Consecutive Root Coverage Using the Single-incision Technique From the Palate with High Acceptance and Little Patient Morbidity

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Abstract

Introduction: Connective tissue can be obtained from the palate using several methods. The single-incision technique may be applied to allow primary intention healing and minimize patient discomfort.

Aim: This case presentation describes the consecutive root coverage procedures using the single-incision technique from the palate.

Materials and Methods: In this report, two patients were treated successively for gingival recessions. A coronally positioned flap combined with a connective tissue graft using one incision line was applied to achieve root coverage. The treated sites showed complete root coverage without probing defects or significant complications.

Discussion and Conclusions: The single-incision technique may be a treatment option for harvesting the grafting material with higher acceptance and minimal complications.

Key Words: Connective tissue; Mouth mucosa; Oral health; Palate

Introduction

Several surgical techniques have been suggested for the treatment of gingival recessions, including the use of free grafts, guided tissue regeneration, or pedicle flaps to cover root surfaces [1-3].

Connective tissue can be obtained from the palate using several methods including the trap-door and single-incision techniques [4]. The design of the palatal incision can be classified into three classes according to the number of incisions (one, two, or three incision lines) [5]. The single-incision technique with one incision line allows for primary intention healing, and this leads to improved early healing and diminished patient discomfort [6].

In this report, two patients were treated successively for two gingival recessions with one incision line. A coronally positioned flap combined with a connective-tissue graft using the single-incision technique was applied to achieve root coverage.

Case Presentation

Case 1

A 45-year-old male was referred for the treatment of periodontitis and gingival recession. The patient had a non-contributory medical history. The patient had multiple gingival recessions including a Miller Class I recession defect of 3 mm on the maxillary right canine and a Miller Class III recession defect of 3 mm on the maxillary left premolar [7]. The clinical probing depths ranged from 3 to 4 mm. The patient was given a detailed explanation concerning the procedure and informed consent was obtained. Simultaneous grafting was suggested, but the patient wanted to have a single defect treated first and continue additional treatments if the surgery were acceptable.

The patient rinsed with a 0.12% chlorhexidine digluconate solution (Hexamedine, Bukwang, Seoul, Korea) before the operation *(Figure 1A)*. Following an injection of 2% lidocaine with 1: 100,000 epinephrine, two oblique incisions extended 2 to 3 mm mesially and distally and were made at a distance from the vertex of the anatomic papilla equal to the depth of the recession and then into the alveolar mucosa *(Figure 1B)*. The connective-tissue graft was harvested from the palate between the distal aspect of the first premolar and the mesial region of the first molar with the single-incision technique [6]. A connective-tissue graft of 8 mm in length and 7 mm in height was harvested with a periosteal elevator *(Figure 1C)* and pressure was applied to the donor site with gauze soaked in saline after the graft was taken. The donor area was closed with absorbable sutures (Vicryl, Johnson and Johnson Medical Inc., Arlington, TX, USA) *(Figure 1D)*. The connective-

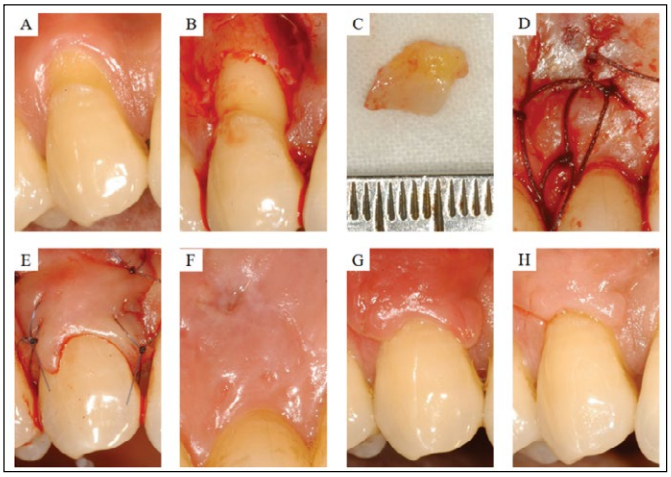

Figure 1A. *Clinical photograph taken at the initial visit showing gingival recession with minimal keratinized tissue on buccal side;* ***1B****. A buccal view after reflection of the flap. Two oblique incisions extended 2 to 3 mm mesially and distally and were made at a distance from the vertex of the anatomic papilla equal to the depth of the recession and then into the alveolar mucosa;* ***1C.*** *The connective tissue (length of 8 mm X height of 7 mm) was obtained from the palate with one incision line;* ***1D.*** *The wound in the palatal area was closed with single sutures;* ***1E.*** *The buccal view after connective-tissue graft and coronally positioned flap;* ***1F.*** *A fourteen-day postoperative view of the donor site;* ***1G.*** *Healing response at fourteen days postoperative;* ***1H.*** *An eight-week postoperative buccal view showing good healing state.*

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tissue graft was positioned just apical to the cemento-enamel junction with the sutures, and the overlying flap was advanced to fully cover the donor tissue *(Figure 1E)*.

The patient was given a cold compress extraorally to minimize swelling and bleeding. The patient was placed on amoxicillin 500 mg 3 times per day for 5 days, aceclofenac 100 mg 2 times per day for 5 days, and chlorhexidine digluconate 0.12% 3 times per day for 2 weeks. The patient was asked not to chew or brush the surgical area for the first two weeks postoperatively. Fourteen days after surgery, the remaining sutures were removed, and the grafted area was carefully cleaned with a 0.12% chlorhexidine solution *(Figures 1F and 1G)*. The patient reported minimal discomfort during whole period. The final evaluation at eight weeks after surgery showed complete root coverage *(Figure 1H)*.

The second connective-tissue graft was done similarly using a previously reported method *(Figures 2A and 2B)*. A connective-tissue graft of 8 mm in length and 9 mm in height was harvested from the palate between the mesial aspect of the first premolar and the distal region of the second premolar with the single-incision technique *(Figures 2C and 2D)*. Any remaining sutures were removed twelve days postoperatively *(Figures 2E and 2F)*. The patient reported minimal discomfort during whole period. The final evaluation revealed good color blending of the treated area with the adjacent soft tissue *(Figure 2H)*.

Case 2

A 23-year-old female visited the dental clinic wanting treatment for gingival recession with dentin hypersensitivity. The patient did not have any medical conditions and was not taking any medications that were associated with a compromised healing response. The patient had a Miller Class I recession defect of 3 mm on the maxillary right canine and a Miller Class I recession defect of 2 mm on the maxillary left lateral incisor [7]. The clinical probing depths ranged from 2 to 3 mm.

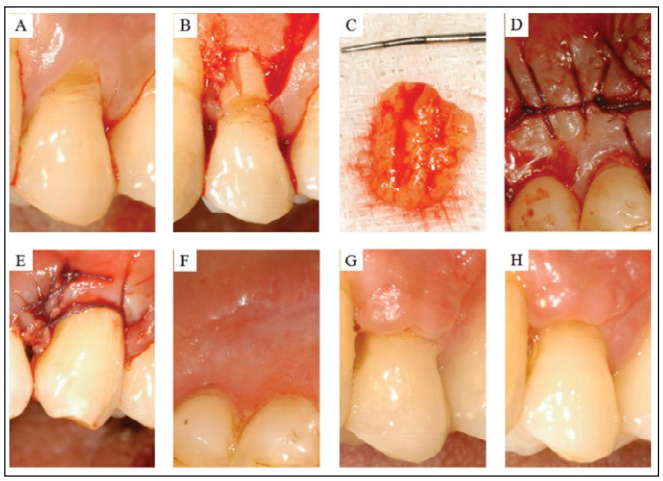

Figure 2A. *Preoperative view of maxillary left premolar;* ***2B.*** *A buccal view after reflection of the flap;* ***2C.*** *A connective tissue graft of 8.0 mm in length and 9.0 mm in height was achieved;* ***2D.*** *Clinical view after the application of sutures in the palatal area. The wound in the palatal area was closed with single sutures;* ***2E.*** *Clinical view after the application of sutures in the donor site;* ***2F.*** *A buccal view after the removal of the sutures at ten days postoperative;* ***2G.*** *A ten-day postoperative view of the recipient site; 2H. Clinical view at six weeks postoperative.*

Following an injection of local anesthetic, a split-thickness flap was made on the proximal papillae, and a full-thickness flap was raised below the papillary area to the mucogingival junction *(Figures 3A and 3B)*. The connective-tissue graft was harvested from the right palate with one incision line. The connective-tissue graft was positioned just apical to the cemento-enamel junction with the sutures *(Figures 3C and 3D)* and the overlying flap was advanced to fully cover the donor tissue *(Figure 3E)*. The patient was placed on the same medication and given the same care instructions as the patient in Case 1. Fourteen days after surgery, remaining sutures were removed, and the uneventful healing of the grafted site was seen *(Figures 3F and 3G)*. The final evaluation at 6 weeks after surgery showed good color blending of the treated area with the adjacent soft tissue *(Figure 3H)*.

The upper-left incisor was treated following an injection of local anesthetic. A similar method was used in preparation of the flap *(Figures 4A and 4B)*. The connective-tissue graft was harvested from the left palate with a single incision line *(Figure 4C and 4D)*. The connective-tissue graft was positioned and the overlying flap was advanced to fully cover the donor tissue *(Figure 4E)*. Any remaining sutures were removed two weeks after surgery *(Figures 4F and 4G)*. No major postoperative problems developed, and pain levels reported by the patient were minimal. The resolution of the gingival recession was seen the final evaluation with harmony of the adjacent tissue *(Figure 4H)*.

Discussion

This report shows clinical results of two consecutive connective-tissue grafts from each patient, which were harvested from the palatal area with one incision line.

The removal of epithelium from the palate may lead to an uncovered wound area, and this is healed by secondary intention [6]. The rigidity of the palatal tissue makes it hard to cover the uncovered wound [8]. One of the many advantages of using the single-incision technique is that the palatal donor

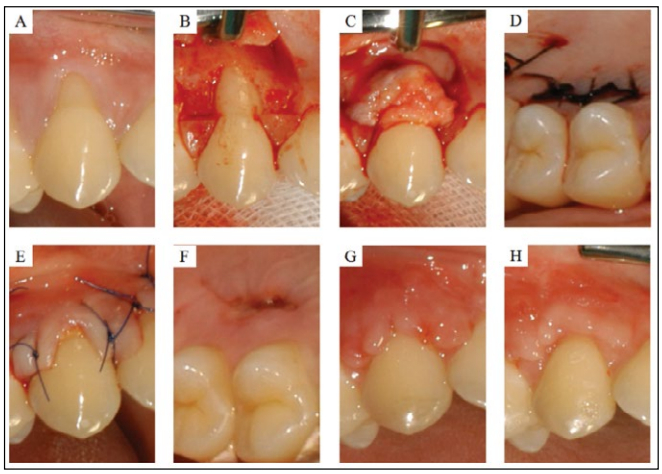

Figure 3A. *Preoperative view of maxillary right canine;* ***3B.*** *Buccal view after reflection of the flap;* ***3C.*** *The connective-tissue graft was positioned just apical to the cemento-enamel junction;* ***3D.*** *The wound in the palate was closed with single sutures;* ***3E.*** *The overlying flap was advanced to fully cover the donor tissue;* ***3F.*** *A fourteen-day postoperative view of the palatal site;* ***3G.*** *A fourteen-day postoperative view of the recipient site;* ***3H.*** *A final evaluation view of the recipient site with good aesthetic results.*

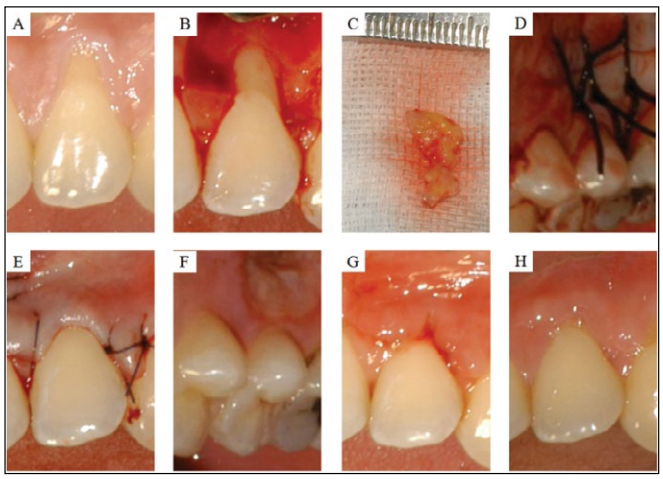

Figure 4A. *Initial view of the upper-left lateral incisor;* ***4B.*** *Buccal view before and after preparation of the recipient site;* ***4C.*** *A connective-tissue graft was achieved from the palate;* ***4D.*** *The wound in the palate was closed with single sutures;* ***4E.*** *Coronally positioned flap was performed;* ***4F.*** *Sutures were removed two weeks after surgery;* ***4G.*** *Final evaluation showing resolution of the gingival recession.*

site can heal with primary intention because no band of epithelium is removed [6]. Secondly, uncompromised blood supply to the tissue seems to be the one of the most important factors for the survival and healing of the wound [9]. More blood supply is maintained due to the minimal number of incision lines [5], and this may give faster epithelialization when compared with other techniques such as trap-door technique and free-gingival graft [4].

In this report, complete epithelial coverage was noted within two weeks following surgery without sloughing of the primary flap. Two patients with multiple surgeries reported minimal discomfort and pain during the whole period. The limited visibility of the donor site seen during graft preparation can be enhanced by extending the incision line. The single-incision technique may be considered as a first option for harvesting the grafting material with minimal complications, especially for single gingival recessions.

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