Nasal Deformity in Unilateral Cleft Lip

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The author presents his experience with the primary correction of nasal deformity in unilateral cleft lips in twenty five cases ranging in age from five months to 30 years. Emphasis is placed upon the important anatomical characteristics of the deformity, i.e. attenuation of the alar cartilage, displacement of the medial crus, thickening of the alar base as the result of deposition of fibrofatty tissue between the two separated layers of skin, accumulation of fibrofatty tissue between the two separated alar domes, drooping of the involved nostril and the presence of a well marked alar arch web. The technique described includes an adequate exposure through a bilateral gingivolabial sulcus incision connected by an intercartilaginous incision, release of the displaced alar base and columella, freeing of the alar cartilage from the opposite side and from overlying skin, repositioning of the alar cartilage and alar dome to a normal anatomical position, and maintenance by a through and through mattress suture and a post-operative nasal pack. The immediate results have been satisfactory.

There has been a growing trend in recent years towards attempts at primary correction of the nasal deformity in unilateral cleft lip (Berkeley 1959 a; Berkeley 1971 b; Galbeke 1956; McIndoe 1958; Padget 1948; Skoog 1971; Wynn 1972). The nasal deformity which is partly developmental (Stark 1958) and partly the result of abnormal stresses exerted by adjoining muscles (Stenstorm 1961), tends to become aggravated with growth. Persistent deformity produces untoward psycho-social consequences which are difficult to reverse later. Considering this, we have been trying for the past few years to correct the nasal deformity at the primary operation in all cases and at all ages. Understanding of the pathogenesis and the pathological anatomy of the deformity (Huffman 1949) made it easier to choose a suitable approach.

Anatomical Considerations

(1) The alar cartilage is generally attenuated.
(2) When the alar base is displaced downwards and laterally, the lining skin remains fixed to the pyriform edge whereas the covering skin is displaced further, separating the two layers into which fibrofatty tissue is deposited (Fig. 4). The alar base thus appears to be thickened.
(3) As the alar arch flattens and the alar dome moves outwards and downwards, the potential space created between the two domes (cleft and uncleft) and the overlying skin is filled with fibrofatty tissue (Fig. 1). This prevents the repositioning of the two alar domes in close proximity.
(4) The alar cartilage is generally displaced caudally pulling down the dorsal skin of the nose and producing the appearance of a drooping nostril with a well marked alar arch web.
(5) The medial crus of the alar cartilage is displaced downward and medially.

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Technique

The technique we have followed is a combination of procedures with some modifications and involves adequate exposure, release of the displaced alar base and columella, freeing of the alar cartilage, restoration of the normal position of the alar cartilage, and maintenance of the corrected position in the immediate post-operative period.

The points for reconstituting the nostril floor are marked first. The alar dome on the cleft side is lifted and Point A is placed where the columellar sil meets the mucosa, and B is marked where the alar rim, when followed, meets the vermilion. The incision starts at B and runs laterally in the gingivolabial sulcus as far back as the premolars where it ends with a right angled extension to facilitate advancement of the buccal mucosa. Anteriorly, the incision extends as far as the pyriform aperture and is continued cephaloid along its edge and then joins the intercartilaginous incision. A gingivolabial sulcus incision on the uncleft side extends up to point B and is then continued backwards below the columella. It turns upwards behind the columella, between it and the anterior border of the septal cartilage, and extends as far as the dome of ala, where it joins the intercartilaginous incision (Fig. 2).

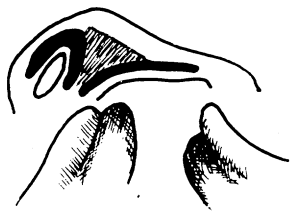


FIGURE 1. Illustrating the potential space between the separated alar domes and overlying skin where fibrofatty tissue gets deposited.

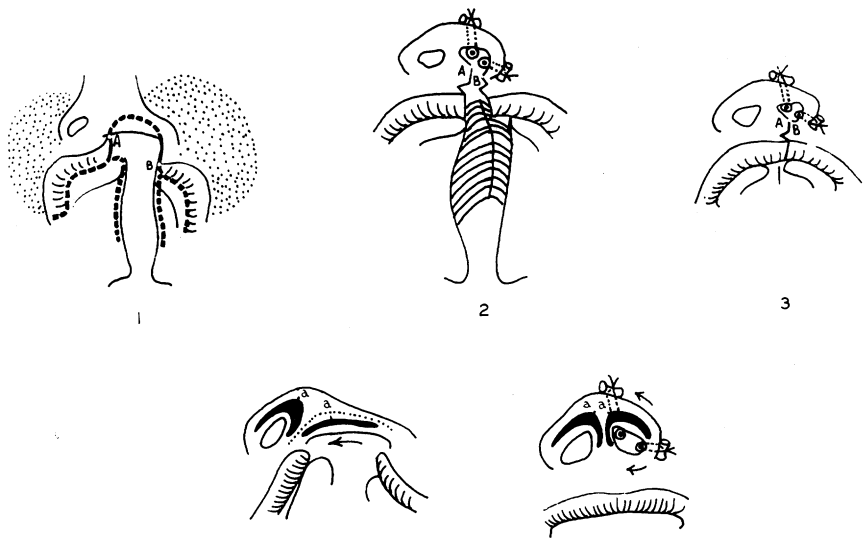


FIGURE 2. (1-5) illustrating the steps of the procedure of the primary repair in unilateral cleft lip nasal deformity.

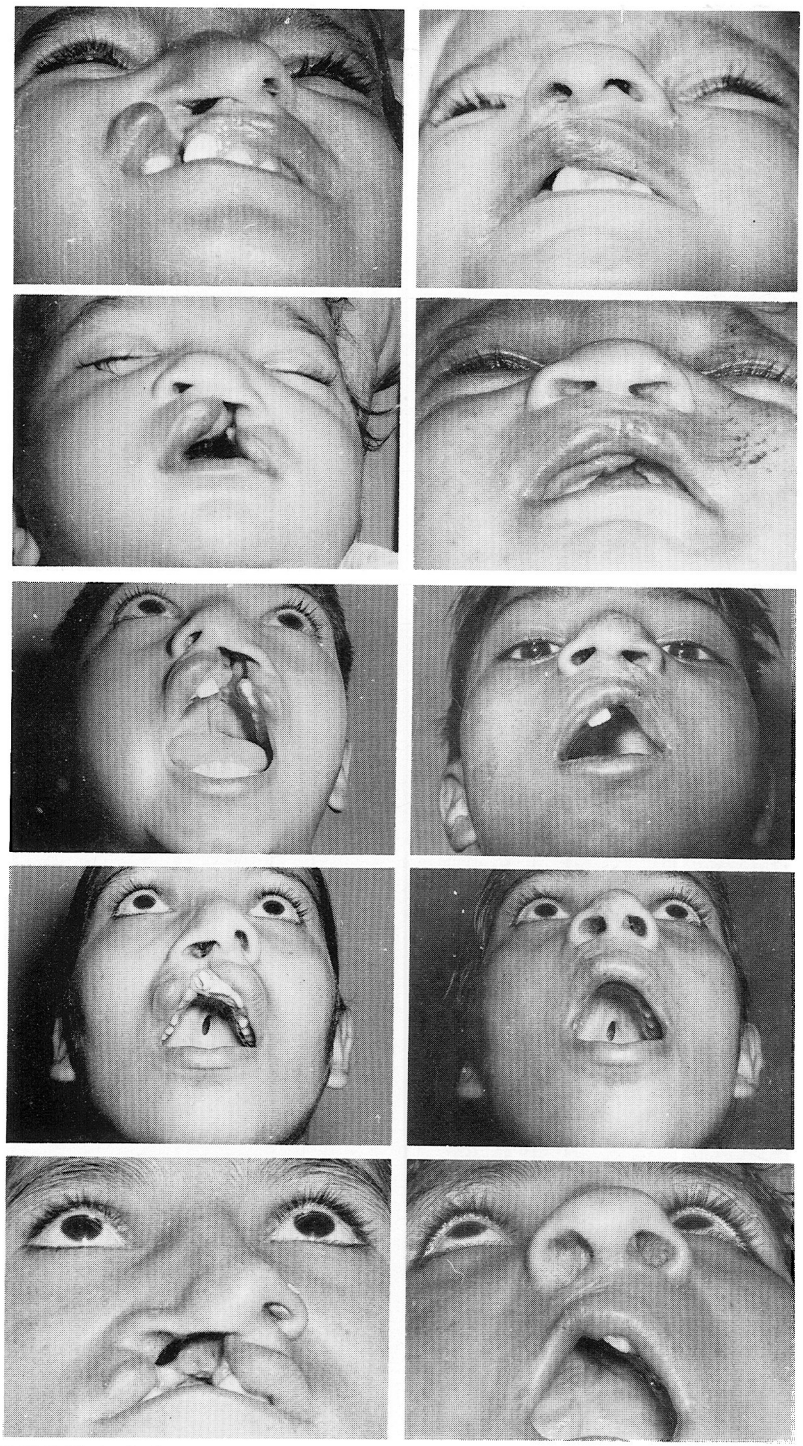
FIGURE 3. Illustrating the slumped nostril and alar dome web corrected by crescent excision of the web skin.

Through this incision, the alar base is freed so as to permit its rolling inward. On the noncleft side, the displaced lip, cheek, and the floor of the intact nostril are freed and the columellar base is liberated from the nasal spine. Through the intercartilaginous incision, the alar cartilage is freed over its whole extent from the overlying skin. The medial crus and alar dome on the cleft side are separated from their counterpart on the opposite side, and the fibrous bands binding the medial crus to the anterior border of the septal cartilage are divided. With complete liberation, the medial crus springs upwards and the columella can be easily brought to mid line. The anterior edge of the septal cartilage at this stage will be seen to project into the intact nostril still covered with mucosa. No attempt is made to displace the septal cartilage to midline. Now the lateral crus with its adherent lining is glided upwards and anteriorly under the overlying skin so as to restore the alar dome to its natural position in close proximity to the opposite dome. This is facilitated by excising the fibrofatty tissue deposited between them. The corrected position of the lateral crus is maintained by a through and through mattress suture passed through the lining with the alar cartilage and the overlying skin close to the dome and tied over a bollus.

The thick and opened-out alar base is thinned by removing the fibrofatty tissue between the two layers, and its thinness is restored by a through and through mattress suture tied over a bollus. The reconstituted alar base is now rolled inwards so that A is sutured to B restoring the nostril floor. This will also reconstitute the proper alar facial angle. The free alar lining above the base has a tendency to web inwards and to obstruct the nasal aperture. This is prevented by suturing it back to a mucosal flap raised on the lateral nasal wall. The flap is based superiorly and is outlined by an incision which extends upwards and forwards from the pyriform edge in front of the inferior turbinate and is transposed anteriorly to facilitate sutures.

In wide clefts, the roof of the cartilaginous part of the affected nasal cavity is at a lower level as compared to the opposite side. An incision is made in the roof separating the attachment of the upper lateral cartilage to the septum. This frees the upper lateral cartilage and permits it to rise and help in reforming the roof of the nasal cavity at a higher level comparable to the opposite side.

Although this procedure, when carried out properly, restores the shape and contour of the nostril, an alar web persists close to the dome in wide clefts with a slumped nostril. This is corrected by excision of a crescent shaped piece of skin from the alar dome web and repair of the defect (Fig. 3). After completion of the repair, the nasal cavity is packed gently with vaseline gauze for six days. This



FIGURES 4–13. Preoperative and postoperative photographs of patients with unilateral cleft lip where primary correction of the nasal deformity was undertaken at different ages, e.g. Fig. 4 & 5, 6 & 7, 8 & 9, 10 & 11, and 12 & 13 showing patients aged, 5 months, 5½ months, 7 years, 9 years and 15 years respectively.

maintains the shape of the nostril until the tissues have become fixed and have healed in their new position.

Results

This procedure has been employed in 25 cases. Eighteen of these were less than one year of age, the average age being eight months. The other seven ranged in age from five years to 35 years. Cases with minimal nasal deformity were also fully corrected in the belief that correct repositioning of the cartilaginous framework permits steady normal growth, prevents abnormal stresses, and thus avoids secondary skeletal abnormalities. These cases have been followed for up to two years. The immediate results have been satisfactory (Figs. 4–13). The results have been particularly encouraging in infants, perhaps because the tissues are soft and pliable and can be easily moulded.

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