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SCRIPTA MANENT EDIZIONI

Rhinoplasty in unilateral cleft lip nasal deformity.

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Summary

Rhinoplasty in unilateral cleft lip nasal deformity.

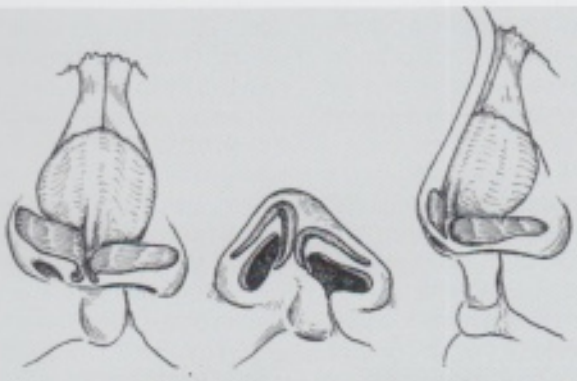
An operation is discribed for the correction of unilateral cleft lip nasal deformity which has had considerable uniformity of success and is applicable to both mild and sever degree deformity.
Our proposed technique is performed through an external rhinoplasty approach and depends on repositioning of the displaced and deformed cartilages together with the reinforcement of the structural support of the nose using multiple cartilage grafts.
This surgical technique was used in 16 consecutive adult patients with unilateral cleft lip nasal deformity and yielded consistently good long-term functional and cosmetic results.

Key words: *Rhinoplasty; cleft lip.*

INTRODUCTION

Within the last twenty years, a few surgeons have developed sophisticated techniques to correct the nasal deformity associated with unilateral cleft lip at the time of primary cleft lip repair[1, 2, 3].
However, most surgeons limit the primary repair to simply closing the floor of the nose while repairing the lip and leave the majority of the nasal deformity to be dealt with at a secondary stage after full nasal development has been reached.
Regardless to timing of repair; the management of the nasal deformity associated with a cleft lip remains a difficult technical challenge. The literature is full of techniques described to correct cleft lip nasal deformity, as the complexity of the anatomical abnormality encountered does not lend itself to a single, straightforward procedure[4-12].
Although *Foda*[13] addressed his outstanding technique to correct the cleft lip nasal deformity he did not believe that any single method can consistently correct the complete spectrum of all deformities encountered in the cleft lip nose. He is hoping, his technique adds to the surgeon's armamentarium and that the reader will be stimulated to modify the technique presented according to the individual needs of each case.
The characteristic features of the cleft lip nose are well-known and have been depicted well in the literature, with more than 20 abnormal anatomical components described in the unilateral cleft lip nasal deformity[11, 14].
However, it is the abnormalities of the lower third of the nose that most stigmatize the cleft nose deformity. This deformity results secondary to the maxillary underdevelopment on the cleft side which leads to an abnormal muscle tension that affects mostly the cartilaginous framework of the nose leading to its distortion, with the subsequent development of the characteristic nasal deformity.
In the classical unilateral cleft lip nasal deformity the pathological anatomy encountered includes a deformed malpostioned alar cartilage on the cleft side with its medial crus depressed and deviated with the collumella to the normal side. The dome is displaced ventrally leading to asymmetric tip with variable degrees of bifidity. The lateral crus is caudally dislocated, buckled and joins the medial crus

Figure 1



Pathological anatomy of cleft lip nasal deformity.

at an obtuse angle resulting in a flattened ala with a horizontally displaced nostril. The caudal part of the septal cartilage is deviated to the non-cleft side leading to nostril asymmetry (Figure 1).

Additional findings include; convex dorsum with depressed nasal tip and crooked nose with its cartilaginous part deviated to the normal side due to the underlying septal deviation and the asymmetrical attachment of upper lateral cartilages.

On planning for surgical repair of the unilateral cleft lip nasal deformity, the goal should always be to achieve as much symmetry as possible to the normal side; however, the degree of symmetry achieved is usually inversely proportional to the severity of the deformity. The author presents a surgical technique for the management of the unilateral cleft lip nasal deformity which has had considerable uniformity of success in achieving nasal symmetry.

MATERIAL AND METHODS

The current study included 16 adult patients presenting for rhinoplasty following the primary repair of congenital unilateral clef lip deformity. All cases were operated upon using the external rhinoplasty approach, starting with a complete septoplasty followed by a combination of repositioning and augmentation of the distorted anatomical framework of the nose. The cases were periodically followed up for a mean period of 24 months and photographic documentation was performed using the standard rhinoplasty views.

SURGICAL TECHNIQUE

With the patient in the supine position and after an adequate level of general endotracheal anaesthesia is obtained, the nose and septum are infiltrated with one per cent xylocaine and 1:100 000 units of epinephrine. Time is allowed to elapse for the vasoconstrictive and anesthetic effect of the infiltrated solution while the patient is prepped and draped in the usual sterile fashion.

The nasal septum is approached first where a curved hemitransfixtion incision is carried along the caudal edge of septal cartilage which is usually found dislocated off the anterior nasal spine and prolapsed in the nostril on the non-cleft side. The membernous septum is elevated on both sides thus denuding the caudal part of the septal cartilage. The septal flap elevation is continued posteriorly in a strict submucoperichondrial plane until the bony septum is reached where the dissection is continued in the submucoperiosteal plane.

The septal cartilage is found to be dislocated off the maxillary crest towards the non-cleft side, thus a horizontal strip of the dislocated cartilage is excised parallel to maxillary crest using a number 15 blade to decrease the vertical height of septal cartilage and allow its placement in the groove on the maxillary crest. The repositioned cartilage is fixed in the midline using a figure-of-eight suture of 5/0 vicryl between the ventral part of the caudal septal cartilage and maxillary perisotum.

On proceeding posteriorly, the remaining part of the septal cartilage and the bony septum are usually found deviated towards the cleft side. The deviated part of cartilage is removed using a cottle elevator, leaving a minimum of 1 cm dorsal strip of cartilage, while the bony deviation is taken down using a Becker double action scissors after full elevation of the mucoperiostum on both sides of the bony septum. After correction of the caudal septal deviation the membranous septum is found stretched and redundant on the non cleft side thus a 3-4 mm strip of membranous septum is trimmed off prior to closure of the hemitransfixation incision using interrupted 5/0 chromic catgut sutures.

Finally the septal flaps are brought to medline and mattressed together using 4/0 chromic catgut sutures in a running fashion in order to obliterate the dead space and minimize the need for intranasal packing.

After completing the septoplasty, attention is directed to the nasal reconstructive part of the procedure. An external rhinoplasty approach is used where bilateral marginal incisions are started laterally along the caudal edge of the lateral crus, dissection is continued medially down the length of the collumella where they are connected via an inverted V-shaped transcolumellar incision, The columellar skin is elevated off the medial crura very meticulously to a void any injury of underlying cartilages. Dorsal skin elevation is continued upwards in the supraperrichondrial avascular plain until the bony dorsum is reached where the perisotum is undermined using a Joseph-type periosteal elevator. Any hump present is taken down very conservatively at this stage; the bony part of the hump is taken down by rasping, while the cartilaginous part is lowered using sharp dissection with a 15 blade.

The cartilaginous dorsum is usually found deviated to the non-cleft side due to deviation of the dorsal part of the septal cartilage and the asymmetric attachment of the upper lateral cartilages to the septum. To correct such dorsal deviation the upper lateral cartilages are separated from the dorsal cartilaginous septum extramucosally and reattached at the exact same level using 5/0 PDS horizontal mattress sutures. Prior to the reattachment of the upper lateral cartilage, a spreader graft, if needed, is fashioned out of septal cartilage and placed on the concave side of the dorsal cartilaginous septum between it and the upper lateral cartilage to camouflage any residual dorsal deviation. Attention is now directed to the alar cartilages, after removing the connective tissue and fat often found between the cartilages, the alar cartilage on the cleft side is usually found to be ventrally recessed due to the deficient maxilla. To make up for the deficient bony platform, premaxillary augmentation is performed using a prolin mesh implant (Figure 2).

The medial crura are spread apart and dissection is continued between the curaual footplate using fine tenotomy scissors to create a premaxillary pocket in which a roll of prolin mesh (2-3 cm long by 1 cm thick) is inserted. If the anterior nasal spine is found to be markedly displaced from midline, it is chiseled off to avoid subsequent displacement of the mesh implant.

A columellar strut is fashioned out of the previously resected septal cartilage and is placed between the medial cura (little pit longer) deep down to rest on premaxillary mesh (Figure 3).

The medial crus on the cleft side is freed and advanced upward onto the columellar strut until its dome is brought up to a normal height with respect to the dome of the non-cleft side. The medial crus of the cleft side is then fixed in its new position to the columellar strut and the opposite medial crus using 5/0 PDS horizontal mattress sutures and both domes approximated by 6/0 prolene sutures.

To correct the caudally displaced buckled lateral crus, a cartilage graft (little pit longer) is placed in a pocket between the lateral crus and underlying vestibular mucosa (Figure 4) and fixed to the lateral crus by 6/0 prolene vertical mattress sutures.

This lateral crural strut helps correcting the web or baffle effect caused by the flattening of lateral crus and its caudal displacement into the vestibule.

An extended shield-type tip graft is fashioned out of the septal cartilage and fixed to the underlying columellar strut-medial crural complex using 6/0 prolene sutures (Figure 5).

Finally, attention is directed to the bony vault, where if any wide or broad nasal bones are present, medial and lateral osteotomies are performed in a routine fashion and nasal bones are mobilized, brought to the midline,

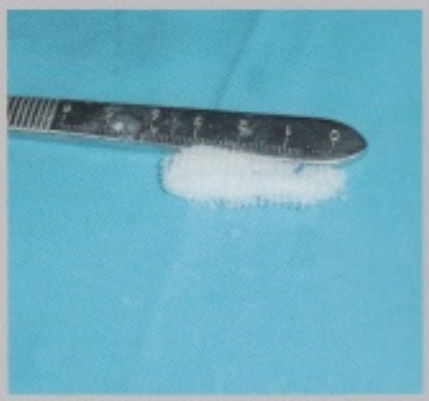


Figure 2.
The use of proline mesh for augmentation of the premaxilla on the cleft side.

Figure 3: The use of columellar strut.

Figure 4: A lateral crus cartilage graft.

Figure 5: A shield-type tip graft.

and narrowed to the desired extent. At conclusion of the procedure, the nasal skin is redraped to its normal anatomical position and the external rhinoplasty incisions are closed starting with the transcolumellar incision which is closed using a deep 6/0 PDS suture to take the tension off the skin which is then closed using interrupted 6/0 prolene sutures. The marginal incision are closed with interrupted 5/0 chromic sutures. Routine external nasal taping and splinting is then performed.