

## Original Article

# Straight line closure of congenital macrostomia

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### ABSTRACT

The results of patients operated on by Nepal Cleft Lip and Palate Association (NECLAPA) surgeons for congenital macrostomia were prospectively studied between January 2000 and December 2002. There were four males and three females with a median age of 10 years. Three had an associated branchial arch syndrome. In all patients an overlapping repair of *orbicularis oris* was done. Six patients had a straight line closure with excellent cosmetic results and one a Z-plasty with a more obvious scar. All had a normal appearing commissure. Overlapping orbicularis repair with straight line skin closure for this rare congenital anomaly is recommended.

### KEY WORDS

Macrostomia, lateral cleft lip, surgery.

### INTRODUCTION

Congenital macrostomia, also known as transverse facial cleft, is a rare facial developmental anomaly. It is often associated with first or first and second branchial arch syndromes. Many different repairs for this deformity have been reported.<sup>1-10</sup> Initially Z-plasties were commonly performed<sup>1,2</sup>, but the scar was found to be aesthetically sub-optimal especially when smiling.<sup>3</sup> Simple line closure was reported to have excellent results, and fears of scar contracture appeared to be exaggerated.<sup>3,4</sup> Other techniques such as W-plasty<sup>5</sup> and triangular flaps<sup>6</sup> have also been reported with good results. We have followed the technique of simple line closure and have obtained satisfactory results.

Here we report on surgical results of seven patients with macrostomia, with simple line closure in six

patients and Z-plasty in one.

### MATERIALS AND METHODS

All patients with macrostomia operated on by the Nepal Cleft Lip and Palate Association (NECLAPA) surgical team between January 2000 and December 2002 were included in the study. Three were operated on in our institutions (Western Regional Hospital, Manipal Hospital) and four were operated on in surgical camps in district hospitals in both Nepal and Tibet.

The point of the new position of the commissure was determined by careful measurement of the two sides prior to intubation as well as observation of the point at which the texture of the vermilion changes from normal mucosa to cleft mucosa (Boo-Chai). All patients underwent simple line closure of the buccal mucosa with overlapping repair of the *orbicularis oris* at the level

of the normal commissure on the contralateral side, using 4-0 or 5-0 Vicryl for this part of the repair. The buccal muscles were closed directly with 4-0 Vicryl. The commissure was closed transversely with fine mattress sutures. In six patients a simple line closure of the skin defect was carried out, starting from the corner of the mouth (Figure 1a and b, Figure 2a and b). In most cases the lengths of the upper and lower skin incisions are slightly different, but by carrying out a careful direct approximation of the two sides a dog-ear can be easily avoided without the need for either extending the incision or using a Z-plasty. In one patient a Z-plasty of buccal skin was performed with the vertical limb in the line of the nasolabial fissure.

## RESULTS

There were four males and three females with a median



**Figure 1a & b:** Pre- and post-operative photographs of straight-line closure of congenital macrostomia

age of ten years (range 6 months to 25 years). Three patients had associated first branchial syndrome, one of whom also had ipsilateral polydactyly.

All patients with simple line closure had excellent results with minimally visible scars even when smiling. In no patient was a dog-ear noted. The patients with the Z-plasty had a more visible scar which became yet more obvious on smiling. All had a normal appearing commissure.

## DISCUSSION

The goals of surgery for macrostomia are (1) symmetric



**Figure 2a & b:** Pre- and post-operative photographs of straight-line closure in older child

placement of the oral commissure, (2) reconstruction of the orbicularis to restore labial function, (3) reconstruction of a commissure with a normal appearing contour, (4) closure of the buccal defect with a minimally visible scar, and (5) prevention of future scar contracture with lateral migration of the commissure.<sup>5,6</sup> We believe that all of these goals are met by a simple line closure.

The point of the new commissure must be determined accurately. We use both measurement and observation of the change in the vermilion border but believe the second is more reliable especially if one is using endotracheal rather than nasotracheal intubation. The stump of the superior *orbicularis oris* is placed over the inferior stump to create a normal contour, and sutured under adequate tension based on where the commissure is going to be placed. This repair is crucial in obtaining normal sphincter-like function of the muscle, necessary in both articulation and mastication.<sup>2,5-7</sup> The buccal musculature (buccinator and risorius) should also be approximated to fill the defect in the cheek.<sup>5</sup>

While some report that leaving a scar at the commissure will not provide for natural contour of the mouth, we did not find this to be the case. If the *orbicularis oris* repair is carried out accurately, this muscle will set the tone to provide a good shape and contour to the commissure. However the small triangular skin flap raised from the lower lip to be inserted into the commissure as reported by Yoshimura and Onizuka may improve the overlapping of the upper and lower lips.<sup>2,9</sup> The oral commissure advancement as described by Fukuda and Takeda would be limited to those with a well-formed aberrant commissure, which in our experience was unusual.<sup>10</sup> Some authors report good results from a vermilion square flap commissuroplasty, and report a more normal appearing vermilion border than the triangular flap described above.<sup>5,7</sup>

Initial workers described Z-plasty closure of the skin defect.<sup>1,2,9</sup> It became subsequently apparent that the Z-plasty scar is more visible, especially on smiling. Thereafter a simple line closure<sup>3,4,8</sup> or a lazy-W closure<sup>5</sup> became more popular. The central line of the Z was asserted to be placed along the nasolabial fold or the relaxed skin tension line (RSTL). However both these

lines can be difficult to see clearly in children. Yoshimura was able to compare five children with a Z-plasty repair and seven with a simple line repair and noted a less pleasing cosmetic result with the Z-plasty, especially when the face was animated. We had the same observation with our single patient with the Z-plasty repair. Yoshimura used a small Z-plasty at the nasolabial fold to remove the dog-ear;<sup>3</sup> we did not encounter a dog-ear in any of our cases. Concerns regarding contracture of the straight-line scar with lateral migration of the commissure appear to be not justified as none of those reporting this technique have noted this as a problem.<sup>3,4,8</sup> It should be noted that our patient population is considerably older than that reported by other authors. Patients in most other series are all five years of age or less; only two of our seven patients were in this age group. It is possible that younger patients have a higher risk of lateral migration of the commissure with increasing age with this technique, although as noted above, other authors have not noted this problem.

We conclude that a functional and well-contoured *orbicularis oris* reconstruction is key to achieving a normal looking commissure. Simple line closure of the skin defect gives the most aesthetically pleasing result both at rest and while smiling.

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