A technique for closure of large oroantral fistula as a lateral transposition flap with an anteriorly based palatal flap is described. Mucoperiosteum of the posterior third of the hard palate, which is more yielding, is raised to bridge large defects without leaving any considerable exposed raw area. The technique is particularly useful in the correction of defects at the tuberosity region. (Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1996;82;253-6)

Numerous techniques have been described for closure of oroantral fistulae. Most of these share an equal degree of success and failure.1 Advancement of the buccal mucoperiosteum or a flap based on the greater palatine artery is usually adequate for closure of most oroantral fistulae. However, the variable size and position of the fistulae has led to the development of modifications. Herbert (1974)2 pointed out that for large fistulae when local tissue is unavailable, palatal mucoperiosteum is the tissue of choice. The palatal technique results in successful closure of the fistulae with the maintenance of an adequate blood supply without reduction in the depth of the maxillary buccal vestibule. However, rotation of the palatal mucoperiosteum leaves a raw area on the palate until secondary epithelialization occurs and a bulge of soft tissue is created at the axis of rotation. Several complex procedures have been described to overcome the limitations of the palatal flap.3-8

All palatal flaps are based on the greater palatine artery, and its integrity has been considered the key to its success. However, with the posteriorly based palatal flap, only the unyielding palatal mucoperiosteum of the anterior third of the palate is available for reconstruction. This mucosa is not ideal qualitatively or quantitatively, particularly for the closure of large defects at the tuberosity area. At this site, advancement of the buccal flap also poses problems.

In our technique, an anteriorly based palatal flap is used as a lateral transposition flap. This flap is ideal for closure of large tuberosity defects that are difficult to close with conventional techniques (Fig. 1). This technique is used routinely in our unit and has given good results in 12 cases. This article describes the technique and our experience with this flap.

TECHNIQUE

The oroantral fistula is prepared by excising the epithelium from its margins and by undermining the mucoperiosteum on its buccal aspect. Now the outline of the flap is marked. It is planned as a lateral transposition flap with the medial margin of the defect to be bridged forming the lateral advancing margin of the flap. The posterior extent of the flap stops short of the edge of the hard palate encircling the greater palatine foramen and medially extends to a point below the incisive foramen (Figs. 2 and 3). The lateral outline of the flap is similar to that of greater palatine artery–based palatal flap. The incision leaves some amount of mucoperiosteum at the anterior aspect of the defect that can then be excised to facilitate the inlaying of the flap without a bulge at the axis of rotation. The flap can now be raised carefully, and the greater palatine neurovascular bundle identified, cauterized, and sectioned. The flap is then moved laterally over the defect and sutured in place with silk sutures (Fig. 4). In most cases a few sutures placed circumferentially around the margins help to reduce the amount of exposed palatal bone to a narrow strip. Healing is uneventful (Fig 5).

DISCUSSION

Anatomically the blood supply of the anteriorly based flap can be explained in two ways. First, the greater palatine artery emerges from the greater palatine foramen and courses forward in the palatal submucosa in a groove between the horizontal palatine process of the maxilla and the inner plate of the alveolar process. The terminal part of the greater palatine artery–based flap. The incision leaves some amount of mucoperiosteum at the anterior aspect of the defect that can then be excised to facilitate the inlaying of the flap without a bulge at the axis of rotation. The flap can now be raised carefully, and the greater palatine neurovascular bundle identified, cauterized, and sectioned. The flap is then moved laterally over the defect and sutured in place with silk sutures (Fig. 4). In most cases a few sutures placed circumferentially around the margins help to reduce the amount of exposed palatal bone to a narrow strip. Healing is uneventful (Fig 5).

Anatomically the blood supply of the anteriorly based flap can be explained in two ways. First, the greater palatine artery emerges from the greater palatine foramen and courses forward in the palatal submucosa in a groove between the horizontal palatine process of the maxilla and the inner plate of the alveolar process. The terminal part of the greater palatine artery is its nasopalatine branch, which ascends up through the incisive foramen into the nose where it anastomoses with the septal branches of the sphenopalatine artery.9,10 This establishes the basis for retrograde flow through the nasopalatine artery when the greater palatine neurovascular bundle is transected.

Second, approximately 85% of the soft tissues over the hard palate may be elevated on one greater
The anteriorly based palatal flap uses the thicker and more yielding mucosa overlying the posterior third of the hard palate. This allows lateral transposition of the flap over a posterior defect with the donor site covered by mucosa advanced from its lateral margins. The donor site is not restricted by the morphologic characteristics of the palate; a flap that is relatively wide at its proximal end can be raised to cover large defects. For smaller defects it is possible to gain adequate lateral transposition by simply raising the flap as described but without transecting the greater palatine neurovascular bundle. The greater palatine neurovascular bundle can be mobilized from its foramen by about 6 or 7 mm by the application of gentle traction on the flap similar to the technique followed when it is necessary to rotate a posteriorly based palatal flap to cover a defect in the soft palate or retromolar region. However, removal of bone from the posterior margin of the palatine foramen will not be necessary.

The use of the anteriorly based flap is limited to defects of the maxillary alveolus; it is particularly useful for resurfacing defects of the tuberosity area. Except in one case breakdown of the posterior margin of the flap occurred and healed by granulation. This appears to have been caused by overzealous suturing to approximate the donor area. No other complications have been encountered in our series of cases.

Three to four sutures placed without tension will reduce the defect at the donor site to a narrow hiatus. Complete approximation particularly in the case of large advancement is difficult and unnecessary because the exposed area of the palate will granulate satisfactorily. In our experience this flap is a superior alternative to the lateral transposition.

Their observation also suggests a probable anastomosis between the vessels across the midline. The anteriorly based palatal flap may therefore have a contribution from the opposite side vessels similar to the blood supply described for the classic forehead flap. We have transected the incisive neurovascular bundle in one case in which a considerable amount of advancement was necessary without observing any adverse effect on flap survival. However, the sensory loss of the hard palate that ensues may be unacceptable although in our case the patient himself was unaware of this.

Although it is a good principle to leave the flap pedicled to its major blood supply, in our experience with 12 flaps the results have been consistently satisfactory. The lateral transposition from the posterior aspect is easily obtained even over large defects that leave very little exposed bone for healing by granulation.

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Fig. 1. Preoperative view of oro-antral communication.

Fig. 2. Illustration of incision design.
Fig. 3. Intraoperative view of incision.

Fig. 4. Flap sutured in position.

Fig. 5. Late postoperative healing.
alternative to buccal and greater palatine–based palatal flap for closure of large defects in the posterior aspect of the maxillary alveolus.

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REFERENCES


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