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Research Article

PERIOESTHETIC SURGERY – USING COMBINATION OF TECHNIQUES FOR THE TREATMENT OF CLASS I RECESSION DEFECTS

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A B S T R A C T

The desire for improved esthetics has increased tremendously over the years. Periodontal plastic surgery deals with regenerative procedures designed to restore form, function and enhance esthetics.

The aim of this study was to evaluate the effectiveness of sub epithelial connective tissue graft and PRF using pouch and tunnel technique as root coverage procedure.

Maxillary teeth with miller's class I gingival recession irt 11,12,13,21,22,23 were included in the study. Split mouth study was done with one site treated using sub epithelial connective tissue graft and another site using PRF, using both pouch and tunneling technique. Patients were followed up for a period of 6 months and 1 year. All the treated teeth showed 100% root coverage at the end of 6 months and 1 year. Gingival recession is a common occurrence and its prevalence increases with age. It can lead to clinical problems, diminished cosmetic appeal and hence esthetic concern. There are various techniques for root coverage. Sub epithelial connective tissue graft has shown the best predictability (95%) of root coverage in Millers class I & II cases.

INTRODUCTION

Gingival recession is defined as an apical displacement of gingival margins from the cement enamel junction, which results in the root exposure[1].Various treatment modalities have been proposed in the literature for the aesthetic correction of gingival recession.

The indications for surgical intervention are quite well defined and it is essential to carry out root coverage surgery whenever concerns such as aesthetics, sensitivity, susceptibility to root caries pulpal symptoms due to root exposure, food lodgement and plaque accumulation exists[2].Combination of techniques have been selected based on the indication and have been performed in the present case for the treatment of gingival recession. These procedures need to ensure the best possible results with minimal discomfort and maximal safety for the patient. The techniques used are Coronally Advanced Flap, Double Papilla Flap and Pouch and tunnel technique by using graft materials.The sub epithelial connective tissue graft have shown the best predictability (95%) of root coverage in Millers class I & II cases[5], and PRF has also been used extensively in the treatment of gingival recession.This case report outlines the importance of the technique selection for the specific type of recession defects and also the advantages of using sub epithelial connective tissue and PRF as the graft material in the field of periodontal plastic surgery.

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Case Report

A 33 year old male patient reported to the Department of Periodontics at A.J. Institute of Dental Sciences , Mangalore, with the chief complaint of sensitivity in the upper and lower anterior teeth. Patient was in good periodontal health and had not received any periodontal treatments previously. Onintraoral examination, there was generalized Miller's class Igingival recession in relation to maxillary anterior teeth (FIGURE 1). The distance from CEJ to marginal gingiva was 4 mm w.r.t 11 and 21; 3 mm w.r.t 12,13,32,33 . There was adequate width of attached gingiva. A pouch and tunnel technique execution with a coronally advanced flap, and the PRF membrane placement was planned for the exposed root coverage of 13,12,11 teeth , while the subepithelial connective tissue graft placement was chosen for the root coverage of 21,22,23 teeth with the purpose of increasing the width of keratinized tissue.

Figure 1 presenting Millers Class I Recession defects on the maxillary anterior teeth.

Figure 2 distance from CEJ to the gingival margin

PRF membrane preparation

Before the surgical procedure, around 8ml of intravenous blood was drawn from the patient and collected ineach of twovacutainer tubes of 10-mL capacity without any anticoagulant. The samples were centrifuged immediately using a table centrifuge (REMI R-8C) for 12 min at 2400 rpm.**(Fig. 3A).**

After centrifugation, a fibrin clot was obtained in the middle of the tube, just between the red corpuscles at the bottom and acellular plasma at the top. PRF was squeezed to form a membrane (Fig 3B,C).

Figure 3a

Figure 3b

Figure 3c

Preparation of the root surface

The patient was guided to rinse the mouth with 15 ml of 0.12 % chlorhexidine solution for one minute. Local anesthesia was given and the exposed roots were cleaned up through scraping and root smoothing with periodontal curettes; subsequently, they were treated and demineralized with tetracycline smear of 500 mg and dissolved in 10 ml of saline solution, using cotton during three minutes to remove the smear layer .

Surgical procedure

Sulcular incisions through each recession area were given with a number 15 blade (Figure 4). Care was taken not to extend the incisions till the tip of the interdental papilla. A full thickness mucoperiosteal flap was reflected, extending beyond the mucogingival junction (Figure 5). This was done so as to reduce the tension on the flap to facilitate coronal displacement following placement of the graft. Each pedicle adjacent to the recession was undermined gently, without detaching it completely to prepare a tunnel (Figure 6). The undermining of tissues to prepare the tunnel was done by extending it laterally about 3-5 mm.

Figure 4

Figure 5

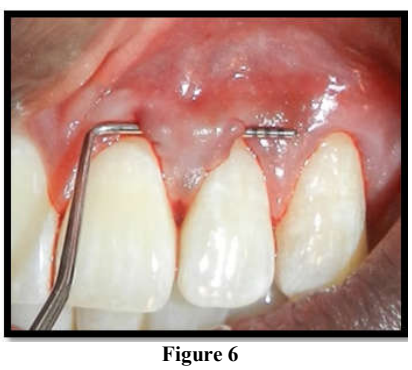

Figure 6

Harvesting of sub-epithelial connective tissue graft

SCTG was obtained from the anterior palate using Trap Door Technique. After administration of 1:80,000 Local anaesthetic agent, an incision is placed 2mm from the gingival margin of the teeth extending from mesial surface of canine to the distal surface of second premolar. Horizontal incisions was placed on the either side of the first incision. The palatal flap is reflected and the sub-epithelial connective tissue was harvested (FIGURE 7A ,B).

Figure 7a

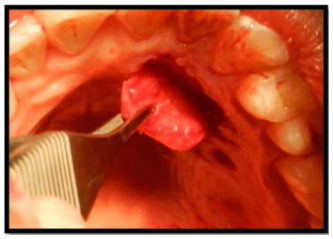

Figure 7b

Preparation of the SCTG's Recipient Site

The graft was inserted and stabilized using a 5-0 silk suture covering the recessions in the recipient site - 21 to 23 teeth region (Figure 8). The mesial aspect of the graft was pierced with the needle, and the needle was passed passively underneath the tunnel created between the adjacent recessions. The suture was passed from the mesial aspect of the tunnel and pushed gently to the distal direction with a periosteal elevator so that the graft could slide underneath the tunnel. The graft was positioned coronal to CEJ using composite plug sutures (Figure 9). Dry tin foil and periodontal dressing (Coe Pak) was placed over the foil.

Figure 8

Figure 9

PRF Membrane Application

To the right side, using a pair of tweezers, PRF membraneswere inserted and adapted in each exposed root surface to recover the recessions (Figure 10), which were obtained from clots resulting from centrifugation. The flap was positioned in coronal direction and maintained by composite plug sutures in each tooth involved in the process (Figure 11).

Figure 10

Figure 11

Post operative instructions

The patients were advised to use 0.2% chlorhexidinegluconate mouth rinse twice daily for 2 weeks. Post-operative home care instructions were given and they were prescribed analgesic to reduce post-operative pain and discomfort. Sutures were removed after 7 days and healing was satisfactory(Figure 12 and 13).

Figure 12

Figure 13

Figure 14

Figure 15

DISCUSSION

The concerns of hypersensitivity, root caries, fear of tooth loss and an increasing interest in esthetics have led to the development and modifications of surgical procedures that not only enhance the width of attached gingiva but also achieve maximum root coverage addressing these concerns[6].Periodontal plastic surgery involves procedures which enhance esthetics, restore form, function and also include regenerative modalities. In the past, periodontal treatment procedures were mainly aimed at preventing and treating the existing periodontal diseases. However, with increasing esthetic demands these surgical procedures are modified so as to preserve and enhance esthetics[4].

The tunnel technique was developed as a modification of the envelope technique to manage multiple adjacent recessions using a single surgical procedure and also preserves the interdental papilla which facilitates an early and accelerated initial wound healing by maintaining adequate blood supply to the underlying graft[7]. It provides excellent adaptation of the graft and provides highly esthetic results by increasing the thickness of keratinized gingiva. The results of the tunnel technique demonstrated favourable root coverage[4]. The tunnelling technique combines the advantages of sub epithelial grafting along with envelope procedures thus improving the predictability[8]

Connective tissue graft was first used by Edel (1974), Broome and Taggart (1976) and Donn (1978), to increase the width of keratinized gingiva. The use of connective tissue grafts for treatment of gingival recession began in 1985 when Langer and Langer described SCTG technique for covering gingival recession of both single and multiple adjacent teeth. They described a technique in which the graft is covered by the overlying partial thickness flap. Nelson proposed the use of full thickness flap to cover the SCTG[10]. SCTG has become a popular treatment modality for coverage of denuded roots because of its high degree of success. It has shown the best predictability (95%) of root coverage in Millers Class I and II cases. The clinical advantage of SCTG is apparent not only at the recipient site, where there is good tissue blending, but also at the palatal donor site, as it uses a more conservative approach to harvest the graft causing reduced degree of discomfort to the patient[4]. The use of platelet-rich fibrin has been predictably obtaining periodontal regeneration. Platelets in PRF release high amount of growth factors which take part in soft tissue and hard tissue repair and regeneration. It act by augmenting the wound healing process through anabolic bone formation, angiogenesis, cementogenesis, osteoblast differentiation, mitosis, chemotaxis, and other processes that improve the healing environment. It is an intimate assembly of cytokines, glycan chains, and structural glycoproteins, which are enmeshed within a slowly polymerized fibrin network;it has the potential to accelerate soft and hard tissue healing[9]

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