

Surgical Root Coverage of Miller's Class I Gingival Recession Using Free Gingival Graft- A Case Report

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ABSTRACT

Periodontal plastic surgery aims at establishing an ideal pink aesthetics through soft tissue reconstruction of gingival recessions. Transplantation of autogenous soft tissue grafts are considered a gold standard treatment modality for coverage of gingival recession defects with predictable and aesthetic outcomes. Hence various surgical techniques are used in combination with such grafts for gingival recession coverage. This case report presents a treated case of Miller's Class I gingival recession defect in relation to mandibular central incisor with adequate root coverage as well as increase in keratinized gingiva using free soft tissue gingival graft harvested from hard palate.

Keywords: Gingival recession, Free gingival graft, Root coverage, Pink aesthetics.

INTRODUCTION

The term "mucogingival surgery" was initially used in literature by Friedman in 1957, where he referred to corrective surgeries involving the alveolar mucosa and the gingiva which included problems associated with attached gingiva, aberrant frenum and shallow vestibule. [1] However the 1996 World Workshop renamed "mucogingival surgery" as "periodontal plastic surgery", [2] a term that was originally proposed by Miller in 1993 since the former term could not adequately describe all the periodontal procedures that were included in this domain. [3] Periodontal

plastic surgery is defined as the surgical procedures performed to correct or eliminate anatomic, developmental or traumatic deformities of the gingiva or alveolar mucosa. [2] Amongst the vast array of various surgical procedures, it includes coverage of the denuded root surfaces. Reconstruction of the existing gingival recessions ensures recreation of optimal pink aesthetics, the ultimate goal of periodontal plastic surgery. This can be achieved by utilizing autogenous soft tissue grafts (applied in combination with several different surgical techniques) that are considered as a gold standard treatment approach for gingival recession coverage with predictable tissue stability and enhanced aesthetics.

Apart from compromised aesthetics, the absence of adequate keratinized gingiva is often associated with increased plaque accumulation, gingival inflammation, bleeding on probing and root sensitivity. [4] Moreover carious and non-carious cervical lesions are commonly associated with gingival recession, which pose a clinical challenge. These problems are addressed to a great extent by surgical root coverage procedures. Autogenous free soft tissue grafts are harvested from remote and aesthetically irrelevant areas of the oral mucosa and are entirely detached from the donor site. This avoids donor site complications surrounding the adjacent teeth like impaired aesthetics and root hypersensitivity. However, application of

free autogenous soft tissue grafts requires a second surgical site, with the association of possible complications like infection, pain, swelling and necrosis.

The first documentation of successful gingival grafting by Bjorn dates back to 1963, where free epithelial grafts were utilized to create a widened zone of attached gingiva. [5] Free gingival graft (FGG) is one of the most common and predictable methods for augmenting gingival tissue dimensions. [6] A predictable post-operative tissue stability and graft survival are its advantages. Palatal soft tissue grafts with epithelial coverage even after their transplantation to the recipient site maintain their original tissue characteristics. Hence although the use of free gingival graft induces favourable amount of keratinization, it also bears the disadvantage of impaired aesthetics due to differences in surface colour and texture compared to adjacent sites. [7]

This article reports a clinical case of Miller's class I gingival recession in lower anterior tooth region in which a free gingival graft was performed to gain

keratinized soft tissue as well as adequate root coverage.

CASE PRESENTATION

A male non-smoker patient of 31 years of age, without any associated comorbidities, reported to the clinic, with the complaint of tooth sensitivity in the mandibular anterior tooth region for the past three-four months. On clinical examination, Miller's class I gingival recession defect was noted in the tooth #41, the vertical length of the recession defect was 5mm and 1 mm of keratinized gingiva was evident, apically to the gingival recession (Fig. 1 a-c). The periodontium was healthy and with no overt signs of inflammation. The soft tissue defect associated tooth was non-mobile. Scaling and root planing was done in the entire dentition and Oral Hygiene Instructions (OHI) were given. Patient was recalled for subsequent follow-up and after two months, surgical technique to increase the width of attached gingiva along with the coverage of the gingival recession defect, with free gingival graft was planned.



Fig 1 a. Miller's class I gingival recession in relation to # 41



Fig 1 b & c. Shows gingival recession of 5mm and width of keratinized gingiva 1 mm in relation to # 41

Surgical Procedure:

After obtaining an informed consent from the patient prior to the surgery, the root surface of # 41 was planed using hand cures and occlusal adjustments were done to relieve the traumatic bite (Fig. 2). An injection with local anesthetic (Lignocaine HCl with 2% epinephrine 1: 200,000) was administered. Adequate anesthesia was obtained both on to the recipient as well as donor site. The recipient site with a firm

connective tissue bed was first prepared by placing a horizontal incision at the mucogingival junction with a 15 No. blade to the desired depth. The incision was extended to approximately twice the desired width of the attached gingiva so that it allowed 50% contraction of the graft on completion of healing. Thereafter; the mucosa adjacent to the area of recession was de-epithelised, without disturbing the periosteum using the 15 No. blade (Fig.3).

A smooth recipient bed free of muscle attachment tissue was obtained. A gauze piece was packed between the recipient site and the lip to limit bleeding and promote hemostasis in the recipient area. Meanwhile the donor tissue was being obtained from the hard palate (Fig. 4). The amount of donor palatal tissue needed was accurately determined by using a foil template and placed over the donor site. With a 15 No. blade the required dimensions of the epithelized free gingival graft was obtained from the thin palatal tissue (Fig. 5). Firm

pressure was applied to the donor site with a gauze piece and a modified Hawley's appliance was fabricated to cover the hard palate.

The graft obtained was a partial thickness graft consisting of epithelium and a thin layer of underlying connective tissue, which was then stabilised to the recipient bed by means of 6-0 absorbable suture having 3/8" reverse cutting needle (Fig.6). Periodontal dressing (Coe-Pak) was given at the recipient site (Fig.7).



Fig 2. Occlusal adjustments done

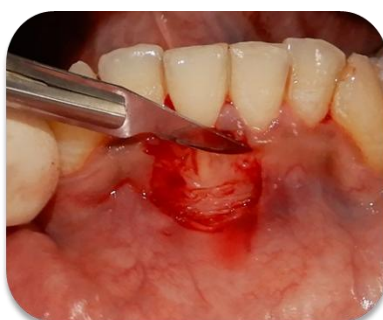


Fig 3. Recipient graft bed prepared

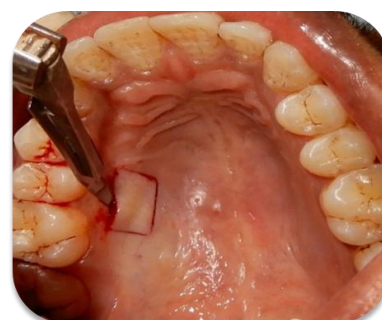


Fig 4. Free gingival graft harvested

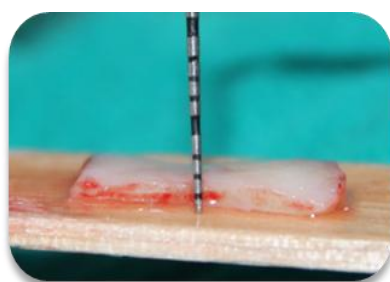


Fig 5 : Free epithelial

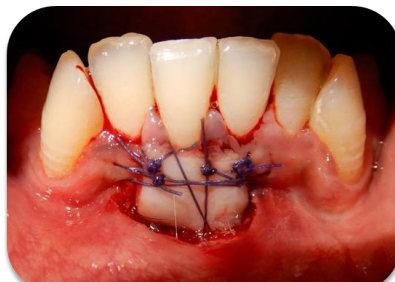


Fig 6. Graft secured on the recipient site.



Fig 7. Surgical dressing given graft (1.5mm thickness)

Postoperative instructions:

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. The patient was prescribed amoxicillin 500 mg three times per day for five days, Aceclofenac 100 mg twice daily for five days, and chlorhexidine gluconate 0.2% three times per day for four weeks. Ten days after surgery, any remaining sutures were removed and the grafted area was carefully cleaned with a

0.12% chlorhexidine solution. Lukewarm or cold semifluid diet on the day of procedure, along with easy-to-chew soft food for two weeks was also advised.

Clinical Observations and Results:

The horizontal incisions showed complete healing with soft tissue maturation, minimal scarring and adequate amount of attached gingival (Fig. 8). 1 month post surgical evaluation showed increase in the width of keratinized tissue with adequate root coverage in relation to

#41 (Fig. 9&10). The findings were consistent 3 month postoperatively as well

and the patient was satisfied with final clinical outcome and appearance.



Fig 8 (a &b). Post operative view (1 month) showing adequate root coverage and keratinized tissue width of 5 mm



Fig 9. Baseline gingival recession & inadequate keratinized tissue width

Fig 10. 1 Month Follow up showing gingival recession coverage & adequate keratinized tissue width

DISCUSSION

Free gingival graft is the frequently advocated treatment modality in cases of gingival recession defects. During the treatment phase, correcting the anatomic factors along with the width of the attached gingiva is also taken into consideration. But, the adequacy of width of attached gingiva has been the centre for debate for decades. Miyasato et al. 1977 stated that a minimal or no amount of attached gingiva is sufficient if adequate plaque removal is practiced. [8] On the other hand, Lang & Loe 1992 suggested that a minimum width of 2 mm of gingiva needs to be present for gingival health to exist. [9] The current consensus is that for adequate maintenance of periodontal health, a minimum of 2mm keratinized tissue and 1mm of attached tissue is sufficient. [10] Despite several techniques being proposed to achieve consistent and predictable root coverage the average percentage of covered root surface under

various clinical situations varies from 56% to 97.8% 6,7,8 thereby posing a major challenge to clinicians while treating buccal recession. [11,12]

As far as aesthetics is concerned free gingival grafts may result in unaesthetic appearance of the recipient site while compared to connective tissue grafts (CTG). But in the presence of a thin palatal mucosa, harvesting a connective tissue graft of sufficient thickness is a challenge and there is an increased risk of injury to the underlying neuro-vascular bundles in the proximity. Zuccheli pointed out that the average palatal mucosal thickness is 3mm, and that less than 50% of the patients requiring mucogingival surgeries have a sufficiently thick palatal fibromucosa for connective tissue grafts harvesting and hence alternative techniques have been utilized to solve this clinical difficulty. This difficulty is not faced while harvesting free gingival grafts. [13]

In order to ensure the success of the graft, adequate dimension of graft should be harvested, as thinner graft exposes the recipient site while thicker graft jeopardizes the circulation and nutrient diffusion. [14,15]

CONCLUSION

Despite numerous root coverage techniques introduced so far, the free gingival graft for root coverage is still a popular, frequently preferred and effective modality of mucogingival surgery. Proper case diagnosis, determining the prognosis of the cases along with strategic surgical protocol are crucial in enhancing the predictability and success of the free gingival soft tissue graft in the correction of the problem and achieving adequate root coverage.

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How to cite this article: Show S, Dey AK. Surgical root coverage of Miller's class I gingival recession using free gingival graft- a case report. International Journal of Science & Healthcare Research. 2020; 5(3): 576-580.
