Secondary Correction of the Cleft Lip and Nose Deformity: A New Technique for Revision of Whistling Deformity

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Reconstruction of the continuity of the orbicularis oris is the main component in correction of the whistling deformity. However, many of the cases are associated with other deformities, such as conspicuous lip scars, an unnaturally wide central lip, flaring alae with wide nostril floors, and a short columella with a flat nasal tip. We report a technique that combines correction of such deformities with reconstruction of the orbicularis oris in a single operation.

The whistling deformity, a concave defect of vermillion in the central portion of the upper lip, is one of the most frequent and serious sequelae of the primary lip repair in bilateral cleft lip patients. An intrinsic deficiency of tissue in the prolabium and a failure to restore the orbicularis oris in the midline contribute to this deformity (Duffy, 1971). Furthermore, the muscle of the lateral side sewn to the incised prolabial margin stretches the skin of the prolabium and brings about an unnaturally broad philtrum with a short columella and unsightly lip scars (Duffy, 1971). Improperly attached muscles produce a bulge in the lateral lip segments and accentuate the deformity, especially with a puckering movement (Puckett et al, 1980).

Therefore, restoration of the continuity of the orbicularis oris is the main component in the secondary corrective operation of the whistling deformity. Additionally, other procedures, such as (1) revision of the lip scars, (2) reduction of the unnaturally wide philtrum, (3) filling in of the central deficit of the mucosal lining, and (4) elongation of the short columella are frequently needed (Oneal et al, 1974). We report a technique to correct the whistling deformity that combines these procedures.

**Operative Procedures**

To reduce the unnaturally wide philtrum and revise the conspicuous lip scars, vertical incisions of skin are made from the nostril floor on each side downward to the wet-dry line of the vermillion. At this level the medial incision on each side is turned medio-horizontally and the two connect (Fig. 1). The depth of the incision is limited to the subcutaneous tissue. The flaps which include scar tissues are dissected, turned downward, and skin portions are discarded to prepare vermilion flaps. In the central lip element, the vermilion is dissected and the lateral edge of the skin is undermined for 2 mm to 3 mm on each side, but the central portion is left attached to the premaxilla. In the lateral lip element, the skin is broadly undermined; the incision extends almost to the nasolabial fold (Fig. 2).

The underlying muscles are exposed and separated into two bundles on each side, the upper two-thirds (pars peripheralis) and the lower one-third (pars marginalis). Pars peripheralis is then incised vertically, 2 mm to 3 mm lateral to the lateral edge of the central lip element. The pars marginalis is cut at the midline where the muscle bundle tapers (Fig. 3). The cut end of the pars peripheralis in the lateral segment is dissected, advanced medially, and sutured with mattress sutures to the corresponding cut margin of the central element, overlapping the tissues. The left pars marginalis and its right counterpart are imbricated together, restoring continuity and fullness at the midline. This results in a deficit of mucosal lining below, which is then filled in with medially transposed interdigitating vermilion flaps. The incisions are closed in layers with interrupted sutures (Fig. 4).
If lengthening a short columella is indicated, a simple flying bird incision (or curved V incision) is made on the tip of the nose according to the modification of Brauer’s method (1966), (Fig. 1). Through this incision, the lateral alar cartilages are carefully dissected from surrounding tissues and repositioned. The medial crura of the two cartilages are sutured together, thus supporting and elongating the columella. The overlying skin is lengthened by V-Y advancement, which also contributes to the correction of the flat nasal tip.

**Case Reports**

**Case 1**
A 16-year-old boy complained of a broad prolabium, conspicuous lip scars, and thin central vermillion (Fig. 5a). He was born with complete bilateral cleft lip and palate. Manchester’s method was used to repair the lip when the patient was 6 months of age.

The corrective operation was done as illustrated in Figures 1 to 4. The postoperative view of the lip is shown in Figure 5b. A simple flying bird incision was made on the tip of the nose, and alar cartilages were dissected and elevated. The skin was lengthened by the V-Y advancement technique (Fig. 6b).

**Case 2**
A 25-year-old man had a severe whistling deformity as shown in Figure 7a. He was born with bilateral cleft lip and palate; the clefts were complete on the left and incomplete on the right. Initial lip repair was a Veau two-stage operation.

The prolabium was so broad that wide vermilion flaps could be prepared on each side. The postoperative view is shown in Figure 7b. The short columella was lengthened by the V-Y advancement technique (Fig. 8).

**Case 3**
A 24-year-old woman complained of conspicuous lip scars and unsightly vermillion. She was born with bilateral cleft lip and alveolus; clefts were complete on the right and incomplete on the left. The initial lip
repair was a Randall two-stage operation.

The corrective operation was done in the same way, except that the lip scar was excised along the scar lines (Fig. 9).

Case 4

A 27-year-old man complained of a conspicuous lip scar on the right side and thin central vermillion. He was born with complete bilateral cleft lip and palate. Initial lip repair was a Veau two-stage operation.

Scar revision and reconstruction of pars peripheralis muscle was performed on the right side only. The edges of the pars marginalis were dissected via the mucosal incisions and were united to one another at the midline (Fig. 10).

**DISCUSSION**

Although a number of operative procedures have been reported for the correction of whistling deformities in bilateral cleft lip patients (Millard, 1977; Masters and Craft, 1974), most of them were directed to supplying tissues to fill in the deficit of vermillion, such as from neighboring mucosa (Robinson et al, 1970; Arons, 1971; O'Connor and McGregor, 1973), tongue (Guerrero-Santos, 1969) and palate (Vecchione, 1982).

Kapetansky (1974) reported a unique procedure in which two vertical pendulum flaps composed of the vermillion and orbicularis oris of lateral lip elements were swung medially to fill in the defect. This procedure has the merit of keeping the white lip intact, but most cases need revision of the lip scars, and an accurate muscular restoration may be difficult using this procedure. Other authors, of course, emphasize the importance of the restoration of correct muscular alignment and continuity (Puckett et al, 1980; Randall et al. 1974; Meijer, 1984).

However, many patients with whistling defor-
FIGURE 5. Preoperative (a) and 4-months-postoperative (b) frontal view of Case 1.

FIGURE 6. Preoperative (a) and postoperative (b) view of Case 1 from below. Columella is lengthened by V-Y advancement technique.

FIGURE 7. Preoperative (a) and 18-months-postoperative (b) frontal view of Case 2.
mity have other deformities, such as a short columella with flat nasal tip, conspicuous lip scars, an unnaturally broad central lip, and flaring alae with wide nostril floors, that also need correction.

Nicolau (1983) reported a method of differential rearrangement of the components of orbicularis oris. Reconstruction of orbicularis oris results in the fullness of central lip but leaves a deficit of mucosal lining. Oneal et al (1974) reported that it was better to move central vermilion posteriorly, leaving the prolabial white line and advancing the redundant vermilion of the lateral segments to the midline. In contrast, some others utilize the whole height of the prolabium and place the central vermilion anteriorly, using the redundant lateral vermilion as transposed flaps to fill in the deficit posteriorly (Duffy, 1971; Robinson et al, 1970). Arons (1971) reported the use of triangular vermilion flaps but did not refer to either the revision of lip scars or the reconstruction of orbicularis oris. Our rectangular flaps have the advantage of supplying more tissues than do triangular flaps. In Case 4, scar revision was performed only to the right side. However, the resected scar tissue was relatively wide, and the vermilion flap could be prepared in rectangular shape. Thus, the mucosal deficit was satisfactorily filled in with a single flap.

Both sides of excessive central lip skin including scar tissue can be reused as superiorly-based forked flaps, (Millard, 1958). We haven’t used this method, fearing that this design might
interrupt circulation to the central lip element, especially to the central vermillion. In contrast, we combined the V-Y advancement technique (Brauer and Foerster, 1966) for successful elongation of a short columella. In a single operation our method corrects the deformities of patients with bilateral cleft.

We have performed this technique in eight patients, and all had satisfactory results.

References


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