

**MODIFIED CORONALLY ADVANCED FLAP: A NOVEL
SURGICAL APPROACH FOR ISOLATED RECESSION DEFECTS**

- A case report

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Abstract:

The increasing interest in esthetics and the subsequent need to solve related problems such as dentin hypersensitivity and root caries have favored the development of many surgical techniques that permit the coverage of exposed roots. In this case report gingival recession was treated using modified coronally positioned flap which resulted in root coverage. The clinical evaluation was performed at 3- and 6-months after the surgery. The final esthetics, both colour match and tissue contours, were acceptable to both the patient and the clinician. This article describes in detail about the surgical technique used for root coverage.

Introduction:

Patients who present seeking esthetic improvement, a decrease of root sensitivity, treatment or reduction in the risk of root caries, or restoration of the gingival margin to its normal contour and position can be treated using root coverage procedures such as 1) Free gingival grafts (**Miller 1982**), sub epithelial connective tissue grafts (**Langer & Langer 1985**) or a coronally advanced flap (**Allen & Miller 1989**). In patients with a

residual amount of keratinized tissue apical to the recession defect, the coronal advanced flap may be recommended. Optimum root coverage results, good colour blending of the treated area with respect to adjacent soft tissues and complete recovery of the original soft tissue marginal morphology can be predictably accomplished by means of this surgical approach.

The coronal advanced flap was first introduced by (**Norberg 1926**) as an aesthetic surgical procedure for root coverage. The technique described by **Allen & Miller (1989)** consisted of two oblique incisions, starting from the mesial and distal line angle of the affected tooth and directed apically in the alveolar mucosa; the flap was then elevated with a split-thickness approach to protect the underlying bone. Following root debridement, the flap was then coronally advanced and secured with interrupted sutures.

Zucchelli & de Sanctis (2000) have introduced a modification of this procedure to treat multiple recession defects. A split-full-split approach was used to elevate the flap; this permitted to maintain the soft tissue thickness above the root exposure.

The following case presentation describes the use of a modified approach of the coronally advanced flap for treating isolated recession defects.

Case Presentation:

A 28-year-old man was referred to the Department of Periodontics at Sibar Institute of Dental Sciences. The patient complained of dentin sensitivity with esthetic concerns. He had no underlying medical conditions and was not taking any medications that would have compromised a soft healing response. The patient had a Miller Class I 3mm recession defect on the maxillary left canine. The following clinical measurements

were taken 1 week before the surgery and at the 3- and 6-months followup visits using William's probe. The patient was given a detailed explanation concerning the procedure, and informed consent was obtained from her.

Patient was anaesthetized by giving an injection of 2% lidocaine with 1:80,000 epinephrine local anaesthetic. The design of the flap consisted of the following incisions:

- Two horizontal bevelled incisions (3mm in length), mesial and distal to the recession defect located at a distance from the tip of the anatomical papillae equal to the dept of the recession plus 1mm.
- Two bevelled oblique, slightly divergent, incisions starting at the end of the two horizontal incisions and extending to the alveolar mucosa.

The resulting trapezoidal-shaped flap was elevated with a split-full-split approach in the coronal-apical direction: the surgical papillae comprised between the horizontal incisions and probeable sulcular area apical to the root exposure were elevated split thickness, and the soft tissue apical to the root exposure was elevated full thickness. This was done in order to include the periosteum in the thickness of that central portion of the flap covering the avascular root exposure. The releasing vertical incisions were given elevated split thickness. Apical to bone exposure flap elevation continued split thickness. Coronal mobilization of the flap was considered adequate when the marginal portion of the flap was able to passively reach a level coronal to the CEJ of the tooth. The root surfaces were mechanically treated with the use of curettes. The facial soft tissue of the anatomic interdental papillae coronal to the horizontal incisions was deepithelized to create connective tissue beds to which surgical papillae of the coronally advanced flap are sutured.

The suture (5-0 MERSILK) of the flap started with two interrupted periosteal sutures performed at the most apical extension of the vertical releasing incisions; then, it proceeded coronally with other interrupted sutures. This was done to facilitate the coronal displacement of the flap and to reduce the tension on the last coronal sling suture. The sling suture permitted to stabilize the surgical papillae over the inter-dental connective tissue bed and allowed for precise adaptation of the flap margin. A non-eugenol periodontal dressing (Coe-Pack) was placed over the treated site. Patient was asked not to brush the teeth in the treated area but to rinse with chlorhexidine solution (0.12%) 3 times daily for 1min. 14 days after the surgical procedure, the sutures were removed. Plaque control in the treated area was maintained by chlorhexidine rinsing for an additional 2 weeks. After this period, the patient was advised to use a soft toothbrush and a roll technique.

The final evaluation at 6-months after surgery showed good color blending of the treated area with the adjacent soft tissue, and the reduction of sensitivity was maintained.



Fig no:1. Upper left canine pre-surgical.



Fig. no:2. Pre-surgical recession depth measured.



Fig. no:3. Flap design; Two horizontal bevelled incisions, mesial and distal to the recession defect, two bevelled oblique incisions coming from the two horizontal, extending to the alveolar mucosa.



Fig. no:4. The flap is raised with a split-full-split thickness approach.



Fig. no:5. The anatomical papillae are deepithelized.



Fig. no:6. The flap is coronally advanced and vertical incisions are sutured with interrupted sutures and surgical papillae are secured to the underlying bed with a sling suture.



Fig. no:7. After 14 days.



Fig. no:8. After 90 days.



Fig. no:9. Recession depth measured after 180 days.



Fig. no:10. After 180 days.



Fig. no:11. Recession depth measured after 180 days.

Results:

Complete root coverage with significant gain in the height of keratinized tissue was achieved in relation to maxillary left canine, while the probing pocket depth remained unchanged and change in clinical attachment was in significant.

Discussion:

As described by **Allen & Miller (1989)** shallow Miller Class I recessions can be successfully treated with high predictability by coronally advanced flap if the keratinized tissue height is at least 3mm wide and not less than 1mm thick. The coronally advanced flap is a mucogingival technique that produces a mean root coverage ranging from 70% to 99%.

In conclusion, the results of the present study demonstrated that the modified approach of the coronally advanced flap technique was effective in treating isolated gingival recessions in the upper jaw. Successful results were achieved both in terms of aesthetics (root coverage and colour blending with adjacent soft tissues) and increase of keratinized tissue, and were well maintained during 6-month observation period.

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