International Journal of Enhanced Research in Medicines & Dental Care (IJERMDC),
ISSN: 2349-1590, Vol. 12 Issue 9, September 2025

Esthetic Root Coverage Using Lateral Pedicle Flap for Mandibular Central Incisor: A Case Report

Janvi[1], Nishant Chauhan[2], Manjula[3]

[1]Department of Periodontics, PGIDS, Rohtak, Haryana, India
[2]Department of Conservative Dentistry and Endodontics, PGIDS, Rohtak, Haryana, India
[3]Department of Oral Medicine and Radiology, PGIDS, Rohtak, Haryana, India

Corresponding author: janvisahu75@gmail.com

ABSTRACT

Gingival recession, defined as the apical migration of the gingival margin beyond the cemento-enamel junction, often leads to esthetic concerns, dentinal hypersensitivity, and increased risk of root caries. This case report describes the management of localized gingival recession in tooth #31 using a laterally positioned pedicle flap. A 23-year-old healthy female presented with Miller Class II and Cairo RT1 recession measuring 4 mm × 2 mm on the mandibular left central incisor, primarily caused by a high frenum pull. A full-thickness laterally displaced flap was raised from the adjacent tooth #41 and positioned over the denuded root. Complete root coverage was achieved, with excellent color blend and tissue harmony at the 3-month follow-up. The procedure demonstrated predictable esthetic and functional outcomes when adequate donor tissue was available.

INTRODUCTION

Gingival recession refers to the apical displacement of the gingival margin, resulting in exposure of the root surface to the oral environment [1]. It may result from traumatic tooth brushing, aberrant frenum attachment, malpositioned teeth, or inflammatory periodontal disease [2–4]. The consequences include dentinal hypersensitivity, esthetic compromise, and predisposition to root caries. The lateral pedicle (or laterally positioned) flap was first described by Grupe and Warren in 1956 [7]. This technique utilizes adjacent keratinized gingiva to cover isolated denuded root surfaces, provided adequate donor tissue and vestibular depth are present. Modifications such as the partial-thickness approach described by Staffileno [13] have improved predictability and reduced donor-site morbidity. For Miller Class I and II defects, prognosis is generally excellent, achieving high rates of complete root coverage. This report presents the successful management of a Miller Class II gingival recession on tooth #31 using a laterally displaced full-thickness pedicle flap obtained from tooth #41.

CASE PRESENTATION

A 23-year-old female reported to the Department of Periodontics with the chief complaint of gum recession in the lower front tooth region. Her medical history was non-contributory. Clinical examination revealed localized gingival recession on tooth #31. The recession was classified as Miller Class II / Cairo RT1, with a recession depth of 4 mm and width of 2 mm (Figure 1). Adequate keratinized tissue was present adjacent to tooth #41, which served as the donor site. The etiologic factor identified was a high frenum pull exerting tension on the marginal gingiva. No interproximal bone loss or trauma from occlusion was noted clinically or radiographically.

Pre-Surgical Phase

The patient received thorough oral hygiene instructions and motivation. Supragingival and subgingival scaling and root planing were performed, followed by a 3-week plaque control phase. Creeping attachment and tissue tone were monitored. Blood investigations were within normal limits, and periapical radiographs confirmed the absence of bone loss. Informed consent was obtained before surgery.

Surgical Procedure

After achieving local anesthesia (2% lignocaine with adrenaline 1:80,000), the recipient site was prepared by thorough root planing of tooth #31 to remove plaque, calculus, and surface irregularities. The root surface was conditioned with saline. A full-thickness lateral pedicle flap was raised from the adjacent donor tooth #41. A horizontal incision was made at the level of the cemento-enamel junction of #41, extending laterally beyond the mucogingival junction with a vertical releasing incision. The flap was reflected carefully, maintaining adequate width at the base to ensure vascularity. The donor site was extended sufficiently to allow tension-free lateral repositioning over the denuded root of #31. The flap was then laterally displaced and positioned 1–2 mm coronally over the CEJ of tooth #31. It was stabilized using 4-0 resorbable sutures (catgut) with sling and periosteal anchoring techniques. Gentle digital pressure was applied for 3 minutes to achieve intimate adaptation and hemostasis. A periodontal dressing was placed over the surgical area.

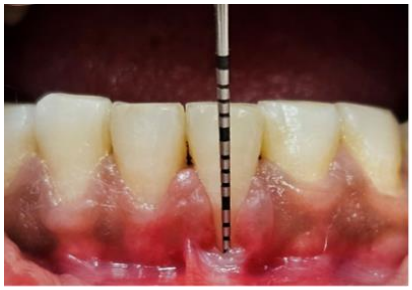

Fig. 1a. Pre-operative depth of recession

Fig. 1b. Pre-operative width of recession

Fig. 2. Intra-operative flap rotation

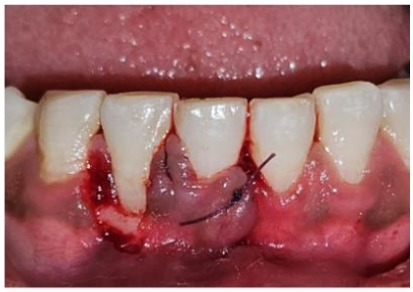

Fig. 3. Sling suture placed after coronal advancement

Fig. 4. At 3 months follow-up

Post-Operative Care

The patient was prescribed analgesics (ibuprofen 400 mg TDS) and antibiotics (amoxicillin 500 mg TDS for 5 days). Brushing was avoided at the surgical site for 2 weeks; plaque control was maintained with 0.2% chlorhexidine mouthrinse twice daily. Sutures and dressing were removed after 10 days. Gentle brushing with the modified Stillman technique was initiated thereafter.

RESULTS

Healing was uneventful with minimal postoperative discomfort. At the 3-month follow-up, the surgical site exhibited complete root coverage of tooth #31 with harmonious gingival contour and color match to adjacent tissue (Figure 4). The clinical attachment level (CAL) gain was 4 mm, and the tissue demonstrated excellent integration with no donor-site morbidity.

DISCUSSION

Localized gingival recession in the mandibular anterior region is often associated with high frenum attachment or thin biotype. The lateral pedicle flap remains one of the most predictable techniques for managing such isolated defects [7, 12]. The success of this procedure depends on adequate donor tissue thickness, tension-free flap positioning, and preservation of the vascular supply [8–10].

In this case, a full-thickness flap was chosen to enhance blood supply and stability. Preservation of the interdental papilla minimized trauma to the donor site. Grupe and Warren's original technique [7] and subsequent modifications by Staffileno [13] have demonstrated mean root coverage between 70–100% in Miller Class I and II defects. Our result of complete root coverage with stable color match at 3 months aligns with these findings.

Potential complications such as donor-site recession were prevented by maintaining adequate flap thickness and ensuring a wide vascular base. The high esthetic outcome and minimal morbidity reaffirm that, when anatomically feasible, the lateral pedicle flap is a reliable treatment modality for isolated gingival recession defects in the mandibular anterior region.

CONCLUSION

The present case demonstrates that a lateral pedicle flap is an effective and predictable surgical approach for the management of Miller Class II / Cairo RT1 gingival recession defects, particularly in the esthetic zone. Complete root coverage, optimal color blending, and satisfactory patient comfort were achieved within 3 months postoperatively. The success of the technique emphasizes careful case selection, adequate donor tissue, and meticulous flap handling to ensure favorable esthetic and functional outcomes.

REFERENCES

[1] Daprilen G, Gatto MR and Checchi L. (2007). The evaluation of buccal gingival recession in a student population; A 5- years follow up J Periodontol. 78(4), 611-614.
[2] Tugnait A and Clerehugh V. (2001). Gingival recession- Its significance and management. J Dent. 29(6), 381-389.
[3] Kassab M and Cohen RE. (2003). The etiology and the prevalence of gingival recession J Am Dent Assoc. 134(2), 220-225.
[4] Serino G, Wennstrom JL, Lindhe J and Eneroth L. (1994). The prevalence and distribution of gingival recession in subjects with a high standard oral hygiene. J Clin Periodontol. 21(1), 57-63.
[5] Gornman WJ. (1967). Prevalence and etiology of gingival recession J periodontal. 38(4), 316-322.
[6] Sangnes G and Gjermo P. (1976). Prevalence of oral soft and hard tissue lesions related to mechanical tooth cleaning procedure. Community Dent Oral Epidemiol. 4(2), 77-83.
[7] Grupe HE. (1956). Warren RE Repair of gingival defects by a sliding flap operation. J Periodontol. 27, 92-95.
[8] Langer B and Langer L. (1985). Subepithelial connective tissue graft technique for root coverage. J Periodontal. 56(12), 715-720.
[9] Nabers JM. (1966). Free gingival grafts. Periodontics. 4, 243245.
[10] Bernimonlin JP, Luscher B and Muhlemann HR. (1975). Coronally positioned flap. Clinical evaluation after one year. J Clinic Periodontal. 2(1), 1-13.
[11] Allen AL. (1994). Use of the supraperiosteal envelope in soft tissue grafting for root coverage. Int J Periodontics Restestorative Dent. 14(3), 217-227.
[12] Guinard EA and Caffesse RG. (1978). Treatment of localized gingival recessions. Part I. Lateral sliding flap. J Periodontol. 49(7), 351-356.
[13] Staffileno H. (1964). Management of gingival recession and root exposure problems associated with periodontal disease. Dent Clin North Am. 8,111-120.
[14] Grupe HE. (1966). Modified technique for the sliding flap operation. J Periodontol. 37(6), 491-495.
[15] Knowles J and Ramfjord S. (1971). The lateral sliding flap with the free gingival graft. The University of Michigan School of Dentistry, Video Cassette.
[16] Espinel MC and Caffesse RG. (1981). Comparison of the results obtained with the laterally positioned pedicle sliding flap- Revised technique and the laterally sliding flap with a free gingival graft technique in the treatment of localized gingival recessions. Int J Periodontics Restorative Dent. 1(6), 31-38.
[17] Nevins M and Cappetta E. (1998). An overview of mucogingival surgery to cover the exposed root surface. In: Nevins M, Mellonig J, eds. Periodontal Thearpy: Clinical Approaches and Evidences of Success. Hanover Park IL: Quintessence Publishing. 339-354.