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Connective Tissue Graft for Miller's Class II Recession: A Case Report

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ABSTRACT

Gingival recession is a prevalent mucogingival defect that compromises aesthetics, predisposes to root sensitivity, and increases the risk of cervical caries. Among various surgical modalities, the coronally advanced flap (CAF) in conjunction with a connective tissue graft (CTG) is considered the gold standard for managing Miller Class I and II gingival recession defects. This report presents the clinical management of a Miller Class II recession defect in the mandibular right lateral incisor (tooth 42) in a 34-year-old male, utilizing a CTG harvested from the palatal mucosa in the premolar region and placed using a CAF technique. Complete root coverage with excellent aesthetic integration was achieved, reinforcing the predictability of this approach in similar clinical scenarios.

Keywords: recession, graft, revascularisation, gingival biotype, keratinization

INTRODUCTION

Gingival recession, defined as the apical displacement of the gingival margin relative to the cementoenamel junction (CEJ), is a frequent clinical finding with multifactorial etiology including traumatic tooth brushing, anatomic factors, inflammatory periodontal disease, and iatrogenic causes.[1,2] Clinically, recession defects can compromise aesthetics, lead to dentinal hypersensitivity, and contribute to root caries, all of which may impact oral health-related quality of life.[3]

Miller's classification system is widely used to categorize the severity of gingival recession and predict root coverage outcomes.[4] In Miller Class II defects, the recession extends beyond the mucogingival junction without interproximal attachment loss, yielding a high potential for complete root coverage with appropriate surgical intervention.

The subepithelial connective tissue graft (CTG), particularly when combined with a coronally advanced flap (CAF), has demonstrated superior clinical efficacy, with high predictability for complete root coverage and enhanced soft tissue thickness and stability.[5,6] The CAF technique permits tension-free coronal positioning of the gingival margin over the exposed root surface, while the CTG provides increased tissue volume and biotype modification conducive to long-term success.[7,8]

This case report describes the successful treatment of a Miller Class II recession defect on the buccal aspect of tooth 42 using a CTG harvested from the palatal mucosa near teeth 14 and 15, in combination with the CAF technique.

CASE PRESENTATION

A 34-year-old systemically healthy male presented with a chief complaint of hypersensitivity in the mandibular anterior region. Clinical examination revealed a Miller Class II gingival recession of 3.5 mm in height and 2.0 mm in width on the labial surface of tooth 42, with a thin gingival phenotype and adequate keratinized tissue apical to the defect. Interdental papillae were intact, and no interproximal attachment loss or tooth mobility was noted. Periodontal probing depths were within normal limits. Radiographic analysis confirmed the absence of interproximal bone loss or angular defects in the region of interest.

Given the favourable clinical presentation and patient motivation, a mucogingival surgical intervention using the CAF + CTG technique was planned and executed following standard protocols. Informed consent was obtained prior to treatment.

Surgical Technique

Following local anaesthesia with 2% lidocaine containing 1:80,000 epinephrine, the recipient site was prepared by careful de-epithelialization of adjacent papillae. A trapezoidal flap design was adopted, consisting of two horizontal incisions at the level of the CEJs of the adjacent teeth (41 and 43), and two vertical releasing incisions extending apically beyond the mucogingival junction. A full-thickness mucoperiosteal flap was elevated up to 3 mm apical to the recession defect, followed by a partial-thickness dissection to release muscular tension and facilitate flap mobility.

A subepithelial CTG measuring approximately 10 mm (length) × 5 mm (width) × 1.5 mm (thickness) was harvested from the palatal mucosa in the premolar region (teeth 14 and 15) using the single-incision technique described by Hurzeler and Weng.[9] Hemostasis at the donor site was achieved and the area was sutured with 3-0 silk sutures.

The harvested CTG was positioned over the denuded root surface and stabilized using 5-0 resorbable interrupted sutures. The flap was coronally advanced to completely cover the graft and secured using sling sutures, ensuring passive adaptation without tension. A periodontal dressing was placed over the surgical area.

Postoperative instructions included mechanical plaque control avoidance in the surgical site for 14 days, 0.12% chlorhexidine rinse twice daily and systemic analgesics. Suture and dressing removal were performed after 14 days.

Clinical Outcomes

At the 3-month postoperative evaluation, the surgical site exhibited healthy, well-integrated soft tissue with complete root coverage. The gingival margin was stable at the CEJ, and the colour, texture and contour of the treated area were indistinguishable from the surrounding tissues. No signs of inflammation, recession recurrence or donor site complications were observed. The patient reported complete resolution of hypersensitivity and high aesthetic satisfaction.

DISCUSSION

This case exemplifies the clinical effectiveness of the CTG + CAF technique for the management of isolated Miller Class II recession defects. The CAF approach facilitates coronal repositioning of the gingival margin and maintains papillary integrity, while the CTG contributes to biotype enhancement, volume augmentation and long-term stability.[10] The palatal donor site in the premolar region offers an optimal balance between accessibility, graft quality, and minimal morbidity. The single-incision technique further improves patient comfort and accelerates healing at the donor site.[9]

Long-term studies have demonstrated the superiority of CTG + CAF over monotherapy with CAF or other graft materials in achieving complete and stable root coverage in Miller Class I and II defects.[11] This success is attributed to the synergistic effect of tissue volume enhancement and improved vascularization conferred by the graft, leading to greater resistance to mechanical trauma and relapse.[12]

From a biological standpoint, connective tissue grafts promote revascularization and integration with the surrounding tissues, contributing to a phenotype conversion from thin to thick biotype, which is less prone to future recession.[13] The use of minimally invasive harvesting and microsurgical techniques further enhances outcomes and reduces patient morbidity.

CONCLUSION

The combination of a coronally advanced flap with a connective tissue graft remains the benchmark approach for the treatment of Miller Class II gingival recession defects. In this case, successful root coverage, esthetic integration, and biotype modification were achieved, demonstrating the predictability and efficacy of this technique in the anterior mandible.

CLINICAL PICTURES

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