

18. *The Evolution of the Rotation and the Elevation of Flap c*

AN EARLY HANG-UP

OVER the 20 years since its conception the rotation-advancement principle has maintained its two fundamental actions, of rotation and of advancement. Any changes that have been instituted have merely been adjuncts facilitating the same fundamental actions. The most important of these is the *back-cut*. The original description did not show a back-cut; in fact, according to the original sketch of the rotation incision adequate rotation would be almost impossible. Subsequent diagrams were more likely to guide to sufficient rotation but still did not ensure it. This is the reason for early complaints from other surgeons. Personally, I obtained adequate rotation in 98 percent of cases. The value of a technique, however, is judged primarily by the results of the original designer and secondarily, but *everlastingly*, by the results of others. Evident in the photographs of those submitting records of their cases to demonstrate their difficulty to achieve a balanced lip was a common criticism: failure to rotate radically enough, so that the cupid's bow, being raised on the cleft side, sat slightly askew. The "giveaway," as revealed by a study of their scar, was the failure of their rotation incision to cross the midline under the columella base. This was not contracture, as accused, but actual failure in the original positioning by the rotation. As I look back to try to see how without a back-cut adequate rotation was achieved, it seems that I was carrying the incision well past the mid-base of the columella.

*still
true*

Then if the release of the non-cleft side still did not bring the cupid's bow component into normal position, the rotation incision was carried further across toward the normal side as suggested in 1960:

The actual extent of this rotation incision can be misleading because of the slant of the columella and the deviation of the septum. What seems to be an adequate incision, and past the midpoint of the columella base, actually may be found short of the mark when the rotation component is brought down and over sufficiently to straighten the columella. Simple proof of the inadequacy of the rotation is seen if the cupid's bow and philtrum dimple component will not come down *easily* into normal position. Extend the incision across the midline through full thickness lip until it does.

*but not
through normal
philtrum
column!*

This final bit of advice turned out to be quite deceiving, as is reflected in comments by Joss and Rouillard on inadequate rotation:

There is a tendency to be too conservative with the upper end of the long curved incision, mainly because of the difficulty in recognizing the midpoint of the base of the columella. Millard himself has stated that this part of the incision may extend horizontally past the midline into the uncleft side, if this is necessary to achieve adequate rotation.

oops!



This statement is misleading and was due to the vagueness of my description: past the midline, yes, but *never* into or beyond the normal philtrum column. This lack of understanding caused some surgeons, in their frantic effort to obtain adequate rotation and to avoid the "pull-up" of the scar, to transgress the normal column. Then, of course, they began to produce abnormally long total lip length in the vertical dimension and immediately decried the method because of this sequela.

OBLIQUE SCAR

Less serious sequelae occurred in rare instances in which the non-cleft component was particularly short along the edge, deficient in its upper part and high in its distortion. Here the radical rotation incision was responsible for an *oblique line* of the long scar, which presented a disturbing asymmetry with the

normal philtrum column of the opposite side. Just such a phenomenon is seen in this 17-month-old boy who had the rotation-advancement operation at age two months in 1957.

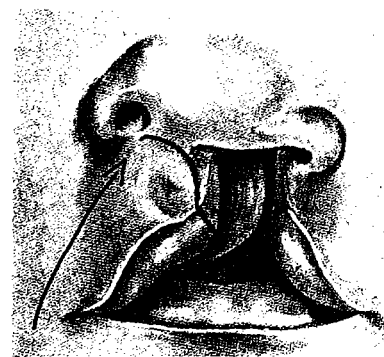


THE BACK-CUT

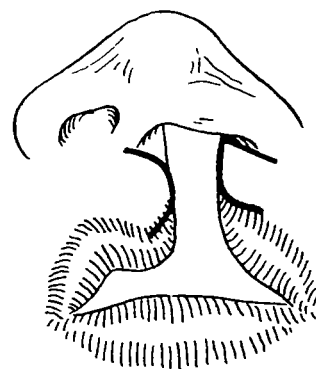
The trick that expedited adequate rotation without causing obliqueness of the scar or abnormal vertical lengthening of the lip was the "back-cut." It was being used in varying degrees by 1962 and was first suggested as a refinement, but only in the fine print of a label for an illustration in *Plastic and Reconstructive Surgery*, in January 1964.

The rotation incision starts at the potential height of the cupid's bow on the cleft side of the medial element. It ascends along a line symmetrical with the philtrum column on the opposite side and curves directly under the base of the columella. This incision is extended as far as necessary to drop the dimple-cupid's bow component into normal position and the rotation is facilitated by a tiny cutback if necessary.

The addition of this subtle little cut came too late for inclusion in ensuing publications such as the 1964 book from West Berlin, *Hasenscharten und Wolfsrachen*, by Joachim Gabka. Although we had enjoyed Gabka's Wagnerian charm earlier during his visit to Miami, unfortunately we had not developed the back-cut well enough for him to take it back and incorporate it in his German text. Since other books in other languages were in the same situation, the more recent facilitating modifications were slow to become recognized.

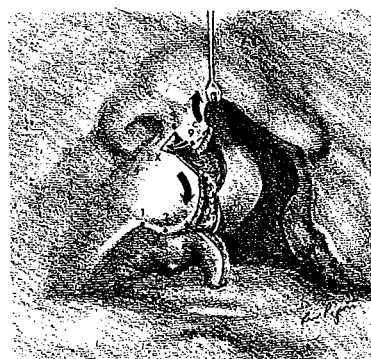
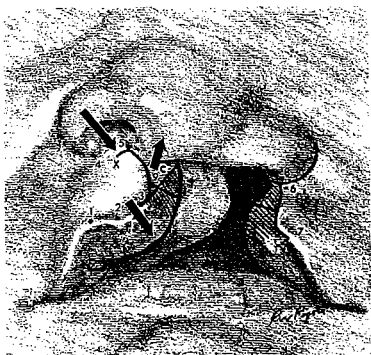


Still not enough in most cases and extending too far across normal column.





Finally, in Rome at the Fourth International Congress of Plastic and Reconstructive Surgery, within sight of the ancient Coliseum, the back-cut was given front billing while I discussed radical rotation and was illustrated for me by Ron Pigott for the *Transactions*:



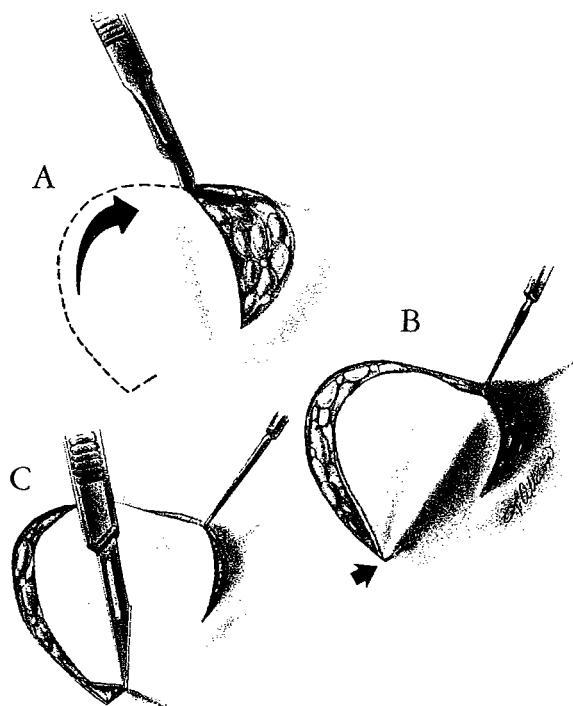
From this point 3 the rotation incision begins through full thickness of the lip, skirting the edge of the cleft and proceeding up to the base of the columella. At this point it takes a curve medially just under the columella base and extends horizontally past the midline of the columella base. At this point the position of the rotated cupid's bow-dimple element should be tested and if not down far enough for symmetry further release is necessary. *It is here that a common mistake is made.* If the rotation incision is extended straight across horizontally into normal lip element on the opposite side the total vertical length of the lip will be increased beyond normal. *This must be avoided.* The rotation incision must not cross the philtrum column on the non-cleft side. Only a relative lengthening of the edge is desired. Thus the rotation incision, once it has passed the mid-columella base, must either *stop* at point 5 or *change* its direction. If the rotation is adequate then point 5 is the rotation end point. If not then the incision must turn down in a "back-cut" procedure which will render further release. This part of the incision is extended by trial in a "cut as you go."

In 1968 in "Extensions," the sharp turndown referred to as the back-cut was again stressed:

This maneuver is emphasized for, although it may not always be necessary, it can make an important difference in those having difficulty with vertical lip shortness.

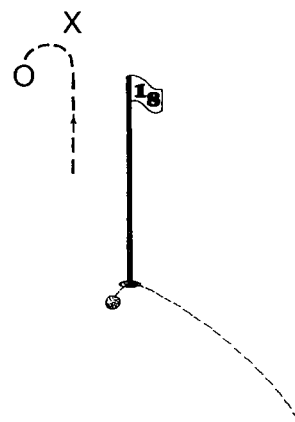
Since then, the back-cut has become an integral part of the rotation incision and is required to some extent in almost every degree of cleft. In principle, any rotation flap, to increase its pivoting potential, must have its semicircular incision checked in the sweep of its arc with an abrupt dart backward a short distance into the actual base of the flap. The basic action is well illustrated here (A). After the usual curved incision has freed the rotation flap, if there is still tension resistance to advancement (B), then the acute-angled back-cut (*arrow*) will change the

direction of the incision, release the tension and allow the rotation to speed up toward its ultimate destination (C).



For those familiar with football patterns, this “back-cut” is the pass receiver’s “buttonhook” with the defensive back (X) in the columellar position.

For those who are golfers, the rotation incision is a curved 30-foot putt which hits the pin and spins away from the cup in a “back-cut.”



INADEQUATE BACK-CUT

Inadequate rotation because of an insufficient back-cut release can affect the result. In one severe cleft operated on during the relatively early days of rotation-advancement, the rotation was not quite radical enough. As this was quite unusual, I went back and reviewed my operative note of 3/13/63 on the case. It read,

Rotation of the medial component carried a little too far, then brought back with one stitch . . .

which reveals the original cut was right and the revision missed the mark. This error could have been corrected simply by scar





excision, more back-cut in the rotation, nasal floor wedge resection and an increase in lateral lip and alar base advancement. The patient was a migrant worker's son, more concerned with survival than lip perfection. Although recalled for increased rotation toward a symmetrical result, he never returned. Maybe one day he will.



CUT BACK ON THE BACK-CUT

Too much back-cut is as objectionable as too little rotation. *It is important, however, to get the maximum release out of the standard curved incision, depending on the back-cut for only the last millimeters; otherwise the scar of union will appear too low in the lip.*



Here is an example in which a surgeon either made his rotation incision too low and too far down from the base of the columella or used too much back-cut, producing an unnatural oblique scar crossing just above the middle of the lip.



INHERENT LENGTH

Crossing into normal lip with the rotation incision ensures increase beyond the normal in the vertical length of the lip. There is another way to get a long lip in spite of limited extension of rotation and an adequate back-cut. Even when the measurements have been set with mathematical accuracy, if the lip is potentially long in the vertical axis, it will end up long. As noted in the anatomy chapter, the normal Negro female upper lip tends to be the longest. Here is a Jamaican girl in whom the rotation incision, without crossing the philtrum column on the normal side, lowered the medial element with the cupid's bow into a balanced position. The fact that the patient ended up with a longer lip than average is not the fault of the method.



BACK-CUT DIVIDENDS

The back-cut offers many advantages. It effectively increases the relative edge length of the non-cleft side without extension across

into normal lip. It also avoids the tendency toward the lopsided effect of an oblique scar. Speeding up the rotation with the back-cut to give a quick pivot nearer the midline of the lip makes it possible to have the scar of union more symmetrical with the gentle, convex curve of the opposite normal philtrum column. Then too, this nick in rotation further reduces the need to worry about insufficient drop of the non-cleft element or fear of a permanent lift of the bow peak on the cleft side. It negates any necessity for small, frantic, inferior flaps subsequently proposed by Skoog, Onizuka, Meyer, Sasaki, Lintilhac and Bernstein.

EVEN THE MUSCLE FIBERS ARE HAPPIER

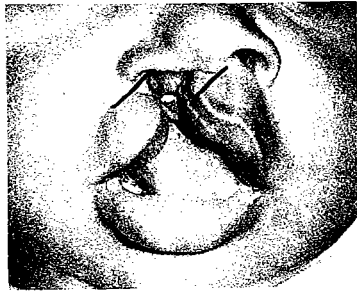
Another vote of confidence for adequate rotation with a back-cut comes from the muscle fibers of the medial element themselves, as first pointed out by Pennisi, Shadish and Klabunde and also confirmed by Fara and our own dissections. Changing their direction from oblique to horizontal enables them to present their ends to the muscle of the lateral element. Wide undermining of the muscles of the non-cleft side is not only *unnecessary* but actually *contraindicated* as such action will destroy the natural philtrum dimple and column. Freeing the muscle a millimeter or two from its skin and mucosa along the edge offers an advantage in the three-layer suturing.

SO IS THE NOSE

An important dividend of the back-cut is its benefit to the nose. This extra release of the lip presented little flap c a better chance to rise into the short side of the columella as a one-sided forked flap and still leave room for the medial advancement of the tip of the lateral flap.

THE FUNCTION OF FLAP c CHANGES

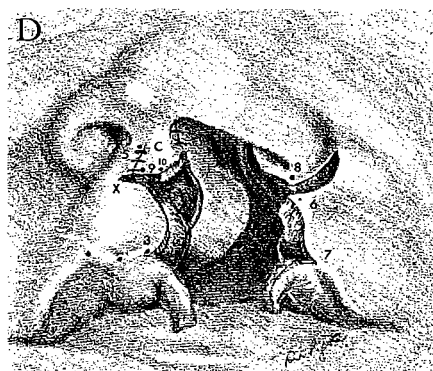
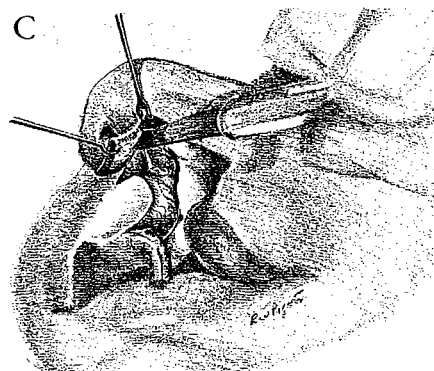
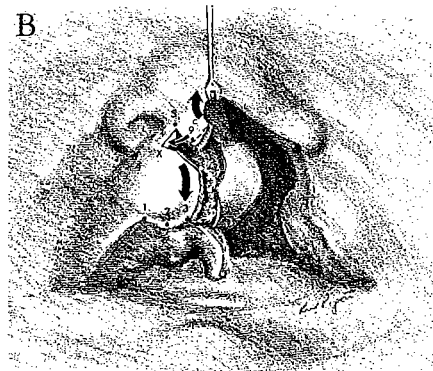
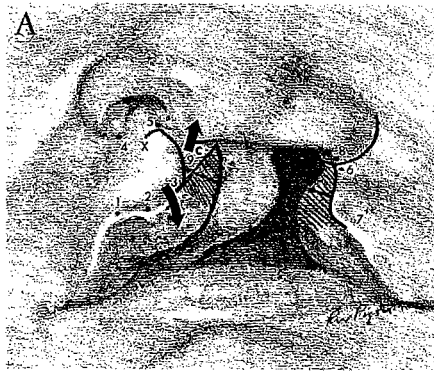
From the beginning the size and importance of flap c were misinterpreted. It was first advertised as nostril sill and used to



take part of the tension of the upper lip cleft closure. Then flap c was sketched too large in complete clefts by Freret, and the artwork was so beautiful that I missed the error of proportion. When such a design was followed literally, it could be responsible for results like this one produced by a young surgeon trying to work out the new method from misleading diagrams. Cutting flap c "too big for its breeches" causes numerous serious sequelae. It acts as a trapdoor in an area where it is out of place and actually blocks adequate advancement of the flaring alar base. It also forces the upper scar, that should run in the alar base-labial crease, down into the actual lip like other Z's—an unnatural, unattractive and unacceptable outcome. Then, too, if flap c is taken too wide, it shears off too much of the non-cleft component, leaving it without a convex border in its upper portion. This is responsible for the oblique effect of the union scar, made more obvious by the relatively overbearing lateral element, and results in asymmetry of the new philtrum column.

Finally, in the 1968 Christmas issue of *Plastic and Reconstructive Surgery*, with these illustrations by Ron Pigott, the actual size and action of flap c was clarified (A). After the back-cut is made, if a hook is placed in the flattened alar rim on the slumped side and lifted to make the rim equal its opposite alar mate, several interesting changes take place. The actual shortness in the cleft side of the columella becomes apparent as a raw gap opens up and flap c rises out of the lip in an attempt to fill this defect (B). It is aided in its advance into the columella with a membranous septal incision on this side (C). It has become apparent that the best action for flap c is not pure advancement. There is an aspect of rotation as the medial side and tip of flap c swing into the back-cut gap to wrap around this portion of the column of the columella base. Flap c is then fixed in its new position with a 5-0 catgut to the membranous septum and to the skin of the columella with two or three 6-0 silk sutures (D). This introduction of flap c into the short side of the columella adds length and contour, bringing a better symmetry to the central column. The lateral side of flap c still will serve as a portion

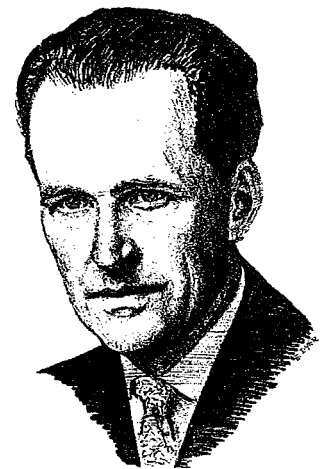
of the nostril sill to join eventually with the advancing tip of the alar base.



A ROTATION INTO THE ROTATION FOR STRAIGHT SCAR

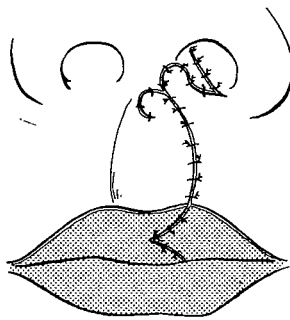
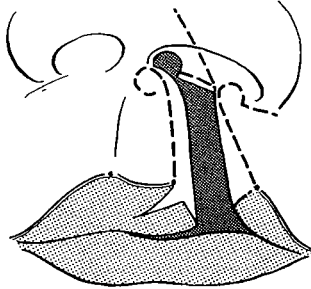
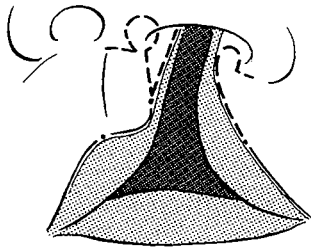
Heinz Reichert, a charming Bavarian from Stuttgart who is keen on scuba diving and happy in deep water, admitted in Melbourne in 1971 that he had been tempted by the anatomical logic of the rotation-advancement principle. He went on to say:

In our opinion Millard's technique combines the simplicity of Veau's method with the advantages of the Z-plasty, but avoids the disadvantages of both. . . . The slightly curved scar crossing the upper third of the philtrum has far less tendency to pull up the vermilion border than Veau's straight scar. In addition, since the advancement-rotation flap adds tissue where it is most needed, above the short side of the downward swung prolabium, Millard's technique produces a philtrum. Or, to say it better, this technique does not destroy the original pattern of the philtrum. The cleft lips closed in this method certainly do have charm.



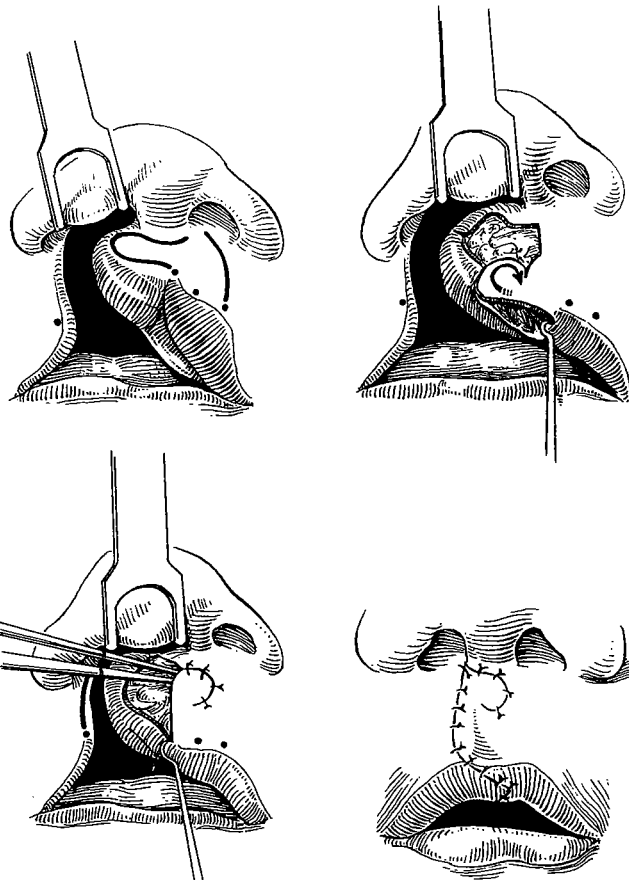
Heinz Reichert





Always in search of improvement and stimulated by Schmid and Widmaier, Reichert published in 1969 a modification of the rotation-advancement principle which seemed to be a rounding of the tip of the advancement flap matched to a rounded defect at the columella base.

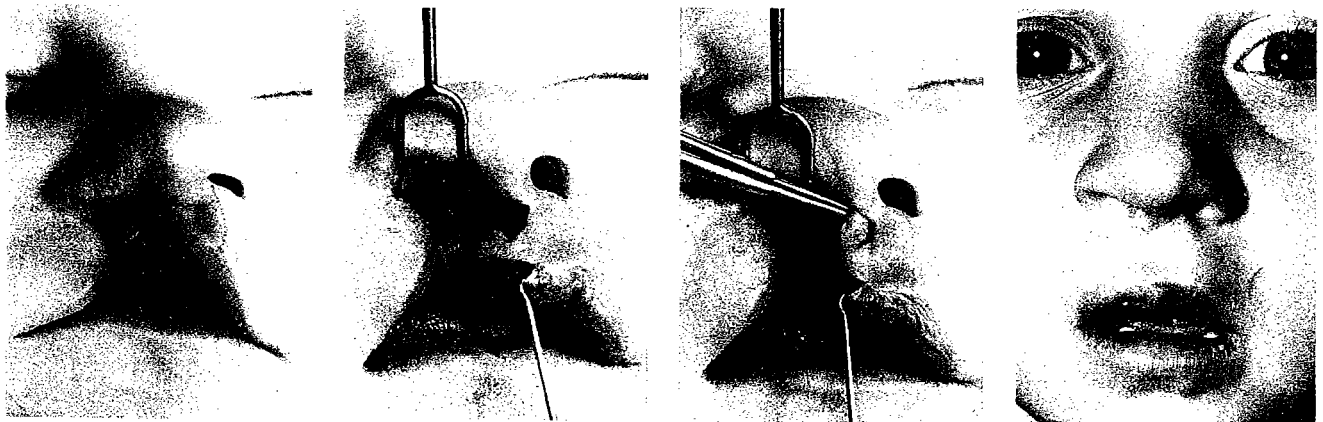
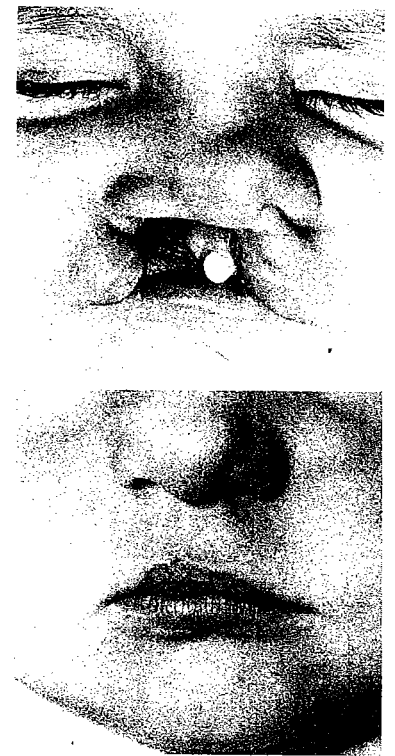
At the Fifth International Congress in Melbourne in 1971, Reichert clarified his modification as a design with the goal to be a scar placed in the vertical line of the margin of the philtrum and not transversing it. His approach to this is slightly complicated but of definite interest. The prolabium is rotated downward as in my original rotation. He then takes a rounded flap from the side of the columella base (reverse flap c) based on the philtrum tissue and to become part of it. This flap fills the gap between columella and prolabium where the lateral advancement flap originally inserted. Thus, he ends up with a circular scar and a slight skin excess in the upper philtrum and a straight-line scar of union from the inside base of the columella to the height of the cupid's bow. Reichert also does a Z-plasty of the vermilion.



Over a five-year period of experience, Reichert admitted the straight-line disadvantage and showed it in one of his cases for, as he said,

Like Veau's scar, there is a tendency to lift the vermilion border by contracture.

Although intriguing in principle, certain points come to mind. First there is a tendency indeed for contracture of the straight-line scar. Yet, as in this very nice case by Reichert, it appears that achievement of adequate rotation or maintenance of this rotation, once obtained, may be a problem when only the philtrum-pedicled flap is curled into the rotation gap. Then too the act of rolling the little transverse flap onto itself into the rotation gap, as demonstrated by another of Reichert's fine cases, produces extra scarring that may be noticeable in the upper portion of the lip.



Of equal importance, it seems, is that Reichert must take the tissue of the original c flap for his philtrum maneuver, thus robbing it of its essential use in unilateral columella lengthening. This columella discrepancy appeared to be borne out in the cases shown by Reichert in Melbourne.

Reichert's design is based on the supposition that the scar of cleft union better imitates the philtrum column if set as a straight line. My original 1955 rotation did produce an oblique scar in certain cases without perfect balance with the philtrum column of the normal side. Reichert used the outmoded diagram

as part of his defense, and I attacked him in Melbourne on this point because up-to-date diagrams after 19 years of refining have taken the obliquity out of the scar. In fact, the back-cut crossing takes place in the upper quarter and, indeed, much as many philtrum columns do, curves quite naturally into the columella. Thus, in my opinion, the rotation-advancement scar line is much more anatomically accurate than a straight-line drop from the medial nasal floor to the height of the cupid's arch.

THE PHILTRUM POSITION OF THE ROTATION SCAR



Here are two examples which show how naturally and symmetrically the scar of union in rotation-advancement can be maneuvered to simulate, in the beauty of its curve, the normal philtrum column. Of course, the scar camouflage is increased by the philtrum dimple, happy in its integrity. One is a handsome Haitian boy.



The other is a fiery little Jamaican lady.

