

Reconstruction of pink esthetics: The periodontal way

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Abstract

Cosmetic procedures involving gingival reconstruction have become an integral part of current periodontal practice. The ability to cover unsightly exposed, sensitive roots and recontour soft tissue recessions have added an esthetic angle to the traditional concept of biological and functional periodontal health. The recession of the gingiva, either localized or generalized, may be associated with one or more surfaces, resulting in attachment loss and root exposure, which can lead to clinical problems such as diminished cosmetic appeal and aesthetic concern. Marginal gingival recession, therefore, can cause major functional and aesthetic problems and should not be viewed as merely a soft tissue defect, but rather as the destruction of both the soft and hard tissue. Treatment proposals for this type of defect have evolved based on the knowledge for healing the gingiva and the attachment system. This case report describes a clinical case of severe Miller Class II gingival recession treated by two stages of surgery that combined a free gingival graft and connective tissue grafting. First, a free gingival graft (FGG) was performed to obtain an adequate keratinized tissue level. Three months later, a connective tissue graft (CTG) was performed to obtain root coverage. The results indicated that the FGG allows for a gain in the keratinized tissue level and the CTG allows for root coverage with decreased recession level after 6 months. Therefore, for this type of specific gingival recession, the combined use of FGG and CTG still serves as a Gold Standard in predictable root coverage.

Keywords: Connective tissue graft, free gingival graft, gingival recession, periodontal plastic surgery

Introduction

Root coverage is an important aim of periodontal therapy. There is a growing demand for this procedure in patients who require an improvement in their esthetic appearance.^[1] Gingival recession occurs when the gingival margin is apical to the cemento-enamel junction (CEJ) leading to exposed root surface and loss of both marginal tissue and attachment. The most frequent etiologic factors associated with gingival recession are inflammatory periodontal disease, traumatic tooth brushing, inadequate attached gingival dimensions, and iatrogenic factors.^[2] Indications for root recession coverage are root sensitivity, root caries, difficulty in plaque control, an increase in the level of keratinized tissue, and undesirable esthetic results.^[3]

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Periodontal surgery to restore esthetics, comfort, and function is one of the most common surgeries in clinical practice. A variety of surgical techniques has been developed to obtain root coverage. However, it has been determined that gingival recession can be treated successfully, regardless of the technique utilized.^[4] Free gingival grafting (FGG), connective tissue grafts (CTGs), coronally advanced flaps (CAFs), and a combination of CTG, CAF, and guided tissue regeneration have been introduced with a high degree of predictability in Miller Class I and II recession defects. A recent systematic review of the literature demonstrated that CTG, FGG, and CAF were effective in reducing gingival recession, with concomitant improvements in attachment level. Another systematic review demonstrated that the CTG procedure optimizes results in root coverage and width of keratinized tissue.^[5]

Progressive gingival recession in the presence of high thermal sensitivity and/or compromised esthetic appearance should be treated with surgical root coverage in Class I and II defects.^[6] Thorough plaque control is the primary condition for the success of any periodontal surgery.

The ideal surgical objective is covering the root up to the CEJ with a probing depth of <2 mm without probe-induced bleeding. The principal challenge lies in obtaining an excellent blood supply for the covering tissues to avoid possible necrosis and root coverage failure.^[7] It is always important to select the periodontal procedure that allows the best esthetic result while causing the least amount of trauma. Miller prescribes complete disclosure at the initial consultation concerning the root coverage that can realistically be

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obtained through the selected form of treatment^[8] [Table 1]. The aim of this case report was to evaluate the association of FGG and CTG performed in two different surgical stages to obtain root coverage.

Case Report

A systemically healthy 37-year-old female patient reported to the Department of Periodontics with the chief complaint of receded gums in relation upper left anterior region for the past 8 months. It was her first dental visit and on clinical examination localized bleeding seen on probing in upper anterior teeth with Miller's Class II recession in 21. The periodontal parameters of the case are described in Table 2. Based upon the periodontal parameters, the case was diagnosed as localized chronic periodontitis in relation to 21 [Figure 1].

The following treatment plan was formulated: Complete oral prophylaxis and localized root surface debridement in 21. Two surgical procedures were attempted to correct the mucogingival defect. One is to increase the width of attached gingiva with a FGG and after a 3 months postoperative period, root coverage to be attempted with a use of a CTG to correct Miller's Class III gingival recession defect in 21.

Table 1: Criteria for success in root coverage procedure

Class	Condition of Recession
Class I	Recession does not extend to the mucogingival junction and is not associated with interdental bone resorption.
Class II	Recession extends beyond the muco gingival junction with no interdental bone resorption.
Class III	Recession is associated with interdental proximal bone resorption and one proximal root exposition
Class IV	There is mesial and / or distal proximal bone resorption with exposure of more than one proximal root surface. The papillae are at the same level as the recession.

Table 2: Periodontal parameters – before and after surgery

	Baseline	After FGG	After CTG	6 Months Follow-up
Probing depth	2 mm	2 mm	2 mm	2 mm
Recession height	5 mm	2 mm	0 mm	0 mm
Clinical attachment level	7 mm	4 mm	2 mm	2 mm
Width of keratinized gingiva	1 mm	3 mm	3 mm	3 mm

An FGG was performed to gain widened keratinized tissue. The FGG, which was introduced by Bjorn in 1963, is a highly predictable technique used to increase the width of keratinized gingiva.^[9-11] After 3 months, an increase in keratinized tissue was observed. For this reason, a second surgical procedure was performed, involving a CTG placed in an envelope recipient bed. The CTG was removed from the palate using the single-incision palatal harvest technique referred to by Lorenzana and Allen.^[12] The CTG was placed and secured through the envelope, covering the adjacent exposed root. The FGG allows for a gain in the keratinized tissue level while the CTG allows for root coverage with decreased recession level.

Surgical Approach

After obtaining adequate anesthesia (lignocaine 1:80,000) the exposed root surface was scaled and planed using hand and ultrasonic instruments. A horizontal intra crevicular incision was made at the recession and extended with two vertical releasing incision in correspondence to the line angles. The interdental papilla was preserved as much as possible. Their facial portion was de-epithelialized to create a connective tissue bed. From second quadrant of palatal region, a FGG was harvested. The graft was placed at the recipient bed and secured with 4-0 vicryl sutures [Figures 2 and 3]. After a weeks' review, a satisfactory healing was observed, and the sutures were removed. On 3 months follow-up, a CTG was planned [Figure 4].

Under local anesthesia 2% lignocaine and 1:80,000 adrenaline, a recipient bed was prepared by two horizontal incisions which were given on both mesial and distal sides of defect followed by two vertical incisions were made perpendicular to the initial incisions on either side which were extending well into the alveolar mucosa. Partial thickness pedicles were reflected for CAF. CTG was harvested from the first quadrant of palatal region and placed the recipient bed stabilized with 4-0 vicryl placed. Coronally advance the pedicle graft over CTG, sutures are placed followed by periodontal dressing [Figures 5-7].

Patient was instructed to discontinue tooth brushing around the surgical site and advised to use 0.12% chlorhexidine gluconate mouth rinse for 4 weeks. Suitable analgesics were prescribed. Satisfactory healing was observed after a week and suture removal was done. The results indicated that the FGG allows for a gain in the keratinized tissue level, and the CTG allows for root coverage with decreased recession level after 6 months. "The code of competence is the only system of morality that's on a gold standard." Thereby this case enlightens on the enhancement of esthetics by the gold standard procedures FGG and CTG [Figure 8].

Discussion

The introduction of FGG to obtain widened keratinized tissue and root coverage was a substantial development in



Figure 1: Left central incisor showing class II gingival recession



Figure 2: Harvesting the free gingival graft



Figure 3: Placement of free gingival grafting with suture



Figure 4: Healing of graft after 3 months



Figure 5: Harvesting of connective tissue graft



Figure 6: Placement of graft on recipient site



Figure 7: Placement of CTG with suture



Figure 8: Healing after 6 months showing complete coverage

esthetic periodontal surgery. Furthermore, using Miller's classification, knowledge of the marginal tissue recession etiology, risk factors, gingival biotypes, new approaches in surgical techniques, and the possible success of the root coverage resulted in increased performance of these procedures.^[13] It is important to note that both treatments (FGG and CTG) proved clinically successful with a high percentage of root coverage and keratinized tissue increase, and that the quantity and quality of the keratinized tissue could contribute to the long-term results of the root coverage. CAF + CTG provided better CRC than CAF alone in the treatment of multiple gingival recessions at the 5-year follow-up study,^[14] which is in line with the current study.

Initially, an FGG, such as that described by Bjorn, was used to compensate for the lack of keratinized tissue. Partial root coverage was obtained with the FGG but was considered insufficient. To provide complete root coverage, a second procedure, involving an envelope technique with CTG (considered the gold standard), was necessary.^[15] In deep Miller Class II recession defects, as shown in the current case, abrupt movement of the flap in a coronal position to ensure major blood nutrition could cause a change in the gingival line with undesirable vestibule loss.

Moreover, with the high level of keratinized tissue obtained, the tissue became thicker, facilitating soft tissue management with a subsequent surgery and reflecting a higher success of the root coverage procedure.

The positive psychologic effects of improving a patient's smile often contribute to an improved self-image and enhanced self-esteem. Oral esthetic and functional rehabilitation can be achieved by restoring teeth and soft tissue defects to an ideal natural form. Accordingly, it has become evident during the past decade that a variety of regenerative procedures have the potential to correct gingival recession defects via augmentation of the width of keratinized or attached gingiva, as well as to obtain partial or complete root coverage.

Conclusion

The results of this case report support the theory that root coverage with FGG and CTG could produce an increase in root coverage and keratinized tissue. Based on this case report, deep Miller Class II recession defects can be treated successfully when FGG is combined with CTG. However,

randomized clinical trials involving patients with Miller Class II gingival recession defects are needed to confirm these findings.

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