

Anterior Palatal Island Advancement Flap for Bone Graft Coverage: Technical Note

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INTRODUCTION

The most important step in bone graft augmentation of alveolar process is soft tissue coverage. Dehiscence of the wound leads to graft exposure and subsequent problems.^[1] When the graft is placed on the bone (onlay) or in between the split alveolar ridge (inlay), then the added width will prevent tensionless closure of the soft tissue.

There are several ways to overcome this problem including wide subperiosteal undermining, periosteal hatching, using tissue expanders before bone graft, and finally soft tissue flaps for bone graft coverage.^[2-5] In the anterior maxilla that is the most esthetic demand area in the mouth, restorative and prosthodontic treatments should have ideal characteristics, as well as possible. This paper reports an Anterior Palatal Island Advancement Flap for bone graft coverage in anterior maxilla.

PATIENTS AND METHODS

Patients

The patient was a 48-year-old female, who was referred for maxillary posterior segmental repositioning and

ABSTRACT

Background: The most important step in bone graft management is soft tissue coverage. Dehiscence of the wound leads to graft exposure and subsequent problems. **Purpose:** This study introduces an axial pattern flap for bone graft coverage in anterior maxilla. **Patients and Methods:** Use of Anterior Palatal Island Advancement Flap is presented by the authors. It is a mucoperiosteal flap with axial pattern blood supply, based on nasopalatine artery. It is easy to raise and predictable. **Results:** Anterior Palatal Island Advancement Flap was effective in bone graft coverage in premaxillary edentulous area. **Conclusion:** It can be used as an aid for bone graft coverage of premaxillary edentulous ridge, where the need for mucosa is small in width but long in length.

Key words: Anterior maxilla, bone graft, dental implant, palatal advancement flap

mandibular subapical osteotomy to level the occlusal plane and provide sufficient space for dental prosthesis. Maxilla was edentulous in between the remaining canine root teeth; the prosthodontist's plan was to reconstruct the anterior maxilla with fixed dental implants and dowel-core crown of the canine teeth after crown lengthening. Cone-beam computed tomography of the maxillary anterior region showed thin remaining bone. The region needs to be augmented for hard tissue replacement. Wedge of the bone that was harvested from anterior mandibular subapical osteotomy was used for bone grafting [Figure 1].

The bone graft was covered by reflecting the labial mucoperiosteal flap and exposed bone in ridge crest was covered by Anterior Palatal Island Advancement Flap [Figure 2].

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How to cite this article: Rahpeyma A, Khajehahmadi S. Anterior palatal island advancement flap for bone graft coverage: technical note. J Surg Tech Case Report 2015;7:42-4.

Access this article online	
Quick Response Code:	Website: www.jstcr.org
	DOI: 10.4103/2006-8808.185655

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Methods

Two vertical palatal parallel-releasing incisions, mesial to the maxillary canines, were cut which are 2 cm in length. Full-thickness palatal mucoperiosteal flap was elevated from the bone with the aid of fine periosteal elevator using great care to avoid injury to the incisive foramen contents. After delicate flap elevation, the third horizontal incision in the palate connects the vertical cuts.

The only attachment of this flap is nasopalatin neurovascular bundle. The flap was advanced 2–3 mm and sutured to the labial flap. All incisions were sutured except the third palatal horizontal incision [Figure 3].

The bony gap behind it was let to be covered with granulation tissue and finally epithelialized.

RESULTS

Anterior Palatal Island Advancement Flap was effective in bone graft coverage in premaxillary edentulous area [Figure 4].

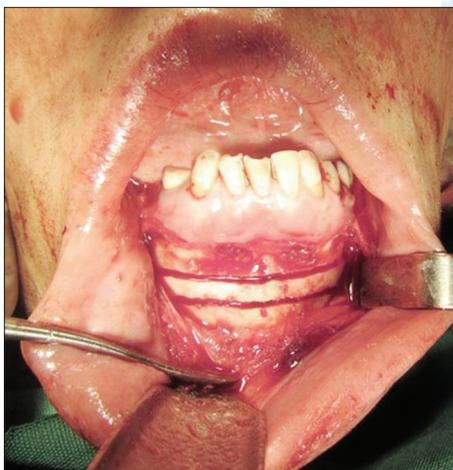


Figure 1: Wedge of the bone was harvested from anterior mandibular subapical osteotomy

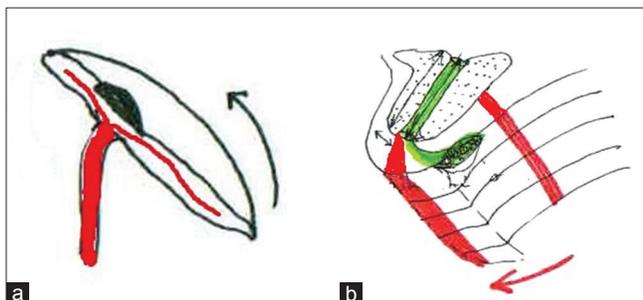


Figure 3: (a and b) Schematic pictures of the flap

DISCUSSION

When there is a need of soft tissue flaps in anterior maxilla for bone graft coverage, some limited choices are available. The transferred tissue in ideal conditions should have color and consistency similar to the adjacent tissues. Buccal mucosal transposition flaps (finger flaps) are not ideal because the transferred tissue is mobile and nonkeratinized.^[6] Palatal flaps are available for providing anterior maxillary bone graft coverage for the mucosa. Flaps that formed from palatal mucosa for this purpose are rotated palatal flap and palatal advanced flap.^[7,8] Flaps from palatal subepithelial connective tissue (CT) are vascularized interpositional periosteal-CT, roll, modified roll, and vascularized periosteal membrane flaps.^[9-12]

Second group flaps need time for secondary epithelialization. Palatal mucosa is supplied by six pairs

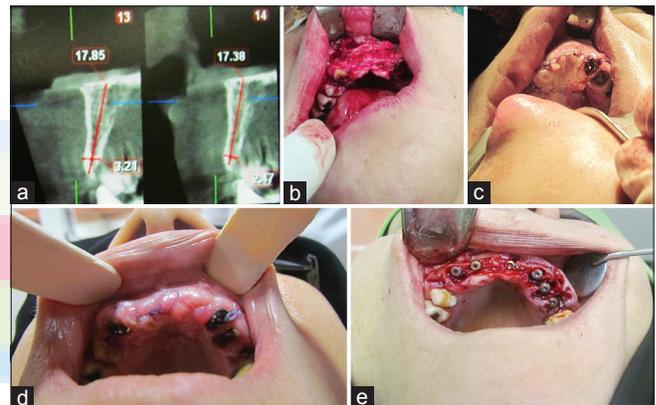


Figure 2: (a) Cone-beam computed tomography of anterior maxilla with thin width alveolar ridge. (b) Maxillary anterior buccal onlay bone grafting. (c) Tensionless coverage of bone graft with Anterior Palatal Island Advancement Flap. (d) Postoperative photograph 3 weeks after operation. (e) Implant insertion into the bone graft and adjacent fresh extraction socket

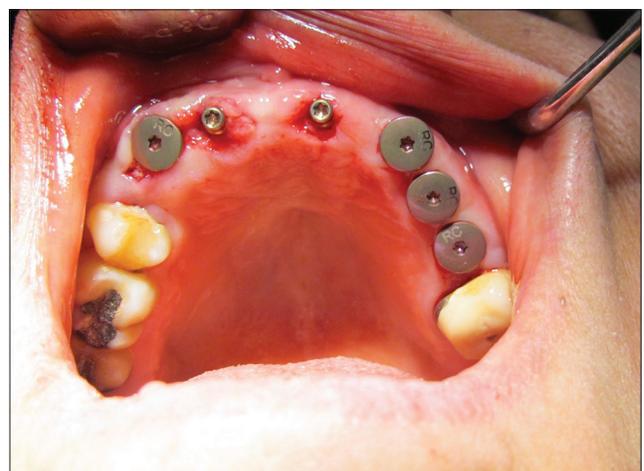


Figure 4: Healing caps in position on implant body and ideal gingival relationship

of arteries.^[13] Posterior Palatal Island Flaps are nourished by greater palatine artery but anterior palatal island advancement flap is anteriorly based mucoperiosteal flap and relays on nasopalatine artery. It is indicated when the anterior maxillary incisors (four teeth) have been lost and there is a need for 2–3 mm advancement of palatal flap. It is anticipated that in older patients with enlarged nasopalatine canal, the amount of flap advancement will increase.^[14]

This flap is recommended for bone graft coverage just in premaxillary edentulous space. In the situation that two central maxillary incisors are lost, flap elevation is difficult and if the edentulous span is long, then blood perfusion of the flap becomes compromised.

CONCLUSION

Anterior Palatal Island Advancement Flap is axial pattern and can be used as an aid for bone graft coverage of premaxillary edentulous space, where the need for mucosa is small in width but long in length.

Financial support and sponsorship

This study was supported by a grant (No:940684) from the Vice Chancellor of Research of Mashhad University of Medical Sciences for assessing reliability of Anterior Palatal Island Advancement Flap in animal study.

Conflicts of interest

There are no conflicts of interest.

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