

Section

General Surgery

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Article

A Study of Septorhinoplasty by Open Technique

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ABSTRACT

Background: This study aimed to assess the reasons for which patients seek rhinoplasty, viz aesthetic, functional and psychosocial reasons. The study included 20 patients with traumatic, infective and congenital nasal deformities and were taken up for open septorhinoplasty.

Methods: This study was carried out in the Department of Surgery at Hamdard Institute of Medical Sciences and Research, Jamia Hamdard, New Delhi. The duration of study was from April 2017 to May 2018. It was a prospective study. All the patients who underwent open septorhinoplasty were assessed for outcome using Alsarraf questionnaire. Other patient data including demographic data, comorbid conditions etc were considered.

Results: After completion of surgeries patients were subjected to the questions of the questionnaire and final results were noted. Results were also assessed on the basis of comparative photographs, both taken pre and post operatively.

Conclusions: Based on the conducted studies and after analysis of available literature, it may be concluded that functional and aesthetic results after open septorhinoplasty have an influence on quality of life of the patients. This study includes all the three aspects ie, aesthetic, functional and psychosocial, for which most of the patients seek rhinoplasty and the results of our study is comparable to various other studies.

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INTRODUCTION

Nose, due to its situation, shape and function, is considered to be of inestimable psychosocial importance. In ancient times it was the "primum movens" of plastic surgery. The slightest deviation from normal is enough to render a person painfully self-conscious among his fellows, the consequence, too, of such a complex, may be unforeseen, not to say tragic. Rhinoplasty surgery is considered by even the most renowned and capable surgeons to be the most challenging, exciting and vexing of all plastic surgical procedure. Open structure rhinoplasty was popularized by Goodman and Charles (1970)¹ when they introduced the modified transcolumellar incision, make which excellent exposure of nasal osteocartilagenous framework was made possible. This approach has become increasingly popular during the


last decade and now considered a firmly established and important technique in rhinoplasty surgery.

Aim and objectives of study

The present study aims to evaluate the results in terms of anatomical, functional and psychological variables and complications associated with open rhinoplasty.

METHODS

This study was carried out in the Department of surgery at Hamdard Institute of Medical Sciences and Research, Jamia Hamdard, New Delhi. The duration of study was from April 2017 to May 2018. It was a prospective study.

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In this study those patients who had nasal deformity traumatic, post-operative (following submucous resection, in which excessive cartilage has been removed), developmental or congenital in origin, were taken up. Corrective open septorhinoplasty was performed under general anesthesia, after clinical and radiological evaluation.

Criteria for selection of patients

1. Patients seeking rhinoplasty for anatomical, functional or psychological reasons.
2. Patient over age 16 years.

Exclusion criteria for the patients

1. Patients should not be suffering from any severe psychological abnormality.
2. Unrealistic expectation of the patients.
3. Patients not giving consent for study.

Detailed clinical history was taken in every case. Clinical examination, including local examination of face and particularly the nose was carried out in every case. It included inspection and palpation of face and specially the nose and PNS, anterior and posterior rhinoscopy, spatula test and test of olfaction. In each case detailed otorhinolaryngological, general and systemic examination was performed. Investigations that included hemogram, routine and microscopic evaluation of urine were done in every case. Special hematological tests like Montoux test, VDRL and test for Leprosy were carried out in relevant cases. Radiological investigations that include lateral views of nose, x-ray of PNS (W/V) and P/A views of chest were carried out in relevant patient. Patients were subjected to surgery only after informed consent. Pre-operative, intra operative and post-operative photograph of every patient were taken.

PHOTOGRAPHIC RECORDS

Preoperatively and postoperatively following views were taken:

1. Anterior
2. Right lateral
3. Left lateral
4. Right anterolateral
5. Left anterolateral
6. Submental

ANALYSIS

The results of our study were studied in 3 dimensions viz aesthetic outcome, functional outcome and psychosocial outcome. All patients who underwent rhinoplasty in this study from Nov 2013 to Feb 2016 were provided with a specific and validated questionnaire (Annex 1) published in 2000 in Aesthetic Plastic Surgery by **Alsarraf**².

Alsarraf questionnaire

ASSESSMENT OF THE OUTCOMES OF RHINOPLASTY				
1. What is your degree of satisfaction with the appearance of your nose?				
Unsatisfied 0	Poor 1	Moderate 2	Very Satisfied 3	Completely Satisfied 4
2. Are you able to breathe through your nose?				
Unsatisfied 0	Poor 1	Moderate 2	Very Satisfied 3	Completely Satisfied 4
3. What is the degree of satisfaction of your friends and family with the appearance of your nose?				
Unsatisfied 0	Poor 1	Moderate 2	Very Satisfied 3	Completely Satisfied 4
4. Do you think the appearance of your nose limits your social and professional activities?				
Always 0	Usually 1	Sometimes 2	Rarely 3	Never 4
5. Are you confident that the appearance of your nose is the best possible?				
No 0	Slightly Confident 1	Moderately Confident 2	Very Confident 3	Completely Confident 4
6. Would you like to change the appearance of your nose through a new surgery?				
Definitely 0	Probably 1	Maybe 2	Probably not 3	No 4
7. Would you like to change the function of your nose through a new surgery?				
Definitely 0	Probably 1	Maybe 2	Probably not 3	No 4

- The questionnaire consisted of 7 questions, each with 5 possible answers, which were ranked from 0 to 4, where 0 represented the most negative response and 4, the most positive.
- The final score considering all questions was divided by 28 and multiplied by 100, which resulted in a number from 0 to 100, where 0 represented the least satisfied patient and 100, the most satisfied.

For evaluation of aesthetic result

- Aesthetic results of rhinoplasty were evaluated subjectively and objectively. Evaluation of aesthetic outcome is based on comparison of six standard pre and postoperative photographic views. Subjective evaluation of cosmetic results was based on patient's assessment i.e., how he/she perceive the final aesthetic outcome of operation and depending upon the first question of patient questionnaire.

For evaluation of functional result

According to the degree of nasal obstruction, the patients were divided into 3 groups: Group I – patients with a severe degree of nasal obstruction Group II – patients with a moderate degree of nasal obstruction

Group III – patients with a mild degree of nasal obstruction Subjective evaluation of results was based on patient's assessment i.e., how he/she perceive the final functional outcome of operation and depending upon the second question of patient questionnaire.

For evaluation of psychosocial result

After the surgical intervention, a survey was conducted in order to find out how satisfied the patients were after the performed correction. The patients were offered with 5 scores, that is, 5 modalities:

- 1 – very satisfied,
- 2 – satisfied,
- 3 – undecided,
- 4 – dissatisfied and
- 5 – extremely dissatisfied.

RESULTS

This study was carried out in the Department of Surgery at Hamdard Institute of Medical Sciences and Research, Jamia Hamdard, New Delhi. The duration of study was from April 2017 to May 2018.

On the basis of demographic data and diagnosis, the following observations were made.

Table 1: Age And Gender Distribution Of Patients

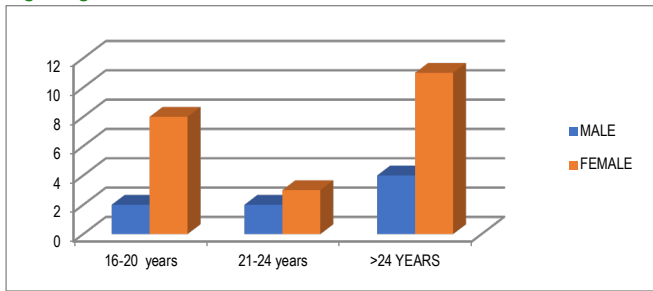
Age in years	Males N (%)	Females N (%)	Total N (%)
16-20	2(10)	8(40)	10 (50)
21-24	2(40)	3(60)	5(25)
>24	4(80)	1(20)	5(25)
Total cases	8(40)	12(60)	20(100)

The ages of patients ranged between 17 years to 35 years, mean age 21.2 ± 4.8 years. The majority of patients were belonged to the age group 16-20 years (50%), followed by 21-24years (25%) and >24 years (25%) each.

There was an obvious female preponderance with females accounting for 60% of the cases. The ages of male patients ranged between 18-27 years, mean age 21.25 ± 1.25 years.

The ages of female patients ranged between 17- 35 years, mean age 21.10 ± 4.83 years.

Fig 1: Age Wise Distribution Of Both Sexes



Based upon demographic distribution in terms of rural and urban, the patients were distributed evenly i.e. 10 patients of the total 20 patients were from urban population and 10 patients out of 20 were from rural population. Duration of stay in hospital was also noted and it was observed that longest duration of stay was 14 days and minimum duration of stay was 5 days with a mean hospital admission of 10.35 days.

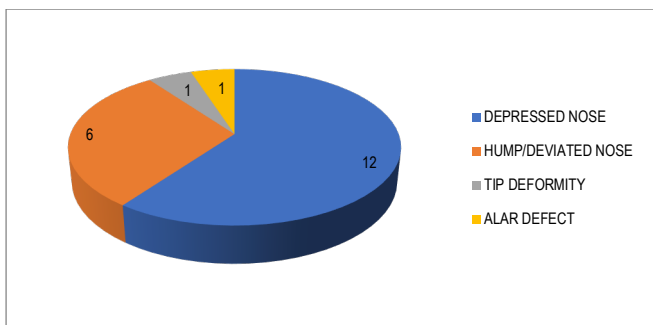


Fig 2: Type of Nasal Deformity

The type of deformities for which the patients presented were also noted. The observation which was made regarding the type of deformities in the presenting subjects were: depressed nose in 12(60%) patients, hump nose in 6(30%) patients, tip deformity in 1 (5%) patient and alar defect in 1(5%) patient.

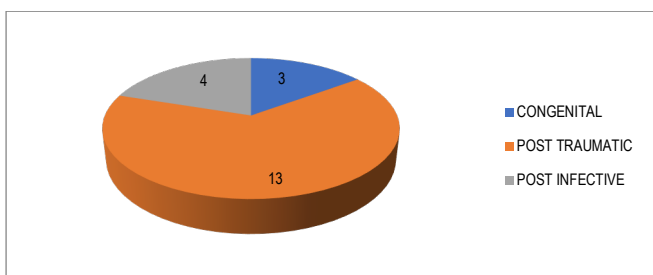


Fig 3: Etiology of Nasal Deformity

The etiology of nasal deformities for which the patients presented were also noted. The observation which was made regarding the etiology of deformities in the presenting subjects were: congenital lesions in 3(15%) patients, post traumatic lesion in 13(65%) patients and post infective lesion in 4(20%) patients.

Of the three congenital lesions, 1(5%) patient had tip deformity and 2(10%) patients had depressed nasal bridge with hypoplastic maxilla. Of the four post infective lesions, 1 patient had alar defect in left ala of nose and 3 patients had depressed nose due to infective necrosis of the nasal

septum. Of the 13 patients with post traumatic lesions, 6(30%) patients had hump nose and seven patients came with depressed nasal bridge due to trauma.

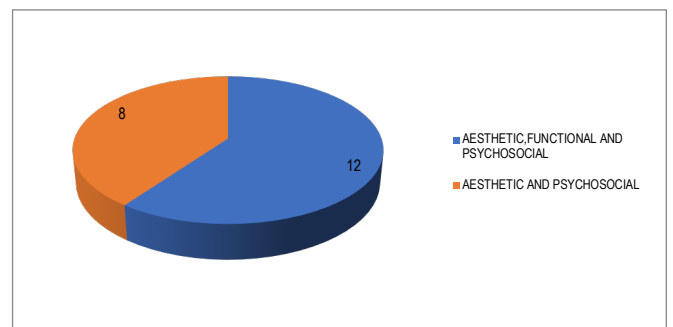


Fig 4: Reason for seeking Rhinoplasty

Reason for seeking rhinoplasty was also asked from the patients. The patients had need for rhinoplasty either because of aesthetic, functional or psychosocial reasons or combinations of these reasons.

Most of the patient sought rhinoplasty surgery in our study due to all three reasons i.e. aesthetic functional as well as psychosocial reasons (12 patients). However, 8 out of 20 patients sought rhinoplasty surgery only due to aesthetic and psychosocial reasons only. Such patients did not have any nasal obstructive complaint.

OPERATIVE PROCEDURES AND VARIOUS OPERATIONS DONE IN PATIENTS

After analysis of demography and history and examination observations, analysis of operative procedures and various operations done in patients was made. It was observed that costal cartilage columellar strut and dorsal augmentation was done in 12(60%) out of 20 patients, hump reduction with osteotomy with costal cartilage columellar strut was done in 3(15%) patients, hump reduction with osteotomy with columellar strut with septoplasty and spreader graft was done in 3(15%) patients, v-y mucosal advancement procedure in inner aspect of left ala was done in 1(5%) patient with alar defect, resection of cephalic border of lower lateral cartilage preserving 8 mm of cartilage and interdomal and transdomal suture applied, with cartilage graft from rib to increase the length of septum to act as columellar strut, lateral crus of lower lateral cartilage was fixed to upper lateral cartilage was done in 1(5%) patient with tip deformity. Follow up patients ranged from 2 months to 6 months with follow up of 4.2 months.

Evaluation of Results

The results of our study were studied in 3 dimensions viz aesthetic outcome, functional outcome and psychosocial outcome.

FOR EVALUATION OF AESTHETIC RESULT

Aesthetic results of rhinoplasty were evaluated subjectively and objectively. Evaluation of aesthetic outcome is based on comparison of six standard pre and postoperative photographic views.

These were frontal, right and left lateral, right and left oblique and basal views. Each postoperative view was compared with corresponding preoperative view by the operating surgeon and results were categorized as appreciably good, fair or worse.

Operating Surgeon’s Evaluation of aesthetic results

Post-operative evaluation of results by the operating surgeon was done upon follow up of the patient in plastic surgery OPD. All six standard views photographs of the patients were taken at the time of follow up and were compared with preoperative pictures and results were recorded in the form of good, fair or worse results.

It was found in our study that 14 out of 20 patients i.e. 70% had good result, 6 out of 20 patients i.e. 30% had fair results and no patient had worse result.

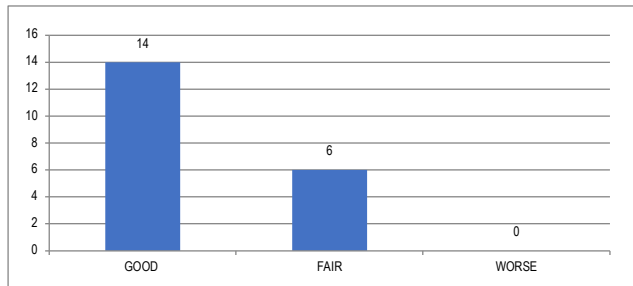


Fig 5: Result analysis

Patient’s Evaluation of aesthetic results

Subjective evaluation of cosmetic results was based on patient’s assessment i.e., how he/she perceive the final aesthetic outcome of operation and depending upon the first question of patient questionnaire.

On follow up patients were asked questions from the Alsarraf questionnaire. And based upon first question of the questionnaire, it was found that 6(30%) out of 20 patients were completely satisfied with aesthetic result, 6(30%) out of 20 patients were moderately satisfied, 8(40%) out of 20 patients were very satisfied and no patient were poorly or not satisfied with post-operative aesthetic result.

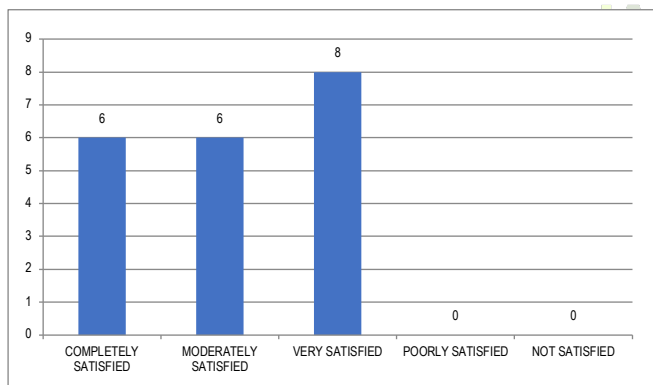


Fig 6: Patient’s Evaluation of aesthetic results

FOR EVALUATION OF FUNCTIONAL RESULT

According to the degree of nasal obstruction, the patients were divided into 3 groups: Group I – patients with a severe degree of nasal obstruction Group II – patients with a moderate degree of nasal obstruction Group III – patients with a mild degree of nasal obstruction

Subjective evaluation of results was based on patient’s assessment i.e., how he/she perceive the final functional outcome of operation and depending upon the second question of patient questionnaire.

DEGREE OF NASAL OBSTRUCTION

Degree of nasal obstruction was also analyzed in the patients who complained of nasal obstruction. It was found that out of

12 patients who had nasal obstruction, mild obstruction was present in 5 patients, moderate obstruction was present in 5 patients and two patients had severe degree of nasal obstruction. The cause of nasal obstruction was deviated nasal septum which was congenital in 5 cases and post traumatic in 7 cases. On follow up patients were asked questions from the Alsarraf questionnaire. And based upon second question of the questionnaire, it was found that 3(15%) out of 12 patients were completely satisfied with functional result, 4(20%) out of 12 patients were moderately satisfied, 5(25%) out of 12 patients were very satisfied and no patient were poorly or not satisfied with post-operative functional result.

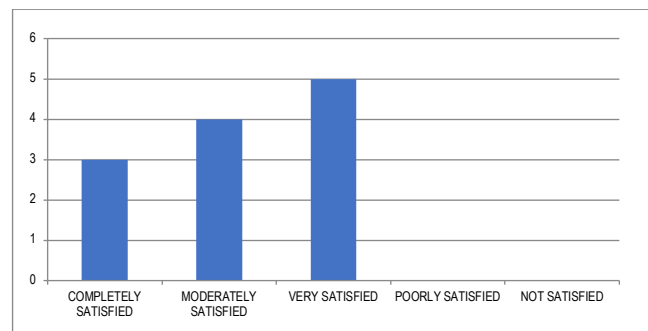


Fig 7: Degree of Nasal Obstruction

FOR EVALUATION OF PSYCHOSOCIAL RESULT

The patients were asked about the degree of satisfaction of his/her friends and family with the appearance of their nose post operatively. It was found that 5(25%) out of 20 patients were completely satisfied with psychosocial result, 6(30%) out of 20 patients were moderately satisfied, 9(45%) out of 20 patients were very satisfied and no patient were poorly or not satisfied with post-operative psychosocial result.

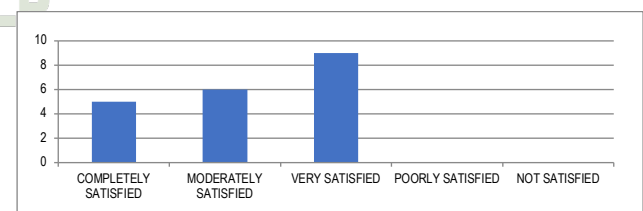


Fig 8: For Evaluation of Psychosocial Result

On follow up, the patients were also asked whether the appearance of his/her nose limits their social and professional activities. The patients responded to the question number 4 of this questionnaire, and it was noted that in 12(60%) patients out of 20 patients, the appearance of their nose never limited their social and professional activity, in 6(30%) patients out of 20, social and professional activity was rarely limited by appearance of nose, and in 2(10%) patients limitation in their social and professional activity was there sometimes.

Confidence level of patients about appearance of their nose post operatively

The confidence level of the patients was also asked and question five of the questionnaire was asked to the patient during follow up. It was asked that whether the patient was confident that the appearance of his/her nose was the best possible. It was observed that 8(40%) out of 20 patients were completely confident of the appearance of their nose, 7(35%) out of 20 patients were very much confident, 4(20%) out of

20 patients were moderately confident, and only 1(5%) patient was slightly confident of the appearance of nose postoperatively. Desire of patients to undergo a new surgical procedure to change nasal appearance was to be asked as per the sixth question of the questionnaire. Similarly desire of patients to undergo a new surgical procedure to change nasal function was also to be asked as per the seventh question of the questionnaire. Since in our study, follow up was short and it was too early to decide for any revision surgery, answer to these questions were not sought from the patients on follow up. Also, patients were lost to follow up and there was no follow up of patients for more than 6 months in maximum.

DISCUSSION

Open structure rhinoplasty is a well-established technique in rhinoplasty surgery as it provides excellent exposure allowing direct inspection, diagnosis and management of various deformities of nasal framework. Numerous publications have appeared in international medical literature utilizing this technique in various ethnic populations especially in the last decade. Rhinoplasty has gone through a remarkable development during the last decades (Wang TD. 2003).³

In facial plastic and reconstructive surgery rhinoplasty is recognized as a difficult procedure with a long learning process, characterized by trial and error McCollough E.G. (1989).⁴ It is a well-known fact and proven by time that in the society that is currently highly dynamic, the first impressions are important. Appearance and external symbols of the individuals are important. Beauty is a social status as one of the factors considered to be important in assessing social situations of people. Today, cosmetic surgery is one of the most common surgeries in the world that is increasing. As medical science advances make it possible that the human could manipulate and change their appearance, they may encourage many people for surgery (Khanjani, 2012).⁵

One of the factors that may be associated with cosmetic surgery is self-esteem, and it is sense of worth and confidence that the person feels about himself and his individual abilities, totally, it is a series of judgments and assessments of person about himself (Lotfi Kashani, 2002).⁶

Rhinoplasty surgery can be open or closed. In this study we had chosen open rhinoplasty procedure for our study because of various reasons. They can be summarized as:

1. Reduced dissection (cutting) of the nasal tissues—no columellar incision
2. Decreased potential for the excessive reduction (cutting) of the nasal-tip support
3. Reduced post-operative edema
4. Decreased visible scarring
5. Decreased iatrogenic (inadvertent) damage to the nose, by the surgeon
6. Increased availability for effecting *in situ* procedural and technical changes
7. Palpation that allows the surgeon to *feel* the interior changes effected to the nose
8. Shorter operating room time
9. Quicker post-surgical recovery and convalescence for the patient.

However, one of the major disadvantages of open rhinoplasty is that it leaves a visible scar on the columella

(Sheen 1999).⁷

Shortly after its re-introduction in 1970 in North America, Goodman considered the external approach indicated for a wide variety of nasal deformities. Today the external approach is used by an increasing number of surgeons, by some even in almost all rhinoplasty patients, unless the nasal pathology can be analyzed adequately during the pre-operative assessment and the same result can be achieved after a closed rhinoplasty in the hands of a single rhinoplasty surgeon Briant (1985).⁸

Our study demonstrates an improvement in patient satisfaction scores for the parameters of aesthetic appearance, psychosocial comfort and acceptance and nasal airway after surgery. In our study 6(30%) out of 20 patients were completely satisfied with aesthetic result, 6(30%) out of 20 patients were moderately satisfied, 8(40%) out of 20 patients were very satisfied and no patient were poorly or not satisfied with post-operative aesthetic result. These findings of our study were similar to the results of Mendis (2013),⁹ Abd al-aziz (2005),¹⁰ Claes(2009)¹¹ and Gustavo de Azambuja et al (2011).¹²

Nasal airway evaluation in our study revealed that 3(15%) out of 12 patients were completely satisfied with functional result, 4(20%) out of 12 patients were moderately satisfied, 5(25%) out of 12 patients were very satisfied and no patient were poorly or not satisfied with post-operative functional result. These findings of our study were similar to the results of Mendis (2013),⁹ Abd al-aziz (2005),¹⁰ Claes(2009)¹¹ and Gustavo de Azambuja et al (2011).¹²

Open structure rhinoplasty provides wide exposure to nasal framework and any deformity of nasal septum can be corrected at the same time resulting in improvement of nasal airway and appearance simultaneously. Improvement in nasal airway was noticed in 60% of our patients who presented with complaints of external nasal deformity and nasal obstruction. In all these cases rhinoplasty was combined with septoplasty as a single stage procedure. Other studies in which septoplasty were combined with rhinoplasty produced similar improvement in nasal airway and good aesthetic results (Konstantinidis I, 2003)¹³ and (Jin HR, 2006).¹⁴

Open structure rhinoplasty is a challenging procedure and complications can arise due to inappropriate patient selection, inadequate diagnosis, errors in surgical technique, and variations in patient's anatomy or healing response (Harsha BC. 2009).¹⁵ We did not encounter any significant complications like extrusion or absorption of graft, postoperative infection, bleeding, ecchymosis, edema or pain. This may be due to our practice of using autologous cartilage grafts, meticulous surgical technique, keeping nasal packs for 24hrs, using intra and postoperative steroids and routinely prescribing antibiotics and analgesics in the post-operative period.

CONCLUSION

Open septorhinoplasty is an old age technique for correction of nasal deformities externally as well as to relieve the patient of airway obstruction while breathing. This study includes all the three aspects ie, aesthetic, functional and psychosocial, for which most of the patients seek rhinoplasty and the results of our study is comparable to various other studies as discussed in the discussion section.

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