

Free Gingival Grafts to Increase Keratinized Tissue: A Case Series

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Abstract: Gingival augmentation procedures are primarily indicated to increase an inadequate amount of gingiva and to cease the progression of gingival recession.

Keywords: Gingival augmentation procedures, Increase Keratinized Tissue.



1. INTRODUCTION

For many years, the existence of “adequate” amount of gingiva was considered as a keystone for the preservation of the generalised periodontal health.¹⁻⁴ In an observational study, Lang and Loe⁵ reported that inspite of the fact that the tooth surfaces were free from plaque, “all the surfaces with less than 2.0 mm of keratinized gingiva exhibited clinical inflammation and varying amount of gingival exudates.” Other investigators⁶⁻⁸ were failed to find a similar association and reported that it is possible to maintain the gingival marginal tissues, even in the areas with inadequate amount of keratinized gingiva. However, the presence of site-specific conditions, like gingival recession, thin periodontium, root prominence and reduced amount of attached gingiva, may indicate for gingival augmentation procedure.^{9,10} In particular, Serino et al.⁹ showed that sites with gingival recession should be considered susceptible to further apical displacement of the soft tissue margin.

The gingival augmentation procedures are mainly indicated to prevent soft tissue damage in the presence of alveolar bone dehiscence during natural or orthodontic tooth eruption, to decrease the progressive marginal gingival recession; to enhance plaque control and to increase the sufficient amount of gingival tissue.¹⁰ A free gingival graft (FGG) procedure is one of the most frequently used surgical technique for gingival augmentation.¹¹⁻¹⁵ This paper showed a 2 years comparison between different surgical treated sites which revealed significant differences in the amount of keratinized tissue (KT), attached gingiva, and in the coverage of gingival recession.

2. CASE HISTORY

Case1:

A 27 years old female patient visited to the department of periodontics with a chief complaint of sensitivity in lower front region since 6months.No significant medical and dental histories. Intraoral examination revealed probing depth of 3mm. bleeding on probing was minimal. The patient's oral hygiene status was found to be good, no other periodontal concern other than Miller's class II recession with respect to the tooth 41. Radiographic evaluation showed no bone loss. Pre-surgical therapy included thorough scaling and root planing and instructions for the maintenance of oral hygiene. Re-evaluation of the lower right central incisor done after 3 weeks which showed 3mm of recession. After taking the patient's consent, the site was treated by Miller's technique for free autogenous gingival grafting to achieve increase width of attached gingiva and root coverage.



Case2:

A 25 years old male patient reported to the department of periodontics with a chief complaint of sensitivity of a tooth in lower front region since 3months. Patient's medical and dental histories were insignificant. Periodontal examination revealed probing depth of 4mm. bleeding on probing was minimal. The patient's oral hygiene status was found to be good. Miller's class II recession was present with respect to the tooth 41. Radiographic evaluation showed no bone loss.



Case3:

A 25 years old female patient reported to the department of periodontics with a chief complaint of long tooth in lower anterior region. Patient's medical and dental histories were insignificant. Periodontal examination revealed probing depth of 3mm. bleeding on probing was minimal. The patient's oral hygiene status was found to be good. The only periodontal concern was Miller's class II recession with respect to the tooth 31. Radiographic evaluation showed no bone loss.



All the individuals included in the study were underwent gingival augmentation procedures –the free autogenous gingival grafts procedure, to treat the inadequate amount of attached gingiva. Before surgery, all individuals were instructed and motivated to maintain and use proper oral hygiene procedures.

After taking the consent of all the patient's, the site was treated by Miller's technique for free autogenous gingival grafting to increase the width of attached gingiva and to achieve root coverage.

2.1 Surgical Procedure: Preparation of Recipient Bed:

The surgical site was anesthetised with local anesthesia by using lidocaine hydrochloride (2%) and 1:200,000 adrenalin. Once adequate local anesthesia had been achieved, the exposed root surface was planned thoroughly with a Gracey 1-2 curette. The horizontal incision was given at the level of cemento-enamel junction extending from the line angle of the adjacent teeth on either side of the recession, deep into the papilla, creating a well-defined butt joint margin (Fig.1). At the distal terminal of the horizontal incision, vertical incision was given, extending well into the alveolar mucosa, so that it is 3mm beyond the apical extent of the gingival recession. A partial thickness flap was elevated and excised apically¹⁶ (Fig.2).



fig 1-



fig. 2

2.2 Preparation of Donor Tissue:

Foil template is used to accurately determine the amount of donor tissue. Firstly, the template was prepared by accurately adapting it to the recipient site.

Either side of palate can be selected and measuring the thickness of the tissue using a file with a stopper. For harvesting the donor tissue the area between first and second premolar which had greater thickness was selected. After the placement of tinfoil template over the donor site the initial incision was made with a no 15 scalpel blade. All palatal incisions were outlined in such a fashion, so that butt joint margin in the donor tissue can be created.

At the recipient site, butt joint margin of the graft will be placed against the accentuated enamel margins at the cemento-enamel junction. A fine bevel access incision was placed to get an even thickness of the graft tissue. The incision was placed by keeping the no.15 scalpel blade parallel to the tissues along the occlusal aspect of the palate. Tissue pliers was continuously used to hold and retract the graft distally as it is being separated apically and dissected, until the graft is totally free from the site (Fig.3). The graft obtained was finely inspected for any glandular or fatty tissue remnants. The thickness of the graft was also checked to ensure the smooth and uniform thickness (Fig.4).

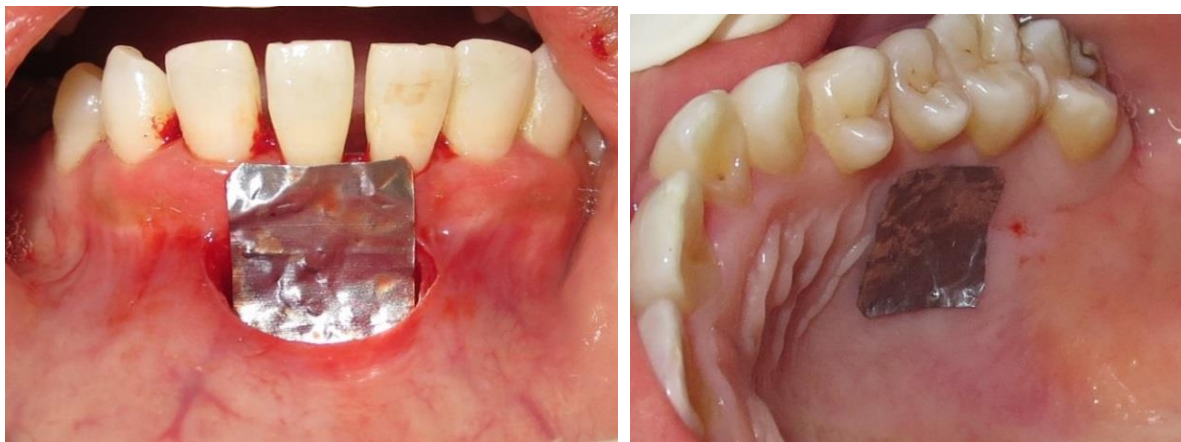


Fig 3



Fig 4

2.3 Graft placement and stabilization:

The harvested graft was then placed on the recipient site and sutured by means of interrupted sutures 5-0 (vicryl) resorbable sutures at the coronal and apical borders (Fig.5) then horizontal stabilizing sutures and a vertical pressure sutures was given for the close adaption of the graft to the tooth surface.

After suturing ,a periodontal pack was properly placed to protect the surgical site and the palatal wound was protected with help of gel foam and stabilized by a Hawley's retainer¹⁷ (fig.6)



Fig 5.

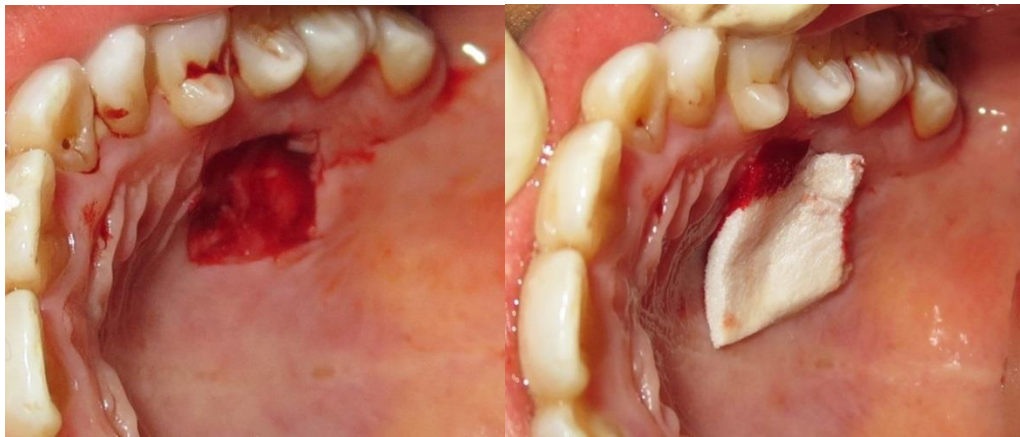
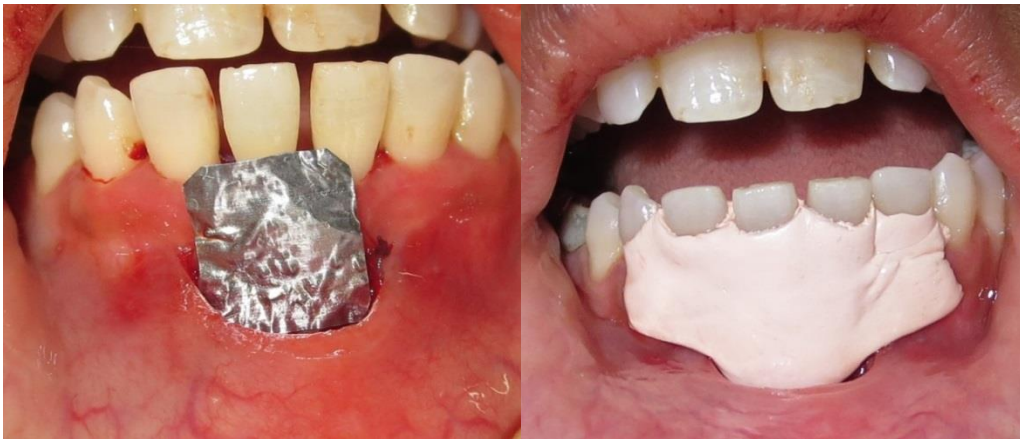


Fig 6.

2.4 Post-Operative Instructions:

The patient was asked to avoid tooth brushing at the surgical site for two weeks. Oral hygiene instructions given to the patients included: mouth rinses with 10 ml of 0.2% chlorhexidine digluconate mouthwash twice daily for 1 minute for 14 days, Capsule Amoxicillin 500mg thrice daily for 5 days and Tablet ibuprofen 400mg twice daily for 3 days were prescribed. Patient was then recall after 10 days for follow up.

Patient recall after 10 days, during that visit the grafted site was gently cleansed with a help of cotton pellet dipped in normal saline and sutures were removed if not resorbed. The graft was stable, pink and healthy and nicely adapted to the root surface. Palatal wound healing was satisfactory. The patient was instructed to use a soft bristle toothbrush followed by a 60-second rinse with 0.2% chlorhexidine digluconate for the another 6 weeks.

Fig. 7 shows the operated site at 1 month and 3 month follow up. The subjects were recalled after every 3 months for supportive periodontal.



(1 month follow up)

(3 month follow up)

Fig. 7

III. DISCUSSION

The main objective of this case series is to assess the changes in the amount of Keratinized tissues and in the position of the gingival margin after the placement of free gingival grafts in sites presenting with insufficient amount of attached gingiva associated with gingival recession.

Sullivan and Atkins described root coverage by placing free autogenous gingival graft and they also reported that free gingival graft offers best results in cases of shallow and narrow recessions.¹⁹ Later Miller (1985) described an effective classification of recession defects taking into consideration the anticipated for root coverage that is possible to achieve.¹⁸ This case series presents a Miller's class-II recession of tooth no 41,31,41 in three different individuals with complete root coverage by free gingival autogenous soft tissue graft. Miller's criteria for successful root coverage procedure include: the soft tissue margin should be at the cemento-enamel junction, must have the clinical attachment to the root, with sulcus depth of 2mm, and there should be no bleeding on probing.²⁰

1.5-2mm thick free epithelialized autogenous soft tissue grafts are recommended for recession coverage procedure.²⁰ Although such grafts have a greater primary contraction as compared to the thin (0.5-0.8 mm) or an average (0.9-1.4 mm) thickness grafts but their secondary contraction is less during the healing process. The thick grafts having the advantage as they are more resistant to future recession. Also with thick grafts which will replace the gingival margin, the process of creeping attachment is quite frequently seen. With creeping attachment, there is an increase in root coverage of approximately 1mm over a 1 year period post-surgery usually seen.²¹ However these procedures are more technically demanding, time consuming and the color match of the tissue is often quite lighter than ideal. Due to the predictability and versatility of connective tissue graft, the use of the free gingival graft for root coverage has drastically declined. But Free gingival graft is best suited in the following situations: increasing the depth of vestibule, increasing the width of attached gingiva associated with a restoration and augmenting the area of minimal gingiva.

IV. CONCLUSION

Gingival augmentation procedures (marginal free gingival graft and submarginal free gingival graft) performed in sites with an inadequate amount of attached gingiva associated with recessions provides an increased amount of keratinized tissue and recession reduction over a period of time .

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