

A propitious approach for the treatment of multiple site gingival recession: a case report

Shiva Gupta^{1,*}, Gouri Bhatia², Deepa D³

¹PG Student, ²Senior Lecturer, ³Professor, Dept. of Periodontology, Subharti Dental College, Meerut, Uttar Pradesh

***Corresponding Author:**

Email: guptashiva892@gmail.com

Abstract

Gingival recession is increasingly becoming a prominent condition in oral health and is one of the most common aesthetic concerns associated with the periodontal tissues. Numerous root coverage procedures such as coronally advanced flap (CAF), lateral pedicle graft (LPG), subepithelial connective tissue procedure can be done either alone or in combination with other regenerative material to treat these recession defects. PRF is a fibrin matrix in which platelet cytokines, growth factors, and cells are trapped and may be released after a certain time and that can serve as a resorbable membrane. This paper reports the use of a platelet rich fibrin membrane in combination with coronally advanced flap for root coverage.

Keywords: Coronally advanced flap, Growth factors, Platelet rich fibrin, Recession, Wound healing

Introduction

Gingival recession is one of the major aesthetic concern seen in the field of periodontology. It is defined as the displacement of the soft tissue margin apical to cemento-enamel junction with exposure of root in the oral cavity.¹ It results in root hypersensitivity, attachment loss and root caries.² Various etiologic factors that can predispose to gingival recession are mechanical trauma from tooth brushing, occlusal trauma, high frenal attachment, inflammation, tooth malpositioning, underlying alveolar dehiscence, thin gingival biotype as well as dental restorative, orthodontic and periodontal treatments.^{3,4} Since mid 20th century, a wide variety of periodontal reconstructive surgical procedures employed to treat gingival recession or enhance aesthetics include connective tissue graft techniques, free gingival graft techniques, laterally positioned flap techniques, coronally positioned flap techniques and semilunar flap techniques. Although connective tissue grafting is considered as an effective means of root coverage,⁵ however, requirement of a second surgical site and difficulty in procurement of sufficient tissue are the certain disadvantages associated with it. Certain additive materials like guided tissue regeneration membranes, platelet rich fibrin (PRF), acellular dermal matrix or amniotic membranes can also be used to improve clinical outcomes of the above mentioned surgical techniques.

This case report presents multiple adjacent gingival recessions treated with a combination of coronally advanced flap technique (CAF) and PRF membrane.

Case Report

A 45 year-old male patient came to the Department of Periodontology, Subharti Dental College & Hospital, Meerut with a chief complaint of hypersensitivity to cold, in relation to the upper left front teeth region. He

had no significant medical history. The patient had undergone restoration two-years ago. Intra-oral examination revealed multiple adjacent Miller Class I recession defects on the left anterior maxillary teeth i.e. 22, 23. These defects were measured by calculating the distance between the cemento-enamel junction (CEJ) and the gingival margin. Gingival recession of 2 mm and 3 mm were recorded with teeth 22 and 23 respectively.(Fig.1) Oral hygiene instructions were reinforced preceded by Phase I therapy. The surgical procedure was explained to the patient and an informed consent was obtained. Three weeks following this initial therapy, the periodontal re-evaluation was done for oral hygiene maintenance and surgical procedure was carried out.



Fig. 1: Pre-operative View #22, 23

Surgical Procedure

The area was anesthetized using 2% Lignocaine with adrenaline (1:80,000). After achieving an adequate anaesthetic effect coronally positioned flap technique was performed by making horizontal incisions with respect to the distal and mesial interdental papillae of 22 and 23, followed by a crevicular incision and two

vertical releasing incisions at the mesial and distal aspects of 22 and 23. A full thickness flap followed by a partial thickness one was reflected. A horizontal releasing incision was made in the periosteum, at the base of the flap in order to facilitate tension-free coronal displacement. Root planning of exposed root surfaces was done. (Fig. 2)



Fig. 2: Flap reflection and Root planning

Preparation of PRF membrane: The PRF was prepared following the protocol developed by Choukroun et al.⁶ 5 ml of venous blood was drawn in test tubes without an anticoagulant and centrifuged immediately. Centrifugation was carried out at 2700 rpm for 12 minutes. The following three layers were obtained after centrifugation: The topmost layer consisted of acellular Platelet-Poor Plasma (PPP), a PRF clot in the middle and red blood cells (RBCs) at the bottom. The PRF clot obtained was separated from the RBC base using scissors and placed in a sterile dappen dish. A thin PRF membrane was prepared by compressing it in PRF box. At the recipient site, the PRF membrane was placed over the denuded root surfaces. (Fig. 3) The flap was coronally advanced to cover the membrane as well as the defect and sutured using 5-0 non resorbable silk sutures. (Fig. 4) Thereafter, periodontal dressing was placed over the surgical area.



Fig. 3: Preparation and placement of PRF membrane #22, 23



Fig. 4: Sutures placed

Post-operative instructions were given and the patient was advised to use 0.2% chlorhexidine digluconate mouth rinse, twice daily. Systemic analgesics were also prescribed. Patient was informed to report after 10 days for removal of dressing and sutures. Oral hygiene reinforcement was done at each follow-up visit and follow up recorded 6 months post operatively showed promising results, with a coverage of 2 mm and 2.8 mm respectively for 22 and 24 (Fig.5). A sufficient amount of gingival thickness was also achieved.



Fig. 5: Six months Post-operative view

Discussion

Various periodontal reconstructive procedures employed in gingival recession treatment vary in their predictability and success rates. Although CAF is one of the most widely employed procedures to cover denuded roots with 9-95% variations in their outcomes,⁷ therefore, by combining CAF with other regenerative techniques like connective tissue graft, enamel-matrix derivative, synthetic allograft, autologous platelet concentrates including platelet-rich fibrin (PRF), its predictability may increase. In this case we have combined CAF technique with PRF for better root coverage.

PRF is a second generation platelet concentrate which was 1st developed in France by Choukroun et al⁶ in 2001. It is an autologous platelet concentrate prepared as a three dimensional fibrin network rich in platelets, leukocytes, different growth factors

(transforming growth factor-1 β , platelet derived growth factors- α β , vascular endothelial growth factors and glycoproteins) and circulating stem cells which enhances capacity for bone regeneration and soft tissue wound healing.⁸ Preparation of PRF is fast and simple as it does not require any addition of thrombin and only single step centrifugation is required. It is cost effective as it is autologous in nature and no additional cost for synthetic membranes is incurred to the patients. To obtain a thin fibrin membrane PRF clot should be squeezed between sheets of cotton gauze as promoted by Choukroun.⁹ A specially designed preparation box (PRF Box® Process, Nice, France) can also be used for compressing the PRF clot which has an added advantage of even pressure being applied to form the membrane. A continuous release of the growth factors has been reported during the initial healing period after application of the PRF membrane on the surgical site. In our case, we followed the protocol proposed by Su et al¹⁰ where PRF was placed immediately for continuous release of growth factors over the subsequent 300 minutes.

In various comparative studies 2, 11, 12, 13 authors found a statistical significant increase in gingival thickness after treatment of gingival recession in cases treated with combination technique (CAF+PRF) than in CAF alone. The result of the present case report are in accordance with the previous studies² as complete root coverage with enhanced healing and a better gingival biotype is obtained with CAF along with PRF.

Conclusion

In modern era of dentistry, platelet-rich fibrin seems to be an accepted minimally invasive technique which when combined with various procedures results in promising clinical outcomes. However, the growth factors and the mechanisms involved are still poorly understood, therefore further research is required to completely analyse capacity of PRF in soft tissue reconstruction and its impact on wound healing.

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