

Philtrum and Philtral Columns Preservation in Unilateral Incomplete Cleft Lip Repair

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ABSTRACT

One of the main advantages for repairing of cleft lip is to have a natural philtrum and philtral ridges with minimal scarring. This study aims to describe a modification for the mostly used technique described by Millard for repair of unilateral cleft lip. In most cases of unilateral incomplete cleft lip there is no shortage or tissue deficiency in the cleft side. In this technique, the C-flap was not rotated 90 degree in the upper lip but was used to fill the gap between the rotational and the advancement flaps forming a philtral column simulating "mirror image" the other philtral column. Twenty-one patients, 13 females and 8 males, with unilateral incomplete cleft lip were operated upon using the same technique. Two cases were revised later as they presented with vermilion notches. One patient suffered from hypertrophic scar. Most of the parents were satisfied with the results as a good appearance of the Cupid's bow, philtrum and philtral ridges was achieved. However, long term follow-up is needed to give a final result.

INTRODUCTION

The techniques designed for the repair of a complete cleft lip should not be used to repair an incomplete cleft lip because in most incomplete cleft lips there is more tissue on the cleft side than in complete cleft lip. This results too often in drooping of the white lip on the affected side [1]. The naturally appearing Cupid's bow and philtral dimple and ridges should be one of the main aims for the plastic surgeon during unilateral cleft lip repair. The most popular method for repair of unilateral cleft lip is the rotation-advancement technique of Millard. Although this procedure preserve the natural landmarks but the scar after repair crosses the philtral column obliquely resulting in an abnormal appearance of the lip. Many modifications were described by many authors to solve the disadvantage of the scar appearance in Millard technique [2-3]. The results were not always good to give naturally looking straight philtral columns in repair of unilateral cleft lip [4].

The philtrum and philtral columns play an important role in the appearance of natural upper lip. The philtral dimple is composed of centrally located dense subcutaneous tissue bordered by loose subcutaneous tissue producing the philtral column laterally [5]. Mohler, in 1978, mentioned that many children presented with unilateral cleft lip have some degree of divergence at the base of the columella [3]. In unilateral cleft lip, similar subcutaneous tissue of the philtral column is found at the medial and lateral segments along the cleft. Rearrangement of the flaps of the noncleft side into their anticipated location should be based on aesthetic units and anatomical structure. Anatomically, the fibers of the contralateral orbicularis oris are decussated and inserted into the dermis lateral to each philtral ridge augmenting its contour [6,7]. Reconstruction of this complex anatomy into its normal position may be difficult. However the flaps can be arranged into the intended position by approximating the similar subcutaneous tissue along the cleft margins [8].

PATIENTS AND METHODS

Twenty-one patients, 13 females and 8 males, with unilateral incomplete cleft lip were operated upon between October 2004 and February 2007. The age ranged from 3 months to 11 months old (mean age was 6 months old). The follow-up period ranged from 6 months to 2 years (mean follow-up period was 11 months). The same technique was used for all cases.

Surgical technique:

The main point in the bottom and high points of Cupid's bow on the noncleft side were marked. The high point of the cleft side was also marked. Other points for Millard technique were identified and marked. The nasal tip was elevated with double hook. A skin marking was made from the proposed

highest point of the Cupid's bow on the noncleft side to the base of the columella along the desired philtral column without a back-cut. So the depression of the philtrum was not involved in the incision. Marking of the lateral lip segment was made along the cleft margin sparing the alar base. A skin incision was made from the proposed highest point of Cupid's bow to the base of the columella on the noncleft side. This incision was taken further to the midpoint of columellar base along the columella-labial junction forming the C-flap. Another incision was made on the cleft side starting at the proposed highest point of the cleft side to the base of the ala. The medial lip segment is released in full thickness and rotated down into its new position. The C-flap is not rotated 90 degree as in conventional technique, but the tissue defect after adequate rotation of the medial segment was then filled with the C-flap. The C-flap was sutured directing its tip downward to fill the gap between the rotational flap of the medial segment and the advancement flap of the lateral segment. The muscle was sutured in two layers with absorbable 5/0 sutures and the skin was closed using 6/0 non-absorbable sutures. Terramycin ointment was applied to the suture line.

RESULTS

Twenty-one patients, 13 females and 8 males, with unilateral incomplete cleft lip were operated on between over 29 months. The age of the patients ranged between 3 and 11 months old (the mean age was 6 months). The follow-up period ranged from 6 months to 24 months (mean follow-up period was 11 months). Two cases (9.5%) were revised as they had vermilion notches. There was one case (4.5%) with hypertrophic scar. The other 18 cases (86%) had good appearance of the philtral dimple and ridges with nearly natural looking Cupid's bow. Most of the parents were satisfied with the postoperative results achieved in their children.

These figures show preoperative and postoperative results of some cases with unilateral incomplete cleft lip.

DISCUSSION

Over the time, repair of cleft lip has a continuous improvement due to a better understanding of the lip deformity. Cleft lip repair still remains a challenge to many surgeons. Reconstruction of the philtrum and philtral ridges remains one of the main problems in cleft lip repair. The rotation-advancement method of Millard is the most widely

accepted technique with a limited success on the appearance of philtral reconstruction. Advancement of the lateral skin flap into the defect after adequate rotation of the medial segment may leave an oblique scar and violate the aesthetic units. Many modifications have been developed to solve this problem [8]. Lateral tissue was used as interdigitation flaps as Z-plasty with the results of asymmetrical philtrum and philtral columns [2,4].

Song et al., in 1998, obtained additional tissue from the columella or membranous septum resulting in deficiency of other structures [9]. The principle factor in the formation of the philtrum may be the accumulation of connective tissue between skin and orbicularis oris muscle [5]. In the intraoperative period, a thick subcutaneous tissue at the medial and lateral cleft margins was observed. It is appropriate to use these tissues to form the philtral column. After rotation of the medial segment, if the lateral flap was advanced in the defect, a thick subcutaneous tissue is placed in the upper part of the philtral dimple producing an abnormally looking philtrum.

Lester, in 1995, used the C-flap to lengthen the columella in the cleft side by advancing it in the donor defect. This results in the placement of a scar that will closely simulate the "mirror image" of the uninvolved philtral column. Therefore, advancing lateral lip segment will not have to come quite as far across the upper third of the lip [10]. In 1996, Kawi described a modification to create a philtrum in most secondary cases and in some primary repairs. Satisfactory results were achieved in most of the patients after 2 years follow-up [11]. While Thomas and Mishra, in 2000, mentioned that they used the C-flap in the nostril sill to avoid narrowing of the nostrils [12]. In this study, the C-flap was used to maintain the rotation of the medial segment, to fill the gap between the rotational and advancement flaps, to avoid scar formation in the upper philtral dimple and to create philtral ridge in the cleft side with no nostril narrowing. However, a long term follow-up may be needed as the results may be on the expense of lengthening the columella in some cases.

Conclusion:

A natural looking philtrum and philtral ridges could be achieved through positioning of the C-flap to fill the gap between the rotational and advancement flap as a modification of Millard technique in unilateral incomplete cleft lip repair. However, long-term follow-up may be needed to have a final result.



Case (1-A): Pre operative.



Case (1-B): Post operative.



Case (2-A): Pre operative.



Case (2-B): Post operative.



Case (3-A): Pre operative.



Case (3-B): Post operative.

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