Case Report
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Predictable Root Coverage in Multiple Recession using a Modified Coronally Advanced Flap

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ABSTRACT

Gingival recession, characterised by the apical migration of gingival margin, can cause aesthetic and functional concerns. A 33-year-old male presented with multiple Cairo's Recession Type 1 recessions in maxillary anterior and premolar regions. A Modified Coronally Advanced Flap (MCAF) was performed to achieve root coverage and aesthetic harmony. The split–full–split flap design ensured adequate soft tissue thickness and tension-free coronal advancement. At follow-up, satisfactory root coverage and soft tissue integration were observed. This case demonstrates predictable and stable outcome of MCAF for the simultaneous management of multiple adjacent gingival recessions.

Keywords: Gingival recession; modified coronally advanced flap; multiple recession; root coverage.

INTRODUCTION

"Gingival recession" is defined as an apical shift of gingival margin caused by different conditions/ pathologies.[1] Suboptimal oral hygiene, thin periodontal phenotype, reduced thickness of alveolar bone, abnormal tooth position in arch, and impact of tooth brushing increase probability of development of gingival recession.[2] Gingival recession can cause aesthetic concern, tooth sensitivity, cervical lesions, and compromised oral hygiene necessitating predictable correction.[3]

Several techniques have been proposed for management of recession defects, including free gingival grafts, connective tissue grafts, and pedicle grafts. Although coronally advanced flaps achieve stable root coverage, surgical papilla rotation can restrict coronal advancement and increase lateral shifting of flap.[4] To overcome this, modified coronally advanced flap (MCAF) was designed which is minimally invasive technique with no vertical releasing incisions and thus preserving vascularity and soft tissue integrity for improved healing and aesthetic outcomes.[5]

CASE REPORT

A 33-year-old male patient presented to the department of Periodontology and Oral Implantology at Kantipur Dental College, Basundhara, Kathmandu, Nepal, with a chief complaint of lower shifting of gums in upper left front teeth region for one year. The patient's medical history was non-contributory and stated that he routinely uses a hard-bristled brush for oral hygiene.

Intraoral examination revealed multiple gingival recession defects involving teeth 11, 21, 22, 23, 26, 33, 32, and 41 (according to two-digit tooth numbering system; Figure 1). According to Cairo's classification, defects were categorised as Recession Type 1 (RT1). The measured recession depth ranged from 1-3 millimetres (mm), with attached gingiva of 2-3 mm, thick gingival phenotype, approximately 1 mm sulcus depth with no bleeding on probing on midbuccal site of all teeth. There was also an aberrant maxillary labial frenum pull. Gingival recessions were associated with composite resin restored

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Figure 1: Clinical presentation after non-surgical periodontal therapy.

Figure 2: Schematic representation of submarginal oblique incisions of modified coronally advanced flap.[5]

Figure 3: Oblique submarginal incisions.

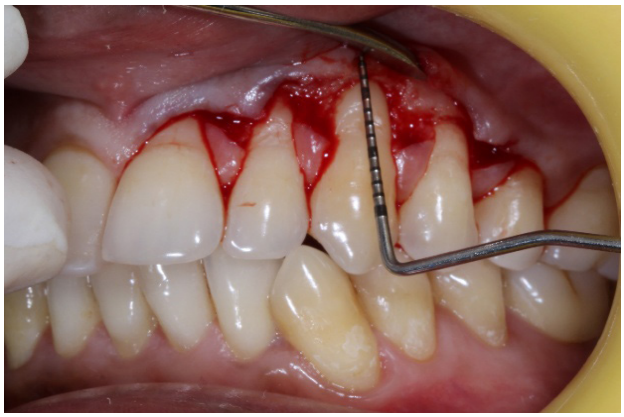

Figure 4: Full thickness flap of approximately 3 mm from buccal bone dehiscence.

non-carious cervical abrasion lesions. Scaling and root planing were performed. Roll's tooth brushing technique was emphasised during post-treatment oral hygiene instructions. After four weeks of healing period, selected treatment approach was MCAF as described by Zucchelli and De Sanctis in 2000 (Figure 2).[5] Written informed consent was obtained before the surgical procedure.

The surgical site was disinfected with 2% povidone-iodine, and patient was instructed to pre-rinse with 0.2% chlorhexidine. Under local anaesthesia (lignocaine hydrochloride with 2% epinephrine 1: 200,000), administered via local infiltration, incisions were carried out using Bard-Parker (BP) surgical blade #15C (Hu-Friedy, United States of America). The horizontal incision of envelope flap consisted of oblique submarginal incisions in interdental papilla and were extended from left central incisor to left second premolar to design an envelope flap (Figure 3).

The first oblique incisions were made mesial and distal to canine. The defect depth was measured from gingival margin with 1 mm added, and this measurement was plotted from mesial and distal interdental papillary tips to define incision endpoints. The incisions began at gingival margin apical to first premolar and lateral incisor recession defects, extending to established endpoints. Similarly, second oblique incision was made on first premolar which started from apical margin of second premolar recession defect to mesial margin of papilla distal to first premolar. The third oblique incision was made on second premolar, and fourth on the lateral incisor. The oblique incisions were then joined with intrasulcular incisions at recession defects, altogether designing flap's surgical papilla. The envelop flap was raised with split-full-split approach in corono-apical direction. The oblique interdental incisions were carried out keeping blade parallel to long axis of teeth in order to dissect surgical papilla in split-thickness surgical blade #15C. Apical to level of root exposure, full-thickness flap of approximately 3 mm was raised using a periosteal elevator (Figure 4). Finally, most apical portion of flap was elevated in split-thickness manner until approximately 3

mm of periosteum was exposed to facilitate coronal displacement of flap (Figure 5). As central incisor was included in flap, muscle fibre insertions mesial to it were released, and maxillary labial frenum was dissected to eliminate aberrant pull.

Only exposed root surfaces with loss of clinical attachment in 21, 22, 23, and 24 were mechanically treated using Gracey curette #1-2 and #5-6 (Figure 6). The remaining tissue of anatomic interdental papilla was de-epithelialised to create connective tissue beds to which surgical papillae were sutured. The flap was finally positioned atleast 1 mm coronal to cementoenamel junction without tension. Three sling sutures starting from distal flap extremity (between 24 and 25) followed by mesial flap extremity (21 and 22) and central part of flap (23) were performed using 6-0 vicryl suture to accomplish precise adaptation of buccal flap on exposed root surfaces. More apically, horizontal double mattress suture was performed from the left central incisor to left first premolar to reduce lip tension on marginal portion of flap (Figure 7).

After surgery, patient was prescribed analgesics: Tablet Ibuprofen 600 mg every eight hours for three days, thereafter "si opus sit" (SOS, as needed), and 0.2% chlorhexidine rinse twice daily for 14 days. Verbal instructions were given, including gentle oral hygiene around surgical site, avoiding mechanical trauma or brushing treated area for first two weeks and following soft diet. The sutures were removed at 14 days (Figure 8), and plaque control was continued with chlorhexidine for two more weeks. Afterward, patient resumed gentle brushing with soft toothbrush using roll technique.

The post-operative presentation at first and second months (Figures 9, 10) demonstrated marked reduction in gingival recession depth, an increase in gingival thickness, and improved soft-tissue contours, indicating favourable early healing and positive clinical response.

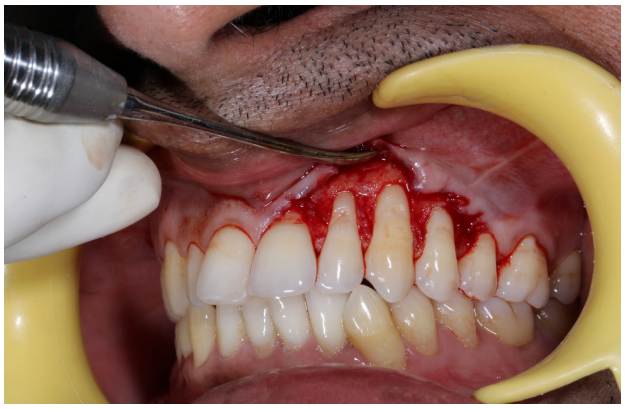

Figure 5: Split–full–split thickness flap elevation.

Figure 6: Mechanical debridement of exposed root surfaces.

Figure 7: Sling sutures and horizontal double mattress sutures using 6-0 vicryl suture.

Figure 8: Suture removal done at 14 days.

Figure 9: Follow-up at one month.

Figure 10: Follow-up at two months.

DISCUSSION

The MCAF has demonstrated predictable outcomes and superior aesthetic results in managing multiple adjacent gingival recessions.[6] Although coronally advanced flaps achieve stable root coverage, papillary rotation can restrict coronal advancement and increase lateral shift. The MCAF design minimises these limitations and enhances flap mobility and aesthetic predictability.[4,5] While adjunctive connective tissue grafts provide additional thickness, MCAF alone has demonstrated satisfactory outcomes in patients with thick phenotypes.[7] The MCAF achieves high complete and mean root coverage, with outcomes further enhanced by adjunctive connective tissue grafts or collagen matrices.[8]

In this patient, a frenectomy was performed to release an aberrant frenal attachment that caused tension on coronal flap; however, frenectomy is not a mandatory step in all MCAF procedures. By using this technique, optimal root coverage and soft tissue integration were achieved, validating efficacy of this minimally invasive approach for multiple adjacent recessions with a favourable tissue phenotype. Although a two-month follow-up demonstrated promising early healing, future evaluations at six months and 12 months will be essential to assess the true stability of root coverage, maturation of the gingival margin, and long-term integration of surgically repositioned tissues.

Conflict of interest: None.

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