

Unilateral Incomplete Cleft Lip- Chieloplasty: A Case Report

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Abstracts: Orofacial clefts are the most prevalent craniofacial birth defects and these malformations transform an infant with severe functional and esthetic handicaps. Cleft lip and palate is a common malformation that occurs in about 2 in 1000 live births. The cleft can vary from a hardly visible furrow in the palate or on one side of the lip to bilateral complete clefts of the lip, alveolus and palate. Clefts of the lip, alveolus and palate are highly complicated malformations. The problems associated such as speech, function, esthetic, and socio-psychological and more precisely deleterious effect on the growth and development of teeth, alveolus and jaws. A specialized corrective surgery is mandatory and indicated in early months of life to achieve the best outcome to improve the function and appearance. We are presenting a case of unilateral incomplete cleft lip with primary repair in a 4months and 20days baby boy. [Patil R NJIRM 2014; 5(5):120-123]

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Introduction: Historical reference to the cleft lip deformity dates back to the Greek physician Hippocrates who referenced the presence of this condition but not its repair in his writings. Flemish physician Yperman (1295-1350), performed the first modern cleft lip repair, or cheiloplasty¹. The unilateral cleft lip in its varying manifestations of shape, size and asymmetry is a complex deformity². Adverse factors during embryonic developmental stages leading to cleft lip and/or palate also may affect development of both primary and permanent dentitions. Teeth adjacent to the cleft are most likely to be affected, but other teeth may also be affected³. Surgery includes, starting with lip-nose repair and soft or hard palate and then continuing with final closure of the palate. This primary surgery is often completed within the first year. There are general agreements that patients that have a cleft in the alveolar process should be treated with bone grafting to the alveolar cleft⁴. Reasons for the abnormal facial morphology involve three groups of factors: *intrinsic* developmental deficiencies, *functional* distortions affecting the position and growth of both normal and abnormal parts, and *iatrogenic* factors introduced by treatment. A hypothesis by Ross and Johnston, 1972 explains the contribution of each of these factors as follows: the only significant *intrinsic* abnormality is in the maxillary complex (maxilla, palatine bone, nasal septum, teeth, soft palate and lip)⁵. After 16 weeks of pregnancy cleft lip diagnosis by ultrasound images (palate is more difficult to acquire). The most broadcast treatment modalities in the management of unilateral cleft lip

and palate according to chronologic age 12 weeks of age cleft lip repair and 6–12 months of age cleft palate one-stage repair with intravelar veloplasty⁶.

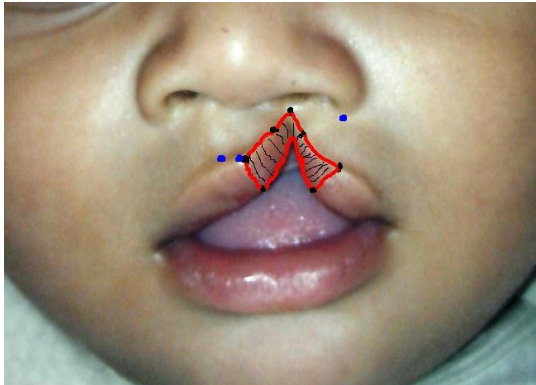
The surgical procedures addressing the problems with the unilateral cleft lip and palate do all include a technique for lengthening the skin of the lip in the cleft area. This procedure can vary according to the preference of the surgeon. The best known are those according to Millard, Tennison and Skoog. The important part of lip repair is, however, reconstruction the muscles entering the lip. This repair should include a reconstruction of the zygomatic and nasal muscles separated from the lower part of the orbicular muscle of the lip.

Case Report: A 4months and 20days baby boy carried by parents to our hospital with the complaint of incomplete closure of upper lip by birth. Extra oral and intraoral examination has been carried out and it was observed that the upper lip defect on left side with incomplete closure. Cleft lip was extended towards nasal side without involving the nasal floor and alveolus and it was diagnosed as left unilateral incomplete cleft lip (Figure 1). General examination, blood investigation was done and reports showed normal. Pediatrician and anesthetist consent was taken and case was considered for surgical lip repair under general anesthesia with parent's informed consent. To place an incision and to excise the malformed tissue on affected part of lip a surface markings has been done on both cleft and non-cleft lip side (Figure 2).

Figure 1 Preoperative View Showing Left Unilateral Incomplete Cleft Lip



Figure 2: Surface Markings



Incision (*Millard's technique*) was placed with blade no.15 on the planned surface markings and malformed lip margins are excised on both the side (Figure 3). A blunt dissection was carried out with dissecting scissors in skin and mucosa and partially separated to identify the orbicularis oris muscle on both cleft and non-cleft side (Figure 4).

Figure 3: Excision of Lip Defect Margins

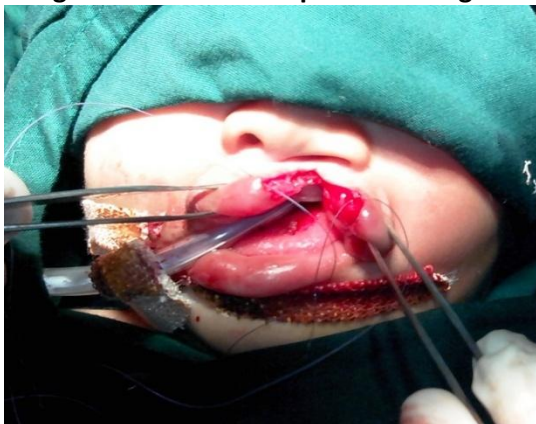


Figure 4: Dissection and Identification of Orbicularis Oris Muscle



Adequate mobilization of soft tissue and approximation of oris muscle to each other from both the side was carried out first by using vicryl 4-0 material (Figure 5) followed by white line, and skin was approximated and sutured with prolene 4-0 material.

Figure 5: Approximation of Muscle, Mucosa and Skin Respectively With Opposite Side



Finally intraoral mucosa was sutured with vicryl 4-0 (Figure 6). On seventh postoperative day the prolene sutures are removed and observed that corrected cleft lip wound was healed satisfactorily without any complications (Figure 7).

Figure 6: Suturing Performed**Figure 7: Postoperative View Showing Closure of Cleft Lip**

Discussion: The morphological features that were markedly different between normal and cleft groups were assumed to be related to intrinsic development problems that resulted in a cleft, caused by functional factors⁵.

In one of the study, the dental age delay in cleft subjects relative to control subjects may be observed qualitatively from scatterplots of paired dental and chronological age data, dental age delay in cleft boys more apparent in the older age group (8-12 years) than in the younger age group (< 8 years). The prevalence of dental age delay among cleft boys was 67% (20/30), with a mean delay of - 0.6 + 0.4 years. This study demonstrated that boys with clefts were slower in dental age than control boys. In addition, cleft boys tended to be more

dentally delayed than cleft girls, although the difference was not statistically significant³.

The unilateral cleft lip in its varying manifestations of shape, size and asymmetry is a complex deformity. To obtain consistent results one requires basic training in soft tissue handling, an understanding of the bony foundations of the face. In the late 1950's the senior author was introduced by his mentor Charles Pinto to the straight repair of Rose and Thompson as modified by Peet, who called it the "Oxford modification of the *straight repair*"². The anatomy of the upper lip is more complex than that of the lower lip. Its shape is often referred to as a "Cupid's bow". Millard popularized this terminology by demonstrating that each philtral column originated from a symmetric point several millimeters higher than that of the midline point. The philtral columns are formed by the intersecting orbicularis oris fibers at the midline. The "*white roll of Gilles*" located just above the vermillion-cutaneous junction is formed by the inferior portion of the orbicularis oris muscle, termed the *pars marginalis*. This structure inserts in the dermis forming a "rolled" skin prominence. The vermillion mucosa is composed of keratinizing epithelium (dry mucosa) below the vermillion cutaneous junction, and non-keratinizing epithelium (wet mucosa) that extends into the labial sulcus. The "*red line of Noordhoff*" is the area where these structures coalesce. The median tubercle is the midline prominence of the mucosal portion of the lip often deficient in cleft lip patients. In the unilateral cleft lip, the Cupid's bow is displaced and the lip is short on the cleft side¹.

Cleft lip can be divided into those that include reconstruction of the orbicularis oris muscle over the premaxilla and those that only leave the muscles attached to the prolabium on each side. They all include a procedure for lengthening the skin of the lip in the cleft areas and as with the unilateral complete cleft lip and palate this procedure can vary according to the preference of the surgeon⁴.

*8 principles for the repair of the unilateral cleft lip deformity*¹:

1. Establish a symmetric, balanced Cupid's bow.

2. Construct a full median tubercle and adequate dry vermilion height.
3. Construct a philtral column with the same shape and height as the philtral column on the non-cleft lip side.
4. Construct a normal unscarred columella and establish a symmetric columellar-labial junction.
5. Reorient and repair the orbicularis oris muscular sling.
6. Create an adequate labial sulcus.
7. Correct the cleft nasal alar deformity.
8. Atraumatic, nonlinear skin closure. It is important to realize that several of these principles overlap one another. Pursuing these principles will improve the aesthetic outcomes of any cleft lip repair.

Millard said that²:

1. Three quarters of the Cupid's bow is present on the non-cleft side, but is riding high. What better way of bringing it down in a horizontal line with its fellow than by a rotational flap? No rotational flap is complete without a back cut and this not only further helps to drop the obliquely oriented Cupid's bow, but compensates for the contracture of the straight line of the Millard procedure.
2. This main rotational flap is taken from the rich non-cleft side and not from the poverty stricken cleft side as in the triangular and quadrilateral flap procedures.
3. The defect thus created is in the upper part of the lip and can be hidden under the overhanging nostril.
4. What better way of filling this defect than by advancing a flap from the cleft side.
5. The advancement flap gives the additional bonus of correcting the nostril flare.
6. The "C" flap helps to lengthen the short columella.
7. The scar imitates the philtral line, creates a philtral column, a philtral dimple and a slight pout which adds charm to the finished result. The scars of both the triangular and quadrilateral flaps crisscross Langer's lines, which again is contrary to basic tenets of plastic surgery.

Conclusion: cleft lip and palate facial malformations lead to a deleterious effect on child and on their parents throughout life. Regarding Orofacial cleft complications, its awareness and education among parents and in the society is equally important to avoid worst life of a child. These oro-facial clefts can be successfully handled if early approach by parents to an Oral and Maxillofacial Surgeon can provide excellent functional and esthetic results with comfortable child's future life.

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