

INTERPOSITIONAL GRAFTING PROCEDURE IN RIDGE DEFECTS RECONSTRUCTION

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Background:

Numerous surgical grafting procedures designed to reconstruct a partially toothless ridge or ridge defects have been described in the literature over the years. The procedures can be grouped according to the means used to increase the ridge such as soft and hard tissue augmentation procedures. To illustrate the different approaches to utilizing soft tissue augmentation, the following procedures will be discussed: Interposition graft and Onlay graft procedure.

Description of the procedure:

In interpositional graft procedures, there is no need to remove the epithelium from the surface of the donor tissue. If augmentation is required in both buccolingual and apico-coronary direction, part of the graft must be placed above the surface of the tissue around the recipient site. Some of the grafted connective tissue surfaces will be exposed in the oral cavity. "Envelope" or partial thickness flap with relaxing incisions, is prepared on the vestibular surface of the defective area. An appropriate donor site is selected at the palate or in the area of the maxillary tubercle, and a free epithelial-connective tissue graft is harvested. If enlargement of the ridge height is not required, the epithelial surface of the graft is placed with the surrounding epithelium. The graft is sutured all over the tissue at the recipient site. The temporary bridge is positioned to serve as a reference when estimating the amount of tissue needed to fill the defect.

Outcomes:

The newly formed granulation tissue during healing will make a border between the graft and the adjacent tissue, smooth and properly epithelialized. Oedema, which occurs postoperatively, will help contour the ridge.

Conclusions:

Class III ridge defects are a major challenge for the dentists, as the ridge needs to be enlarged in both vertical and horizontal dimensions. The combined procedures can be used successfully in such situation.

Fig.1. Schematic illustrations of the inter - positional graft procedure.

(a) Cross section of class I ridge defect. (b) A labial flap (partial-thickness dissection preferred) is used to create the pouch. (c) A wedge-shaped graft is removed from the palate. (d) The epithelial surface of the graft is placed flush with the surface of the tissue surrounding the pouch and sutured around its circumference.

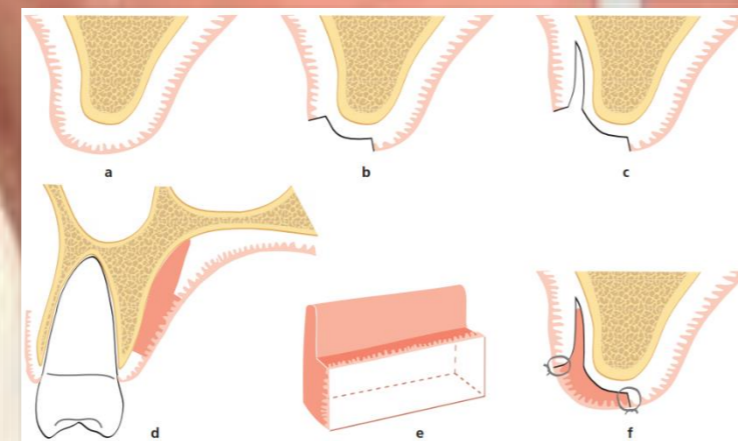
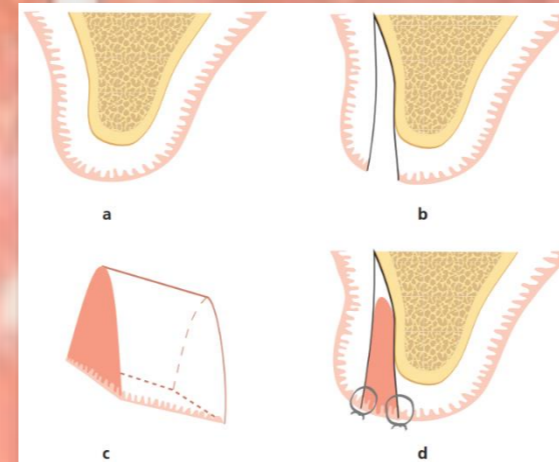
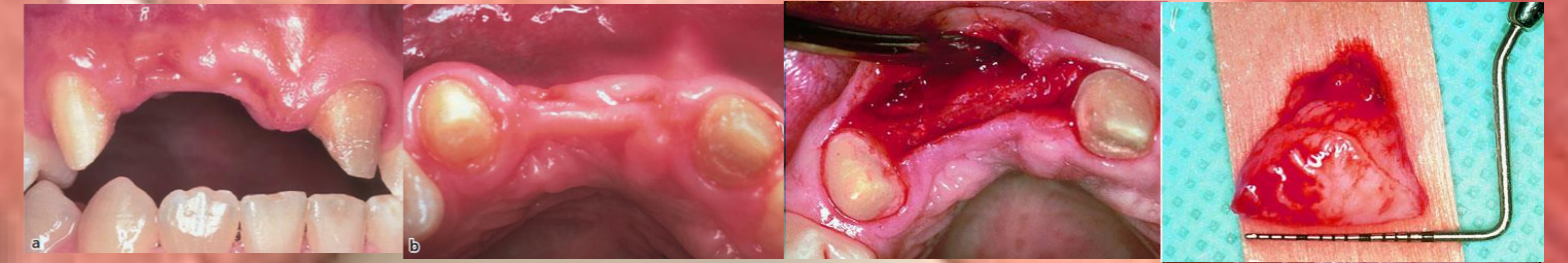


Fig.2. Diagram of the combination onlay interpositional graft procedure.

(a) Cross section of a class III ridge defect. (b) Epithelium is removed on the labial crestal side of the ridge to prepare the recipient bed for the onlay segment of the graft. (c) Partial-thickness dissection was then used to create a pouch for the interpositional section of the graft. (d) The dissection for the graft is started at right angles to the surface of the palate. The scalpel blade is then angled to remove a long connective tissue segment for the graft. (e) Three dimensional view of the onlay section of the graft (including epithelium) and the connective tissue segment for buccolingual augmentation. (f) Graft sutured into position.

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The right maxillary lateral and central incisors were lost due to trauma. These views show the horizontal and vertical loss of ridge tissue 10 months after the extractions. (c) A partial-thickness path of incision was extended labially and apically to create a pouch. The amount of space created within the pouch and the degree of relaxation of the flap was then tested with a periosteal elevator. (d) The epithelialized section of the graft can be seen in this view. (e) The premolar area, maxillary right side, was used as a donor area. The area of exposed connective tissue corresponds to the onlay section of the graft. The incisions were extended another 5–7 mm towards the midline on a long bevel to obtain the interpositional segment of the graft. (f) The graft was tucked into the labial pouch and sutured first along its palatal border. The labial flap was then sutured along the epithelial connective border of the graft. The residual labial socket defect in the flap created a soft tissue discontinuity defect along the labial margin of the flap. (g) At 6 weeks post surgery, it can be seen that further augmentation would be required to gain additional soft tissue in both the vertical and horizontal planes. A second-stage procedure was done at this time. (h) An incision 1.5 mm in depth was utilized to de-epithelialize the crestal surface of the ridge. Note that the papillae were not included within the surgical field. The mesial and distal borders of the onlay section of the recipient site were then extended apically to create vertical releasing incisions. The overall recipient site was to be trapezoidal in shape. A labial flap to create the pouch section of the recipient site was made using partial-thickness dissection. (i) The left maxillary premolar area was used as the donor site for the second-stage surgery. (j) This side view clearly shows the epithelialized onlay section of the graft and the de-epithelialized connective tissue section of the graft, as well as tissue thickness. (k) The graft was sutured first along the fixed palatal border to gain initial stabilization. Then the connective tissue interpositional section was sutured along the lateral borders. The flap was then sutured over the interpositional section of the graft at the epithelialized edge of the onlay section of the graft and along the vertical incisions. (l) At 6 weeks post surgery, the provisional prosthesis was modified to bring the tissue surface of the pontics into contact with the healing ridge. (m) At 2 months post surgery, tooth form was further modified on the provisional prosthesis and gingivoplasty was done to sculpt the tissues to final form and smooth out surface irregularities. (n) The final ceramo-metal prosthesis was inserted 4 months later. The life-like reconstruction of the soft tissues and dentition restored dentofacial esthetics for the patient.

