

## 44. Secondary Correction of Triangular and Quadrilateral Flap Methods

### FIRST Z

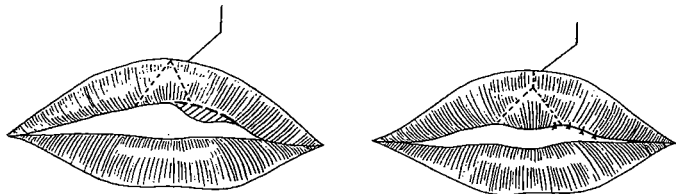
AS pointed out by Borges, New Zealander H. P. Pickerill was the first to apply the Z-plasty principle to the linear scar of cleft lip. Pickerill was one of the colonials serving under Gillies at Sidcup during World War I, and this is not his only first. In 1924 he wrote:

I devised what I have called the "zig zag" or "triangular flaps" method. This gave such satisfactory results that I have employed it subsequently in practically every civilian case of harelip baby or adult which has come under my care.

### THE VERY INFERIOR TRIANGULAR FLAP

In lips closed primarily with the Mirault-Blair-Brown-McDowell triangular flap, which is placed as low as possible along the inferior edge of the medial element, the cupid's bow has been destroyed. The vermilion tubercle invariably is situated to the cleft side of the midline where the mucosal interdigitation has been performed.

To correct the unnatural vermilion free border, a horizontal ellipse can be excised from the off-center bulge and a small V-Y posterior roll-down of vermilion will create a midline tubercle.



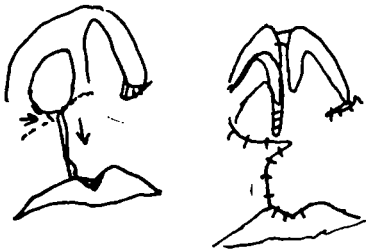
Henry Pickerill



The absence of a cupid's bow is eye-catching and deserves correction. The modified cupid's bow operation can be used to create the effect of an artificial bow and can be employed unilaterally or bilaterally.

### SECONDARY ROTATION-ADVANCEMENT

Because of the loss of the cupid's bow, the rotation-advancement method is not usually indicated in secondary correction of a Blair-Brown result. It does have some advantages to offer, but the end result shows only moderate improvement, as demonstrated by the following case.



*Sketch  
from op.  
note*

This patient was first seen at age 19 years after two operations which ended up with a Blair-Brown type of closure; it was more of a straight line than usual. It was tight along the transverse axis, and the unilateral nasal deformity was typical. Although the cupid's bow had been destroyed long ago and was only painted with lipstick, a scar excision with rotation-advancement closure achieved nasal base improvement and tightening of the lip in the upper portion with relative relaxation in the lower part.



Blair-Brown



Blair-Brown



Secondary R-A



13 years later without lipstick



A follow-up 13 years later revealed maintenance of the labial and nasal improvement and a slightly better scar position, but as the cupid's bow had been discarded primarily, there was still no evidence of one.

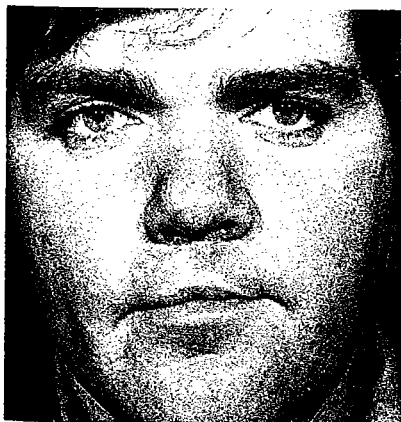
An eight-year-old boy from North Carolina with a Mirault-Blair type of lip closure had developed a long lip on the cleft side with an asymmetrical cupid's bow and tubercle. A rotation-advancement procedure in the upper portion of the lip and a one-sided cupid's bow at the mucocutaneous ridge achieved better labial and nasal balance.

It has always been surprising to me how many of these Blair-Brown cases end up eventually with a relatively tight upper lip. Evidently, the lateral triangular flap has been advanced so far across the medial lip element that not only is the cupid's bow vestige destroyed but in a large percentage of complete clefts, and even in incomplete clefts, the free border of the upper lip is short of tissue, tight and overpowered by the relatively protuberant lower lip. Here the lip-switch flap can be used to advantage both to relieve the upper lip tightness and reduce the lower lip protuberance and to create the central semblance of a philtrum and a cupid's bow.

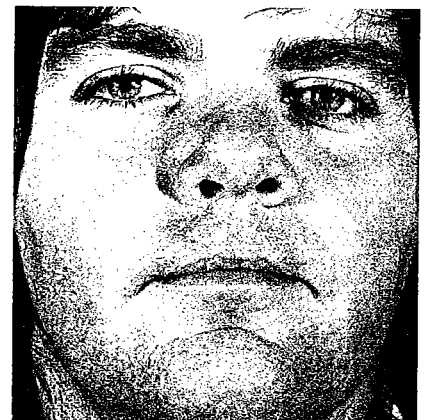
Here is an example of an inferior triangular flap of the Blair-Brown type after 27 years which might be considered reasonably good if lack of a cupid's bow and philtrum is of no concern. The skin scar, mucocutaneous junction join and vermilion "whistling" deformity needed minor revisions. A diamond-shaped excision of the skin scar, an interdigitation of the white roll flap and a posterior V-Y of central mucosa seemed to improve the discrepancies.



*a purse string effect*



27 years



28 years

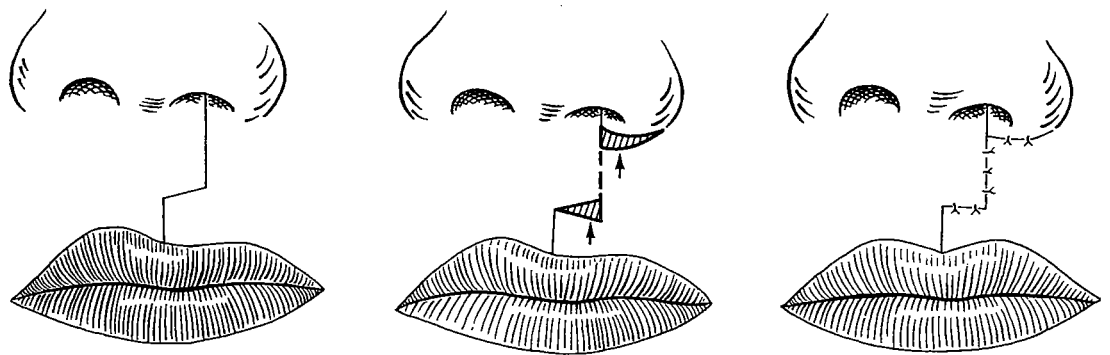
Yet the "blah" effect of a lip without its artistic curves, hollows and columns may one day motivate the patient to a small, shield-shaped Abbe. His lower lip, although not protuberant, can accommodate the philtrum needed. This case has not had its Abbe yet but others have and examples will be presented in Chapter 46.

#### THE LEMESURIER DISCREPANCIES

Probably the most common deformities of the LeMesurier operation are those associated with asymmetry of the cupid's bow. If the operation has been designed correctly, the artificial cupid's bow will be balanced and in the center of the lip. If not, it must be readjusted until it is. This could mean anything from excision of a full-thickness wedge to lift and equalize the bow to opening up the entire lip and revising the flaps so that when they are reassembled there is balance.



The LeMesurier method is constantly accused of causing an associated deformity, the vertically long lip on the cleft side. Many authors have complained about this, and its correction requires reduction of the height of the quadrilateral flap by horizontal excisions the exact amount of the extra length.



Of course, the excisions must vary according to the case and in these examples several adjuncts including the white roll flap were used. Whatever tricks are tried, however, once the philtrum

column line has been violated, the scarring will never be natural.



And again



Recently Converse has described a similar correction of this drooping lateral portion of the lip on the cleft side.

#### QUADRILATERAL FOUNTAINHEAD

Farkas and Lindsay of the Toronto Hospital for Sick Children, the birthplace of the LeMesurier method, took issue with this accusation of cleft side elongation. They studied 70 adult unilateral cleft lip and palate patients treated by the LeMesurier lip closure and reported:

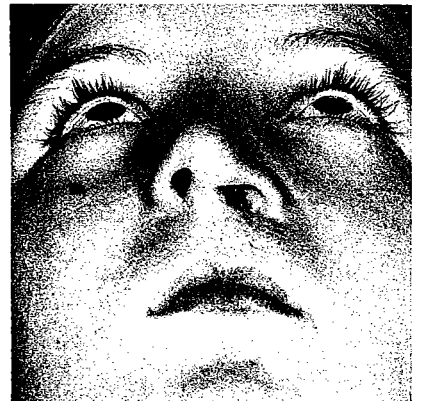
The vertical length of the medial part of the upper lip in unilateral cleft lip and palate patients was similar to that of the controls. The average lateral vertical length of the lateral part of the upper lip, on the operated side, did not differ significantly from the average vertical length on the unoperated side. We disagree with some authors who have said that the

quadrangular flap usually creates too long a lip [Clifford and Pool, Trauner and Trauner] and this asymmetry is exaggerated by further growth and development [Bauer and Wang]. Our findings are similar to those of Williams.

*Amen*

These comments prove again that any method done correctly will show only the faults inherent in its design and need not be blamed for the operator's mistakes of mismeasurement and misalignment.

Although when correctly executed the LeMesurier quadrilateral flap could produce a symmetrical cupid's bow, it did so at the sacrifice of half of the normal bow and the philtrum dimple, producing a rather flat unanimated lip. Of course, a common complaint with all the earlier methods was the lack of simultaneous nasal correction, which necessitated further excision of tissue primarily or later secondary procedures.



If the LeMesurier lip ends up tight in side-to-side dimension and is severely flat in relation to the lower lip, then again a midline lip-switch flap may be required to release the tightness and bring relative balance to the upper and lower lips. Examples will be shown in Chapter 46.

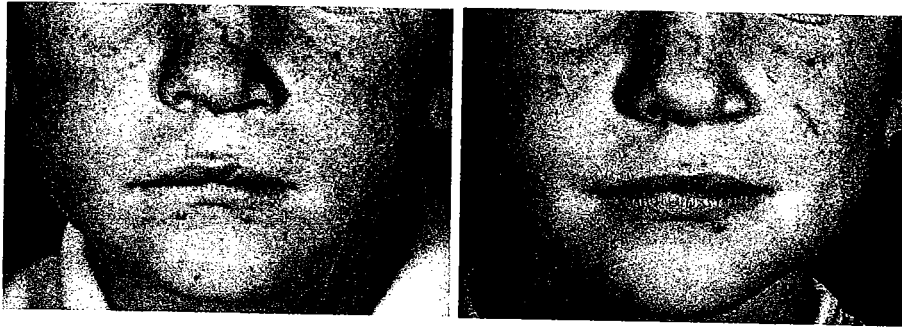


#### SECONDARY CORRECTION OF THE TENNISON RESULT

If the Tennison operation has been judged, marked and executed accurately, the cupid's bow has been salvaged and only the zigzag of scars across the philtrum column on the cleft side is eye-catching. If the scars heal well, the result should be reasonably

pleasing. If not, the patient and the surgeon are in trouble, and scar excision and careful closure may be of some benefit.

Here is a Tension-type procedure carried out by a skilled and experienced Boston surgeon who got the very best available out of the method. The scar is a Z, but it healed well and flattened the lip only slightly. The additional vermilion free border Z-plasty was less pleasing.

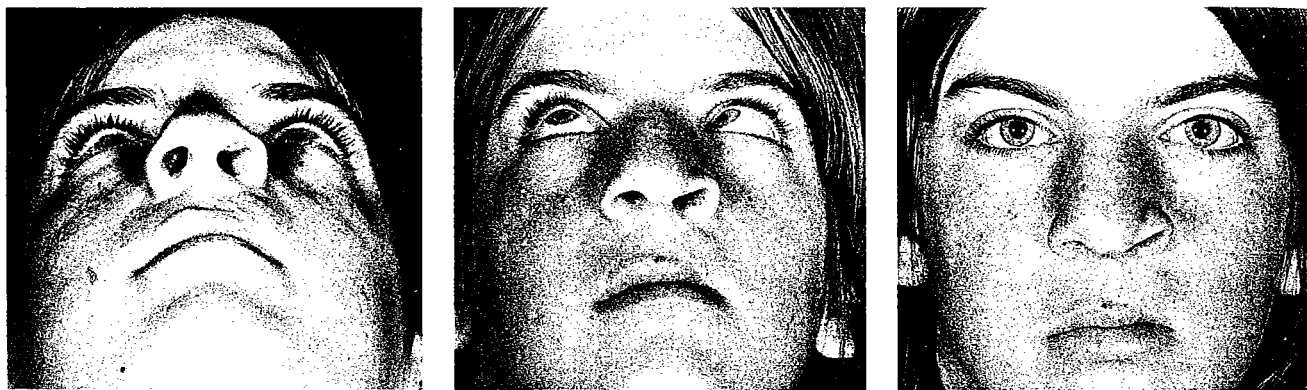


No matter what the method, if the vermilion is interdigitated in the anterior visible position, an irregular off-center cleft side excess "blob" often results, requiring later revision. This vermilion excess was trimmed and the midline deficiency filled out with a small V-Y at the same time the palate was pushed back and maintained with an island flap.

If the measuring has been off even a couple of millimeters, the ingenuity of the surgeon is taxed almost beyond reason. Certain corrections may be possible, but, in general, "the egg has been scrambled" and "all the King's men cannot put Humpty-Dumpty together again." The same thing is true of all members of the zigzag family of lip closures, Z-plasties, interdigitations and double interdigitations.



For instance, take this Z-plasty which has placed the cupid's bow in symmetrical position but has encroached upon the cleft side element so much that there is a one-sided "whistling deformity" and a severe transverse shortness of the lip as measured from the height of the bow to the commissure on the cleft side.



It is interesting to see this deformity with the Tennison approach when so many cry about its possibility in rotation-advancement and state preference for the Z because of it! Correction here will be indeed difficult. Note also that the flare of the ala has not been corrected simultaneously.

Again, if the upper lip is tight and flat, release with a midline philtrum-shaped lip-switch flap may work wonders. There is an interesting case in Chapter 46 to demonstrate this.

#### INTERDIGITATIONS CAN BE STICKY

As Musgrave pointed out:

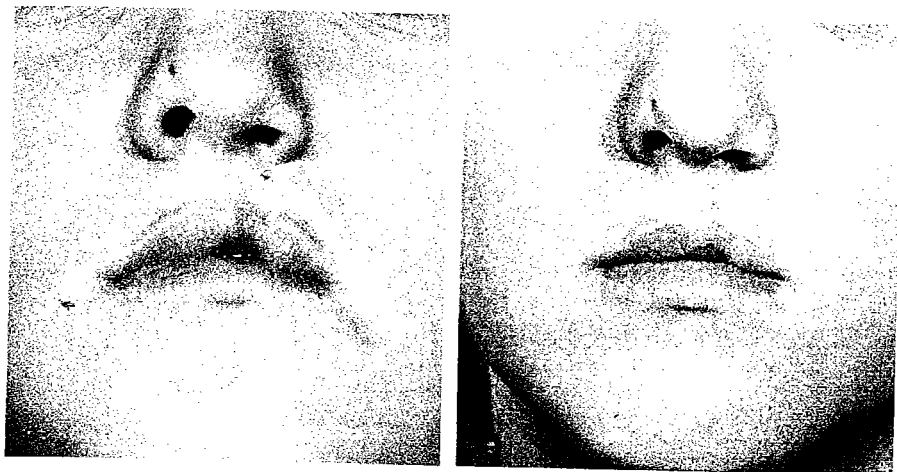
If the surgeon who must perform a secondary repair had his choice of primary methods to correct, he would not choose to perform a secondary operation on the LeMesurier or Trauner or Tennison or similar procedures where quadrilateral or triangular flaps have been inserted into the medial side of the cleft and the scars are so difficult to revise. The Rose or Millard operations are easier to deal with secondarily.

*What's so  
easy about  
the true  
Rose?*

I agree with this stand and have a case to prove it. Although the Tennison-type Z-plasty had symmetrized the cupid's bow, the zigzag scar was eye-catching and difficult to correct. Careful revision of the scar *twice* was without improvement. Finally, even after reducing the amount of the Z to nearer a straight line and



using part of this skin as a "white roll" flap to interdigitate across the mucocutaneous ridge, only a slight improvement was obtained.



once



twice

#### ROTATION-ADVANCEMENT ADVOCATED

V. M. Hogan and J. M. Converse of New York University School of Medicine, in a rather insignificant little paragraph in Grabb, Rosenstein and Bzoch's book of 1971, probably gave the rotation-advancement its greatest secondary testimonial:

If the deformity is not minimal—for example, when there is a total imbalance of the medial and lateral lip elements about the cleft scar—then the previous quadrilateral flap or triangular flap repair is ignored and the Millard technique is utilized.

I might not have gone quite that far, but then they just might have something! In fact, there is a case in which I did try to scrap the interdigitation with a secondary rotation-advancement. Such an approach requires excision of more tissue than most lips can afford. The result shows moderate improvement but at least the alar base drift was improved, the cupid's bow placed in balanced position and the scar maneuvered into the philtrum column line; in time, it might be quite unnoticeable.



7 years



10 years