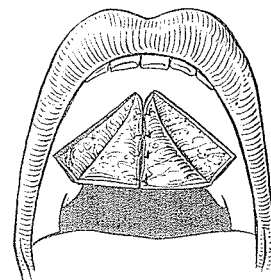
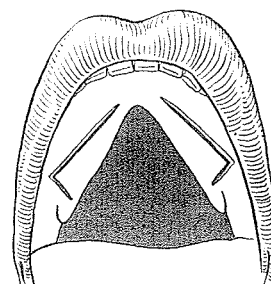
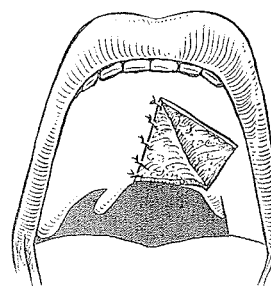
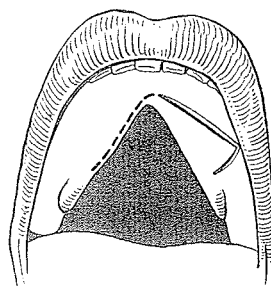
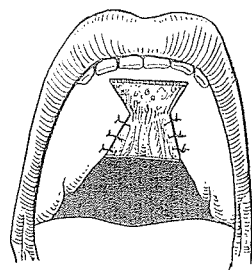
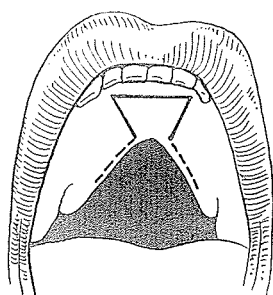


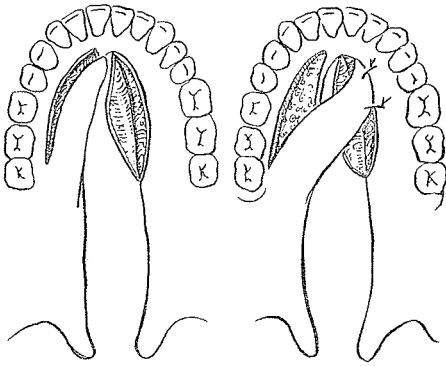
10. *Eversion of Flaps for Closure of Palate Clefts*

ACCORDING to Dorrance, Krimer was the first, in 1827, to use the important principle of everting soft tissue flaps from the covering of the palatal plates or the adjoining tissue. In his case Krimer made an incision along one side of the cleft. On the opposite side he made an L-shaped incision carried down to bone in the hard palate area. The flap of soft tissue was elevated with its base medially, turned over with the mucosa upward and sutured to the opposite split edge of the cleft. Thus the cleft was closed with one area raw and the halves of the uvula still divergent.

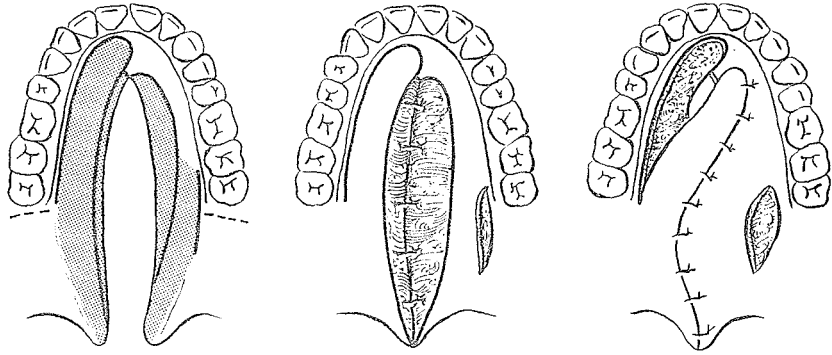
In 1830 Bonfils varied this principle with his turnover flap based posteriorly along the cleft edge to fill the cleft of the velum.



In 1836 Nélaton turned two Krimer flaps so that each filled half the cleft of the hard and soft palate and sutured them to each other in the midline. The wide raw area remaining must have been responsible for extensive scar contracture. The same principle, on a smaller scale, has been used through the years and is still of value for closure of fistulae.



In 1890 Davies-Colley made an important divergence from the popular von Langenbeck approach on a case in which the von Langenbeck method had failed. He combined the turnover flap of Krimer with a mucoperiosteal flap for overlapping. Four years later he modified the original procedure and used it in conjunction with staphylorrhaphy so that the split palate was closed in one operation.



Sir Arbuthnot Lane

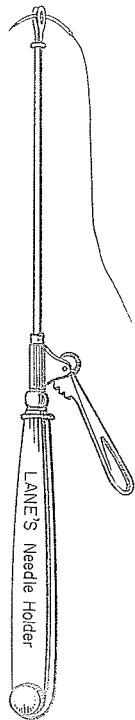
L A N E

In 1897 Sir W. Arbuthnot Lane of St. Bartholomew's Hospital, London, pointed out the importance of establishing the palatal septum between the oral and nasal cavities. He advised operation very early to obtain normal breathing, a function he considered essential for the development of the involved parts.

Lane was Harold Gillies' chief in the early days and, being interested in palate surgery, used his influence to help Gillies and plastic surgery get started in England. Lane was a general surgeon at heart, however, who was content to *create and ignore large raw areas*, and for adequate exposure to the palate he did not hesitate to split a *normal* lip. As an enthusiastic proponent of the "no touch" technique, he used long instruments to manipulate the tissues without once touching them with his hands. As Gillies said:

The old boy used the instruments with such dexterity that he could finish the operation in half the time of the rest of us.

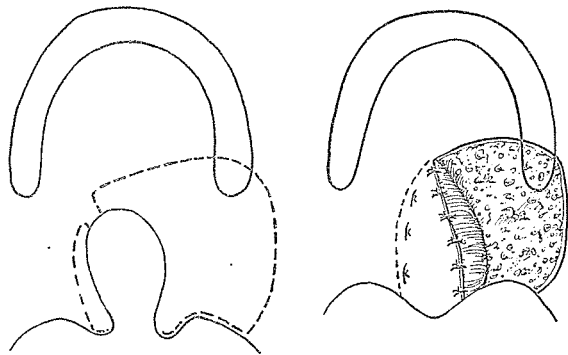
In fact, the medical students affectionately cartooned Sir Arbuthnot Lane working with his famous long instruments through a hole in the dome of his operating theater.



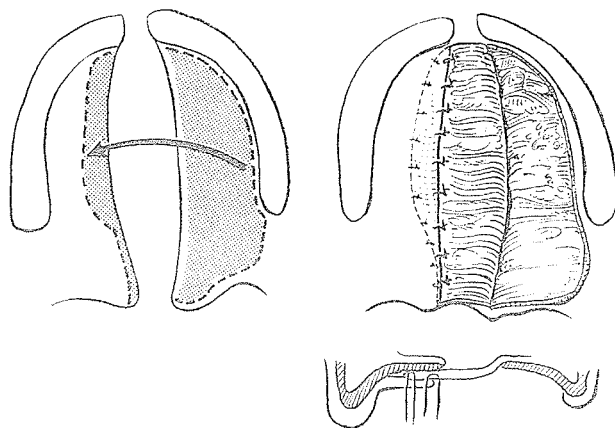
ugh!

Once Lane got onto the book-leaf turnover flap, he used frightening ingenuity in its application, warning that great care must be taken not to tear away this flap from the margin of the cleft. Here are variations of Lane's turnover flap approach for various clefts.

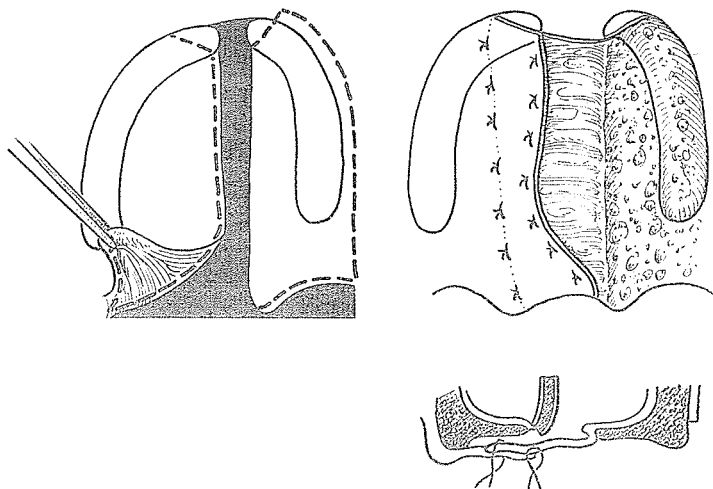
For a split velum (in Dorrance):



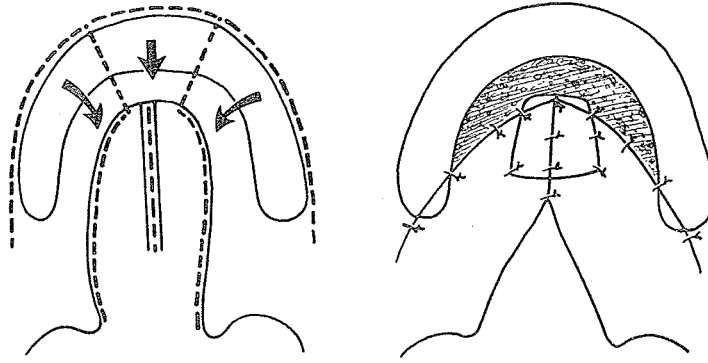
For a complete unilateral cleft (in Dorrance):



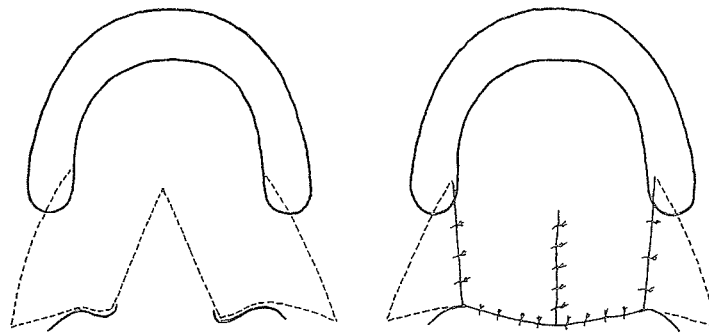
For a complete unilateral cleft (in Davis):



For a very wide bilateral cleft in two stages:

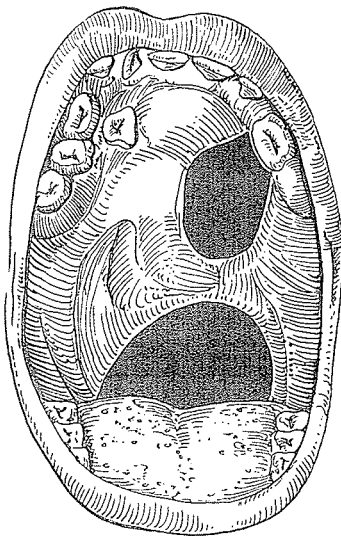


First stage



Second stage

Sir Abuthnot Lane did develop a principle which has value. Yet, by carrying it too far, he became known as a bad knight in palate surgery. Our good and sensitive knight, Sir James Berry (a CL&P himself), in 1912 condemned eversion of the mucoperiosteum as practiced by Lane and others. You can almost hear his nasal escape as he made these pertinent comments:

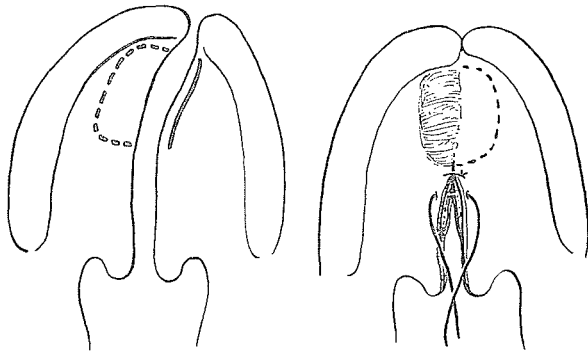


That the [palate] defect can often be closed at the time of operation by this procedure is quite certain, but what is required is to know the subsequent fate of the flap and how the patient speaks. We have seen several cases in which the flap was undoubtedly atrophied and large holes have been left . . . ; in others it has been evident that the whole flap has sloughed and the palate been left in such a condition that further operation was quite impossible. The soft palate is frequently very deformed owing to the contracture of the scar tissue; moreover it is often stiff and rigid instead of being freely mobile. Most important of all, however, is the question of

speech. . . . At the demonstration of cases before the Surgical Section of the Royal Society of Medicine (May, 1911) very few patients were shown who had been operated on by this method and who were old enough to talk or to answer questions intelligibly; and therefore we are still left without reliable information on this important subject.

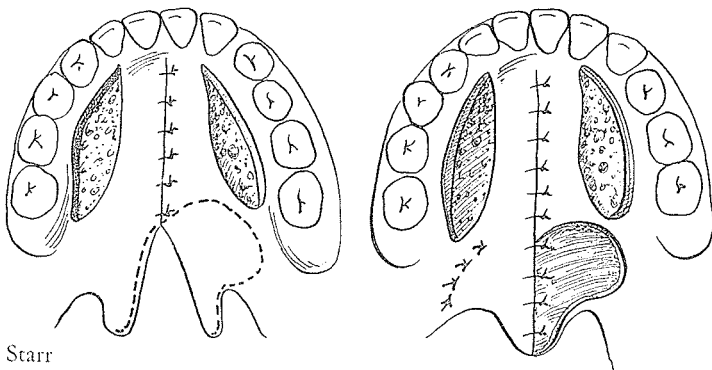
COMBINING TURNOVER FLAP AND MUCOPERIOSTEAL FLAP

In 1906 Murray used a turnover flap to close the hard palate in infancy and at 2 years medially displaced palate tissue to close the velum.



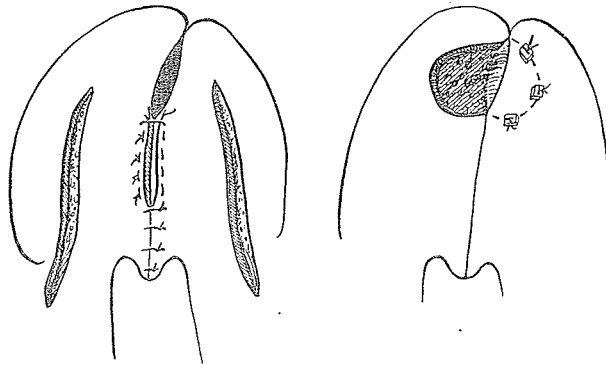
Murray

In 1907 Moszkowicz combined von Langenbeck's mucoperiosteal flaps with the Krimer-Lane turnover flap for palate closure. In 1908 Starr reversed the uses of the two principles, closing the hard palate with mucoperiosteal flaps and the velum with a turnover flap.



Starr

In 1917 Harry Shermann reversed Murray's order of closure by approximating the velum first and later closing the anterior cleft with a turnover flap.



Shermann

SKIN GRAFTING THE EVERSION FLAP

J. F. S. Esser, during World War I, originated the split-skin graft inlay for reconstruction of the buccal sulcus. He must have spent a good portion of his surgical hours burying skin. In 1916 he described an interesting approach to closing a palatal defect with a turnover mucoperiosteal flap lined on both sides to avoid raw areas. On one side of the defect Esser made a crescentic incision down to bone as near the alveolar ridge as possible, then peeled the mucoperiosteal flap off the bone, leaving the base along the edge of the defect. At this point he had a turnover flap already popularized by Lane. He then fashioned a flat egg of modeling compound, wrapped it with a split-skin graft with its raw surface outward and tucked it into the raw pocket formed as the mucoperiosteal flap was brought back and sutured to its original join along the alveolar ridge. By one to two weeks the skin graft had adhered firmly to the raw undersurface of the turnover flap so that it could be relifted, folded medially, leaf-of-book fashion, and tucked under the elevated mucoperiosteum of the opposite edge of the cleft. This, of course, was an important improvement over other eversion flaps since it avoided one of the main flaws, a broad, raw, contracting surface. Esser recommended this method in all cases of bilateral jaw-palate clefts.

MODERN USES

Large eversion flaps producing huge raw donor areas were popular in the pioneer days of palate surgery. The undependability of the vascularity of these flaps and the severe contracture of them and their donor areas have reduced their use. Today the only turnover flaps being employed are the vomer flap for nasal lining in the hard palate area and various relatively small eversion flaps for closing fistulae.