# A Method for The Repair of Transverse Facial Clefts

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In the natural form of the *oral commissure*, the outer edges of the upper and lower lips form small triangular flaps. The white line of the lip at the *commissure* is web continuous with the upper and lower red lips. The lower part of this web is larger than the upper. To repair this so that there is a natural appearance, a Z-plasty and mucocutaneous flap based inferiorly is performed on the *transverse facial cleft*. The incision line for the Z-plasty is made through each vermilion border and is extended approximately 1.5-2 mm to create the web continuous with red lips. The *mucocutaneous flap* is formed when making the incision through the lower vermilion border. As the flap is elevated and sutured to the upper lip, the larger web-like skin on the lower lip is made. This skin is seen to insert boldly into the oral cavity.

In the repair of the transverse facial cleft, the reconstruction of the new commissure requires great care. A modified Estlander method (May, 1962.; Nagai and Weinstein, 1963.), a Z-plasty (Longacre et al., 1963.; Khoo Boo-Chai, 1969.), a small triangular mucous flap with added Z-plasty (Stark and Saunders, 1962.; Itho et al., 1971.), and a small triangular skin flap based inferiorly added to Z-plasty (Onitsuka, 1965) have all been devised to create a new commissure.

In its natural form, the outer edges of the upper and lower red lips form small triangular flaps. Anderson and Kurtay (1971) note that the normal corner of the mouth is actually not a corner at all but rather a small and continuous segment of vermilion. Onitsuka (1965) emphasizes the natural form of the lower lip at the commissure. When the mouth is closed without excessive pressure, the edges of the upper and lower vermilions do not simply adjoin on one point. The edge of the lower vermilion inserts into the oral cavity at the anterior point of the commissure, and the skin is seen to round into the oral cavity. We have noted that this form, which looks as if it is covered with skin at the commissure, is also present in the upper lip. Wall et al. (1972) indicate that the vermilion at the commissure is a small, fragile, anterior web continuous with the upper lip and a large posterior web continuous with lower lip.

In order to reconstruct this natural appearance of the commissure, we have utilized the Z-plasty, in which the outline of the incision is located in skin, and a mucocutaneous flap is based inferiorly. We discuss the importance of this operative technique for the management of the transverse facial cleft in this paper.

## **Operative technique**

Point A is marked in proportion to the healthy side, and point C is located on the commissure side with reference to point A to create the mucocutaneous flap, which is made by beginning the incision at point C'. This flap is used to create the new oral orifice. These three points are located either above or below the vermilion and are extended through each vermilion border approximately 1.5 to 2.0 mm. Points B,B' are equal in length to points A and A' respectively. The lengths

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FIGURE 1. *left and right*; Z-plasty and mucocutaneous flap based inferiorly. Points A, C, C' are located either above or below the vermilion and are extended through each vermilion border approximately 1.5 to 2 mm.



FIGURE 2. left and right; Incisions A-D and C'-D are made the depth of the mucosa. Mucous tissues are reversed to the side of the oral cavity, and the cleft is sutured closed.

A-B, A'-B' are determined in accordance with the cleft width. Thus, the vertical angle of the triangular flap, approximately  $30^{\circ}$  to  $60^{\circ}$  is sufficient to allow the flaps to be reversed. Point A' is located somewhat more toward the midline of the lower lip than is point D to prevent the dog-eared protuberance produced when the flaps are reversed (Figure 1).

Perpendicular incisions through the vermilion are made, and the incisions A-D and C'-D on the line along the lip are made beginning medially and continuing to point D. These mucous tissues are reversed to the side of the oral cavity, and the cleft is sutured closed. The mucocutaneous flap is joined and sutured at the upper lip to create the new oral orifice. The incisions A-B and A'-B' are made and ablated to make two skin and muscle flaps, each of which is interpolated. Points A and C' are, therefore, joined to make the white lip in the region of the commissure (Figures 2 and 3). Z-plasty flaps are sutured completely (Figure 4).





FIGURE 3. left and right; Points A, C' are joined to make the white lip. Two triangular skin and muscle flaps are incorporated.



FIGURE 4. Left, Z-plasty flaps are sutured completely. Right, Appearance of the new commissure 14 days postoperatively.



FIGURE 5. Left, Transverse facial cleft in female. Right, Postoperative appearance of the commissure after 15 years.

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#### Discussion

In past years, the simple linear closure of the transverse facial cleft was used. This method tends to cause constricture at the commissure and predisposition to fissure formation. In addition, an afterimage of postoperative malformation from the straight scar cannot be disregarded. Farthermore, the repaired commissure often has a tendency to droop downward after surgical reconstruction of the transverse facial cleft. The Z-plasty technique is consequently now used most of the time, although the results have not always been cosmetically satisfactory. Itho et al. (1971) state that the new commissure created by Z-plasty alone shows the unnatural form because of the scar in the new oral orifice resulting from suturing of each of the flaps.

In the natural form of the commissure, the outer edges of the upper and lower lips form small triangular flaps. The vermilion border inserts into the oral cavity at the anterior point of the oral orifice, so the skin is seen to round into the oral cavity. As described by Onitsuka (1965), this appears to be similar to the web between the fingers. The white lip at the commissure is a web-like form continuous with the upper and lower red lips. In comparison with the vermilion border on the lower lip, the one on the upper lip inserts into the oral cavity at a point closer to the oral orifice. The lower part of this web-like skin is larger than the upper.

To reconstruct this natural form, the incision line through the vermilion for the Zplasty is placed in the skin. Farthermore, the mucocutaneous flap in the lower lip is elevated and sutured to the upper lip. Points A and C' located in the skin (Figure 3) adjoined to make the web-like skin at the commissure. Point C' is elevated to point A, and then the inferior triangular skin flap of the Z-plasty is also moved. Consequentially, the web-like skin on the lower lip is made boldly. The new oral orifice made with the inferiorly based mucocutaneous flap does not lose the natural roundish appearance. If this incision line is simply placed in the vermilion border, the results after surgery are unsatisfactory. Such things as the "Goldfish Mouth" (Khoo Boo-Chai, 1969.) occur.

Figure 5 shows the results in one case fifteen years after surgery. The patient has been progressing satisfactorily.

### Summary

In surgical treatment of transverse facial cleft, we have devised a technique using a Zplasty and a mucocutaneous flap based inferiorly. This method allows reconstruction of the natural appearance of the commissure and prevents postoperative drooping. This operative technique is presented.

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