

Unilateral cleft lip repair with a slight variation of conventional Millard's technique on the cleft side-a clinical study

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Background: Many different techniques have been attempted for cleft repair. The most significant of these is Millard's "rotational advancement" technique devised in 1958. However, some of the few disadvantages of this technique are the nostril size discrepancy and a prominent scar on the cleft side. We describe a slight variation of this technique for treatment of several cases of unilateral cleft lip. **Methods:** The preoperative design of the surgical method was drawn on the skin, the vermilion, and the oral mucosa. After completion of the preoperative marking, the wide dissection was performed to separate the orbicularis oris muscle completely from the abnormally inserted bony structure and the enveloped skin-mucosal flap. The freed orbicularis oris muscle was then reconstructed with full width. On the cleft side alar crease incision is avoided and the incision is taken on the nasal mucosa only to construct nasal floor and avoid scar **Results:** Unilateral cleft lip repair using this technique was conducted in 42 patients between 2015 and 2017. A total of 05 patients (12%) required a secondary operation on the lip after the first unilateral cheiloplasty. In all patients, satisfactory surgical outcomes were obtained with an indistinct scar and a well-aligned lip contour. **Conclusions:** the slight variation on the cleft side by avoiding skin incision is a good technique to acquire a natural and balanced shape in unilateral cleft lip repair.

Key Words: unilateral cheiloplasty, unilateral cleft lip, Straight-Line Advanced Release Technique,

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The most significant technique of repair of unilateral cleft lips is Millard's "rotational advancement" technique devised in 1958. Millard[1] published the operative method in 1976, and it became the fundamental technique used for unilateral cleft lip repair. This original rotational advancement technique was modified by adding variations such as vermilion flaps[2] and triangular advancement flaps.[3,4] Other adaptations of the rotational advancement technique are Mulliken's[5] modification and Fisher's[6] recently published anatomical subunit approximation technique. In this study, we describe the novel technique and its application in treating several cases of unilateral cleft lip[7].

I. Patients And Methods

After obtaining the verbal and written informed consents 42 patients underwent unilateral cleft lip repair using this technique. All of the surgeries were performed by the same surgeon from 2015 to 2017. Furthermore, all cases were first-time surgery on unilateral cleft lips for all patients. The peaks of the Cupid's bow were marked at the vermilion cutaneous junction. Key landmarks were tattooed using gentian violet dye and a 26-gauge needle. Next, 1% lidocaine with 1:200,000 epinephrine was infiltrated along the designed incision line. Incisions were made with number 15 blades. Dissection was performed to separate the orbicularis oris muscle from the abnormally inserted bony structure and the enveloped skin-mucosal flap. At this point, the extent of dissection was set as wide as possible. In the subcutaneous plane, the range of dissection was the philtral area on the noncleft side to the perialar area on the cleft side. The release and dissection below the orbicularis oris muscle ranges from the cleft margin to the anterior nasal spine and piriform aperture base on the noncleft side. On the cleft side, the release area of the abnormally inserted muscle covers the entire anterior maxillary plane. This maneuver is the most important step for deciding the entire lip contour line. After dissection on both sides of the cleft is completed, the orbicularis oris muscle is fully detached from the abnormal insertions. The freed orbicularis oris muscle was then reconstructed. After obtaining the rotation- advancement flaps using conventional millard's technique incision on the cleft side was given along the nasal mucosa to construct the nasal floor and nostril and skin incision was avoided on the cleft side Further, after all planes of the lip wound were closed, a vertical skin suture line was achieved without any unnecessary transverse scar.[fig I-IV]

II. Results

Unilateral cleft lip repair using this technique was conducted in 42 patients between 2015 and 2017. The mean age at primary cheiloplasty was 3.8 months (range, 3.2–7.6 months). A total of 5 patients (12%) required a secondary operation on the lip after the first unilateral cheiloplasty. The main purposes of this revision cheiloplasty was notching, correction of red vermilion bulging and correction of philtral vertical scars. In all patients, satisfactory surgical outcomes were obtained with an indistinct scar and a well-aligned lip contour.

III. Discussion

Previous cleft repair techniques require the measurement of many parameters, which may change because of stretching and release after dissection. Thus rather than focusing on the skin, attention must be paid to the perioral muscle, which is the main framework in cleft lip repair. This is the principal concept underlying the present technique. The markings are minimal, and positioned to meet the requirements for deciding on surgical incision and plain anatomical junction. The primary purpose is to maintain the natural shape of the Cupid's bow. As described above, we do not consider miscellaneous preoperative measurements important. Instead, we consider the proportion of normal anatomy of the lip as essential to obtain natural results. Because the core structure of the lip is the orbicularis oris muscle and the skin merely envelopes this muscle, reconstitution of the complete muscle sling is more important rather than tailoring of the skin. Most patients with clefts show bilaterally contracted muscle, which develops because of the loss of the midline anchoring structure with breakdown of the muscle sling. To relocate the contracted muscle in the defective area, all muscle inserted into the neighboring structure around the cleft should be fully released without exception. It is known that the columellar base and the alar base on the cleft side are definitely affected by the pulling power of the abnormal muscle. By gradually pulling and detaching the entire muscle bulk inferiorly, the extent of release of the abnormal orbicularis oris muscle can be adjusted. In the case of severe wide complete clefts, the dissection range can be extended to the piriform aperture base on the noncleft side. Reconstruction of the orbicularis oris muscle is then performed with full width and length, from the columellar base to the end of the red vermilion. This technique allows sufficient lip length and lowers skin tension, which prevents the scar from widening [9]. By this technique, an adequate amount of mucosal tissue is obtained for an oral lining, and central fullness is achieved. Finally, a 3-dimensional lip is obtained with a high possibility of having the natural tubercle shape[8]. When there is inadequate eversion of the vermilion, as in the case of thin lips, individuals tend to appear aged and unattractive. To surgically correct this appearance, the tissue of the oral lining is stretched vertically to give the appearance of full lips[10]. Various methods such as Z-plasty, transposition flaps to correct notching deformities, and the V-Y advancement technique for tubercle formation are used to obtain sufficient vertical tissue for the oral lining in a secondary cheiloplasty (11-15). The natural oral lining should be considered with high priority in lip surgery, especially for the primary repair of cleft lips, in which the skin and mucosa are insufficient. The scar around the alar base has been a concern for most patients, and revision for this scarring has been very difficult. The absence of an incision around the alar base can be regarded as an important advantage of the present technique. Our results were similar as those in Nakajima's method and Fisher's[6] method.

IV. Conclusions

To acquire a natural and balanced shape in unilateral cleft lip repair with minimum scarring on the cleft side this technique is advocated since most patients required only a single lip operation, and only few cases of postoperative peaking and notching deformities were encountered in the present study.

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preoperative



postoperative



FIG. I PREOPERATIVE UNILATERAL CLEFT LIP



FIG II The wide dissection and release of the orbicularis oris muscle are completed.



FIG III The straight-line wound closure was performed.



FIG IV POST OP 3 MONTHS

Table 1. Details of the patients who underwent unilateral cleft lip repair

TOTAL NO. OF PATIENTS	42
MALE PATIENTS	34(80.9%)
FEMALE PATIENTS	8(19%)
CLEFT ON RIGHT SIDE	14(33.33%)
CLEFT ON LEFT SIDE	28(66.67%)
COMPLETE CLEFT LIP	31(73.80%)
INCOMPLETE CLEFT LIP	11(26.19%)

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