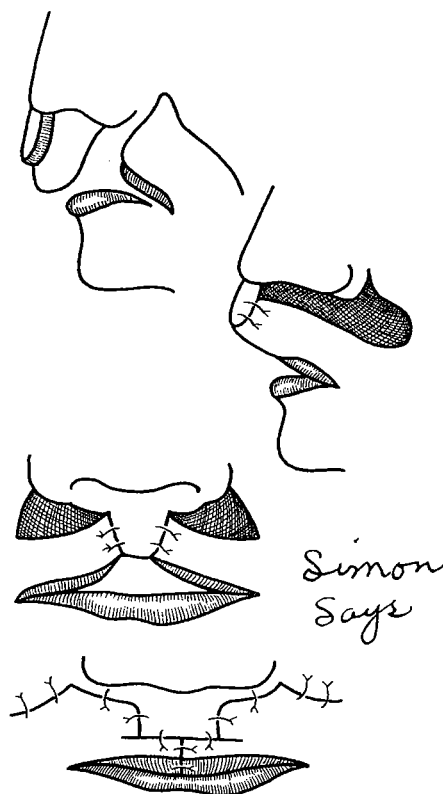


13. *The Adhesion Principle in Bilateral Clefts*

THE so-called lip adhesion procedure in one or two stages is a modified lip closure that will serve to pull back at least to some degree on the projecting premaxilla. According to Leo Clodius of Zurich, Simon in 1864 attached two lateral lip flaps to the prolabium to pull the premaxilla back prior to a definitive lip closure. He made the point that a "vital indication" is not to disturb the premaxilla and its future function even at the disadvantage of a less attractive early lip repair.

In fact, this seems to be the first true adhesion procedure. It was radical, to be sure, but it achieved bilateral attachment, which, after its restraining action had served its purpose, was revised to what Simon probably considered an artistic lip reconstruction.

This adhesion operation by Simon has become the basis of a fascinating controversy. While with Gillies at Rooksdown I worked with Holdsworth who referred to the residual congenital skin bridges with or without muscle that occasionally span the upper part of a lip cleft as "Simonart's" or "Simonartz" bands. Since then I have been guilty of using this term loosely. In 1976 intellectual Tom Gibson, intrigued by these terms, started an intensive search for their origin and found that Gustav Simon in his 1868 book had presented the above operation for bilateral clefts. Gibson then deduced that someone subsequently must have written about repositioning of the premaxilla by creating the transverse bands of "Simon Arzt in Rostock" which is an operative band and not a congenital one. This no doubt solves



Arzt
means
doctor

the name origin of the fictitious Simonart's band which I propose could now be designated *Gibson's bridge*, not by priority but by forced default.

Bengt Johanson of Göteborg, Sweden, a modern Viking with the sagacity and canny confidence to explore unknown waters, in 1958 first used a mucosal flap adhesion to create a bed for his early primary bone grafting. By 1961 he began to realize that primary bone grafting was contraindicated but that the adhesion was possibly having a beneficial molding effect on the maxillary segments.

He and Ohlsson wrote in 1961:



Bengt Johanson

The line of incision along the lip cleft lies inside the skin and mucosal margin, in bilateral cases leaving the prolabium almost intact towards the premaxilla. 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.

By 1968 he had developed his surgical plan, which at one month of age closed the hard palate by a turnover vomerine flap and created a mucosal lip adhesion and at six months closed the soft palate, leaving the definitive lip surgery until a year and a half. This is his routine today, and he feels that the early adhesion restrains the premaxilla to aid in its eventual maxillary alignment.

In 1958 I used an early, simple attachment of lateral vermilion flaps to overlap the prolabium vermilion at one month of age to bring blood supply to the prolabium. This action was in preparation for an early columella lengthening at three months. An incidental dividend of the approach was the partial retropositioning of the projecting premaxilla. In 1963 I created my first preliminary adhesion for the sole purpose of stalling closure of a wide cleft and giving time for maxillary molding. This was a high mucosal flap adhesion, described in 1964 and used selectively ever since.



Peter Randall

In 1965 the precise and diligent Peter Randall of the University of Pennsylvania also proposed the lip adhesion as a preliminary procedure. Then in 1971, once with Hamilton and again with Graham, he presented asymmetrical bilateral clefts in which

only the completely cleft side was subjected to adhesion. This maneuver has the same sound logic as closing the worst side first for it takes a step toward symmetrizing the sides prior to the definitive closure. Finally, in 1972 Randall reported his follow-up feelings in *Plastic and Reconstructive Surgery*:

I am continuing this operation with enthusiasm. . . . It has been particularly useful in handling the protruding premaxilla in cases of complete bilateral clefts, and has made it unnecessary to use external elastic pressure or internal dental appliances in these cases.

He admits in typical honesty:

The operation does add another surgical step. Even though the procedure is carried out in tissue which is ordinarily discarded in the lip repair, some of these patients have presented appreciable scar at the time of the definitive lip repair.

This point I feel is important because actually nothing, and I mean nothing, should be discarded in such clefts, and to add scarring in order to avoid elastic traction is questionable.

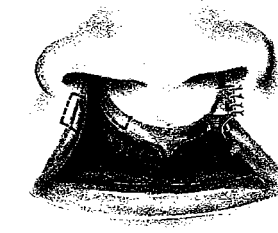
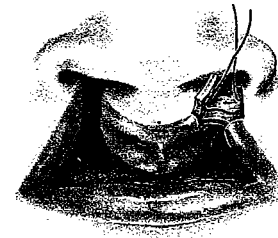
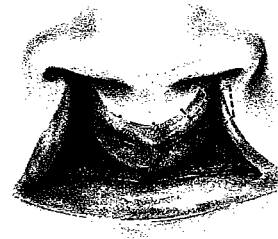
Randall has begun to select his cases, which seems a wiser course:

For several years a lip adhesion was performed in this clinic as a preliminary operation on all children with complete unilateral and bilateral clefts. This does *not* seem to be necessary and is *not* being done at the present time. If the lip segments can be approximated with little difficulty, a lip adhesion is not carried out; the definitive closure is done as the primary operation. . . . In bilateral clefts only one side is done at a time.

But this makes *two* stages out of a simple adhesion procedure!

In 1970 Takahashi of Tokyo incorporated what he referred to as the Randall adhesion for a preliminary procedure in preparation for a forked flap bilateral cleft closure.

Meanwhile Walker, Collito and Meijer continued their C-W (Collito-Walker or close and wait) technique of simple approximation of cleft lip edges with absolutely no undermining. This type of adhesion they claimed always produced a favorable arch form which did not deteriorate. Here is an example that Meijer forwarded in 1974.



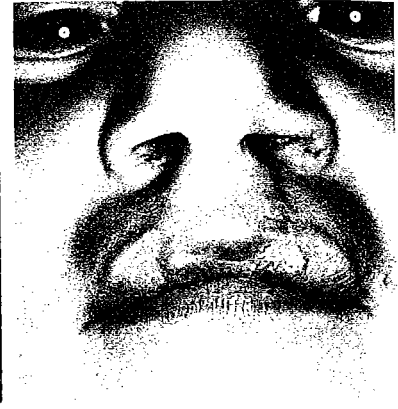
3-19-65



11-5-65



6-1-66



4 years

In 1971 Cronin and Penoff succinctly placed the adhesion procedure in its rightful place:

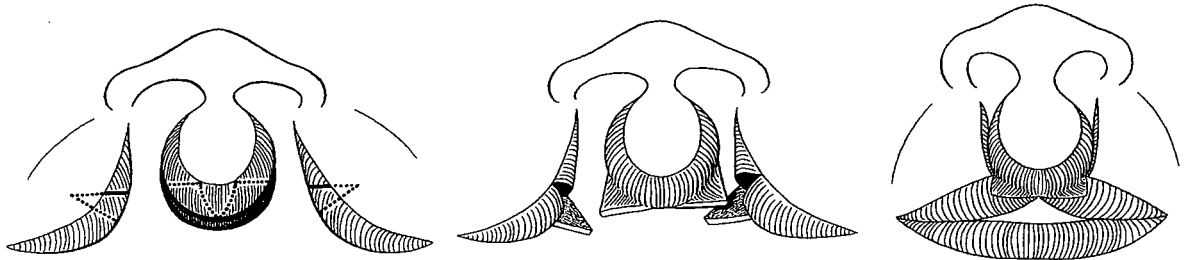
Rather than compromise a definitive lip repair by attempting to close it over a markedly protruding premaxilla, lip adhesions may be performed if adequate progress is not being made with head cap and elastic, or particularly if the infant lives at a distance, it may be done as the initial procedure.



K. Hollmann

A LOW ADHESION

K. Hollmann of the University of Vienna, in an abstract at the 1973 Copenhagen Congress, reported his use of the lip adhesion in 27 bilateral cleft cases. Anxious for early minimal soft tissue approximation because of its growth stimulation and premaxillary molding, he advocated attachment of mucosal flaps from the lateral lip elements to the inferior vermilion of the prolabium at one week of age.



His action and timing are very similar to what I used in my first 1958 adhesion in a bilateral cleft. The only difference is that he tucks the lateral flaps under the prolabium vermilion instead of overlapping them. This is a step I have long since abandoned but it still may have value in the very small prolabium.

A HIGH ADHESION

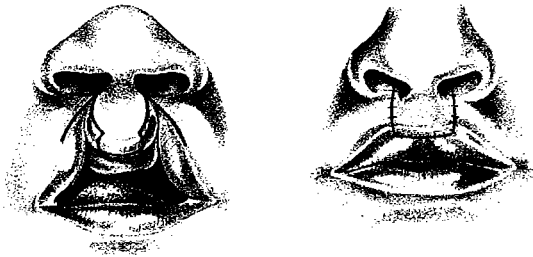
Another type of preliminary adhesion that originated in northern Yugoslavia does not actually involve the lip but accomplishes some of the same goals possibly in a better way. Professor Franc Celesnik, trained by Costecka in Prague and Trauner in Gras, became Director of the Maxillo-Facial Clinic of the Medical Faculty of the University of Ljubljana, Yugoslavia, and organized a cleft palate center there. In 1962 Celesnik described a two-stage procedure for bilateral clefts with the first stage serving as a type of adhesion procedure. In the first operation the bilateral total cleft lip was transformed into a bilateral partial cleft lip by closing the floor of the nose on both sides.



Franc Celesnik



In the second operation three months later, the definitive lip closure was accomplished on both sides by the straight-line Veau technique.



In September 1973, the very month of Professor Celesnik's untimely death, Zvone Zajdela of the Medical Faculty of Ljubljana published "Celesnik Procedure in the Surgical Treatment of Bilateral Complete Clefts" on 55 cases from 1957 to 1972. At four months of age the alveolar clefts were closed bilaterally, the floor of the nostril was formed and the upper fourth of the lip was closed.

The nostrils are fixed on both sides with a muscle flap, taken from the soft tissues of the cheek and fastened through the nasal septum as suggested by

Trauner . . . and Celesnik . . . for the unilateral cleft. The reconstructed floor of the nostril is then covered from the lower side with a flap from the buccal mucosa as described by Burian. . . . The advantages of this method are the following: pressure on the base of the premaxilla is created, repositioning the premaxilla dorsally, the development of the prolabium is better and symmetry on both sides is achieved with greater ease with an orthodontic appliance, shifting of the premaxilla downward is prevented and secondly, the expansion of the lateral segments of the upper jaw is ensured.

Under this regimen, the remaining lip cleft receives a Veau closure at least six months after the first stage, the soft palate is approximated at one year, the columella is lengthened at three to five years and the hard palate is closed at six to seven years.

A CELESNIK DISCIPLE

Another Celesnik contribution to clefts was the training of Yugoslavian Milivoj Perko, who claims to be his oldest student and is now chairman of the team for Congenital Jaw and Face Deformities in Infancy at the Oral Surgery Institute of the University of Zurich. At the International Cleft Palate Congress in Copenhagen in 1973, Perko and Margaret Hotz presented their conclusions after six years of combined management of bilateral clefts. Hotz is a remarkable combination of pediatrician, orthodontist, prosthodontist and speech pathologist. She swings into action first with preoperative orthodontic plates (with or without expansion screws), relying on *natural growth* to get approximation and alignment of the three segments. As Hotz explains:



Margaret Hotz

Extraoral traction is not used to retrude the premaxilla in the first place, but to prevent it from developing any further. Widening of the lateral segments is necessary because of rapid growth of the lower jaw during the first six months. Our aim is to keep the upper arch wide enough to encompass the mandible. Postoperative retention and control are necessary in order to maintain normal jaw relationship.

Then at about six months of age Perko executes a Celesnik I closure of the anterior nasal floors bilaterally. He claims these advantages:

1. Tilting of the premaxilla does not occur, as it will be pushed backward bodily.

2. Growth of the prolabium occurs more rapidly after repair of the nasal floor.

3. The premaxilla will be fixed in a midline position which facilitates symmetric closure of the lip.

Yet during the Copenhagen Congress Perko admitted to me informally that he was beginning to doubt the true value of the early nasal floor adhesion of Celesnik. He expressed some concern over possible effects on growth even with this limited surgery and suggested it might be unnecessary when orthodontic manipulation by his team of Hotz and Wanda Gnoinski was proving to be so effective.

Two to three months after the nasal floor adhesion, Perko carries out what he refers to as Celesnik II stage but which is the definitive lip closure. In Perko's hands it is actually a Veau or Manchester procedure postponing release of the nasal tip. As he says,

I prefer to perform the columella plasty later on, using your forked flap.

It is my "gut" feeling that the adhesion principle in bilateral clefts is a procrastination which is justified only if the surgeon is inexperienced, timid or without orthodontic assistance or when the premaxilla protrudes persistently and in spite of preliminary traction beyond a reasonable point for definitive closure. It seems wiser to manipulate the premaxilla element with prosthodontic and external pressures than to add further operations in preparation for a final lip closure. The adhesion will not put the kind of restraint on the premaxilla that a muscle-to-muscle closure from the lateral elements under the prolabium over the premaxilla can exert. Therefore, if it is relatively easy to get muscle-to-muscle closure, it will be more effective anyway. Bypassing this mincing step saves some tissue and avoids scarring.

A TINY EXCEPTION

When the prolabium is truly *diminutive*, early adhesive attachment of its sides to the lateral lip elements with mucosal flaps may be indicated. They will stretch it into a more than respectable philtrum, thus creating forked flap material and at the same time restraining the premaxilla.



1 month



3 months



8 months

AN ADHESION POLL

Resident John Osborn of Toledo in June 1974 completed a survey of 80 residency training programs in the U.S.A. and Canada. The response to the use of lip adhesions for either unilateral or bilateral clefts was affirmative in 27 (34 percent). The affirmative response is likely to increase over the next few years.