



Case Report

A partly epithelialized free gingival graft technique in the treatment of RT2 gingival recession- A case report

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ABSTRACT

Introduction: The management of gingival recession is a more common challenge for the patients as it affects the esthetics and causes dentin hypersensitivity. The use of the autogenous soft tissue graft as donor is considered as a gold standard treatment modality with predictable esthetic outcomes for the gingival recession coverage. In partly epithelialized free gingival graft (PE-FGG) technique the apical portion of the graft is de-epithelialized to overcome, partly the esthetic deficiencies associated with the conventional FGG.

Case Presentation: A 42 year old female patient presented with single Cairo's RT2 buccal recession with 41 and was associated with inadequate width of keratinized gingiva. PE-FGG technique was performed after harvesting the soft tissue graft from the palate. The apical portion was de-epithelialized extra-orally with sharp blade and the graft was sutured on the recipient site with Holbrook and Oschenbien sutures. Complete root coverage was achieved and maintained at 6 months with excellent esthetic outcomes.

Conclusion: The use of PE-FGG technique shows excellent outcomes esthetically and can be used for treatment of isolated gingival recession defects.

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1. Introduction

Performing periodontal plastic surgery poses a significant challenge for clinicians due to its technical sensitivity and the variety of recession coverage techniques currently in use. The rising aesthetic expectations of patients have spurred the development of newer and more innovative methods to meet these demands. Over the past three decades, several surgical procedures have been proposed for treating single and multiple gingival recessions, including pedicle flaps (lateral or coronally positioned), free gingival grafts (FGG), bilaminar techniques, and regenerative procedures.^{1,2}

The FGG technique, introduced by Sullivan and Atkins in 1968,³ has demonstrated superior root coverage results

by increasing the width and thickness of the marginal keratinized tissue.⁴⁻⁷ Gingival recessions in the lower incisor region are often associated with poor mucogingival conditions due to a lack of gingiva, the presence of frenal attachments, and a shallow vestibule.^{8,9} However, free gingival grafts often result in an unsatisfactory aesthetic appearance due to poor tissue color and texture integration and the apical displacement of the alveolar mucosa.¹⁰ The apical extent of the epithelialized FGG is a key factor in the apical displacement of the mucogingival junction (MGJ), influenced by the graft's thickness and the apicocoronal extent necessary for graft survival.¹¹⁻¹³

To address these challenges, a partly epithelialized free gingival graft (PE-FGG) was introduced by Cortellini, Tonetti, and Prato GP in 2012 for management of RT1 gingival recession in lower incisors.¹⁴ In this technique, the FGG remains epithelialized only in the coronal portion. The

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apicocoronal extent of the epithelialized part is calculated based on the amount of graft needed to cover the area from the cemento-enamel junction (CEJ) to the ideal position of the MGJ, determined by connecting the MGJ of adjacent teeth. The epithelialized portion of the graft is approximately 1.5-2 mm thick, while the apical part is 1-1.5 mm thick.¹⁴

The PE-FGG technique offers several advantages for treating gingival recession, including increased resistance to tension from the muscular-mucosal environment, a reduced risk of apical displacement of the MGJ or flattening of the vestibule, increased thickness of keratinized tissue, and better color matching compared to FGG.¹⁵

Achieving complete root coverage (CRC) is the primary goal of periodontal plastic surgery procedures, although it may not always ensure an excellent aesthetic outcome. In addition to CRC, the color and texture of the gingiva and the alignment of the mucogingival area must also be considered.¹⁶

2. Case Presentation

2.1. Clinical presentation

A 42 year old, systemically healthy (ASA I) female patient reported on December 08th, 2023, to the Department of Periodontology with a chief complaint of receding gums, and sensitivity in the lower front teeth region. The tooth had trauma from occlusion and grade I mobility. Clinically Cairo's RT2 gingival recession defect was observed in tooth 41, with papillary loss (Figure 1). The treatment plan included thorough Phase I therapy followed by surgical procedure after 4 weeks.

2.2. Case management

After taking the written informed consent from the patient, local anesthesia was given under sterile conditions. A horizontal butt-joint partial thickness incision was given on the papilla at the CEJ level of the involved tooth and extended mesial and distal till the line angle of the adjacent tooth. Two vertical incisions were made, extending beyond the alveolar mucosa and the tissue between these incisions was de-epithelialized. The base of the recipient site was positioned 5 mm below the most apical point of the recession (Figure 2). The exposed root surface was planed with curettes and rinsed with saline. A sterile aluminum foil was used to measure the dimensions of the recipient site. Local anesthesia in the form of left greater palatine nerve block was given for harvesting the donor graft. The measured aluminium foil was placed on the palate 3 mm away from the gingival margin of the first premolar and incisions were given on the external edges of the aluminium foil. The graft harvested was of 2 mm in thickness (Figure 3). It was de-epithelialized in the apical portion with a sharp blade upto 1.5 mm thickness. The

de-epithelialized apical part of the graft was enveloped between the dissected alveolar mucosa and the periosteum of the recipient bed and extended 2-3 mm apical to the bone dehiscence. Suturing was done with Holbrook and Ochsenbein technique¹⁷ with 5-0 vicryl sutures (Figure 4). Sterilized aluminium foil was kept on the sutured graft and periodontal dressing (Coe-pak) was given. The palatal site was covered with gelfoam and sutured using figure of eight suture with 5-0 vicryl suture. Acrylic palatal plate was given to cover the palatal wound.

In the post-operative period patients were requested to avoid tooth brushing and chewing in the treated area. Antibiotics including Amoxicillin 500 mg every 6 hours, Ibuprofen 400 mg every 6 hours and 0.12% chlorhexidine mouth rinse thrice daily for 2 weeks were given. After 14 days sutures were removed and patient was advised to continue with careful tooth brushing with soft bristle toothbrush. After 3 weeks, patient resumed full oral hygiene, mastication in the treated area. Patient was followed up at 1 month, 3 months and 6 months.



Figure 1: Pre-op– Cairo's RT2 recession with 41

2.3. Clinical outcomes

Healing was uneventful and complete root coverage was observed at one month and was subsequently maintained upto 6 months (Figure 5). An increase in the keratinized tissue was observed and the probing depth at mid-buccal site on the treated tooth was 1 mm. The root coverage esthetic score (RES)¹⁸ ranged between 9 to 10 with respect to colour match and texture. The surgical site showed an increase in both gingival thickness and width of the keratinized attached gingiva. It also resolved the patient's hypersensitivity completely.

3. Discussion

In the recent era, focus on patient-centered aesthetic outcomes, achieving ideal pink and white esthetics is



Figure 2: De-epithelized recipient site



Figure 3: PE-FGG harvested



Figure 4: PE-FGG sutured



Figure 5: After 6 months- recipient site

essential. The inadequate width of attached gingiva in the lower mandibular region can pose a challenge for clinicians in selecting the appropriate treatment option. It is crucial to eliminate secondary occlusal trauma, reduce tooth mobility, and stabilize the teeth.

According to two recent meta-analyses on treatment with FGG, root coverage outcomes range from 43% to 85.3% (Roccuzzo et al., 2002)¹⁸ and the percentage of sites with complete coverage ranges from 9% to 73% (Clauser et al., 2003).¹ In the present case report, 100% complete root coverage was observed.

The total surface area of the PE-FGG was designed to support adequate vascular supply. The de-epithelialized part of the graft was placed between the alveolar mucosa and periosteum to promote early nourishment and enhance survival of the graft. The graft was harvested to obtain a uniform thickness of 1.5-2 mm in the epithelialized part and 1-1.5 mm in the apical part to promote revascularization.¹¹

Autogenous soft tissue grafts are considered the gold standard for treating gingival recession, and the use of PE-FGG may have contributed to the enhanced clinical outcomes. A key criterion for successful root coverage is graft stabilization. In this study, the graft was stabilized using the Holbrook and Ochsenbein suturing technique, which involves three types of sutures: horizontal stretching, circumferential, and interdental concavity sutures.¹⁷

During the healing process of a free gingival graft, the upper epithelial layer becomes necrotic, and a new epithelial layer forms based on the genetic information of the connective tissue.^{18–20} Since the epithelial layer on the PE-FGG is thinner than that of conventional FGG, the amount of necrotic epithelium during the healing phase is reduced. Consequently, PE-FGG enters the differentiation phase earlier and exhibits a whiter appearance. In the present case report, the PE-FGG demonstrated better color integration, making it almost indistinguishable from the neighboring gingiva.

4. Conclusions

The PE- FGG resulted in patient centered esthetic outcome and reduced patient discomfort. Hence, this technique may allow the clinician to achieve functionally and esthetically pleasing root coverage in the mandibular anterior region with RT2 gingival recession. Further controlled studies with larger sample size are necessary to directly compare the efficacy of the PE-FGG technique with the other root coverage techniques.

5. Source of Funding

None.

6. Conflict of Interest

None.

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