Diastasis of the Orbicularis Oris Muscle in Repaired Unilateral Clefts of the Lip

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The deformities of the lip and nose in patients with repaired clefts of the primary palate have long been a challenge to the ingenuity of the plastic surgeon. The pathological anatomy of these defects has been well defined, the broad range of individual variation recognized, and diverse techniques of structural reconstitution have been proposed.

Attitudes concerning the proper timing of corrective surgery for the nasal deformity, for example, vary from those who would mold and realign the defective cartilages at the time of primary repair of the lip (shortly after birth) to those who prefer to wait until later childhood or early adulthood. The proponents of early correction argue that their efforts are preventive, aimed at eliminating or reducing the degree of secondary deformity in later years. Others suggest that to interfere with unknown and unpredictable differential potentials of tissue growth during infancy is improper.

The degree and extent of the lip-nose deformity complex often dictate the mode of repair. Some surgeons prefer radical correction of nasal cartilages, nasal bones, septum, floor of nostril, alar base, labial scar, vermilion, and labial sulcus at one operation. Others prefer to concentrate on only one or a few components of the complex at a time, in stepwise fashion, directing attention first to abnormalities of bony and septal framework and later to overlying imperfections of soft tissue. The latter situation especially obtains in a large clinic where successive surgeons operate upon the same patient over a period of years.

It is the purpose of this paper to call attention to one of the more subtle postoperative deformities in cleft lip cases and to present a simple surgical method for its correction. In observing the late results of surgery for unilateral cleft of the primary palate in patients, usually adults, seen at the Cleft Palate Clinic of The New York Hospital-Cornell Medical Center, I have become increasingly aware of the frequent persistence of a flattened appearance and lack of substance to the upper lip about the scar of the original line of cutaneous suture, especially in the infranasal portion of the lip. Often this is the only noticeable deficiency after near-perfect symmetry in one or two planes has been surgically achieved.

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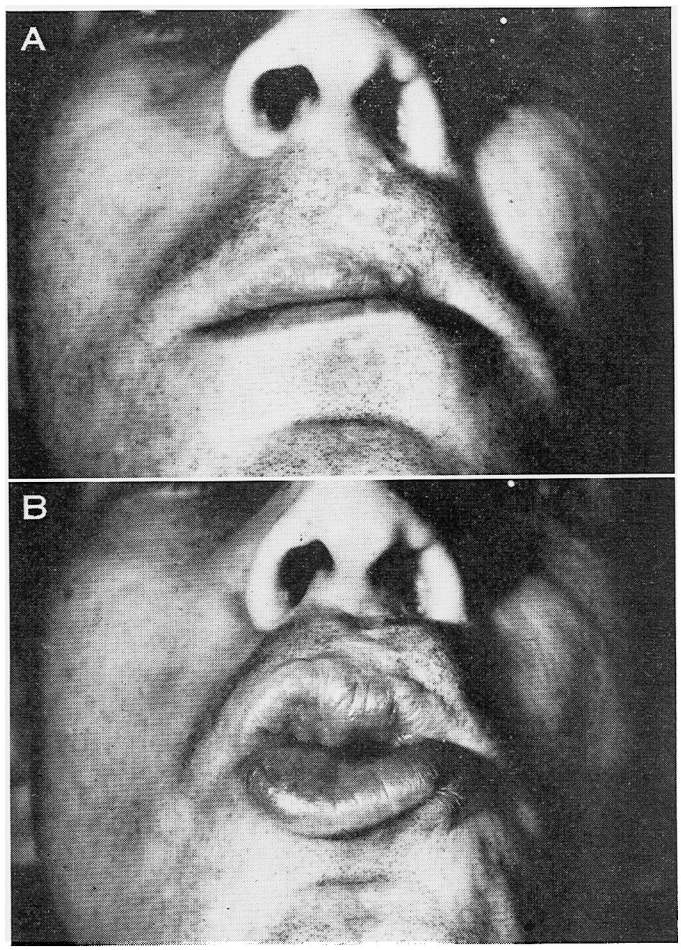

FIGURE 1. Top, note flattened appearance about the scar and deficiency in substance of vermilion on the cleft side. Bottom, note separation of muscular segments and vertical orientation of muscle on the cleft side as patient whistles.

There are three clinical characteristics of this isolated component of the lip-nose deformity complex. a) There is a *flattened appearance of the lip* about the scar (Figures 1a and 4, top). This may involve all or part of the vertical dimension of the lip and is usually more pronounced high in the lip just inferior to the anterior margin of the floor of the nostril. The floor of the nostril is frequently wide and depressed. b) There may be a *deficiency in bulk of the vermilion* in the region of the scar (Figure 1a). Often, the entire vermilion of the lip on the side of the cleft appears empty and formless. c) *Absence of muscular contraction* in the region of the scar is noted during speech.

Surgical exploration of such lips reveals that, in addition to full-thickness cicatrix in the region of the repaired cleft, there is rather wide

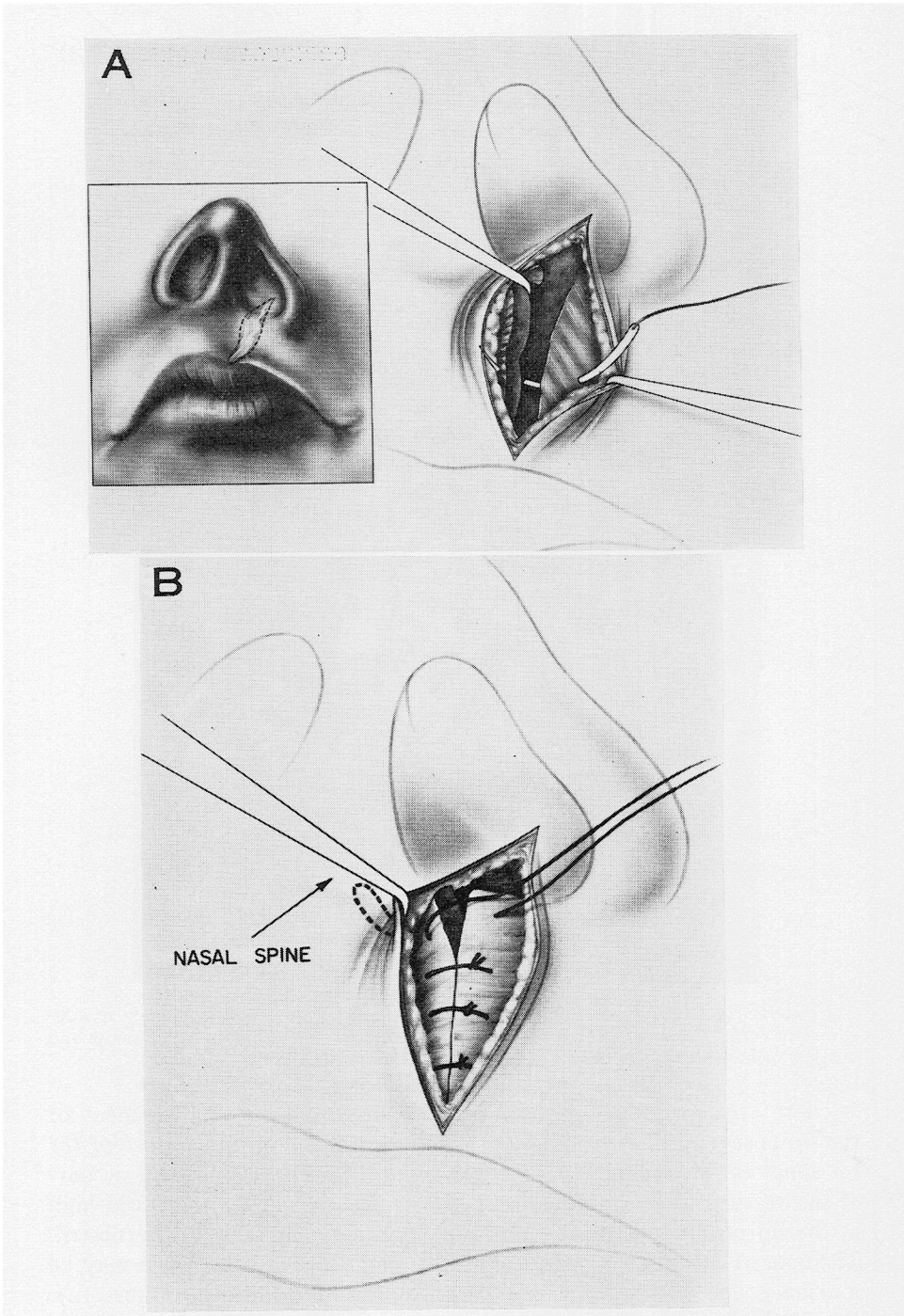

FIGURE 2. Diagrammatic representation of surgical approach to restoration of labial contour in diastasis of the orbicularis oris muscle. A, muscular segments are dissected free and approximated. Inset shows outline of excision of cutaneous and subcutaneous cicatrix. B, superior aspect of muscular union anchored to nasal spine.

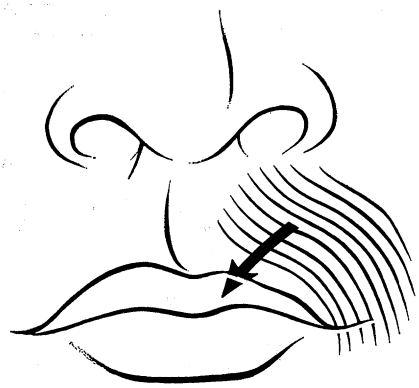

FIGURE 3. Diagrammatic representation of the vertical orientation of muscle on the cleft side seen in some repaired unilateral clefts. Arrow indicates direction of surgical rotation necessary to correct associated deficiency of vermilion.

diastasis of the orbicularis oris muscle. On the cleft side, the gross orientation of the bundles of muscle fibers may tend to be more vertical than horizontal (Figures 1b and 3). Clinically, one can often readily define the position of the central portions of the ununited segments of muscle by observing the lip while the patient swallows. (The lips press against one another with moderate force as an intraoral bolus is moved posteriorly by the tongue to initiate the act of deglutition.) Similarly, the patient's repetition of labial sounds such as *f, b, m,* or the word *people,* or the simple act of whistling may emphasize the positional derangement of the musculature (Figure 1b).

There are several etiologic considerations which may be active singly or in combination. a) *Improper closure* of the muscular layer at the time of initial repair of the cleft lip. b) *Dehiscence of the muscular layer* soon after initial repair owing to laterally distracting forces. c) *Gradual attenuation of the muscle* along the line of closure. This may result from continued tension on the wound, or from the persistence of vertically oriented bundles of muscle on one or both sides of the repair. Pickrell has suggested that dysplasia of the orbicularis oris muscle may be responsible for the late appearance of flatness about the repaired cleft (*2*). d) In patients with complete unilateral cleft of the primary and secondary palates, insufficient forward development of the major alveolar segment certainly contributes to the flatness of the upper lip.

The surgical approach to diastasis of the orbicularis oris muscle aims at restoration of contour and symmetry to the upper lip by positional reorientation and approximation of the separated segments of muscle. The cutaneous and subcutaneous cicatrix is excised from the floor of the nostril to the vermilion border, and the isolated muscular segments are located and dissected free from overlying subcutaneous tissue and underlying labial mucosa, thus creating bilateral, laterally based flaps of muscle (Figure 2a). When a muscle segment is found to be oriented verti-

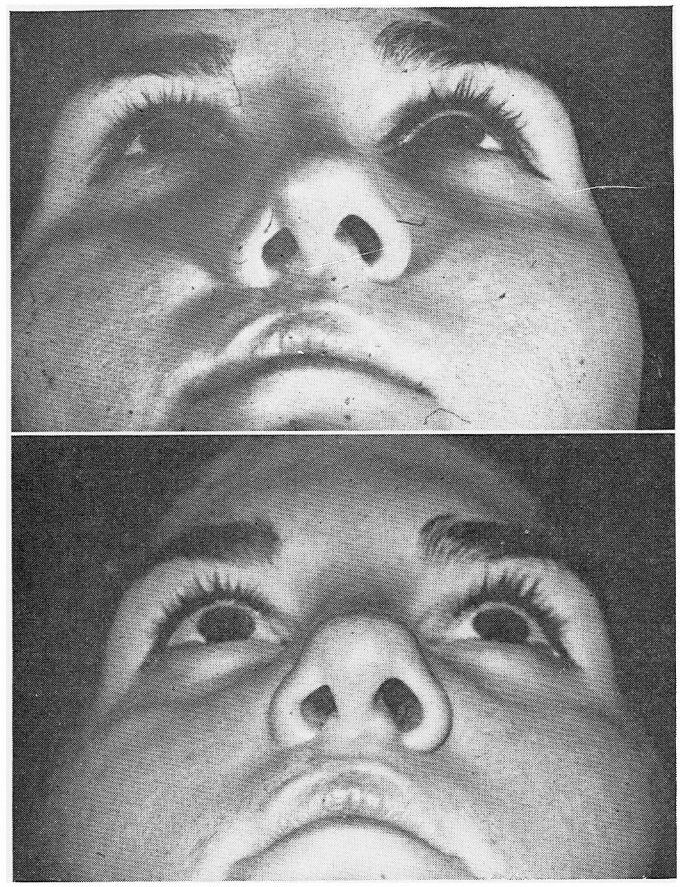

FIGURE 4. Top, preoperative; note flattened appearance about the scar. Bottom, three months postoperative; note symmetry of upper lip. Improved position of right ala, and narrowed nostril floor were achieved by extension of incisions into floor of nostril.

cally, it must be rotated inferiorly to fill the empty vermilion (Figure 3). Integrity of the muscular layer is achieved by generous bites with simple sutures of chromic catgut. That portion of the lateral segment of muscle nearest to the ala is anchored to the periosteum and subcutaneous tissue about the nasal spine (Figure 2b). Associated widening and/or depression of the floor of the nostril are managed by wedge excision and alar realignment if necessary, or one may insert a graft of cartilage carved to the appropriate size. A Logan bow and, later, porous adhesive tape are used for postoperative immobilization of the upper lip. Figures 4, 5, and 6 illustrate patients before and after operation.

Discussion

Little attention has been devoted to diastasis of the orbicularis oris muscle in repaired clefts of the lip, or to the manner of its repair.

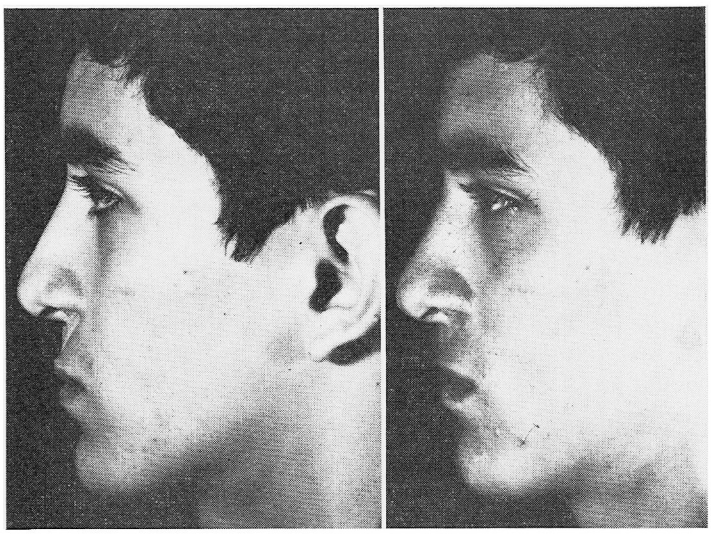

FIGURE 5. Left, preoperative; note lack of contour in region of the scar. Right, three months postoperative; there is more fullness to the left side of the lip.

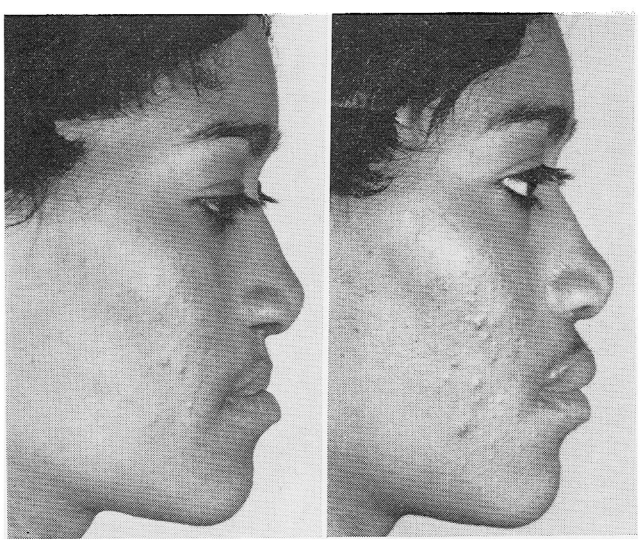

FIGURE 6. Left, preoperative; note relative protrusion of lower lip. Right, two months postoperative; note improvement in relative contour of upper and lower lips.

Opinion varies as to the necessity for approximation of the muscle layer at the time of original repair. The most common practice is simply to approximate the two opposing muscle layers with simple stitches of absorbable suture material. Some prefer to combine the muscle and labial mucosa as a single layer in closure. On the other hand, LeMesurier (*1*) has taught that dissection of the layers of muscle before approxima-

tion, and even simple suture without undermining, results in unnecessary scar formation. He has stated that good scars and good labial function can be obtained without the use of buried sutures, because "the muscle apparently heals to muscle" when skin and mucosal layers are approximated accurately.

Summary

Whatever the etiology, diastasis of the orbicularis oris muscle in some repaired unilateral clefts of the primary palate is a subtle though definite component of the lip-nose deformity complex. A method of surgical correction of this deformity and early postoperative results are presented. Final evaluation of this procedure will require more time in follow-up observation.

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References

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2. Pickrell, K., F. Masters, N. Georgiade, and C. Horton, Restoration of lip contour using fascia, tendon, and dermal grafts. *Plastic reconstr. Surg., 14,* 126–137, 1954.