



Case Report

Management of Multiple Recession Defect Using Modified Coronally Advanced Flap Alone or With PRF

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ABSTRACT

Gingival recession presents with destruction of both soft and hard tissues. Treatment of gingival recession has become an important therapeutic measure due to increasing cosmetic demands. Many periodontal plastic procedures have been developed to obtain predictable root coverage. A recent innovation in dentistry is the preparation and use of Platelet Rich Fibrin (PRF), a second generation platelet concentrate. The growth factors present in PRF help in wound healing and also are regarded as promoters of tissue regeneration.

The aim of this report was to determine the clinical outcome of root coverage using modified coronally advanced flap with or without platelet rich fibrin clot (PRF) membrane. The present report involved two patients with mean age of 25 years having Millers Class I gingival recession on adjacent teeth. The mean recession depth at baseline was 2.5mm in case 1 and 3.0 mm in case 2. The patients were treated using Modified Coronally Advanced Flap alone (Case 1) and in combination with PRF (case 2). The patients were re-evaluated at 15 days, 1 month, 3 months and 6 months post-surgery. The results demonstrated 95% and 86% root coverage at 6 months in case 1 and case 2 respectively.

Conclusion: Both the procedures show predictable root coverage. Procedure including PRF gives additional benefit of increased gingival biotype (thickness).

Keywords: Gingival recession, Platelet Rich Fibrin, Regeneration, Modified Coronally Advanced Flap.

INTRODUCTION

Gingival recession is a term that designates the oral exposure of the root surface because of a displacement of the gingival margin apical to the cemento-enamel junction.^[1] Marginal Gingival recession can cause major functional and esthetic problems.^[2] It has been clinically related to a higher incidence of root caries, attachment loss, hypersensitivity and

esthetic concerns. The prevalence of gingival recession ranges from 20% to 100% in adults.^[3-6] Gingival recession may be localised to a single tooth or may involve multiple teeth. In multiple adjacent recession type defects (MARTD) the avascular surface area exposed to the oral cavity is more extensive. Additionally, some anatomical considerations such as thin biotype, decreased keratinized tissue width (KTW),

root prominence and root proximity make the choice of surgical treatment difficult as compared to localized gingival recession type defects.

Over the years, numerous surgical techniques have been introduced to correct gingival recession. However, Scientific literature is sparse regarding the treatment of MARTD and randomized control trials (RCT) are needed to identify the indication for each surgical technique and any prognostic factors (Chambrone et al. 2009). Recently, new techniques have been suggested for the surgical treatment of multiple adjacent recession type defects (MARTD). These are mainly derived from the coronally advanced flap (CAF) (Zucchelli & De Sanctis 2000), a supraperiosteal envelope technique (SET) in combination with a subepithelial connective tissue graft (CTG) (Allen 1994), or its evolution as a tunnel technique (Azzi & Etienne 1998, Zabalegui et al. 1999, Tozum & Dini 2003). The main goal of these plastic periodontal surgery procedures is to obtain root coverage and optimal aesthetic appearance with complete root coverage and blending of the mucosa and/or gingiva.

Coronally repositioned flaps were originally used to gain attachment on teeth with periodontal disease.^[7] They were later modified to repair gingival recession.^[8] The coronally repositioned flap is less technique sensitive than rotational flaps. It also eliminates the need to harvest donor tissue and minimizes the morbidity of donor areas. The term “coronally advanced flap” was coined by Pini-Prato et al.^[9] in 1999 to better reflect the procedure. The average root coverage achieved with this technique ranges from 75% to 82.7%, with 24% to 95% of sites achieving complete root coverage.^[10,11] Thereafter, various adjunctive agents have been applied to

promote healing and further enhance clinical outcomes.

So as to increase the efficacy of the root coverage treatment, reduce the morbidity of the technique and improve clinical outcomes, proposals have been made for the addition of biological factors such as; enamel matrix derivative (EMD) (Ito et al. 2000, Pilloni et al. 2006); platelet rich plasma (Petrunaro 2001); platelet rich fibrin (PRF) (Aroca et al. 2009).

Platelet-rich fibrin (PRF) belongs to a new generation of platelet concentrates geared to simplified preparation without biochemical blood handling. PRF was first developed in France by Choukroun et al for specific use in oral and maxillofacial surgery. It has been used extensively in combination with bone graft materials for periodontal regeneration, ridge augmentation, sinus lift procedures for implant placement and for coverage of recession defects in the form of a membrane. This report presents two cases of multiple adjacent gingival recessions treated by modified CAF alone and combined modified CAF-PRF novel technique.

CASE REPORT

Two patients, one female and one male with mean age of 25 years came to the department of periodontology, Dr. Syamala Reddy Dental College, Hospital and Research Centre Bangalore with chief complaint of sensitivity to cold water in the upper front tooth region and upper right back tooth region respectively. No relevant medical and dental history was reported. Patients were divided in two; case 1 and case 2 by flip of coin method. Clinical parameters were recorded and tabulated in table 1. Both patients were treated by an MCAF technique; the combination treatment (with a PRF membrane) was done at the surgical site in case 2.

CASE NO. 1. Figures of Procedure

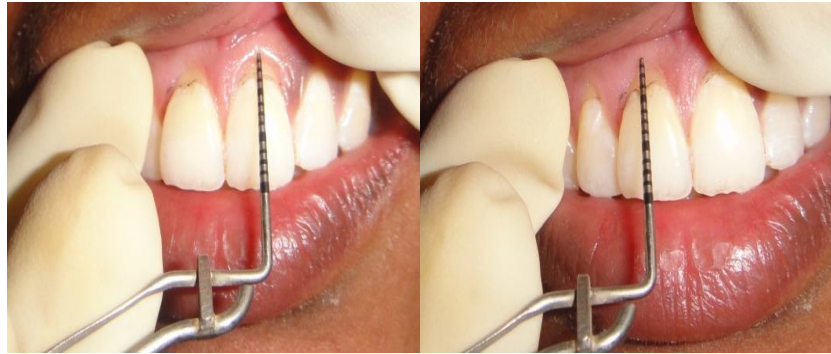


Figure 1: Pre Operative.



Figure 2: Reflection.



Figure 3: Sutures Given.



Figure 4: 6 Month Follow Up.

Clinical presentation: At the time of presentation, clinical examination showed Millers class I gingival recession. Other clinical parameters are given in table 1.

Table 1: Clinical parameters.

Clinical parameters	Case 1	Case 2
Mean Recession depth	2.5mm	3mm
Mean Recession width	2.5mm	3mm
Mean Probing depth	2mm	2mm
Mean Width of keratinized gingiva	4mm	3mm
Average Thickness of gingiva	1mm	1mm

CASE NO.2. PICTURES



Figure no.5: Pre operative.



Figure no. 6: Reflection.



Figure No.7: PRF Obtained.



Figure No.8: Placement Of PRF.



Figure No.9: Sutures Placed.



Figure No.10. : 6 Months Follow Up.

Presurgical therapy: Preparation of the patient included scaling and root planning of the entire dentition and oral hygiene instructions. The surgical procedure was explained to the patient and the informed consent obtained. Radiographs were obtained of the respective teeth, no bone loss was noticed. Prior to surgical procedure, routine blood investigation was done in both the patients who came under the normal limits.

Surgical procedure: The operative site was adequately anaesthetized. A coronally positioned flap technique was performed at the surgical site. This site was delineated by two oblique releasing incisions at the mesial and distal aspects and sulcular incisions around the affected teeth. A full thickness flap was elevated to expose marginal bone apical to the dehiscence area. A horizontal releasing incision was made in the periosteum at the base of the flap to facilitate tension free coronal displacement. The exposed root surfaces were scaled and root planed.

Preparation of PRF membrane: After the recipient site preparation was completed, the required quantity of blood was drawn in test tubes without an anticoagulant and centrifuged immediately using a tabletop centrifuge for 10 minutes at 3,000 rpm. The resultant product consists of the following three layers:

Top most layer consisting of acellular PPP, PRF clot in the middle, RBCs

were present at the bottom. The fibrin clot was easily separated from the lower part of the centrifuged blood and spread on a sterile gauze and converted into a membrane.

The flap was coronally advanced and sutured. The periodontal dressing was placed over the surgical area.

Post operative care: The patient was advised to use 0.2% chlorhexidine digluconate mouthrinse. Systemic antibiotics were prescribed and advised to follow routine post-operative periodontal mucogingival instructions. The dressing and sutures were removed 15 days after surgery.

RESULTS

The results demonstrated 95% and 86% root coverage at 6 months in case 1 and case 2 respectively with additional gain of gingival tissue thickness (=0.5mm) in case 2 as compared to case 1.

DISCUSSION

The main objective of using platelet preparations lies in the fact that the platelet α - granules are a reservoir of many growth factors that are known to play a crucial role in hard and soft tissue repair mechanism.^[14,15] These include platelet-derived growth factors (PDGFs), transforming growth factor beta (TGF- β), vascular endothelial growth factor (VEGF), and epidermal growth factor (EGF), insulin like growth factor-1 (IGF-1). Platelet growth factors exhibit chemotactic and mitogenic

properties that promote and modulate cellular functions involved in tissue healing and regeneration, and cell proliferation.^[16]

A recent 6-month study evaluated the use of PRF in the treatment of multiple gingival recessions with coronally advanced flap procedure and found the significant improvement during the early periodontal healing phase with a thick and stable final remodelled gingiva.^[12] However, another randomised clinical trial in the same year reported inferior root coverage of about 80.7% at the test site (CAF+ PRF) as compared to about 91.5% achieved at control site (CAF), but an additional gain in gingival/ mucosal thickness compared to conventional therapy.^[13] An increase in thickness of the keratinised tissues reported in both studies may contribute to a long term stable clinical outcome with reduced probability of recurrence of recession.

CONCLUSION

This case report reflects the success of this biomaterial for coverage of multiple recession defects and the ability to increase the thickness of the keratinised gingival tissue.

REFERENCES

1. Chambrone L, Sukekava F, Araujo MG, Pustiglioni FE, Chambrone LA, Lima LA. Root coverage procedures for the treatment of localised recession-type defects. *Cochrane Database Syst Rev* 2009 ;(2):CD007161.
2. Kassab MM, Cohen RE. The etiology and prevalence of gingival recession. *J Am Dent Assoc* 2003; 134:220-225.
3. Albandar JM, Kingman A. Gingival recession, gingival bleeding, and dental calculus in adults 30 years of age and older in the United States,

- 1988-1994. *J Periodontol* 1999; 70:30-43.
4. Loe H, Anerud A, Boysen H. The natural history of periodontal disease in man: Prevalence, severity, and extent of gingival recession. *J Periodontol* 1992; 63:489-495.
5. Arowojolu MO. Gingival recession at the University College Hospital, Ibadan – Prevalence and effect of some aetiological factors. *Afr J Med Med Sci* 2000; 29:259-263.
6. Thomson WM, Hashim R, Pack AR. The prevalence and intraoral distribution of periodontal attachment loss in a birth cohort of 26-year-olds. *J Periodontol* 2000; 71:1840-1845.
7. Harvey PM. Management of advanced periodontitis. I. Preliminary report of a method of surgical reconstruction. *N Z Dent J* 1965; 61:180-187.
8. Sumner CF 3rd. Surgical repair of recession on the maxillary cuspid: Incisally repositioning the gingival tissues. *J Periodontol* 1969; 40:119-121.
9. Pini Prato G, Baldi C, Pagliaro U, et al. Coronally advanced flap procedure for root coverage. Treatment of root surface: Root planing versus polishing. *J Periodontol* 1999; 70:1064-1076.
10. Wennstrom JL. Mucogingival therapy. *Ann Periodontol* 1996; 1:671-701.
11. Greenwell H, Bissada NF, Henderson RD, Dodge JR. The deceptive nature of root coverage results. *J Periodontol* 2000; 71:1327-1337.
12. Del Corso M, Sammartino G, Dohan Ehrenfest DM. Clinical evaluation of a modified coronally advanced flap alone or in combination with a

- platelet-rich fibrin membrane for the treatment of adjacent multiple gingival recessions: a 6- month study. *J Periodontol* 2009;80: 1694–1697.
13. Aroca S, Keglevich T, Barbieri B, Gera I, Etienne D. Clinical Evaluation of a Modified Coronally Advanced Flap Alone or in Combination with a Platelet- Rich Fibrin Membrane for the Treatment of Adjacent Multiple Gingival Recessions: A 6-Month Study. *J Periodontol* 2009; 80:244-252.
 14. Marx RE, Carlson ER, Eichstaedt RM, Schimmele SR, Strauss JE, Georgeff KR. Platelet-rich plasma: growth factor enhancement for bone grafts. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1998; 85:638-46.
 15. Anitua E, Sanchez M, Orive G, Andia I. The potential impact of the preparation rich in growth factors (PRGF) in different medical fields. *Biomaterials* 2007; 28:4551-60.
 16. Dohan Ehrenfest DM. How to optimize the preparation of leukocyte- and platelet-rich fibrin (L-PRF, Choukroun's technique) clots and membranes: Introducing the PRF Box. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2010; 110:275-278.

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