51. *Composite Free Graft Lip-Switch*

ALMOST every author concerned with Abbe flap procedures has emphasized the value of a narrow pedicle. It has been whittled down until the procedure has become an island flap. Gillies used to say that lip vermilion is so vascular that it would probably nourish an Abbe flap even if the main coronary vessel were inadvertently divided. He never taxed his theory to the point of cutting one because of the irreplaceable value of this prime cut of lip. Pursuing the principle to the end point, of course, would mean dividing the pedicle completely and free-grafting the wedge of lower lip into the upper lip.

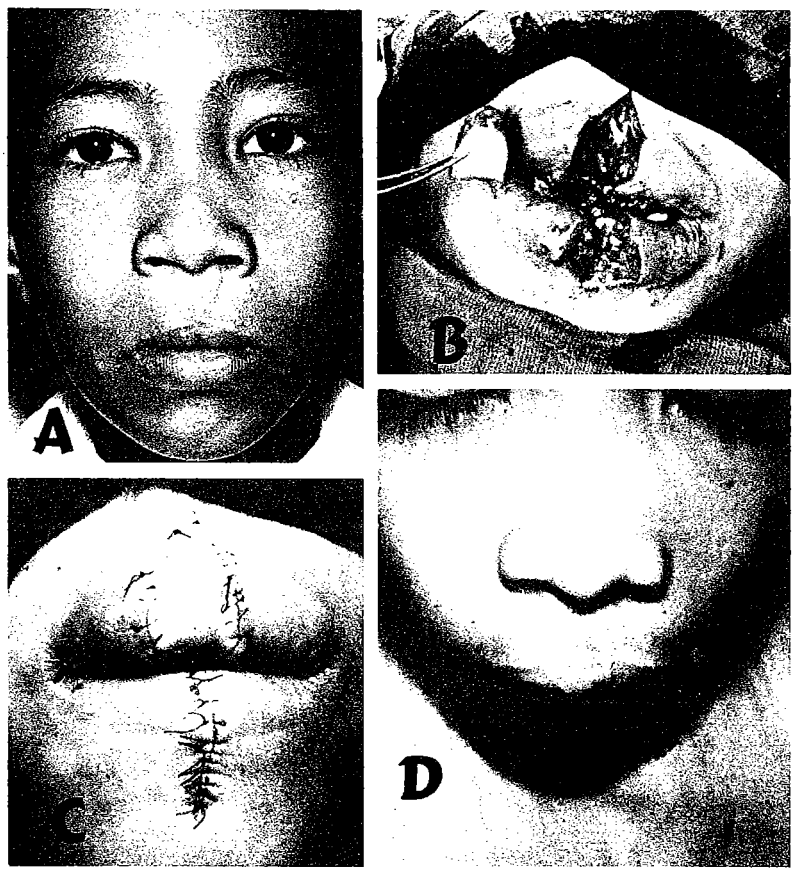
The modest, retiring southern surgeon Wiley S. Flanagin of Augusta, Georgia, had the ingenuity and courage to be the first. In 1956 he reported four composite free grafts from the lower to the upper lip of 1 cm. in thickness. He also ignited a chain reaction that has flared up in many plastic surgery centers: Kingston, Buenos Aires, Paris, London, Tokyo, and Livingston, New Jersey.

Wiley Flanagin

Late in 1962 in Kingston, Jamaica, I treated a secondary bilateral cleft lip deformity with a composite free graft, 1.25 cm. wide, taken from the relatively protuberant lower lip. As such a graft has two edges of approximation, its width can be 1.25 to possibly 1.5 cm.

The patient was a young Jamaican female in whom a primary cleft had been closed with the lip's lateral elements pulled together below the prolabium resulting in a short columella, absence of a philtrum and cupid's bow and a bulky superior

portion of the upper lip with a tight lower border. A short forked flap lengthened the columella and tightened the superior portion of the lip. The tight border of the lip was released by a midline incision, and the lower lip composite graft was meticulously sutured. This action achieved relaxation of the lip with eversion of the free border and formation of a philtrum and its dimple along with the suggestion of a cupid's bow. This Kingston Public Hospital case was published in the *British Journal of Plastic Surgery* in January 1964.



As I wrote at the time:

The free graft approach has several obvious advantages such as requiring only one operation, by-passing the inconvenience of a fortnight of lip-tie and allowing a slightly more accurate inset. These factors must be weighed against several disadvantages. Of course, there is always the possibility of a tragic loss of the graft. Then the amount of tissue that can be transported is limited. The temporary circulatory embarrassment during the struggle for survival and "take" may leave scarring or at least remove some of the natural

velvet-like quality seen in flaps and so often missing in grafts. Then, too, the chance of survival of hair follicles is even less likely in the composite graft. . . . This prediction has been corroborated by Flanagin (1963) and serves as a contraindication for the use of the free composite graft in the male. Growth of hair, of course, in the flap is normal and allows the culturing of a moustache which can serve to camouflage the scars.

When the free-graft approach is to be used then every precaution for a perfect take must be employed including meticulous approximation of all layers and strict immobilisation of the upper lip. Suggestions outlined for small lip-switch flaps also are appropriate for free grafts. The mid-vertical position for the insertion of the graft again is advised whether in postoperative lips of bilateral or unilateral clefts. As in the lip-switch flap the full-thickness composite free graft should be taken from the mid-portion of the lower lip so as to incorporate any groove that is present. It is of interest that this dimple also persists after grafting and serves well to imitate the natural philtrum.

Hector Marino

Another to become infatuated by the free graft Abbe was the genteel, honorable, enthusiastic Hector Marino of Buenos Aires, who whether at Alberto's in Rome or at Jackson Memorial Hospital in Miami has epitomized what Shakespeare's Mark Antony said of Brutus: "This was the noblest Roman of them all." In 1967, with Juan Rabinovich, he published four cases of composite lower lip free grafts in unilateral cleft cases. They emphasized the importance of young vascular tissue and complete excision of scars to ensure adequate vascularity to the graft. Description of the graft was courageous:

The base of the triangle should not exceed 2 to 2.5 cms.

Indeed, their grafts were an impressive size and revealed good results in spite of their unilateral placement! Their report of the results is candid:

Two of the cases presented no complications whatsoever. In the other two, there was central necrosis of the graft which, however, did not change the satisfactory result.

A letter to Marino requesting his latest thoughts on Abbe free grafts and a possible example in a bilateral case received this charming response on June 5, 1974:

12 hours postoperative

Unfortunately I do not have such a case in my files because in these last years I had the luck of being able to solve most of my secondary double harelips using rotating flaps from the vicinity. . . . Besides, in the few cases in which I performed the classical Abbe operation I refrained from employing the free transplant of tissue perhaps because old age is making me a bit wary of taking avoidable risks.

On the other hand I have employed this procedure in a number of hopeless, scarred secondary single harelips in which, for different reasons, I could not expect that the patient would tolerate the locking of both lips together for any length of time. Of these I have color pictures . . . one of which is quite interesting as it shows the composite graft looking of an absolutely normal pink hue just 12 hours after the operation.

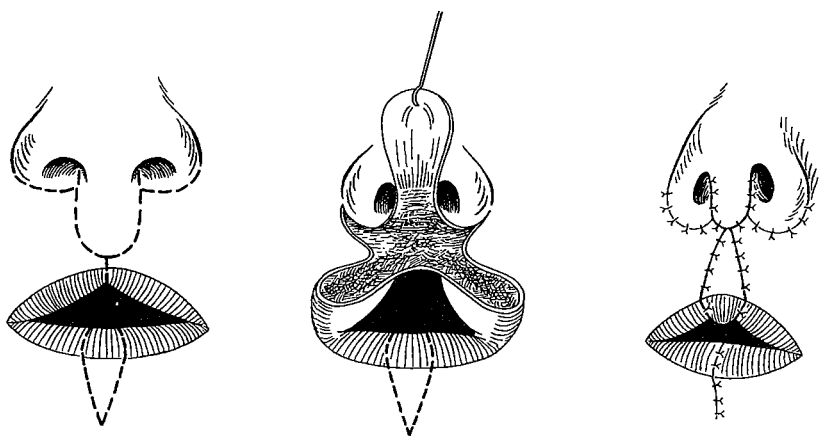
I seem to remember that Jack Penn told me that he has used the free transplant in all his cases in the last years attributing his unfailing success to the immediate and constant cooling of the graft.

This large free graft is quite remarkable not only in its size but in its rapid revascularization. Moreover, it has been placed in the midline of a unilateral cleft lip creating a pleasant philtrum.

Also in 1967 Claude Dufourmentel, with Mouly, Preaux and Marchac of Paris, expressed their pleasure with a simplicity of "la greffe composée libre de lièvre à lièvre." As noted by Gola:

C'est le procédé d'Estlander-Abbé sans pédicule.

They had the courage to combine shifting a skin flap out of the center of the upper lip to lengthen the columella and filling the lip gap, which was now under some tension, with a free composite graft.



In 1969 the confident F. T. "Jerry" Moore, one of McIndoe's favorites, with P. G. Lendvay of the Queen Victoria Hospital, East Grinstead, England, wrote a colorful paper on the "Free Composite Lip-Switch Procedure." They reported that since 1965 a series of 25 patients aged 5 to 30 years had had lip free grafts with no total losses and gave their reasons for a one-stage lip-switch:

1. The danger of post-operative airway obstruction.
2. Discomfort of the patient in having upper and lower lips connected by a pedicle for a period of two weeks.
3. The necessity of lengthy hospitalization and for two separate operations.
4. The technical difficulty of matching skin and vermilion junction at the time of pedicle division when the tissues are still in a reactive and indurated phase.

but an Abbe need not be so debilitating

They suggested that the graft be no more than 1.5 cm. wide and that it be cut on the oblique and inserted in similar fashion to capitalize on the tongue-in-groove principle advocated by Davenport and Bernard in 1959 for increasing contact apposition in composite free grafts. Corroborating McLaughlin's 1954 findings in composite auricular grafts, they reported:

> The color of the graft, initially dead white, is noted to have a pale pink tinge 12 hours post-operatively; 24 to 48 hours after operation it shows cyanosis, but with obvious return in colour. A final healthy colour is noted at about the third day.

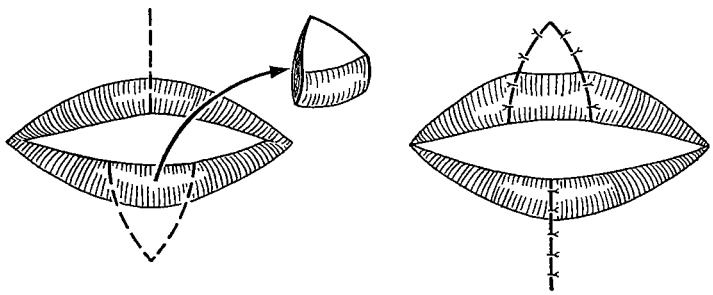
John Walker and Robby Meijer of St. Barnabas Medical Center in New Jersey were also tempted by the simplicity of the one-stage procedure. In 1971 they reported 14 free composite lip grafts, with an average width of 1.24 cm. and an upper limit of 1.5 cm., with no total losses and minimal graft contraction.

In 1973 in Copenhagen, Shugo Soeda of Tokyo University gave some interesting findings on composite grafts. Experiments with 22 composite grafts in rabbits involved removal of the graft from the lip or nose and replacing it in its original site. Microangiography revealed that some of the large vessels connected directly to the recipient vessels in three to four days while the

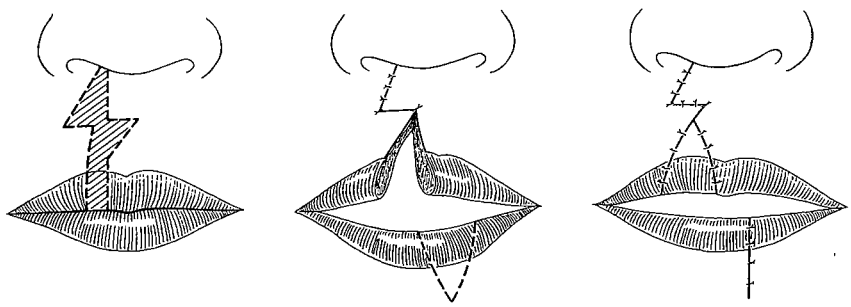
Shugo Soeda

capillary penetration from the bed could not be demonstrated except near the margin at the same time.

Soeda also reported over 30 composite lip grafts, measuring 0.8 to 1.5 cm. in width, which he had inserted in secondary cleft lip deformities without any total losses. He used the obvious midline insertion in bilateral clefts.



In unilateral cases he was obsessed with the insertion of the graft into the off-center position of the old scar and advised taking the graft from "the contralateral side" of the lower lip to get the natural curve and thickness to match the upper lip.



Histological study of four cases revealed patent large vessels and almost normal muscle fibers in the graft after six months. At the same time electromyography showed positive activity. This is encouraging when it is recalled that Magnus in 1890 and Volkmann in 1893, in animals, and Eden in 1919, in humans, found that free autogenous muscle grafts were replaced by connective tissue.

A critical study of the cases Soeda showed at the Cleft Palate Congress in Denmark revealed composite grafts that had taken well. In the unilateral cases, however, the unilateral position was

jarring, and in both unilateral and bilateral cases the grafts were too short in vertical length, not extending the full length of the lip and giving a stuck-on effect rather than simulating a philtrum.

A HALF LOSS

It has been noted constantly that there have been no total losses of these composite free grafts, but even a partial loss can be undesirable and it does happen. I used a composite free lip graft in an impatient old lady with a cancer defect and lost the posterior mucosa, which was far from ideal, requiring revision. Yet it is not fear of graft loss that has limited my use of this procedure.

FLAP VERSUS GRAFT

The natural quality, size, amount of scarring and chance of survival are all better in the Abbe flap, and toleration of the nine-day coronary lip-tie is preferred. Of course, when microsurgery has progressed to the extent that the labial coronary vessels can be anastomosed with a very high percentage of success, the anastomosed free graft will have everything to offer that the flap has plus the abolition of the inconvenient little eight- or nine-day pedicle.

In the meantime, the only vote for a standard "Abbe" free graft is convenience. When convenience means actual feasibility of switching a lower lip segment into the upper lip at all, then, of course, the free graft is available. If used, it should be no more than 1.0 to 1.5 cm. in width and be shield-shaped like a philtrum. Unlike any free grafts published, including mine, it should be made long enough to reach the base of the columella. The length of the graft does not endanger its chances of survival and does increase its similarity to a philtrum.

Except. Marmo's

There are times when the graft may come in handy, as in the case Gillies labeled his "quickest Abbe." An adult cleft lip patient who had had an Abbe flap meticulously sutured into place was sent back to the ward. The extracautious anesthetist left the

intratracheal tube in position with the metal angle-piece strapped to the chin. Back on the ward less than an hour later, the patient began to swallow, which reaction gripped and pulled the tube out of the angle-piece and down into the trachea. The house officer could just reach the tube with the tip of his fingers. Senior surgeon Basil happened by and, seeing the cyanotic patient and the struggling house officer, grabbed up a pair of bandage scissors, chopped through the pedicle and retrieved the tube.

A note by H. D. G. on this case suggested:

> If such should ever happen to you, don't forget you could save the flap by slipping one finger into the mouth and ripping out the precious piece from its stitches in the upper lip.

Or, if the Abbe flap was not more than 1.5 cm. wide, it has suddenly become a free graft and should be treated as such.

Better yet, do your Abbe flaps under local anesthesia. It is easier anyway.