



**Research Article**

**BUTTON ASSISTED CORONALLY ADVANCED FLAP -A NEW TREATMENT APPROACH FOR MULTIPLE RECESSION**

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**ABSTRACT**

Esthetics has become an essential criterion of the overall treatment plan in dentistry that comprises of a healthy and beautiful smile at any age. The objective of this case report is to evaluate the effectiveness of a new treatment approach which consists of coronally advanced flap procedure combined with orthodontic button application. The clinical and biological advantages were the preservation of the blood supply as the vertical releasing incisions were avoided. Here we used orthodontic buttons to maximize the stabilization of the immediate postoperative flap location. Three months postoperative results showed that the technique is a very effective approach even in the treatment of Miller's Class III recession defects.

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**INTRODUCTION**

One of the most common esthetic concerns associated with the periodontal tissue is gingival recession. A variety of techniques have been proposed to cover gingival recession defects. Although all these techniques have shown a consistent potential for root coverage, meta-analyses from several systematic reviews revealed an ample degree of variability in clinical results. The success and predictability of a therapy depends on patient related, dentist-related, site-related and technique-related factors. In a technical manner; flap thickness, flap tension after suturing and the position of the gingival margin at the end of the surgery appeared to be fundamental in achieving complete root coverage<sup>1</sup>

In the cases described in this article, PRF membrane was combined with a coronally positioned flap for root coverage. As it is important and hard to protect and to achieve the most possible coronal position of the gingival margin during early healing period, orthodontic buttons were used to maximize the stabilization of the immediate postoperative flap location.

**Case History**

**Case 1**

A 32-year female reported to the Department of Periodontology, GDC Trivandrum with the chief complaint of

unesthetic appearance in the maxillary front tooth region for 9 months. Clinical examination revealed Miller's Class I recession in maxillary incisors. (Figure1)

**Case 2**

A 36-year female reported to the Department of Periodontology, GDC Trivandrum with the chief complaint of receding gums in the maxillary front tooth region for 2 years. Clinical examination revealed Miller's Class III recession in maxillary incisors and associated cervical abrasion.( Figure2). Patient was informed about the uncertain prognosis with the surgical technique and an alternative prosthetic management with gingival veneer was also explained. Patient made an informed decision to undergo surgical procedure.

The gingival biotype of the patient was thick in both cases. The patients underwent a session of oral prophylaxis along with instruction for maintenance of oral hygiene. Gingival recession depth, and keratinised tissue width measurements (GRD and KTW) were performed at the mid buccal point of the involved teeth.

In both the cases, coronally advanced flap combined with PRF membrane was planned as there was adequate vestibular depth. Written informed consent for periodontal surgery was obtained. Before the surgery, orthodontic buttons were applied on involved teeth with flowable composite on the middle 1/3rd of the facial aspect of the tooth after etching and bonding Surgical procedure

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### Case I

Under local anesthesia, an envelop flap was designed which consist of intra sulcular incision in the recession defects and oblique submarginal incisions in the interdental areas, (Figure 3) The interdental papilla was kept intact, and only the surgical papilla was dislocated by the oblique interdental incisions. A full thickness flap was raised apical to the root exposure, and a partial thickness flap was elevated in the most apical portion of the flap to facilitate the coronal displacement of the flap. (Figure 4) The anatomic interdental papillae were de-epithelialized. The PRF membrane was placed over the denuded roots. (Figure5) The final position of the flap was overcorrected to be at least 1 to 2 mm coronal to the CEJ of all teeth at the end of the surgery to compensate for the expected postsurgical wound contracture. The central area of the flap was stabilized using suspensory sling sutures [with 5-0 black silk] on the buttons. The surgical papilla was stabilized using interrupted suture (with 5-0 black silk) over the interdental connective tissue bed. (Figure6) A periodontal dressing was applied to prevent any mechanical trauma.

### Case II

Full thickness flap was elevated in this case using sulcular incision as there was a need for effective surgical debridement in interdental area. (Figure7) The apical most portion of the flap was undermined to convert it to a split thickness flap, facilitating coronal displacement of the flap. The PRF membrane was placed and suturing was done as in first case. (Figure8) (Figure9)

### Postsurgical Treatment and Follow-up

Postoperative instructions were given. The patient was instructed to avoid brushing and flossing in the area of surgery and to consume only soft food during the first week. Amoxicillin 500 mg TDS and Ibuprofen 400 mg TDS for 5 days were prescribed to the patient. A 0.2% chlorhexidine digluconate mouth rinse was prescribed daily for the first 15 days. Only soft diet for the first week was advised. The sutures, buttons, and periodontal dressing were removed 14 days after surgery.

The patients were instructed to resume mechanical tooth cleaning of the treated areas using a soft toothbrush and a careful roll technique after 3 weeks of surgery and was recalled 3 months after suture removal.

## RESULTS

The recall showed uneventful healing along with root coverage. (Figure10) Figure11). No scar formation was observed and the colour match of the tissue was excellent. Root coverage was complete in case1 but only a partial coverage in case2.

## DISCUSSION

The ultimate goal of any therapeutic intervention aimed at root coverage should be to restore the tissue margin at the cemento-enamel junction and to achieve an attachment of the tissues to the root surface so that a normal healthy gingival sulcus with no bleeding on probing and a minimal probing depth is present.<sup>2</sup> The Connective Tissue Graft technique is considered as the gold standard in the management of recession defects. However, its use in the treatment of multiple recessions may be limited due to the great discomfort

to the patient when large grafts are harvested from the palatal mucosa. Also, large grafts can impair vascular exchange between the covering flap and the underlying receiving bed, and thus, increase the risk for flap dehiscence and unesthetic exposure of the graft.<sup>1,3</sup>

In multiple recessions, it is important that the technique to be used must be easily practical, must not take a long time and should not require second operation area. Selection of surgical techniques should allow all gingival defects to be simultaneously corrected with the soft tissue close to the defects themselves.<sup>1</sup> Evidence indicates that coronally advanced flap-based approaches result in the best clinical results. In patients with high esthetic expectations, the CAF is the first choice when there is adequate keratinized tissue apical to the root exposure. With this approach, the soft tissue used to cover the root exposure is similar in colour, texture, and thickness to that originally present at the buccal aspect of the tooth with the recession defect; thus, the esthetic result is more satisfactory.<sup>3,4</sup>

Although coronally advanced flap has several modifications, most of them need vertical or oblique external releasing incisions. Disadvantages of vertical releasing incision include damage to lateral blood supply to the flap and this may lead to unaesthetic white scar. Zucchelli and De Sanctis described an envelope type of coronally advanced flap.<sup>3</sup> The absence of vertical releasing incision in this helps limit bleeding during surgery and this may favor blood clot stabilization. It has also been reported that there is less increase in apicocoronal width on keratinized tissue because vertical incision delays or disturbs realignment of mucogingival junction.<sup>5</sup>

But these vertical incisions provide stability to the flap, increases the predictability of achieving adequate coronal positioning and complete root coverage. Pini-Prato and colleagues reported that the greater postoperative coronal displacement of the gingival margin may cause greater root coverage.<sup>6</sup> In a recent study, Aroca et al. (2010) reported a new technique, which include the composite stops placed at the contact points of the teeth to prevent collapse of the suspended sutures into the interproximal spaces.<sup>7</sup> Zareen Fatima et al used orthodontic brackets along with coronally advanced flap to maximize the stabilization of the immediate postoperative flap location.<sup>8</sup> Ozcelik O et al used orthodontic buttons to maximize the stabilization of the immediate postoperative flap location as in our case report.<sup>1</sup> The most important part of this technique is to ensure the anchorage of the coronally displaced flap during 2 weeks of wound healing. The suspended sutures used in this technique also provided the maximum coronal position of the flap

This approach of the coronally advanced flap may also be used in combination with connective tissue graft, enamel matrix derivatives, GTR, acellular dermal matrix or others. The cost of mucogingival operations may arise when other biomaterials are included.<sup>1</sup> A recent innovation in dentistry has been the preparation and use of PRF, a concentrated suspension of the growth factors found in platelets. These growth factors are involved in wound healing and postulated as promoters of tissue regeneration. Placement of the PRF membrane in recession defects can be used to restore the functional properties of the labial gingiva of the maxillary anterior teeth by repairing gingival defects and re-establishing the continuity and integrity of the zone of keratinized gingiva.<sup>9</sup>

This case report highlights the use of button assisted coronally advanced flap along with PRF for root coverage in multiple recession defects. We attained 100% root coverage in class I recession defect and a partial root coverage in class III defects. According to Pini Prato, coronally advanced flaps result in 70-99% of root coverage. Complete root coverage can be achieved in class I and II defect but only partial root coverage (70% to 75%) can be accomplished in Class III defects. Surgical treatment of multiple Miller's class III defects is more challenging, mainly due to loss of inter-proximal bone and soft tissues.<sup>10</sup> In both cases there was an increase in the keratinized tissue after surgery. Even though when compared with other technique, this technique is easy, inexpensive and highly acceptable, a longer period of evaluation in a large number of patients is probably necessary to assess whether these initial positive results are modified with time.

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