

## Case Report

### Free Mucosal Grafting: A Case Report

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**Abstract:** Gingival augmentation procedures are indicated to increase the width of attached gingiva and to arrest the progression of recession. Autogenous gingival grafting or epithelialized free gingival grafting is a well-established mucogingival procedure for recession coverage and increasing the width of attached gingiva. A case of a localised Miller Class I recession and insufficient width of attached gingiva in a 29 year old male is reported. Recession was found on the anterior mandible with inadequate width of attached gingiva and is treated using free mucosal graft. The primary objective of the treatment is to improve esthetics, for root coverage, to increase the width of attached gingiva and to minimise the hypersensitivity found due to exposure of cementum.

**Keywords:** attached gingiva, mucogingival surgery, free mucosal graft.

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#### INTRODUCTION

The most important functional goals in the treatment of mucogingival problems are to arrest the progression of gingival recession, improve the ability for plaque control in cases with healthy and disease marginal tissues. The term *Mucogingival Surgery* was introduced in the periodontal literature by Friedman [1] in 1957 and was defined as “*Surgical procedures to preserve gingiva, remove aberrant frenulum or muscle attachments and increase the depth of the vestibule*” [2].

Miller in 1988 suggested the term Periodontal Plastic Surgery<sup>2</sup> to be more appropriate. Periodontal plastic surgical procedures are defined as “surgical procedures performed to correct or eliminate anatomic, developmental or traumatic deformities of the gingiva and alveolar mucosa” [3-4].

The presence of thick keratinized gingival covering serves as an effective barrier that resists damage from the physical forces of mastication and thermal and chemical stimuli. Corn et al suggested that the apico-coronal height of keratinized tissue ought to exceed 3mm [5]. Bowers et al [6] suggested that less than 1mm of attached gingiva may be sufficient. Lang & Loe suggested that 2 mm of gingiva is adequate width for maintaining gingival health [7]. Gingival recession is the exposure of the root surface due to apical shift of the gingival margin. The incidence of gingival recession varies from 8% in children to 100% after the age of 50 [8].

#### CLASSIFICATION OF MARGINAL TISSUE RECESSION [9].

**Class I** - Marginal tissue recession which does not extend to the MGJ. There is no periodontal bone loss (bone or soft tissue) in the interdental area, and 100% root coverage anticipated.

**Class II** - Marginal tissue recession which extend to of beyond the MGJ. There is no periodontal bone loss (bone or soft tissue) in the interdental area, and 100% root coverage anticipated.

**Class III** - Marginal tissue recession which extend to of beyond the MGJ. There is periodontal bone loss (bone or soft tissue) in the interdental area, or there is malpositioning of the teeth, which prevents the attempting of 100% root coverage. Partial root coverage anticipated.

**Class IV** - Marginal tissue recession which extend to of beyond the MGJ. There is periodontal bone loss (bone or soft tissue) in the interdental area, or there is malpositioning of the teeth is so severe that root coverage cannot be anticipated.

Kumar and Masamatti proposed new classification [10] to overcome the drawbacks of Miller's classification [9].

**Table-1: Classification Of Marginal Tissue Recession**

Kumar & Masamatti 2013	Proposed Classification	Proposed Palatal Classification
Class I	There is no loss of interdental bone or soft tissue: Class I-A: Gingival margin on facial/lingual aspect lies apical to CEJ but coronal to MGJ with attached gingiva present between marginal gingiva and MGJ. Class I-B: Gingival margin on facial/lingual aspect lies at or apical to MGJ with the absence of attached gingiva between marginal gingiva and MGJ.	PR-I: There is no loss of interdental bone or soft tissue. PR-I-A: Marginal tissue recession $\leq 3$ mm from CEJ. PR-I-B: Marginal tissue recession of $>3$ mm from CEJ.
Class II	Class II: The tip of the interdental papilla is located between the interdental contact point and the level of the CEJ mid-buccally/mid-lingually. Interproximal bone loss is visible on the radiograph. Class II-A: There is no marginal tissue recession on facial/lingual aspect. Class II-B: Gingival margin on facial/lingual aspect lies apical to CEJ but coronal to MGJ with attached gingiva present between marginal gingiva and MGJ. Class II-C: Gingival margin on facial/lingual aspect lies at or apical to MGJ with the absence of attached gingiva between marginal gingiva and MGJ.	PR-II: The tip of the interdental papilla is located between the interdental contact point and the level of the CEJ mid-palatally: PR-II-A: Marginal tissue recession $\leq 3$ mm from CEJ. PR-II-B: Marginal tissue recession of $>3$ mm from CEJ.
Class III	Class III: The tip of the interdental papilla is located at or apical to the level of the CEJ mid-buccally/midlingually. Interproximal bone loss is visible on the radiograph: Class III-A: Gingival margin on facial/lingual aspect lies apical to CEJ but coronal to MGJ with attached gingiva present between marginal gingiva and MGJ .Class III-B: Gingival margin on facial/lingual aspect lies at or apical to MGJ with the absence of attached gingiva between marginal gingiva and MGJ.	PR-III: The tip of the interdental papilla is located at or apical to the level of the CEJ mid-palatally: PR-III-A: Marginal tissue recession $\leq 3$ mm from CEJ. PR-III-B: Marginal tissue recession of $>3$ mm from CEJ.

Various methods have been described in literature for root coverage. Absence of keratinized tissue lateral or apical to recession defect, marginal insertion of frenum, presence of shallow vestibule, presence of multiple defects limit the use of rotational flaps and hence free soft tissue grafts are the best choice for root coverage in these cases. In this case report, Free Gingival Graft is used with main aim of root coverage, to improve esthetics and to increase the width of attached gingiva. This procedure takes epithelium and connective tissue of the palate and locates it in to a recipient bed. This graft retains none of its own blood supply and depends upon the recipient blood vessels.

**CASE REPORT**

A 28 year old male reported to the Department of Periodontics and Implantology, DivyaJyoti College of Dental Sciences and Research, Modinagar, Ghaziabad with a chief complaint of downward placement of gums in lower front tooth region. Also patient has sensitivity to cold in this region from past 6 months. Medical history of the patient revealed no systemic illness. Clinical examination revealed Miller's

class I recession of app. 4 mm in relation to 41 with positive tension test.

Our treatment objective was root coverage, to augment the width of attached gingiva and to relocate the aberrant frenum. Hence frenotomy and free mucosal graft was performed for root coverage and for increasing the width of attached gingiva. (Fig 1)



**Fig-1: Pre- operative**

Full mouth scaling and root planing was performed and patient was asked to maintain the oral hygiene. Patient was instructed with the brushing technique.

Frenotomy was performed by giving the incision deep in the vestibule and all the attachments were incised. Horizontal incisions were given in the interdental papilla in relation to 42 and 31. Vertical incisions were made along the proximal line angles of 42 and 31 beyond the mucogingival junction. (Fig 2)



**Fig -2: Horizontal incisions given in the interdental papilla in relation to 42 and 31. Vertical incisions made along the proximal line angles of 42 and 31 beyond the mucogingival junction.**

De-epithelialisation was done and the tissue tags were removed. Bleeding was controlled with pressure using sterile gauze. (Fig 3)



**Fig-3: Tissue tags removed after de-epithelialisation. Bleeding controlled with pressure using a sterile gauze.**

Aluminium foil was taken to mark the amount of tissue to be taken from donor site. (Fig 4).



**Fig-4: Aluminium foil taken to mark the amount of tissue to be taken from donor site.**

Graft was harvested from the palatal side in relation to 24 and 25. Harvested graft consists of layer of epithelium and a thin layer of connective tissue. The graft was separated with blade until it was detached from all sides. (Fig 5, 6)



**Fig-5: Donor site**



**Fig-6: The graft separated with blade until it was detached from all sides.**

Trimming of the harvested graft was done. (Fig 7)



**Fig 7: Harvested Graft (Trimming of the harvested graft was done)**

Acrylic stent (Hawley's appliance) was used to protect the donor site. (Fig 8)



**Fig-8: Acrylic stent (Hawley's appliance) to protect the donor site.**

Graft was placed at the recipient site (Fig 8) and was sutured in the position. (Fig 9)



**Fig-9: Graft placed at the recipient site**



**Fig-10: Graft sutured in the position.**

Post-operative instructions were given to the patient. Patient was prescribed with Amoxycillin 500 mg (tid), and Ibuprofen 400mg (tid) for 5 days and Chlorhexidine rinses 0.2% twice daily.

### RESULTS

Patient was recalled after 6 months and the healing was uneventful in recipient and donor sites. (Fig. 10, 11)



**Fig-11: Healing was uneventful at donor site after 6 months recall.**

3 mm of Root coverage was obtained and width of attached gingiva was enhanced. (Fig 12)



**Fig-12: Healing was uneventful at recipient site after 6 months recall with 3 mm gain of attached gingiva and root coverage was obtained.**

## DISCUSSION

Initially the term Free Gingival Grafting (FGG) was used, however the term is a misnomer because the donor tissue may not be obtained from gingiva, it can be obtained from attached gingiva, palatal mucosa, retromolar area, etc. Younger and Harlan first reported free gingival grafting for root coverage [11]. A well documented case report describing FGG procedure was presented [12]. Two years later Sullivan and Atkins presented a series of paper that is considered to be the classic rationale of FGG technique [13]. Pennel *et al* utilized partial thickness graft of 1-1.5 mm thickness root coverage was attempted using free masticatory mucosa graft [14].

Free gingival grafts are used for root coverage procedure, to increase the apicocoronal dimension height of gingival unit, to remove aberrant frenum and its attachment, to deepen the vestibule and also for soft tissue ridge augmentation procedures.

In this case, a gain of app. 3 mm of root coverage was seen which accounts for 75% of root coverage, accomplished by free mucosal graft procedure and rest can be achieved by creeping attachment, which was described by Goldman and Cohen as the postoperative migration of the gingival marginal tissue in a coronal direction over portions of a previously denuded root [15]. Creeping attachment is apparently best observed on mandibular anterior teeth with narrow recessions. This phenomenon can be detected 1 to 12 months after graft surgery with an average coverage of about 1 mm. Matter and Cimasoni described 5 factors that seemed to have a definite influence on creeping attachment: width of the recession, position of the graft, interproximal bone resorption, position of the tooth and the patient's dental hygiene [16].

## CONCLUSION

From the above study conclusion can be made that Free mucosal graft is the efficient and viable method as significant amount of root coverage and gain in width of attached gingiva was achieved. Relocation of aberrant frenum, recession coverage and gain in width of attached gingiva was achieved in a single procedure, reducing patient's visit and hence increasing patient compliance.

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