

Evaluation of postoperative morbidity in open versus closed septorhinoplasty

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Objective: To compare post-operative facial pain, periorbital edema and ecchymosis in open and closed approach of septorhinoplasty in the tertiary care setup of Karachi.

Methodology: The study was done in the Department of ENT and Head & Neck Surgery, Dr. Ruth K. M. Pfau Civil Hospital Karachi, from January 2017 to June 2019. It included 50 patients, who had undergone septorhinoplasty through open (25 patients) and closed (25 patients) approach. Patients were assessed for post-operative facial pain, periorbital edema and ecchymosis 24 hours after surgery. For the assessment of pain, a visual analog score was used and scoring for

eyelid edema and ecchymosis were made from 0-4, 0 being the lowest and 4 being the highest score demonstrating the severity.

Results: There was a significant clinical and statistical difference between both the groups in the scores of facial pain, periorbital edema and ecchymosis and the gender ($p < 0.05$). However, no significant difference was found in terms of age ($p > 0.05$).

Conclusion: Postoperative morbidity (facial pain, periorbital edema and ecchymosis) was less frequent after closed approach septorhinoplasty as compared to the open approach.

Keywords: Edema, ecchymosis, septorhinoplasty.

INTRODUCTION

Rhinoplasty is done for modifying and reconstructing the shape of the nose. It involves addressing the nasal architecture in such a way that it improves outlook of the patients according to their desire, while still preserving or sometimes also addressing the nasal function. It can be done via two approaches, internal and external. Osteotomy is the final and most difficult step in the creation of a sculpted bony pyramid.¹

It is associated with various complications in the early postoperative period, such as bleeding, edema and ecchymosis.² Eyelid edema causes reduced visual acuity, especially within the first 24 hours of surgery.³ It is due to the bleeding in the soft tissues secondary to lateral osteotomies.⁴ Postoperative nasal packing is also found to increase the duration and severity of periorbital ecchymosis.⁵ Measures used to prevent edema include careful surgical technique, pressure application at the osteotomy sites, timing of osteotomy, cold compression and head elevation, but they are not successful to that much extent.⁶

Merits and demerits of closed over open rhinoplasty remain a subject of debate. Open approach is a better option for treating compound and complicated nasal deformities. It has the advantage of giving the surgeon better exposure and access to adjust the shape of nose. Nevertheless, the disadvantage of this includes columellar skin necrosis, which might cause a lot of trouble to the patient aesthetically.⁷ Open approach is

more invasive and requires a wider dissection, takes more time even by an experienced surgeon.⁸ On the other hand, there is minimal operative time consumption, faster recovery, and no scar formation in closed approach. Other advantages of closed septorhinoplasty include preservation of nasal tip vascularity and minimal subcutaneous fibrosis, with short recovery period. All these factors make closed approach rhinoplasty superior to open technique. The aim of this study was to compare the severity of postoperative facial pain, periorbital edema and ecchymosis in patients' undergoing open and closed septorhinoplasty.

METHODOLOGY

It was a prospective comparative study conducted in the Department of ENT-Head & Neck Surgery, Dr. Ruth K. M. Pfau, Civil Hospital Karachi, which included 50 patients, of age ranging between 18 and 35 years, of both genders, admitted for primary septorhinoplasty with grossly deviated nose, from January 2017 to June 2019. Patients were allocated in two groups, each of 25 members, Group 1 with patients operated through open approach, and Group 2 operated through closed approach. Patients with comorbidities (diabetes mellitus, hypertension, ischemic heart disease or lung pathology), patients with nasal pathologies other than septal deviation, and those with history of previous nasal surgeries were excluded.

After having baseline laboratory investigations and taking informed consent, patients underwent septorhinoplasty under general anesthesia with osteotomy performed through conventional method. Patients were randomly stratified by osteotomy procedure. Postoperatively, antibiotics, analgesics and steroids were given intravenously. Head elevation was advised. Nasal cavities were packed with BIPP packs, which were removed after 48 hours, followed by nasal decongestant sprays. Patients were advised to clean the nose thoroughly with alkaline water. The external nasal cast splints were removed 10 day post-surgery.

The intensity of facial pain postoperatively was determined by the visual analogue scale (VAS).⁹ The periorbital edema and ecchymosis were assessed postoperatively according to the grading system described by Kara and Gakalan.^{10,11} (Fig. 1). The scale ranged from 0 to 4, with higher values indicating more edema and ecchymosis. A doctor, who was not the part of primary procedure, assessed the variables 24 hours after the operation.

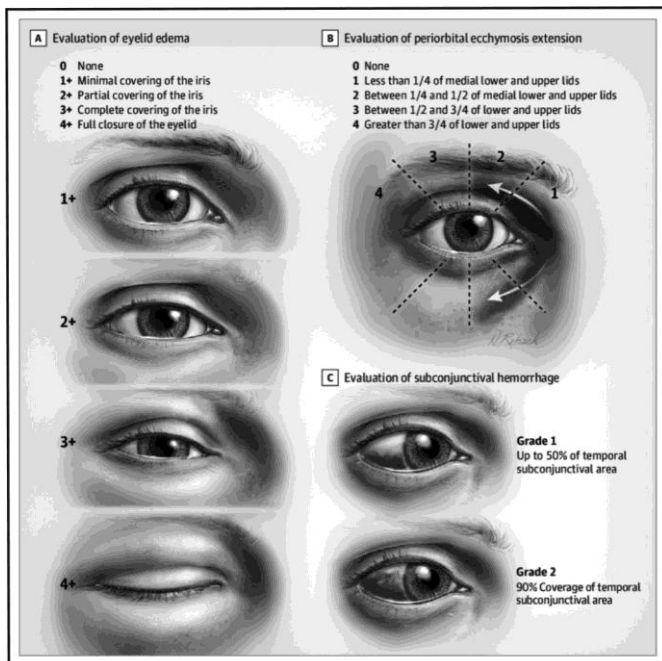


Fig. 1: Grades of periorbital edema, ecchymosis and subconjunctival hemorrhage.

Statistical Analysis: The SPSS version 24 was used for the statistical analyses and t-test used with $p < 0.05$ was consider to indicate statistical difference.

RESULTS

The study included 50 patients altogether. In group 1 (open approach), 12 were males and 13 were females

with ages range between 18 years and 33 years and a mean age 23 ± 3.341 . Group 2 (closed approach) had 16 males and 9 females, between 19 and 31 years and a mean age of 24.32 ± 3.47 . Patients in group 2 had a significant decrease in pain (3.76 ± 1.09) than that of group 1 in which pain was severe (6.08 ± 1.15). The eyelid edema of the patients of group 2 was less severe (1.67 ± 0.99) than group 1 patient (3.04 ± 0.934). Periorbital ecchymosis was decreased in patients of group 2 (1.16 ± 0.98) as compared to group 1 patients (2.72 ± 0.936) (Fig. 2).

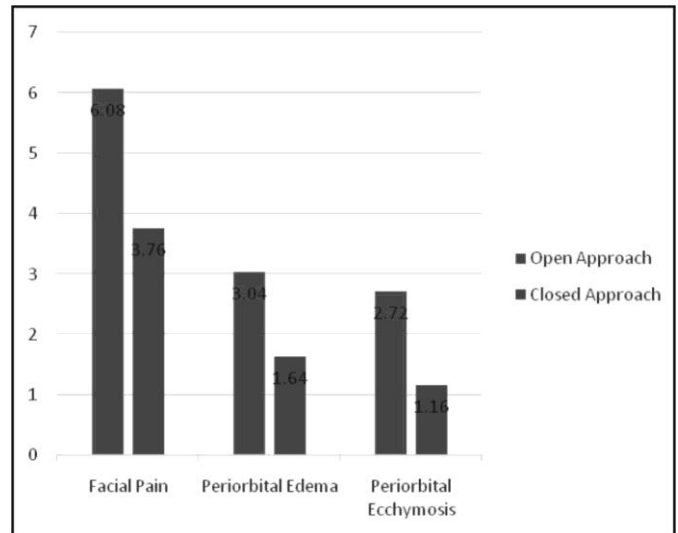


Fig. 2: Comparison of postoperative morbidity with open versus closed approach.

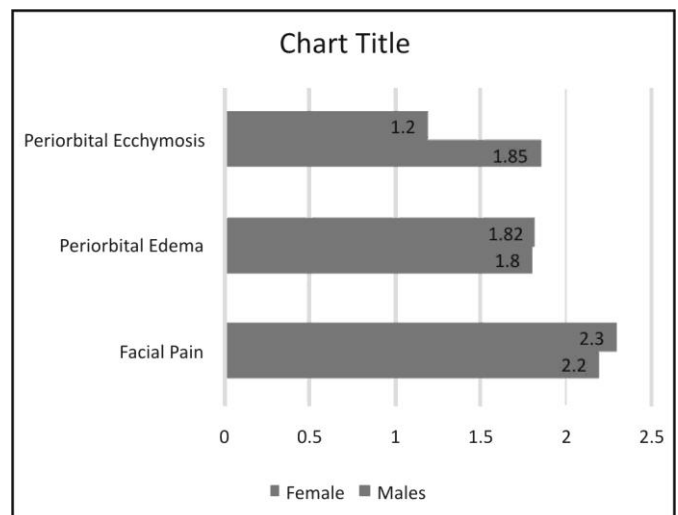


Fig. 3: Postoperative sequelae by gender.

The facial pain and periorbital edema were more frequently seen among female patients as compared to males ($p < 0.05$) (Fig. 3). In-group 1, 6 were aged under 20 years while 19 were above 20 years. Likewise, those

in group 2, 3 aged less than 20 years and 22 were above 20 years of age. The results showed that postoperative sequelae were more frequently seen in younger patients (> 20 years) as compared to those above 20 years ($p > 0.05$).

DISCUSSION

Postoperative morbidity is an important issue to be addressed for both patients and surgeons. Previously, no quantitative data was available regarding the adverse effects of rhinoplasty. Sharif et al reported adverse events post rhinoplasty.¹² Wound dehiscence on lip was also reported as postoperative complication.¹³ The approach used for rhinoplasty plays an important role in the postoperative sequelae. The open approach is more damaging as it involves extensive dissection of skin over the osseocartilagenous framework, bleeding during surgery causing greater edema and postoperative pain, and results in an obvious scar mark.

The endonasal approach is more precise, less damaging and scarless type of surgery. It is superior to the open approach, as there were more chances of extended nasal tip edema with open technique.¹⁴ The desired result with closed approach is more natural and in cases of revision surgery, it allows easier resolution of problems.¹⁵ However, the open approach has been reported to have better outcomes in comparison to the other types of septorhinoplasty in terms of cosmesis and functionality.¹⁶

We used VAS as an outcome measure for evaluation of pain. The physical representation of pain through this scale makes it an optimal tool for describing pain intensity.⁹ Patients' pain score was assessed between the both groups using VAS with 0 number having no pain, 1 – 3 mild pain, 4 – 6 moderate pain and 7 – 10 severe pain. We evaluated that the pain score for group 2 remained on lower side (3.76 ± 1.09) to that of group 1 (6.08 ± 1.15). Wittekindt et al also suggested that open rhinoplasty was associated with less satisfaction with pain management.¹⁷

Our study included 28 males and 22 females. 12 males and 13 females had open approach rhinoplasty while 16 males and 9 females were operated through closed technique. The facial pain and periorbital edema were more frequently seen among females, while periorbital ecchymosis was more common in males. Al Abri et al reported that males had better cosmetic satisfaction with open surgical approach as compared to the end nasal approach septorhinoplasty.¹⁸ Females have been found to have less satisfaction with their bodies and are not likely satisfied with the outcome of ENT surgeries.¹⁹ The periorbital sequelae following rhinoplasty include

periorbital edema, ecchymosis and sub conjunctival hemorrhages. The postoperative complications after rhinoplasty are majorly associated with osteotomies. Their pathogenesis appears to be attributable to the disruption of soft tissues surrounding the bony site selected for osteotomy.

We studied open versus closed rhinoplasty approaches for periorbital sequelae in early postoperative period. In contrast to the study conducted by Sakallioğlu et al, we found out that the facial pain, periorbital edema and ecchymosis were present in the patients operated through open approach more frequently than those operated through closed approach.⁴ A meta-analysis by Kim et al suggested no significant advantage in edema and ecchymosis was found in the external approach as compared to closed rhinoplasty.²⁰

Troedhan et al, used ultrasonic surgical device called piezotome.²¹ It was seen that the postoperative periorbital edema and ecchymosis was significantly reduced with the use of such device. In our study, rhinoplasty was performed using traditional instruments and osteotomes. Moreover, preserving the periosteum in external perforating lateral osteotomy is associated with less eyelid edema and ecchymosis in early postoperative period.²² This suggests that with the use of better technique and instrumentation, we could reduce the morbidities associated with rhinoplasty.

CONCLUSION

The study concluded that closed approach rhinoplasty is associated with less morbidity as compared to the open approach, in the early postoperative period.

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Conception and design: Tariq Zahid Khan.
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Conflict of Interest: None declared.
Rec. Date: Dec 7, 2021 Revision Rec. Date: Feb 21, 2022 Accept Date: May 30, 2022.

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