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Estlander flap combined with an extended upper lip flap technique for large defects of lower lip with oral commissure

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Summary Various methods of reconstructing lower lip partial defects have been reported, for example those using the upper lip such as the Abbe and Estlander flap techniques. However, when a large defect of the lower lip with oral commissure is presented, the choice of reconstruction method is often difficult. For such cases, the Estlander flap technique is often used, although displacement of the oral commissure is one of the remaining problems.

In the case of large defects of the lower lip with oral commissure, we opted for a reconstruction method in which the entire upper lip was incised and extended, a portion of which was reflected as a traditional Estlander flap. Four cases were treated using this method, and in all cases there were no complications such as venous return disturbance, and the site healed well. Sensation returned within 3 months, and contraction of the lips appeared within 6 months. The symmetry of oral commissures was maintained and the appearance was almost cosmetically satisfactory.

Our technique is especially useful for reconstructing defects affecting 1/3–2/3 of the lower lip including the oral commissure. This technique is cosmetically and functionally successful and the symmetry of the oral commissure is maintained.

The lower lip is a common site for malignant tumours such as squamous cell carcinoma,[1] and creates many opportunities for reconstruction. For partial defects of the lower lip, reconstructive methods using the upper lip such as the Abbe[2] and Estlander[3] flap techniques have been often used. Although the Estlander flap technique is often employed in cases of defect near the oral commissure,

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displacement of the oral commissure is one of the remaining problems.[4] Displacement of the oral commissure causes functional disorders such as sialorrhoea, and obtaining satisfactory cosmetic results is difficult. Although many methods of lower lip reconstruction have been reported, they almost never discuss defects with or without the oral commissure. When the Estlander flap technique was performed by us, after widely incising and extending the entire upper lip to treat large defects of the lower lip including oral commissure, we were able to obtain satisfactory cosmetic and functional results without displacement of the oral commissure.

Method

This method was used in cases with a defect to more than ½ of the lower lip, including the oral commissure. Before surgery, a Doppler blood flowmeter was used to confirm the presence of the facial artery and superior labial artery on the unaffected side. The traditional Estlander flap was designed in the proximity of the defect where one part of the flap border runs along the nasolabial fold. Moreover, to extend the entire upper lip, the incision line was designed along the columella base and the base of the nasal wing up to the nasal wing on the unaffected side (Figures 1a, 2a).

The full thickness — including the skin and oral membrane — in the proximity of the defect was incised and the full thickness of the upper lip was elevated as the flap. At a point roughly 1/3 along the flap periphery, as with the Estlander flap, the vermilion border including the superior labial artery was preserved, and the Estlander flap was elevated and reflected (Figures 1b, 2b). At this time, to ensure the bilateral symmetry of oral commissures, it is necessary to pay special attention to the position where the flap pedicle swings over.

At the base of the superior flap, the skin between the alar groove and the nasolabial fold was excised to resolve distortion. The oral membrane, muscle and skin of the surrounding region and the defective stump were sutured to one another's layers (Figures 1c, 2c, 3). Especially at the oral commissure, the remaining muscles surrounding the mouth, such as the zygomaticus major muscle, the zygomaticus minor muscle, the risorius muscle and the buccinator muscle, should be carefully sutured to the orbicular oris muscle at the oral commissure to recreate normal anatomy as much as possible. Moreover, if the skin at the buccal region is deficient and tension is created, it is best to concomitantly use local flaps such as the V-Y flap from the buccal region or lower jaw.

Result

This method was used in four cases. Two cases had defects over roughly ½ of the region, two cases had defects over roughly 2/3 of the region, and all had defects to the oral commissure. Among them, case 1 required the concomitant use of a local flap to make up for the deficiency of buccal region skin (Table 1).

After surgery, there were no complications such as venous return disturbance, and all cases healed well. Oral ingestion was possible immediately following surgery. The bilateral symmetry of oral commissures was almost maintained during rest and contraction, and the balance of the

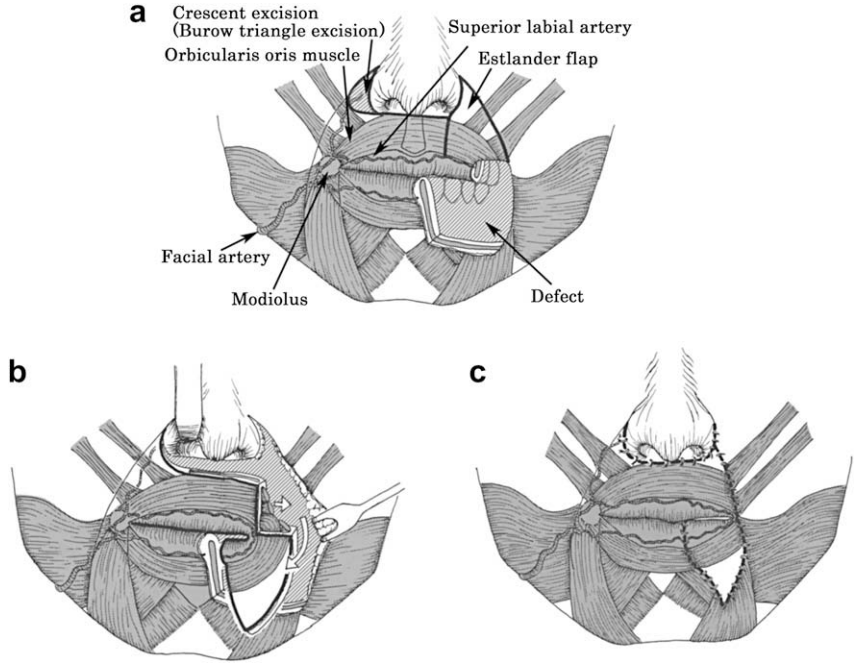

Figure 1 Schematic diagrams of our technique. (a) The defects of the left lower lip including oral commissure. The design of the Estlander flap and the entire upper lip flap. The crescent excision of the lateral nasal wing on the unaffected side is designed to remove skin distortion. (b) The Estlander flap swings caudally. (c) Transpositioned flap provides orbicularis sphincter function and fixes new oral commissure symmetrically.