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MODIFIED CORONALLY ADVANCED FLAP (ZUCCHELLI'S METHOD) FOR ROOT COVERAGE OF MULTIPLE DEFECTS: A CASE REPORT

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Abstract: Gingival recession, apical shift of the gingiva margin from its position with oral exposure of the root surface, is a common feature in populations with high standards of oral hygiene. Gingival recessions are treated to reduce dentinal hypersensitivity and to improve esthetics. Complete root coverage, with the soft tissue margin at the level or coronal to cemento-enamel junction (CEJ), is the most important outcome in patients with esthetic requests. Predictable root coverage is major challenge to the clinicians. This technique allows the multiple gingival defects to be corrected simultaneously with the soft tissue present adjacent to the recession defects. A sharp dissection into the vestibular lining mucosa was carried out to eliminate muscle tension and to achieve complete root coverage.
Keywords: Modified coronally advanced flap, Zuchelli's technique, Root Coverage.

Introduction

Several surgical approaches have been proposed for treating gingival recessions, the results are dictated by the attachment loss and underlying bony architecture of the periodontium. The selection of suitable technique surgical technique depends the defect size, the presence or absence of keratinized tissue adjacent to the defect, the width and height of the interdental soft tissue, the depth of the vestibulum or the presence of frenuli, while few are patient related factors.[1] When multiple recessions affect adjacent teeth, they should be treated at the same surgical time and, if possible, second intervention for the procurement of graft from the donor site should be avoided. Esthetic result with complete root coverage is the goal considering other factors such as the thickness, color and blending of the surgically treated area. With the aim meeting higher esthetic needs of the patients, Zuchelli et al in 2000 introduced a new surgical approach of coronally advancing the flap for the treatment of multiple recession defects.[2]

Case report:

A 33year old male patient presented to the department with a complaint of unsightly appearance of his teeth while smiling. Patient presented with no relevant medical history and past dental history. Intraoral examination revealed multiple adjacent recessions of gingiva with the exposure of the root surfaces along with cervical abrasions. (Fig:1) 7mm recession was present at the mesio-buccal root of 16, 1mm recession at 15, 2mm recession at 14, and 3mm recession at 13 with 1mm of keratinized gingiva remaining at 16 and 3mm at 13,14,15. Patient was explained about the surgical procedure and informed consent was obtained. Non- surgical phase was completed initially to eliminate the deposits and plaque. Cervical abrasions were restored using composite restorative material. Periodontium was rendered inflammation free before the procedure.

Figure 1: Pre-operative presentation

Asepsis was done with povidone-iodine extra-orally and 2% chlorhexidine intra-orally before the commencement of the procedure. Infraorbital nerve block was administered to anesthetize the area with 2%w/v lignocaine injection.

Lateral approach was used without any vertical releasing incisions in the anterior region. An envelope flap was designed with horizontal incisions for coronal advancement of the flap, extending from first molar to canine.

Figure 2: Incisions

Horizontal incision consisted of intrasulcular incisions at recession defect and sub-marginal oblique incisions in the interdental areas which were continuous, creating a surgical papilla. (Fig:2) Canine was considered as axis of rotation. To ensure correct positioning of the surgical papilla with 1mm coronal to the cementoenamel junction after advancement, always start the oblique incision from the apical margin of the adjacent tooth recession depth to an endpoint on the tooth from the anatomic papilla with a measurement of recession depth + 1mm. First oblique incisions were located mesial and distal to the canine which is at the axis of rotation. With the completion of this incision proceed to the premolar by measuring its recession depth and creating a surgical papilla as earlier and continue to the distal end. The sub-marginal incisions were joined with the intrasulcular incision at the defect depth. Distally vertical releasing incision was given to facilitate advancement.

Figure 3: Elevation of the flap

Elevation of the flap was accomplished by split- full- split thickness in an apico-coronal direction, relieving the superficial muscle attachment and facilitating the advancement. (Fig: 3)

Area of the tooth with clinical attachment loss was mechanically debrided and remaining fibers of the connective tissue were preserved. The remaining anatomic papilla was deepithelialized to provide the connective tissue bed for the advanced flap.

Figure 4: Advancement of the flap

With advancement of the flap, the surgical papilla shift to the position of the anatomic papilla without any dead space between the tissues and advancement was considered adequate when the margin is passively positioned at 1mm coronal to the CEJ. (Fig: 4)

Figure 5: Suturing

Figure 6: Periodontal dressing

Figure 7: Post-operative 6 month

Sling sutures and horizontal mattress sutures were placed to maintain the achieved position of the gingival margin.

(Fig :5) Periodontal pack was placed. (Fig:7) Patient was instructed to use 2% chlorhexidine mouthwash and avoid brushing in the area treated surgically, and prescription of antibiotics and analgesics was given for 5 days.

Healing index was recorded one week after the surgery which was excellent with a score 5.[3] Complete root coverage at all sites was achieved at 1week period. 14 days later patient was advised to resume brushing with a soft tooth brush in roll technique. Patient was recalled regularly and oral hygiene was maintained. Stable results were maintained at 3 month and 6month recall with an improvement in the thickness of keratinized gingiva.

Discussion:

Complete root coverage is the most important outcome for the patients having high esthetic demands. Prior to 1980s surgical procedures aimed at reducing the recession defect (laterally positioned flap and coronally positioned flap) and in increasing the thickness of the keratinized gingiva (free gingival graft).[4] With the aim of developing a complete root coverage, procedures like subgingival epithelial graft and regenerative techniques were used. Prognoses of these techniques are poor resulting in incomplete root coverage, unwanted esthetic outcomes like scarring of the gingiva and irregular outline of the mucogingival junction. Even though complete root coverage is achieved excessive thickness and poor blending with the adjacent tissues were noticed with many techniques.[4]

Minimally invasive technique, using horizontal incision design (envelope) allows for complete root coverage of the multiple defects with a single procedure, leaves no scar tissue, blood supply is maintained. Calculated oblique incision allows for preservation of the existing tissues and in maintenance of the marginal keratinized tissue with good color and thickness matching the adjacent tissues. A split thickness at surgical papillae– full thickness at the soft tissue apical to the root exposure – split thickness apical to bone exposure, this is a double incision, one to dissect muscle insertions from the periosteum and the other to cut muscle from the inner connective tissue lining the mucosa of the flap to permit coronal advancement of the flap passively.[1] Sling sutures anchored to the palatal cingulum of the treated teeth allow for proper adaptation of the flap and horizontal mattress suture prevent muscle pull and lip pull.

Conclusion:

This approach of modified coronally advanced flap technique was very effective for coverage of root surfaces of multiple gingival recessions and predictable position of the marginal gingiva could be achieved. Root coverage and increased width of keratinized tissue with minimal amount of keratinized tissue apical to the recession defects is possible.

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