

36. *A Preliminary Adhesion*

IN extremely wide complete unilateral clefts, no matter what the technique used for closure, any adjunct is welcome. An adhesion-type procedure allows the surgeon a chance to stall for time and tissue growth, reduces the actual deformity by molding the maxillary segments into closer approximation and, consequently, facilitates the subsequent construction of a more perfect final lip result. In the absence of a normal intact orbicularis oris muscle spanning the maxillary arch, there is no molding action. It was noted by Veau and mentioned by Plessier in 1930 that even the most minor Simonart's band acting as a restrainer in utero greatly reduces the extent of maxillary and nasal distortion, Pruzansky has reconfirmed these findings.

Although delayed in its application, any closure of the lip across the cleft affects the width of the gap and position of the segments of the maxilla. In my 1964 "Refinements," in reference to a wide cleft of exceptional severity, I suggested:

In such cases postponement should be considered particularly for those not veterans of the rotation-advancement approach. Rather than compromise the final result by forcing the rotation-advancement technique or settling for less with another method, a simple straight first stage approximation of the superior one-third of the lip cleft is a possibility. This could be carried out high enough to avoid destruction of any natural landmarks. Partial union of the lip will help to mould the distorted maxillae and, if deemed necessary, better alignment can be achieved with orthodontia and maintained with a bone graft. The rotation-advancement method then is available for final lip closure.

At Princess Margaret Hospital, Nassau, in 1963, a severe cleft from Turk Island was closed with an adhesion procedure. After

the medial lip element had been freed from the maxilla, it was underlapped with a rectangular vermilion flap from the lateral lip element. All landmarks were preserved by the superior position of the adhesion.



As early as 1954 Johanson advocated a type of lip adhesion procedure as part of his routine for obtaining closure in the anterior palate area in preparation for his primary bone grafting. By 1961 Bengt Johanson with Ohlsson of Sweden realized that the adhesion had other values. He noted,

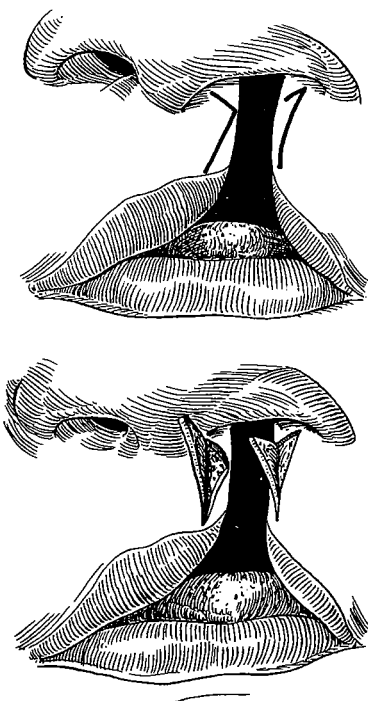
This avoids troublesome scars and loss of tissue prior to a later more thorough lip closure, but secures the desired muscular influence on the upper jaw.

In 1965 Randall, in his enthusiasm for the adhesion procedure, did much to popularize it. His reasons are clear-cut:

When the cleft is complete and wide there is likely to be more concern over tension, the position of the lip segments after the bony segments have been moulded and the eventual position of the alar base. In addition there is considerable worry whether or not an "S" shaped alar cartilage is ever going to approximate the contour of the normal side.

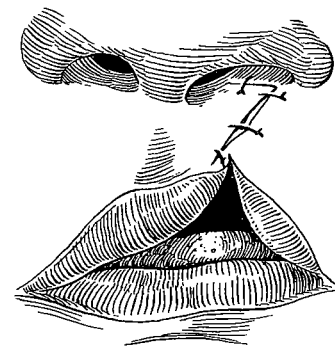
Randall advocated short broad triangular flaps interdigitated and approximated with sutures of the mucosa, muscularis and skin.

He explained that this was a broader attachment than that of Millard and an improvement over the simple margin incisions or limited excision of the cleft margin as suggested by Spina (to add substance to the prolabium in bilateral clefts). Randall's report indicated that he used an adhesion on all complete clefts



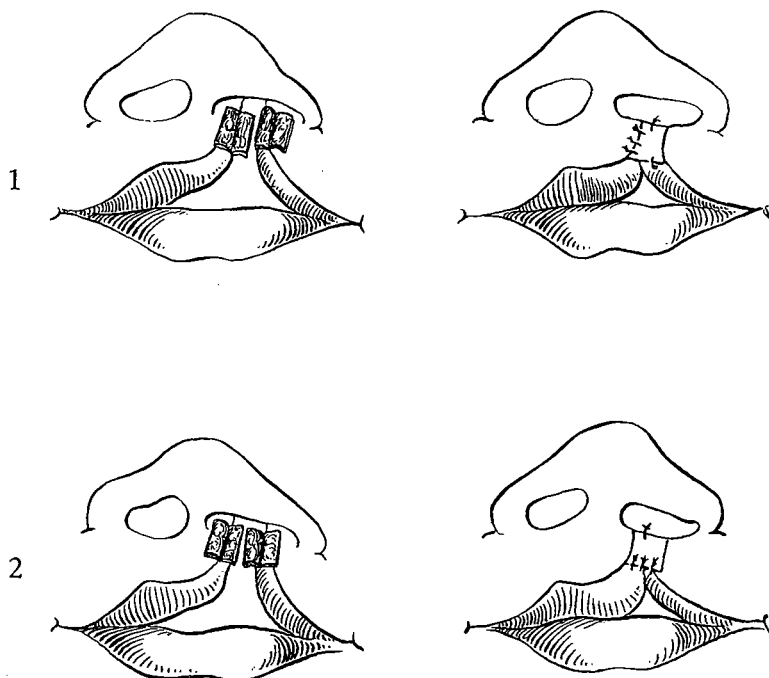
regardless of width, and the procedure was carried out at ages 2 to 10 months (average 3.6 months) with the final definitive repair following after a 2- to 7-month (average 5.2 months) interval. In his opinion the price of an additional operation and an extra trip to the hospital was more than offset by two factors:

1. The adhesion renders the newborn infant much more acceptable looking if the surgeon prefers to delay a definitive closure until the child is older.
2. There is no true sacrifice of tissue with the scar of adhesion because the tissue used ordinarily would be discarded in the [Randall] final lip operation.



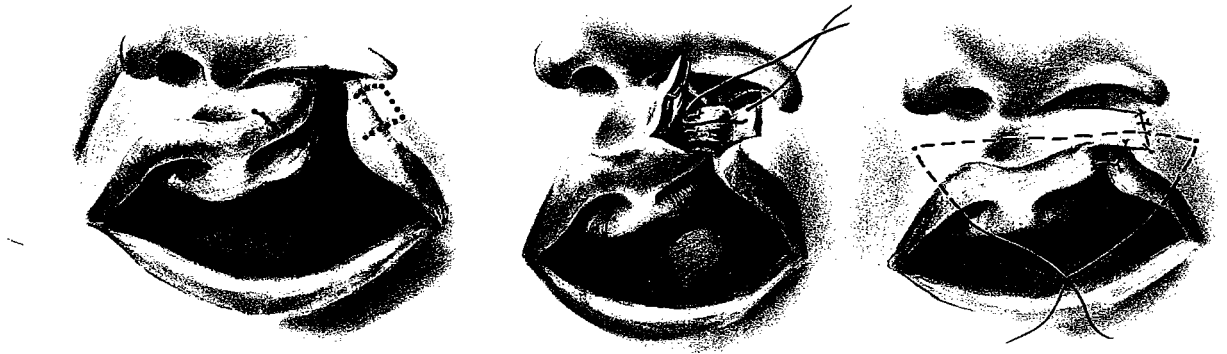
The first point, for what it is worth, is valid, but the second point holds only for Randall's procedure and is too costly in the rotation-advancement method. It is felt, first, that the adhesion is required only for complete clefts and, second, that only mucosal flaps in the upper third of the lip need be approximated, for once the adhesion is firm, the muscles lateral to it will act just as effectively as a molding band.

In 1970 Takahashi reported his use of the lip adhesion procedure. He diagrammed what he considered to be (1) the Millard and (2) the Randall type of adhesions.



Actually this has never been my design. The medial flap turns the wrong way and, of course, there should not be any skin involved and wasted in this temporary maneuver. A cardinal point is the placement of the adhesion *high up* in the lip.

More recently, Randall with Hamilton and Graham reported on 68 lip-adhesion procedures with an incidence of dehiscence of 8 percent in unilateral clefts. They varied their adhesion to matching rectangular flaps reinforced with a retention suture.



This modification also encroaches on tissue valuable in the rotation-advancement procedure and, thus, is a bit too extravagant.

It is thought that an adhesion that does not encroach on valuable tissue, if done early, can be instrumental in shifting the maxillary components into better position. At the same time, it reduces the horror of the deformity so that the parents are pacified, allowing the surgeon to postpone the final surgical repair until the more ideal age of six to eight months. At this time, primary nasal correction may be accomplished.

*It is interesting
that in 1974
Dave Furnas
also advocated
a similar
adjunct.*

C - W

In 1966 Walker, Collito, Mancusi-Ungaro and Meijer proposed the C-W technique ("close and wait" or "Collito and Walker") as an atraumatic preliminary and definitive two-stage lip closure. They made a *big* point that there must be *no* undermining of soft tissue in the buccal sulcus, *no* muscle detachments or sectioning of bone even in the presence of a large and/or protrusive

premaxillary segment. They believe that the lateral bands, supporting the anterior portion of the lesser segment, should be preserved and to destroy it surgically would encourage arch deterioration. They almost hissed at Randall's undermining his lateral lip segment in 30 percent of his adhesions. They describe their method and its physiology:

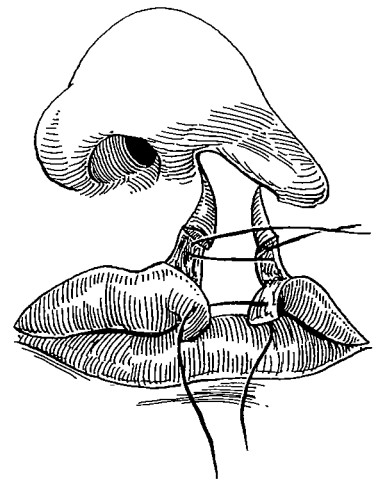
In the first stage, the high and low points of the expected cupid's bow are marked on the lateral and prolabial tissue and used as landmarks which are not to be interfered with surgically. . . . Bilateral vermilion flaps are turned down and sutured together.

This maneuver positions the adhesion low in the lip, placing the constriction in the inferior border, which is less than ideal. It is, however, quite necessary because, without the aid of undermining, the tension will not allow union of the upper portions of the lip elements.

Following first stage closure, the alveolar and palatal clefts are reduced spontaneously. The premaxillary area is gently molded back to the midline, and the lateral segment is oriented toward a nearly ideal arch form. The definitive or second stage closure is executed after the soft tissue and bone [reorientation]. . . . A time interval of 6-12 weeks seems average. Again no undermining is allowed for the second stage. . . .

Thus, the unimpaired tissues are expected to gain their full growth potential by eliminating the suspected inhibiting factors, i.e. cicatrix, produced by undermining and the change of muscle environment created by unwarranted soft tissue detachments.

The C-W principle was first described to me by John Walker over a cup of tea in a flower garden behind the Iron Curtain during an International Plastic Surgery Congress in Bratislava in 1965. I had thought about it from time to time. As in all plastic surgery, the more atraumatic the procedure the better, but wounds do heal and with normal healing there is minimal restraint of growth. Yet, one factor in the C-W principle makes good sense. Keeping the original attachments of the lip elements to the maxillary segments allows them to act as effective *strings* with which to control the maxillary "puppets."



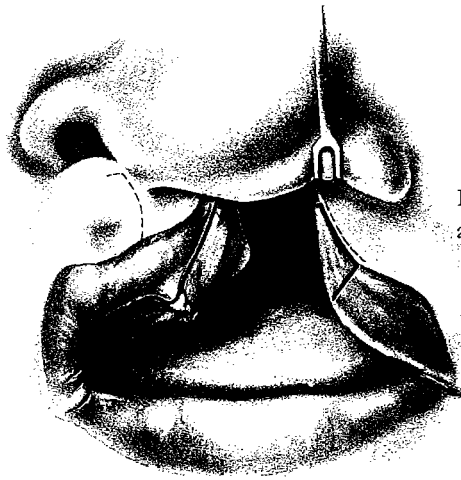
John Walker

A HIGH HALF-UNDERMINED ADHESION

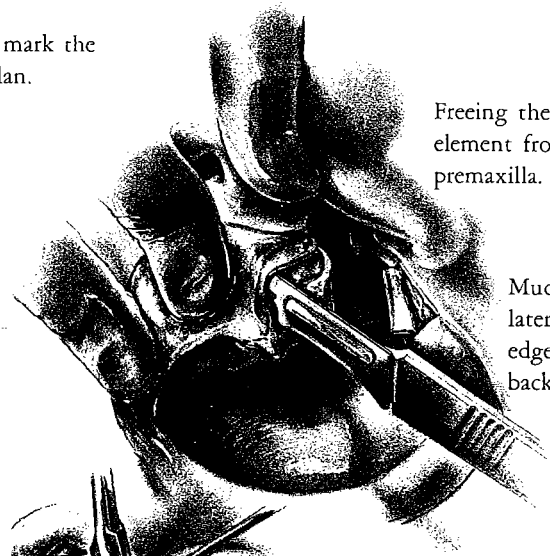
Discarding the concern about scarring following undermining but focusing on the control of segments by maintaining original attachments made it possible to formulate an adhesion plan that seems to take the best of both methods. The rotation and advancement incisions are marked to protect the landmarks. The medial lip element is freed from the maxilla so that it can advance over the outwardly rotated segment and be united in an adhesion to the lateral lip element, which is *not* undermined and is allowed to maintain its original attachment. Release by undermining of the medial side reduces tension and facilitates success of the adhesion uniting in the more strategic upper portions of the lip elements. Once the lip adhesion is firm, the constricting band of lip muscles will mold the forward-projecting maxilla back into the arch while the tug of intact lateral lip attachment to the retroplaced lateral maxillary segment should help to pull it forward into better alignment. After six months, adequate freeing of the lip tissues seems justified, not only because the attachments are in abnormal position on the maxillary segments, but because their release reduces the tension of the final lip closure. This allows repositioning with an improved prognosis for the lip scar and without great jeopardy to maxillary growth.



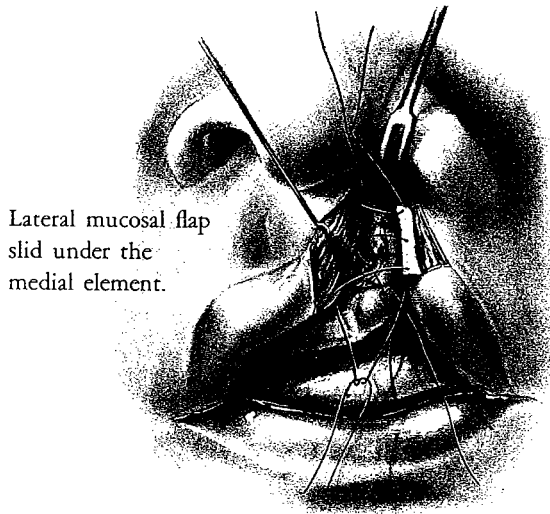
Making the Adhesion



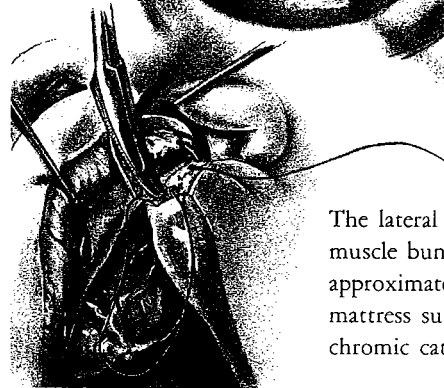
Dark lines mark the adhesion plan.



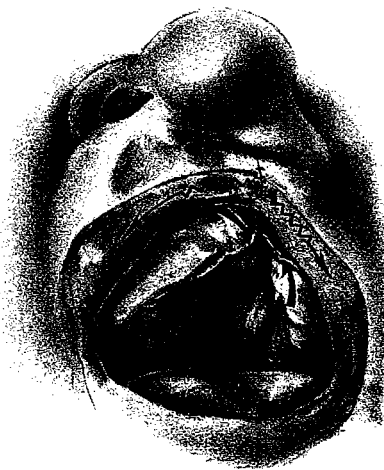
Freeing the medial element from the premaxilla.



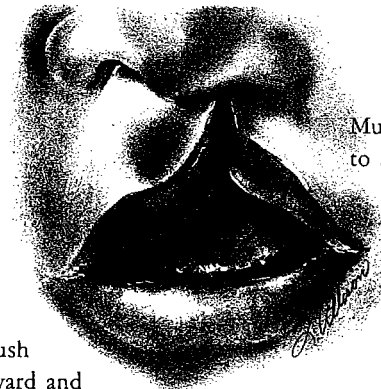
Lateral mucosal flap slid under the medial element.



The lateral and medial muscle bundles are further approximated with a mattress suture of 4-0 chromic catgut.



The adhesion will push the premaxilla backward and may help to pull the lateral maxillary segment forward.



Mucosa is sutured to skin.

A SALUBRIOUS ADJUNCT

An adhesion is not necessary in every case, but in wide complete clefts it can be an aid. Here is an example in which it worked wonders. A very wide cleft had this type of adhesion created at three weeks of age. Two and a half months later, the final lip procedure, including alveolar and anterior palate closure, was done easily as a surgical demonstration before a cleft lip and palate symposium at Jackson Memorial Hospital, University of Miami School of Medicine, in March 1970.



ACTUAL FACTS

Subsequent experience with the adhesion procedure, which I still advocate as diagramed, has presented two minor problems:

1. An early adhesion within the first month of age will usually move the maxillary components quickly into apposition in the alveolar area with abutment which renders anterior alveolar closure difficult at the time of nasal floor reconstruction during the definitive lip closure. At the present time, a small prosthesis is being used to prevent this abutment and maintain a half-centimeter gap of access to facilitate alveolar closure at the time of rotation and advancement of the lip.
2. Even without undermining of the lateral lip element from

the maxilla, the pull of the adhesion does not, in many cases, show a rapid and dramatic forward growth of the diminutive maxilla on the cleft side.

There are certain exceptionally wide clefts that may require undermining of the lateral lip element also in order to achieve an adhesion. Yet, as shown in this case, the progress in both lip and nose is worth the effort and trauma.



? INCLUDING SEPTUM IN ADHESION

Recently, the residents and I worked on a patient with severe lateral lip element discrepancy who also had a strangely persistent nasal distortion. It resisted much improvement after the adhesion, and even after rotation-advancement with a lateral cleft edge mucosal flap let into the vestibule-releasing alar base incision and a primary alar lift, the nasal correction was disappointing.



Of course, with tissues placed in better position, there must be gradual improvement with growth in time, but the discrepancy struck such a discord that, again, a search for a better way was begun.

The key to this residual nasal deformity seemed to be the severe deviation of the septum. The thought occurred that, considering Latham's concern over the bent septum, Reidy's lack of concern over early septal surgery and Berkeley's valiant primary correction, *maybe* in certain cases the septum should be straightened during the adhesion procedure. Exposure, after freeing of the medial lip element from the maxilla, would be easy. The septum could be freed with the nasal spine from the maxilla and vomer a short distance. Careful, limited mucoperichondrial dissection and scoring of the cartilage on the concave, non-cleft side could be accomplished. Then, during the suturing of the high lip adhesion, possibly a stitch from the lateral lip element could catch the anterior septum to bring it around into a midline position, rendering the alar lift during the rotation-advancement operation either more effective or less necessary.

This has become almost routine

A TRIAL VARIATION

Recently I have tried a variation which achieves more primary nasal correction during the adhesion procedure. The cleft edge vermilion of the lateral lip element, flap 1, has been inserted across the tight area in the lateral vestibule allowing release of the alar base. The lateral lip element was also freed from the maxilla enabling the entire lip-nose component to come forward in a more nearly normal position. This necessitated a reversal of the vermilion flap which was turned from the cleft edge of the medial element to underlap the edge of the lateral element to form the adhesion. It will be interesting to study the advantages, if any, of this modification.



SECONDARY USE OF THE ADHESION

Man's ingenious adaptation to circumstance is boundless. After World War II in London, I remember queues everywhere were an accepted way of life, particularly out in front of cinema theaters. They, in turn, attracted troubadours, jugglers, acrobats, magicians and even an occasional pickpocket to entertain those waiting to be entertained and to pick up a little extra change. In the same parasitic relationship, once the obvious values of the adhesion procedure had been exploited, ingenious secondary uses began to be developed.

In 1971 Culf, Cramer and Chong of Temple University, disenchanted with the consistent depression and retrusion of the alar base and certain that this discrepancy could be corrected in many cases without bone-grafting the deficient maxilla, stole, like pickpockets, the *adhesive bridge* itself. They denuded its distal skin and mucosal epithelium but salvaged the bulk of subcutaneous tissue, muscle and scar, usually leaving it attached medially (and in the rotation-advancement it is merely an extension of flap c). Then, through a 1 cm. lateral endonasal incision below the alar base, a pocket was dissected. Into this space the denuded adhesive flap was plugged with the aid of a pull-out skin suture, the skin and mucosa of the medial portion of this filler flap being retained to aid in lining the nasal floor.

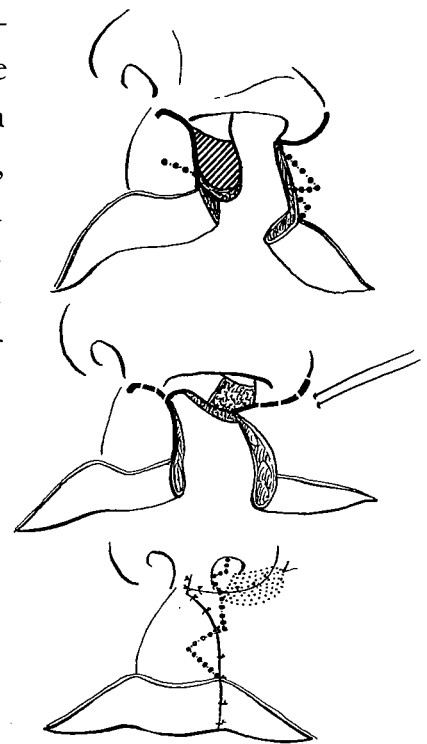
Always interested in how and why a surgeon has come upon a method, I asked Lester Cramer, the plastic surgery chief at Temple University, about this adjunct. When he candidly referred me to Culf, to whom he awarded the credit, I was reminded of a story about Cramer. On his first day at Trinity College he was called in by the president along with several other contestants and given nine questions involving history, geography, math and science. The tenth question asked,

Which of these questions was the easiest for you?

Whereupon Cramer wrote,

Question #10 which I do not have to answer.

He won a full scholarship and confirmed the president's diagnosis with a Phi Beta Kappa and later an A.O.A. key.



Lester Cramer



Norris Culf

I then turned to Norris K. Culf, and he responded in 1972 that three years earlier he had begun using the adhesion in a complete unilateral cleft and,

it was obvious that there was a significant displacement of the alar base which was not corrected by the previous lip adhesion. Therefore, with the abundance of tissue available, which would otherwise be discarded, we used this to create some support by tucking it under the alar base leaving it attached medially. . . . We have done the procedure with both the triangular type lip repair and your repair and it seems to be equally effective in both situations.

EARLY SOFT PALATE CLOSURE

At the time of the lip adhesion procedure, whenever possible without further surgery, the soft palate edges are split and sutured in three layers as far anterior as possible. Even one centimeter of approximation can be of value. Early soft palate closure has the same beneficial effect *behind* that the lip adhesion is achieving *up front*. Not only does this promote early coordination of soft palate and pharyngeal musculature, but it probably improves the function of the eustachian tubes and certainly promotes molding of the maxillary tuberosities.

PROGRAM FOR FIRST ANESTHESIA

As soon as the cleft infant is feeding well, has a hemoglobin level of at least 10 gm. and is free of infection, which should be within the first three weeks, three quick procedures are carried out:

1. Otological examination and insertion of tubes, if indicated.
2. Soft palate closure.
3. Insertion of a prepared light prosthesis to prevent complete alveolar collapse and then the creation of a superior lip adhesion.

This triple mission accomplished, the patient, parents and surgeon get a six months' rest. . . .

