

Case Report



The Subepithelial Connective Tissue Graft Is Gold Standard For Root Coverage: A Case Report

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Abstract

Objective: Marginal tissue recession is a common condition in Periodontology. The aim of this study was to evaluate the efficacy of the subepithelial connective tissue graft technique in treating Miller's Classes I and II recessions, characterized by well-diagnosed and eliminated etiological factors, and its ability to achieve predictable total coverage. The technique's success has been attributed to the dual blood supply provided by the periosteum and flap connective tissue, ensuring graft nutrition.

Case report and conclusion: This report presents a clinical case of a Miller's Class I recession treated with the subepithelial connective tissue graft technique, resulting in complete coverage of the recession, resolution of aesthetic concerns, and alleviation of dentin hypersensitivity reported by the patient.

Introduction:

Marginal tissue recession is a common condition in Periodontology characterized by the displacement of the gingival margin towards the mucogingival junction, leading to the exposure of the root surface. It can occur at various locations in the oral cavity with different

degrees of extension. The term "marginal tissue recession" is now widely accepted as it encompasses both the involvement of gingiva and alveolar mucosa. [1]

Multiple factors contribute to the development of recessions, including traumatic toothbrushing, tooth malpositioning, periodontal disease, frenum and bridle insertions, occlusal trauma, subgingival overhanging margins in restorations, ill-fitting crowns, adjacent tooth extractions, orthodontic movement, iatrogenic factors, and bone dehiscences. Notably, gingival inflammation is a common feature among these factors. [2]

Marginal tissue recessions can negatively impact periodontal health, aesthetics, and patient comfort. They can act as local modifying factors in the initiation and progression of periodontal disease by altering the normal gingival contour and promoting bacterial plaque accumulation. This alteration also affects aesthetics unfavorably. Moreover, recessions can lead to dentinal hypersensitivity when the root surface is exposed to the oral cavity, causing discomfort for the patient. [3]

Surgical treatment offers an effective solution to address aesthetic concerns, reduce or eliminate dentinal hypersensitivity, and improve oral hygiene in the affected area. Among various surgical techniques, the subepithelial connective tissue graft has been extensively studied and demonstrated the highest predictability for achieving root coverage. However, factors such as defect width and height, as well as the condition of interproximal gingival and bone tissue, play a critical role in determining the prognosis of the treatment. [1]

In 1985, Miller proposed a clinical classification for marginal tissue recessions, categorized into class I to class IV based on the extent of recession and involvement of interproximal tissue. Higher levels of periodontal tissue loss in class III and IV recessions generally indicate a poorer prognosis for achieving successful root coverage after surgery. [4]

The objective of this study is to present a case report utilizing the subepithelial connective tissue graft technique and highlight its predictability for achieving successful outcomes when appropriately indicated.

Case report:

A 33-year-old female patient with no systemic health issues and a non-smoker presented with concerns about the appearance of tooth #32 and dentinal hypersensitivity. After a thorough evaluation, traumatic toothbrushing and previous orthodontic movement were identified as potential etiological factors. Clinical examination revealed a marginal tissue recession of approximately 4 mm in length using stent and UNC-15 probe (Figure 1). Based on the Miller's classification, the recession was classified as class I, indicating that root coverage using the subepithelial connective tissue graft technique was a suitable treatment approach.



Figure 1. 4mm recession at before sugery.

Prior to the surgical procedure, antisepsis was performed using an aqueous solution of 0.12% chlorhexidine digluconate. Local anaesthesia was administered using 2% xylocaine with adrenaline. Subsequently, scaling and root planing were performed on tooth #32. The scaling procedure was necessary to eliminate any contamination and exposed cementum.



Figure 2. Incision is given

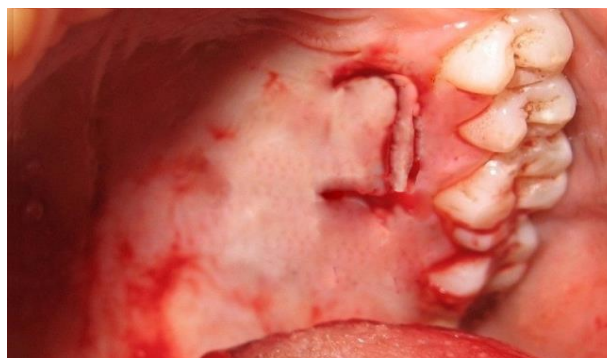


Figure 3. SECTG is harvested

Subsequently, the preparation of the receptor site was carried out by making horizontal incisions in the direction of the enamel-cementum junction at each papilla. Two vertical relaxing incisions and one intrasulcular incision were then made (Figure 2). A full-thickness flap was raised, extending up to the mucogingival junction, and continued as a partial-thickness flap based on this junction. The epithelium of the papilla was then coronally removed up to their apexes.

Following the preparation of the receptor site, the subepithelial connective tissue graft was obtained from the palate using a technique involving two parallel incisions. One incision was made perpendicular to the tooth axis, while the other was made parallel to the bone surface, deepening to achieve the desired graft height (Figure 3 and 4).

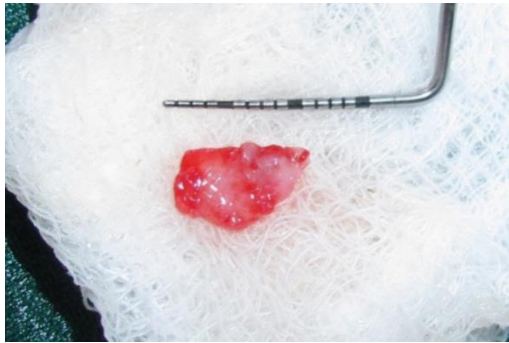


Figure 4. Harvested graft 10mm x 8mm Figure 5. Graft is sutured on recipient site.



Figure 6. Flap advanced coronally and sutured. Figure 7. Tin foil was placed

The graft was carefully adapted onto the recipient site (Figure 4) and secured in place using absorbable sutures (5-0 Vicryl). The sutures were used to ensure proper fixation and stability of the graft.

The flap coronally advanced and sutured over the graft (Figure 6). Additionally, complementary sutures were placed to secure the flap and ensure proper wound closure. Tin foil was placed and periodontal dressing was given (figure 7 and 8)



Figure 8. Dressing given

Figure 9. After one month

During the postoperative period, the patient was instructed to use a mouthwash containing 0.12% chlorhexidine digluconate for 10 days to maintain oral hygiene. Analgesics were also prescribed to manage any post-surgical pain. Sutures were removed 7 days after the surgery.

Follow-up appointments were scheduled at 1, 3, and 6 months post-surgery. Radiographs were taken during these appointments, revealing excellent root coverage and significant aesthetic improvement (Figures 9,10 and 11). These findings demonstrated 100% the successful outcome of the surgical procedure.



Figure 9. after 3 months



Figure 10. After 6 months

Discussion:

Numerous mucogingival techniques have been introduced in the literature to address marginal tissue recessions [5]. In the 1960s and 1970s, commonly used techniques included coronally positioned flaps [6], laterally displaced flaps [7], and a combination of coronally positioned flaps with free gingival grafts [8]. However, in the early 1980s, the use of subepithelial connective tissue grafts gained popularity, providing excellent results for areas with localized root exposure [9].

The selection of the appropriate technique and the long-term success of the procedure rely on careful evaluation of factors such as defect type, recession etiology, operator's skill, presence of keratinized tissue, tissue width, predictability, single or multiple gingival recessions, healing, aesthetic outcome, and risk factors [10].

The subepithelial connective tissue graft technique can be indicated for the treatment of single or multiple gingival recessions, correction of papilla volume or deformities of the edentulous gingival border, creation or augmentation of keratinized mucosa [1], and potential improvement of root coverage associated with restorative procedures, abrasion, or dental caries [11].

In 1985, Langer and Langer described the subepithelial connective tissue graft technique for root coverage in the treatment of recessions at single or multiple sites, attributing the success of the procedure to the double blood supply for graft nutrition originating from both the periosteum and the flap's connective tissue [9]. This technique is less invasive at the palatal area, resulting in minimal postoperative discomfort for the patient and offering high predictability of coverage. Consequently, it is the preferred choice for cases that require good aesthetic outcomes, as in the reported case. However, this technique also has certain disadvantages, such as the need for a larger amount of tissue than necessary due to tissue contraction after surgery, which may result in aesthetic alterations [12]. Additionally,

achieving standardization of graft thickness can be challenging, further impacting aesthetics [13]. These aspects should be carefully considered during the surgical procedure.

In this case report, a full-thickness flap was performed up to the mucogingival junction in the receptor site to minimize bone loss. The use of a partial-thickness flap may increase the risk of perforation, leading to flap necrosis and subsequent bone tissue loss [4]. Moreover, in partial-thickness flaps, the presence of highly vascularized tissues adjacent to the root surface may contribute to root resorption [16]. According to Harris [10], desired outcomes after the surgical procedure include root coverage up to the enamel-cementum junction, firm tissue attachment to the tooth with probing depths less than 2 mm, absence of bleeding on probing, adequate keratinized tissue, color matching adjacent tissues, aesthetically pleasing tissue contour, and reduction of patient-reported sensitivity.

Special consideration should be given to the indication of subepithelial connective tissue grafts in cases of Miller's class III and IV marginal tissue recession. This technique exhibits less predictability for root coverage in such recessions due to challenges in graft adaptation and nutrition, which may result in graft necrosis [15].

Conclusion:

The success of this clinical case can be attributed to the precise selection of the subepithelial connective tissue graft technique, which offers high predictability for root coverage in Miller's class I and II recessions, as well as the double blood supply for graft nutrition.

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