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Combined Effect of Connective Tissue Graft and Platelet Rich Fibrin Membrane in The Treatment of Miller's Class II Gingival Recession: A Case Report

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Abstract

Gingival recession is one of the commonest complains of the patients with esthetic concern. It is also known to cause dental hypersensitivity. Out of the various prevailing techniques of root coverage, the conventional Coronally advanced flap in adjunct with connective tissue graft is the proven gold standard. In an attempt to achieve optimum result, Platelet Rich Fibrin (PRF) Membrane is used at the surgical site. The growth factors of PRF improves the healing and results in better surgical outcome. In this case report, a single tooth Miller's Class II recession is treated with Conventional Coronally advanced flap in adjunct with Connective tissue graft and PRF membrane. Evaluation after 15 days showed resolution of inflammation and advanced healing. On three months' follow-up, appreciable amount of root coverage is achieved along with increased width of keratinized gingiva and increased gingival thickness

Keywords: Connective tissue graft, Platelet Rich Fibrin Membrane, Coronally advanced flap INTRODUCTION

Due to the increased concern in people regarding esthetics, gingival recession has turned out to be one of the commonest chief complains of people these days. This not only interferes with the esthetics, but also is known to cause dental hypersensitivity with increased risk of cervical abrasion and root caries. Gingival recession is defined as "the displacement of marginal tissue apical to the cementoenamel junction."^[1] Several classifications have been proposed since 1968 to diagnose gingival recession. Out of these, Miller's classification^[2] is most widely used. This classification is primarily based on the extent of gingival recession defects and the amount of hard and soft tissue loss in the interdental areas, surrounding gingival recessions. This system is significant in predicting the treatment outcome

following mucogingival surgery. Miller stated that "100% coverage can be anticipated in Class I and II recessions, partial root coverage in Class III, and no root coverage in Class IV." Different authors have further concluded that root coverage ranging from 9% to 90% could be achieved in Miller's Class I and II gingival recession using different surgical techniques. ^[3] Different periodontal plastic surgery procedures have been proposed over the past three decades for treatment of gingival recession. The main treatment goal was to reduce recession depth and increase the width of keratinised gingiva. Coronally advanced flap technique has shown to have more predictable recession coverage with apparently acceptable aesthetic results.^[4,5] However, when the coronally advanced flap technique is used alone, the results were

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seen to be unstable on long term follow-up.^[6] The treatment outcomes of coronally advanced flap can vary between 9-95%.^[7] This technique provides limited gain of keratinised tissue.^[8] To achieve a better result, the commonest combined approach is, coronally advanced flap with connective tissue graft. The blood derived biological modifiers came into use for boosting the hard and soft tissue healing. Blood derived biomaterial have evolved from fibrin sealant to first and second generation platelet concentrates. Choukron introduced Platelet rich fibrin (PRF) which is prepared by collecting the blood without any anticoagulant and immediately centrifuging it.^[9] The coronally advanced flap was first introduced by Norberg (1926)^[10] as an aesthetic surgical procedure for root coverage. Langer and Langer (1985) ^[11] advocated the use of subepithelial connective tissue graft with a split thickness flap. Pini Prato et al. (2010) ^[12] performed a comparative study on 13 patients showing multiple gingival recessions using split mouth design. On 5yrs follow-up it was concluded that coronally advanced flap with connective tissue graft provided better root coverage than coronally advanced flap alone. In this case report, PRF membrane was also used along with the sub epithelial connective tissue graft placement as an adjunct to coronally advanced flap to treat a Miller's Class II gingival recession. This was done in an attempt to reduce the complications and enhance the healing with the help of the growth factors derived from the blood concentrate in the form of PRF membrane.

MATERIALS AND METHODS:

A 35-year-old female patient reported to the Department of Periodontics with the chief complaint of sensitivity in upper left front teeth region. On examination, Miller's Class II gingival recession was observed in upper left first premolar (Figure 1). The recession depth was 4mm and probing depth was 1mm.

Full mouth scaling and root planing was performed and patient was recalled for evaluation after 28 days. The concerned area was re-evaluated thoroughly. Sulcular incision was placed in the upper left first premolar region and vertical incisions were placed along the region of the isolated recession, sparing the papilla (Figure 2). The papilla of the concerned tooth was de-epithelialised (Figure 3). Periodontal flap was reflected in split-full-split thickness fashion. Root conditioning was done with tetracycline. Free mucosal graft was harvested from the palate (Figure 4) and deepithelialised to obtain the connective tissue graft (Figure 5). Platelet Rich Fibrin (PRF) membrane was prepared from 10ml of patient's venous blood collected in a glass test tube, which was centrifuged at 3000 rpm for 10 minutes on table top centrifugation machine (Figure 6). The buffy coat was collected and compressed to remove the remaining serum and obtain the PRF membrane (Figure 7). The membrane was placed at the site of recession on the vascular bed (Figure 8). The connective tissue graft was placed on top of the PRF membrane and sutured with sling sutures (Figure 9). The elevated flap was coronally advanced and stabilized with anchoring sutures (Figure 10). After haemostasis was achieved at the donor site, palatal cover plate was placed covering the site.

RESULT:

The patient was recalled for evaluation after 14 days, 21 days, 1 month and 3 months respectively. Faster healing was achieved with minimum inflammation and complications (Figure 11). There was an increase in gingival thickness and increased width of keratinized gingiva. Appreciable amount of root coverage was achieved after 1 month. On 3 months' follow-up, there was recurrence of 1mm of gingival recession (Figure 12). However, there was appreciable improvement in the gingival parameters (Figure 13).

DISCUSSION:

The selection of the surgical technique in an attempt to cover a gingival recession depends mainly on the local anatomical characteristics and on the patient's demands. In patients with a residual amount of keratinized tissue apical to the recession defect, the coronally advanced flap may be recommended. Since long term stability of coronally advanced flap could not be achieved in such technique. Pini Prato et al. (2010) ^[12] used connective tissue graft alongwith coronally advanced flap and the result obtained was better than the conventional technique. Though connective tissue graft is considered to be the gold standard for root coverage, ^[13] the blood derived biological modifiers came into use for boosting the hard and soft tissue healing. Various studies have been carried out in search of an ideal biomaterial. The evolution of platelet concentrates have proven to be a

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boon in such a condition. In a comparative study, the healing index obtained in the PRF group were statistically superior in reference with data recorded in the connective tissue graft group. The pain intensity was statistically different among groups for the first 7 days, favoring the PRF group. Choukron J *et al.* (2006) had concluded the clinical effects of PRF in tissue healing.^[14]

CONCLUSION:



Figure 1: Pre-operative view



Figure 3: De-epithelialisation of papilla

In this case report, the result obtained was quite appreciable. Root coverage was achieved along with increase in gingival thickness and width of keratinised gingiva. The use of PRF membrane acted as a boon and enhanced the healing process. The added role of the concentrated growth factors of PRF membrane can be responsible for the overall outcome of the root coverage surgical procedure.



Figure 2: Flap reflected in split-partial-split thickness fashion.



Figure 4: Donor site for Connective tissue graft.



Figure 5: Harvested connective tissue graft.



Figure 7: PRF membrane.



Figure 9: Placement of Connective Tissue Graft.



Figure 6: Centrifuged blood for PRF.



Figure 8: Placement of PRF membrane.



Figure 10: Coronally advanced flap stabilised with sling suture.



Figure 11: 14 days Post operative view.



Figure 12: 3 month post opoerative view shows 1mm of Recession



Figure 13: 3 month post opoerative view shows increase in gingival thickness and increased width of Keratinised gingiva.

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