

Original Research Article

Retrospective study of analysis of 100 cases of septorhinoplasty by open versus closed rhinoplasty approach

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ABSTRACT

Background: Rhinoplasty is one of the great and most common cosmetic surgeries performed in current era for different type of reasons one main is for cosmetic and aesthetic one. Aim of this study is to know the functional and aesthetic outcome of septorhinoplasty by open and closed septorhinoplasty approach by using Nasal Obstructive Symptoms Evaluation (NOSE) score and ROE (Rhinoplasty Outcome Evaluation) score. To study the advantages of open rhinoplasty over closed rhinoplasty.

Methods: This is retrospective study carried out in our hospital. In this study all types of cases we divided them in to two groups. Group A is made for the cases which are operated by open rhinoplasty approach and group B for the cases which are operated by closed septorhinoplasty approach.

Results: In our study group of 100 patients, the mean age was 30 in male 24 yr. in female. In our study of 100 cases 50 cases operated by open rhinoplasty approach and 50 patients by endonasal (closed) approach. The postoperative functional state compared with the preoperative state ($p < 0.05$). Preoperatively average NOSE score in Group A was seen to be 70.40 ± 13.98 with postoperative average score to be 7.00 ± 7.55 ($p < 0.05$). The preoperatively average NOSE score in Group B was 68.60 ± 13.26 with postoperative average score of 15.70 ± 9.04 ($p < 0.05$).

Conclusions: Open approach gives better functional results than closed approach. Open approach gives better aesthetic results than closed approach. Open approach septorhinoplasty can correct most of the deformities of the external nose along with any severity of septal deviation better than the closed approach.

Keywords: Septorhinoplasty, Closed, Open, Aesthetics cosmetic

INTRODUCTION

Rhinoplasty is one of the great and most common cosmetic surgeries performed in current era for different type of reasons one main is for cosmetic and aesthetic one. Initially, rhinoplasty was confined to repairing damage, but in modern times it has been used to change the nose shape for aesthetic purposes. According to the American Society for Aesthetic Plastic Surgery Reports, cosmetic procedures increased by 147% from 1997 to 2009. The modern era of rhinoplasty started in 1887 by using only intranasal incisions.¹ In the early 20's the

columella appealed to surgeons as presenting the best avenue of approach to nose and many authors described using external columellar incisions for rhinoplasty. However it was not until 50 years later that Goodman revived and popularized the use of external approach in rhinoplasty.^{1,2} since then a progressive increase in popularity of external approach has been noted as evidenced by the huge number of publications discussing indications modifications advantages and expanded applications of that approach. Our aim of this study is to find out the functional and aesthetic outcome of septorhinoplasty by open and closed septorhinoplasty

approach by using Nasal Obstructive Symptoms Evaluation (NOSE) score and ROE (Rhinoplasty Outcome Evaluation) score. To study the advantages of open rhinoplasty over closed rhinoplasty.

METHODS

This is retrospective study carried out in our institute JIUS IIMSR Warudi Badnapur since March 2015 to March 2018. This present study includes 100 cases consisting of deviated nasal septum, external deformity of nose, traumatic fracture, developmental deformity all are studied from March 2015 to March 2018. These all types of cases we divided them in to two groups. Group A is made for the cases which are operated by open rhinoplasty approach and group B for the cases which are operated by closed septorhinoplasty approach. The choice of approach depended upon the severity of septal deviation and the extent of external nasal deformity. The major outcome measure used was subjective evaluation of functional and aesthetic results using NOSE score and ROE score. All the patients were analyzed by preoperative NOSE scoring and subjected to post-operative review NOSE scoring. Analysis of the NOSE scale with paired t test showed significant improvement in. All the patients above 13 years age who presented here in our outpatient Department of ENT at JIUS IIMSR Warudi Badnapur dist. directly or referred from other centres with external nasal deformities and nasal obstructions and desirous of aesthetic nasal surgery were thoroughly evaluated and assessed and investigations like CBC, blood group, KFT, LFT RBSL done to get aesthetic fitness. Ethical clearance for study sought from ethical committee. A detailed history, clinical examinations, past history and personal history all are taken in to consideration and endonasal examination was routinely performed and a study group of 100 patients were considered eligible for the study.

Inclusion criteria

Those patients who have deviated nasal septum, gross nasal septum deviation with external deformity, traumatic fractures producing external deformity nose

Exclusion criteria

Those patients with only deviated septum, and/or hypertrophied nasal turbinate's, those who are not willing for surgery and not fit for surgery were excluded from this study.

A routine two way discussion between the surgeon and the patient took place to diagnose the deformity and to agree on the anticipated surgical procedures. We have refined our criteria for determining operative suitability to include patients who after consultation are deemed psychologically with parental support. Standard preoperative and postoperative photographs of the frontal, lateral, oblique, and basal views were routinely

taken for each patient and kept in our record to get in future for any medico legal purpose. After collecting the data, all the patients underwent rhinoplasty. All patients were operated on under general anaesthesia. Study group patients were divided into two Groups-A & B. Group A patients were operated using open approach. Group B patients were operated upon using closed approach.

The choice of approach depended upon the severity of septal deviation and the extent of external nasal deformity. After induction of anaesthesia, 2% xylocaine with 1:100,000 epinephrine with equal quantity of bupivacaine was injected into the subcutaneous plane of the dorsum, sidewalls of the nose, and the lobule. Injection also included the septal mucosa and the marked intercartilaginous incision lines. Endonasal 4% xylocaine with adrenaline gauze packing was applied to maximize vasoconstriction. Proper dose of higher antibiotic was given just before the start of operation. The patients were invited for the second visit at 3 month and 3rd visit at after Six month and then followed for period of 2.5 years after surgery. The major outcome measure used was subjective evaluation of functional and aesthetic results using NOSE score and ROE score. A trained interviewer interviewed each patient separately and completed the NOSE score, which was translated and validated for our population. The NOSE scale is designed to assess nasal obstruction. It consists of five questions with five options each and is scored from 0 to 20, with higher scores indicating more severe nasal obstruction. ROE is an easy-to-use questionnaire that allows comprehensive assessment of rhinoplasty-related patient satisfaction.^{3,4} this instrument comprises a total of six questions regarding the physical, emotional, and social fields. The ROE asks patients to assess the appearance and function of their nose, emotional confidence, and desire for change, as well as the manner in which their nasal appearance influences their personal, social, and professional life. Each of the six items is scored on a 0–4 scale, with 0 representing the most negative response and 4 the most positive response. Dividing the total score for each instrument by 24 and multiplying by 100 yields the scaled instrument score. This range is 0–100, with 0 representing the least and 100 the most patient satisfaction. The same questionnaires with the same methodology were completed by the same interviewer. Data analysis was conducted to compare the results before and after rhinoplasty.

RESULTS

In our study group of 100 patients, the mean age was 30 yrs in male, 24 yrs in female as shown in Table 1. In our study of 100 cases, 60 were male and 40 were females as shown in Table 2. Out of these 100 cases, 58 were unmarried and 42 were married as shown in Table 3. In our present study reason for rhinoplasty shown in Table 4. Out of 100 cases, 50 were operated by open rhinoplasty approach and remaining 50 were operated by endonasal (closed) approach as shown in Table 5. In the

open approach, 40 were females and 60 were males. The patients with wide nasal bridge, broad nasal tip, saddle nose deformity, severely twisted nose nasal tip asymmetries, major septal deviations, and difficult secondary rhinoplasty were selected for open rhinoplasty type surgery.

Table 1: Showing age distribution.

Sr no	Age	Male	Female
1	10-20	13	12
2	21-30	18	10
3	31-40	15	12
4	41-50	14	6
5	total	60	40

Table 2: Showing gender distribution.

Sr no	Gender	Number	Percentage (%)
1	Male	60	60
2	Female	40	40
3	Total	100	100

Table 3: Showing distribution according to married status.

Sr no	Married status	Number	Percentage (%)
1	Unmarried	58	58
2	Married	42	42

Table 4: Shows distributions according to the reason for rhinoplasty.

Sr no	Reason for rhinoplasty	Number	Percentage (%)
1	Therapeutic	60	60
2	Cosmetic	20	20
3	Traumatic	20	20

The patient group in open rhinoplasty type was subjected to different Techniques as per their deformity like twisted nose (6), reduction rhinoplasty (15), augmentation rhinoplasty (20), tip associated tip pasty (7), multiple deformities including revision rhinoplasty (2) as shown in Table 6.

All the patients were analysed by preoperative NOSE scoring and subjected to post-operative review NOSE scoring. Analysis of the NOSE scale with paired t test showed significant improvement in the postoperative functional state compared with the preoperative state ($p < 0.05$). Preoperatively average NOSE score in Group A was seen to be 70.40 ± 13.98 with postoperative average score to be 7.00 ± 7.55 ($p < 0.05$). The preoperatively average NOSE score in Group B was 68.60 ± 13.26 with postoperative average score of 15.70 ± 9.04 ($p < 0.05$) as shown in Table 7.

The difference in the NOSE scores in two groups was statistically significant highlighting the fact that open rhinoplasty technique is better than closed with extracorporeal septoplasty being more effective in relieving nasal obstruction. Analysis of the ROE scale with t test showed significant improvement in the postoperative cosmetic state compared with the preoperative state ($p < 0.05$).

Table 5: Shows distributions according to type of rhinoplasty operation.

Sr no	Type operation	Number	Percentage (%)
1	Open septorhinoplasty	50	50
2	Closed septorhinoplasty	50	50

Table 6: Shows distribution according to type of open rhinoplasty for different shapes of nose.

Sr no	Type of open rhinoplasty done	Number	Percentage (%)
1	Rhinoplasty for twisted nose	6	6
2	Reduction rhinoplasty for hump nose	15	15
3	Augmentation rhinoplasty for depressed nose	20	20
4	Rhinoplasty for tip deformity	7	7
5	Rhinoplasty for multiple fracture of nose	2	2

Table 7: Showing preoperative and postoperative average NOSE score in group A and group B.

Average nose score	Group A patient	Group B patient	P value
Preoperative	70.40 ± 13.98	68.60 ± 13.26	< 0.05
Postoperative	7.00 ± 7.55	15.70 ± 9.04	< 0.05

The outcome of rhinoplasty was judged by ROE scores which was Preoperatively 8.35 ± 4.3 in Group A and 19.03 ± 4.13 in Group B. with postoperative ROE in group A to be 63.5 ± 5.12 and 43.3 ± 5.4 in group B ($p < 0.05$) as show in Table 8.

Table 8: Showing average ROE score in group A and group B patient.

ROE score	Group A	Group B	P value
Preoperative	8.35 ± 4.3	19.03 ± 4.13	< 0.05
Postoperative	63.5 ± 5.12	43.1 ± 5.4	< 0.05

Group A had better ROE scores than Group B which justifies the statement that 'open approach is functionally better than closed approach in rhinoplasty. In this present study we studied total 100 cases of different pattern of external deformity of nose the average mean age was 30 in male and 24 was in female.

DISCUSSION

Rhinoplasty, one of the most rapidly growing aesthetic surgeries currently, is particularly complex due to the interplay of social, psychological, and physiologic factors inherent to their management. The aim of rhinoplasty is to establish certain aesthetic results while preserving satisfactory nasal function. The present study indicates that young generation mostly females (60.33%) in 2nd and 3rd decade of their life are interested in rhinoplasty surgeries. This shows the greater tendency of women and girls particularly educated working group prefers to undergo these types of surgeries for cosmetic reasons.

The major indications for rhinoplasty are: cosmetic and cosmetic/therapeutic. This clearly shows that pre and intraoperative planning are essential in order to achieve good results; selection of the type of surgery and approach to be used in a case of rhinoplasty depends on type of nasal deformities present.

The closed rhinoplasty approach can adequately handle most of the common straightforward nasal deformities such as high dorsal hump, however in more complex nasal deformities, wide nasal bridge and broad nasal tip, saddle nose deformity, severely twisted nose, the wide exposure provided by the external open approach allows for more precise evaluation of the deformities and improves the surgical control over the corrective manoeuvre's employed.

Besides sequel of naso-labial clefts have long been considered the major indication for external incision, the best indications are small nostrils, nasal tip asymmetries, major septal deviations, and difficult secondary rhinoplasty.⁵ the external approach allows for greater surgical exposure and enables the surgeon to use both hands with binocular vision. Also the ability to coagulate the bleeding points under direct vision diminished the blood loss during the procedure and the surgeon can work in blood less field throughout the operation.

The external approach provides excellent exposure with direct view of the lower lateral cartilages and middle vault as well as several technical advantages. The study reveals that open approach gives better functional results and corrects most of the deformities of the external nose along with any severity of septal deviation better than the closed approach. The primary virtue of the external rhinoplasty technique is exposure, and the primary concern with this technique is the columellar scar and postoperative nasal tip oedema. Besides this It has been seen that endonasal approach when combined with the

delivery approach gives results, which can be comparable to the open approach.^{5,6} The results of our study based on the NOSE, and rhinoplasty outcome score questionnaires indicate that QOL changes after rhinoplasty. These changes are improved physical performance, mental condition, mental health, vitality and freshness, self-esteem, and breathing.⁶ the normal anatomy can be restored and this is achieved most often by repositioning and precise placement and fixation of the cartilage grafts.⁷

In the current study there were 40 female (40%), and 60 males (60), with mean age of 30 year in male and 24 year in female this young age's female predominance was agreed by other studies.^{8,9} This probably due to those the young females were more concerned about their body concept and awareness for their physical appearance (beauty), with special appreciation of facial attractiveness especially in the nose.

The type of the surgical procedures used in the current study are open rhinoplasty 50 cases (50%) and closed rhinoplasty in 50 cases (50%). But post-operative result wise revealed there was out come result of open rhinoplasty (50%) was great this agreed with what mention with the opinion of other studies that revealed the open rhinoplasty had become unquestionably popular in the last two decades, due to ease of diagnosis and technical advantages that access both in view of the structures as in the teaching of rhinoplasty.¹⁰

In the current study, the frequency of the type of the rhinoplasty regard to the patient chief complaint was analyzed and found the open rhinoplasty was mainly indicated for tip deformity (7%), hump nose (15%), saddle nose (20%), and twisted nose (6%), and closed rhinoplasty (50%) for non-tip deformities like mild deviated external deformity of nose, gross deviated septal deformity with external deviation, the indication of the type selection of surgical procedure was depended upon the patient chief complaint, physical examination and the surgeon preference, as several authors.¹¹⁻¹³ Recommended the open technique to be selected for tip rhinoplasty, also Islam and Yousuf in their study reported that "closed rhinoplasty approach an adequately handle most of the common straightforward nasal deformities as high dorsal hump, however in more complex nasal deformities, as wide nasal bridge and broad nasal tip, severely twisted nose, the wide exposure provided by the open approach allows for precise evaluation of the deformities and improves the surgical control over the corrective maneuvers employed".¹⁴

There are many factors that can influence the satisfaction of patients whom underwent rhinoplasty such as their culture characteristics, life style, sex, their level of expectations, so, it is essential for surgeon to understand the complaint of the patient and have an insight about his expectations.¹⁵ So like that we in our study have given importance to this factor in many cases.

In the current study the surgical outcome of both types of rhinoplasty were assessed preoperatively and postoperatively by both a subjective method that evaluated the patient satisfaction through the ROE questionnaire, and the objective method through the measurement of computerized anthropometric facial indexes. ROE questionnaire by Al Sarraf is one of validated, useful method that assesses both the appearance and the function of the nose, and is considered as an applicable tool for evaluation of the surgical outcome of different techniques.

In the current study the “ROE” questionnaire assessment in relation to the patient chief complaint was analyzed, and the results were as the following; in open rhinoplasty was (63.5%) and for closed rhinoplasty was (43.1%), depend on numerical bases; in open rhinoplasty, those initial complaint involved including different types of external deformity resulted in a higher level of patient satisfaction if compared to closed technique, also it was found that in closed rhinoplasty in whom their initial complaint involved nasal tip resulted in slightly minimum level of patients satisfaction, these observations were agreed with studies.¹¹⁻¹⁴ That advocated the treatment of nasal tip is best accomplished by open approach.

The degree of patient satisfaction for external nasal deformity on revealed, the postoperative “ROE” score was detected higher in open rhinoplasty (63.5%) than those in closed rhinoplasty (43.1%) respectively, and these result were almost comparable with the results that obtained by Hussein WKA et al study.¹⁶

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