Secondary correction of bilateral cleft lip deformity with simultaneous Abbé flap and nasal repair

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SUMMARY. For secondary repair of a bilateral cleft lip deformity with a short columella and defective upper lip, simultaneous correction of the lip and nose is ideal. We perform a nasal repair through a bilateral reverse-U incision and columella elongation using the upper lip. An Abbé flap is then transferred to the upper lip defect. This procedure enables total reconstruction of characteristic bilateral cleft lip deformities in one stage. We have applied this method to 15 patients (9 males and 6 females) with an average age of 18.7 years. Although some patients need jaw surgery, all have been satisfied with the results.

INTRODUCTION

The characteristics of secondary bilateral cleft lip deformity are: imbalance in tissue volume of the upper and lower lip, short columella, inadequate nasal tip, increased columello-labial angle and so-called whistling deformity due to tissue deficiency of the central vermilion.

For cases in which upper lip volume is markedly deficient, we have applied a one-stage reconstruction of the nose and the upper lip simultaneously. A nasal repair is done through a bilateral reverse-U incision. A central white lip flap based on the columella base is utilized for columella reconstruction, and the resultant upper lip defect is covered by an Abbé flap. We report the details of this method of secondary correction of bilateral cleft lip.

SURGICAL PROCEDURE

Surgery is performed under local anaesthesia. The white lip skin surrounded by scar is elevated and utilized for columella formation. The incision is then continued up to the bilateral reverse-U incision, allowing wide exposure of the nasal cartilages. The shape of the white lip flap depends on the shape of the existing scar (like a fork flap in some instances and rectangular in most other cases) which directly connects to the columella (Fig. 1a). As there usually exists a transverse scar crossing the columella base, care should be taken not to compromise the blood supply to the flap. For this reason, it is wise to elevate the soft areolar tissue between the bilateral alar cartilages along with the flap. To elevate the tip of the nose, this areolar tissue will be placed back on the alar cartilages after they are sutured to each other. The areolar tissue sometimes makes a flap by itself (Harashina, 1995), but in most of our cases the areolar tissue is elevated together with the dorsal skin of the nose. In most Japanese patients, a cartilaginous strut (as described by Kinnebrew 1983, and Tessier and Tulaxne 1984, is not needed because their noses are flatter than those of Caucasians.

To make a well-defined nasal dorsum and to avoid a round nose, two to three transverse mattress sutures of 4-0 clear monofilament nylon are placed subcutaneously over the nasal tip and dorsum. The knot of the suture is buried through a stab incision. Some through-and-through sutures are added between skin and cartilage of the ala along the alar groove (Fig. 1b, 1c).

The white lip flap is moved to the columella and the distal end of the flap is fixed to the anterior nasal spine (ANS). When the ANS is hypertrophied, it is trimmed to make a sharp columello-labial angle.

An Abbé flap is inserted into the lip defect created by the nasal correction. The Abbé flap is designed not to fill the defect but to match the normal aesthetic unit of the philtrum, given the age and sex of the patient. We use a measurement of the philtrum in a normal individual of the same age and gender as a guideline. Usually the width of the vermilion lip is 10-13 mm and the length of the white lip is 15-18 mm. A relatively narrow flap gives a better cosmetic result (Fig. 1d).

For a defined philtral dimple, the skin incision for harvesting the Abbé flap is inclined 45° from upper-lateral to deep-medial. The tip of the Abbé flap is denuded and secured to the ANS. One or two buried sutures of 3-0 clear monofilament nylon are placed between the bilateral alar bases or between the alar base and the columella base to avoid flaring of the alar base (Fig. 1e).

To restrict jaw movement postoperatively, a Barton bandage is applied. When necessary, one or two wires for intermaxillary fixation are added.

The pedicle of the Abbé flap is divided 5 to 7 days postoperatively. At that time, small irregularities of the vermilion border, which usually occur during fixation of the jaw, are accurately corrected.
CASES

From July 1989 to March 1997, we applied this method in 15 patients with secondary deformities of bilateral cleft lips. Nine were male and six were female. Their ages ranged from 11 to 26 years (mean 18.7). In all cases, primary repair had been performed at another institute. Representative cases are presented below.

Case 1

A 17-year-old woman had had her bilateral cleft lip repaired, one side at a time. Details of the surgical procedure and the date of surgery were not available. Her alveolar examination revealed that her original deformity had been an asymmetric cleft. The Abbé flap was divided 7 days postoperatively in this patient (Fig. 2).

The result 2 years and 8 months after surgery is shown in Figure 2f. Although we recommended an additional revision of the columella scar, the patient was satisfied with this result and refused further surgery.

Case 2

An 18-year-old man presented with a typical postoperative deformity of bilateral cleft lip and palate. His dental occlusion was good following orthodontic treatment. Our method was applied to correct his nasal deformity and to improve his profile. The pedicle of the Abbé flap was divided 7 days later. The postoperative contour of the nose and the relationship between the upper and lower lips were satisfactory (Fig. 3).

DISCUSSION

Much progress has been made in the field of cleft lip repair (Nakajima et al., 1991). However, in bilateral
Fig. 2 – Case 1: A 17-year-old woman. (a) Preoperative frontal (left) and lateral (right) views. (b) Design of the incision. Central portion of the lip vermilion was turned inwards to make a deep oral vestibule. (c) Elevation of the white lip flap. Note the wide exposure of the nasal cartilages. (d) Elevation of the Abbé flap. (e) Immediately after surgery. The pedicle was divided 7 days later. (f) Two years and 8 months postoperatively.

cleft lip repair, numerous problems still remain. Millard published his forked-flap technique in 1958 and Converse et al. (1970) reported a combined nose-lip repair in bilateral cleft lip deformity, which must be considered to be a prototype for our method. As we reported previously (Nakajima and Yoshimura, 1990), some cases can be treated successfully by a combination of a short-fork flap and a bilateral reverse-U incision (Fig. 4). However, in cases of severe nasal deformity with marked insufficiency of the upper lip volume, an Abbé flap is needed to add volume to the upper lip (Millard, 1970). In such a case, the procedure reported here can be effectively performed. Of course, there are some patients in whom maxillary osteotomy is indicated. In such cases, we use this procedure to release the upper lip.
tension in preparation for the maxillary osteotomy. In fact, many of these patients in whom maxillary osteotomy was indicated were highly satisfied with the result of this procedure alone, and did not want to undergo the osteotomy. It is understandable, considering their age, that patients do not wish to disturb their daily activity for a longer period by undergoing an osteotomy.

CONCLUSION

We report a method of secondary correction of bilateral cleft lip deformity using an Abbé flap with nasal repair through a combination of bilateral reverse-U incision and columella elongation with a white lip flap based on the columella. This method is indicated only in cases of severe deficiency of upper lip volume.
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References


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