Afroze Incision for Functional Cheiloseptoplasty

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Abstract: Repair of unilateral cleft lip is a fascinating and challenging procedure. Although a great number of operations have been described for the unilateral cleft lip repair, none fulfill all the plastic surgical criteria, and in most cases, cleft lip repairs require secondary operations in an attempt to achieve described goals of primary cheiloplasty. The Afroze incision is a combination 2 incisions, that is, the Millard incision on the noncleft side and Pfeiffer incision on the cleft side. The flap design is the Millard flap on the noncleft side rotated downward, and the peak of the distal curve of the Pfeiffer flap is positioned in the triangular defect formed by the movement of the Millard flap. The proximal curve lengthens downward to receive the Millard's "C" flap. The advantage of this technique is that there is no tension on the postoperative scar because the incision is essentially horizontal in nature, and the contracture of the scar occurs horizontally rather than vertically. Primary septal repositioning is performed, which provides stability and exact positioning of the previously lifted alar crus of the cleft side and nasal tip, and the nose can grow in a balanced way with equal muscular force being exerted on both sides. This incision can be used in all types of complete unilateral cleft lip regardless of the width of the cleft, shortening the cleft lip segment.

Key Words: Complete unilateral cleft lip, Afroze incision, cheiloseptoplasty

Repair of unilateral cleft lip is a fascinating and challenging procedure. The aims of a unilateral cleft lip repair are to achieve a lip length on the cleft side matching that on the normal side, an inconspicuous residual scar that does not cross anatomic boundaries, an adequate Cupid's bow width, an absence of notching of the vermilion border (whistle tip deformity), and an absence of peaking of the vermilion at the Cupid's bow on the cleft side. Although a great number of operations have been described for the unilateral cleft lip repair, none fulfill all the above criteria, and in most cases, cleft lip repairs require secondary operations in an attempt to achieve this described goal.[1]

The Millard repair is based on a rotation flap on the noncleft (medial) side coupled with an advancement flap on the cleft (lateral) side. One of its main advantages is that the technique allows adjustment as the operation proceeds, with further rotation and advancement movements tailored to the individual case. It requires the approximation of a pair of convex curves that ultimately may leave a scar crossing the midline at the base of the columella. The Pfeiffer incision is designed using the concept of "morphologic order." Measurements of noncleft side height and length are recorded and translated to the cleft side using a flexible wire, thus determining natural anatomic points. The 2 curves are brought together such that the highest and lowest points of 1 curve are approximated with the corresponding highest and lowest points of the other, thus creating a straight line.[2]

On comparison of the 2 techniques, each has its own advantages and shortcomings. The Millard flap produced better results when considering vermilion approximation. In this respect, it is rather more flexible than a straight line design, and the operator is able to position the rotation flap on the noncleft side where it is judged likely to produce the best outcome. This technique also has an improved outcome where preoperatively the lip is wider on the noncleft side. This would lead to a reduction in rotational requirement of the flap on the medial side, resulting in less distortion and a Cupid's bow with better form. Repairs using flaps according to Pfeiffer's design resulted in a better length of lip postoperatively. By its nature, the more waves incorporated in the incision, the greater the height of the lip. A prominent wave placed just above the mucocutaneous junction will tend to exaggerate this factor.[2]

Afroze incision is a combination of 2 incisions, Millard incision on the noncleft side and Pfeiffer incision on the cleft side. The flap design is such that Millard flap on the noncleft side is rotated downward, and the peak of the distal curve of the Pfeiffer flap is positioned in the triangular defect formed by the movement of the Millard flap. The proximal curve lengthens downward to receive the Millard's "C" flap. The advantage of this technique is that there is no tension on the postoperative scar because the incision is essentially horizontal in nature and the contracture of the scar occurs horizontally rather than vertically. There is also no pressure on the Cupid's bow for the same reason.

INCISION MARKING

On the noncleft side, the Cupid's bow is marked by 3 points. Point 1 is the highest point on the contralateral white roll; point 2 is the deepest point on the white roll. Point 3 is marked on the white roll at a distance that is 2 mm more than the distance between points 1 and 2.

On the cleft side, point 4 is marked at a point where the white roll begins to fade (Figs. 1–3).

The Millard incision on the noncleft side is extended from point 3 along the junction of skin and vermillion mucosa and further
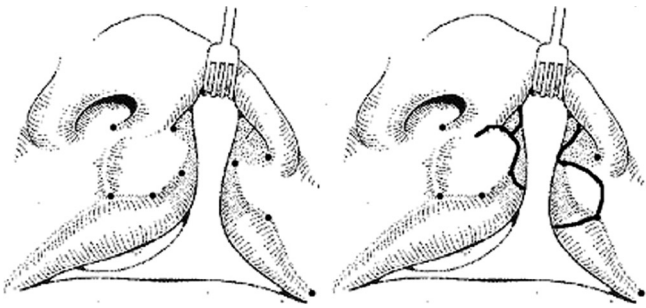
FIGURE 1. Afroze incision marking.

FIGURE 2. Clinical photograph of Afroze incision marking on the noncleft side.

FIGURE 3. Clinical photograph of Afroze incision marking on the cleft side.

FIGURE 4. Nasalis muscle dissection on the cleft side.

FIGURE 5. Dissection of deviated nasal septum.

FIGURE 6. Repositioned nasal septum.

1734

FIGURE 7. Approximation of the ''C'' flap.

up along the junction of the skin and nasal mucosa and then turned down lateral to the base of columella to finish in front of the columella. The variation of the Millard incision here is that it does not cut across the base of the columella. The incision can be extended further during surgery using a back-cut if more rotation is required.

On the cleft side, the Pfeiffer incision is started from point 4 on the white roll. The incision starts from this point to go laterally

and then curve back to the junction of the skin and vermillion mucosa. From here, it continues along the junction of the skin and nasal mucosa to then turn upward perpendicularly along the junction of the hair-bearing and non–hair-bearing nasal mucosa, stopping at a distance that is approximately one third of the distance on the inner part of the ala (Figs. 1–3).

On both sides, the incision is extended anteriorly onto the vermillion at right angles to the incision and continued medially to meet the first part of the incision over the cleft alveolus. On the cleft side, an incision is also made from the distal wave, down on the lateral part of mucosa along the cleft alveolus. Both the above lateral incisions expose the cleft alveolus and piriform area. The mucosa covering the area medial to the 2 incisions (sterile zone) is removed. After the muscle dissection is done, the alveolar flaps are detached from the cleft margins subperiosteally. On the cleft side, minimal dissection is done to expose the orbicularis oris muscle. However, extensive dissection is done to expose the malposed nasal part of the nasalis muscle. This muscle lies beneath the distal "V" flap of the Pfeiffer wave and can easily be exposed in this technique (Fig. 4).

SEPTUM IS THE KEY

Not touching the cleft lip nose in primary cleft lip repair was dogmatic in the past, although it meant severe functional, aesthetic, and psychologic problems for the child. This attitude was defended vehemently, even fanatically, by many surgeons who were afraid that growth impairment might occur.[3] Theoretical basis of septal repositioning during primary cheiloplasty is that most nasal and deep bundles of orbicularis muscle in unilateral cleft lip patients

FIGURE 8. Long-term follow-up of primary cheiloseptoplasty done using Afroze incision.

insert to the mucoperichondrium and anterior nasal septum. Correction of the deviated septum is important because it provides stability and exact positioning of the previously lifted alar crus of the cleft side and nasal tip, and the nose can grow in a balanced way with equal muscular force being exerted on both sides. Studies have demonstrated that no negative sequel can be observed after manipulation of the septum in children.[4] If no primary correction is performed, breathing problems through the nose persist until late corrections are made. The correct placement of the septum can be achieved only through very tightly adherent perichondrium. Perichondrium is completely freed from the cartilage on both sides. Otherwise, the septum will always swing back into its original position. The anterior nasal spine is located by subperiosteal dissection, and all attachments to it are separated. The septum is then carefully isolated through the same incision by splitting and raising the perichondrium on both sides (Fig. 5). The septum is detached from its attachment to the nasal spine and maxillary crest and straightened. The perichondrium around the detached septum is sutured together in such a way that the septum is now in its central position though not resting on the anterior part of the maxilla (Fig. 6). The nasal sill is sutured next by joining the hair-bearing nasal mucosa on both sides. The 2 lateral flaps in the alveolus are sutured to complete the perioplasty.

The nasalis muscle is then positioned below the nasal sill and attached to the contralateral nasalis muscle to form a sling to support the nasal sill on the cleft side, septum, and ala. After nasalis repositioning is completed, the orbicularis oris muscle is sutured

to its counterpart. The skin suturing is done by first securing the white roll with a suture above and below it. This is done by joining point 3 on the Cupid's bow to point 4 on the cleft-side white roll. The C flap is then usually already sufficiently rotated downward to fill the proximal Pfeiffer wave. This flap is essentially horizontally positioned, resulting in a horizontal scar. The rotation downward of the C flap causes a V-shaped defect in front of the columella, which is filled with the distal V flap of the Pfeiffer wave. Nasal pack and pressure dressing are applied (Fig. 7).

Figure 8 shows the long-term outcome of a unilateral complete cleft lip operated using the functional cheiloplasty using Afroze incision.

The advantages of this method are septal repositioning, horizontal scar, and good nasal symmetry.

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