Case study

Esthetic Root Coverage: A Case Report

ABSTRACT

Background: Marginal gingival recession can cause major functional and esthetic problems. Advanced flaps are the simplest, yet unpredictable procedures for managing these conditions. The predictability of root coverage can be increased by combining coronally advanced flap (CAF) or its modified approach with other regenerative techniques.**Objective:** To ascertain the potential benefits of platelet-rich fibrin (PRF) on modified CAF for the treatment of gingival recession. **Materials and Methods:** A patient with Millers' class II gingival recession in three adjacent anterior teeth having a minimum 3-4 mm width of attached gingiva., Patient was subjected to modified CAF with PRF. The clinical parameters, i.e., vertical gingival recession depth (VGRD), gingival recession width (GRW), probing depth (PD), clinical attachment level (CAL), were recorded at baseline,& from 1 month to 3 months **Results:** VGRD, GRW, PD , CAL, improved significantly from baseline to 1 month & from 1 month to 3 months , however the parameters from 3 months to 6 months are to be evaluated.**Conclusion:** Benefits of the combined technique in terms of increased GT appear to justify the use of PRF along with modified CAF for the treatment of mild to moderate Millers Class II gingival recessions.

Keywords: coronally advanced flap (CAF) ,vertical gingival recession depth (VGRD)

INTRODUCTION

Gingival recession is as great an esthetic problem as it is a periodontal concern. It has been clinically related to a higher incidence of root caries, attachment loss, and hypersensitivity[1]. Various root coverage procedures have been successfully performed to correct this common periodontal problem. However, achieving a predictable outcome of such procedures is still a challenge for periodontists. Pedicled flaps are probably the simplest procedures for managing gingival recession. Norberg first proposed coronally positioned flap in 1926 as an esthetic surgical procedure for root coverage.[2]

Optimum root coverage, good color blending of the treated area with adjacent tissues, and complete recovery of original soft tissue morphology can be accomplished by this procedure. Initial designs of coronally advanced flap (CAF) have been frequently modified by several clinicians to obtain more predictable results. However, it appears that CAF alone is a less than optimal technique to achieve root coverage despite its advantage of low morbidity. The predictability can be increased by combining CAF or its modified approach with other techniques which may involve the use of connective tissue graft, enamel matrix derivative, synthetic allograft, platelet-rich plasma, and platelet-rich fibrin (PRF).PRF is a second generation platelet concentrate. It is prepared as a single fibrin membrane, containing

constituents of blood which are favorable for healing and immunity.[3] PRF consists of a fibrin matrix polymerized in a tetra-molecular structure with incorporation of platelets, leucocytes, cytokines, and circulating stem cells.[4]

CASE REPORT

A 42-year-old female patient reported to the Department of Periodontology with a complaint of hypersensitivity to cold and unesthetic appearance. She had no significant medical history. History of improper brushing was noted, On clinical examination, recessions were identified on the right and left maxillary anterior teeth with 3 mm of Miller's Class II with all the maxillary anterior teeth .A thorough case history (clinical parameters like Vertical Gingival reccesion depth VGRD , gingival recession width (GRW), probing depth PD, CAL was taken into consideration), impressions with upper and lower arch was taken at day 1 to fabricate study models, followed by Scaling and root planing , & reinforcement of oral hygiene instructions was done . Patient was recalled after 21 days for assessment of (Vertical Gingival Reccesion depth (3-4 mm) ,gingival recession width (GRW) , PD & CAL post SRP) and for investigating the underline bone & teeth , a IOPA was advised with upper right & left anterior teeth , also patient was sent to department of endodontics for checking the pulp vitality.

Investigations suggested that, there was mild bone loss seen in upper right & left maxillary anterior teeth in IOPA & the pulp vitality test showed (+ ve test i.e the pulp was vital) because of which endodontic treatment was not done. A informed consent was obtained after explaining the surgical procedure to the patient.

SURGICAL PROCEDURE

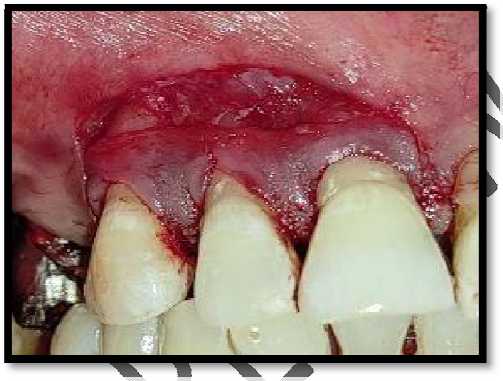
Area to be operated was anesthetized using 2% lignocaine with 1:200,000 adrenaline by mucosal infiltration. (Figure :1) A sulcular incision was made at the gingival margin including mesial and distal papillae with two slightly divergent incisions at the end of the sulcular incision extending into the alveolar mucosa.(Figure: 2) The resulting trapezoidal-shaped flap was elevated in the coronal-apical direction. A coronal full-thickness flap was raised up to mucogingival junction followed by apical split thickness flap.(Figure :3) . All muscle fiber insertions present in the flap were eliminated. The root surface was planed with the Gracey curettes. Coronal mobilization of the flap was done till the marginal portion of the flap was able to passively reach a level up to the CEJ and the flap was stable in its final coronal position even without suture . .(Figure :3)

Preparation of platelet-rich fibrin membrane

After preparing the recipient site, 5 ml of venous blood was placed in a test tube without anticoagulant and centrifuged immediately. It was centrifuged for 10 min at 2700 rpm. The resultant product consisted of the following three layers: The topmost layer consisted of acellular Platelet-Poor Plasma, a PRF clot in the middle, and red blood cells at the bottom. The membrane was prepared by squeezing the clot between two gauze pieces on sterilized glass slabs (Figure: 4)

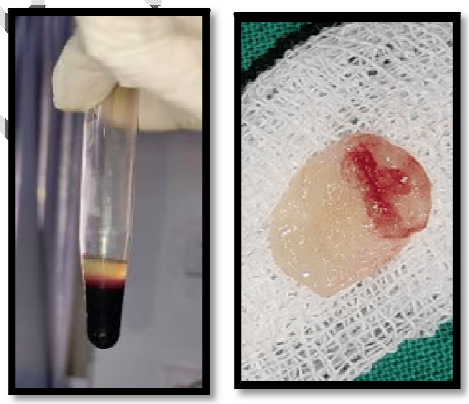
PRF membrane was placed at the surgical site & flap was adapted at the CEJ & aluminium foil was placed for stabilization of the PRF membrane (Figure:5),followed by placement of periodontal dressing (COE-PAK™). (Figure:6) No sutures were placed.

(Figure : 1).



(Figure : 2)

(Figure :3)



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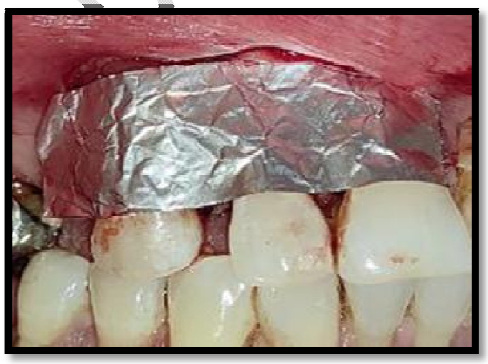

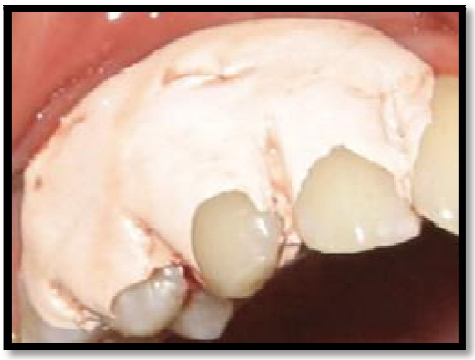

(Figure : 5) **(Figure : 6)**

Fig. 1-6: Sulcular incision in teeth

POSTOPERATIVE PROTOCOL

Patients were advised to take soft diet and to avoid biting on the operated site for 2 weeks. They were also instructed to avoid brushing in the operated area for 2 weeks. Chlorhexidine mouth rinse (0.2%) and ibuprofen 400 mg tablets were prescribed twice daily for 1 week. Postoperative healing was uneventful. Periodontal dressing was removed 1 week after surgery. Patients were then instructed to gently brush the operated area using Charter's technique for the next 1 month

FOLLOW UP

Patient was recalled after 3 weeks, 6 weeks & 3 months At each follow-up visits, patients' oral hygiene maintenance was evaluated and instructions were reinforced followed by supragingival ultrasonic scaling. Complete history was recorded to check for any changes in systemic conditions or habits. Fortunately, no such change was observed in any patient over the period of 3 months

(Fig : 7) After 1 week **(Fig :8) After 3 months**

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DISCUSSION

CAF is a simple technique for management of gingival recession. Varying outcome of this technique has been reported widely in the literature. The present study showed significant improvement in VGRD, from baseline to 3 months on this patient, similar to many previously reported data.[5,6,7] Gain in CAL also confirms the findings of previous studies. [8,9,10,11,12] Increase in CAL and decrease in VGRD following modified CAF procedures may be attributed to formation of long junctional epithelium.

However, the histological studies regarding the healing of pedicled grafts (e.g., CAF or rotational flap) have shown mixed results which varied from complete long junctional epithelial attachment to partial connective tissue attachment in the apical part and epithelial adaptation in the coronal part[13]

In the present study, however, exact nature of reattachment could not be known as histologic evaluation of new attachment apparatus was not done. Combination of full and split flap design has several advantages .Most of the earlier techniques of CAF utilized coronal displacement of flap through periosteal incisions, to eliminate the muscle tension on the flap . [9,14] In the present modified technique, coronal displacement was allowed through elimination of muscle insertions as reported by de Sanctis and Zucchelli.[8]

This technique provided simultaneous advantages of eliminating the tension on flap as well as permitting passive displacement of flap till CEJ without sutures because of the absence of the muscle pull, thus achieving the better and stable root coverage.

Ghahroudi et al [15] in a research similar to our study compared the efficacy of AM and CTG in the management of root exposure. Average root coverage rates after 6 months in the two groups were 67% and 54%, respectively.

Results of the present Case for treatment of anterior teeth gingival recessions by CAF indicated that only benefit of the addition of PRF appears to be a significant increase in the thickness of gingiva which may improve the predictability and long-term maintenance of achieved soft tissue root coverage. Clinical significance of this additional improvement in GT needs to be evaluated in larger patient sample over a longer follow-up period.

CONCLUSION

Clinical outcomes obtained with the modified CAF in combination with PRF in the management of Grade II Millers gingival recession were evaluated . All values i.e Vertical recession depth , PD & CAL improved significantly from baseline to 3 months **.**Benefits of the combined technique in terms of increased thickness & percentage of root coverage appear to justify the use of PRF along with modified CAF for the treatment of (grade II acc to MILLERS) multiple gingival recessions. There was no secondary surgery required (for the donar site graft) , no sutures were used, also this technique is cost-effective & no antegenecity was seen as PRF was used.

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