

II. Surgical Closure of the Cleft

8. *Cautery or Paring and Suturing the Edges of the Cleft Palate*

JUST 10 years before the 13 North American colonies united to divide themselves from the British Empire, the first cleft palate was united, and both events were accomplished with French assistance. It may be true that Jacques Houllier, as reported by Rogers in 1971, sutured the edges of a traumatically split velum in 1552. Yet credit for the first closure of the congenital cleft palate must go to a French dentist named Le Monnier of Rouen. Believing that this most conspicuous and distressing deformity was amenable to successful surgical treatment, in 1764 he proposed an operation in three stages:

1. Introduction of sutures.
2. Cautery of cleft edges.
3. Bringing the freshened edges together and fixing them.

According to Robert, Le Monnier was the first to perform the operation, sometime between 1762 and 1764.

A child had the palate cleft from the velum to the incisor teeth; M. Le Monnier, a skillful dentist, endeavored and succeeded in reuniting the borders of the cleft, first inserted several points of suture in order to keep them approximated and afterwards abraded them with "the actual cautery." An inflammation supervened which terminated in suppuration and was followed by reunion of the two lips of the artificial wound. The child was perfectly cured.

VON GRAEFE



Ferdinand von Graefe

Carl Ferdinand von Graefe, born in Warsaw, schooled in Dresden and Leipzig, at the age of 23 became professor of surgery at the University of Berlin. Three years later, in 1813, he became surgeon general to a division of the Prussian army during the Napoleonic Wars, received many medals and was consulted by royalty. In 1816 he introduced to the medical profession the first comprehensive surgical method for closing clefts of the velum. He presented his case most casually before the biweekly meeting of the Medical-Surgical Society of Berlin, and it was reported, in third person, early the following year in the *Journal of Practical Therapeutics*. This seemingly unimportant paragraph was translated from the German in 1971 by Karl Schuchardt for the journal *Plastic and Reconstructive Surgery*:

Geheimrath Graefe spoke about clefts of the soft palate, which could be congenital or acquired. He had tried several times in vain to cure the evil or to replace it artificially until finally, in the case of a cleft so extremely severe that it reached to the bone, he conceived the idea to unite it by suture and by an artificially caused inflammation. For this purpose he invented special needles and needle holders. With these he made a suture which, in conjunction with spreading it with *Acidum Muriaticum* and *Tinctura Cantbaridum* (which latter he preferred for the excitement of the plastic process), achieved such perfect healing of the cleft that the person afterwards could swallow quite well and speak distinctly.

ROUX



Joseph Roux

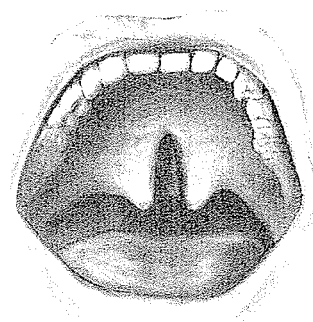
Philibert Joseph Roux, born into a family of French surgeons, in 1802 competed with Dupuytren for an important surgical position to the famous Hôtel-Dieu. As the story goes, a new post of Second Surgeon at Hôtel-Dieu was created specifically for Dupuytren, who was fast gaining renown. An upstart named Roux competed brilliantly and tied. In the playoff, each candidate was required to deliver a public lecture on some subject proposed by the faculty but not communicated to the contestants until four hours before the appointed lecture. One of Dupuytren's friends in the faculty secretly informed him of the subject 24 hours ahead, and on this basis he presented the superior lecture and won the post.

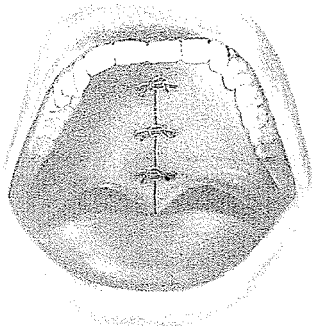
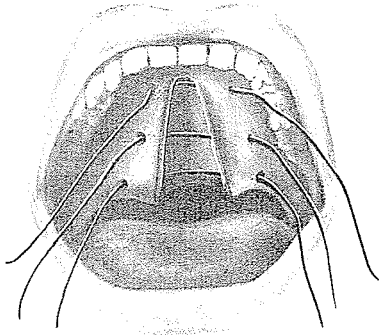
There is a more intriguing story about the competition, told by E. Warren in 1860 and quoted by Goldwyn, telling of Dupuytren's visit to an influential friend in a frantic effort to win this post:

Rushing into his room, he burst into tears, struck his head violently with both hands and cried out, "I am lost!" His friend tranquillized him and said, "Take courage. Go this evening to Madam B. She thinks favorably of you; will be flattered by your application, and gratified to exert her influence in the medical intrigue. She can turn the scale in your favor, if she chooses. Kneel to her. Pray to her. Say everything you can think of to excite her interest, and you will obtain the prize. Fly! There is not a moment to be lost!"

Although Dupuytren managed to defeat Roux in this competition, he lost in the next, as Roux married Dupuytren's fiancée. Roux later became full professor on the faculty of medicine, University of Paris, was surgeon-in-chief at La Pitié, received the Legion of Honor and finally succeeded Dupuytren as surgeon to the Hôtel-Dieu. In 1819, in the *Journal Universel des Sciences Médicales*, appeared his most famous work, "Observations on a Congenital Division of the Soft Palate and Uvula Cured by Means of an Operation Similar to That for a Hare Lip." This paper was translated from the French in 1971 for *Plastic and Reconstructive Surgery* by Daniel Morel-Fatio. It began with an acknowledgment by the editor that a Dutch surgeon named Itard had several years before proposed closing a woman's cleft palate with stitches but the surgery had not been carried out because a more distinguished surgeon considered the chances of success nil. It was then explained that the operation by Roux had been a complete success and that details of the operation were of interest. The patient was a young medical student with a cleft of the soft palate and uvula who had typical cleft palate speech and was most anxious to correct it. Roux noted that the patient's mouth was big and that the edges of the cleft could be brought together easily. Yet, realizing the operation was risky and fearing failure, Roux performed it almost in secrecy, with only assistants present. The report continues:

M. Roux passed 3 wax-threaded loops, using a curved needle placed in a handle. Then he drew together the wax-threaded loops so as to bring





together the two edges of the division, and thus evaluate exactly the extent of the loss of substance that he would have to inflict upon them. Half a line [*] of the soft palate and of the uvula was taken with great dexterity; the ligatures were drawn tight and the wax-threaded loops cut close to the knots.

Immediately after the operation, the voice returned almost to normal—with hardly any change. The patient was put on a strict diet for 3 days; complete silence was enforced. In a few days the two parts had come together completely, but the two lips of the uvula were not completely touching.

The editorial comment concluding this report hints at the beginning of a medical sophistication that would eventually give plastic surgery its great chance:

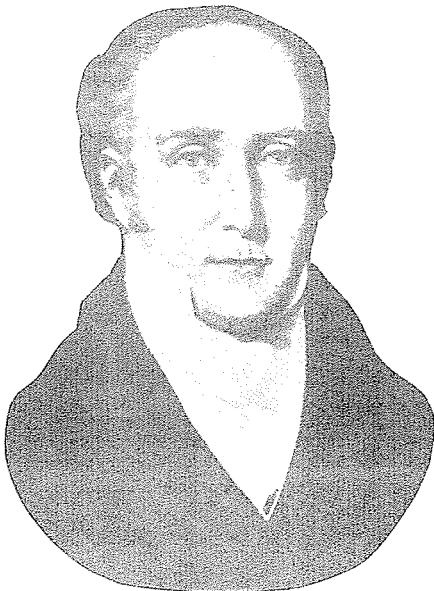
Although without danger for the patient's life, the operation corrected a malformation in an organ whose integrity is vital for normal swallowing and speech. It must be considered amongst those successful innovations which have increased the field of the curative art. It would be wrong to call attention only to operations which endanger the life of patients.

PATIENT'S POINT OF VIEW

Possibly of even greater interest than the medical report in third person of Roux's operation was the report in first person by his patient, John Stephenson, a Canadian who was studying medicine in Edinburgh. Stephenson wrote a graduation thesis in surgery in 1820 in which he explained:

The report will be authentic for the subject is one which I perhaps am best qualified to discuss, since I am myself the patient.

He then commented on his early loss of milk through his nose, the discovery of his palatal fissure, improvement in feeding with an upright position, a family history of one brother with a cleft uvula, pronunciation of *th* like *s*, his nasal speech, how because of its quality he found the French language easier than English and his inability to blow up a football or play on a wind instrument without closing his nostrils with his fingers.



John Stephenson

* A *line* is the twelfth part of an inch, its use dating back to A.D. 1665, early in the reign of King Charles II of England, who "never said a foolish thing, and never did a wise one."—R. H. Ivy

While on a study visit to a hospital in Paris, Stephenson had occasion to speak with Dr. Roux, who immediately noted his abnormal voice and, with more candor than tact, asked if he had ever had a syphilitic ulceration of the palate. Whereupon Stephenson opened his mouth, and Roux, noting almost complete closure of the velar cleft during active movements of his fauces, pronounced the congenital cleft operable. Stephenson decided to have the operation while he was in Paris, for, as he said, a war might have prevented my return to Paris and a clever surgeon be deprived of well-deserved distinction.

At 4 P.M., September 28, 1819, the operation was performed. This is Stephenson's own report:

I adopted a sitting position which seemed best to facilitate breathing and the flow of blood out of the mouth. . . .

Three interrupted *sutures*, stout enough to avoid laceration of the tissues, as far as possible, were introduced with two surgical needles alternately from behind forwards, each suture being thus drawn three times. Since fingers are too short to do the work at such depth, and the needles were rendered slippery by the constant flow of saliva, use was made of a stylus-like instrument (*porte-aiguille* in French) with what we call in English a slider to grasp the needles. . . . I suffered less from the pain than from the irritation and tickling caused by the introduction of the needles, a sensation that would run up to the ear like the pain of toothache. . . .

Before the edges were freshened the sutures were put in place in order to see whether the fissure could be closed. . . . The edges were thereupon cut with forceps and a guarded scalpel. The sutures were separately tied and severed.

The ligatures had been placed in position before the incision not only to see that the fissure could be closed, but also because the oozing of blood from the freshened edges, especially in the next stage, would have been troublesome both to the operator and to me. The union seemed to be as firm as skill could make it and nature's healing inflammation would perfect the cure. . . .

Stephenson continued:

Immediately after the operation, in order to satisfy an inconvenient but understandable curiosity, I spoke a few words in the presence of Dr. Roux and some others. Everyone declared that my voice was considerably altered.

Thirteen days after his surgery, Stephenson, at Roux's request, read a report of his case before the Royal Institute of Paris. He then set forth on his return to Scotland and during the Channel crossing from Ostend to Dover experienced seasickness and a dividend of his operation. To his great joy, he was able to stand at the rail 22 days postoperatively and vomit without his gastric contents being projected through his nose.

Stephenson concluded his thesis by admitting to some persistent nasal escape in his speech and justified it with

Who can deny the all importance of habit?

He suggested the operation be carried out between 4 and 6 years of age and

certainly before puberty to avoid all the disadvantages of habit.

He also suggested the name *velosynthesis*.

John Stephenson returned to Montreal and had a successful career. Honorable Peter McGill referred to him as

the man above all others to whom we owe McGill College.

Evidently unaware of von Graefe's earlier, cursory description, Roux gave no credit in his 1819 publication. This omission enraged von Graefe, who had just finished the galley proofs of another palate publication. He attacked Roux for advertising an operation never performed before

and continued his attack with some heated logic:

This remark could hardly come from this physician, who is well read in the medical literature. The first palate suture was successfully performed by me in the spring of 1816.

He elaborated that later in the same year it was presented to the Medical-Surgical Society of Berlin, while lectures to large audiences were given in 1817 and 1819.

News of my operation must have reached Paris by traveling young physicians, as there is a lively exchange of students between the medical schools

of Berlin and Paris. . . . Its existence could not have remained unknown to Herr Roux.

He continued:

I devised this operation in 1816 and performed it on four individuals. The operation was fully successful in only one patient. If I had had more experience, I might not have advised and performed the operation in patients like the one who had a wide cleft of his hard and soft palate, another who was anemic, and another who was cachectic.

Obsessed with gaining unquestionable priority, von Graefe proceeded to accept many more cases. His 1820 publication discussed a modification of his earlier method: denuding the defect borders with a uranotome and applying a bolt and nut device to hold the sutures. Seven years later he discarded these complicated appliances and used waxed, triple twine sutures held with a double knot. He also advised that sutures of catgut might be used.

Thirty years and 140 staphylorrhaphies after his first operation, Roux admitted that three years before this first procedure M. von Graefe had attempted the operation unsuccessfully.

THE FIGHT FOR PRIORITY

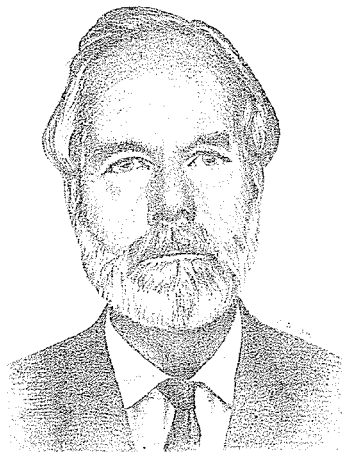
The eternal fight for priority was not first fought between von Graefe and Roux and certainly did not end there. Levi Lane said in San Francisco in 1896:

The method of Roux was the better one, and was so acknowledged by Graefe. A further investigation of the subject has brought to light the fact that the operation of closing the soft palate by suture was proposed to the French Academy in 1779 by Beziers. Priority here, as elsewhere, has proved a Protean entity, a flitting fugitive, which, though sought and temporarily possessed by rival claimants, has in the end escaped their grasp and fled to other hands. Such emulation, however, should be commended, since it is of generous source and is inspired by justice to give the palm to him who has earned it. Gold too often finds its way to the hand of him who has not earned it; the curators, by which the field of science is vigilantly guarded, do not permit such wrong; the earner is secured in his earnings, often through the mutual aid of his competitors.

*But
de Monnier
scooped
them all!*

A GLIMPSE THROUGH ZEIS

According to Tom Gibson, Eduard Zeis of Dresden, a merchant-banker's son, was one of the great figures in plastic surgical history, having been exposed to the specialty during its period of greatest expansion by enthusiastic practitioners. In this milieu he was stimulated to write the first textbook of plastic surgery, *Handbuch der plastischen Chirurgie*, published in 1838, and later a great 1863 work, *Die Literatur und Geschichte der Chirurgie*, plus an 1864 *Nachträge*, all involving other surgeons' work and experience, defining the scope of plastic surgery much as it is today.



Thomas Patterson

Thomas J. S. Patterson of Churchill Hospital, Oxford, whose book, *The Essentials of Plastic Surgery*, with Peet, has been quoted often in these volumes, has become deeply involved with the *Zeis Index* for several years. Here is an excerpt from Zeis by Patterson:

Graefe conceived the idea of repairing the soft palate on the same lines as a hare-lip. He carried out the operation in 1816, and reported the first successful case on 27th December of that year to the Med. -Chir. Gesellschaft in Berlin. This arduous undertaking, calling for the greatest cooperation from the patient and perseverance on the part of the surgeon, excited general astonishment. . . . Soon after this, Roux, obviously incorrectly, claimed priority for this discovery, whereupon Graefe defended his reputation by describing his operation in greater detail in 1820. It took a long time for Graefe to achieve full recognition. Finally, however, Roux himself acknowledged that Graefe had preceded him, and excused himself by reason of his ignorance of the German language and literature.

The difficulties of this operation were so great that many surgeons quailed before them. Nevertheless a few soon copied the technique, and tried to make it easier by improving the instruments.

PALATE OPERATION BECOMES POPULAR

Following the success and rivalry of von Graefe versus Roux, surgical approximation was accepted by the medical profession as the treatment of choice for clefts of the velum.

John Collins Warren, professor of surgery at Harvard Medical School, who helped found the Massachusetts General Hospital, the American Medical Association and the *New England Journal of Medicine*, published a description of

an operation that he performed in 1819 for the cure of natural fissure of the soft palate.

He acknowledged that he had heard of cleft palate operations being done in Poland and Germany as well as by Roux in Paris but had "sought in vain for details of it." Thus, independent of von Graefe and Roux, he closed a soft palate on a 16-year-old girl in Boston, Massachusetts.

Thomas Alcock of London was the first in England to close a palate, an accomplishment that took about seven attempts on the same patient, using single knots and allowing early eating and speaking.

SMITH OF THE IVY LEAGUE

Nathan Smith, who studied medicine at Harvard, taught at Dartmouth and finally became professor of surgery and a founding father of Yale Medical School, noted in 1826:

Everyone must have observed that, when in early infancy the suture of the lip is properly made, the gentle pressure which the lip, then more straight than natural, exerts upon the cleft portion of the jaw, has a tendency gradually to approximate them, for at this time the bones of the face being yet in part cartilagenous, readily yield to little force.

Thus Smith decided to suture the palate and reported,

The operation was accomplished with less difficulty than I had anticipated. The margins of the palate were pared with the knife and a ligature of suitable size, with a needle very much curved, was carried through on one side, a sufficient distance from the margin, and brought back through the opposite. Two threads were employed in this manner, and the parts were brought into contact with very little difficulty.

STEVENS OF P AND S

Alexander H. Stevens was a young American doctor who during the War of 1812, while bearing dispatches to Europe, was overtaken by a British cruiser and imprisoned in Plymouth, England. Upon his release, he studied in London and Paris, and then, while



Nathan Smith



Alexander Stevens

attempting to return to the United States, was thrown into prison again. After his final release and return to the States he was made professor of surgery at the College of Physicians and Surgeons of New York. In 1827 he was another pioneer in palate surgery and described his operation, but gave Roux credit for priority:

The patient being seated near a window, and his head thrown back and supported by an assistant standing behind, I interposed a handkerchief, tightly rolled up, between the molar teeth on the right side, and depressing the tongue with the left hand, introduced with the right hand a curved needle armed with a thread.

He then placed three sutures and, after paring the cleft edges with a cataract knife, tied and cut the threads. The patient was not allowed to speak or swallow for four days, at the end of which time Stevens removed the sutures and found the wound perfectly united. He reported that

On the fifth day . . . in the afternoon, he ate several pies and began to speak freely, but not with much improvement in his articulation. Supposing it might proceed from the division of the uvula, the parts of which hung like a swallow's tail from the end of the pendulum, I removed one of them. . . . On the tenth day, the voice was materially improved but far from being perfect.

*He was a
direct fellow.*