

Semilunar Coronally Advanced Flap for Cairo RT1 Recession Coverage: A Case Report

Janvi¹, Manjula², Nishant Chauhan³

¹Department of Periodontics, PGIDS, Rohtak, Haryana, India

²Department of Oral Medicine and Radiology, PGIDS, Rohtak, Haryana, India

³Department of Conservative Dentistry and Endodontics, PGIDS, Rohtak, Haryana, India

Corresponding author: janvisahu75@gmail.com

ABSTRACT

Background: Gingival recession is a common mucogingival condition characterized by apical displacement of the gingival margin leading to root surface exposure. Surgical root coverage aims to restore the gingival contour, improve esthetics, and reduce hypersensitivity. The semilunar coronally advanced flap, described by Tarnow (1986), is a minimally invasive technique indicated for shallow isolated recessions with adequate keratinized tissue.

Case presentation: A 34-year-old female presented with localized recession and hypersensitivity on tooth 14. Clinical evaluation revealed a Cairo RT1 recession measuring 2 mm in depth and 2 mm in width, with a 3 mm zone of keratinized tissue and a thick gingival phenotype. A semilunar coronally advanced flap was performed to achieve root coverage. Complete healing was achieved at three months with full root coverage and resolution of hypersensitivity.

Conclusion: The semilunar coronally advanced flap offers a predictable, esthetic, and conservative option for managing localized RT1 recessions, especially when keratinized tissue and gingival thickness are adequate.

Keywords: Gingival recession; Semilunar coronally advanced flap; Root coverage; Cairo RT1; Periodontal plastic surgery

INTRODUCTION

Gingival recession is defined as the apical migration of the gingival margin beyond the cemento-enamel junction (CEJ), resulting in root surface exposure [1]. It may lead to esthetic concerns, dentin hypersensitivity, and increased risk of root caries [2]. Recession defects are classified based on the level of attachment loss; the Cairo classification provides a clinical attachment level (CAL)-based system with RT1 defects showing no interproximal attachment loss [3]. Various mucogingival procedures have been developed for root coverage, including coronally advanced flaps, laterally positioned flaps, subepithelial connective tissue grafts, and minimally invasive techniques. Tarnow (1986) introduced the semilunar coronally advanced flap, designed for isolated shallow recessions, avoiding tension or suturing while maintaining blood supply from all borders [4].

This report presents a case of Cairo RT1 recession on tooth 14, successfully treated with the semilunar coronally advanced flap technique.

Patient Information

A 34-year-old female patient presented to the Department of Periodontics, PGIDS, Rohtak, with a chief complaint of tooth hypersensitivity in the upper right premolar region for the past four months. The patient reported discomfort during brushing and cold beverage intake.

Clinical Examination

On examination, tooth 14 exhibited localized gingival recession on the mid-buccal aspect measuring 2 mm in depth and 2 mm in width (Figure 1). The zone of keratinized gingiva was 3 mm, with a thick gingival phenotype. Probing pocket depth was 2–3 mm, and clinical attachment loss was limited to the mid-buccal surface (2 mm).

No interdental attachment loss was observed; hence, the case was classified as Cairo RT1.

The recession was associated with a high buccal frenum pull, identified as the etiologic factor.

No non-carious cervical lesion (NCCL) was present. The tooth responded positively to vitality testing, and no radiographic bone loss was evident.

Diagnosis: Localized Cairo RT1 gingival recession with dentin hypersensitivity in relation to tooth 14.

Surgical Procedure

Pre-surgical Phase

The patient was motivated for oral hygiene improvement and instructed in the modified Stillman's brushing technique. Scaling and root planing were performed one week prior to surgery. Informed consent was obtained.

Surgical Phase

- **Anesthesia:** Local infiltration using 2% lidocaine with epinephrine (1:80,000).
- **Flap Design:** A semilunar incision was made approximately 2 mm apical to the gingival margin of tooth 14, following the curvature of the gingival contour, extending mesiodistally beyond the recession defect (Figure 2).
- **Flap Reflection:** A partial-thickness flap was raised gently toward the coronal aspect, allowing coronal repositioning without tension.
- **Root Surface Management:** The exposed root surface was thoroughly planed and conditioned with 17% EDTA gel for 30 seconds to remove the smear layer and enhance connective tissue adaptation.
- **Flap Advancement:** The coronally repositioned flap was slid upward to cover the exposed root surface and stabilized in position. No sutures were required as flap tension was minimal, and tissue adaptation was achieved.
- **Hemostasis:** Gentle pressure was applied with a sterile gauze for 5 minutes to ensure adaptation and clot stability.



Figure 1: Preoperative photograph showing Cairo RT1 recession on tooth 14



Figure 2: Intraoperative photograph showing semilunar incision design



Figure 3: Post-operative photograph showing Coe-pack application



Figure 4: Three-month postoperative view showing complete root coverage and harmonious gingival contour

Postoperative Care

- The patient was prescribed Amoxicillin 500 mg TID for 5 days and Ibuprofen 400 mg TID for 3 days.
- 0.12% chlorhexidine mouthrinse twice daily for 2 weeks.
- Brushing was avoided in the surgical area for 10 days.
- The patient was reviewed after 1 week, 1 month, and 3 months postoperatively.

Outcome and Follow-up

Healing was uneventful. At 1-week, minimal edema was noted; at 1 month, the gingival contour was harmonious with adjacent tissues.

At the 3-month follow-up, complete root coverage was achieved, with gain in clinical attachment and resolution of hypersensitivity (Figure 3). The gingiva appeared healthy and blended esthetically with the surrounding tissue.

DISCUSSION

The semilunar coronally advanced flap (SCAF) is a minimally invasive root coverage technique indicated for isolated Miller Class I / Cairo RT1 defects with sufficient keratinized gingiva and a thick biotype [4,5]. The design preserves vascular supply from all sides and eliminates the need for suturing, reducing postoperative morbidity and improving

esthetics. In this case, the patient had adequate (3 mm) keratinized gingiva, a thick phenotype, and shallow recession (2 mm), making SCAF an ideal choice. The absence of interproximal attachment loss favored predictable coverage.

Studies by Tarnow (1986) and Roccuzzo et al. (2002) demonstrated mean root coverage of up to 90–100% in RT1/Miller Class I recessions using this technique [4,6]. The key determinant of success is passive coronal positioning without flap tension and maintaining intact papillary blood supply. Alternative techniques, such as the coronally advanced flap or subepithelial connective tissue graft, offer comparable results but are more invasive. For small, isolated defects with adequate keratinized tissue, the semilunar approach achieves optimal esthetic outcomes with less trauma and rapid healing [7–9]. This case achieved complete root coverage at 3 months, consistent with literature reports. The thick phenotype and adequate blood supply likely contributed to the favorable outcome.

CONCLUSION

The semilunar coronally advanced flap is a conservative and effective technique for treating localized RT1 gingival recession in patients with adequate keratinized tissue and thick gingival phenotype. It provides excellent esthetics, minimal postoperative discomfort, and high predictability of root coverage.

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