CLINICAL CASE REPORT

Autogenous Connective Tissue Graft for the Treatment of Localized Gingival Recession: A Case Report

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Introduction

Gingival recession is defined as the apical migration of the gingival margin in relation to the cemento-enamel junction causing root exposure. The negative effects of exposed roots may lead to dentine hypersensitivity, root caries, and poor esthetics(1). One of the reasons of mucogingival surgery is to gain root coverage with procedures that warrant sound predictability and good esthetics.

There are several periodontal plastic surgery proceduresto cover exposed root surfaces which include pedicle grafts (2), free gingival grafts (3), connective tissue grafts (4, 5), membrane barrier guided tissue regeneration technique (6), and acellular dermal matrix allografts (7, 8). However, the predictability of such surgical procedures may be associated with different conditions. Out of number of procedures, subepithelial connective tissue graft can be considered as the 'gold standard' technique for treating teeth with gingival recessions (9). A number of systematic reviews (9-11)have validated the use of connective tissue graft (CTG) as the most suitable procedure for Millers Class I and II gingival recession lesions. Besides improving clinical attachment, probing depths, thickness of keratinized mucosa and root coverage, these procedures offer better uniformity of color between the surgical grafted area and adjacent tissues

Therefore, this manuscript presents a case report detailing the successful use of autogenous CTG in the management of a Class II gingival recession lesion.

Case Report

Clinical case presentation

A 28-year-old male with no medical problems was referred to the Department of Periodontology with complain of an un-aesthetic mandibular incisor tooth (tooth #41) with sensitivity to hot and cold stimulus from approximately 12 months. Clinical evaluation revealed gingival recession on the labial surface extending 2 mm apical to the cemento-enamel junction (CEJ) and narrow zone of attached gingiva measuring approximately 1 mm (Fig 1). There was no loss of interdental papillary height on the distal aspect of the incisor and mild loss of papilla on the mesial aspect. Plaque control and oral hygiene was good with no apparent staining on the teeth. There was no evidence of interdental bone loss (i.e. the distance between the crestal bone and CEJ was not greater than 2 mm). The case was diagnosed to be sensitivity associated with Class II Miller recession.

The goal of the treatment was to restore harmonious appearance of the gingiva by covering the root surface to the height similar to the adjacent tooth and to increase the zone of attached gingiva.

Figure 1: Intraoral image showing gingival recession on the labial surface extending 2 mm apical to the CEJ and a narrow zone of attached gingiva.

Autogenous Connective Tissue Graft (ACTG)

Following local anesthesia with 2% lidocaine, epinephrine 1:100,000, the exposed root surface was thoroughly planed and scaled first with ultrasonic instrument and then manually with the use of hand instruments to remove plaque, accretions and root surface irregularities. The exposed root surface was then conditioned with a saturated solution of tetracycline-HCL for 2 minutes (100mg tetracycline-HCL/1 ml of sterile distilled water). A sulcular incision was made at both sides through the bottom of the crevice allowing dissection of the papillae adjacent to the site of recession defect until the proximal line angles of the adjacent teeth. Afterwards two vertical releasing incisions were placed both mesial and distal involving adjacent teeth, distant from the main defect. A full thickness flap providing a broader surgical bed was elevated in an apical direction exposing the alveolar plate of bone until the mucogingival junction (MGJ). The periosteum was released and blunt dissection into the vestibular lining mucosa was performed to eliminate tension to help re-position the flap coronal at the level of CEJ. The interdental papilla of the adjacent teeth were not involved (Fig 2).

The donor site for the sub-epithelial connective tissue graft was the palate in the bicuspid region of the same subject (Fig 3). Donor palatal tissue was harvested in the following way: a horizontal incision was placed in the palate 2 to 3 mm from the free gingival margin, and two parallel internal vertical incisions, one superficial and one deep, were made and connected mesially and distally. The underlying connective tissue was released at its base and removed (Fig 4). The wound was closed with simple interrupted 3-0 silk sutures. The donor site on the palate healed by primary intention after two week of suture removal. The graft was shaped to fit the recipient site and secured to the wound bed (Fig 5) with a continuous sling suture using 5-0 vicryl material to the papilla on either side of the graft. Silk sutures were removed after 15 days; visible portions of the vicryl suture were removed after 3 weeks.

Figure 2: Full thickness flap elevated exposing the alveolar plate of bone. The interdental papilla of the adjacent teeth were not involved.

Figure 3: Subepithelial connective tissue graft harvested from the palate of the same subject.

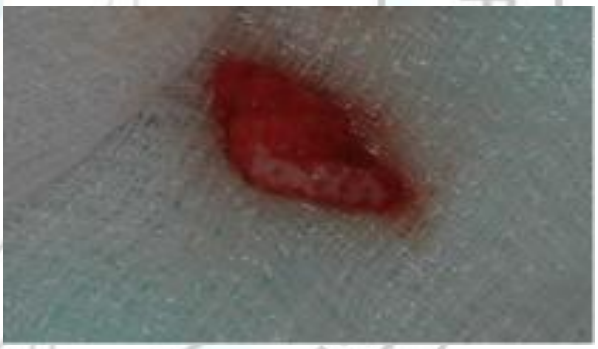

Figure 4: Resected palatal subepithelial connective tissue graft

Figure 5: Graft secured to the papilla on either side using continuous sling suture 5-0 vicryl.

Postsurgical Care

Patient was instructed to avoid trauma and to discontinue tooth brushing at the surgical site during the first 15 days. Patient was instructed to use 0.12% chlorhexidinedigluconate solution rinse for 60 seconds twice daily for 2 weeks. After 15 days, a modified brushing technique was advised in order to minimize apically directed trauma to the soft tissue around the surgical site. Throughout the treatment, recall visits for prophylaxis treatment were arranged at 1, 3, 5, 8, 12, 16 and 32 weeks.

Healing was uneventful. At 2nd week, the gingiva at the surgical site was still edematous (Fig 6). Only erythema could be observed along the border of attached gingiva which improved at 8th week of follow-up. At 9 months postoperatively, the amount of attached gingiva was approximately 3 mm, and the gingiva was firmly attached. Probing depth at the mid buccal site was less than 1 mm and the free gingival margin was located less than 1 mm apically to the apical border of the CEJ (Fig 7).

Figure 6: 2nd week postoperative. Gingiva is still edematous and erythema could be observed along the border of the attached gingiva.

Figure 7: At 2 months postoperatively the periodontal tissue is less edematous and improvement in erythema is clinically evident.

Figure 8: At 9 months the probing depth at mid buccal site was 1 mm and free gingival margin was located 1 mm apical to CEJ.

Discussion

This case report evaluated the treatment of localized gingival recession by using palatal connective tissue graft for the treatment of Class II Miller recession. The present clinical result is encouraging and indicates significant coverage of the exposed root with the palatal connective tissue graft that has provided restoration of clinical attachment. Overall surgical procedure was aimed to reduce any risks involved with no harmful events in the healing process along with patient comfort. The connective tissue graft for the restoration of root defect was harvested from the palate of the same subject. Horizontal incisions were placed in the palatal tissue with two parallel vertical incisions along each side of the horizontal incision to remove adequate tissue from the underlying connective tissue. The incisions were placed to ensure primary intention healing and comfort for the patient.

Multiple factors can effect the degree of root coverage including, biocompatibility of root surface, sufficient vascularization of the surgical bed, surgical manipulation, tissue width and ideal plaque control (12). Meticulous root planing on the exposed root surface was performed with the use of hand instruments to remove plaque and accretions and further increasing the surface biocompatibility. Special care was taken to prepare recipient surgical bed. Sutures were performed without stretching the graft tissue, preventing the displacement of graft without tension, thereby avoiding impaired vascularization. The grafts were also compressed to promote the tensile strength and stability of the wound.

Coronally advanced flaps (CAF) with or without enamel matrix derivatives have been recommended as an alternative to CTG in the management of Class I & II recession lesions. Nemcovsky et al, (13) compared the clinical outcome of CAF and CTG in the management of recession defects, concluding that CTG was superior to CAF in the percentage of coverage and increase in width of keratinized tissue.

In addition, soft tissue allografts have been used as an alternate to autogenous CTG to provide root coverage without the need of a second surgical site intra-orally (14).However CTG additional increases the gingival tissue thickness and width of keratinized tissue, two critical features, which warrant the use of connective tissue graft over allografts (15).

Conclusion

This surgical technique aided complete root coverage as well as improved the thickness of attached gingiva. The interpretations made in the present case report indicate that connective tissue graft can be a successful treatment option in achieving soft tissue root coverage and gain of clinical attachment in Miller's class II root defects.

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