

Management of Miller's Class III Gingival Recession by Gum Drop Technique: A Case Report

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ABSTRACT

OBJECTIVE

Gingival recession is defined as the apical migration of the junctional epithelium with exposure of root surfaces. It is considered as one of the most common condition affecting the gingiva. Epidemiological studies show that more than 50% of subjects in the populations studied have one or more sites with recession of at least 1 mm. The purpose of this case study was to evaluate the success of a newer technique i.e., Gum Drop technique for the management of Miller's Class III gingival recession (GR).

METHOD

A female adult, aged 37 years was selected having multiple GR, Miller's class III recession defect in 11,21 (Cairo RT2 recession defect) and class II defect in 12,22. After Phase I therapy, gumdrop surgical technique was done. Patient was followed up monthly for 6 months.

RESULTS

Root coverage was obtained 90% following 6 months of surgery with 4-5 mm recession depth reduction.

CONCLUSION

Gum Drop surgical technique may be applied as an effective technique for the management of Class III Miller's type of gingival recession. Long term continuous monitoring of the case would be mandatory for a better conclusive.

KEYWORDS

Gumdrop; i-PRF; A-PRF; Regeneration; Gingival recession

INTRODUCTION

Gingival recession (GR) can be defined as the exposure of the root surface caused by an apical shift in the gingival

margin [1] or apical migration of marginal gingiva. It can occur on one or all surfaces of the tooth, may be localized or generalized. Different epidemiological studies showed

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that buccal sites are more commonly affected and recession increases with increase in age [2]. GR results in an unaesthetic appearance, root hypersensitivity and root caries with multifactorial etiology. Common etiological factors are plaque-induced inflammation, subgingival calculus, tooth brush trauma, self-inflicted trauma, tooth mal positions, high frenum attachment, uncontrolled orthodontics movements and post treatment complication after periodontal flap procedures. The management of gingival recession is based on a thorough assessment of the etiological factors and the degree of tissue involvement [3]. Subepithelial connective tissue grafting, introduced by Edel in 1974 and developed by Langer in 1980, in conjunction with the use of coronally advanced flaps has been consistently effective and is currently considered the gold standard for gingival recession treatment [4,5]. Later in 2000 different minimally invasive surgical procedures are widely adapted for the management of gingival recession with good outcome and predictability. Most recent one among these is the Gum drop technique by Tuttle D et al. [6].

The gum drop technique (GDT) is a novel soft-tissue grafting procedure that combines minimally invasive incisions with blood derivatives from the patient to achieve root coverage [6]. This case report emphasis on the effect of management of Millers class III recession using this newer gum drop technique.

CASE REPORT

A 37-year-old female patient reported to the Department of Periodontology and Oral Implantology with a chief complaint of receding gum in the upper front teeth region, for which he noticed sensitivity and expressed the fear of losing a tooth. On intraoral examination, positions of teeth were normal. Marginal tissue recession was extending beyond mucogingival junction (MGJ) in relation to 11,12,21,22 and intraoral periapical radiograph (IOPA-R) revealed loss of interdental bone between 11 and 21 and diagnosed as Miller's class III recession defect in 11,21

(Cairo RT2 recession defect) and Miller's class II defect in 12, 22. Recession defect depth was 6 mm on both 11,21 and 4 mm on 12,22 (Figure 1a & Figure 1b). Scaling, root planing was done and oral hygiene instructions were given. Four weeks after phase I therapy, patient was recalled for root coverage and written consent was taken.



Figure 1: Preoperative.



Figure 2: Radiograph.

SURGICAL PROCEDURE

Prior to surgery the peripheral blood is collected from the patient in 10 ml vials. The tubes do not contain anticoagulant and are immediately centrifuged to 1300 rpm for 8 min, after completion of centrifuging, the fibrin clot is separated from the red blood cell (RBC) component using tweezers to remove the clot from the tube and scissors are utilized to separate the RBC portion from the fibrin. Root conditioning done using tetracycline for 2-3 minutes to remove the smear layer and improve connective tissue attachment [7] (Figure 3). Gum pierced with ophthalmic microsurgical blade (side port blades) and orbans knife in three spots on the arch apical to the mucogingival line (Figure 4,5). A tunnel preparation was

done between the entrance holes and extended to the cementoenamel junction (CEJ) of each tooth sparing the tip of the papilla (not detached from the underlying bone) to permit repositioning of the soft tissue. The resulting tissue creates a tension-free flap allows movement of the gingival margin in a more coronal direction to cover the root recession being treated. Patient-derived plasma growth factors are introduced into the gum piercings following elevation of the tissue through the holes with a syringe. The A-PRF membranes previously created are introduced through the entrance holes under the elevated soft tissue (Figure 6). Multiple A-PRF membranes are placed. Flap advanced coronally and sutured by composite bonded and acts as stabilization points for the sutures [Figure 7]. Sutures need to remain for 3-4 weeks. After the surgery injectable plasma-rich fibrin (700 rpm/3 min) is injected into the periodontal ligament spaces to stimulate regeneration and into the tunnel to solidarize the membranes, increasing clot and flap mechanical immobilization. The growth factors and mesenchymal cells from the i-PRF further stimulate fibroblast growth and cell and enhance the attachment of the flap to the root surface [8].



Figure 3: Root conditioning using tetracycline.

A prescription of 0.2% chlorhexidine-digluconate mouth rinse twice daily for 2 weeks and a course of antibiotic including amoxicillin 500 mg thrice daily and 400 mg of ibuprofen thrice daily for 7 days was given. Patient asked to come after 2 weeks for review.

RESULTS

Throughout the study period the patients maintained a good oral hygiene with adequate plaque control. No adverse events were recorded during the postoperative period. The values of variables measured at baseline and 6 months after surgery. Root coverage was obtained 90% following 6 months of surgery. Preoperative recession depth in 12 and 22 are 5mm and 4 mm respectively. It reduced to 1mm after 6 months. The recession depth in 11 and 21 are 7mm and reduced to 2 mm after 6 months postoperatively with thick gingival margin.



Figure 4: Gum pierced with ophthalmic blade in three spots on the arch.



Figure 5: Gum pierced with orbans knife.



Figure 6: A-prf membrane placed through the

gum piercing along with i-prf.



Figure 7: Flap advanced coronally and sutured by composite bonded.



Figure 8: 6 months postoperative.

DISCUSSION

Gingival recession is a most common condition affecting the gingiva and due to its multiple etiology different surgical approaches has been addressed. The surgical technique depends up on whether the recession is localized or generalized, size of the recession defect, the presence or absence of keratinized tissue adjacent to the defect and classification of recession defect.

Common classifications among gingival recession defect are Millers and Cairo et al.

Miller's classification of gingival recession defects (1985) [9].

Class I: Recession within attached gingiva. No loss of interdental bone and soft tissue papillae covering interdental bone at full height.

Class II: Recession extending to or beyond the mucogingival junction. No loss of interdental bone and soft tissue papillae covering interdental bone at full height

Class III: Recession extending to or beyond the mucogingival junction. Loss of interdental bone but interdental bone height coronal to apical extent of recession defect. Reduction in height of the soft tissue papillae covering interdental bone.

Class IV: Recession extending to or beyond the mucogingival junction. Loss of interdental bone apically to recession defect. Gross flattening of interdental soft tissue papillae.

Cairo et al. (2011) - Gingival recession based on the assessment of CAL at both buccal and interproximal sites [10].

RT1: Gingival recession with no loss of interproximal attachment. Interproximal CEJ was clinically not detectable at both mesial and distal aspects of the tooth.

RT2: Gingival recession associated with loss of interproximal attachment. The amount of interproximal attachment loss (measured from the interproximal CEJ to the depth of the interproximal pocket) was less than or equal to the buccal attachment loss (measured from the buccal CEJ to the depth of the buccal pocket).

RT3: Gingival recession associated with loss of interproximal attachment. The amount of interproximal attachment loss (measured from the interproximal CEJ to the depth of the pocket) was higher than the buccal attachment loss (measured from the buccal CEJ to the depth of the buccal pocket).

The main goal of mucogingival plastic surgery is to obtain complete, predictable, and aesthetic root coverage. Till now, the predominant choice for treatment GR is by coronally advanced flap (CAF) with an autogenous connective tissue graft (CTG) obtained from the patient's palate [8].

Platelets have a vital role in periodontal regeneration due to presence of growth factors and cytokines, essential for both soft and hard tissue regeneration. Del Corsa et al. evaluated the effect of combination of PRF +CAF for the treatment of adjacent multiple gingival recession and

found a significant improvement during early periodontal healing phase with thick and stable gingiva [11]. PRF is rich in VEGF and PDGF. VEGF helps in angiogenesis to the new tissue as success of any grafting procedure depends on the blood supply and vascularization of the tissues involved. PDGF is a mitogen (stimulator) for cells of mesenchymal origin including fibroblasts providing a role in periodontal regeneration [12]. In the present case we achieved 90 percentage of defect coverage in 11,12,21 and 22 at six months postoperative interval. Miller's class III recession also achieved 90% defect coverage and 4-5 mm of recession depth reduction. The outcome obtained in our study was in favor with the original gum drop technique. Main advantage of the gum drop technique is its minimally invasive incisions this will enhance wound healing with minimal patient discomfort and postoperative pain. The avoidance of second surgical site also been an advantage for choosing this technique to achieve root

coverage. Because of the greater regenerative potentials, both PRF i.e. A-PRF and i-PRF (used in gum drop technique) can be used as an effective agent in the management of recession defects.

CONCLUSION

Mucogingival surgical procedures are very successful and predictable procedure in periodontics that employing a variety of techniques. Gum drop technique, a minimally invasive surgical procedure with biocompatible approach has shown higher patient case acceptance and very effective in treatment of Class III Miller's type of gingival recession. This technique definitely will be an eye opener in the field of root coverage procedures. Long term monitoring of the cases with more well designed and properly controlled studies are needed to determine the success and acceptance of this technique.

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