20. *Primary Handling of the Free Border Vermilion*

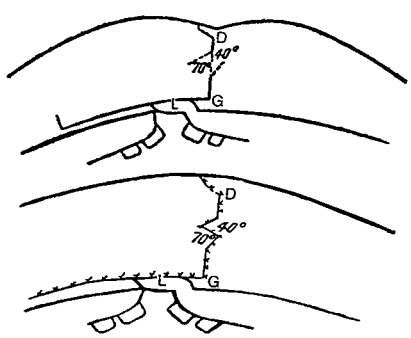
ANOTHER worrisome detail is the closure of the vermilion edges, and in spite of great care, because of the treacherous hypertrophy of lip mucosa and the contracture of adjacent scars, this aspect of the closure often requires minor secondary corrections.

In the late 20's Vilray Blair became cognizant of the effects of scar contracture on the free border of the lip and advocated a mucosal Z-plasty in the cleft closure of the visible vermilion. This prevented contracture, but the dividend nibbled away at the capital with irregularities that spoiled the natural curve of the lip free border.

In 1952 Limberg of Leningrad proposed one of his many Z's for interrupting the posterior mucosal portion of his straight-line lip closure. This was particularly sound as it was placed out of sight and did tend to discourage distortion contracture of the visible lip border.

In 1961 T. M. Obukhova of Samarkand, following the method of L. M. Obukhova, explained in Russian:

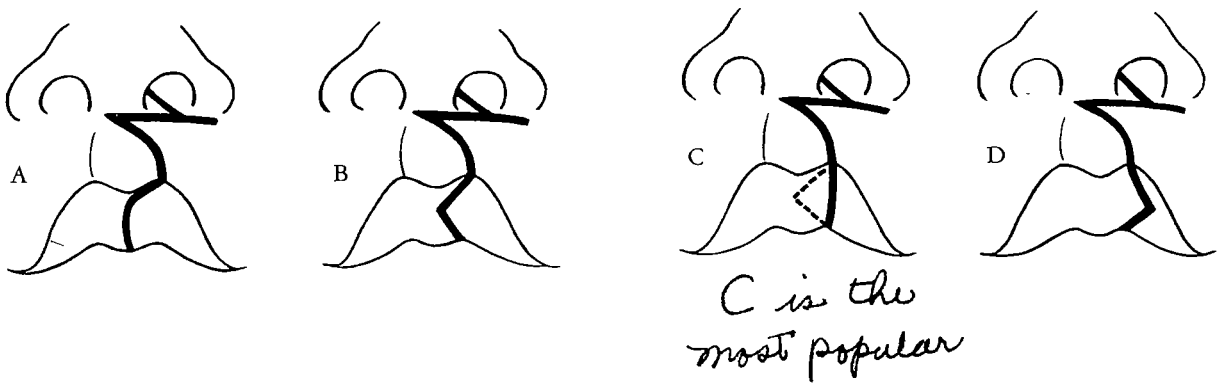
To remove the pulling in on the mucous membrane and vermilion border of the lip, converging triangular flaps, after A. A. Limberg, at angles of 40 degrees and 70 degrees, are widely separated and transposed with the larger angle transferred to the central position. The mucous membrane and vermilion border of the lip become even after suturing.



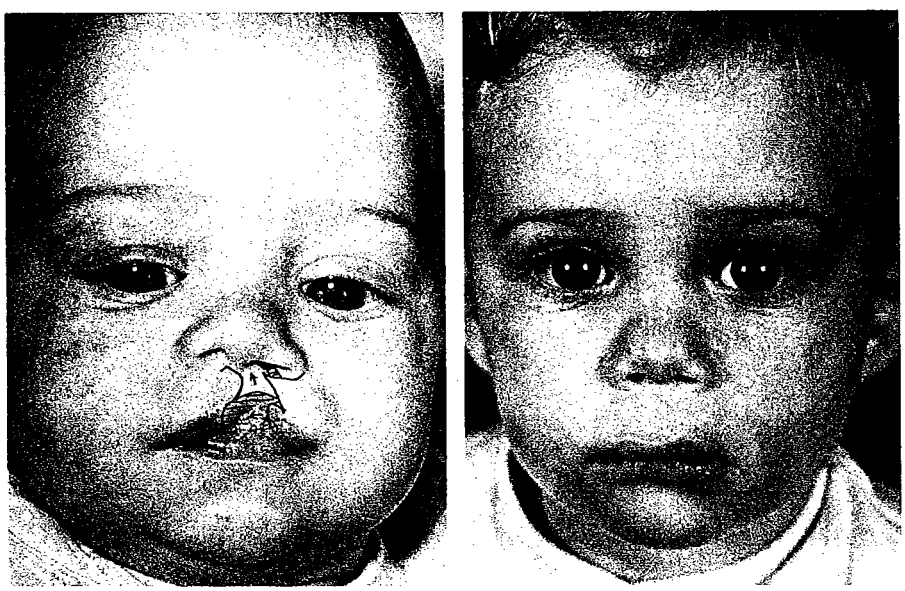
Careful handling and minimal discard of vermilion is impor-

tant during the primary closure. In *Plastic and Reconstructive Surgery,* June 1960, I suggested the following variations:

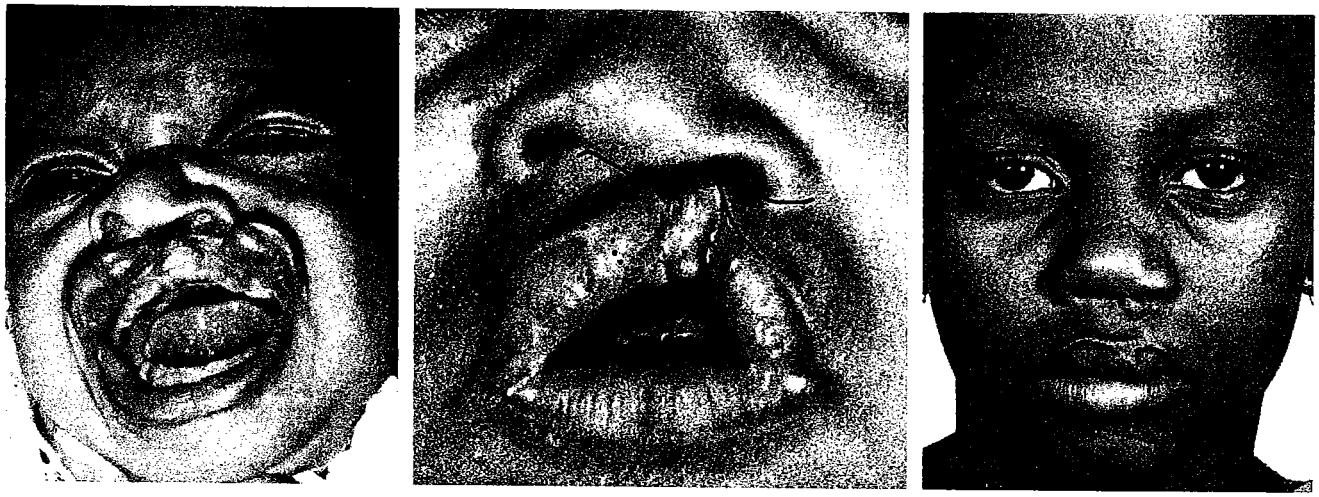
If the cupid's bow component is weak in vermilion then it can be bolstered from [the] lateral lip vermilion either as an onlay flap (A), as a central tongue into a dart (B), or as a posterior interdigitation (C). If the lateral lip segment is weak in vermilion then the mucosal flap [being pared] from the medial cleft edge can be used to interdigitate laterally (D). If both are weak in vermilion then each will welcome the other's flap, at least in part.



Several overlaps from the cleft side (*A*) were used in the early cases from 1958 to 1960, as shown in this example, and the results were quite good actually.



Eventually the repeated occurrence of excess vermilion in an unnatural position requiring subsequent revision, as in this 1958 case, caused me to discontinue this mucosal overlap.



STRAIGHT ANTERIOR CLOSURE

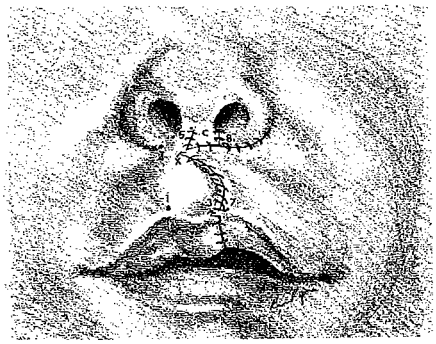
In the ensuing 12 years there has been a change in the handling of the vermilion. In general, the visible vermilion up front is approximated as a full-bodied straight line from the "white skin roll" to the free border. What goes on behind depends on the case. There are four and more possibilities.

SECONDARY REVISIONS

When the lip element on the cleft side is minute and the vestibular extension of flap B is not sufficient after its advancement into this rotation gap, there may persist an attenuation of the vermilion along the cleft side. In 1964 this was being corrected secondarily by various maneuvers which were described in my article on "Refinements."

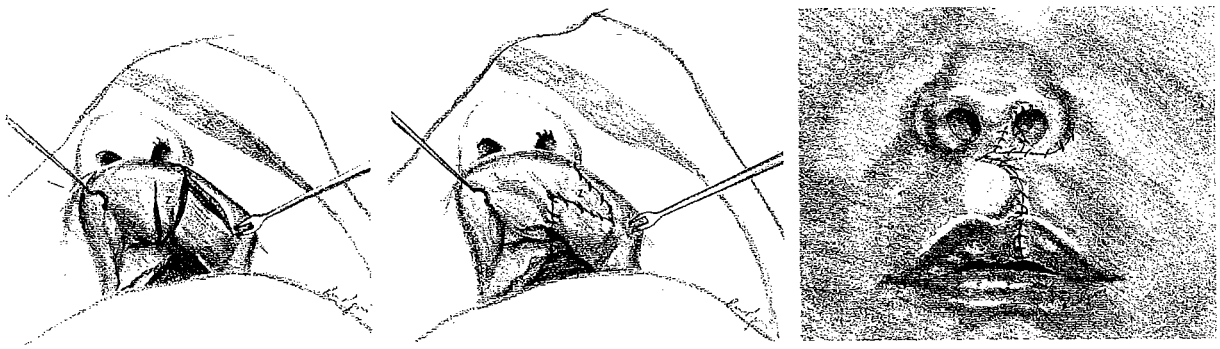
1. An incision along the upper labial sulcus on either side of the cleft with wide undermining and medial advancement of the mucosa was presented as one general method of everting the free border vermilion.

2. A pure V-Y of posterior mucosa in a roll-down was proposed as the most direct and effective method of relieving secondary notches and thinned areas along the free border.

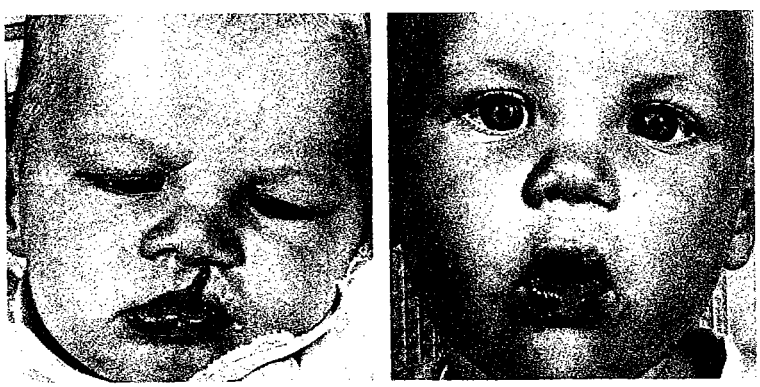


PRIMARY REVISION

By 1968 this attenuation of the vermilion on the cleft side was considered correctable during the primary procedure. Relative tightness in the upper portion of the lip during the closure can result in an excess in the lower portion. This can be used, in part, as a posterior vertical mucosal (and muscle if desired) flap based inferiorly (Z). When let into a relaxing incision just posterior to the attenuated free border, it will balance the thickness of the lip vermilion along its entire extent.



While reviewing my cases recently, I have been interested to note that secondary revisions most often involved minor vermilion free border reductions. A number of these revision excisions seem to be required on the *cleft* side some years after the posterior mucosal flap (Z) has been transposed, suggesting that the procedure may not be as necessary as it looks at the time of the primary surgery. The case shown is an example. It is also possible that by this method we achieve more fullness than is evident early, suggesting that a less radical release may be sufficient. The principle and the method, however, are still found of value in certain cases.

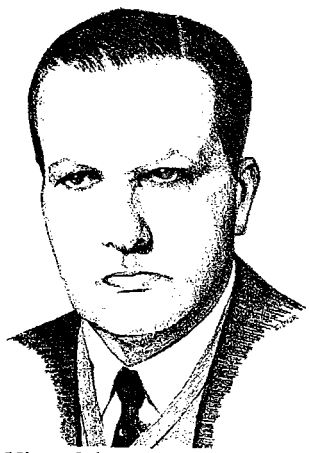


A HIDDEN BREAK

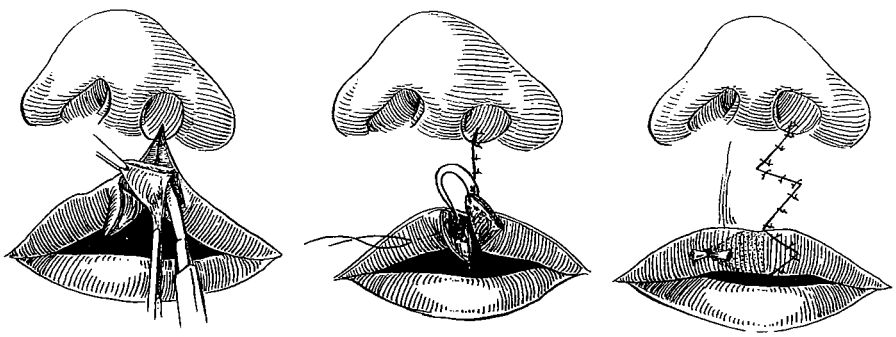
There are any number of ways of using interdigitations in the closure of the posterior mucosa, but the important point is to make at least one interruption in the long through-and-through curved line of the scar. The flap need not be a big or long one, just a mucosal zigzag, but *out of sight.*

SPINA'S TUBERCLE

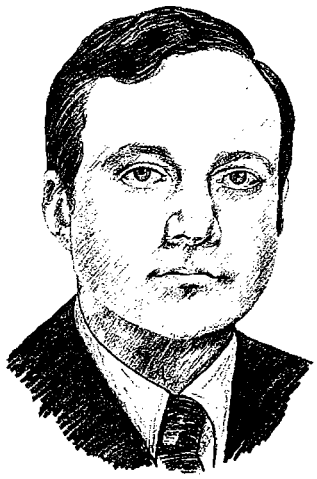
An interesting principle for bolstering deficient vermilion was first described by Victor Spina, the dynamic bantam Italian from the University of São Paulo, Brazil. With Orlando Lodovici in 1960 he proposed straight-line paring of unilateral clefts broken with a Z-plasty. The excess vermilion parings were preserved as two flaps. The one from the cleft side was denuded of epithelium and introduced "tongue in tunnel" across the cleft into a subcutaneous pocket dissected into the opposite side to increase the bulk in the general area of the midline tubercle. The vermilion flap from the opposite, non-cleft side was overlapped across the cleft as a "tongue in groove" external interdigitation.



Victor Spina



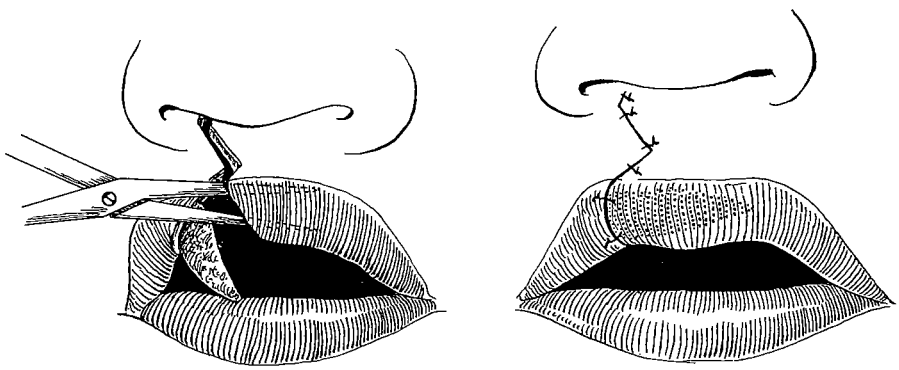
As would be expected, and as demonstrated by their illustrations, although the vermilion border was bolstered, an artistic dead-center tubercle flanked by bilateral notches of the natural cupid's bow was not consistently achieved. Nonetheless, this method is sound in principle, "using what is available in an attempt to achieve what is desirable," and was soon championed and modified by others.



José Guerrero-Santos

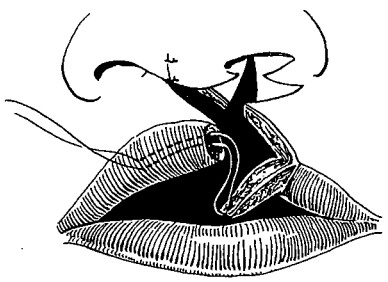
GUERRERO-SANTOS

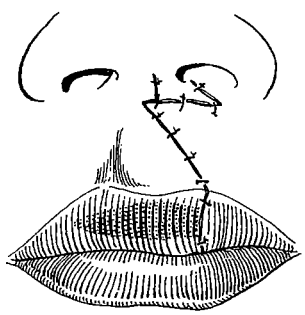
Similar bolstering of a deficient cleft edge with the mucosal cleft paring was described by José Guerrero-Santos of the University of Guadalajara in 1962. Guerrero-Santos, self-trained, bright-eyed and innovative, has developed a plastic surgery residency with American College of Surgeons' standards. Unaware of Spina's work, he had espoused this principle since 1958 and advocated denuding the mucosa of a longer flap from the cleft side and introducing it as a submucosal and muscular tongue into the lower portion of the opposite side. At that time he used it in conjunction with a Z-plasty type of lip closure.



Several years later, at the Second Hamburg Cleft Lip and Palate Symposium, Pfeifer described a similar procedure for secondary correction using a denuded flap of scar tissue which he buried medially in the vermilion.

It was reassuring that in 1971 an astute band of Mexican surgeons, Ramirez, Castaneda and Torres, led by Guerrero-Santos again, changed to the "good" side and suggested that the crossed denuded flap be used with the rotation-advancement method. It had been their experience, as they said, that





> A simple edge-to-edge approximation of an unbalanced vermilion border may result in an unattractive join, the central labial tubercle partially or totally absent, asymmetry in the lateral portions of the vermilion and notches.

To prevent these complications they have employed, with some success, the denuded flap. As they noted:

> Initially, we combined it with a z-plasty in the primary correction of cleft

lips and we mention the use of the crossed-denuded flap as a complement to the Millard technique. This combination is our routine procedure now.

The results they showed were excellent, as is their Mexican acceptance of the old Scots principle of never throwing anything away. Needless to say: If it is needed, use it. I have found this principle of value, especially when using the medial mucosal paring for insertion into the lateral vermilion.

Because of the shape of the flap and the point of its insertion, there usually will occur a mucosal swell in the wrong position, but as they said,

Redundant tissue can be removed in a secondary cleft lip correction by a lens-shaped extirpation.

Other methods to achieve the same effect have been described. As Guerrero-Santos noted:

Randall describes a procedure similar to ours, calling it a triangular muscle flap and combining it with the Millard technique.

RANDALL

Randall, in his typically sportsmanlike manner, expressed it this way in 1971:

The occasional poor result with the Millard technique has shown shortening of the scar with peaking of the cupid's bow on the cleft side.

He gives three possible explanations for this discrepancy:

1. Not enough rotation and not enough lateral paring.
2. Tendency for "nearly straight scar" to contract.
3. Fara's direction of orbicularis oris muscle fibers tending to sweep up along the cleft margins.

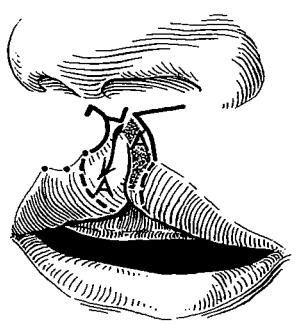
probably

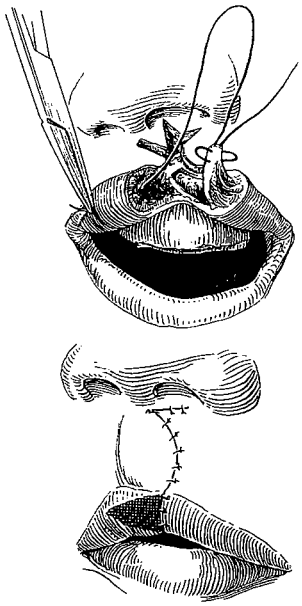
temporary

deserves consideration

Thus, Randall reasoned:

There would be an advantage in combining the rotation-advancement skin incisions with a transposition of a flap of orbicularis oris muscle as in the triangular flap technique.

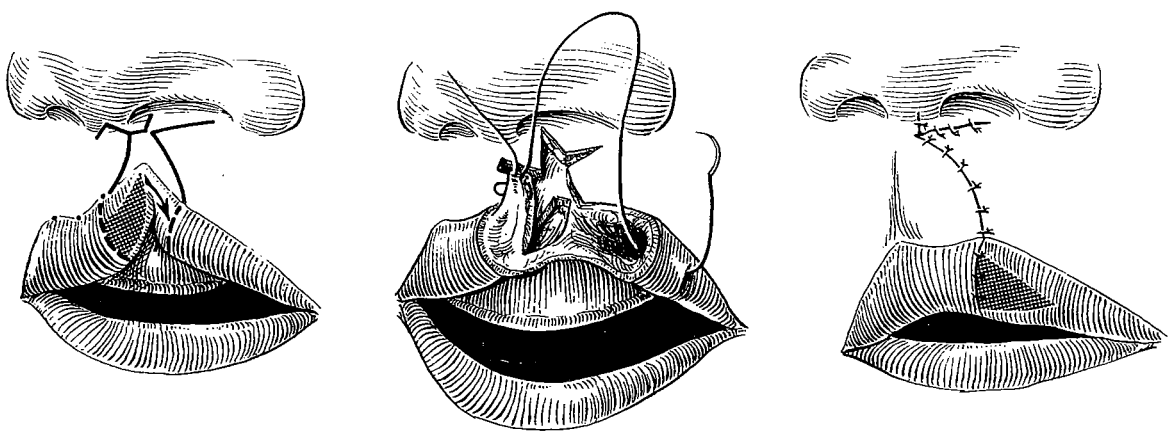




This little adjunct has appeal as it intertwines muscle fibers. It can do no harm except that it is taking a muscle flap from the weaker side to bolster what is often the stronger element. In those occasional cases, also referred to by Davies, in which the tubercle is weak on the medial element, the additional tissue may be welcome. As the muscle flap enters lateral to the midline tubercle and is triangular in shape, an off-center vermilion bulge may result; this problem has also been noted by Guerrero-Santos.

REVERSE THE MUSCLE FLAP

The principle of inserting a muscle flap across the cleft into the muscle of the opposite side is sound and tends to improve the muscle fiber alignment. This maneuver must be adapted, as needed, to each case. It seems far more logical to reverse the action suggested by Randall. Take the muscle flap from the strong medial side and introduce it into the lower border of the weaker side to bolster its contour. This procedure may reduce the need for the previously described posterior mucomuscular flap transposition.



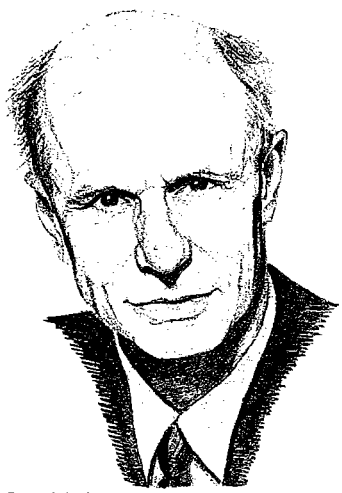
As will be shown later, the true tissue deficiencies exist in the upper portion of the upper lip in the subnasal area on the cleft side, and the best use of any muscle edge flaps probably should serve this area primarily.

SALVAGE OF THE VERMILION PARINGS

The vermilion border of the cleft edges, which over the years has been cut off and thrown away like butcher scraps, is no longer being treated so negligently. The principle of "never throwing anything away until you know you do not need it" has finally won out. When cleft edges are freshened, the vermilion parings are being salvaged as flaps based on the mucosa of the alveolus. Various surgeons have found uses for this mucosal tissue.

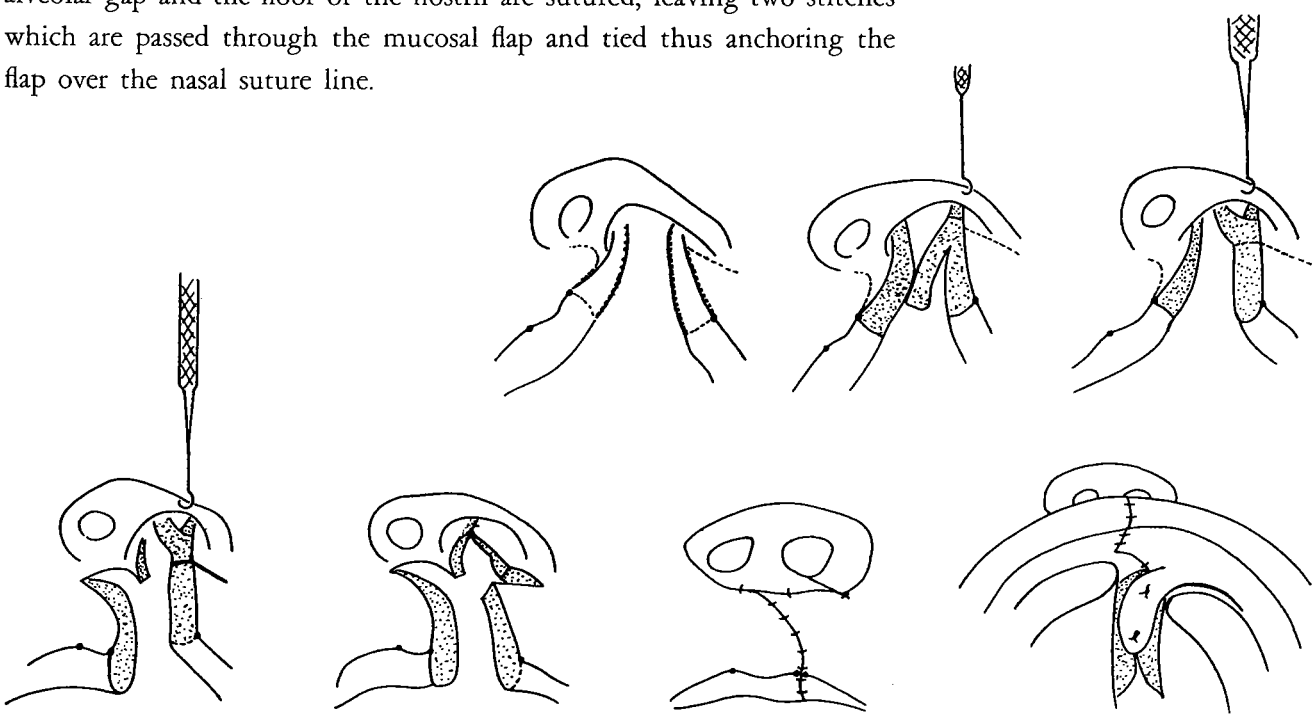
Muir

Ian Muir of Aberdeen, a gentle, astute "Mr. Chips," was finely tempered during training with Mowlem. True to the thrifty character of the Scots, in 1966 he advocated the ingenious use of the salvaged cleft edge vermilion. He has diagramed the application of his flap as he utilizes it when closing a lip with the rotation-advancement method. As Muir explained in 1972:



Ian Muir

> On the lateral side the mucosal flap is raised from the margin of the cleft. On the medial side the tissue at the free margin of the lip is discarded. The mucosal flap is pulled backward preparatory to making the incision for the rotation advancement flap. This needs to be done so that the mucosal part of the incision does not encroach upon the base of the flap. . . . The nasal layer of the extreme anterior end of the palate, the alveolar gap and the floor of the nostril are sutured, leaving two stitches which are passed through the mucosal flap and tied thus anchoring the flap over the nasal suture line.



No scar band in Samarkand

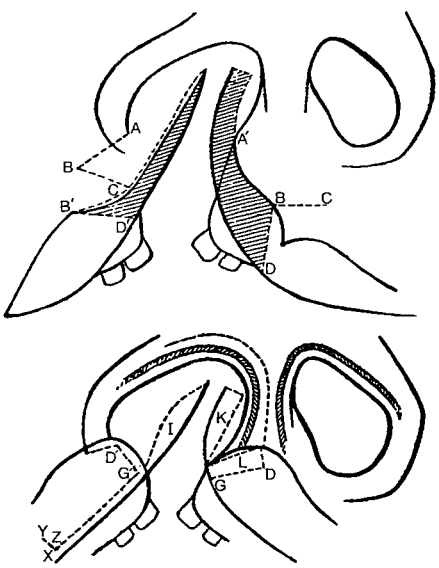
The Russian city of Samarkand (150 miles from Afghanistan) was captured by Alexander the Great and destroyed by Genghis Khan. From the time of Marco Polo it served as the junction of trade routes from China and India to Europe (the "silk-road"). About 1400, Tamerlane made it the capital of his huge empire and, being no "choirboy" himself, subdued riots in Persia and other possessions, leaving behind, as reminders, towers built of the skulls of the revolutionaries. While cognizant of its violent past, we must pay tribute to Samarkand and the Obukhovas, mother and daughter, for ever taking an interest in cleft lip at all and especially for caring enough to salvage cleft edge mucosal scraps for a two-layer non-contractile closure of the alveolar and nasal floor defect. Tamara M. Obukhova wrote in 1961:

Tamara Obukhova

All authors, in describing their particular method, generally stop with a description of the skin incisions, and do not describe the particularities of the incisions in the mucous membrane. Only A. A. Limberg (1952) speaks of an incision shaped like a "poker" on the mucous membrane of the vestibular space by a peripheral incision of the upper lip.

She cited the article by her mother, L. M. Obukhova, "A Correction Plasty for Harelip and the Nasal Ala," as the method she herself uses but noted the vagueness of its description.

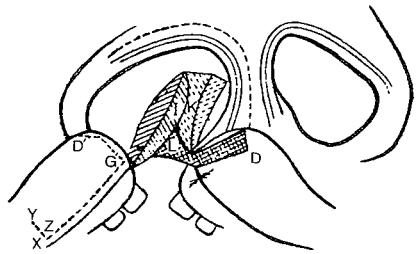
It is stated that the anterior portion of the nasal cavity and the region of the cleft of the alveolus is doubly closed, both by skin covering and by mucous membrane, but it is not shown in what direction the incisions are made, nor what follows.

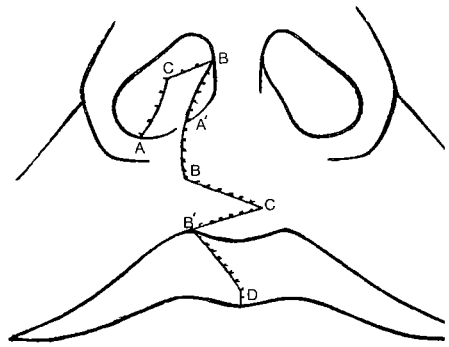


In 1961 in the Russian journal *Stomatologiya,* as translated by resident S. A. Wolfe, T. M. Obukhova, using the lip method of L. M. Obukhova, turned mucoperiosteal flaps from the medial (K) and lateral (I) edges of the cleft within the vestibule and in wide clefts also used medial cleft edge vermilion of the lip (L). The translation continues:

After the incisions of the mucous membrane on the columella side and at the edge of the nasal ala, along the line of the pear-shaped aperture, there are two mucoperiosteal flaps formed, I and K, which fold together

and rotate into the oral cavity where they are sutured together with catgut beginning posteriorly. These flaps are adequate in narrow clefts. For closure of wide clefts the lack of mucous membrane is filled with a flap of mucous membrane taken from the cleft edge of the medial side (L). In narrow clefts this piece of mucous membrane is resected.





Other uses of the cleft margin vermilion

John Tondra, with Bauer and Trusler in 1966, apparently was the first to suggest covering the raw premaxilla in bilateral clefts with edge mucosa:

The lateral mucous membrane of the prolabium is usually discarded due to the small amount, as well as an inherent abnormality of tissue, although it may be used to cover the exposed premaxilla.

Energetic Charlie Horton, with Adamson, Mladick and Taddeo of Norfolk, Virginia, in 1970 extended this principle to unilateral clefts also and actually advocated salvaging the vermilion paring to cover the raw area of the premaxilla to improve the labial sulcus. They stated:

Charles Horton

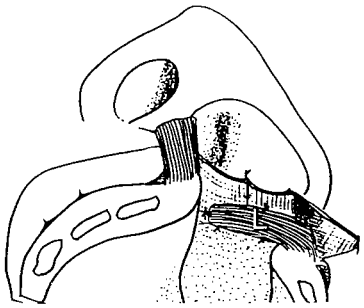
We believe it is important to construct a sulcus early to allow unrestricted growth of the lip.

This is an important and practical suggestion and is being used by many of us today, when no better use can be found, particularly in incomplete clefts.

Another surgeon intrigued with the use of "in-between" and cleft margin flaps is Cesar Arrunategui of Peru, who bears a striking resemblance to Rudolph Valentino. He has been working at the Barsky Plastic Surgery Unit, Saigon, South Vietnam, and in 1971 described denuding the epithelium from the "in-between area" of an incomplete cleft and burying this for bulk under the floor of the nose.

Cesar Arrunategui

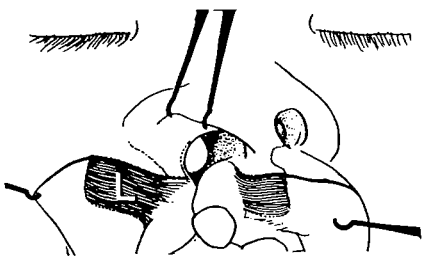
In 1972 he sent me diagrams to be presented at a Congress in Cologne, showing uses of what he refers to as a "variable flap" of mucosa and muscle from the lateral cleft edge based on the gingiva-labial sulcus. As one use, he proposes inserting this mucosal flap as nasal lining between the upper lateral and

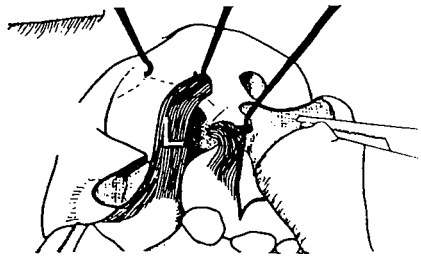


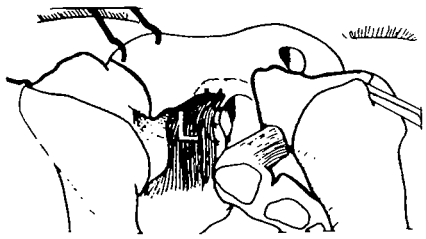
alar cartilages, a procedure I have also found valuable for some time.

He proposes using this flap in complete clefts as a second-layer closure of the nasal floor similar to the Muir maneuver.

His third use denudes the central portion of this flap to allow it to be folded upon itself and tucked under the alar base.







It is interesting that surgeons all over the world have progressed in sophistication to the extent that they are saving the parings and using them to their advantage. Recently I have been using the medial mucosal margin to bolster the nasal floor and alveolar closure in the spirit of Muir but reserve the lateral vermilion margin as a mucosal flap to fill the raw area created when the alar base on the cleft side is freed from the maxilla and extended along the intercartilaginous line. The alar base is thus allowed to come forward and, of even greater import, to stay forward! The details of this maneuver will appear in Chapter 37.