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Free Gingival Grafts for Augmenting Attached Gingiva in Millers Class III Gingival Recession- A Case Series

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Abstract

The management of advanced cases of gingival recession are important to prevent further attachment loss consequently leading to tooth loss. Management of Millers Class III and IV cases of Marginal Tissue Recession are not only challenging but also the techniques available for its correction are limited. The Free Mucosal Graft (FMG) harvested from the palate allows augmentation of keratinized tissue and is considered to be one of the most reliable procedures for augmenting the keratinized tissue. This case series includes four cases of Miller's Class III gingival recession in the mandibular anterior region managed using FMG harvested from the palate. The result in all four cases was highly satisfactory in terms of augmenting the keratinized tissue and improvements in the recession height. The patients were relieved of the associated symptoms of sensitivity and discomfort while brushing teeth.

Keywords: Morphology, Sensitivity of Teeth, Free Mucosal Graft, Probing Depth.

Introduction

Mucogingival defects can result from aberrances in morphology, position and/ or amount of gingiva. These defects can result in unsightly appearance due to marginal tissue recession, sensitivity of teeth, root caries, accumulation of plaque and calculus and difficulty in maintaining site. Addressing these deformities forms an important aspect of Periodontal Plastic Surgical Procedures [1]. Marginal tissue loss can advance to such an extent that clinicians face challenges in addressing not only the esthetics but also the associated functional and biological problems [2]. The recession defects associated with Millers Class III and IV are often accompanied by bone loss and hence not amenable for aesthetic coverage of denuded roots. The main aim in such cases is to increase the amount of attached gingiva or keratinized mucosa apical to area of defect. The presence of keratinized tissue provides resistance from damage from mechanical, chemical and thermal stimuli. It also provides an effective barrier against microorganisms in plaque and their noxious products [3]. The goal of this case series is to discuss the rationale

and clinical application of one of the earliest forms of mucogingival therapy- The Free Gingival Grafts (FGG). The cases were treated with the use of FGG with an intention to increase the width of keratinized tissue apicocoronally and buccolingually, create sufficient vestibular depth wherever required, halt the progression of marginal tissue recession, relieve symptoms like sensitivity/ tenderness of gums and make the site more maintainable.

Case Series

The case series includes four cases of Millers Class III gingival recession who reported with a chief complaint of sensitivity in lower front teeth region and/or tenderness of gums while brushing. The management of these recession defects was performed using FGG which was harvested from the palate. The patients were explained the procedure and a written informed consent obtained. All the patients were systemically healthy. The initial therapy included Phase I therapy ranging from 4 to 12 weeks which included scaling and root planning, oral hygiene instructions and orthodontic consultations to relieve trauma wherever indicated. The clinical parameters were recorded at baseline and post operatively which included probing depth (PD), gingival recession height (GRH) and height of keratinized tissue (KTH). The GRH was measured as the distance between the cemento-enamel junction (CEJ) to the apical most aspect of gingival margin and the KTH was measured from the mucogingival junction (MGJ) to the gingival margin.

The procedures were performed under local anesthesia (2% Lignocaine hydrochloride). The recipient bed was prepared by a partial thickness flap which was secured apically with the detachment of muscular and fibrous attachments of the frenum. Root planning and flattening of root was carried out to reduce the avascular contact with the graft. The gingival graft was harvested from the palatal region as per the requirement and assessed from the prepared recipient site. The graft was harvested by making an outline keeping it 2 to 4 mm from the palatal gingival margin, posterior and distal to the midline of canine and mesial to the 1st molar. The thickness of graft was between 1 to 2 mm and included the palatal epithelium, connective tissue and submucosa. The harvested graft was then secured on the recipient site using 3-0 BBS sutures and protected with a periodontal pack. Palatal stents were prepared with spacers which was loaded with periodontal pack and used to protect the donor site.

Post-operative instructions were given to the patients. The antibiotics and analgesics prescribed were Cap Amoxicillin 500 mg tid for 5 days, Tab Tinidazole 500 mg bid for 3 days and Tab Ibuprofen 400 mg tid for 3 days. The patient was instructed not to brush in the surgical site and 24 hours following surgery rinse with 0.2% chlorhexidine mouth wash 10 ml for 60 sec twice a day. The patient was recalled after 10 days for removal of pack and sutures.

Case 1:

A 36 years old female patient reported with a complaint of tenderness of lower front gums while brushing teeth and sensitivity to cold since 1 year. Examination revealed a Miller's Class III gingival recession wrt 41 region with tension test positive. The mandibular labial frenum attachment was causing blanching and displacement of the gingival margin wrt 41. The surgical procedure was carried out as described and post operative evaluation done at 1 yr and 2 yrs respectively [Fig 1 a-f].

Case 2:

A 32 years old female patient reported with a complaint of tenderness of lower front gums while brushing teeth

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since 06 months and sensitivity to cold. Examination revealed a Miller's Class III gingival recession wrt 31, 41 region. The patient was unable to maintain oral hygiene. After phase I therapy the patient was taken up for FGG for augmenting the keratinized gingiva. Post operative evaluations were carried out at 06 months and 14 months [Fig 2 a-d].

Case 3:

A 25 year old male serving soldier reported with complains of sensitivity to cold wrt lower front teeth since 04 months. The tension test was positive wrt mandibular labial frenum resulting in displacement of the interdental papilla between 31 and 41. Augmentation of keratinized gingiva was carried out and patient evaluated post operatively at 06 and 09 months [Fig 3 a-f].

Case 4:

A 24 yrs old serving soldier reported with sensitivity of lower front teeth on consuming cold drinks and food since 06 months. On examination there was a marginal tissue recession of 4 mm wrt 41 region with complete loss of keratinized tissue apical to recession and extending into the vestibule. A partial thickness graft was reflected and augmented using a FGG from the palate. Post operative evaluation was carried out at 03 months [Fig 4 a-f].

Results

The Free Gingival graft harvested from the palate was used for augmenting the keratinized mucosa in four patients. The procedure successfully resulted in augmenting the keratinized tissue in regions having Millers Class III gingival recession having complete loss of the same. The clinical parameters evaluated included PD, GRH and KTH carried out at baseline (preoperative after phase 1 therapy) and post operatively at various intervals. The PD in all the four cases was comparable at baseline and post operatively [Table 1]. There was a great reduction in GRH in Case 1 from 5 mm at baseline to residual GRH of 2mm at 2 years and in Case 4 from 4 mm at baseline to 1 mm at the end of three months [Table 2]. In Case 2 the GRH was comparable at baseline and 9 months with improvement of 1 mm in 31 region where as in case 3 complete root coverage was seen in 31 region and residual GRH of 1mm at 09 months from 3mm at baseline [Table 2]. The keratinized tissue was absent at baseline and post operative the notable augmentation of keratinized tissue (KTH) was seen in all the four patients despite the associated graft shrinkage [Table 3].

Discussion

The main objective in the management of Miller's Class III gingival recession cases where there is a complete lack of keratinised mucosa is to augment the same. The failure to do so can result in soft tissue damage in the presence of alveolar bone dehiscence during natural or orthodontic tooth eruption; to halt progressive marginal gingival recession; to improve plaque control and patient comfort around teeth and implants; and to increase the insufficient dimension of gingiva in conjunction with fixed or removable prosthetic dentistry according to American Academy of Periodontology. A 10 to 25 years retrospective study was performed to evaluate the changes in the amount of KT and in the position of the gingival margin following application of free gingival grafts at the marginal or submarginal gingival level. Root coverage was not the immediate and primary goal of these procedures however, augmentation procedures were effective in halting the progression of recession, post-operative migration of the gingival margin tissue in a coronal direction over portions of a previously denuded root also called 'Creeping Attachment was also observed [4]. Some studies reported that creeping

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attachment took place between 1 month and 1 year after surgery, whereas no other measurable coronal migration was observed after a longer period of time (5 years) [5,6]. The outcome of the presented case series shows Millers Class III gingival recession that was managed with FGG harvested from the palate. There was remarkable increase in the height of keratinized tissue in all the cases with stability in result ranging between 03 months to 02 years. Also there was reduction in the GRH after the augmentation most of which can be attributed to creeping attachment. Some of the shortcomings of this procedure include a 2nd surgical site to harvest the graft, morbidity and pain associated with secondary healing and the quantity of graft available. Despite these factors, the FGG to augment gingival tissues remains a reliable method especially in compromised or advanced cases of marginal tissue recession.

Conclusion

Gingival augmentation procedures performed in sites with an absence of attached gingiva associated with recessions provide an increased amount of KT and prevention in the progress of further gingival recession.

Legend Tables

Table 1: Probing Depth (mm) measured at baseline & Post operatively

Probing Depth (in mm)																
Case 1			Case 2						Case 3						Case 4	
Base Line	01 Yr	02 Yrs	Base line		06 months		14 months		Base line		06 months		09 months		Base line	3 months
41	41	41	31	41	31	41	31	41	31	41	31	41	31	41	41	41
1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1	0.5

Table 2: Gingival Recession Height (mm) measured at baseline & Post operatively

GRH (in mm)																
Case 1			Case 2						Case 3						Case 4	
Base Line	01 Yr	02 Yrs	Base line		06 months		14 months		Base line		06 months		09 months		Base line	3 months
41	41	41	31	41	31	41	31	41	31	41	31	41	31	41	41	41
5	2	2	3	3	2	3	2	3	2	3	0	1	0	1	4	1

Table 3: Keratinized Tissue Height (mm) measured at baseline & Post operatively

KTH (in mm)																
Case 1			Case 2						Case 3						Case 4	
Base Line	01 Yr	02 Yrs	Base line		06 months		14 months		Base line		06 months		09 months		Base line	3 months
41	41	41	31	41	31	41	31	41	31	41	31	41	31	41	41	41
0	11	11	0	0	7	7	7	7	0	0	5	5	5	5	0	5

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Figure Legends

Case 1:

Fig 1a: Pre-operative wrt 31

Fig 1b: GRH of 5 mm

Fig 1c: Recipient bed

Fig 1d: FGG from palate

Fig 1e: FGG secured on recipient bed

Fig 1f: 01 Yr post-operative

Fig 1g: 02 Years Post-operative

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Case 2:

Fig 2a: Preoperative wrt 31, 41 region

Fig2b: Palatal donor site

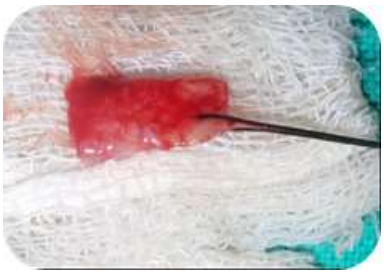

Fig 2c: FGG

Fig 2d: Post-operative 14 months

Case 3:

Fig 3a: Pre-treatment wrt 41 region

Fig 3b: After phase I therapy

Fig 3c: Preparation of recipient site

Fig 3d: FGG

Fig 3e: Palatal donor site

Fig 3f: Post operative 09 months

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Case 4:

Fig 4a: Preoperative wrt 41 region

Fig 4b: Recipient bed

Fig 4c: FGG

Fig 4d: FGG secured

Fig 4e: Post operative03 months

Fig 4f: Post-operative healing of palatal donor site at 03 months

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