**Original Research Article**

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Exploring satisfaction and outcomes in rhinoplasty: experience from a tertiary care hospital in Kashmir valley, India

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**ABSTRACT**

**Background:** Augmentation rhinoplasty is a popular yet challenging procedure that aims to improve both the nasal appearance and quality of life of patients. The purpose of this study was to examine the satisfaction and outcome after augmentation rhinoplasty at a tertiary care hospital in Kashmir valley.

**Methods:** The study was conducted at a tertiary care hospital in Kashmir valley among patients who underwent the procedure using autologous cartilage grafts at the ENT department from October 2021 to December 2021. The sample size was 56. The patients age, gender, pre-operative findings, surgical techniques, post-operative outcomes, complications, and corrective interventions were recorded. The rhinoplasty outcome evaluation questionnaire was used to evaluate the patients' pre and post-operative status, with outcome assessed three months after surgery.

**Results:** The present study included 56 patients which comprised of 39 (69.64%) males. The mean age of patients was 41±9.6 years. The indication for surgery was a mix of aesthetic and functional reasons in 56% subjects with 78% undergoing a primary surgery. The mean pre-operative score on the ROE questionnaire was 9.21±0.8 which improved to a mean score of 19.56±1.1 at three months after surgery. Overall 75% (42/56) patients reported a post operative ROE score of ≥80%. There was a significant improvement in all domains assessed by the ROE questionnaire, including appearance and function.

**Conclusions:** Augmentation rhinoplasty can provide satisfactory aesthetic and functional outcomes for patients with nose deformities with consistent improvement across all domains related to aesthetics and functionality.

**Keywords:** Augmentation rhinoplasty, Nasal deformity, ROE Questionnaire, Satisfaction

INTRODUCTION

Rhinoplasty is a popular cosmetic and functional surgery that aims to enhance the appearance and function of the nose.1,2 There has been a growing demand for this surgery in recent times in view of increased self-consciousness about ones looks and also due to improvement in access to safe rhinoplasties.3 Rhinoplasty is often thought of as a cosmetic procedure, but it is also frequently performed to correct functional issues with the nose, such as obstruction of the nasal airway that can affect breathing.4 This adds a layer of complexity to the surgery, as internal nasal structures may need to be modified in addition to reshaping the external appearance of the nose.5 The goal of functional rhinoplasty is to maintain or improve nasal function, such as airflow and smell, while also enhancing the aesthetic appearance of the nose.6 As such, rhinoplasty can be a highly individualized procedure that requires careful consideration of both functional and cosmetic aspects in order to achieve optimal outcomes for each patient.7 While the surgery has been shown to produce satisfactory outcomes in the majority of patients, there is a growing interest in understanding the factors that contribute to patient satisfaction and the impact of rhinoplasty on patients' quality of life.8,9 Keeping in view the importance of exploring satisfaction and outcomes in rhinoplasty, we planned this study to shed light on patient reported outcome after augmentation rhinoplasty. The findings of this study have important implications for the practice of rhinoplasty and may inform the development of more effective and patient-centered approaches to this surgery.

Methods

The present study employed a descriptive study design and was conducted between October to December 2021. The study was conducted in the Department of Otorhinolaryngology of Government Medical College, Srinagar which is a tertiary care teaching hospital in Kashmir valley, India. Participants were recruited from the patients attending the Otorhinolaryngology OPD of the same hospital.

All patients attending the OPD and requiring augmentation rhinoplasty were explained the purpose of the study and their informed consent sought. The participants underwent a standard workup which included assessment for inclusion and exclusion criteria followed by basic investigations. Subjects who provided consent were included and their basic information recorded on a pretested schedule. The subjects then responded to Rhinoplasty Outcome Evaluation (ROE) questionnaire and were then admitted for surgery.10,11 Sample size was based on the number of eligible patients which reported to the hospital during the study duration. The sample size was 56.

All rhinoplasty operations were performed under general anesthesia with open technique. Local infiltration of adrenaline and lidocaine was performed 15-20 minutes prior to operation in order to minimize bleeding. Antibiotic prophylaxis was given with intravenous ceftriaxone dosage of 1gm perioperatively which was continued for a week postoperatively.12,13 Septal cartilage, which was the first choice, was used if minimal (2-3 mm) dorsal augmentation was desired in the form of a shaped cartilage block or diced cartilage. If septal cartilage was not available, auricular cartilage and maxillary crest bone was used for minimal dorsal augmentation. Costal cartilage was reserved for patients who needed greater augmentation. Nasal splints were used externally for an average of 10 days.12,14

Sociodemographic variables like gender, age and clinical parameters were recorded from all the patients preoperatively. In addition all subjects responded to ROE questionnaire preoperatively and at completion of 3 months after surgery.

***Rhinoplasty outcome evaluation (ROE)***

It a validated scale containing 6 questions and response to each question is recorded on a 5 point Likert scale with minimum and maximum score of 0 and 4 respectively. The total score ranges from 0-24 with a lower scores signifying higher degree of impairment/higher perception of nose deformity.15,16

***Outcome assessment***

Outcome was assessed using the ROE questionnaire with subjects scoring more than 80% classified as having a satisfactory outcome. In addition pre and post operative values were compared.15

***Statistical analysis***

Data was entered into Microsoft excel and analyzed using Stata V 17. The mean and standard deviation were calculated to describe the data's central tendency and variability. A Student's t-test was performed to determine if there was a significant correlation between two sets of data. The confidence interval was set at 95%, indicating the level of certainty in the results. A p-value of less than 0.05 was considered statistically significant.

Results

Study questionnaires for both preoperative stage and at follow-up after three months were completed by 56 participants. The mean±standard deviation (SD) age of participants was 41.4±9.6 years and the minimum and maximum age was 18 and 57 years respectively. In the present study population, 39 patients (69.64%) were males, while 17 (30.36%) were females. The indications for rhinoplasty varied, with 14 patients (25%) seeking the procedure for functional reasons, 11 (19.64%) for aesthetic reasons, and 31 patients (55.36%) for a combination of both. The most common cause for nasal deformity/symptoms was trauma (66.07%) followed by developmental (26.79%) and post septal abscess (7.14%). Of these cases, 12 (21.43%) were revision surgeries. The details are provided in Table 1.

The mean ROE score of all patients preoperatively was 9.21±0.8 which increased to 19.56±1.1 after three months of surgery. The difference was statistically significant. The ROE score had increased for both genders and also individually for all indications of rhinoplasty. The preoperative and post operative ROE scores for all groups are depicted in Table 2. Table 3 depicts the pre and post operative scores for each question in the ROE scale. The was a significant increase in all domains ranging from appearance (Q1 and Q3) to functioning (Q2).

 Table 1: Clinical profile of subjects.

|  |  |  |  |
| --- | --- | --- | --- |
| Variable name |  | No | % |
| **Age** | Mean±SD (years) | 41.4±9.6 |  |
| ≤ 20 | 6 | 10.71 |
| 21-30 | 8 | 14.29 |
| 31-40 | 12 | 21.43 |
| 41-50 | 21 | 37.50 |
| 51 and more | 9 | 16.07 |
| **Gender** | Male | 39 | 69.64 |
| Female | 17 | 30.36 |
| **Education** | Illiterate | 4 | 7.14 |
| Less than primary | 11 | 19.64 |
| Completed primary | 41 | 73.21 |
| **Indication** | Functional | 14 | 25.00 |
| Aesthetic | 11 | 19.64 |
| Combined | 31 | 55.36 |
| **Aetiology** | Trauma | 37 | 66.07 |
| Developmental | 15 | 26.79 |
| Post septal abscess | 4 | 7.14 |
| **Type of surgery** | Primary | 44 | 78.57 |
| revision | 12 | 21.43 |
| **Cartilage used** | Septal | 34 | 60.71 |
| Costal | 18 | 32.14 |
| Auricular | 4 | 7.14 |

Table 2: Pre and post operative roe scores in study subjects.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | ROE questionnaire values |  |
|  |  | Preoperative | post operative | p value |
| **Overall score** | Mean±SD | 9.21±0.8 | 19.56±1.1 | < 0.001 |
| **Age (years)** | ≤ 40  | 10.32±0.4 | 19.92±0.8 | < 0.001 |
| ≥41  | 8.16±0.6 | 18.12±1.2 | < 0.001 |
| **Gender** | Male | 9.36±0.5 | 19.68±1.1 | < 0.001 |
| Females | 8.88±0.6 | 19.44±1 | < 0.001 |
| **Indication** | Functional | 9.84±0.8 | 18.96±0.9 | < 0.001 |
| Aesthetic | 9.36±0.7 | 18.72±1.1 | < 0.001 |
| Combined | 8.88±0.3 | 19.44±0.8 | < 0.001 |
| **Aetiology** | Trauma | 8.88±0.7 | 19.68±1.2 | < 0.001 |
| Developmental | 10.08±0.5 | 18.96±0.8 | < 0.001 |
| Post septal abscess | 9.36±0.6 | 18.72±1 | < 0.001 |
| **Type of surgery** | Primary | 9.6±0.8 | 19.68±0.9 | < 0.001 |
| Revision | 9.12±0.7 | 18.96±1.2 | < 0.001 |

Discussion

Rhinoplasty is a cosmetic surgical procedure that aims to improve the aesthetic appearance of the nose and/or to correct functional issues such as breathing problems. This procedure has gained increasing popularity in recent years, especially in developing countries like India, where people have increasingly become conscious of their physical appearance.3,17 However, little is known about the satisfaction and outcomes of rhinoplasty in this region. In this study, we explored the satisfaction and outcomes of rhinoplasty conducted at a tertiary care hospital in the Kashmir valley, India. Patients who underwent rhinoplasty between October to December 2021 were included in the study. A structured questionnaire was used to collect data on patient demographics while pre-operative and post-operative satisfaction, functional and aesthetic outcomes was assessed using the rhinoplasty outcome evaluation (ROE) questionnaire.16

The study participants comprised of 56 subjects who reported to OPD and matched the inclusion criteria for the study. After excluding ineligible subjects, eligible ones underwent augmentation rhinoplasty and there preoperative and post operative ROE scores were compared. The mean±standard deviation (SD) age of participants was 41.4±9.6 years and 39 patients (69.64%) were males. The indications for rhinoplasty varied, with 14 patients (25%) seeking the procedure for functional reasons, 11 (19.64%) for aesthetic reasons, and 31 patients (55.36%) for a combination of both. The most common cause was trauma (66.07%) followed by developmental (26.79%) and post septal abscess (7.14%).

The mean ROE score of all patients preoperatively was 9.21±0.8 which increased to 19.56±1.1 at completion of three months after surgery. The difference was statistically significant. The ROE score had increased for both genders and also individually for all indications of rhinoplasty. There was not significant association with age of subjects and all subjects reported a significant improvement at 3 month follow up. This finding correlates with multiple previous studies which reported a significant improvement in appearance and breathing after rhinoplasty and the results of our center are comparable to multiple centers in other parts of India and globally.18-20

Rhinoplasty outcome evaluation (ROE) questionnaire consists of six questions and response to each is recorded on 5 point Likert scale. Each question was from a minimum of 0 to a maximum of 4. The total scores for each subject could range from 0-24. In our study, the mean preoperative score was 9.21±0.8 and mean post operative score was 19.56±1.1. The results are consistent with multiple other studies which also found a comparable pre and post operative scores.21,22 There was a significant increase in mean post operative scores which depicted significant improvement in appearance and outcome. The suggests that patients were satisfied with the augmentation rhinoplasty done at our center.

Patients reported a consistent improvement in all areas, including their postoperative appearance, as well as when asked about their appearance from the perspective of their close relatives and friends. The patients also reported better breathing after surgery as well as reported a decreased perception of social limitation due to nasal deformity. The patients also reported that they were less likely to seek surgical correction after surgery. Multiple other studies also reported improvement in all the domains which suggest that the outcomes are related and also is an indicator of internal consistency of the questionnaire.23,24 The improvement in perceived nasal appearance and functional outcome supports the need for improving access to rhinoplasty services as it improved self-belief in addition to improving quality of life.

This study has some limitations. The primary limitation of the study was the lack of data on internal validity of English version of ROE questionnaire. We used the English version of the ROE questionnaire on non-native English speakers due to lack of a pretested questionnaire in local language.

**Conclusion**

The findings of our study align with previous research indicating that augmentation rhinoplasty leads to significant improvements in both appearance and function, with the potential to enhance the quality of life for individuals with nasal septum abnormalities. Notably, we observed consistent improvements across all age groups and genders, as well as regardless of the reason for surgery.

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