

Establishing the Essential Zone: Free Gingival Graft for Gingival Augmentation and Root Coverage

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ABSTRACT

Gingival recession is a frequently encountered clinical finding which causes compromised aesthetics and dentinal hypersensitivity leading to an inadequate zone of keratinised gingiva and might facilitate subgingival plaque formation resulting in further attachment loss. Epithelised soft tissue graft harvested from the hard palate, commonly known as free gingival graft is simple and highly predictable when used to increase the amount of keratinised tissue. This case report highlights the use of free gingival graft as a gingival augmentation and root coverage procedure for 26-year-old patient with Cairo Recession Type 2 mucogingival defects with optimum aesthetic outcome. →

Keywords: Free gingival graft; gingival augmentation; gingival recession; root coverage.

INTRODUCTION

Gingival recession is an apical shift of the gingival margin in relation to the cemento-enamel junction, associated with clinical root exposure.¹ It has a prevalence rate of 65.44% in the Nepali population.² Various predisposing and precipitating factors cause recession leading to dentinal hypersensitivity, non-carious cervical lesions, root caries, compromised plaque control, and aesthetics.³ Such consequences can be managed by the free gingival graft (FGG) procedure, first described by Björn in 1963, for augmentation and was later advocated by Miller in 1985 for root coverage.

CASE REPORT

A 26-year-old female with no relevant medical history reported with chief complaint of downward shifting of gums in the lower front region of the jaw for two years which was associated with occasional sensitivity. Her past dental history revealed scaling done two months

back and was prescribed a desensitising agent for one and a half months with no improvement in sensitivity. Intraoral examination revealed a thin gingival biotype, well-aligned lower anterior teeth with no evidence of trauma from occlusion, and gingival recession with three millimetre depth extending to a mucogingival junction in relation to 31 (according to two-digit tooth numbering system, Figure 1). Intraoral periapical radiograph (IOPAR) of lower anterior teeth revealed interdental bone loss in relation to 31 (Figure 2).

The mucogingival defect in relation to 31 was classified as Cairo Recession Type 2 (RT2). FGG was planned and explained to the patient. After obtaining consent from the patient, full mouth scaling was performed and an impression of a maxillary arch



Figure 1: Gingival recession of three millimetre with respect to 31.

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Figure 2: Intra-oral periapical radiograph showing interdenal bone loss wrt 31.

was made for fabrication of acrylic stent. The patient was recalled after four weeks with a routine blood investigation report.

Under adequate local anaesthesia (2% Lignocaine and 1:200000 Adrenaline), a partial thickness recipient bed was prepared by giving horizontal incision at the level of the cemento-enamel junction (CEJ), extending three millimetre from the line angle of 31 mesially and distally and two vertical incisions extending six millimetre beyond the most apical part of the exposed root thus preparing a butt joint with a horizontal incision on the marginal part of the recipient site (Figure 3).

A sterile tin foil was used to make a template of the recipient bed, which was transferred to the left side of the palate approximately three millimetre below



Figure 3. Prepared recipient bed.

the gingival margin, anterior to mesiopalatal line angle of maxillary first molar and posterior to rugae area to harvest the graft (Figure 4).

Under greater palatine nerve block, bleeding points were marked one millimetre away from the template to accommodate shrinkage. Incisions were given with the number 15 blade joining the bleeding points to dissect the partially thick palatal graft. Bleeding from the donor site was arrested with a pressure pack and an acrylic stent was placed.

After harvesting the graft, it was placed over the normal saline moistened gauze and was thinned with a number 15 blade from the non-epithelial surface to remove glandular and fatty tissue thus obtaining a graft of about one mm thickness (Figure 5). The prepared graft was placed immediately over the recipient bed and stabilised with a 4-0 silk suture with an interrupted and criss-cross suturing technique (Figure 6). Slight pressure was applied over the graft with moistened gauze for five minutes to permit thin fibrin clot formation and prevent dead space. Sterile foil was placed over the recipient site and non-eugenol dressing was applied.

Post-surgical instructions were given and the patient was instructed to refrain from brushing at surgical site for two weeks. Chlorhexidine mouthwash 0.2% 10 ml twice daily was prescribed for 14 days. Amoxicillin 500 mg and Metronidazole 400 mg were also prescribed for five days, for pain management combination of Ibuprofen 400 mg and Paracetamol 325mg was prescribed for three days.



Figure 4. Tin foil template on the palate.



Figure 5. Prepared graft with one millimetre thickness.



Figure 6: Graft sutured on the recipient bed.



Figures 7, 8: Healing after the fourteenth day on the recipient site and donor site.



Figure 9, 10: Augmentation and coverage after four months.

On the 14th post-operative day, periodontal dressing and sutures were removed. Satisfactory healing at both sites was noted. (Figures 7, 8). At four months follow-up, there was complete healing at the surgical

sites with augmentation of keratinised gingiva of five millimetre width and mean root coverage of 66% (Figures 9, 10). The patient was satisfied and also had no hypersensitivity of the tooth.

DISCUSSION

Thin periodontal biotype, absence of attached gingiva, persistent gingival inflammation, orthodontic therapy, improper tooth brushing technique, and frenum position are among the several predisposing factors for gingival recession.¹ In this case, thin periodontal biotype, and persistent gingival inflammation could be the possible factors for recession. Recent consensus reports have advised clinicians to maintain ≥ 2 mm gingival width with one millimetre width of attached gingiva to maintain periodontal health.⁴ Additionally, studies show that untreated gingival recessions are more prone to further apical displacement over time despite good patient compliance.⁵ Surgical management of gingival recession including apically positioned flap, pedicle soft tissue grafts, and free soft tissue grafts are advised. Among these, the free gingival graft is a simple and predictable technique to augment keratinised gingiva.⁶

Keratinised tissue augmentation and either partial or complete root coverage can be achieved with FGG in sites with narrow and shallow (≤ 3 mm) recession defects associated with reduced or absence of attached gingiva.^{7,8} Therefore, with the primary aim of augmenting keratinised gingiva and to achieve root coverage, FGG was performed in this case. Socheren and colleagues, 1973 advocated graft thickness of 0.5-0.75 mm, which is considered ideal for augmentation. We used a graft of about one mm

thickness, which augmented five mm of keratinised gingiva.

For root coverage, predictability can be optimised by increasing the graft survival, done by covering at least three mm of the periosteal bed on mesial, distal, and apical to bone dehiscence.⁸ The mean percentage of root coverage for FGG ranged from 43% (Jahnke et al. 1993) to 85.3% (Borghetti and Gardella 1990). In this case, a mean root coverage of 66% in four months was achieved. Complete root coverage could not be achieved due to interdental bone loss. Some extra coverage is still expected to occur by creeping attachment between 1-12 months after surgery.⁹

Although easy and highly predictable for gingival augmentation, FGG may cause discomfort and post-operative bleeding at the donor site and colour mismatch at the recipient site.¹⁰ But in this case acceptable colour match was achieved, which may be due to pale pink keratinised gingiva on adjacent teeth.⁸

SUMMARY

The FGG is still considered to be the “gold standard” for gingival augmentation which may prevent the development and further progression of gingival recession with complete or partial root coverage in RT2 defects providing optimum aesthetic result.

Conflict of interest: None.

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