

41. Combining Palate Pushback with Pharyngeal Flap

BURIAN

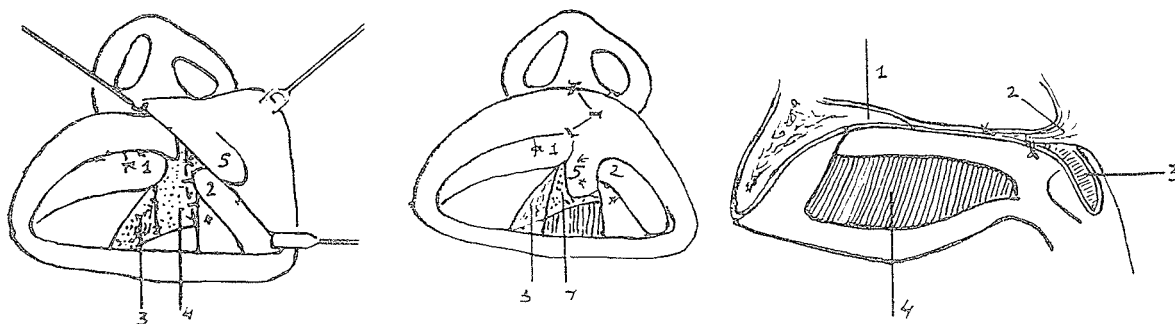
FRANTIŠEK Burian, the tiniest giant in plastic surgery, was short in stature and in his later years, when I knew him, kyphotic. Yet his pioneering courage and fiery spirit made him stand tall among his peers. Because he was walled off from the rest of the world by the Iron Curtain, it was not until the middle 60's that the free world began to discover his depth of experience. Finally allowed to venture from behind the Iron Curtain, he was always accompanied by a communist colleague-watchdog. At the Stockholm Congress he confided on the sly to his free world cronies, including Ivy, two months his senior:



František Burian

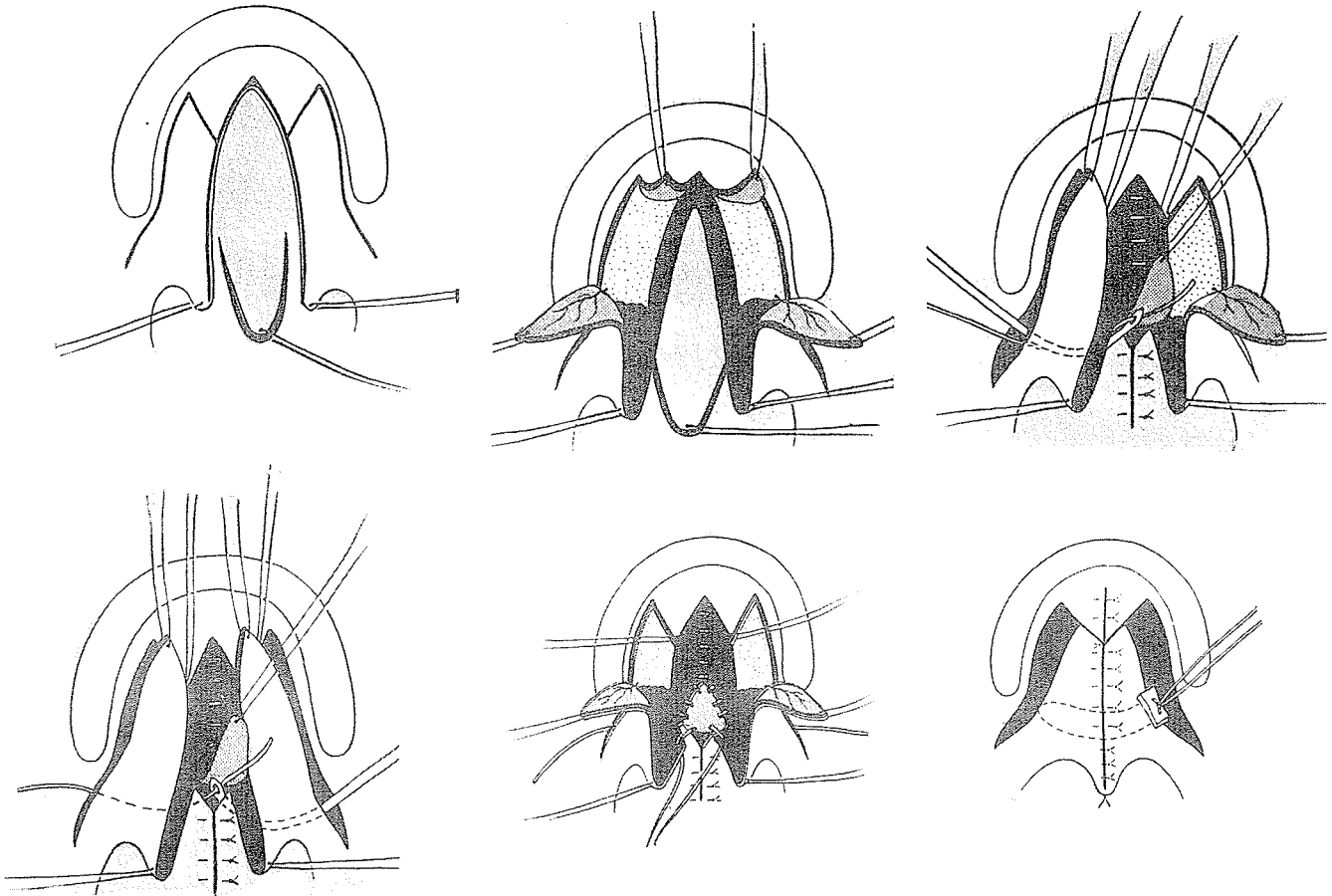
Now for a few days, I have emerged into the sunshine; tomorrow I return to the darkness.

At the Plastic Surgery Clinic in Prague, it was revealed that he had been using primary pharyngeal flaps since 1924. In his 1964 Gillies Memorial Lecture, he reviewed his 40 years of experience:



I postponed lip operations till the fifth month or even later, and palate operations till the fifth year. To prevent the collapse of the arch of maxilla, I interposed a flap of upper lip mucosa between the poles of the bone cleft. The palate operation consists of repositioning using the method of Kilner-Wardill, and fixation of the palate by means of pharyngeal flap with a superior pedicle.

In 1968, in his *Plastic Surgery Atlas (Vol. 2)*, Burian presented improved diagrams of his Veau-Kilner-Wardill repositioning in combination with a superiorly based pharyngeal flap fixation.



Burian was indeed a pioneer of plastic surgery, and Fára has given me this little anecdote which perhaps with some paraphrasing paints his personality with color:

Whenever a fly was discovered in Professor Burian's operating theatre, it invariably caused great shock, stimulating extensive effort to kill it. During one such exciting incident, a simple woman in charge of cleaning spied a fly sitting on Professor Burian's shoulder while he was operating. With enthusiastic eagerness, she leapt up and swatted the fly with a great wet cloth! Everyone stirred uneasily. Burian looked slowly up at his assistant surgeon and asked calmly:

"Malice or stupidity?"

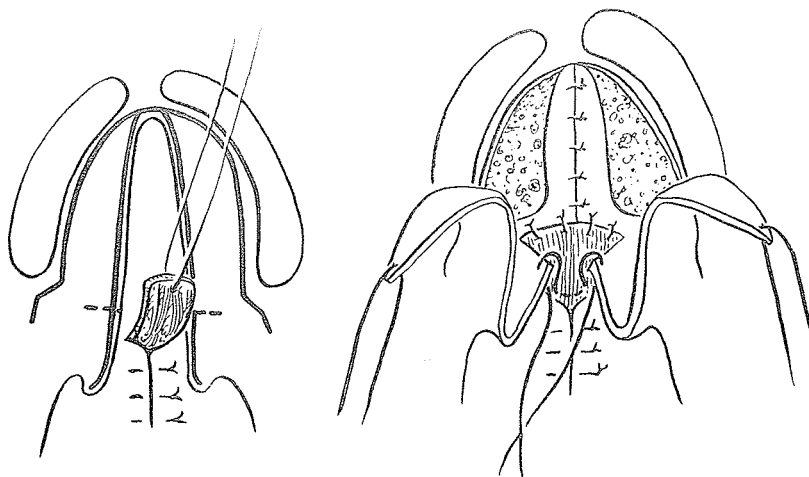
His assistant answered:

"Stupidity."

and the operation continued. Following the surgery, Burian consoled the weeping, apologizing cleaning woman:

"Do not worry, you showed us that you know about antisepsis. After all, the head nurse is responsible and never should have let the fly in in the first place."

In 1970 M. Fára, with E. Sedláčková, O. Klásková, J. Hrivnáková, A. Chmelová and I. Šupáček, reported that Burian, at the Prague clinic, had done his first primary pharyngofixation 46 years before and had been so impressed with the speech results and the reduced need for corrective operations that this procedure became routine. Of 2,689 primary palate operations, 2,073 were combined pharyngofixation. The technique involved a Kilner-Wardill type of V-Y repositioning of the palate with the release in the nasal mucosa just posterior to the edge of the hard palate. Into the nasal defect the tip of a superiorly based, sometimes tubed, pharyngeal flap was sutured partially to line the nasal side and to fix the pushback with the pharyngeal flap.



Fára noted the two instances in which the pharyngofixation was not used:

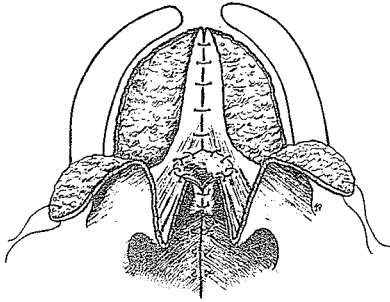
- (1) where the morphological and functional conditions are exceptionally favorable, and perfect velopharyngeal closure after simple retroposition can be expected;
- (2) in mentally defective children, where speech has no social importance.

Fára says that the pharyngeal flap has been routine for nasal lining since 1955

Fára concluded:

The follow-up of our patients has shown that speech results, however great the retroposition, are much better in patients:

(1) with (rather than without) pharyngofixation, (2) with primary (rather than secondary) pharyngofixation, and (3) with upper-based (rather than lower-based) flaps.



In 1972 Miroslav Fára with František Vele again presented the adjunct of tubing the superiorly based pharyngeal flap using its distal, opened portion, not unlike a blooming morning glory, for attachment to the anterior nasal side of the soft palate. They concluded that the quicker healing and reducing seen after

tubing or closing the proximal aspect of the superiorly-based flap assists somewhat in preservation of the muscle fibers.

It was noted that, because the Czech language demands a high standard of palatopharyngeal closure, this flap contributes considerably to the good results of this cleft palate therapy.

MARINO



Hector Marino

The intellectual, articulate and enthusiastic Hector Marino of Buenos Aires, Argentina, in 1942 was the first to write a comprehensive book on cleft lip and palate in the Spanish language. In 1949 he presented his idea of combining the pushback operation with the standard pharyngeal flap and published it in the *Bulletin of the Argentine Academy of Surgery*. In 1972 he wrote:

I recall how I came to perform the first case. In March, 1947, I had been lecturing in Brazil and decided to visit the beautiful old town of Ouro Preto which lies near Belo Horizonte. Upon arrival, I went to visit the professor of otolaryngology at the University and, upon handing him my card, found that he already knew me. It happened that he had a niece with a cleft palate who had been operated a number of times and without much success. He informed me that this niece was about to leave the next day for Buenos Aires to consult a Dr. Marino. You can imagine what followed: an immediate visit with the patient and a splendid stay in Belo Horizonte. Well, the poor girl was a sorry mess, one of those scarred palates with a long, long velopharyngeal gap. Anyway, she came to Buenos Aires and I combined the pushback operation with an inferiorly-based pharyngeal flap. The operation was a complete anatomic and functional success (perhaps beginner's luck?!).

I had shelved the idea until one day in December, 1947, Drs. Gustav Aufricht and Jerome Webster, who had been to the IV Latin American Congress held in Montevideo, visited my office. I happened to see my Brazilian girl in the waiting room and showed her to my friends. Their reaction was most rewarding, as they admitted never having seen this combination done before. Coming from such a learned man as J. P. W., I realized the idea had some value and decided to publish it. But as *nihil novum sub sole*, I must say that, later on, I met in Spain a famous pediatric surgeon, Dr. Rovilarta of Barcelona, who I believe had the same idea more or less at the same time as myself.

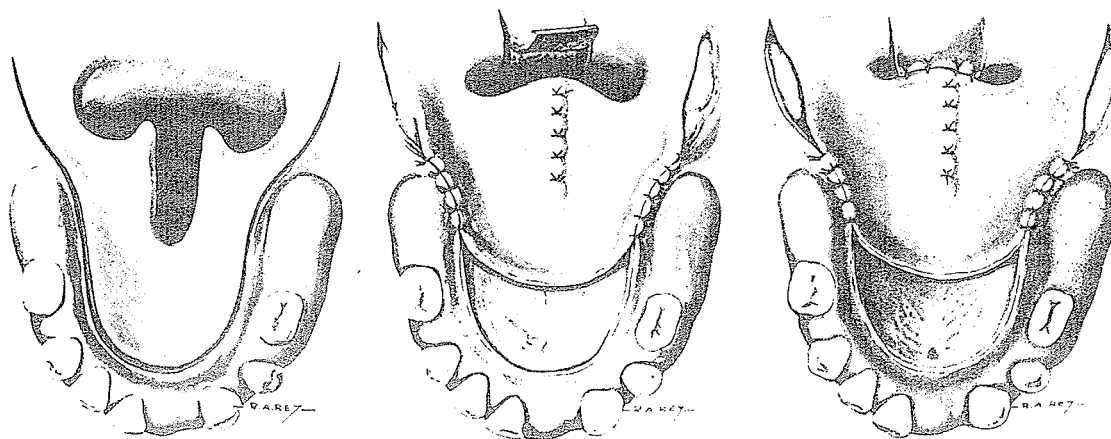
Then one day, during the First Congress of Plastic Surgery (Stockholm, 1955), somebody spoke at length on this procedure and claimed priority for it. To everyone's surprise, Jerome Webster asked to come to the podium and, pointing to me, said that he believed there was the originator of the procedure and went on to tell about his visit to my office in Buenos Aires.

Marino did not use his pharyngeal flap for nasal lining lengthening

In 1950, in the *British Journal of Plastic Surgery*, Marino, with Renato Segre, advocated pharyngostaphyline fixation as a complement to the pushback operation. A Dorrance-type pushback with the nasal surface of the mucoperiosteum lined with a skin graft was held in backward position by the attachment of a thick, inferiorly based pharyngeal flap to the sutured posterior border of the velum. The union was filled with two layers of sutures. The authors noted:

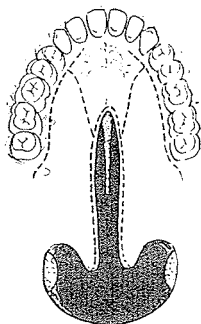
The procedure guarantees against the loss of some of the backward displacement of very short palates, which happens quite often even with a correctly executed push-back operation.

They did not hesitate to dispense with this adjunct, if advisable:

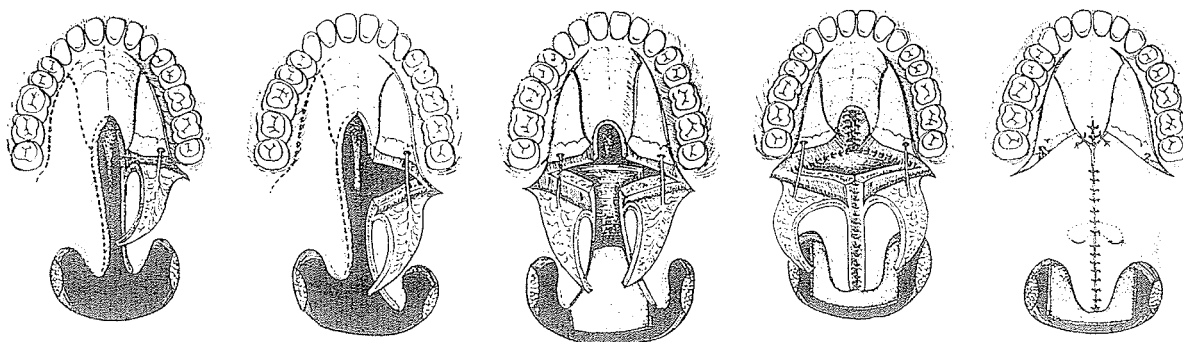


We have observed in some cases that the results of re-education reached a not superable limit which was far from ideal. This was attributed to the rigidity imposed on the velum by the pharyngo-staphyline fixation. To go beyond this limit, it is felt that the union of the velum to the pharyngeal wall must be divided as soon as the anchoring effect on the push-back is no longer needed, and the reabsorption of scar tissue ends. This simple procedure is performed within two or three months of the attachment to the pharyngeal wall.

SANVENERO-ROSSELLI



In 1954 Sanvenero-Rosselli, at the First Hamburg Cleft Palate Symposium, proposed an extended use of his superiorly based flap to fill the nasal defect, following a releasing division of the nasal mucosa from the posterior edge of the hard palate in the primary operation, as presented by Honig in these sketches at the Second Hamburg Symposium:



According to C. A. Honig of Utrecht, the Netherlands, this technique of V-Y repositioning, in combination with division of the nasal mucosa along the edge of the hard palate and the filling of this nasal defect with a superiorly based pharyngeal flap was not published.

In his 1963 thesis "On Pharyngoplasty" Honig summarized at the 1964 Hamburg Symposium:

We have investigated the functional and anatomical results obtained by this operation in 48 patients. All of these had previously undergone one or more operations for cleft-palate and all had unintelligible speech and defective closure mechanism, as observed through the open mouth prior to pharyngoplasty.

The competence of the reconstructed velopharyngeal closure mechanism was judged from contrast X-ray pharyngograms and from function tests.

A sufficient closure mechanism was found in 42 of the 48 cases . . . [and] the speech . . . was assessed [as] good in 20, satisfactory in 12, poor in 13 and bad in 3.

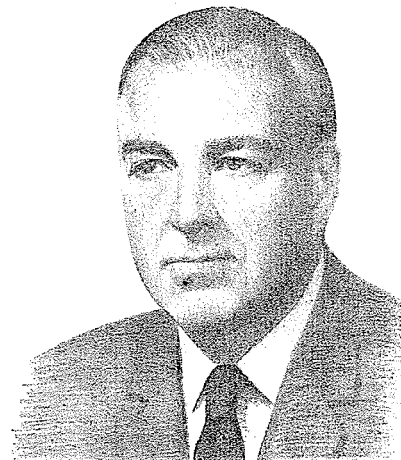
This operation seems to be more extensive than the short releases and the narrower flap used by Burian, who also indeed used the pharyngeal flap for at least some nasal lining.

First published use of pharyngeal flap for lengthening nasal lining

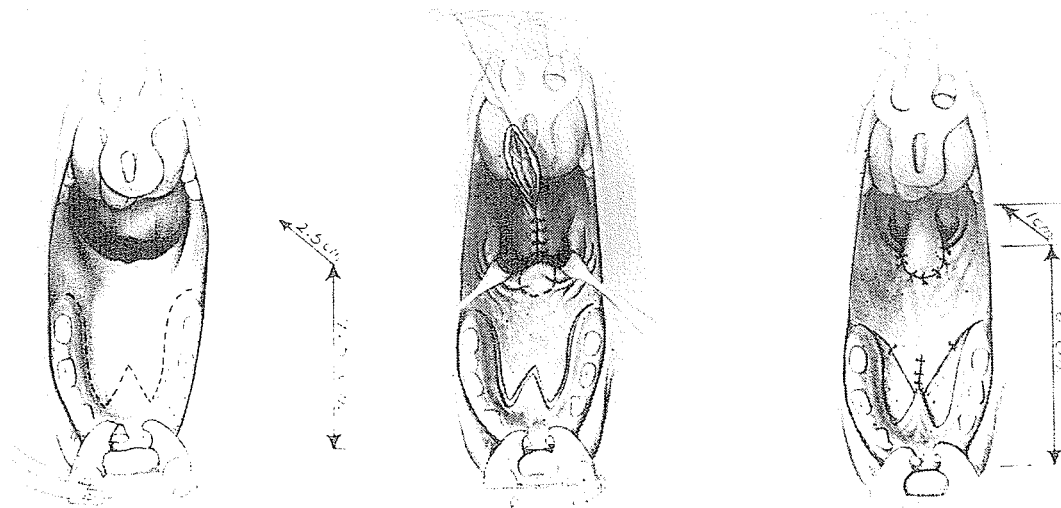
CONWAY

In 1951 Herbert Conway at Cornell Medical Center combined the pharyngeal flap with V-Y pushback operation. In 1955, at the Stockholm Congress, Conway, with Stark, elaborated on the importance of the inferiorly based flap in secondary cleft palate correction.

Conway had done some boxing in his youth and remained a dangerous infighter all his life. I enjoyed him and his con-artistry, once accusing him of being a crafty "old pro" with his ability "to hang on and hook" in close. He admitted to this attribute, and the drawings presented by him and Stark in the Stockholm 1957 Congress *Transactions* were examples of this art.



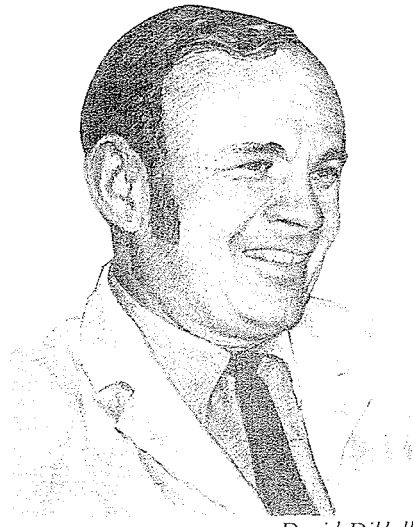
Herbert Conway



In fine tone drawings, they showed the original relationships with a velopharyngeal distance of 2.5 cm. Then, following a V-Y retropositioning aided by the Limberg osteotomy (which Conway

as if by magic.

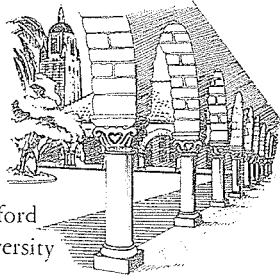
avored) and the attachment at the uvula of an inferiorly based pharyngeal flap, they presented the velopharyngeal distance reduced to 1 cm.



David Dibbell

CHASE AND OTHERS

The same clever, two-in-one method of using the pharyngeal flap, both as a retracting suspension and as a mucosal cover to the raw nasal area, was developed independently by Robert A. Chase, professor of surgery, Stanford University, and reported in 1965 by Dibbell, Laub, Jobe and Chase. In 1976 I wrote the first author, David G. Dibbell, now at the University of Wisconsin, Madison, about this work and about his former chief. He answered:



Stanford University

I was a very junior member of the team at the time the paper was published. . . . One thing that does come to mind about Chase: after he was made the Chairman of the Department of Surgery at Stanford University, when formally asked the nature of his profession, he would respond, not that he was a plastic surgeon or a surgeon, but that he was a medical educator. Obviously, his history from that time on has demonstrated that this objective has provided him with his main driving force.

Chase would make a great University President

In 1977 Bob Chase was requested to reminisce about this pharyngeal work. He wrote:

In surgery, as in life, a thorough familiarity with principles is the key. Imagination and curiosity coupled with a knowledge of principles has been the cause for turbulence between surgeons on the question—who should be credited with a new idea, operation, or technical wrinkle? It should be no surprise that individuals simultaneously or sequentially come up with the same ideas independently since most sensible ideas are based on fundamental principles.

For years there has been discussion about the problem of scar contraction of the raw palate surface as a cause for restriction of the palate and return to its forward position after pushback surgery. It seemed sensible to suggest that one strategy for resurfacing the raw area on the nasal surface, while at the same time taking advantage of the other possible virtues of the pharyngeal flap, was to use this pedicle flap to cover the nasal raw surface. We tried it and found it a useful technique.

On preparing material for publication in the customary detailed literature search, I came across a little-referred-to thesis by C. A. Honig presented in 1963. Honig rightly credited Sanvenero-Rosselli with having demonstrated



Robert Chase

the use of the superiorly-based pharyngeal flap on the nasal side of the soft palate at a meeting in 1954. Honig's modification of the Sanvenero-Rosselli procedure is very similar to that described in our paper of 1965.

Far from being disappointed or embarrassed, I was delighted to see that the principle made sense to others and that their successes had borne out the good sense of application of those principles. It is not whose idea it is that is important but the fact of the idea itself that counts.

It comes down to fundamentals, and it does not take an intellectual giant to know that to be true. Take the good sense of Phil Esposito of hockey fame who, it is said, exhibited that sense in a recent T.V. interview. The interviewer, growing impatient with the general low key responsiveness of Esposito, said in desperation as the interview was drawing to a close,

"Come on, Phil, tell us what makes you such a great player?"

"Did your father motivate you as a child?"

"Was your uncle a great hockey player?"

"Do you do it for the overall team spirit and affection for your team mates?"

Esposito's answer, a classic putdown to this barrage of suggestions as to what makes him such a great hockey player, demonstrated his belief in fundamentals.

Said Esposito, "It helps a lot if you know how to skate."

In 1971, with Richard Yules, Chase re-endorsed this principle for secondary correction of palatopharyngeal incompetence and added:

This "secondary operative procedure" may provide an excellent primary procedure in select cases; if so, there is no contraindication to employing it before the child acquires poor speech habits.

Yules and Chase justified their approach with good reasoning:

An effective method is simply to attach the pharyngeal flap to the raw nasal surface, thereby preventing severe scar contracture both in the lengthened velum and in the free pharyngeal flap.

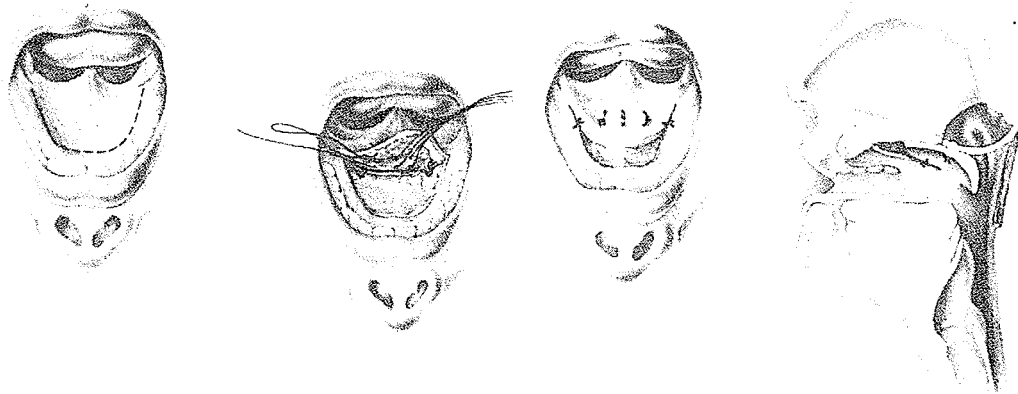
Chase prefers the more physiological superiorly based flap, concurring with the 1959 findings of Broadbent and Swinyard which demonstrated dynamism and electromyographic activity in these flaps. Thus Chase argued:

The philosophy on which we predicate our view is that the pharyngeal flap offers an opportunity to do more than anatomically occlude the velopharyngeal space; it may also provide help in elevating the soft palate for more effective closure.

*It would
be nice*

Chase and Yules use a Dorrance or V-Y pushback, performing an osteotomy on the posterior wall of the posterior palatine foramen to facilitate repositioning. With its base as cephalad as the atlas promontory, the pharyngeal flap is cut as wide as possible without impinging on the Eustachian tube orifices and long enough to reach the front of the cleft and line the raw nasal area. As they warned:

Care must be exercised to avoid injury to the ascending palatine arteries coursing on the posterior side of the pharyngeal wall approximately 1 cm. to either side of the median raphe.



They make no issue about primary closure of the pharyngeal donor area:

Some surgeons leave the defect unrepaired and allow it to heal by secondary intention, while others suture the margin of the defect together. Either method results in narrowing the palatopharyngeal isthmus, thus reducing the nasaopharyngeal port.

In 1973 in the *British Journal of Plastic Surgery* Richard Jobe of Stanford University reported adjuncts to facilitate combining a pharyngeal flap with a palate pushback. He advocated determining the length of the pharyngeal flap by measuring the distance from the posterior edge of the hard palate to the posterior pharyngeal wall. Then, after injection of 0.5% lignocaine with 1:200,000 adrenalin in planned operative sites, he advised elevating the pharyngeal flap in a dry field before doing the palate pushback. He also described another trick:



Richard Jobe

It has been our practice to place a loose suture through the tip of the pharyngeal flap. When the palate dissection is complete, a small Robinson

urethral catheter is passed orally into the nasopharynx through the nasal defect of the pushback. The suture in the flap is then threaded through the holes of the catheter and the catheter is withdrawn. Traction on the suture then brings the flap on to the nasal surface of the palate, where it is secured.



Jobe, anxious to set the record straight, wrote in 1976:

One day in the late 1960's, while I was doing a pharyngeal flap pushback operation of the type invented by Sanvenero-Rosselli and popularized by us at Stanford with Douglas Ousterhout, I was deriding a recent resident graduate of Stanford, who had had a one-page paper in *Plastic and Reconstructive Surgery* of a technique clearly stolen from one of our consultants without reference. During this conversation and operation, Ousterhout suggested to me the use of a catheter to pull a pharyngeal flap around the backside of the released palate to simplify considerably this procedure, when the palate is not divided.

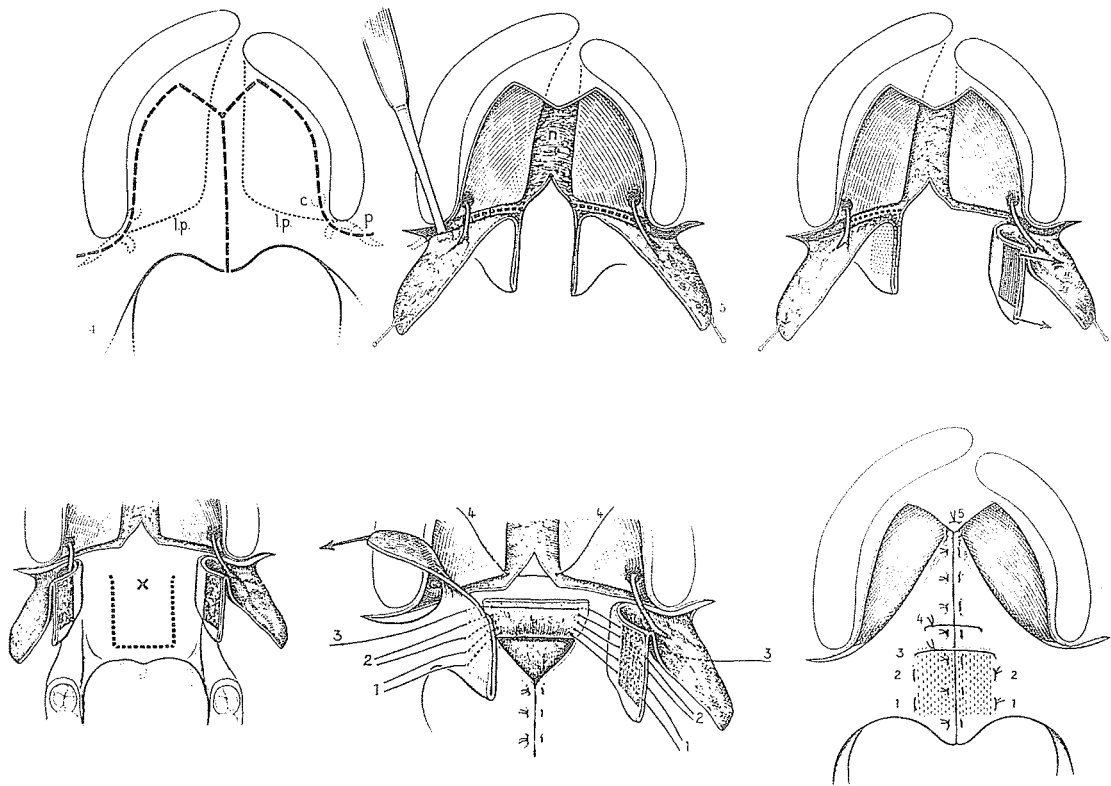
Daisey Stilwell illustrated this neat trick and it was accepted by the *British Journal of Plastic Surgery*, but I forgot about Ousterhout's involvement. When the paper came out, Ousterhout was quick to razz me about stealing his idea precisely at the time I was accusing another. I have apologized to Doug but would be more than delighted if this tale and my apology could be exposed.

E. N. Kaplan of Stanford University, in a 1973 follow-up clinical report, noted that an additional 125 combined pushback and pharyngeal flap cases had been performed. He reported an improvement in all cases, the improvement closely related with the adequacy of velar mobility. No patient was made worse, and those least improved had unilateral or bilateral complete palate paralysis. Kaplan noted:

We believe that the palate pushback enhances the capabilities of a mobile palate by positioning the palate closer to the pharyngeal wall; also, the pushback frees the levator muscles from their abnormal insertions on the unyielding surface of the hard palate. The pharyngeal flap lines the raw nasal surface of the pushed back palate, thus preventing wound contracture that would pull the soft palate forward toward its preoperative position.

In 1977 R. Dijkstra of Zwolle gave his arguments in favor of a superiorly based flap to fill the nasal defect in a pushback. He cited the expendable pharyngeal wall donor area, ease of surgery and narrowing of the pharynx.

J. L. Grignon and G. Freyss of Paris in *Annales d'Oto-Laryngologie et de Chirurgie Cervico-Faciale*, 1969, presented their method of attaching a pharyngeal flap to the velum during a V-Y pushback.



Roland Minami of Greenbrae, California, threw a little sobering light on the lack of omnipotence of this or any palate procedure when he wrote in 1978:

My introduction to cleft palate surgery began during my first year of residency at Stanford, when an enthusiastic Chief Resident presented a girl

with severe hypernasal speech. She was 17 years old, mentally slow, had a sister and mother with hypernasal speech, and was suspected of mimicking them. "How are you, Miss Smith?" asked the Chief Resident. "Phhhhhine!" replied the girl. The next day she had a palate pushback and pharyngeal flap which was then our standard operation for velopharyngeal incompetence. Sometime later, we were showing off examples of our plastic surgical prowess to the Chief of Surgery. Among them was the not-too-bright girl who had had the pushback and flap. The Chief Resident proudly introduced the patient and described her treatment. "How are you doing?" he asked brightly. "Phhhhhine!" snorted the girl, just as she had done preoperatively.

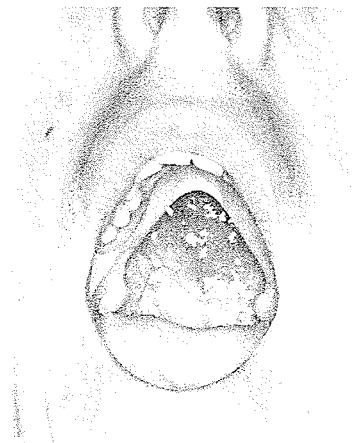
At the time, we found this episode amusing in a morbid sort of way. However, I am sure that this scene has been repeated many times in plastic surgery centers all over the world, and it is not funny. It does serve to illustrate the insufficiently stressed fact that there are a multitude of factors unrelated to the palate which influence the choice of operation (or not to operate!) and the results that may be expected from such treatment. All hypernasal patients are not alike, and should not be approached in a standard fashion.

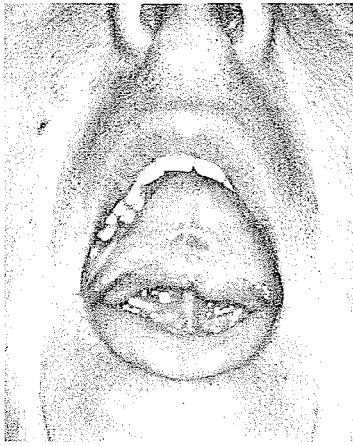
T TAILORING OF THE FLAP

The Burian-Fára-Rosselli-Honig-Chase two-in-one principle has great appeal to the Scots strain in my ancestry. Yet this same stingy streak nudged me to save the waste of a long, wide flap by custom-fitting the design for the specific defect.

It so happened, one day in November of 1968, that three plastic VIP's, Jack Penn of Johannesburg, Jan Strombeck of Stockholm and Ross Musgrave of Pittsburgh, were crisscrossing at Miami International Airport, and the delay in flights allowed them a little time in our operating room at Jackson Memorial Hospital. A wide, unoperated adult cleft palate was scheduled, and the mouth was large enough for the "Big Three" to see an island flap being inset. As I lifted the mucoperiosteal flap on the first side, a meager, string-like anomalous structure represented the neurovascular bundle. This was dismissed as a possible carrier for the island.

An advantage of this method [I sighed, with beads of perspiration appearing] is that, should anything happen to one side, there is always the second side to supply the island.





The second side was like the first, and by this time I was sweating profusely, having already divided the soft from the hard palate. During an embarrassing silence, we all stared through the large elliptical hole in the nasal lining.

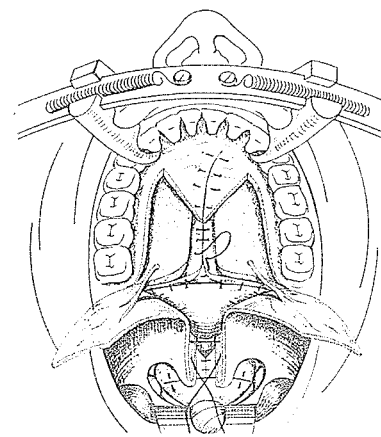
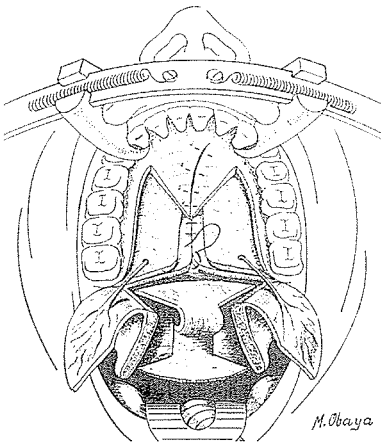
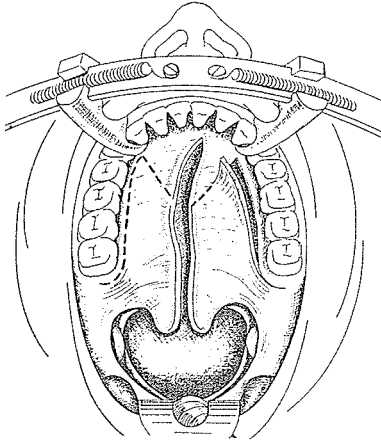
In desperation, it occurred to me that a pharyngeal flap based superiorly and of Chase's length could be shaped as a T and used to line accurately the entire nasal pushback defect as well as the anterior two-thirds of the soft palate cleft. The procedure went well, and Penn, at the end, allowed that "necessity is the mother of invention."

In spite of the width of the cleft, there was marked improvement in speech which could have been even more pronounced had the patient, who is a police radio operator, been willing to take time off from tracking crooks for speech therapy.

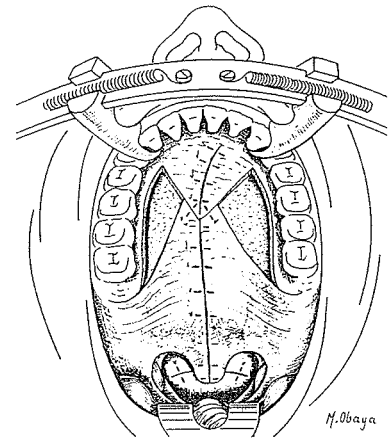
The method was published in *Plastic and Reconstructive Surgery* in 1970 with the accompanying diagrams.

Another T pharyngeal flap was used in a secondary lengthening of an operated complete cleft in a 13-year-old girl with nasal speech; she had a very short, scarred palate riddled with fistulae, rendering an island flap impractical. Five months after surgery, her speech had improved to such a degree that she won a school prize in speech and was given the lead in her class play. She can blow up a balloon for the first time, and her grimaces have almost completely disappeared.

This T pharyngeal flap has been used four times. The need is rare, but surgeons embracing this principle might find it of value. It allows a tailored closure of the nasal pushback defect at the same time it provides a suspensory synechia to maintain length. It takes tissue from outside the palate, and the eventual reduction in the pharyngeal vault is an extra advantage in speech. The base of the flap can be used in the nasal closure of the actual soft palate when this cleft is wide and requires extra tissue. The blood supply of the posterior pharyngeal wall, supplied by the ascending and descending pharyngeal vessels, is adequate to nourish the T. The prongs of the T need not be exactly transverse but can be directed obliquely to enhance the potential blood supply. Or, as Chase suggested when the T was offered to him: "Can we split the end of the flap?" The base should be of generous width and,

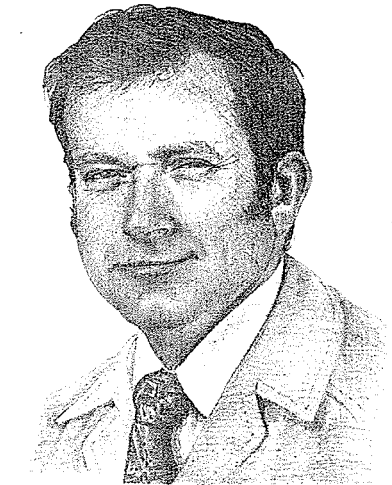


with the base placed superiorly, the T must be taken from well down on the pharyngeal wall to provide adequate flap length to reach the anterior defect at the posterior edge of the hard palate. This procedure calls for a bit more surgery than an island flap or even a routine pharyngeal flap, but when indicated, it can help to solve a difficult problem. It is available as a primary or a secondary procedure.



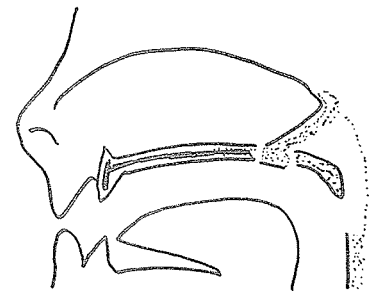
FOR EXTRAORAL MUCOSA

Australian Anthony J. Emmett, after training in plastic surgery with two Hawke Bay New Zealanders working in England, eventually returned to Brisbane. Here he is involved in various transplantations and modifications. On his farm he successfully transplanted 60 olive trees out of 400, and he is raising Braford cattle, a crossbreed of Brahma and Hereford, originally developed to flourish in Florida heat by my friends, the Alto Adams of Fort Pierce. In palate surgery he has modified the standard pharyngeal flap by taking a full-thickness flap of mucosa and muscle with a high, superior base and cutting it 2 to 3 cm. wide and 6 to 8 cm. long. The distal 1 to 2 cm. retains its mucosa while the next 5 to 6 mm. of the pedicle is carefully denuded, presenting a mucosal island with a raw neck which is passed through a transverse split in the palate and used for additional mucosa on the oral side. As he wrote in 1977:



Anthony Emmett

This operation is indicated for the palate which is short and scarred where it is desired to put a flap of elastic pharyngeal mucosa into the oral surface of the palate at the junction of the hard and soft palate. . . . The flap can be brought through the palate by simply having divided the palate transversely to allow the soft palate to fall back. Generally we prefer to split the palate as well as divide it transversely.



COMPARISON OF PHARYNGEAL FLAP INSERTIONS WITH OR WITHOUT PUSHBACK

In 1977 at the Third International Cleft Palate Congress in Toronto, Michael Lewin, with Daniller, Croft and Shprintzen of

Montefiore Hospital, the Bronx, reported comparison of three different insertions of wide, superiorly based pharyngeal flaps in 100 patients observed over six months postoperatively with multiview videofluoroscopy and nasopharyngoscopy.

1. The U-shaped pushback (Dorrance) includes transverse division of the palatal aponeurosis and nasal mucosa with insertion of the distal one-fourth of a wide pharyngeal flap to line the nasal side (Sanvenero-Rosselli, Honig, Chase). The rest of the unlined pedicle suspended in the nasopharynx contracts into a tube.

2. The sandwich attachment splits the posterior edge of the soft palate horizontally above the uvula and extends laterally along the posterior pillars. Into this pocket is fitted a short, wide pharyngeal flap including its mucosa (Webster). Because of the width of attachment, the flap does not curl but contracts in an anteroposterior direction.

3. The soft palate is split three-fourths of its length. The nasal mucosa and the aponeurosis are divided from the hard palate, and the levator muscle is repositioned and sutured (Braithwaite). The pharyngeal flap is introduced into the longitudinal split on the nasal side with the uvula being sutured to the base of the pharyngeal flap to provide lining.

They summarized:

The closure of lateral gutters on phonation, which is essential for elimination of hypernasality depends primarily on the amplitude of LPW [lateral pharyngeal wall] movement. The latter is an important factor in predicting the success of the operation.

The unlined pharyngeal flap, combined with pushback [1], provides the least obturation. The sandwich flap [2] is highly effective but tends to over-obturate the nasopharynx and results in a high incidence of hyponasality. The pharyngeal flap, combined with splitting of the palate and recession of the velar musculature [3], is suited for a majority of patients with VPI. Its failures seem to be limited to patients with absence of LPW movement.

Donor area

The pharyngeal flaps in this comparative study took the entire

width of the posterior pharyngeal wall, and the donor area was closed except for "a small dime-shaped raw area" at the flap base. Primary closure was considered to reduce morbidity and minimize descent of the flap base by contracture. Lewin and his colleagues admitted, however:

Examining patients a few months after operation, we found no visible difference between those where the wound healed by contracture and those closed by suturing.