

24. *Palate Extension by Union of the Posterior Pillars*

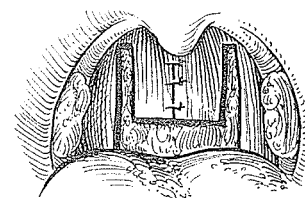
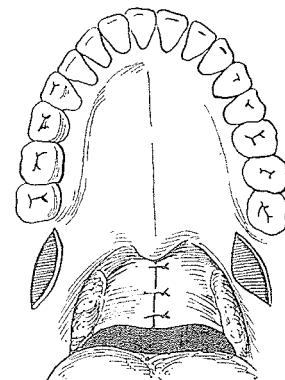
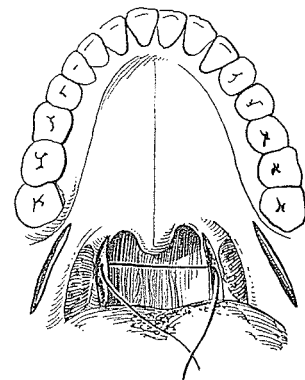
GUSTAV Passavant of Frankfurt, the father of operations designed to reduce the velopharyngeal aperture, in 1865 described a procedure which united the palatopharyngeal muscles in the posterior pillars of the tonsils for 2 cm. in the midline to effect the extension of the posterior velum back toward the pharyngeal wall. The upper portion of the mesial border of each posterior pillar was denuded and united by suture after lateral longitudinal incisions had been made in the anterior pillars. Speech was only slightly improved as nasal intonation persisted, as did Passavant in his search for velopharyngeal competence.

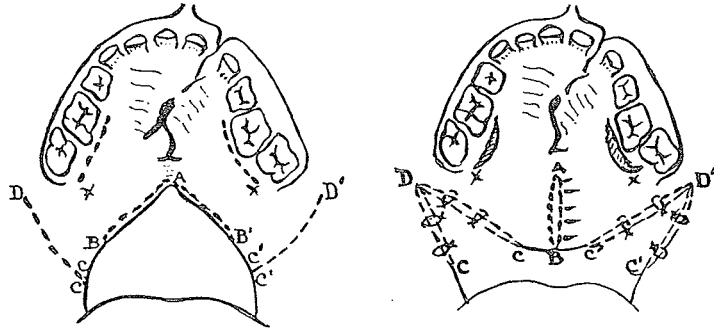
PILLARS CUT AS FLAPS

In 1871 William Whitehead of New York attempted to lengthen the palate by adding to it two lateral flaps dissected from the posterior pillars and the lateral walls of the pharynx. Probably with beads of perspiration on his brow, he explained:

I endeavored by a difficult and laborious dissection of the palatopharyngeus muscles, to form flaps with which to lengthen the velum palati. Having seized, with a pair of forceps, the palatopharyngeus on the right side very low down, I divided this muscle and a part of the mucous membrane of the prevertebral region, and dissected upward with a pair of curved scissors a flap more than sufficient to form, with a corresponding one on the opposite side, a long and dependent curtain to the new velum.

In 1897 Senn reported using flaps from the tonsillar region to reconstruct the velum in a case in which the soft palate was





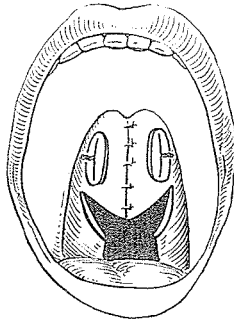
absent. In 1909 Brandt mentioned using flaps from the region of the tonsils to close defects in the palate in children. In 1922 J. E. Thompson used oblique side cuts C-D and C'-D' through palatoglossal and palatopharyngeal muscles to allow medial approximation of the remaining velum. He reported:

The reconstructed palate was firm and strong, although somewhat short and stubby.



Hippolyte Morestin

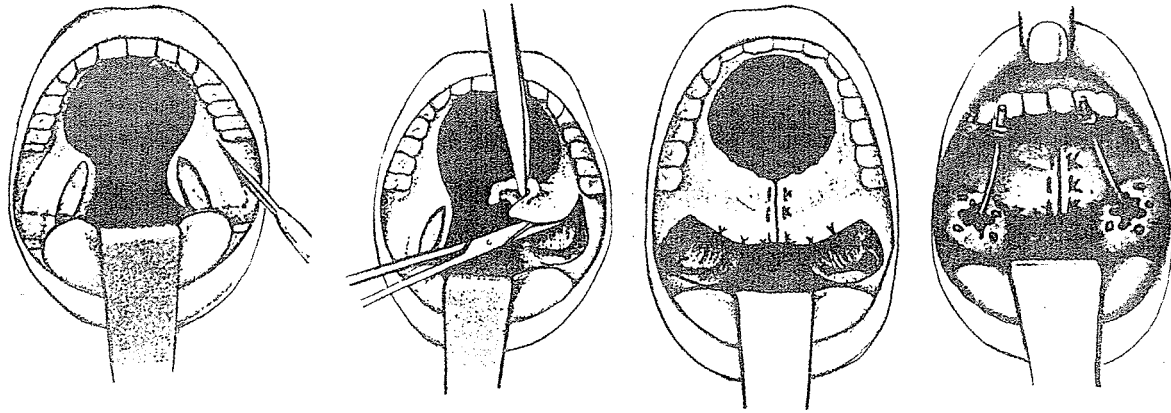
In 1910 Hyppolite Morestin of Paris, the octoroon from Martinique with a volatility of kitten-to-tiger temperament, lengthened the velum in a girl with defective speech after successful closure of her palate cleft. He accomplished this feat by suturing the posterior pillars of the fauces in the midline after incising each side on the slant from "without and upward to within and inward." He reported a satisfactory result.



In 1923 Makuen of Philadelphia incised through two-thirds of the palatopharyngeus muscle on each side, approximated their medial edges and used silver wire over lead plates to hold the closure against tension.

RADICAL LATERAL FLAPS

In 1925 flamboyant Eastman Sheehan of New York admitted to considerable loss of tissue in cleft palate failures following surgery. He argued that the palate muscles had blended with neighboring tissues and set out to find a way to use them. In a total cleft he designed bilateral flaps based anterolaterally, taking tissue from the pillars of the fauces, the tonsils and part of the lateral wall of the pharynx. He noted:



The upper point of the incision is well above the superior horizontal line of the faucial tonsil. The incision is carried well toward the cheek, then directly downward across the tonsil to include its upper two thirds, then backward over the posterior pillar, to include about a quarter of an inch of the pharyngeal membrane, then up to a level with the original point of incision. . . . The muscles, membrane and tonsillar tissue within these borders is then deeply separated, by the use of a long semicircular scissors with blunt ends.

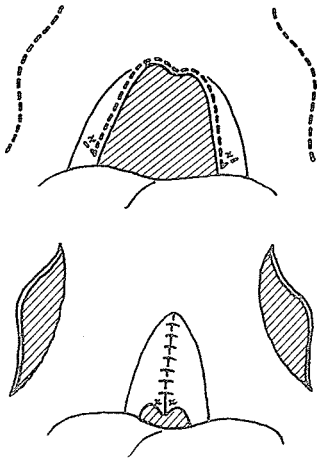
The two flaps were united in the midline, and the raw area in the faucial regions was lined with Thiersch epithelial inlay grafts shaved off the inner surface of the thigh. A dental plate with two bars carrying molded stents was used to maintain the grafts. The residual anterior hole in the hard palate was later filled with an obturator.

It is interesting that this procedure is a reverse of the Gillies-Fry operation using skin grafts with a stent and ending up with an obturator in the hard palate hole. Sheehan had spent time at Sidcup and no doubt was influenced by Gillies' work and teaching. He and Gillies became "friends," and this is what Gillies once told me over a cup of tea:

When the Nuffield Professorship in Plastic Surgery at Oxford University was under consideration, I was most anxious for the position, feeling it would be especially satisfying after having graduated from Cambridge. Eastman Sheehan had charmed Lord Nuffield sufficiently to become a strong contender and eventually he and I competed to a stand-off and my good friend Tommy Kilner became the Nuffield Professor.

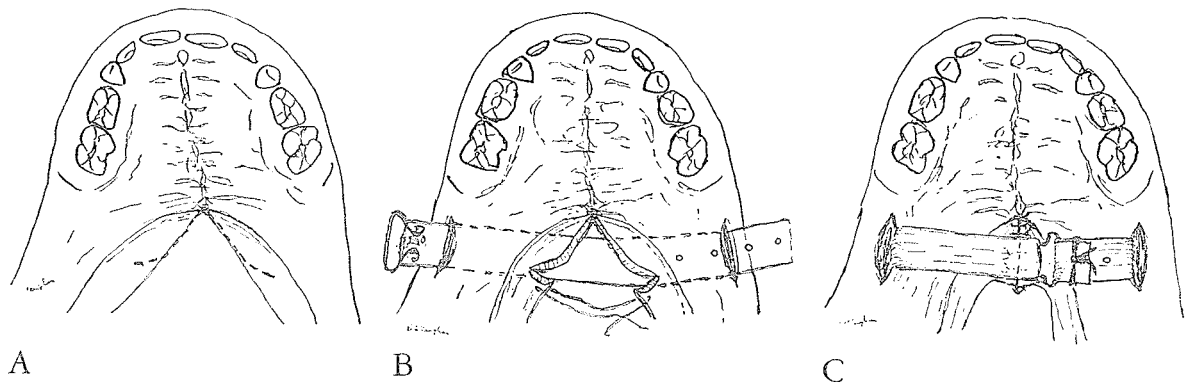
Today Sir Harold Gillies' portrait hangs beside that of Lord Nuffield at the Royal College of Surgeons, London.

JOINING THE POSTERIOR PILLARS



In 1912 Helbing, using a modification of Passavant's principle, united the posterior pillars to increase the size of the velum by denuding the mesial border of the palatopharyngeus arch and extending this denudation over an intervening portion of the free border of the velum. An incision was then made on each side dividing the posterior pillars at the little "x." The denuded edges were united in the midline by suture aided by lateral relaxing incisions.

In 1944 Harold S. Vaughan of New York Post-Graduate Medical School resurrected Passavant's principle and published his modification. His logic was impressive:



It must be understood that the palatopharyngei cannot be used to obtain sufficient horizontal elongation of the soft palate to permit elevation against the pharyngeal wall, as these muscles pass down the lateral wall of the pharynx somewhat posteriorly; they can, however, be made to move closer to the posterior pharyngeal wall and, by the assistance of the pharyngopalatine sphincter, the muscles will approximate close enough to nearly close off the nasopharynx. In attempting midline union it is necessary to obtain complete immobilization of the palatopharyngei, and it is here that the silver ribbon is invaluable.

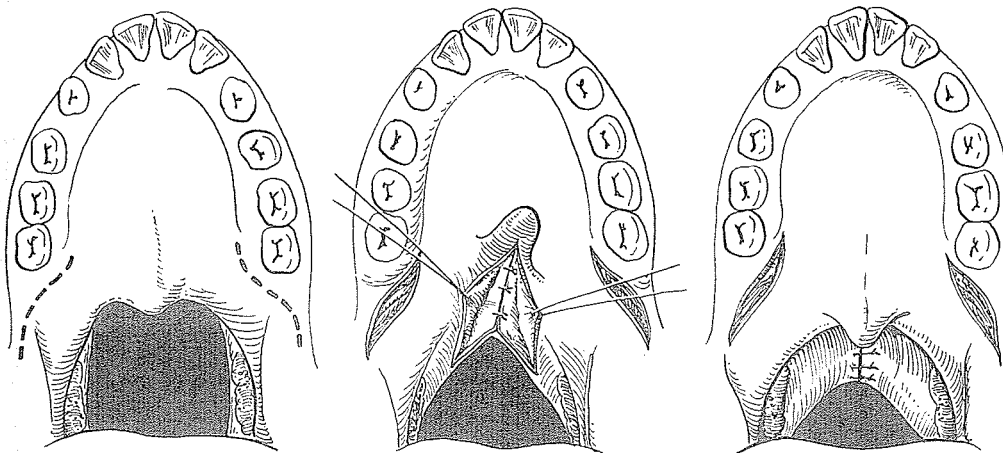
SANVENERO-ROSSELLI

Gustavo Sanvenero-Rosselli, a learned Italian of Milan, who accumulated a remarkable private plastic surgery library, often

revealed his knowledge of history. In 1971 he informed me that Paré, or one of his colleagues of that era, had exclaimed of a cleft palate that when the child was born, God was yawning: "*Ceux à qui Dieu a bâillé dès leur nativité.*"

In 1949 Sanvenero-Rosselli also advocated the principle of approximation of the posterior pillars of the fauces behind the uvula and in 1958 described the method at the Universities of Turin and Milan. In 1964 in Hamburg he emphasized his enthusiasm for this method, explaining it as a simple procedure for further elongating a previously operated velum when the posterior pillars are not too far apart or too thin. As he said:

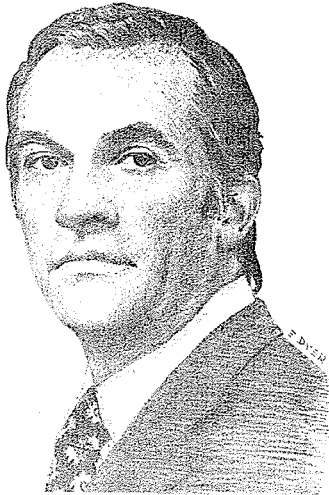
Without reopening the closed velum, without any additional scar or interruption or distortion of muscular bundles, we obtain elongation of the palate, such as to grant a positive improvement in its functional value.



In 1973 G. Sanvenero-Rosselli was honorary president of the Second International Congress on Cleft Palate held in Copenhagen. Poul Fogh-Andersen as secretary general had the Congress opened with a lur fanfare, explaining that this demonstration was not a new test for velopharyngeal incompetence. He elaborated:

These Danish instruments, made of bronze and called "lurs," are the oldest playable musical instruments in the world. There is something both musical and fascinating about these lurs, manufactured according to an outstanding casting technique 3,000 years ago, apparently always used as a symmetric pair, calling people together, just as you heard two minutes ago, or warning against enemies, maybe announcing religious ceremonies or possibly for entertainment as you will enjoy in a moment.





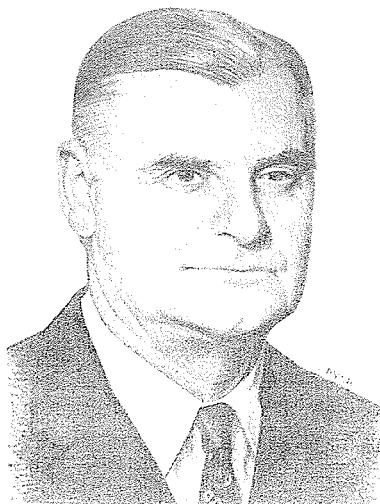
Ernesto Caronni

As soon as the sound of the lurs had faded, Sanvenero-Rosselli and Ernesto Caronni of Milan again confirmed faith in union of the pillars to lengthen the posterior palate 2 to 3 cm. beyond the uvula and added a uvula switch.

In an effort to contribute to a good velopharyngeal closure, the transposing of the uvula from the anterior (oral) face to the posterior (pharyngeal) face of the velum . . . has proved itself to be very effective. . . . Not only do we transpose the uvula, but with it a certain mass of muscle that remains in the cavity as a contractile protrusion, which often is determinant in assuring a good velopharyngeal contact.

In 1976 D. Rosselli and I. Minuto of Rome, in homage to Sanvenero-Rosselli's memory, reported their use of the posterior pillar union in 120 cases with only 7 not recuperable, requiring a velopharyngeal flap. As further defense for the principle, they cited the 1972 work of J. Delaire, whose study of the normal palate demonstrated that behind the azygos muscle, situated below the palatopharyngeus, there is a considerable portion of the velum. On this basis he concluded logically that the reconstruction of the cleft soft palate must unite the muscular elements in the most natural way, and thus union of the posterior pillars reconstituted a condition similar to the normal.

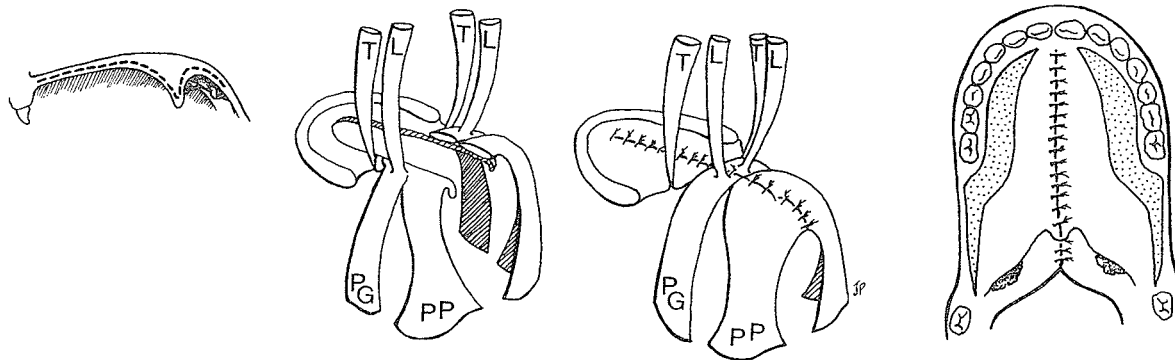
In 1954 George T. McCutcheon, of Columbia, South Carolina, reported his use of Passavant's principle at the time of cleft palate closure:



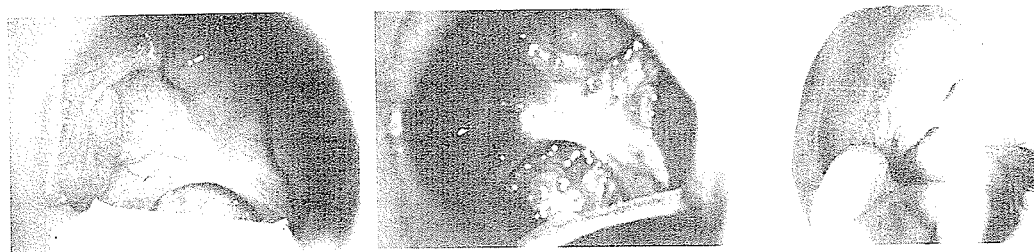
Alberto Albertengo

For some time we had considered the pharyngo-palatine muscles with the idea that their approximation in the midline would accomplish a muscular barrier to the onrush of air into the nose. . . . Since 1949, we have operated upon 75 cases. . . . The results have been encouraging. . . . Most have required no speech training, while a few have accomplished normal speech with minimal training.

Alberto Albertengo of Rosario, Argentina, in 1964 at the International Congress in Rome described his use of Passavant's union of the posterior pillars. He diagramed with a broken line the edge incisions extending beyond the uvula along the inner border of the posterior tonsillar pillars.

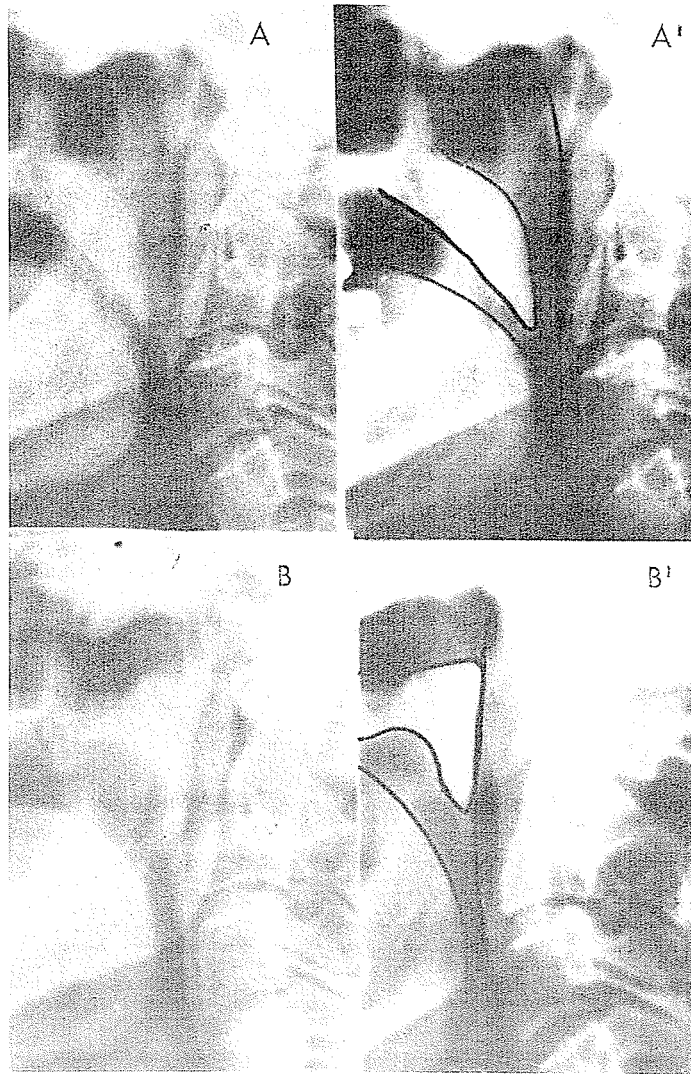


Out of 150 cases, 95 percent had been totally or partially successful. Several final results are shown. He summarized his reasons for continued use of this approach.

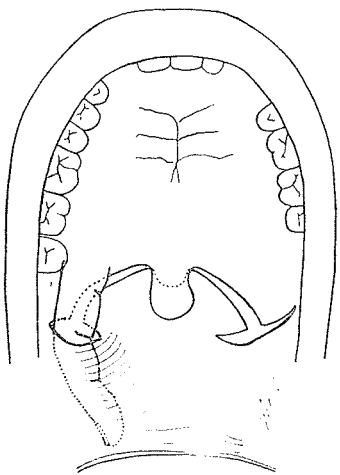


1. This type of operation allows the palate to be lengthened a further 2 to 3 cm.
2. A dynamic and effective sphincter is obtained between the naso- and oropharynx.
3. The movements of the palate are not affected. . . .
4. The quality of speech is found to be in direct relationship to the length of the palate obtained.
5. Because the technique is simple it can be done in the same time as the closing of the cleft.
6. If this operation is done in childhood, better results are obtained.
7. When operation takes place at early age, muscular action, in time, lengthens the short palate.

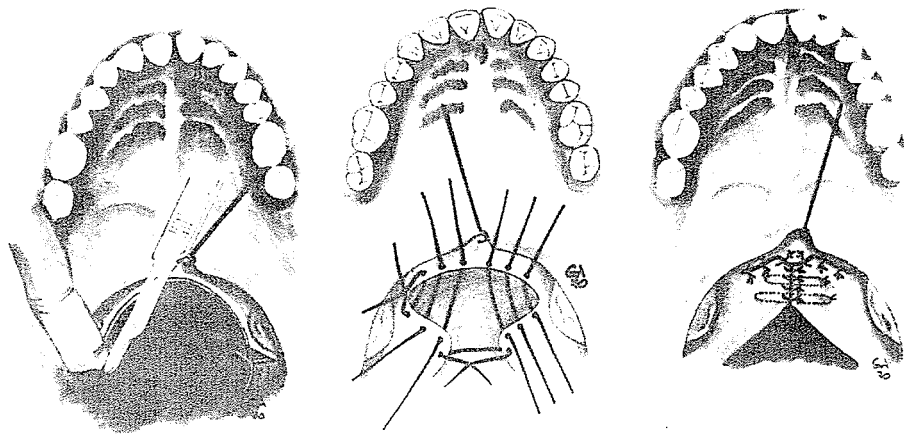
Radiographic demonstration of dynamics of the soft palate after operation: A-A', Relaxation; B-B', Activity.



Otto Neuner, oral surgeon of the University of Berne, Switzerland, in 1966 and again at the International Cleft Palate Congress in Copenhagen in 1973, advocated splitting the posterior edge of the velum and extending these incisions bilaterally along the edge of the posterior pillars. Through a crosscut at the level of the tonsil the finger is used to dissect under the lateral pharyngeal muscles and guide further extensions of the incisions in the lateral pharynx. Two-layer closure of the incisions in essence joins the posterior pillars behind the uvula. Neuner noted:

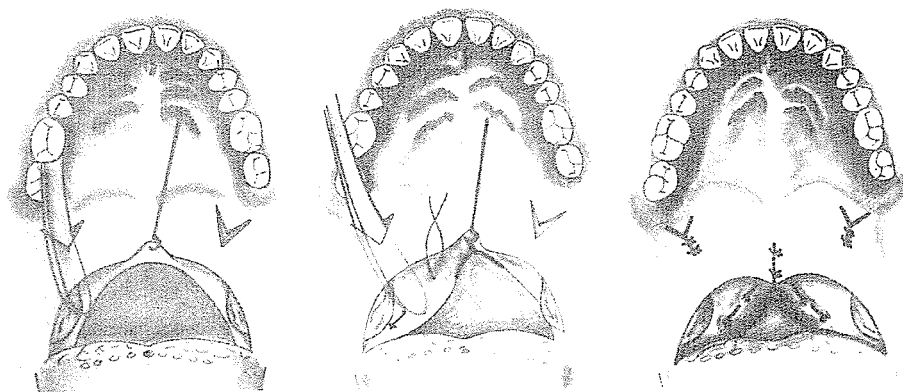


An improvement is attained in creating a new palatine fornix by a lateral detachment of the pharyngeal septum (mainly muscular tissue); the velopharyngeal ring is restricted to a narrow lacuna and the new roof shows great flexibility.



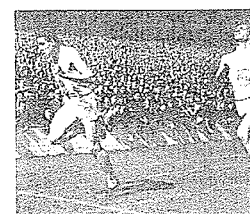
The operation was performed by Neuner on 30 patients with a great improvement as regards to consonants but a lesser one as regards to vowels.

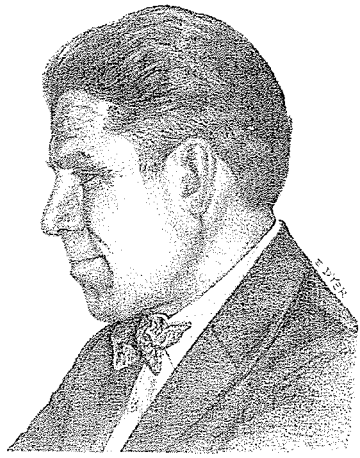
Neuner also used what he calls "an Arcus Palatopharyngoplasty," which is a thickening of the posterior tonsillar pillars and diminishing of the velar opening by plication of the constrictor muscle in the fold.



This operation, Neuner reported, either in one or two procedures [was] performed on 45 patients with speech improvement in most cases to normal phonation.

Robert M. McFarlane of the University of Western Ontario, London, Canada, is not unfamiliar with international competition. Not only has he entered the fray in cleft palate surgery, but he represented Canada in the 1948 Olympic Games in London, England, at 400 meters. His best time was 46.9 seconds, which



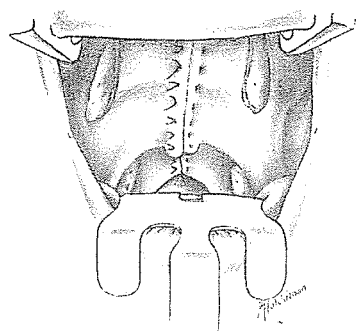
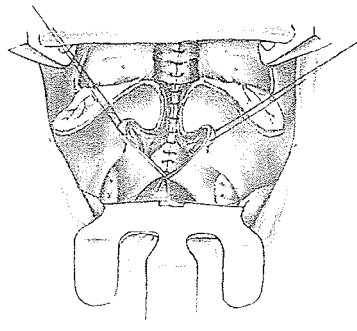
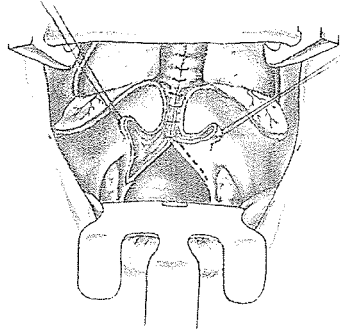
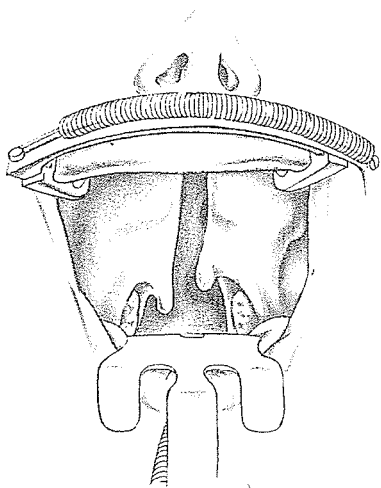


Robert McFarlane

partly explains the problem he gives his house staff making rounds up and down the stairs of Victoria Hospital's eight floors.

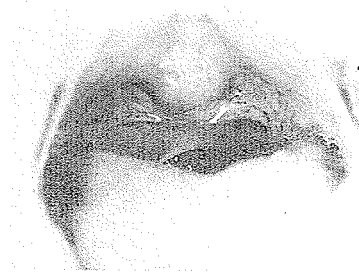
At the 1972 Las Vegas meeting of the American Society of Plastic and Reconstructive Surgeons, he and R. G. Colcleugh presented the most modern "Suture of the Posterior Tonsillar Pillars at the Time of Cleft Palate Closure." He explained closing the palate with a pushback at 1 year with three or four mucoperiosteal flaps as described by Peet in 1961. After closure of the nasal layer of the soft palate, the incisions were made along the medial edges of the posterior pillars and they were sutured in two layers.

A broad web of soft tissue was thus created posterior to the uvula, as shown in his photograph. Here also are his radiographs of a 5-year-old unilateral complete cleft treated in the manner described. (A. Palate at rest, B. Voicing letter e, C. Voicing letter s.)

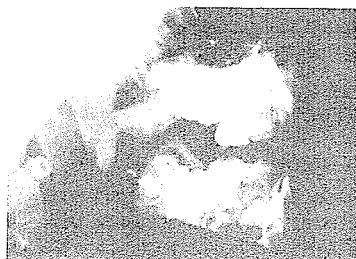


His summary was pertinent:

The results of this procedure were studied in twenty-three children operated upon for cleft of the palate at one year of age. The study consisted of clinical, radiological, and speech assessment. Eighty-three percent had acceptable speech four to six years later, and there was no evidence of interference with movement of the palate by the sutured tonsillar pillars.



A



B



C

In 1976, after reevaluation, McFarlane reported:

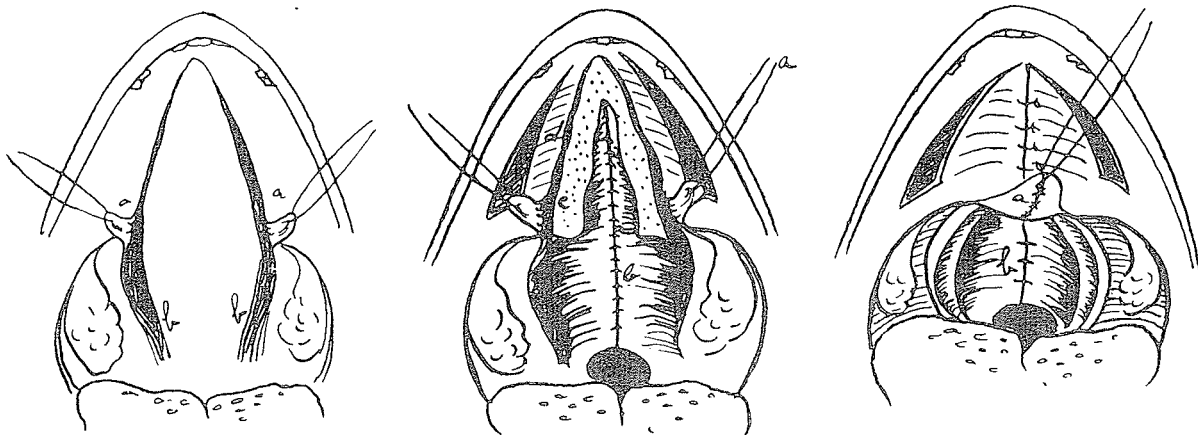
I still feel that it is a good procedure and I continue to use it routinely.

In 1973 at the Cleft Palate Congress in Copenhagen Cardoso da Rocha, a pediatric surgeon of Porto, Portugal, who had been interested in cleft palate for 20 years, advocated the procedure as sketched, noting:

Anatomic reconstruction making use of the pharyngo-palatinus muscles facilitates not only a surgical reparation of the cleft palate, but also enables the best phonetics results, avoiding more open "rhinolalias."



Cardoso da Rocha



In 1974, in the *Journal of the Indian Medical Association*, Murari Mohan Mukherji and A. Chanda of Calcutta advocated tonsillectomy for large and infected tonsils as an aid in surgically uniting the posterior tonsillar pillars during a V-Y palatoplasty. They wrote:

Posterior pillars of the fauces have been stitched up starting from the inferior margin of the uvula for about an inch. The uvula hangs like a ceiling lamp from this elongated soft palate. This partial apposition of the posterior pillars of the fauces not only elongates the soft palate but also constricts the nasopharyngeal aperture. Both these acts help in closure of the nasopharynx for the production of satisfactory speech.

VOTES AGAINST THESE UNIONS

The principle of uniting the posterior pillars of the tonsils has never appealed to me. It may give superior-inferior velar length but does not, in my opinion, give the coveted anteroposterior

yet a lot of
fine surgeons
like it!

lengthening. In our Miami cleft palate clinic in November 1976 we were discussing a patient who had had the posterior pillars united behind the uvula years before in another unit. The speech was poor. David Dickson, our speech analyst, was asked how he felt about the physiology of the pillar union. He expressed disdain, explaining that it might aid swallowing by extending the swoop of the funnel, but in speech it reduced the resonance by dividing the oral and nasal cavities at the wrong point and actually was detrimental to velar movement because of the inferior tethering.