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Case Report

Regenerative approach for root coverage with platelet-rich fibrin: A case report

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ABSTRACT

Gingival recession (GR) exposes the root surface and causes sensitivity, if left untreated it will lead to the root exposure with the bone loss around the teeth and eventually more complex periodontal defect. There are numerous surgical interventions are present in literature for treating gingival recession, the Coronally advanced flap (CAF) surgery is one of the most common procedures for the treatment. The Predictability of the treatment outcome can be increased by combining with other regenerative procedures. The platelet rich fibrin (PRF) is preferred to combine with CAF. PRF is prepared as the fibrin membrane that contains constituents of blood and favours healing at the surgical site. In this case report we are presenting treatment of Miller's class II recession with CAF combining PRF.

1. Introduction

Gingival recession is common aesthetic problem which leads to apical migration of gingiva beyond the cementoenamel junction (CEJ). It can be considered as the gateway for further destruction of periodontium if left untreated with impaired aesthetics, exposure of root surface bone resorption and enventually tooth loss.[1] In periodontal surgery our elucive goal is to attain the maximum attachment level as well as regeneration of the lost periodontal tissue.

There are several treatment protocols has been suggested for the treatment of gingival recession such as subepithelial connective tissue grafting(SCTG) procedures,[2] the free gingival grafting procedures,[3] laterally positioned flap, Coronally advanced flap, tissue regeneration with different membranes, enamel matrix darivatives(EMD),[4]platelet rich fibrin with CAF,[5] SCTG with CAF is considered as gold standard for the root coverage procedures, however this technique gives excellent result but the requirement of secondary surgical site is the major disadvantage. Post operative pain and delayed healing in palatal area is most common complications.

To overcome this, the use of PRF as autologous graft material has been used with CAF.PRF is second generation platelet concentrate and autologous leukocyte concentratre[6] and prepared as a single fibrin membrane, it contains different constituents of blood and releases growth factors such as transforming growth factor β, platelet-derived growth factor and vascular endothelial growth factor which leads to healing and regeneration.[7]

PRF is a manipulative fibrin membrane which can be easily adapted and sutured. In periodontal surgeries PRF used in the infrabony defects, furcation defects, sinus floor elevation and gingival recession procedures. In this case report we are presenting treatment of Millers class II gingival recession with CAF and PRF.

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2. Case Report

A 24 years old female patient reported at the outpatient department of Periodontology with the chief complain of sensitivity in lower front teeth region. On examination Miller class II gingival recession was diagnosed in mandibular anteriors irt 31 and 41. For the management of gingival recession root coverage procedure was planned for the management gingival recession CAF along with PRF membrane was planned.

2.1. Pre-surgical procedure

The procedure was explained and written informed consent was obtained from the patient. Patient's medical history was evaluated and was non contributory. Preparation of the surgical site was done by scaling and root planning and then surgery was planned. Pre-operative measurements were taken using "university of North carolina Probe-15".

2.2. Preparation of platelet rich fibrin

The protocol developed by choukroun et al.[8] was used for the preparation of PRF. 10 ml blood volume was drawn from median cubital vein in sterile tube and immidiately centrifugation was done at 2700 revolution per minute (rpm) for 12 minutes. After the centifugation three layers can be distinguished, the topmost layer was containing acellular plasma, in the second layer fibrin clot was present and third layer contains RBCs (red blood cells). The separation of fibrin clot was done with the help of sterile tweezers. The fibrin clot was slightly squeezed between the gauge pieces to obtain a thin fibrin membrane.

Fig. 1: ClassII Recession irt 31,41

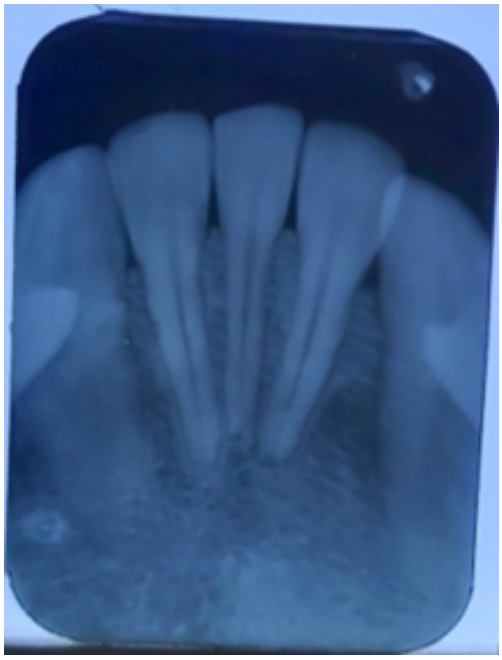

Fig. 2: IOPAR

Fig. 3: Incision

Fig. 4: Prepared PRF

Fig. 5: Placement of PRF

Fig. 6: PRF membrane

Fig. 7: Periodontaldressing placed after suturing

3. Discussion

For the management of gingival recession CAF is simple procedure but when it is combined with PRF it gives excellent result. The goal of periodontal plastic surgery is to achieve the aesthetics as well as the regeneration of lost periodontal tissues.[9] When it comes to restoring tissue the treatment of gingival recession becomes more challenging to provide the aesthetic and functional well being of the patient. In such cases root coverage not only corrects the aesthetics but it also relieves the hypersensitivity of the tooth.[10] Treatment with PRF continuously supplies the growth factors in the required area and enhances the proliferation of fibroblasts[11] and ultimately leads regeneration. It is non-toxic and non immunereactive as it is prepared from patients own blood. There are many studies which suggests that CAF with PRF for recession coverage procedures presents excellent result.[12–14]

During healing phase the alpha granules of platelets,that are rich with various growth factors and cytokines are released continuously for 7 days which leads to cell proliferation, collagen synthesis and formation of osteoid.

In present case report significant root coverage was gained, within the limits PRF provides a living scaffold of tissue that can treat the gingival recession with more stable results. Keeping in mind that the PRF gives advantage as a membrane in root coverage procedures, it should be always placed 1mm coronally to the cementoenamel junction (CEJ) and left exposed to the oral cavity. In this case the healing was unevenful and there was no signs of infections. Many studies such as studies by *Dohan et al.*[15] and *Thamaraiselvan et al.*[16] shown significant results with CAF and PRF whereas studies done by Moraschini et al.[17] and *castro et al.*[18]shows there was no any benefit of PRF on periodontal regeneration. Recent studies demonstrated use of PRF and advanced PRF (A-PRF) presents excellent treatment results for gingival recession abnormalities.[19–21] Although there are more studies required to evaluate the effectiveness of the PRF for the regenerative procedures.

4. Conclusion

This article presents the regenerative approach for root coverage with coronally advanced flap with platelet rich fibrin. Gingival recession causes aesthetic and functional problem, the regenerative capability of platelet rich fibrin makes the treatment more promising and satisfactory.

5. Source of Funding

None.

6. Conflict of Interest

None.

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