Two Surgical Procedures for Closure of Palatal Fistulae

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A double layer repair of palatal fistulae offers the best chance of success for their closure. Two local factors act against attaining this desired purpose. They are as follows: a) the unyielding, firm, relatively immobile mucous membrane of the hard palate, which does not lend itself to the usual rotation flap technique; b) the shortage of nasal mucous membrane, which severely limits the degree to which this layer can be mobilized.

The negative features of these two factors are further accentuated following injury and palatal surgery, because scarring further restricts mobilization and rotation of local tissues (*1*).

Two operative techniques are presented which may help in the closure of two distinct types of palatal fistulae.

Closure of Anterior Palatal Fistulae

This method makes use of a buccal mucous membrane flap. It is most helpful in cases where there is a wide alveolar cleft, and where the canine and perhaps first pre-molar teeth are missing. Anterior palatal fistulae associated with a bilateral cleft lip and a protuberant premaxilla particularly lend themselves to this method of closure.

Operative Technique. The margins of the fistulae are incised and two anterior palatal flaps are cut in the standard way, and widely mobilized. A buccal mucous membrane flap is raised with its base situated opposite the gap in the dental arch created by the missing canine tooth (Figure 1, top). The width of the flap at its base is about 10 to 12 mm, and its length is approximately 2.5 cm. The blood supply of the flap is ample since the tissues of the deep surface of the lip are generously supplied with blood vessels. This flap is rotated through 90° and is rolled over about 120°. The buccal surface of this flap now faces the nasal cavity, and so becomes the nasal layer in the double layer closure of the fistula (Figure 1, middle).

The mucous membrane of the dental arch gap is pared away, making place for the base of the flap. Two stay sutures fix the tip of this flap

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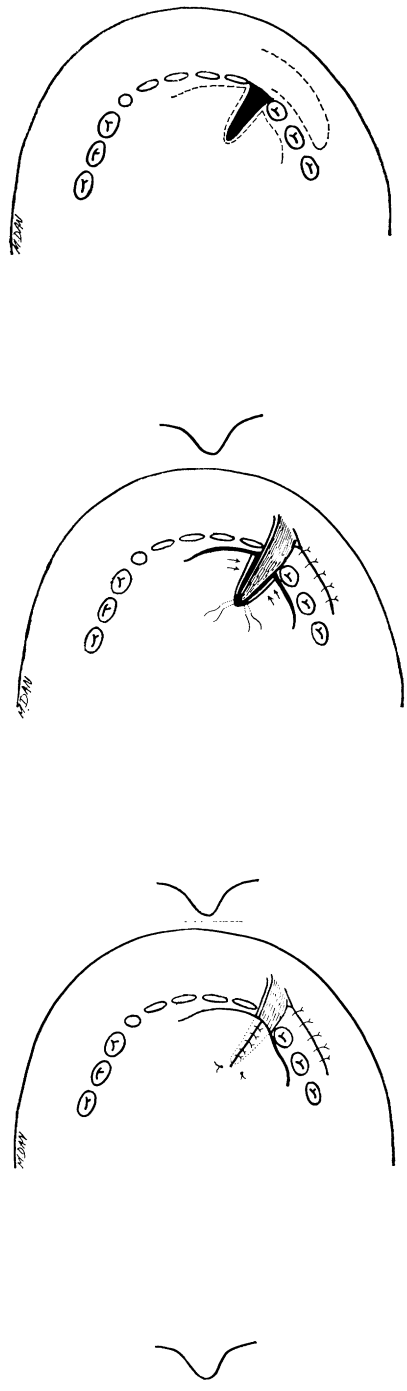

FIGURE 1. *Top*, schematic representation of anterior palatal fistula, showing lines of incisions of palatal and buccal flaps, used for repair of the fistula. *Middle,* the buccal flap is rolled over on itself to provide the nasal lining, and both anterior palatal flaps are elevated prior to closure. *Bottom,* final situation in which the palatal flaps are sutured over the buccal flap. Note the two anchoring sutures which fix the tip of the buccal flap into the posterior recess of the fistula.

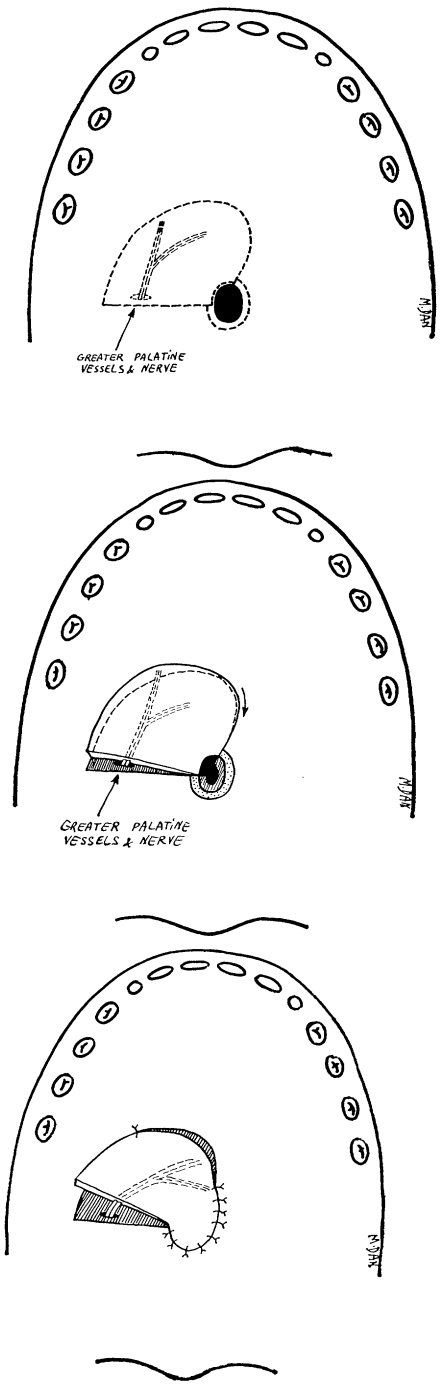

FIGURE 2. *Top*, schematic drawing showing the outline of the island flap as well as the incisions around the margin of the mid-palatal fistula. *Middle*, the mucoperiosteal island flap has been freed off the hard palate and along its posterior bony edge. The mucosa of the margin of the fistula is hinged inwards to create the nasal lining. *Bottom*, final stage showing the rotated island flap which has provided the oral lining for closure of the fistula.

to the posterior recess of the fistula, and are brought out through the mucous membrane of the hard palate. The two anterior palatal flaps are now sewed together and cover the buccal flap (Figure 1, bottom).

This flap gives support to the oral closure and also brings a new blood supply to this area. Again this oral suture line does not overlie the edges of the buccal flap, thus insuring a high degree of success to this procedure. The margins of the defect on the deep surface of the lip created by raising the buccal flap are readily approximated with silk sutures, and no deformity of the lip is produced in any way. Should the anterior fistula be unduly large, the dimensions of the buccal flap as described above may not suffice. Recourse should then be made to a wider and perhaps longer flap. Closure of the buccal defect may now have to be undertaken by means of a thick split-thickness skin graft.

Closure of Fistulae at the Junction of the Hard and Soft Palate

This method makes use of a mucoperiosteal island flap of palatal tissue. A rotation flap is outlined in the mucous membrane of the hard palate with the base of the flap lying opposite the greater palatal foramen (Figure 2, top). This flap is cut and raised off the bone to the posterior edge of the hard palate. The greater palatine neurovascular bundle is freed, and the medial part of the bony palatine canal is removed, which gives additional freedom to the greater palatine vessels and nerve.

An incision is made through the mucous membrane at the base of the flap. By dividing the aponeurotic attachments along the edge of the hard palate, the rotation flap is transformed into an island flap (*2, 3, 4, 5*) (Figure 2, middle). Whereas before there was considerable tethering of the base of the flap severely restricting the rotation effect, now this island flap gains considerable mobility (Figure 2, bottom).

The remaining margins of the fistulae are incised in such a way that they are hinged under the island flap, thereby covering to a certain extent its nasal surface, and providing the double layer closure.

The raw surface of the hard palate created by the rotation of the island flap should be well healed within 10 to 14 days.

Summary

Two operative procedures are described for closure of both anterior and mid-palatal fistulae. In the former, a buccal mucous membrane flap which is rotated and rolled over on itself provides the nasal lining of a two-layer closure. In the repair for mid-palatal fistulae, a mucoperiosteal island flap is used for the oral lining, and a hinged flap from the margins of the fistula provides the nasal layer.

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