

# Clinical case report of a Coronally Advanced Flap Procedure in Multiple Gingival Recession Defects

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## ○ Introduction

Gingival recession may be defined as the partial denudation of the root surface due to apical migration of gingival margin. It implies the loss of periodontal connective tissue fibers and alveolar bone and this may result in an impaired esthetic appearance and dental hypersensitivity. Surgical management of gingival recession defects may be indicated to achieve esthetic improvements, decrease root sensitivity, restore or prevent root caries, and to arrest progressive gingival recession. The procedures commonly used to treat gingival recession defects are rotational and advanced gingival flaps (Grupe & Warren 1956, Harvey 1965), free gingival or connective tissue grafts (Miller 1983, Nelson 1987), guided tissue regeneration (Scantlebury 1993, Karring et al. 1993), and combinations thereof.

When selecting a surgical technique where multiple gingival recessions affecting the esthetic area of the dentition, several requirements have to be satisfied. The attempt to reduce the number of surgeries and intraoral surgical sites, together with the need to satisfy patient's esthetic demands, must be taken into consideration. When multiple recession defects are present, they should preferably be treated at the same time with one procedure and, if possible, the removal of soft tissue grafts from the mouth should be avoided in order to minimize patient discomfort. Also, the limited availability of donor tissue is a problem to consider when recession defects are multiple. In terms of esthetics, complete root coverage of the defects, optimal thickness of the graft, and natural color blending of the surgical site must be obtained in order to meet patient expectations. Problems related to these considerations have been encountered using currently employed surgical approaches, thus development and evaluation for alternate approaches for the treatment of multiple recession-type defects in patients with esthetic expectations appears warranted.

## ● Case Report

### *Patient Selection*

Two systemically healthy patients (28, 42 years old) were selected after informed consent. The patients exhibited good periodontal health and no loss of periodontal support in tooth surfaces involved other than those showing recession defects. The patients received oral hygiene instructions, scaling and professional tooth cleaning as part of their periodontal treatment. Patient inclusion was based on the following criteria after completion of the initial therapy:

- Non-compromised systemic health and no contraindications for periodontal surgery
- Presence of at least 2 adjacent Miller class I or II gingival recession defects
- Tooth vitality and absence of grooves, irregularities, caries, or restorations in the area to be treated
- Acceptable oral hygiene standards (full mouth PII 2/3 < 25%, defect site PII 0)

### *Surgical Procedures*

The surgical procedures followed the protocol by Zucchelli & de Sanctis (2000). Briefly, following local anesthesia, oblique submarginal incisions in the interdental areas continued with intrasulcular incisions at the recession defects were made with a micro-blade. An envelope flap was raised in a split-full-split thickness flap approach in the coronal-apical direction. A sharp dissection into the vestibular lining mucosa was carried out to eliminate muscle tension following de-epithelialization of remaining anatomical interdental papilla. After coronally advancing and adapting the flap, a combination of sling and horizontal double mattress suture was performed using Vicryl 4.0 sutures. A periosteal stabilizing suture was placed at the base of the flap. Gingival sutures were removed at 2 weeks post-surgery.

A postsurgical infection control program emphasizing wound stability included administration of Augmentin 600 mg bid for 7 days, a 0.12% chlorhexidine rinse (Peridex 0.12%, Procter & Gamble, Cincinnati, OH) twice daily, and cessation of all mechanical plaque control at the surgical sites for 4 weeks. Pain control included Ibuprofen 600 mg qid starting immediately before the surgery and when needed. Patients were reviewed weekly (the first 4 weeks postsurgery) to assess and reinforce compliance with the infection control program. They were then exposed to repeated oral hygiene measures as needed and received prophylaxis 1, 3, 5 weeks after suture removal and, subsequently, once every 3 months until 12 months postsurgery.

### **Case 1**

A 28 year old male with gingival recession defects affecting teeth from the maxillary left central incisor to the first premolar presented to Seoul National University Dental Hospital, Department of Periodontology and was treated with the proposed protocol (Fig. 1). All recession were considered Miller Class I or II although slight bone loss was observed in the interdental area.



**Fig. 1.** Photographic representation of multiple recession defects treated with the technique described by Zucchelli and De Sanctis (2000). a, Schematic drawing of the envelope flap. The surgical papilla (SP) of the envelope flap results from the interaction of the oblique submarginal interdental incisions with the intrasulcular incision at the recession defects. During coronal advancement, each surgical papilla rotates towards the ends of the flap and finally resides over the de-epithelialized anatomic interdental papillae. b, Flap design. c, Flap elevation: the envelope flap was raised with a split-full-split approach in the coronal-apical direction. d, Removal of the epithelium of the facial portion of the anatomic interdental papillae. e, Coronal mobilization and suturing (sling sutures) of the flap. f, Healing at 4 weeks.

Although photographic presentation of the case was limited to healing at 4 weeks, figure 1 shows the detailed steps involved with this particular procedure.

## Case 2

A 42 year old female with gingival recession defects affecting teeth from the maxillary left canine to the first molar presented to Seoul National University Dental Hospital, Department of Periodontology and was treated with the proposed protocol (Fig. 2).



**Fig. 2.** Photographic representation of multiple recession defects treated with the technique described by Zucchelli and De Sanctis. a. Schematic drawing of the envelope flap. b. Flap design. c. Flap elevation: the envelope flap was raised with a split-full-split approach in the coronal-apical direction. d. Coronal positioning and suturing (sling suture) of the flap. e. Healing at 8 weeks. f. Healing at 1 year.

Although not too dramatic in its presentation, the results at 1-year follow-up showed decrease in recession height and a slight increase in keratinized tissue. In terms of root coverage, it may be suggested that in terms of root coverage, the initial recession depth and amount of presurgical keratinized tissue are important factors to achieve better results. Greater reductions in recession depth can be expected with worse initial conditions and with lesser amount of keratinized tissue apical to the recession defect.

## Discussion

More frequently, gingival recessions affect more than one teeth. In order to minimize the number of surgeries and optimize the surgical result, multiple recessions that are adjacent should be treated simultaneously. By utilizing the soft tissues adjacent to the defects, the coronally advanced flap procedure has been demonstrated to be a predictable treatment modality for obtaining root coverage in isolated type of gingival recessions. The coronally advanced flap procedure used in the present cases possess the following advantages. In the envelope type of flap, vertical releasing incisions are avoided so that the blood supply to the flap is not compromised and the surgical margin stabilized. Also, prevention of white visible scars can be achieved since the use of vertical releasing incisions can be avoided with this particular protocol. Other advantages can be derived from the split-full-split thickness flaps that are used for root coverage. More thickness for the portion of the flap residing over the previously exposed root surfaces is achieved with easier coronal displacement and more abundant blood supply to the interdental papillae in the interproximal areas.

The two cases presented in the present case report demonstrated that the treatment modality was effective for the treatment of multiple gingival recessions in patients with esthetic demands in respect to root coverage and increase in keratinized tissue. Although long-term clinical presentation was not provided in case 1, the 1-year follow-up in case 2 showed a remarkable decrease in gingival recession height and increase in keratinized tissue. Finally, it may be concluded that irrespective of the number of recessions that are adjacent, it can be treated simultaneously with the protocol used in the present case report to achieve root coverage and gain in keratinized mucosa. Further studies in controlled conditions with the inclusion of parameters to quantify the clinical improvements are needed to validate the results.

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