

Soft Tissue Augmentation Using Free Mucosal Graft

Prasad Nadig, Priyadarshini Nadig

ABSTRACT

Gingival augmentation procedures are indicated primarily to increase an insufficient amount of gingiva and sometimes to halt the progression of gingival recession. Inadequate or absence of attached gingiva is considered detrimental to periodontal health by many researchers. Individuals with less than optimal oral hygiene practice can be helped by increasing the width of attached gingiva and vestibular depth, which provide room for easier placement of toothbrush and help to avoid brushing on mucosal tissue. This article puts emphasis on a case report where management of gingival recession and decreased width of attached gingiva was done by free mucosal graft with encouraging results.

Keywords: Root coverage, Free mucosal graft, Recession, Soft tissue augmentation, Free gingival graft.

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INTRODUCTION

One of the most common esthetic concerns associated with periodontal tissue is gingival recession. Gingival recession or marginal recession is defined as 'the location of the marginal tissue apical to the cemento-enamel junction with exposure of the root surface'.¹ Gingival recession may be associated with anatomic factors, inflammatory conditions or trauma. Therapeutic actions are directed at minimizing the progression of apical migration of gingival margin as well as to enhance the esthetic appearance of tissues. Root surface exposures resulting from gingival recession may also produce sensitivity, susceptibility to root caries, and can lead to dentinal hypersensitivity. Gingival recession may also lead to lack of adequate attached gingiva, limiting proper plaque removal by the patient. Coverage of these exposed root surface may minimize the above problems.

Friedman in 1957 gave the term 'mucogingival surgery' and defined it as 'periodontal surgical procedures designed to correct defects in the morphology, position and or the amount of soft tissue and underlying bone support at teeth and implants'.² In 1993 Miller retermed mucogingival surgery as 'periodontal plastic surgery'. Because of advancements and introduction of newer techniques, mucogingival surgery has moved beyond the traditional treatment of only correction of recession type defects.

Various periodontal plastic surgery procedures are aimed are at:

- Gingival augmentation
- Root coverage
- Correction of mucosal defects at implants
- Crown lengthening
- Gingival preservation at ectopic tooth eruption
- Removal of aberrant labial frenulum
- Prevention of ridge collapse associated with tooth extraction
- Augmentation of edentulous ridge.

As esthetic aspects represent an inseparable part of today's clinical practice, the surgical coverage of recessions is mainly indicated for esthetic improvement rather than functional aspects, however individuals with less than optimal oral hygiene practice can be helped by increasing the width of attached gingiva and vestibular depth, which provide room for easier placement of toothbrush and help to avoid brushing on mucosal tissue. The success of mucogingival surgical interventions may depend on several factors,³ such as (i) the bacterial contamination of the sites; (ii) local factors such as defect morphology, tooth position and tooth surface characteristics; (iii) tension of the flap; (iv) thickness of the graft; (v) blood supply; (vi) graft adaptation on the recipient bed; (vii) graft suturing and immobility; (viii) surgeon skill and technique; (ix) patient compliance and good oral hygiene maintenance.

Root coverage can be achieved by various techniques:

- Free autogenous gingival graft
 - Laterally positioned flap
 - Coronally positioned flap
 - Double papilla flap
 - Transpositional flap
 - Rotational flap
 - Semilunar coronally advanced flap
- Free soft tissue graft
 - Free gingival graft
 - Connective tissue graft
- Guided tissues regeneration

The free gingival graft procedure involves keratinized epithelial graft procured from palate or an edentulous ridge which is secured at the recipient site. Keratinized gingiva was first utilized by Hattler in 1967 and the technique was popularized by Sullivan and Atkins. In 1980s miller

demonstrated that it was possible to cover deep, wide recessions using free gingival graft with very good prognosis. The free gingiva graft is indicated for root coverage of both single and multiple recessions.

CASE REPORT

A female patient aged 45 years reported with the chief complaint of sensitivity in lower anterior tooth region. Clinical examination revealed Millers class III recession in relation to 41 and 32 (31 missing). The distance from CEJ to marginal gingiva was 6 mm in relation to 41 and 2 mm in relation to 32 (Fig.1). Inadequate amount of attached gingiva was noted in relation to 41 with frenum attachment at the gingival margin. Hence, our treatment objective was not only to achieve root coverage but also to create adequate amount of attached gingiva and removal of aberrant frenum, therefore free gingival grafting technique was planned.

Full-mouth scaling and polishing were performed and thorough oral hygiene instructions were given to eliminate local factors in the recession area. The patient was instructed to perform nontraumatic brushing technique.

Preparation of the recipient site: Following the administration of local anesthesia a horizontal incision with a no. 15 blade was made in the interdental papilla at right angle in relation to 32, 41 and 42 so as to create a butt joint with the graft. Vertical incisions were made at the proximal line angle of 42, 33 extending beyond the mucogingival junction into the alveolar mucosa and the overlying keratinized epithelial tissue were excised. Tissue tags were removed and bleeding at the recipient site was controlled using moderate pressure with sterile gauze dampened with saline for 5 minutes (Fig. 2). A template was prepared to harvest graft from the donor site.



Fig. 1: Recession in relation to 41 and 32

Obtaining the graft from donor site: The free gingival graft consists of epithelium and a thin layer of underlying connective tissue. The template representing the recipient site was placed over the palate (donor site) and a shallow incision was made around with no. 15 blade (Fig. 3). The blade was inserted to the desired thickness at one edge and lifted using a tissue forceps. The graft was separated using a blade till it was free from all sides. Tissue tags were removed and trimmed to required size (Fig. 4). A prefabricated palatal acrylic was placed to protect the donor site before suturing to help control hemorrhage.

Suturing of graft at recipient site: Excess clot was removed from the recipient site following which the graft was placed and sutured (Figs 5 and 6). A horizontal suture was placed along the length of the graft and circumferential suture were placed in relation to 41 and 32. A firm pressure was applied



Fig. 2: Recipient site prepared

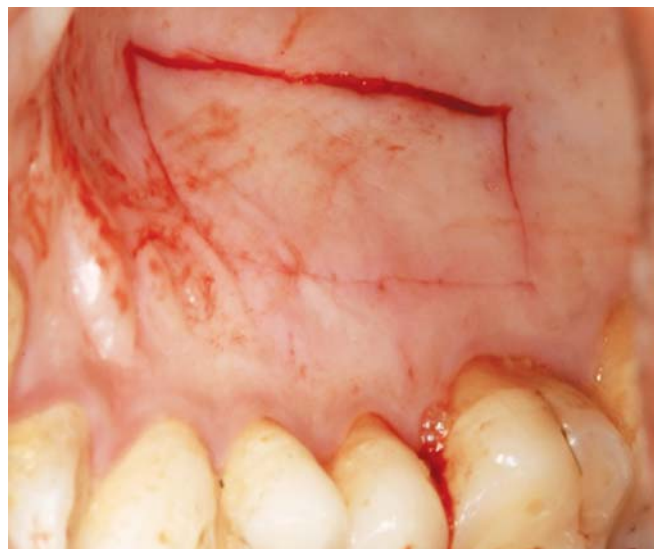


Fig. 3: Incision placed at donor site

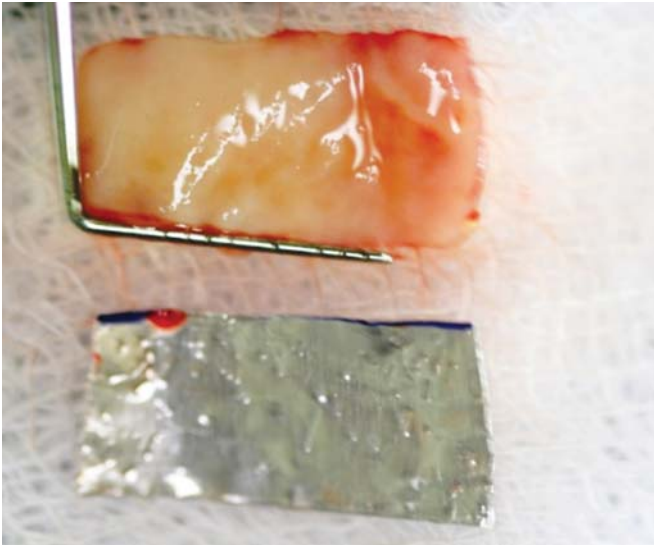


Fig. 4: Free gingival graft procured

over the grafted area with a saline soaked gauze piece for 2 minutes to promote close approximation of the graft to the recipient site.

RESULTS

The patient was recalled after 4 weeks for reevaluation. On clinical examination the recession in relation to 41 and 32 was reduced to 2 and 0 mm respectively with a wide zone of attached gingiva (Fig. 7). The donor site had healed uneventfully (Fig. 8).

DISCUSSION

The clinical significance of attached gingiva is very well known, a thick keratinized gingiva acts as an effective barrier and resist physical, chemical and thermal assault



Fig. 5: Graft placed on recipient site



Fig. 7: One month postoperative photograph

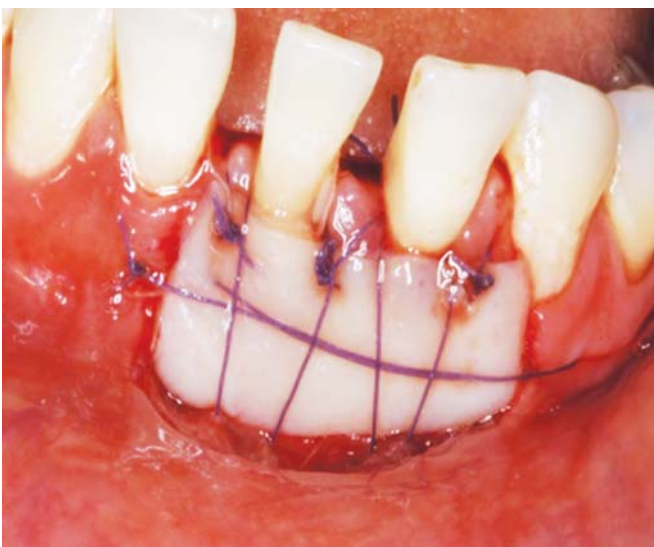


Fig. 6: Graft sutured at recipient site



Fig. 8: Donor site at 4 weeks postoperatively

protecting the underlying periodontium. The decreased width of attached gingival becomes more important when it obstructs proper oral hygiene maintenance.

The absence of sufficient amount of keratinized tissue apical or lateral to the recession defect, marginal insertion of frenuli, presence of a shallow vestibule and multiple recession defects limits the application of advancement flaps or rotational flaps.⁴ In these cases, free soft tissue grafts are ideal to increase the apicocoronal dimension of keratinized tissue.

The free gingival graft can be used both as a one- or two-step procedure for root coverage. Free gingival graft are used:⁵ (i) To increase the apicocoronal dimension of the gingival unit, (ii) to form a new functional attached gingiva where attached gingiva is completely lacking, (iii) for pedicle grafts where gingiva of the adjacent donor site is insufficient, (iv) to remove abnormal frenum and its attachment, (v) root coverage procedure, (vi) to deepen the oral vestibule and (vii) also for soft tissue ridge augmentation procedure. Another clinical situation where free gingival graft can be technique of choice relates to conservative dentistry where it has been suggested that 5 mm of keratinized tissue is desirable to prevent recession in areas where a restoration with subgingival margins is planned.⁶

In this case report, the distance from CEJ to marginal gingiva was 6 mm in relation to 41 and 2 mm in relation to 32 preoperatively which was reduced to 2 and 0 mm respectively postoperatively resulting in mean root coverage 66.6 and 100%. Free gingival graft has a high degree of predictability and mean initial root coverage of 73% is found.⁷ The remaining amount of root coverage required can be achieved by the creeping attachment. Goldman describe creeping attachment as the increased gingival coverage over a denuded root surface that takes place over an extended period of time after surgery.⁸ Creeping attachment gives an additional coverage of 0.8 mm on average in 95.5% of sites which may provide the extra-attachment needed for 100% root coverage.⁹

SUMMARY

The free gingival graft is still a viable and effective modality of mucogingival surgery. Though many new techniques for root coverage have been in-use recently, the free gingival graft may still be the best treatment option for gingival recession when an increase in the apicocoronal dimension of the keratinized gingival tissues is a desirable treatment outcome.

REFERENCES

1. Lindhe J, Lang N, Karring T. Clinical periodontology and implant dentistry (5th ed). Blackwell Publishing Ltd. Garrington Road, Oxford, UK 2008;p. 958.
2. The American Academy of Periodontology. Glossary of periodontal terms (4th ed). Chicago: American Academy of Periodontology 2001: 49-50.
3. Bouchard P, Malet J, Borghetti A. Decision-making in aesthetics: Root coverage revisited. *Periodontology 2000* 2001;27:97-120.
4. Carranza FA, Newman MG, Takei HH. Clinical periodontology (10th ed). WB Saunders Co. St Louis, Missouri 2006: p. 1016.
5. Camargo PM, Melnick PR, Kenney EB. The use of free gingival grafts for aesthetic purposes. *Periodontology 2000* 2001;27: 72-96.
6. Maynard JG, Wilson RD. Physiologic dimensions of the periodontium significant to the restorative dentist. *J Periodontol* 1979;50:170-74.
7. Wennström JL, Prato P. Mucogingival therapy. *Ann Periodontol* 1996;1:671-701.
8. Goldman H, Schluger S, Fox L. *Periodontal Therapy* (3rd ed). St. Louis: CV Mosby Co 1964;560.
9. Harris RJ. Creeping attachment associated with the connective tissue with partial-thickness double pedicle graft. *J Periodontol* 1997 Sep;68(9):890-99.

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