MINIMALLY INVASIVE TISSUE GRAFTING: THE GUM DROP
TECHNIQUE

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ABSTRACT

Aesthetics is a major concern for any person with gingival recession. Along with aesthetics, sensitivity also poses a problem, for which recession coverage is sought. Many root coverage procedures are now in vogue. The goal of these procedures is to provide complete root coverage and an optimal aesthetic appearance. The latest techniques for recession coverage are minimally invasive combining regenerative materials such as platelet concentrates, of which, A-PRF and i-PRF have evoked interest.

The use of platelet concentrates removes the necessity of a donor site while increasing the thickness of the soft tissue. These are papilla-preserving techniques that give more aesthetic results. This case report throws light on a minimum invasive technique ‘The Gum Drop Technique’ (GDT), with the use of A-PRF and i-PRF.

INTRODUCTION

Gingival recession or ‘appearance of long teeth’ is a condition where the marginal gingiva shifts apically resulting in exposure of the root surface. This exposed root surface can lead to problems like sensitivity and unpleasant esthetics for which treatment is sought.[1]

Various procedures are known for the treatment of gingival recession. These are broadly divided into two types:

1. Pedicle graft procedures are those in which the graft remains attached and is only repositioned to cover the recession.
2. Graft procedures are those in which Free Gingival Graft or Connective Tissue Graft is harvested and placed at the region of the recession.[2]

Minimally invasive surgery was first introduced in periodontics in 1995, by Harrel and Rees. It involves minimal surgical access that minimizes tissue trauma due to reflection and manipulation, resulting in improved stabilization of blood clot with reduced surgical morbidity.[3]

Modifications for the traditional techniques were introduced to avoid the requirement of a secondary donor site referred to as the “tunnel” technique introduced by Mahn in 2001.[4]
Recently, advances have been made towards minimally invasive procedures for recession coverage and has drawn attention towards the use of growth factors like plasma rich fibrin (PRF) for improvement of recession.

Platelet-rich fibrin, developed by Choukroun et al, is a second-generation platelet concentrate. Platelet concentrates are used in surgeries with the objective to provide growth factors, leucocytes and platelets enmeshed in the fibrin matrix that could be useful to improve healing and promote tissue regeneration.\(^5\) They promote alveolar bone repair of extraction sockets and ridge augmentation, defect correction and implant site development.\(^6\)

GDT is a biologically enhanced soft tissue graft procedure which combines minimally invasive incisions with the positive benefits of autogenous blood derivatives from the patient to achieve root coverage.\(^7\) Hence, this case report highlights the encouraging results obtained using this technique.

**CASE DESCRIPTION**

A 48-year-old male patient reported to the Department of Periodontology with a chief complaint of sensitivity and long appearance of his upper front teeth. On examination, Miller’s Class 1 recession was noted in relation to 11, 12, 21, 22 and Miller’s Class 2 recession in relation to 13, 23(FDI system of tooth numbering) (Fig 1). Patient was found to be systemically healthy.

**Pre-Surgical preparation**

Phase 1 therapy was completed followed by reinforcement of oral hygiene instructions. Patient was recalled after 1 month to assess oral hygiene maintenance and gingival health. The gum drop technique was planned for recession coverage.

**Surgical procedure**

After administration of local anaesthesia (Lignocaine HCl with 1:80,000 adrenaline), gum piercing was done, in the alveolar mucosa near the base of the vestibule, apical to the recipient site (between 13 and 14, 11 and 21, 23 and 24). (Fig 2)
Once the holes were created by gum piercing, a full thickness tunnel was created between the piercings and extended to the Cemento-enamel junction of each tooth, keeping the tip of the papilla intact, and, thereby ensuring that it resulted in a tension free flap, permitting the coronal advancement of the flap. (Fig 3)

Root biomodification was done for the exposed roots using tetracycline root conditioner for 3 minutes and then washed off.

Peripheral blood was collected into two 10 ml vial tubes without anticoagulant and one of them was centrifuged (LABTECH, DENTIFUGE) to 1300 rpm for 8 minutes. After physiological coagulation, the fibrin clot was separated from the red blood cell component base using scissors and tweezers and A-PRF membrane was obtained. (Fig 4)
PRF membranes were introduced into the tunnel till the desired thickness was obtained (Fig 5). The gingiva was then coronally advanced towards the CEJ. Composite was placed on the labial surface of the teeth to act as stabilizing points for the suture. Resorbable 5.0 suture vicryl (Ethicon) was used. (Fig 6)

The second tube of blood was centrifuged at 700 rpm for 3 minutes, resulting in formation of i-PRF, which was collected into a 2 mL syringe, and was introduced through the piercing (Fig 7). This was done to enhance regeneration as growth factors and mesenchymal cells would stimulate fibroblast growth and cell migration that would assist in the attachment of the flap to the root surface. Also, it would help to solidarize the membrane, thereby stabilizing the clot and flap. Antibiotics (Amoxicillin 500mg), analgesics (Paracetamol 300 mg + Aceclofenac 125 mg) and mouthwash (Chlorhexidine gluconate 0.12%) was prescribed. Patient was recalled after 1 week.
Patient was kept on follow up for a period of 1 year. (Fig 8)

RESULTS

Complete root coverage of 11, 12, 21, 22 and partial root coverage of 13 and 23 was obtained (Fig 9, 10).
DISCUSSION

Gingival recession is a common condition affecting the gingiva, its multiple etiology requires different surgical approaches for its correction. Surgical technique for recession coverage depends on size of the recession defect, classification of recession defect, whether the recession is localized or generalized and presence or absence of keratinized tissue adjacent to the defect. [8, 9]

Gum Drop Technique is a procedure pioneered by Dr. Delia Tuttle, it is a novel soft tissue grafting procedure that combines minimally invasive incisions with blood derivatives from the patient to achieve root coverage.

Successful complete root coverage in 11, 12, 21, 22 and partial root coverage in 13, 23 was obtained in our case, which is similar to the results obtained by Tuttle et. al. Midhun et al. obtained 90% root coverage after 6 months of the surgery. Gautam et al. reported near complete root coverage. [10,11]

This technique was chosen as there were multiple recession and it had an added advantage of not creating an additional wound, which would’ve increased the chances of morbidity, also, it made use of the patient’s own blood derivative which promoted healing due to the presence of additional growth factors.

This procedure involved tunnelling and coronal advancement of the gingival tissues, which resulted in less incisions and trauma. The introduction of i-PRF and A-PRF into the surgical site, releases growth factors, causing stimulation of new blood vessel growth through vascular endothelial growth factor (VEGF) and fibroblast growth factor. [12] Del Corso et al. studied the effect of combination of PRF and Coronally Advanced Flap for the treatment of adjacent multiple gingival recession and reported significant improvement during early periodontal healing with thick and stable gingiva. [13, 14]

The greater regenerative potential of both PRF i.e. A-PRF and i-PRF (used in gum drop technique) is an effective agent in the management of recession defects, by improving healing, reducing inflammation of operated site, thus, resulting in long term stability of the repositioned gingival margin. Other than patients with bleeding disorders and haematological disorders, PRF can be used for almost all cases. [15,16]

CONCLUSION

This innovative approach has provided excellent results in this patient, where multiple adjacent recessions were handled without a second donor site. The patient was comfortable and satisfied with the esthetics and the therapeutic outcome of this procedure. Few cases which use this technique have been reported. Hence, this case report was intended to encourage more clinicians to perform this minimally invasive technique, which involved A-PRF and i-PRF and a coronally advanced flap.

REFERENCES