



Case Report

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Intraoral De-Epithelialized Gingival Graft in the Treatment of Multiple Adjacent Gingival Recessions: Case Report with a 1-Year Follow-Up



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Abstract

Background: This article depicts a clinical case with 1 year follow-up in which de-epithelialized gingival graft (DGG) was used with the tunnel technique to treat multiple gingival recessions (GRs), and describes a technique used to intraoral de-epithelialization with diamond burr.

Methods: A 45-year-old male patient was referred for evaluation and treatment of anterior maxillary multiple GRs. DGG with the tunnel technique was proposed to coverage of Cairo Recession Type I GRs on teeth #21 through #22 and an on tooth #23. Tunnel bed area had been prepared with microblades and tunnel knives. Donor are measured and de-epithelialized with diamond burs intraorally. After DGG harvested split cross-sectionally. The DGG was placed through the tunnel bed with auxiliary sutures and sutured with vertical double-crossed technique.

Results: Ten days after the surgical procedure, the tissue region was homogeneous where there is not uncovered DGG part, and clinically increased tissue thickness was observed. After 1 years of follow-up, the mean coverage 92.2%. Besides, increasing of tissue thickness was observed.

Conclusion: Intraoral DGG using with the tunnel technique successfully for treatment of multiple GRs with an increase of the soft tissue thickness and gain aesthetic outcomes.

Keywords: Case report; Gingival recession; De-epithelialized gingival graft; Root coverage; Tunnel technique

Abbreviations: DGG: De-epithelialized Gingival Graft; GR: Gingival Recessions; CAF: Coronally Advanced Flap; SAF: Semilunar Advanced Flap; FGG: Free Gingival Graft; EMD: Enamel Matrix Protein Derivatives; ADM: Acellular Dermal Matrix Allograft; GTR: Guided Tissue Regeneration; CTG: Connective Tissue Grafts; Plaque Index; GI: Gingival Index

Introduction

Gingival recessions, is defined as shift of gingival margin to apical aspect with exposure of root surface, is a pivotal problem that, affects the majority of adults in populations [1]. GRs may result in tooth sensitivity, cause root surface caries, aesthetic deficiency and clinical attachment loss. Complete root coverage and aesthetic integrity are aimed to the treatment of localized and multiple GRs using different methods [2]. GRs can be determined as single and multiple by the number of affected teeth. GRs have several etiologic factors have been considered primary or predisposing factors that can be grouped in: anatomical factors (e.g., lack of attached gingiva, muscular insertions, tooth misalignment, inadequate thickness of the alveolar bone plate

and root prominences; (e.g., periodontitis or viral infections); iatrogenic factors (e.g., improper restorations) and mechanical trauma (e.g., toothbrushing trauma or lip piercing) [3].

Several methods of GRs treatment exist: Pedicle Grafts (Pedicle Flaps), Laterally Sliding Flap [4], Double Papilla Flap Technique [5], Oblique Rotated Flap [6]. Advanced Flap Procedures: Coronally Advanced Flap (CAF) [7], Semilunar Advanced Flap [8]. Free Gingival Graft (FGG) (Bjorn 1963): Single stage (FGG) [9], Double stage (FGG + CAF) [7]. Subepithelial Connective Tissue Graft [10], Subepithelial Connective Tissue Graft + Rotation Flap [11], Subepithelial Connective Tissue Graft + Pouch Technique [12], Tunnel Technique [13]. Biomimetic Approach: Enamel

Matrix Protein Derivatives (EMD) [14], Acellular Dermal Matrix Allograft (ADM) [15], Guided Tissue Regeneration (GTR) [16].

Zucchelli et al. [17] performed DGG harvesting extraorally to treatment of GRs using coronally advanced flap (CAF) technique. Using DGG has minimized chair time during operation was recorded [17]. Implementation DGG with tunnel technique in the treatment of gingival recessions was successful [18], many alternative products as connective tissue grafts (CTG), collagen matrix [19], acellular dermal allo- and xenografts [20] have been studied. In spite of many articles, few articles have discussed using DGG for multiple recessions, especially when associated with the tunnel technique [18,21]. The subepithelial connective tissue graft is a predictable and versatile technique in treatment of gingival recessions [10,22]. Differences in hard palate anatomy [23,24] and insufficient fibromucosal thickness ($\leq 2.5\text{mm}$) [25] may complicate harvesting CTG [2,26]. In the presence of multiple GRs, graft length and appropriate graft selection should always be considered for the patient's satisfactory aesthetic results.

Case Report

45 old year male patient was referred to the HB Private Dental Clinic in July 2019 for evaluation and treatment of anterior maxillary GRs (Figure 1). His essential complaint was severe dentin sensitivity. He was non-smoking, general healthy and well educated

about oral hygiene procedure. Clinical evaluation indicated plaque index [27] (PI) of $<15\%$ and gingival index (GI) [28] of 13%, probing depth was $\leq 3\text{mm}$. Following local anesthesia, scaling and root planning of the exposed root surfaces were performed with Gracey curettes. Afterwards, interdental spaces were splinted with flowable composite resin for hanging sutures, without previous acid etching. Sulcular incisions were performed from #11 to #24 through the buccal aspect with microblades (Figure 2). Tunnel bed was prepared with specific tunnel instruments (Hu-Friedy, USA) preserving the integrity of the gingivo-papillae complex carefully (Figure 3). The second step was to harvest DGG from the premolar palatal fibro-mucosa: First, determined graft region was de-epithelialized (Figure 4) with diamond burs (Figure 5). under saline irrigation Afterwards DGG was harvested by 15C scalpel blades, approximately 1.5mm thickness (Figure 6). Donor palatal site was sutured with horizontal cross sutures (5-0 monofilament propilen, Dogsan, Trabzon, Turkey). Harvested DGG was positioned and placed through auxiliary 5-0 monofilament sutures (Figure 7). Positioned DGG and elevated papillae complex were sutured with vertical double-crossed sutures (Figure 8). Patient was advised to avoid trauma and irritants. An analgesic (flurbiprofen 100mg, two times a day for 3 days) and mouthrinse with 0.12% chlorhexidine digluconate (twice a day for 10 days) were prescribed after operation.



Figure 1: Baseline view of multiple GRs.



Figure 2: Microblade was used to perform sulcular incision.

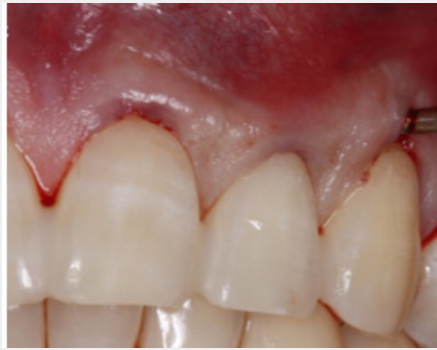


Figure 3: Elevation of gingivo-papillaer complex.



Figure 4: Special E-9 adaptor of round burr for ultrasonic scaler.



Figure 5: De-epithelialization of graft region intraorally.



Figure 6: Harvested DGG.



Figure 7: DGG introduced into tunnel bed.



Figure 8: Vertical double-crossed sutures.

Results

Healing was uneventful. During healing time, there is no sign of necrosis on the recipient and donor area (Figure 9). Patient did

not report pain, hemorrhage or discomfort. After 1 years of follow-up (Figure 10), the mean coverage was 92.2%. Besides, increased gingival tissue thickness was observed.



Figure 9: 10 days after surgery.



Figure 10: 12-month follow-up of the case.

Discussion

In the present article, a clinical case was reported in which the DGG was used with the tunnel technique to treat multiple GRs. Main of the difficulties (anatomic limitations, graft size, graft thickness and graft shrinkage) have been recorded in complete root coverage of treatment of multiple GRs. Bertl et al. [29] showed that, DGG includes excessively dense collagen and low amounts of glandular/adipose tissue compared to CTG, as a result of histomorphometric analysis. Due to, graft minimum graft shrinkage has been reported [30]. Azar et al. [31] reported that, DGG could be considered as “dense CTG”, included minimum adipose and epithelial tissue. Despite epithelial remnant cells during de-epithelialization [32], DGG was unique graft for root coverage [18].

Conclusion

The present case report reveals that DGG with tunnel technique is a successful treatment alternative for root coverage procedures of multiple adjacent gingival recession defects. This procedure has potential to increase soft tissue thickness, keratinized tissue gains and as well as to improve the final aesthetic outcomes. Post-operative healing was uneventful. Moreover, after a 1-year follow-up, the results were stable. In conclusion, DGG in combination with tunnel technique appears to be a good treatment option for treatment of multiple GRs.

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