

Surgical placement of Free gingival graft with platelet rich fibrin as a membrane in the lower aesthetic zone - A case report with a 6 months follow up

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Abstract

Gingival recession is a usually encountered mucogingival problem in clinical practice which is highly unesthetic and can lead to other associated conditions like root caries and sensitivity. The aesthetic demand together with a reduction of root sensitivity and management of root caries or cervical abrasion are the main indications for root coverage. In this case report, a 32-year-old female patient having Miller’s Class III gingival recession in relation to 41 was treated using a free gingival graft with satisfactory postoperative results.

Keywords: Free gingival graft, Gingival recession, Root coverage

Introduction

Reconstruction of the existing gingival recessions and inadequate width of attached gingiva ensures recreation of optimal pink aesthetics, the ultimate goal of periodontal plastic surgery.¹

Soft tissue grafting like free gingival graft is the treatment of choice to increase keratinized tissue in defective areas and cover the gingival recession. Keratinized tissue is critical for the maintainability of the surgical site and flap management.²

To protect the FGG site, a variety of dressing has been introduced such as non-eugenol dressings. However, these conventional dressings act only as a mechanical barrier, so biological dressings like Platelet-rich fibrin dressings were introduced to enhance healing which was

previously used to treat skin ulcers and showed improved clinical results.³

Platelet-rich fibrin has been used extensively in dentistry for socket preservation, sinus lift, periodontal regeneration, guided tissue regeneration and wound healing.⁴

Femminella et al.⁵ compared between PRF and a gelatin sponge in the management of palatal wounds and showed that the use of a PRF membrane as a palatal bandage is effective in accelerating palatal wound healing and reducing the patient's morbidity.⁵

In this case study, a Miller's class III recession in a lower anterior tooth, was treated with free autogenous soft tissue graft and PRF was placed as a membrane to enhance healing.

Case report

A 32-year-old female patient reported to the Department of Periodontology, with a chief complaint of root surface exposure in the lower front tooth region which was aesthetically unpleasant (Fig. 1). The patient's medical and dental history was not significant. The oral hygiene status was good. Intraoral examination diagnosed as class III gingival recession based on Miller's classification (1986)⁶ and 1 mm of keratinized gingiva was evident, apically to the gingival recession. Presurgical therapy included patient education and motivation, scaling and root planning with plaque control instructions. The periodontium was healthy and with no overt signs of inflammation. The soft tissue defect associated with tooth was mobile. Patient was recalled for subsequent follow-up and surgical technique to increase the width of the attached gingiva along with the coverage of the gingival recession defect, with a free gingival graft was planned.

Surgical procedure

Preparation of the recipient bed

A horizontal incision was made in the exposed root of 41 at the level of cemento-enamel junction extending from the line angle of adjacent teeth on either side of the recession. At the distal terminals of the horizontal incision, vertical incisions were given extending well into the alveolar mucosa. A partial-thickness flap was elevated and excised apically (Fig. 1)

Preparation of donor tissue

The amount of donor tissue required was accurately determined by using a tin foil template. The left side of the palate between the premolar and first molar was selected to harvest the donor tissue using the conventional technique. The initial incision was outlined by placing the tinfoil template with no 15-scalpel blade (Fig. 2). Care was taken to place the incision 3 mm from the palatal gingival margin to avoid recession on these teeth. With a 15 No. blade the required dimensions of the epithelized free gingival graft was obtained.

To prepare PRF, A 10 mL blood sample was taken by venipuncture of the antecubital vein. It was then divided into two sterile tubes of 5 mL each. Immediately, the tubes were centrifuged at 3,000 rpm for 10 minutes. The fibrin membranes were obtained by squeezing the clot with dry gauze to use it as a PRF dressing to promote healing (Fig 2).

The graft obtained was a partial thickness graft consisting of epithelium and a thin layer of underlying connective tissue, which was then stabilized to the recipient bed by means of a 5-0 non-absorbable suture having a 3/8" reverse cutting needle.

After suturing, a foil and periodontal pack were placed to protect the surgical site.

Postoperative instructions

The Patient was advised not to chew or brush at the recipient site for seven days. He was advised not to retract the lip. These are important to ensure the stability and success of the graft, which would otherwise delay the wound healing process. Fourteen days after surgery, sutures were removed and the grafted area was carefully cleaned with a 0.12% chlorhexidine solution. The healing of the palatal wound was satisfactory and the patient did not complain of any pain or discomfort. At 3 months postoperative visit, a gain of 3 mm in clinical attachment level was noted.

Discussion

A free gingival graft is the frequently advocated treatment modality in cases of gingival recession defects with inadequate keratinized tissue. The treatment is mainly aimed to attain a wide band of keratinized gingiva which will provide better plaque control and lead to a possible significant improvement of the periodontal attachment apparatus.

Sullivan and Atkins⁷ reported that FGG offers the best results in cases of shallow and narrow recession. According to them, when the graft is placed over the recession, some amount of 'bridging' can be expected because a portion of grafted tissue that is covering the root will survive by receiving circulation from the vascular portion of the recipient site.⁷

Platelet-rich fibrin is a type of platelet concentrate containing leukocytes and platelets in a fibrin network, which acts as a scaffold for the embedding of the growth factors and thereby, accelerating wound healing.⁴ According to Kawase et al⁸ the sustained release of growth factors from PRF between 1 and 4 weeks significantly affects the total healing time. They noticed in their in vitro study that the compression of PRF to healing at a 2-week membrane reduces the porosity and

delays degradation of PRF. The PRF has been showing a significant wound healing response when used to cover the palatal wound which is in agreement with the study by Ozcan et al.⁹

The use of PRF in the present case study also showed improved healing time and enhanced protection of the palatal wound.

In our case, complete root coverage was not achieved as it was a Millers class III recession. However, the patient was reasonably happy with the result obtained with a significant reduction in tooth mobility. In this case, considering all the criteria for a successful root coverage FGG was considered a feasible treatment option. A 6 months follow-up showed a satisfactory result which was well appreciated by the patient with no discomfort.

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Legend Figures

Figure 1 (left to right): Class III gingival recession irt 41 and Preparation of recipient area.



Figure 2 (left to right): Free gingival graft was taken from the palate, PRF membrane was prepared, suturing of the graft with PRF membrane to the recipient bed.



Figure 3 (left to right): Postoperative view (1 month), Postoperative view (6 months).

