one). In order to reach the final result in the scale, we added up the responses from each question, and such result was divided by 24 and multiplied by 100 - from that we obtained a value which varied between zero percent and 100 percent (zero represents minimum satisfaction and 100 the maximum one). The final result was then divided in classes, according to quartiles: zero to <25 (poor) and 25 to <50 (fair); 50 to <75 (good); and ≥75 (excellent).

Surgeon's subjective evaluation tool named "Surgeons' Rhinoplasty Evaluation Questionnaire (SREQ)" was developed in this study and applied. This questionnaire was administered to three plastic surgeons other than the operators, to evaluate the rhinoplasty patients' photos pre & post-operatively depending on their experience & their aesthetic eye.

SREQ consists of twelve items to which the surgeons respond based on a rating scale ranging from zero to three (zero being the most negative answer, and three being the most positive one). After examining the different photographic views of the patients, pre and post operatively, each surgeon was kindly asked to fill in the questionnaire separately. The results were calculated in the same way as the ROE questionnaire.

Objective evaluation was done by measuring the angles and ratios of the nose and its relation to the face. Eight common parameters were measured from the photos (frontal, lateral and basal views) for all the patients. For patients with septal deviation a ninth parameter (angle of septal deviation) was calculated. We compared these measures pre and post operatively with the ideal beauty canons.

These parameters are relatively easy to measure and less prone to possible interpretation errors that may be generated by the posture of the patient. We used a computer software program "Face Master" to help in the measurements of these parameters [8]. The software tool is designed by Ozkul, et al., 2009 to make angular and ratio metric measurements of any facial features, but it provides assistance for the following frequently used facial parameters: (nasofrontal angle, nasal projection ratio, nasofacial angle, nasomental angle, nasolabial angle, rule of the third ratio, rule of the fifth ratio and equilateral triangle rule ratio.

We measured the nasofrontal (NFr) angle on the lateral view with the help of this software by dragging the already drawn angle lines to the right position on the photo between the nasal dorsum and glabella where the nasion is the apex of this angle (Fig. 1). In the same way we measure the rest of the angles.

Nasal tip projection was measured by the Goode's method; the length of a horizontal line drawn from alar-crease-to-the-tip is divided by the length of line drawn from nasion-to-tip should give a ratio of 0.67 (Fig. 2).

The rule of third is the ratio of the distance between nasion-to-subnasale and the distance between subnasale-to-menton and should be 47% to 53%. So the ideal ratio should be 47/53=0.88 (Fig. 3) [8].

The rule of fifth, a more practical alternative measurement indicative of this parameter is the division of intercanthal width to alar width (Fig. 4).

In the basal view the rule of equilateral triangle was calculated by placing the already drawn triangle over the nasal base confining the nose within its lines. The ratio of triangular height to its base is the parameter that calculated for this rule.

Other parameters like angle of septal deviation can also be measured, as long as user records the measurements manually. In patients with type-C deviated septum, the angle was measured by drawing a line lying between the nasion and the most prominent point of convexity and a second line lying between the most prominent point of convexity and the nasal tip. The angle between both lines was calculated by the program and recorded to the patients' spread sheet manually (Fig. 5). As for type-I septal deviation, this angle of deviation is between the midline facial axis (a vertical line drawn between the nasion and center of the lip) and the nasal axis between the nasion and nasal tip (Fig. 6).

Statistical analysis:

Data collected and analyzed by computer program SPSS "ver. 17" Chicago. USA. Data expressed

as mean, Standard deviation and number, percentage. Student *t*-test was used to determine significant for numeric variable. Chi. Square was used to determine significance for categorical variable.

RESULTS

The initial sample had 40 patients with 35 (87.5%) females and 5 (12.5%) males. The mean value of age was 20.75 years with range between 14 and 34 years; (92.5%) were single. Regarding occupation, the highest percentages of patients (49.7% & 42.5%) were unemployed and students respectively. All patients were operated under general anaesthesia 37.5% close approach vs. 62.5% using open approach. Out of the 40 patients there were 10 patients had deviated septum (8 type-C & 2 type-I).

The evaluation tools were applied to 32 patients those who were regularly present at the follow-up visits. As regard the ROE score there were highly significant difference between the pre & post-operative results. (53.12 %) out of the cases had ROE scores of less than 25% and (46.8%) had ROE between (25-50%) in pre-operative evaluation. But in post-operative evaluation (56.2%) out of the cases had ROE scores between (50-75%) and (40.62%) had ROE scores (>75%) with a highly significant difference (p<0.000) (Fig. 7). There was also a significant increase in the satisfaction rate in patients more than 20 years old.

As for the surgeon evaluation tool (SREQ) the results showed the same pattern of improvement as the ROE results with highly significant difference between the pre & post-operative scores (Fig. 8).

As for the objective evaluation tools (angles and ratio measurements) there was a moderate significant difference in the mean values of naso-facial angle, nasomental angle, septal deviation angle, nasal projection and rule of fifth ratio (p<0.001) (Figs. 9,10).

Patients with type-C septal deviation were divided according to post-operative angle change toward normal (180) as follow: Excellent result ">170" were 2 patients out of 8 (25%), Good "160-170" were 5 patients (62.5%) and one poor "<160" (12.5%).

Fig. (1): Nasofrontal angle measurement (130.6 degree) to the right of the photo. This measurement will be added automatically in the table on the left side.

Fig. (2): Nasal projection measurement (the ratio of NT/AT = 0.63).

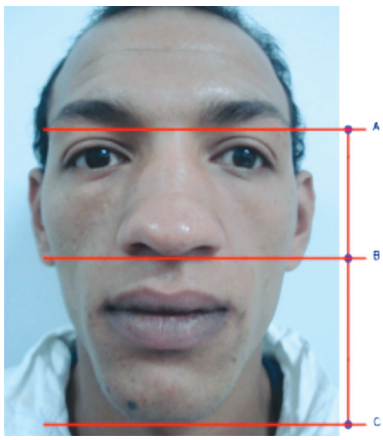

Fig. (3): Rule of third measurement (the ratio of AB/BC = 0.77).

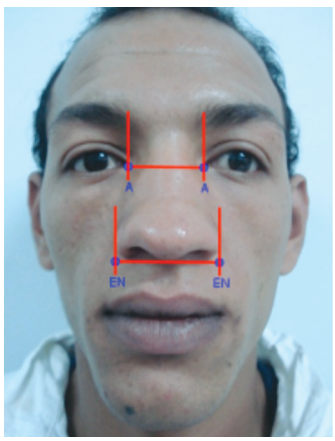

Fig. (4): Rule of fifth measurement (the ratio of A-A/EN-EN = 0.73).

Fig. (5): Angle of septal deviation (type-C) measurement = 154.7 degree.

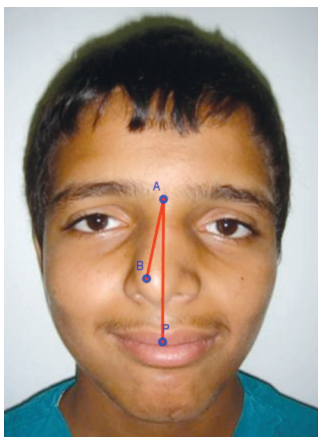

Fig. (6): Angle of septal deviation (type-I) measurement = 11.7 degree.

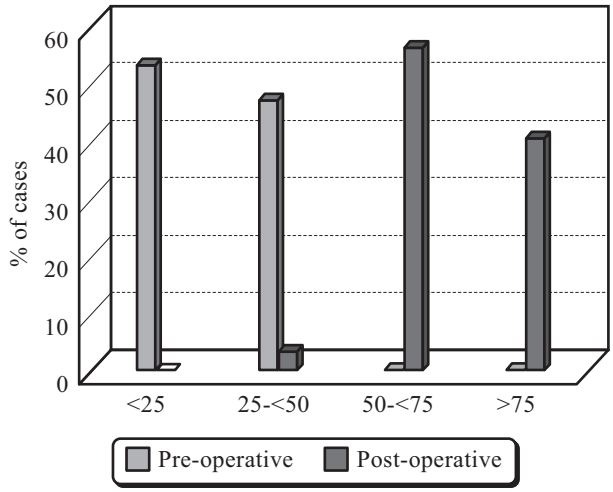

Fig. (7): Relation between patients' satisfaction (ROE) pre & post-operatively.

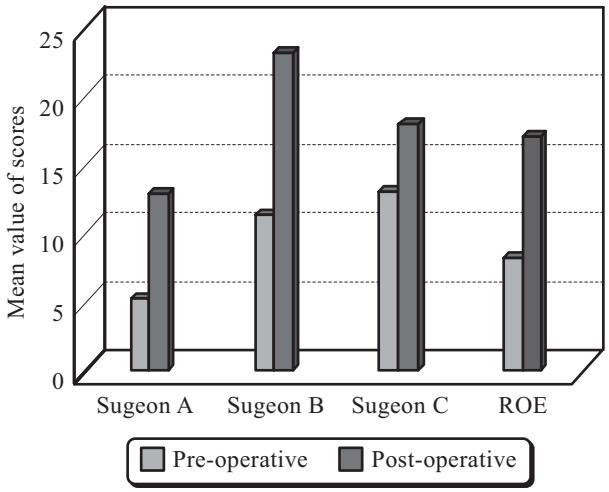

Fig. (8): Relation between surgeons' satisfaction & ROE pre & post-operatively.

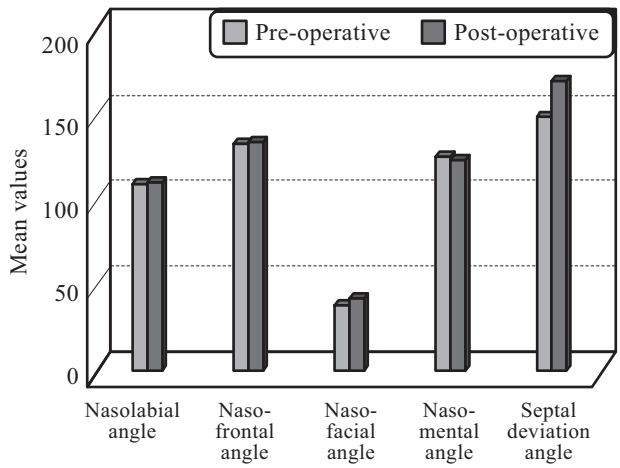

Fig. (9): Relation between angles pre & post-operatively.

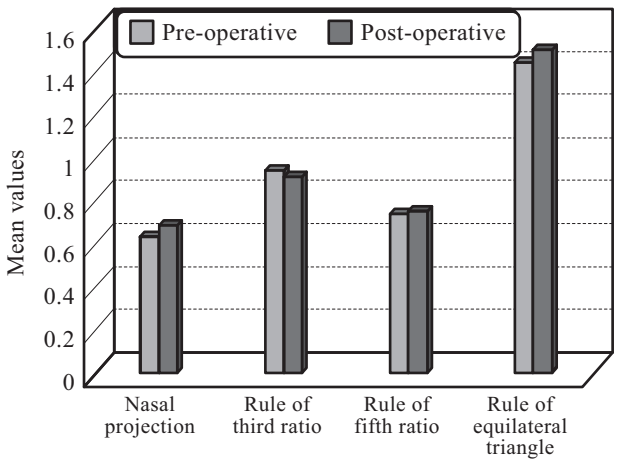

Fig. (10): Relation between ratio pre & post-operatively.

Case (No. 1): A female patient, 23-years old had a saddle nose, (frontal and lateral views pre & post-operative).

Case (No. 2): A female patient, 27-years old had a previous surgery of the nose somewhere, to end up with a badly deformed right ala (pinched tip), (frontal, lateral, and basal views pre & post-operative).

Case (No. 3): A female patient, 22-years had (type-C) deviated septum (frontal view pre & post-operative).

Case (No. 4): A male patient, 17-years old had a (type-I) deviated septum (frontal view pre & post-operative).

DISCUSSION

The major indications for rhinoplasty are: Cosmetic and cosmetic-functional [9]. Pre and intraoperative planning are essential in order to achieve good results; the surgeon must carefully examine the nose in order to determine which pathological condition there is and which surgical procedure is needed [10].

In the present study 12.5% of patients were male vs. 87.5% female; this agrees with Ferraro, et al., (2005) where males were less likely to seek rhinoplasty than females (20% males: 80% females) [11]. On the contrary, in a study for objective evaluation of deviated septum, Erdem & Ozturan (2008) reported that the number of males was more than females [12]; that may be explained because this study dealt only with patient seeking functional correction of deviated septum which is more common in males due to more exposure to trauma. In contrast to females, male patients seem to lack a clear body concept and an in-depth awareness of their physical appearance. As a result, they often have difficulty articulating their objectives for cosmetic surgery.

In the current study there was a significant difference between pre-operative and postoperative measurements for nasofacial, nasomental and septal deviation angle; also there was a significant difference between nasal projection and rule of fifth ratio. The Face master computer program was helpful in evaluating the effectiveness of different surgical techniques. This agrees with Okur, et al. (2004) who stated that the angle measurement method using Scion Image may be helpful in evaluating the effectiveness of surgical techniques and the results for correction of the crooked nose [13]. In another study by Ozkul & Ozkul (2006), only five parameters (nasofrontal, nasomental, nasolabial, nasofacial angles and nasal projection ratio) were used to induce a facial harmony index, which is to generate a score for the patient before and after the rhinoplasty operation so that the improvement due to rhinoplasty operation can be determined objectively [14].

In the current study, we found that 25% of patients with type C septal deviation had excellent results in post-operative measurements, 62.5% good results and 12.5% poor (this patient had a significant change in the septal deviation angle post-operatively, but his angle was very bad from the beginning). This agrees with Okur, et al. (2004) who found that 66.7% of the patients with crooked noses had good and excellent results after surgery. Also, Erdem & Ozturan (2008) found that 27.7% of his patients had excellent results and 30.5% had good results after measuring the angle of septal deviation post-operatively [12,13]. The approach for the management of the crooked nose includes wide exposure through external septorhinoplasty, release of all deforming forces for the septum, straightening of the septum while maintaining an adequate dorsal and caudal strut, realigning and reinforcing the nasal structures with sutures or grafts, and performing adequate osteotomy.

In the current study we utilized a retrospective assessment of patients' preoperative satisfaction and prospective evaluation of the patients' postoperative satisfaction; this was similar to the one published by other authors [6,15].

In current study, only one of the 32 patients submitted to surgery remained in the group of unhappy patients (25%-50%) & (56.25% were good and 40.62% Excellent) postoperatively. Employing our ROE normality criteria in another study, carried out by Arima, et al. (2012), it was noticed that 18 of the 19 patients (94.7%) would pre-operatively fit as altered ROE values, while only two patients (10.5%) in the post-operative would continue with altered values [16]. This shows that the cutting score established in our study seems to truly fit the questionnaire. On the other hand, Castle, et al. (2002) reported that rhinoplasty is the aesthetic surgery that has the lowest satisfaction rate; identifying good candidates to the procedure is fundamental to obtain good results [17].

Although not being necessary for indicating surgery, the classification of patients as being candidates or not to the procedure, by using a normality value, may predict results which are more or less satisfactory. Patients with high scores in the pre-op may not be very pleased after the surgery, and they may even have a risk of worsening in their initial situation. This agrees with Izu, et al. (2012) who stated that the normality value for ROE questionnaire equal 12 (50%) [18].

In the current study, upon analyzing the reason why one patient kept post-operative satisfaction <50 (failure), it was noticed that she had ROE score of 10 which is very near to the normality value and she had a post-operative complication of nostrils asymmetry and scaring in the basal view that decrease her ROE score to 6.

In current study, the surgeons' assessment of patients after rhinoplasty operation can be listed as follows: Surgeon A with mean score of "12.83" out of 36, being "23.08" for surgeon B and "17.86"

for surgeon C. The mean value of ROE score for patients was "17.00" out of 24. These agree with Yu, et al. (2010) who used another method for surgeons' assessment to compare with patients' assessment, and found that differences in patients' and surgeons' findings were largely due to differences in assessment skills and should be addressed by thorough explanation of nasal aesthetics **[19]**.

Conclusion:

This study along with other studies emphasizes the importance of using the evaluative tools to subjectively and objectively assess patients seeking rhinoplasty. Both subjective and objective evaluation tools are important for identifying the good candidate for rhinoplasty operation, though most of the surgeons depend on their aesthetic eye only. It should be taken into consideration that the aesthetic eye is a skill that needs a lot of time to be developed.

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