ISSN: 2456-8090 (online)
DOI: https://doi.org/10.26440/IHRJ/0603.06502

CASE REPORT

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A Novel Modification of Semilunar Coronally Advanced Flap for the Treatment of Gingival Recession: A Case Report

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ABSTRACT

Recession of the gingival margin is still a common problem, with negative consequences for both aesthetics and periodontal health. Complete root coverage of gingival recession defects with periodontal plastic surgery is a necessity in this era where aesthetics are a top priority. Correction of mucogingival recession deformities has been described using a variety of periodontal plastic surgical procedures, each with varying degrees of success. The goal of this case report is to describe how a semilunar coronally advanced flap was modified to treat gingival recession in the maxillary anterior tooth.

KEYWORDS: Recession, Perioplastic Surgery, Coronally Advanced Flap

INTRODUCTION

A number of periodontal plastic surgery procedures for the correction and management of mucogingival deformities and defects have been described, with varying degrees of success.[1] Friedman defines mucogingival surgery as "surgical procedures performed to correct relationships between gingiva and oral mucosa." Periodontal plastic surgery is defined as surgical procedures performed to correct or eliminate anatomic, developmental, or traumatic deformities of the gingiva by the 1996 World Workshop in Clinical Periodontics.[2]

Gingival recession is defined as exposure of the tooth by the apical migration of the gingiva.[3] It is a common problem faced by dental patients. Gingival recession is the result of supragingival and subgingival calculus, aggressive tooth brushing, improper flossing technique, high frenal attachment, position of tooth in the arch, excessive orthodontic forces and iatrogenic causes such as crown preparation. Other causes include inadequate width of attached gingiva, prominent roots & trauma from occlusion.[4,5]

Due to root exposure, recession causes unsightly aesthetics and can lead to root caries and dentinal hypersensitivity.[6] Mucogingival recession deformities can be corrected with a variety of periodontal plastic surgical procedures each demonstrating a variable degree of success. The different root coverage procedures are free gingival autograft, free C/T autograft, pedicle autograft such as a laterally positioned flap and coronally positioned flap - semilunar pedicle (Tarnow), sub-epithelial C/T graft (Langer), guided tissue regeneration, and the Pouch and Tunnel technique. The different pedicle grafts are rotational flaps like the laterally positioned, double papilla, and transpositional flap, and advanced flaps like coronally advanced flap and semilunar flap.[7]

The advantage of pedicle over free soft tissue grafts is the retention of flap vascularity. Pedicle flaps, whether probably advanced or laterally rotated, can be carried out by either a partial-thickness, full thickness, or combination dissection. Partial-or split thickness flaps with periosteal and connective tissue retention have been shown to cause less resorption of the underlying alveolar bone.

The coronally advanced flap along with connective tissue graft has demonstrated highest rate of success for complete root coverage.[8] However, the coronally advanced flap approach may result in shallowing of the vestibule and scarring of the vertical incisions.[5] Additionally, the association with CTG requires a second surgical area and increases the surgical time as well as the technical difficulty of the approach.[9] Other surgical approaches have been proposed to obtain root coverage with simplified techniques, such as the semilunar coronally advanced flap described by Tarnow.[10]

Treating gingival recession is a challenge for the general dental practitioner in today's practise. The purpose of this case report is to demonstrate the feasibility and ease of performing a semilunar coronally repositioned flap procedure in the case of maxillary class I gingival recession, as well as its long-term benefits.

Submitted on: 17-Feb-2022; **Accepted on:** 18-Jun-2022

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A 38-year-old male patient reported to the Department of Periodontics with a chief complaint of receded gums with respect to upper left front tooth. Medical history and family history was non- contributory. There was no history of trauma. Patient did not report of any deleterious oral habits. On eliciting the oral hygiene habits, patient revealed that he was using a hard toothbrush and horizontal brushing technique. He did not use any interdental aids.

On soft tissue examination, a thick gingival biotype with an adequate amount of keratinized gingiva was present. Millers Class I gingival recession with a depth of 2 mm was diagnosed as the gingival defect on 22.

The patient showed good plaque control and tissues showed no signs of inflammation. Modification of patient's brushing technique to modified Stillman's technique with a soft toothbrush was suggested. Root coverage procedure in relation to 22 was planned one week later. All the blood reports were within the normal range.

A modified semilunar coronally advanced flap technique was planned. Before the commencement of the surgical procedure he patient was instructed to rinse his mouth with chlorhexidine mouthwash (0.2%). Pre-operative photographs were taken (figure 1). A stent was used to measure the relative attachment level. Extra-oral disinfection was performed using 2% betadine. The surgical area was anesthetized using local anesthetic agent (lignocaine 2% with epinephrine 1:100,000).

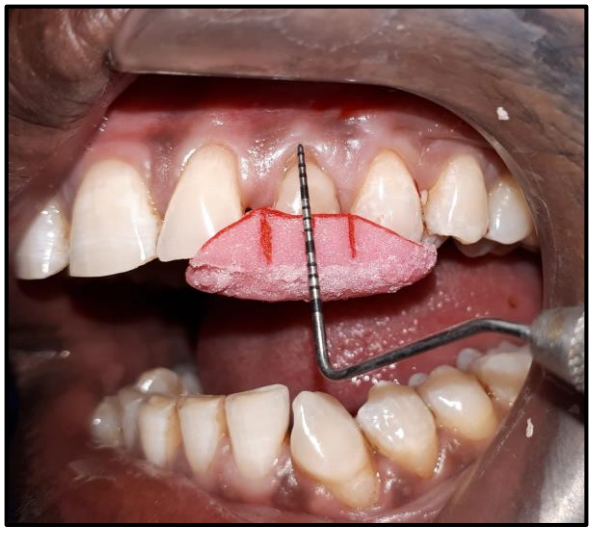

Figure 1. Pre-operative pic showing the gingival recession.

Following careful debridement of exposed root surface, a semilunar incision was given using No.15C BP bladef rom gingival margin in such a way that the outline of the incision is parallel to the curvature of the gingival margin (figures 2 & 3). The most apical extent of the arc of the incision was typically located in the mucosa. The incision was extended into the papilla region on each side of the tooth, but with a broad base of anchorage for adequate blood supply for the graft. An intracrevicular incision was given extending apically to the level of the semilunar incision and soft tissue graft was coronally repositioned to the level of the CEJ (figure 4). Sutures were placed on the papillary area to ensure adequate adaptation and better stabilization of the flap (figure 5).

Figure 2. Incision using No. 15C BP blade

After the procedure patient was advised to take analgesics for 3 days. He was advised to take soft diet and not to brush on the surgical site. During this period, plaque control was achieved with 0.12% chlorhexidine solution mouthrinse used twice a day. Patient was recalled after 7 days for suture removal (figure 6). On one week follow-up healing was found to be satisfactory.

Figure 3. Semilunar incisions placed.

On further follow up visit after one month, a 100 percent increase in relative attachment level was observed (figure 7). There was no any recurrence of recession on any of the follow up visits. On the recall visit, oral hygiene instructions were reinforced.

Figure 4. Intracrevicular incision given.

DISCUSSION

The changing face of dentistry has ushered in a new era where the present-day aim is to have a healthy and aesthetically pleasing dentition. Thus, esthetics has become an essential criterion of the overall treatment plan in dentistry, which comprises a healthy and beautiful smile at any age.[11] Gingival recession is of great esthetic concern associated with periodontal disease. Coronally advanced flap is one of the most reliable techniques for treatment of single recession defects, and different surgical flap designs have been proposed over time increasing the possibility of achieving root coverage.[12]

Figure 5. Sutures placed.

Semilunar coronally repositioned flap is one of the definitive, least invasive, and conservative one-stage periodontal plastic surgical procedure. Technique was introduced by Tarnow. He described Coronal repositioning of the semilunar incision parallel to the free gingival margin of the facial tissue over the denuded root.[11]

Figure 6. Suture removal

The modified semilunar coronally repositioned flap was first described by Kamran Haghighat in 2006.[13] It also has the advantage of requiring a smaller surgical site with no vestibule shortening, as well as improved coronal mobility and stability of the repositioned flap. This technique allows for more control over flap repositioning and reduces apical tissue retraction while attempting to cover the root.[7]

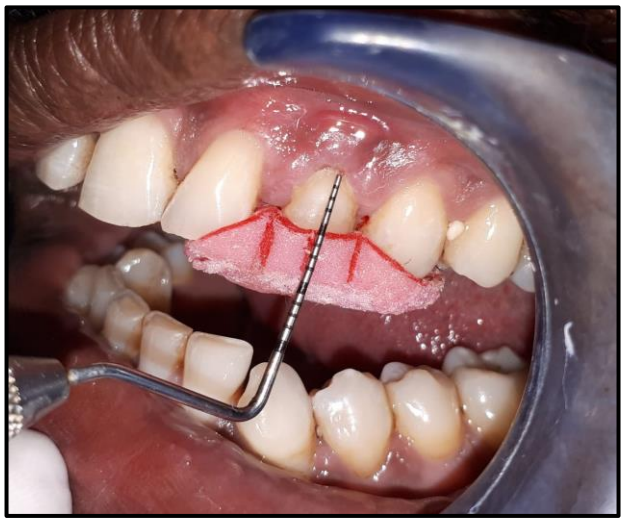

Figure 7. One month post-operative

The amount of recession coverage as measured by measuring the distance between the cementoenamel junction and the gingival margin is considered the primary outcome variable for the therapeutic endpoint

of success for root coverage procedures.[7] This case report describes a one-month follow-up of a case in which a modified semilunar coronally advanced flap was used to treat a maxillary anterior tooth. The semilunar coronally advanced flap can be sutured through the midline papilla to stabilise the mobilised pedicle and, as a result, the marginal tissues in the desired location.[13]

One-month follow-up showed that the roots have been completely covered. The success of this technique is contingent on proper case selection, modification of patients' oral hygiene habits, and patience for recall visits.[14] This case report also supports the literature by demonstrating that the modified semilunar coronally repositioned flap can be performed in a simple dental surgical setting with minimal post-operative complications using only the most basic instruments.
The technique's greatest shortcoming is that it can't produce root coverage exceeding 2-3 mm. This technique can be successfully used to manage isolated gingival defects in maxillary teeth, as well as patients who have sensitive teeth due to exposed dentine as a result of gingival recession.[15] It has no notable variation in technique from subepithelial connective tissue graft in terms of gaining coronal displacement of marginal gingiva.

Modified coronally repositioned flap technique is not time consuming and does not require high level of expertise unlike the other periodontal plastic surgeries. In the present case gingival aesthetics was improved and successful correction of recession was obtained.

CONCLUSION

The modified semilunar coronally advanced flap used in the present case is an uncomplicated technique which provides satisfactory results for treating Millers Class I and II gingival recession defects in the anterior region. When the case is properly selected and the procedure is performed correctly, this method can successfully treat teeth with narrow gingival defects.

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Cite this article as:
Kasare N, Thakur R, Jangid M, Shiradhonkar A. A Novel Modification of Semilunar Coronally Advanced Flap for the Treatment of Gingival Recession: A Case Report. Int Healthc Res J. 2022;6(3):CR1-CR5. https://doi.org/10.26440/IHRJ/0603.06502

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Source of support: Nil, **Conflict of interest:** None declared

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