



TO STUDY THE SURGICAL OUTCOMES OF INTERNAL CONTINUOUS TECHNIQUE OF LATERAL OSTEOTOMY IN PATIENTS UNDERGOING CLOSED RHINOPLASTY

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Abstract

An ideal nasal osteotomy technique delivers predictable control and precision to maximize the aesthetic and functional results in rhinoplasty surgery while limiting the potential for complications. We carried out a prospective study of surgical outcomes of the internal osteotomy technique performed during rhinoplasty. We performed an observational descriptive prospective study to analyse 25 patients of either sex with external nasal deformities who had undergone closed rhinoplasty between Oct 2021 to Oct 2022 at Santosh Medical College & Hospital, Gzb. Patients underwent endonasal low to high continuous lateral osteotomy with 4 mm curved guarded osteotome. Intraoperative comparison was done in terms of bleeding, ease of performing osteotomy, time taken for osteotomy, and for improvement in aesthetic appearance of nose. In our study, most patients belong to the age group ranging from 20 - 30 years, with mean age of 25.20 ± 3.57 years. Out of 25 who underwent internal osteotomy, 19 were males, and 6 were females. We found that excellent haemostasis was achieved in 9 cases. It was observed that all the 25 patients developed postoperative oedema. On comparing the patient's satisfaction, it was observed that, 16 (64%) patients were very satisfied, 5 (20%) were moderately satisfied, and 4 (16%) patients were unsatisfied by the surgical outcome. In our study none of the patients developed any lacrimal sac problem, nasal cyst formation, anosmia, epiphora, canalicular bleeding, unstable bony pyramid, Rocker deformity, or Stair-step deformity.

Key words: internal osteotomy, rhinoplasty, deformity

INTRODUCTION

Rhinoplasty is a surgical procedure, which involves reshaping the nose by removing excess bone and cartilage. It helps in not just improving the appearance of nose, but also improves the function of the nose, helping the patient look as well as breathe better.

The most critical step in rhinoplasty is osteotomy, which includes medial osteotomy, intermediate osteotomy,

transverse osteotomy, and lateral osteotomy. An ideal nasal osteotomy technique delivers predictable control and precision to maximize the aesthetic and functional results while limiting the potential for complication. Lateral osteotomies are generally the last step in aesthetic rhinoplasty but is the most integral part of rhinoplasty for reshaping lateral nasal contour, narrowing of nasal

base, realigning the nasal dorsum and correcting an open roof.

We carried out a prospective study to surgical outcomes of the internal osteotomy technique performed during rhinoplasty.

MATERIAL AND METHODS

We performed an observational descriptive prospective study to analyse 25 patients of either sex with external nasal deformities who had undergone closed rhinoplasty between 2021 to 2022 at a tertiary care centre.

Inclusion criteria

1. Patients having contour deformities-lateral depression, dorsal deformities and/or deviated nose with or without deviated nasal septum, dorsal hump.
2. Age group: 20 - 45 years.

Exclusion criteria

1. Patient who has undergone rhinoplasty previously.
2. Patient with depressed nose requiring augmentation.
3. Patient with history of recent nasal trauma.
4. Patient with bleeding disorders.
5. Patient with chronic illness like uncontrolled diabetes mellitus and hypertension, tuberculosis (active).

Preoperative Evaluation of the patient

All patients were admitted a day before the surgery and a detailed relevant history was taken. Thorough general physical and otorhinolaryngeal examination of the admitted patients were done. All routine investigations were sent. Patients were fully explained about the deformity, surgical procedure, risks, benefits, outcome, and a complete informed consent about the procedure of rhinoplasty was taken. The standard facial photographs

were taken which included Frontal view; Right and Left lateral views; Right and Left oblique views; Basal view (worm's eye view).

Operative procedure

All the patients were operated under general anaesthesia. The local site was cleaned with 1% povidone iodine. Vibrissae were removed with iris scissors. The surgical procedure was done through closed approach. 2% xylocaine with adrenaline (1: 2, 00,000) was infiltrated in five areas (1) tip and columella, (2) lateral wall, (3) dorsum/extramucosal tunnels, (4) incision lines, and (5) septum (both sides). Septal deformity, if any, was corrected via septoplasty. Transfixion or hemitransfixion incision along with intercartilagenous incision was placed, followed by dissection of the nasal bones and upper lateral cartilages from the overlying skin. Upper lateral cartilages were separated from the septum. After adequate correction of the deformity, the incision was closed using 4-0 vicryl suture. Bilateral anterior nasal packing was done. This was followed by external taping of the nose using transpore strips in an overlapping manner and external splinting using Plaster of Paris (6 layers) moulded to fit the shape of the dorsum.

Internal (Endonasal) Continuous Lateral Nasal Osteotomy Technique

Patients underwent endonasal low to high continuous lateral osteotomy with 4 mm curved guarded osteotome. The proposed line of osteotomy was marked with marking pen for the accurate path of osteotomy. The periosteum was elevated and the osteotome was engaged and passed along the sulcus of frontal process of maxilla (nasofacial groove) with tapping stroke of the mallet (fig 1). The osteotome

was gently curved medially as it approached the infraorbital rim and continued superiorly till the level of intercanthal line. Similar steps were repeated on the opposite side also. Once the nasal bones were fully mobilized then proper alignment was done using digital pressure.



(Fig 1)lateral osteotomy along the nasofacial groove

Assessment

Intraoperative comparison was done in terms of bleeding, ease of performing osteotomy, time taken for osteotomy, and for improvement in aesthetic appearance of nose. All the 25 patients who underwent internal/endonasal continuous lateral osteotomy were assessed for post-operative oedema and ecchymosis at 1, 2, 7, and 21 days after the operation; for nasal mucosal healing after 2 weeks; and for the final outcome of surgery at the end of 6 months. Nasal endoscopy was done on postoperative day 14 to assess the intranasal mucosa for healing and synechia formation. Comparison was done between preoperative and postoperative photographs and the satisfaction of the patient regarding aesthetic improvement was assessed.

Scoring system of oedema--

Grade I :
No Coverage of iris with eyelids.

Grade II :
Slight coverage of iris with swollen eyelids.

Grade III : Full coverage of iris with swollen eyelids.

Grade IV : Full closure of eyes.

Modified Kara and Gokalan Scoring system was followed for grading oedema and ecchymosis:

Scoring system for ecchymosis --

Grade I - Ecchymosis up to the medial one-third part of lower and /or upper eyelid

Grade 2 - Ecchymosis up to the medial two-third part of the lower and/or upper eyelid

Grade 3 - Ecchymosis up to the full length and lower/or upper eyelid.

RESULTS

A total of 25 patients with external nasal deformities were evaluated. The observations and results obtained are as follows:

Age distribution

In our study, most patients belong to the age group ranging from 20 - 30 years, with mean age of 25.20 ± 3.57 years.

Sex distribution

Out of 25 who underwent internal osteotomy, 19 were males, and 6 were females.

Type of associated deformity

In our study, all 25 patients had associated deviated nasal septum (DNS). 15 patients out of 25 had isolated crooked nose, and 10 had combined crooked nose with hump deformity.

Septal correction

Of the total 25 atients operated, deviated nasal septum (DNS) was present in all and hence required septal correction, in the

form of septoplasty, in addition to the correction of external deformity.

INTRAOPERATIVE EVALUATION

1. Haemostasis during surgery

We found that excellent haemostasis was achieved in 9 cases, while in 15 cases it was average control, and in 1 cases poor haemostasis was present.

2. Ease of performing osteotomy

While performing lateral osteotomy by internal continuous method, the ease of performing osteotomy was excellent in 18 cases, whereas it was average in 7 patients.

POSTOPERATIVE EVALUATION AND FOLLOW UP

Postoperative oedema

Patients were assessed for the presence of postoperative oedema in terms of maximum grade and duration.

1. Grade of oedema

It was observed that all the 25 patients developed postoperative oedema.

We found that grade 1 oedema was present in 16 (66%) patients, grade 2 oedema in 5 (20%) patients, grade 3 in 2 (10%) patients and grade 4 in 2 (4%) patients.

2. Duration of oedema

Patients were observed for the presence of oedema on postoperative days 1, 2, 7, and 21. It was observed that all 25 (100%) patients had postoperative oedema on day 1 and 2, and it persisted in 12 (48%) patients at the end of one week.

Post-operative ecchymosis

1. Grade of ecchymosis

It was observed that out of 25, 22 patients developed ecchymosis.

2. Duration of ecchymosis

Patients were observed for the presence of ecchymosis on postoperative days 1, 2, 7 and 21. It was observed that, 21(90%) patients out of 25 had postoperative

ecchymosis on day 1 and 2, and it persisted in 3 (22%) patients at the end of 1 week and in 1 (2%) patient at the end of 3 weeks.

Correction of deformity

Deformity correction at the end of 6 months was evaluated by comparing the preoperative and postoperative photographs of the patients and assessing the satisfaction of patient using ROE (Rhinoplasty Outcome Evaluation) scale(fig 2).

On comparing the patient's satisfaction, it was observed that, 16 (64%) patients were very satisfied, 5(20%) were moderately satisfied, and 4(16%) patients were unsatisfied by the surgical outcome.

In our study none of the patients developed any lacrimal sac problem, nasal cyst formation, anosmia, epiphora, canalicular bleeding, unstable bony pyramid, Rocker deformity, or Stair-step deformity.



Fig 2 Crooked nose deformity (a) preoperative (b) postoperative

DISCUSSION

For rhinoplasty surgeons, nose forms the most important part in improving the aesthetic outcome of the face by performing constructive and functional

rhinoplasty^[1]. Rhinoplasty not only alters the shape of the nose but also causes functional changes. Osteotomies constitute a fundamental step in rhinoplasty and it is rare that they are not required. Lateral osteotomy is a major part of rhinoplasty for remodelling external facet of the nose and narrowing of nasal base and dorsum after removal of the hump^[2].

Rohrich et al^[3] reported that external osteotomy does not require mobilization of soft tissues or subperiosteal tunnels and makes it possible to position and conduct the osteotome exactly along the line desired. Consequently, there was less trauma to the mobile tissues and a partial interruption of periosteum with greater stability of bone, but our findings were different from this study.

Denney and Tardy investigated the internal method using a 2-3 mm osteotome without the protector reported that the internal method reduced the edema, ecchymosis and mucosal damage^[4]. In our present study also the findings concur with the observations of the above author. High grade edema was present in only 4 % cases. Edema and ecchymosis subsided over a period of 3 weeks post operatively. The internal method advocators believe that this method, when implemented with a high precision, causes lower extent of edema and ecchymosis^[5]. Becker with 30 years' experience, despite confirming external route's reliability, suggested internal osteotomy by 2 mm osteotome a without protector to be done without any nasal mucosal damage, though 4 mm guard osteotome had 95% tissue damage.[6] The findings were confirmed by Patrick and Sullivan too.[7] In our study we have used 4 mm curved guarded osteotome to perform the lateral osteotomy to reduce the slip and minimise the tissue

trauma. Another study with similar instruments like ours (internal osteotomy with 4 mm guarded osteotome) had less edema and ecchymosis on 2nd, 3rd and 7th days[8]. Besides the technique adopted we should also consider other confounding factors which can adversely affect the outcome viz. use of NSAIDs, oral contraceptives, anti-coagulants, blood coagulations disorders and blood pressure. The optimal performance of continuous internal lateral osteotomy depends upon the skills and experience of the surgeon. Before embarking upon closed rhinoplasty, the surgeon has to hone the requisite skills as it is both art and science of rhinoplasty which results in favourable patient outcomes.

CONCLUSION

Rhinoplasty is the treatment of choice for patients with external nasal deformities. It can provide both cosmetic and functional improvement. It is a belief amongst the authors that the internal (endonasal) continuous lateral osteotomy is an effective and reliable technique in correcting the external nasal deformity. It is also known to us that the aesthetic result of rhinoplasty is not just dependant on osteotomies, and that many experienced rhinoplasty surgeons can debate in favour or against of the lateral nasal osteotomy technique that they follow or not follow respectively. Keeping this in mind, we conclude that the internal technique of lateral nasal osteotomy delivers a better and predictable control with precision to maximize the aesthetic and functional results while limiting the potential for complication. It causes less tissue injury, and provides higher confidence in being able to be performed. Moreover, the post-surgery aesthetic satisfaction of patients

was higher, making it a preferable option for the surgeon and the patient as well.

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