CASE REPORT

CORONALLY ADVANCED FLAP FOR THE TREATMENT OF SINGLE AND MULTIPLE GINGIVAL RECESSIONS: A CASE REPORT

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Abstract:

The desire for better esthetic have increased immensely in recent times making esthetic procedure a fundamental part of any periodontal treatment. Periodontal plastic surgical procedures aim at the coverage of exposed root surfaces. Gingival recession resulting in root exposure is a common problem faced by clinicians and also an aesthetic concern for the patient. The objective of this case report was to achieve the ability of periodontal plastic surgery for root coverage in the treatment of gingival recession. This case report aims at depicting two particular types of procedure for root coverage procedure (a) root coverage for single tooth gingival recession with vertical releasing incisions (b) root coverage for multiple gingival recessions without vertical releasing incisions.

KEY WORDS:

Coronally advanced flap, Gingival recession, Periodontal plastic surgery.

INTRODUCTION:

The foremost goal of any periodontal therapy is to improve periodontal health and thereby to conserve a patient's functional dentition throughout his/her life. Aesthetics have become an inseparable part of today's oral therapy, and several procedures have been proposed to preserve and enhance patient's aesthetics.

The term 'periodontal plastic surgery' (PPS), first suggested by Miller (1988) was defined as 'surgical procedures performed to prevent or correct anatomical, development, traumatic or plaque disease-induced defects of the gingiva, alveolar mucosa, or bone' (The American Academy of Periodontology 1996). One of the most frequent indications of PPS is the treatment of buccal gingival recessions. This treatment has mainly been justified by the patient's wish to improve the aesthetic appearance when there is an exposed root. Occasionally, there is an indication for surgical treatment when the

exposed root is associated with dental hypersensitivity and/or root caries.[1]

Various treatment modalities for root coverage:

Pedicle gingival grafts, free gingival grafts, connective tissue grafts, guided tissue regeneration (GTR) can be used to achieve root coverage.[2] Evaluation of the amount of root coverage required for the exposed roots and other factors (i.e. donar site, recepient site, thickness of the flap, position of the teeth in the arch etc) helps in selecting the surgical procedure. The benefit of pedicle graft over the free soft tissue grafts is the retaining of the flap vascularity. Pedicle flaps may be a partial thickness, full thickness or combination. They may either be coronally advanced or laterally rotated.[3,4]

Coronally advanced flap (CAF) is one of the most widely used surgical technique indicated for the treatment of Miller's class I and class II gingival recession defects. In 1999 Pini Prato et al. coined the term "Coronally advanced flap". CAF may lead to excellent esthetic results, avoiding the need for a second surgical site and it is simple to perform.[5]

CAF is the first choice when there is adequate keratinized tissue apical to the root exposure.[6,7,8] As the color, texture, and thickness of the tissue is maintained on the buccal aspect of the tooth with the recession defect; the esthetic result is more satisfactory with this approach. Multiple gingival recessions are successfully treated with an envelope type of CAF.[7]

This case report exhibits two techniques. First technique for the treatment of isolated gingival recession by Coronally advanced flap with vertical releasing incisions and second technique for the treatment of multiple gingival recessions given by Zucchelli's modified approach for Coronally advanced flap in 2000 which was without vertical releasing incisions.

Case Report

A 35 years old male patient came to the Department of Periodontology and Implantology, at College of Dental Science and Research Centre, Ahmedabad with the complaint of unaesthetic appearance in the upper front region of the jaw and sensitivity to cold food in the same region. On examination, 3mm of class I gingival recession (Miller 1985) was found on tooth #6 (Maxillary right canine),

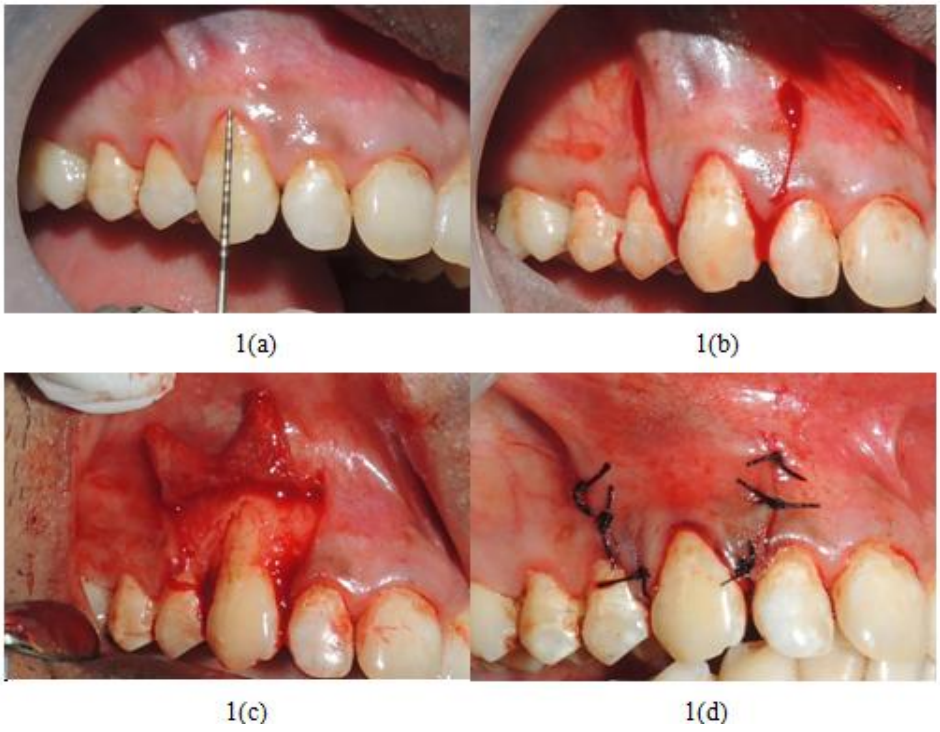

Figure1: (a) Preoperative view (b) Two oblique divergent vertical incisions (c) A combination of split thickness and full thickness flap was raised (d) Flap was sutured.

2mm of class I gingival recession on tooth #9 (Maxillary left central incisor), 1mm of class I gingival recession on tooth #10 (Maxillary left lateral incisor), 3mm of class I gingival recession on tooth #11 (Maxillary left canine), 1mm of class I gingival recession on tooth #12 (Maxillary left first premolar).

For root coverage, periodontal plastic surgery was planned with coronally advanced flap. Coronally advanced

flap with vertical releasing incision was planned for the isolated gingival recession in tooth #6, whereas an envelope type of Coronally advanced flap without vertical releasing incision (Zucchelli's modified approach) was planned for the multiple gingival recessions in teeth #9, #10, #11, #12. Systemic history was ruled out prior to the surgery.

(a) Surgical Technique: For isolated single tooth gingival recession:

Under local anesthesia, the coronally advanced flap procedure was initiated with the placement of two apically divergent vertical releasing

incisions, extending from a point coronal to the CEJ at the mesial anddistal line axis of the adjacent tooth and apically into the lining mucosa.

A split-thickness flap was prepared by sharp dissection mesial and distal to the recession and connected with an intracrevicular incision. Apical to the receded soft tissue margin on the facial aspect of the tooth, a full-thickness flap was elevated to maintain maximal thickness of the tissue flap to be used for root coverage. Approximately 3mm apical to the bone dehiscence, a horizontal incision was made through the periosteum, followed by sharp dissection into the vestibular lining mucosa to release muscle tension. The blunt dissection is extended buccally and laterally to such an extent that the mucosal graft was tension free when positioned coronally at the level of the CEJ. The facial portion of the interdental papillae was de-epithelialized to allow for the final placement of the flap margin coronal to the CEJ.

The tissue flap was coronally advanced, adjusted for optimum fit to the prepared recipient bed, and secured at the level of the CEJ by suturing the flap to the connective tissue bed in the papilla regions. 4-0 Mersilk suture was used to carefully close the surgical site.

(b) For multiple gingival recessions:

The surgical technique adopted in the recession defects was the envelope type of CAF proposed by Zucchelli and De Sanctis in 2000.

The flap design consisted of a horizontal incision which was given extending such that it included one more tooth on each side of the teeth to be treated which facilitated the coronal repositioning of the flap tissue over the exposed root surfaces. The intrasulcular incisions at the mesial/distal margins of the recession defects with a variable number of interdental submarginal incisions were given to form the surgical papillae of the envelope flap. The flap was raised with a split-full-split approach in the coronoapical direction. The surgical papillae were elevated split thickness, keeping the blade parallel to the long axis of the teeth. This split elevation terminated at the level of an imaginary line connecting the probeable sulcular areas of the two adjacent recessions.

The thickness of the flap is critical for root coverage. Full thickness flap was raised apical to the root exposure

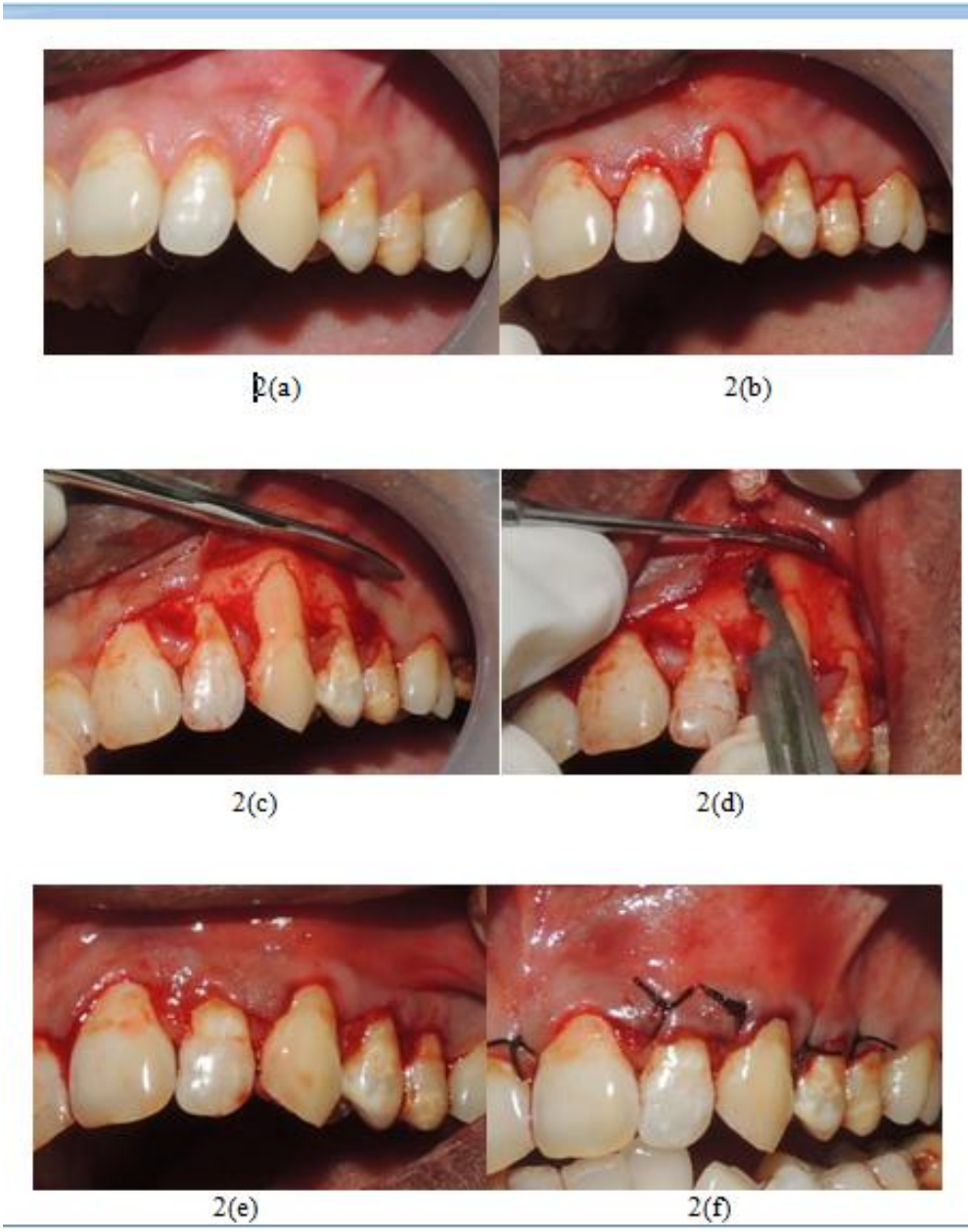

Figure2: (a) Preoperative view (b) Incisions for Zucchelli's modification of CAF (c) Flap is elevated (d) Periosteal releasing incision given at the depth of the flap to facilitate the coronal displacement of flap, and de-epithelialization of interdental papilla is done (e) Coronally displaced flap (f) Flap was sutured.

A small periosteal elevator was inserted into the sulcus for full thickness elevation. It was completed once 3 to 4 mm of bone was denuded apical to the bone dehiscence.
To facilitate coronal displacement of the flap the most apical portion of the flap was elevated split thickness.

The remaining soft tissue of the anatomic interdental papillae was de-epithelialized. This created connective tissue beds to which the surgical papillae were sutured. Coronal advancement of the flap was obtained with a partial-thickness dissection into the vestibular-lining mucosa. The insertions were recognized by pulling the lip and were eliminated with the blade kept parallel to the external mucosal surface.

The apical movement of the blade for cutting muscular insertions was controlled through the thin, almost transparent, lying mucosa because of the absence of vertical releasing incisions. Each surgical papilla was rotated toward the periphery of the flap and rested at the center of the interproximal area (anatomic papilla) that was previously de-epithelialized. The marginal portion of the flap passively reached to a level coronal to the CEJ at every tooth in the surgical area. Suturing of the flap was done with interrupted sutures by 4-0 Mersilk anchoring the surgical papilla to the underlying connective tissue bed. No periodontal dressing was applied.

Postsurgical instructions and infection control:

Patient was prescribed antibiotic (combination of Amoxicillin 500mg and Clavulanic acid 125mg) for 7 days and Ibuprofen 600mg to control postoperative pain and edema, at the beginning of the procedure and 6 hours later. Subsequent doses were prescribed only if necessary. Patients were advised not to brush in the surgically treated region. Sutures were removed 10 days after surgery. Thereafter, the patient used a soft toothbrush and chlorhexidine mouthwash once a day. Patient was recalled for prophylaxis 2 and 4 weeks after suture removal.

DISCUSSION:

Treatment of gingival recession has become an important therapeutic issue due to the increasing number of cosmetic requests from patients. Patients' esthetic demands, due to exposure of portions of the root surface during smiling or function, are the main indication for root coverage surgical procedures. Thus, complete root coverage upto the CEJ is the goal to be achieved when the

patient complaints about esthetic appearance of the teeth.

In the present case report, the demonstrated modification of the coronally advanced flap is an effective treatment modality for the management of multiple recession defects affecting adjacent teeth in the esthetic regions of the mouth. The presumed advantage of the envelope type of flap is the lack of vertical releasing incisions (VRIs), which could damage the lateral blood supply to the flap and might result in unesthetic visible white scars (keloids).[9,10] The rate of successful treatment outcome was similar to that reported in the literature in case-series studies of CAF for single[6] and multiple[7] gingival recessions in which very similar surgical techniques were used. A possible explanation for the successful outcome of the procedure is that the soft tissue apical to the root exposure (including the keratinized tissue) was elevated full thickness by inserting the periosteum elevator in the probeable sulcus. This preserved the maximum soft tissue thickness where thickness was critical for root coverage. Another possible explanation for the improved result might be because the gingival recessions were only Miller Class I gingival recessions, with no deep cervical abrasion or root demineralization.

The absence of a wide zone of keratinized tissue apical to the defects was considered a limitation of the coronally advanced flap technique.[11,12] The fact that the coronally advanced flap procedure resulted in an increased apicocoronal gingiva height might be explained by several events taking place during the healing and maturation of the marginal tissue: first, the tendency of the mucogingival line to regain its "genetically" defined position following coronal dislocation with the flap procedure,[13] second it cannot be excluded that granulation tissue derived from periodontal ligament tissue might have contributed to the increased gingival dimension.[14]

Finally, it cannot be excluded that the augmented dimension of the flap, used for treating multiple recessions with respect to that used for the single-type gingival defect, might have been responsible for an increased stability and, thus, better root coverage results.[11]

CONCLUSION:

Coronally advanced flap with or without vertical releasing incisions are equally effective in providing a consistent reduction in the baseline

recession. The envelope type of Coronally advanced flap was associated with an increased probability of achieving complete root coverage and with a greater increase in buccal keratinized tissue height. Patient satisfaction with esthetics (overall satisfaction, color match, and amount of root coverage) was very high for both treatments, with no difference between them.

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