Primary Repair of the Unilateral Cleft Lip by Triple Wedge Technique

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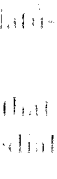
Cleft lip and palate is one of the worst natural deformities which makes a young child to grow up to face all the physical disabilities of feeding and speech, indirectly affects mental condition of the child when he or she is not able to place oneself with other normal beings. It looks probable when with all the beauties of the face, the boy or the girl look scosmetically ugly, but cleft palate adds to the miseries of cleft lip by grossly distoring the speech, which is the representative of the man's intellectual attainments. When a child with cleft lip and palate is allowed to go to school with defective speech and ugly looks, life can be made almost unbearable by the constant mimicry by his comrades.

Surgical repair of the unilateral cleft lip is one of the most fascinating and challenging procedure faced by the Plastic surgeon. The results as stated by "Blair and Brown" range from "near perfect to the plain bad." Cleft lip has improved greatly since 1912 when Thompson wrote "No close scrutiny of each separate part, if carried out with merciless criticism, will lose numerous defects and a completed by a often a wretched imitation of Nature's masterpiece."

It has been generally accepted that there is a lack of tissue on the medial [illegible] of the cleft and flap of tissue from the lateral side of the cleft is usually needed to fill the deficiency on the medial side. Various type of flaps, rectangular flaps, square flaps, round flaps, triangular have been tried. Skoog 1958 noted that in dropping the displaced Cupid's bow to a horizontal position, a triangular defect is produced on the medial side which must be filled with a triangular flap.

Triangular flaps of one sort or another have been used for years. Mirault is one of the original advocates of the lateral triangular flap. However he used triangular flaps from both the medial as well as lateral side of the cleft. Tennison in 1952 advocated a triangular flap from the lateral side of the cleft. Millard 1955 bring down the Cupid's bow by making incision in the superior portion of the lip using a triangular flap from the lateral side. Skoog uses a triangular flap in both superior and inferior portion. Peter Randall (1959) used one triangular flap from the lateral side which is filled in the triangular defect produced on the medial side in order to bring down the Cupid's bow.

Present plan of the triple wedge technique :



Point 'A' and 'B' are marked as superior peak and centre of the Cupid's bow. This is obvious on the [illegible] cleft side. 'C' is located at the inferior

cutaneous junction so that 'AB' is equal to 'BC' which forms the other limb of the Cupid's bow. Point D is marked at the muco-cutaneous junction at the level of the columella (Fig. 1).

Now the non-cleft side of the lip is pushed over the cleft gently by digital pressure so that Columella is straight and in the midline, philtrum line XA which is quite obvious on the non-cleft side and point B, lie in the normal anatomical position. Perpendicular line is drawn from C to XA and the point 'G' is marked. GA is the length by which the height of the lip is deficient at the cleft margin on the medial element i.e. XA=CD+AG. Point F is marked on the line GC so that CF is equal to 2/3 length of AG. Point 'E' is marked at the level of the base of the Columella so that DE is equal to 1/3 length of AG. The points are further checked so that XA=CD+DE+CF (Fig. 2).

Marking of lateral element :

'J' is marked close to the muco-cutaneous junction at the level of base of the ala so that P'J+DO' is equal to OP. Point H and K are marked taking T as the centre at level of the base of ala so that JKH forms an isosceles triangle with each limb equal to DE.

L is marked at the muco-cutaneous junction where the vermilion is of full thickness. Point N is located so that TN is equal to DC. Taking point L & N an isosceles triangle LMN is formed each limb equal to CF. These points are further checked by measuring the distance TNL which should be equal to ED+DC+CF=XA. (Fig. 1 & 2).

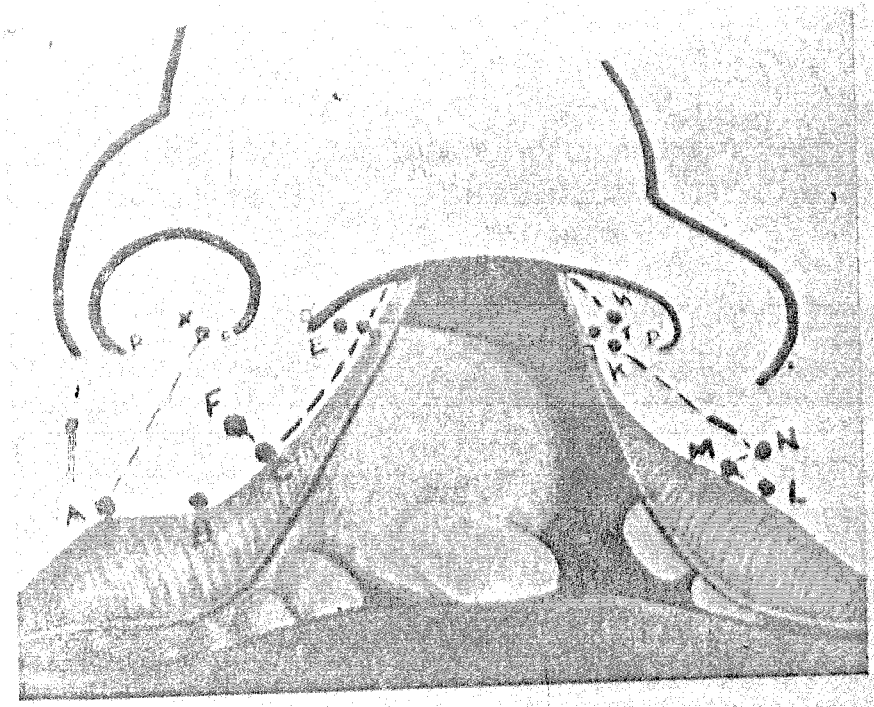


Fig. 1—Diagramatic illustration showing markings on the medial and lateral elements of the cleft lip.

OPERATION :

After carefully marking the points are tattood with Bonney Blue ink. With the markings completed 5 c. c. 1: 10000 adrenaline in saline is injected in the dento-labial sulci on on either side. Lip incisions are made preserving all the vermilion. Incisions are made bilaterally in the buccal sulcus deep to the bone and wide mobilisation of the lip done.

ALAR CORRECTION :

No attempt has been made to correct the nasal deformity by any corrective Rhinoplastic procedures. It is well known fact that if the alar cartilages are traumatised the growth of the nose may be retarded. Blind mobilisation of the skin from the underlying alar cartilages has been recommended, as the cartilage in infants are more delicate and pliable and repositioning and rotation of the cartilages are more easily accomplished. I personally do not believe that blind mobilisation of skin from the underlying cartilage is without the danger of traumatising the alar cartilage and arrest of growth. No body till now has given a long follow up of 15-20 years to judge the growth of the nose after the procedure. I have an experience of dissecting the skin from the alar cartilage in partial loss of noses, where total Rhinoplasty is done by flap, preserving the cartilagenous frame work. The cartilage is so much adherent to the skin cover that even with the open dissection it is liable to tear with slight carelessness.

The procedure followed in my cases is to bring the tissue as near normal as possible by camouflage. The buccal inci-

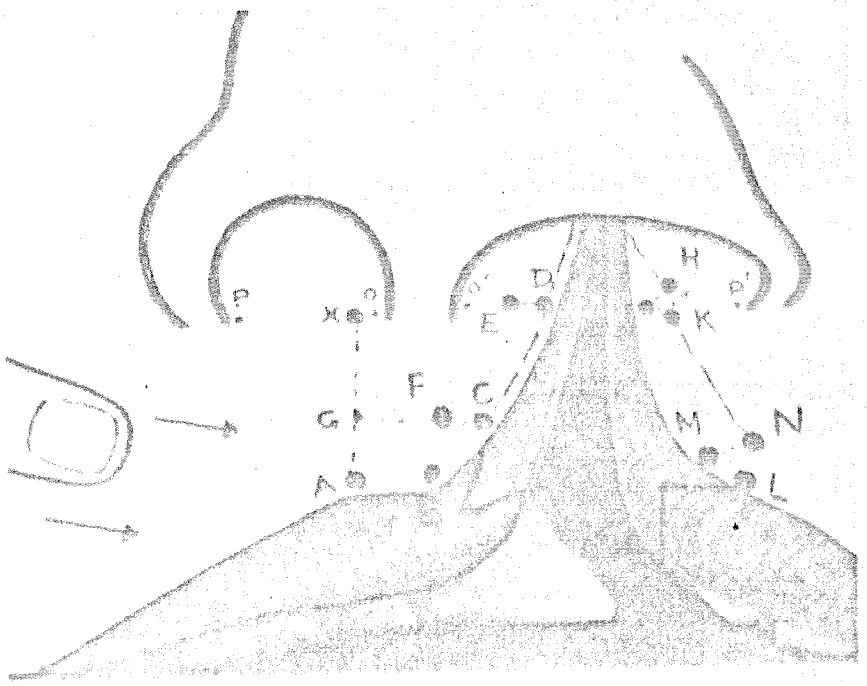


FIG. 2 Markings on the lip. The medial element is pushed towards the cleft by digital pressure

sion on the cleft side is extended upwards along the margin of the pyriform fossa and carried in the nasal mucosa at the junction of upper and lower alar cartilages, to the tip of the nose. The upper margin of the lower alar cartilage along with mucosa is hooked and retracted so that the alar cartilage is advanced upwards. Closure of the nasal incision with 3/0 Ch. catgut is done while traction is still maintained in the alar cartilage by hook so that 'B' is stiched to 'A' (Fig. 3). Thus a dog ear is produced which contains cartilage and mucosa. It is inverted and pushed up to fill up the tip of nose. By this procedure the cartilage and mucosa is advanced upwards and tip of the nose is filled up by composite tissue.

CLOSURE OF THE LIP :

Closure of the lip is done in two layers muco-muscular layer stitched with 3/0 ch. catgut and skin with 5/0 atraumatic silk. After closing the lip upto the red margin, the vermilion on the non-cleft side is so trimmed that it produces a triangular defect which is filled with a triangular flap of the vermilion from the lateral element of the lip. The three triangular flaps from the lateral element are stitched to the triangular defect on the medial element (Fig. 4).)

ANALYSIS OF THE RESULT :

In the present study the clefts have been classified as :—

(a) Gr. I Cleft of the lip only — Right sided
— Left sided
— Bilateral

(b) Gr. I-A Cleft of the lip with alveolar notch — Right sided
— Left sided
— Bilateral

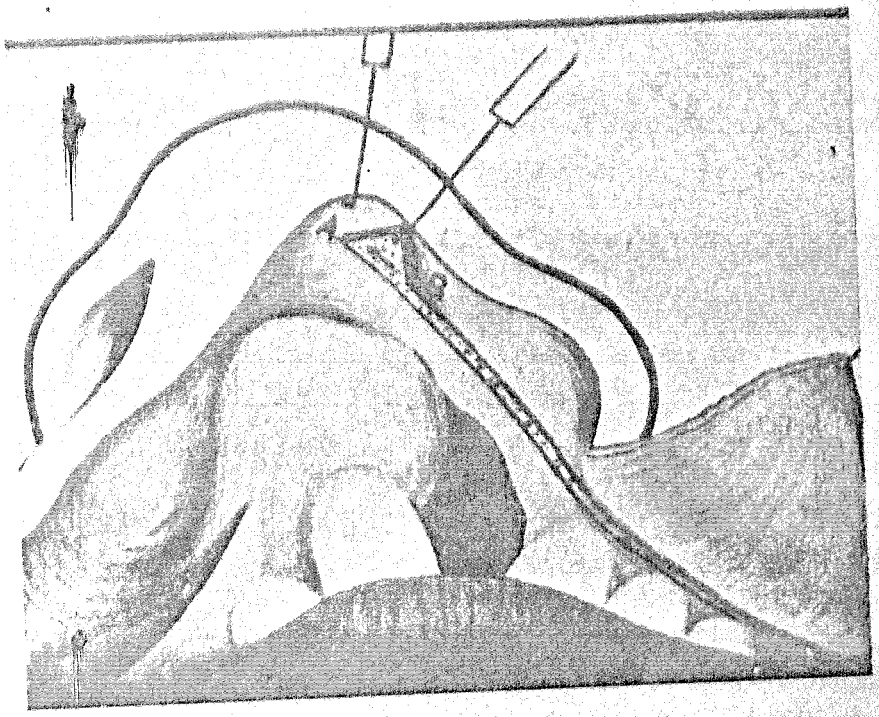


Fig. 3 Showing method of alar correction

(c) Gr. 2 Cleft of the palate

(d) Gr. 3 Complete cleft of the palate — Right sided — Left sided — Bilateral

(e) Submucous cleft which may be present in any of the group.

(f) Combination of various clefts.

Out of 160 cases of cleft lip and palate operated by me, 135 were unilateral cleft lip, Gr. I-12, Gr. I-A-73, Gr. III-47 and combination of the groups Gr. 2/ Gr. I-A (L) were 3.

Out of 135 cases, 10 were operated by Millard's technique. The results of 125 which have been operated by Tripple Wedge technique have only been analysed. Results have been classified as Good, Fair and Bad. The criteria of the classification depends on the condition of (1) Scar (2) Vermilion and Cupid's bow (3) Shape of the nostril (4) Muscle union (5) Height of the lip and (6) condition of the lip whether tight or loose.

Good—Where all the criteria are fulfilled.

Fair —Where some minor corrections are required.

Bad —Where more than 50% criteria are not fulfilled.

Having these criteria for analysis the result in the present series of 125 cases, 78 were good, 42 Fair and 5 bad. (Fig. 5-6)

DISCUSSION :

Cardoso (1952) and Marcks (1953) both pointed out that Cupid's bow is normally present, on the medial side of the cleft but it is misplaced upwards. Many of the earlier methods of repair had little regard

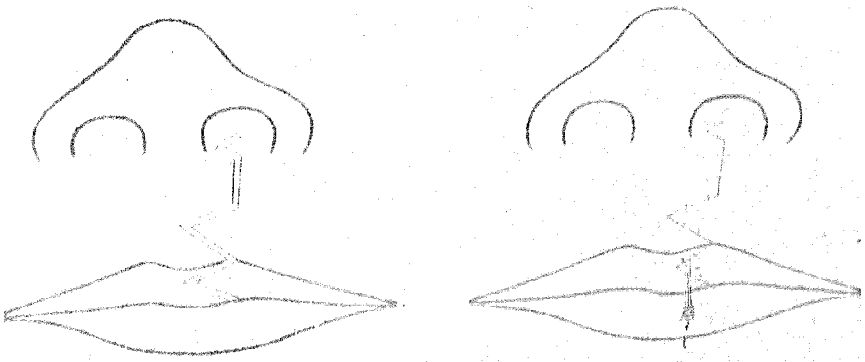
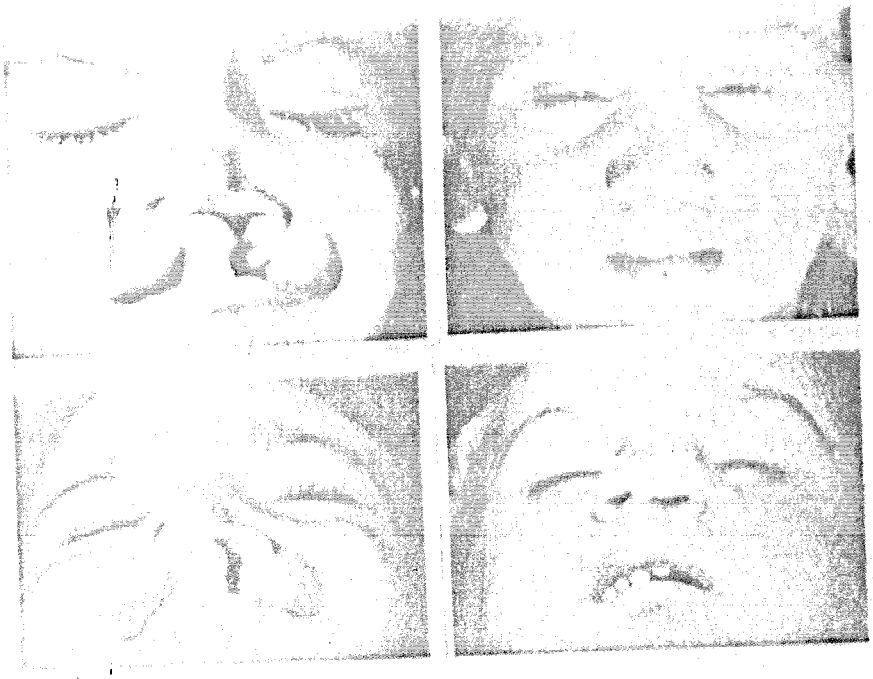
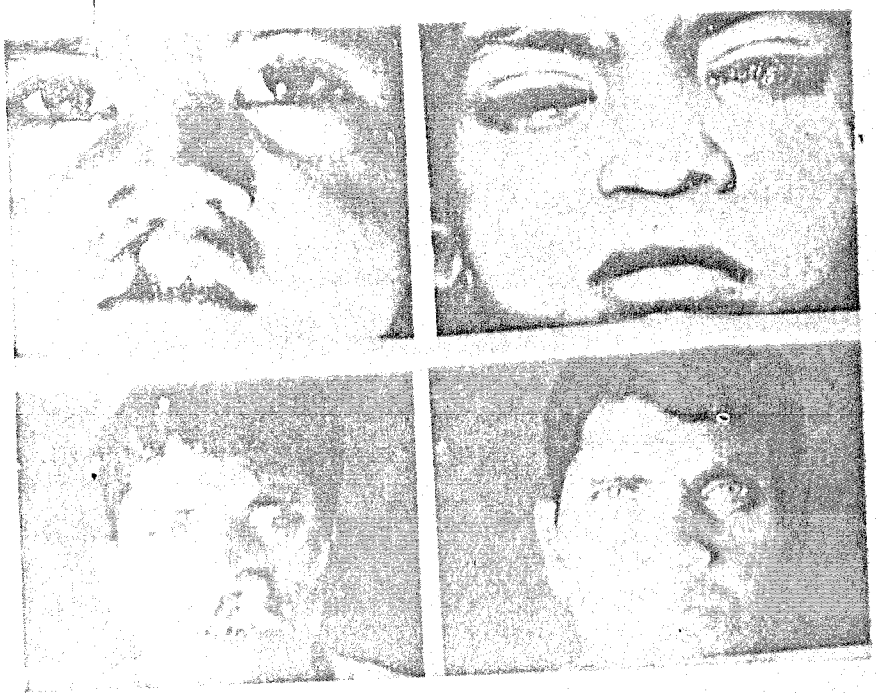


Fig. 4 Showing method of closure of the lip.



Pre-operative Post-operative



Pre-operative Post-operative

Figs. 5, 6 Photographs before and after the operation.

for the preservation of the normal Cupid's bow. In the present method Cupid's bow is well preserved and brought down to its normal position by transverse cut in the lower part of the lip. Tennison method gives good result but there is no consideration of anatomical landmarks and marking of the lip does not depend on geometrical measurements. The flaps used is quite large and although excellent results are produced in children with wide clefts but in narrower cleft it would seem that much smaller flap could be used.

Millard's procedure with a big triangular flap in the upper part of the lip is good for narrow clefts. Both of these surgeons depend on the expérience than on any definite geometrical measurements. Therefore the results are not good with new hands.

Randall (1966) described his method in which a triangular flap is brought from the lateral element to fill in the defect created by a transverse cut in the lower part of the medial element of the lip in order to bring the Cupid's bow down to its normal position. No definite measurements are given regarding the size of the transverse cut. In this procedure the size of the transverse cut depends on the size of the triangular flap brought from the lateral element which is against the principles of Plastic Surgery as the defect is created first and then the tissues are brought.

At times he makes a transverse incision at the base of the columella which is filled by a triangular flap from the alar base. As this transverse cut in the upper part of the lip is not taken into the consideration in the primary marking, descrepancy in the length of the medial and lateral element is bound to occur in the final closing of the lip.

Skoog makes two triangular flaps both in the upper and lower part of the lip. The upper triangular flap is filled in the gap created by the transverse cut which is made below the Columella. While in the triple wedge the upper flap constructed at the level of the base of ala where the alar rim is still prominant at the floor of the nose and this flap is brought to fill the gap created by the transverse cut at the level of the base of the columella. The transverse cut made in this procedure increases the length of the lip as desired and accomodates the alar base at a normal level. The described procedure by skoog also depends on experience rather than any definite geometrical measurement.

The closure of the vermilion as described in all the procedures is in the straight line. In my experience often the notch occurs at the vermilian after the secondary contraction of the straight scar. It is therefore considered in the Triple Wedge Technique that the triangular flap from the lateral element is filled in the triangular defect which is shaped according to the tissue required to produce the fullness in the centre part of the vermilion. Thus in the present procedure three triangular flaps are designed at the lateral element of the lip to fill in the gaps on the medial side. The procedure again depends on definite anatomical landmarks and definite measurements.

Summary

The technique of primary repair of

the unilateral cleft of the lip using three triangular flaps has been presented. Three triangular flaps are designed on the lateral element of the cleft, one at the alar base, other in the lower 1/3 of the lip and third at the vermilion. The triangular flaps fit into the medial triangular defects.

The measurements are simple and are based on the vertical height of the normal side and are made from definite anatomic landmarks.

The results of 125 unilateral cleft lip, treated by the author using triple wedge technique have been analysed.

Acknowledgement

I am indebted to Prof. C. Balakrishna, F.R.C.S. from whom I have developed the above described technique. The author has introduced few modifications of his own in the above technique.

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