

Treatment of Gingival Recession with Subepithelial Connective Tissue Harvested from the Maxillary Tuberosity by Distal Wedge Procedure

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“Clinical Showcase” is a series of pictorial essays that focus on the technical art of clinical dentistry. The section features step-by-step case demonstrations of clinical problems encountered in dental practice. If you would like to contribute to this section, contact editor-in-chief Dr. John O’Keefe at jokeefe@cda-adc.ca.

Subepithelial connective tissue grafting can be used for root coverage,¹ to increase the amount of keratinized tissue² and to decrease root sensitivity.³ The maxillary tuberosity is reported to have thicker soft tissue than the hard palate and may therefore be a suitable donor source for connective tissue graft.⁴

In the case described here, subepithelial connective tissue harvested from the tuberosity area by a distal wedge procedure was used to treat gingival recession and dentin hypersensitivity in the lower premolar region.

Case Report

A 47-year-old woman was referred to the department of periodontology at Seoul National Dental Hospital. The patient did not have any medical conditions and was not taking any medications known to compromise soft-tissue healing. The pa-

tient had periodontal disease with gingival recession. In particular, she had a Miller Class III recession defect⁵ of 2 mm on the mandibular left first premolar (Fig. 1). Clinical probing depths ranged from 2 to 3 mm, and the thickness of the keratinized tissue on the buccal area was 2 mm. The patient had mild tactile and air blast sensitivity and was concerned about the progression of the recession.

The patient received oral hygiene instruction and underwent scaling and root planing as part of the initial phase of periodontal treatment. During re-evaluation, a deep pocket was identified in the upper left second molar area (Fig. 2). This area was scheduled for pocket reduction, with the tissue from the tuberosity area to be used for the grafting procedure. The patient was given a detailed explanation of the procedure, and informed consent was obtained.



Figure 1: Buccal view before treatment showing recession defect on the lower left first premolar.



Figure 2: Radiograph of the upper left second molar area showing alveolar bone loss.



Figure 3: A handpiece was used for de-epithelialization of the tuberosity area.



Figure 4: The connective tissue graft, with periosteum attached, was harvested from the tuberosity area.

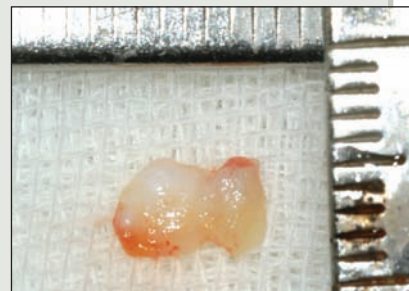


Figure 5: The connective tissue graft was 6 mm in length and 4 mm in height.



Figure 6: A partial-thickness flap was raised below the papillary area.

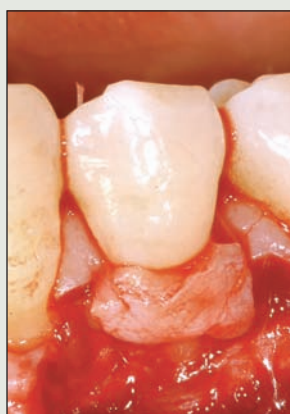


Figure 7: The connective tissue graft was positioned apical to the cemento enamel junction with sutures.



Figure 8: The overlying flap was advanced and sutured coronally to cover the donor tissue.

Immediately before the procedure, the patient rinsed for 2 minutes with a 0.12% chlorhexidine digluconate solution (Hexamedine, Bukwang, Seoul, Korea). Following injection of local anesthetic (2% lidocaine with 1:100,000 epinephrine), a handpiece was used to accomplish de-epithelialization (Fig. 3). The connective tissue was harvested by means of a distal wedge procedure (Figs. 4 and 5). A split-thickness flap was created on the proximal papilla, and a partial-thickness dissection was then performed apically, leaving the underlying periosteum in place (Fig. 6). The connective tissue graft was positioned apical to the cemento enamel junction with sutures (Fig. 7), and the overlying flap was advanced to cover the donor tissue (Fig. 8). The patient was given amoxicillin 500 mg 3 times daily for 5 days, aceclofenac 100 mg 2 times daily for 5 days and chlorhexidine digluconate 0.12% 3 times daily for 4 weeks. The patient was asked

not to chew in the surgical area or to brush the area for the first 2 weeks after surgery.

The patient experienced no major postoperative problems, and she reported only minimal pain. At 10 days after surgery, the wound in the tuberosity area had closed completely (Fig. 9). Postoperative review of the recipient site at 3 weeks after surgery showed good healing, without gingival inflammation (Fig. 10). At the final evaluation, 13 months after surgery, there was good colour blending of the treated area with the adjacent soft tissue (Fig. 11). At that time, the tooth had 0.5 mm of residual recession, and the width of the keratinized tissue was 3 to 4 mm.

Discussion

In the case described here, subepithelial connective tissue harvested from the tuberosity area by a distal wedge procedure was used to treat gingival

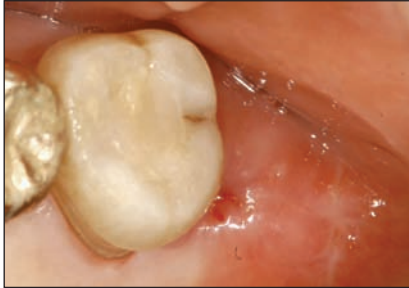


Figure 9: Healing at 10 days after the connective tissue was harvested.



Figure 10: Postoperative view of the recipient site at 3 weeks after surgery.



Figure 11: Clinical appearance at 13 months after surgery.

recession. Reduction of gingival recession and of hypersensitivity were maintained at least until the final evaluation at 13 months. The rationale for this treatment includes (1) a smaller surgical site and a reduction in treatment time through a combined approach and (2) faster healing in the donor area by primary closure of the wound area.

The soft tissue for grafting may be obtained from the maxillary tuberosity area by gingivectomy; this donor soft tissue may then be de-epithelialized and trimmed.⁶ This approach may leave an uncovered wound area, which must heal by second intention. In this case, de-epithelialization was performed before grafting, and sutures were used for primary closure of the wound area, which may lead to faster healing.

Subepithelial connective tissue grafting can be performed to achieve root coverage,⁷ but an additional surgical site is needed to harvest the connective tissue. There may be limitations due to vascular anatomy and inadequate tissue thickness.⁸

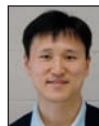
The phenomenon of creeping attachment was first reported after free gingival grafting⁹ and was later reported to occur after connective tissue grafting with partial-thickness double pedicle.¹⁰ In the case reported here, creeping attachment occurred with the subepithelial connective tissue harvested from the tuberosity area, and this improved the result for the patient's Miller Class III defect.

The need for keratinized tissue around a tooth is controversial. For patients who have maintained proper control of plaque, lack of an adequate zone

of attached gingiva may not lead to an increase in soft-tissue recession. However, in one study, teeth with narrow zones of keratinized gingiva had significantly higher gingival scores than teeth with keratinized gingiva.¹¹ The authors of another study also suggested that proper oral hygiene might be facilitated by an adequate band of keratinized mucosa.¹² In the case reported here, the increased width of the keratinized tissue was maintained over time, with no noticeable accumulation of plaque.

A subepithelial connective tissue graft obtained by distal wedge procedure may be applied to root coverage procedures. However, randomized clinical trials are needed to validate the clinical significance of this approach. ♦

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