

A Rational Approach to Repair of Unilateral Cleft Lip

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UNILATERAL cleft lip repair is a commonly performed operation and many techniques are available. It is, however, not uncommon to find the repaired lips, to be vertically long in the centre or on one side, to have an exaggerated or an asymmetric cupid's bow or to have the lip tight horizontally. It is necessary, therefore, to analyse the different procedures, in order to understand the pitfalls and to reemphasise the fundamentals of a good repair.

Anatomical Consideration

It is generally agreed that a deficiency exists in the medial element and is confined to the philtrum on the cleft side. The lateral element is fully preserved and the line joining alar insertion to the thickest point of mucocutaneous ridge demarcates its medial limit. The clear definition of various components is possible only in incomplete clefts. In wider clefts, however, the inherent elasticity of tissues and unopposed pull of surrounding muscles displaces the tissues to such an extent that landmarks become ill defined and one is likely to think of a deficiency existing in the lateral element (Fig. 1). In such cases very little tissue is seen medial to the level of alar insertion. The width of the cleft half of

philtrum as measured from the mid point of the lip to the thickest point on the mucocutaneous ridge (proposed peak of Cupid's bow on cleft side) is shorter than on the normal side, but the difference is not significant ($P > .05$). This is irrespective of the width as well as the degree of the cleft. However, the lateral element on the cleft side when measured from the angle of the mouth to the thickest point on the mucocutaneous ridge before it thins is significantly shorter

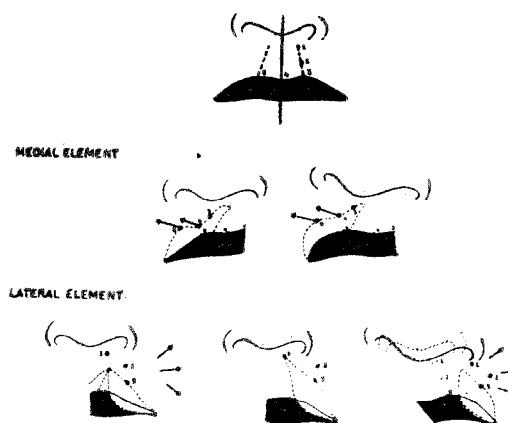


Fig. 1—Illustrating the manner of displacement of lateral and medial elements in cleft lip of various degrees

than that on the uncleft side as measured from the angle of the mouth to the peak of the bow ($P \leq .01$).

The shortage in length on the cleft side is explained by the inherent elasticity and consequent retraction of tissues in the

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absence of any restraining influence on the opposite side. These contracted tissues stretch after operation to dimensions comparable to the normal side, when balance of acting forces on the two sides is restored to normal. However, in cases where cleft is not repaired for many years and the tissues have contracted, the lip on cleft side will remain shorter by a few mms.

A critical analysis of the techniques practised has brought out certain important facts :

1. The points on the mucocutaneous ridge on two sides of the cleft for the proposed peaks of the cupid's bow should lie on the thickest portion of the mucocutaneous ridge before it thins. This will ensure continuity of the prominent ridge in a repaired lip. If however the points are chosen in relation to thickness of the vermillion (Skoog 1958) they may lie on less prominent portion of the ridge, thus interrupting the continuity of the mucocutaneous ridge in a repaired lip.

2. The most effective incision across the philtrum which can bring down the point of proposed peak of the bow on the cleft side is a transverse incision which must stop at mid line (Sawhney 1972). Incisions which are oblique upwards (Millard 1958, Randall 1959, Skoog 1959) are ineffective unless they are carried beyond the mid line into the normal half of philtrum or beyond. By doing so the centre of the lip drops increasing the vertical height of the lip. Such extended incisions also create large defects which require greater tissue and bigger flaps from lateral elements for closure,

creating a horizontally tight and a vertically long lip.

3. The flaps designed from the lateral element should preferably be added close to the lower free border of the lip as this produces the normal pouting of the lower border of the lip. This natural kicking of the lower border is not produced if the flaps are inserted close to base of collumela (Millard 1958, Trauners 1957, Wynn 1965) altering the normal lip profile.

4. It is not necessary to cut into the philtrum at more than one point like Skoog (1959) because it complicates the repair without adding any advantage.

5. Measurement of the base of the triangular flap designed from the lateral element is crucial, for on it depends the drop in the proposed peak of the bow on the cleft half of philtrum. It should be exact and easily determinable, so that when the flap is inserted in the defect in the philtrum the peaks of the bow on the two sides come at the same level. Any increase or decrease in the width of the base of the flap is likely to vary the level of the peak of the bow.

Tennisons' (1952) stencil method and Millards' (1958) sight method are not exact and so are other techniques (Skoog, 1958; Trauners, 1965). Hagerty (1958) and Wynn (1965), calculate the base of triangular flap by taking the distance between alar insertion and peak of bow on normal side as standard lip length and deducting from it the existing lip length on cleft side. Randall's (1959) method of finding existing lip length of cleft side and then calculating the base of flap

is more complicated. It is needless to emphasise that the base of the flap should be equal to the drop required in the proposed peak of the bow and we estimate it simply by finding the difference in heights of the peaks of the bow after the collumela is pushed medially to mid line. This may necessitate an incision in the jinjivobuccal sulcus on the uncleside.

6. It does not make much difference as to how you suture the vermillion i.e. by a straight line, or oblique line closure or by use of flaps to make suture line irregular to avoid scar contracture, provided approximation of muscular layer at the vermillion is done.

Taking into consideration the above points we have been following the design of repair

as outlined in Fig. 2, and it has given me satisfactory results (Fig. 3—6).

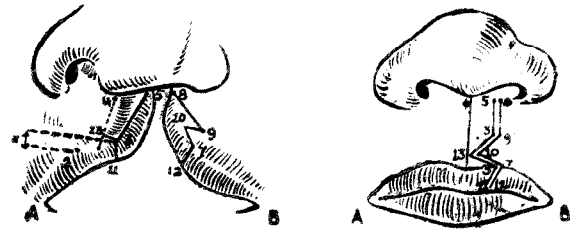


Fig. 2—Illustrating the design of repair of cleft lip.

Design of Repair Suggested

Define mid line of the lip by marking mid point of collumela at point 4 and mid point of the philtrum at mucocutaneous ridge at point 1, join 1 and 4. 2 is the peak of bow on the normal side, and 3 (proposed peak of b w on cleft side) is chosen on the mucocutaneous ridge where



Fig. 3



Fig. 4

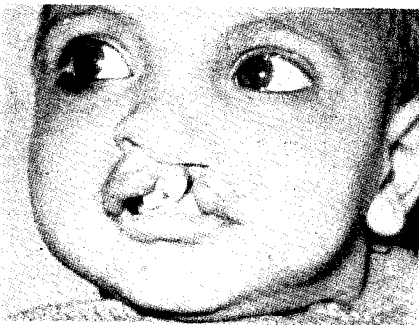


Fig. 5



Fig. 6

Fig. 3-6—Pre and post-operative photographs of patients with cleft lip repaired.

it is thickest and most prominent before it starts thinning. Point 3 is so placed that (3—1) is generally shorter than (2—1) by 1 mm or so, because of retraction but when the lip is repaired (3—1) stretches. The displaced medial element is pushed towards the mid line and it may require prior incision in the jinjivolabial sulcus. The difference in height of point 3 and 2 is estimated by drawing horizontal lines from these points and finding the distance between them. This is marked X and it gives us an exact estimate of the distance through which proposed peak of bow (3) must drop before it comes to the level of peak of bow on normal side i. e. (2) making the segment of the bow symmetric. The nostril dome is lifted and the collumellar sill houte is traced laterally and put 5 where it meets the vermilion. Similarly trace the alar margin and continue it medially until it meets the vermilion and mark 8 at the junction. A and B are at angles of the mouth. Point 7 is chosen on the mucocutaneous ridge on cleft side where it is still prominent and thick before thinning (B—7). It is generally found to be shorter than (A—2) by 1—2 mm or so because of retraction of tissues. Draw a horizontal

line from 3 extending laterally across the philtrum and falling at right angles to the mid line (4—1) and the junction of the two is marked 13. When incision 3—13 is made through the thickness of lip, point 3 drops through distance X so that 3 comes to lie at the level of 2, creating a triangular defect. On the lateral element choose 9 such that (9—7) equals X and (8—9) equals (5—3). Having defined point 9 mark 10 so that (9—10) and (10—7) equals (3—13). This would outline the exact size of the triangular flap which will fit into the defect created in the medial element. From 3 and 7 extend lines across the vermilion so that they meet the free border of vermilion at 11 and 12 respectively. Incisions are given through the thickness of the lip starting from 5 and extending to 3 and then along 3—13 and 3—11. Similarly incise along 8—9, 9—10, 10—7 and 7—12.

Summary

Techniques of unilateral cleft lip have been critically analysed and fundamentals of repair stressed. A simplified design for repair with exact measurements has been presented.

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