

Management of Multiple Marginal Tissue Recessions using Zucchelli's Technique- A Case Report

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Abstract

Marginal tissue recession is caused due to multiple etiological factors like anatomical position of the teeth, periodontitis, iatrogenic causes like biological infringement and self-induced habits like faulty brushing of teeth, nail-biting, etc. The consequences of marginal tissue recessions are sensitivity, root caries, noncarious cervical lesions (NCL) and impaired aesthetics which adds to the morbidity. The treatment would require the removal of etiological factors followed by the surgical correction of the marginal tissue recession defect. The defect can be corrected either graft-associated or by coronally repositioned flap approaches. One acceptable and widely used therapeutic approach to cover denuded root surfaces is a coronally repositioned flap. Coronally repositioned flaps have been traditionally employed in many surgical approaches in covering marginal tissue recession, one such approach as given by Zucchelli and De Sanctis, aims to create surgical papilla which when adhered to denuded anatomical papilla corrects the marginal tissue recessions by repositioning the flap coronally. This technique has prerequisites of having papillary height, vestibular depth and width of keratinized gingiva. This minimally invasive technique has been proven to show a predictable and promising result with excellent and acceptable blending of surgical flap with adjacent tissues when treating recession. This case report highlights the treatment of multiple marginal tissue recessions using Zuchelli's technique.

Keywords : Marginal tissue recession, Zuchelli's technique, Coronally repositioned flap

Introduction :

Marginal tissue recessions are gingival recessions causing displacement of the gingival margin apical to the cement-enamel junction (CEJ).¹ Marginal tissue recessions are caused by to variety of etiological factors such as anatomical positioning of the teeth, dehiscence, iatrogenic causes such as biologic width infringement, self-induced habits such as faulty tooth brushing leading to root caries, exposure of roots, non-carious cervical lesions (NCL), dentinal hypersensitivity and impaired aesthetics adding to the complexity of the defect. It is mandatory to priorly eliminate the etiological factor followed by the surgical correction of the defect using periodontal plastic surgeries aiming for complete root coverage which should be either coronal or at the level of CEJ.² Periodontal plastic surgeries for root coverages incorporate the use of coronally repositioned flaps, grafts and bio-scaffolds in the correction of marginal tissue recession. There are various approaches to cover these recession defects which can be either graft-associated

procedures using free gingival graft, subepithelial connective tissue graft, bioscaffolds like allogenic and xenogenic dermal matrices or non-graft associated procedures such as the laterally positioned flaps, semilunar flap, modified semilunar flap, oblique rotated flap, pedicle flap, coronally repositioned flap given by Zucchelli's and De Sanctis.³ Treatment for multiple marginal tissue recessions is usually more complex than treatment for single tooth marginal tissue recession due to larger surgical field and increased anatomical diversity, including roots eminences, enamel-root abrasions, mucogingival problems such as shallow vestibule, absence or uneven keratinized tissues. Zucchelli's approach incorporates the creation of surgical papillae which when adhered to the denuded anatomical papillae would cover the marginal tissue recession, as there is no requirement of any additional soft tissue grafting and the advantage of correcting multiple marginal tissue recessions in one single appointment, it is the preferred surgical option. The

prerequisites for Zucchelli's technique are the presence of an intact papilla, adequate vestibular depth, and adequate width of the attached gingiva. This procedure can be performed with the presence or absence of vertical incisions. Presented here is the case with teeth having NCL with marginal tissue recession defects. The NCLs were restored with Glass ionomer cement (GIC) to get an attachment to PDL fibers before the surgery. Root conditioning was done before restoration in order to remove debris and enhance creeping attachment. As a coronally repositioned flap is less invasive than other surgical options, it is considered the first surgical option when addressing numerous gingival recession defects.³ Minimally invasive, safe, scar-free, better root coverage, good color blending with surrounding soft tissues, and better restoration of the original soft tissue anatomy are the outcomes of this technique.⁴

Case description :

A 36-year-old female patient came to the Department of Periodontology with a complaint of receding gums and sensitivity in the upper left and right jaw areas over the past year. The patient had no relevant medical history but past dental history revealed endodontic treatment and prosthesis done with teeth 35, 36. Clinical examination revealed RT 1 gingival recessions with 14-24 along with the presence of Non carious cervical lesions due to faulty tooth brushing. Probing depths ranged from 1-3mm with 4-5mm of Clinical attachment loss with minimal bleeding. The width of the keratinized gingiva was adequate. (Fig 1) After a thorough examination and treatment planning, a coronally



Fig 1 : Pre-Operative Condition

repositioned flap with Zuchelli's technique was considered as the choice of treatment. Following the patient's informed permission, On the initial appointment, scaling and root planning were done, and coronoplasty was done to relieve trauma from occlusion; surgery was scheduled after two weeks of phase I therapy.

Surgical procedure :

Adequate aseptic precautions were taken. Local infiltration anesthesia was injected into the operative site using 2% lignocaine HCl and 1:200,000 adrenaline. The central tooth chosen was the right maxillary canine. Using a no. 15c blade, an oblique submarginal incision was performed from the central incisor and up to the first premolar. The oblique submarginal incision was given such that it extended interdentally from the CEJ of the central tooth to the gingival margin of the adjacent tooth till the last tooth was selected. (Figure 2) An intrasulcular incision was made along each



Fig 2 : Oblique incisions placed and split full split incisions given

tooth after making the submarginal incision a partial-thickness flap was reflected which divided the interdental papilla into surgical and anatomical papilla. This guarantees that the surgical papillae are positioned coronal to the anatomical papillae to attain the form and shape of the original anatomical papillae. From the papillary area up to the MGJ, a full-thickness flap was reflected, and the underlying muscle attachments were separated from the periosteum keeping the blade parallel (Figure 3). The vertical releasing incision was given in the anterior region of the central tooth for more coronal advancement of the flap. Where the coronally advanced flap was planned, the NCLs present on the affected teeth were assessed. For the defects that were confined only to the root areas, radicular odontoplasty was done by root planing using hand curettes, following which root



Fig 3 : Split full split thickness flap raised

conditioning was done using tetracycline hydrochloride by burnishing method. Affected tooth structures confined to enamel were first subjected to 37% phosphoric acid for 15 seconds to remove the smear layer to facilitate bonding with type II GIC cement. The restored surface was treated with polishing grain rotary instruments to remove irregularities present on the GIC and then rinsed copiously. Phosphoric acid was used as has been shown to have a better adhesion and superior bond strength as compared to other bonding materials before placement of GIC.⁵ (fig 4) The De-epithelization of anatomical interdental papillae was done to



Fig 4 : Etching with 37% Phosphoric acid done after curettage

allow for the creation of connective tissue beds, which were then used to place surgical papillae. After that, the flap was moved coronally making sure that the surgical papilla supervenes the anatomical papilla forming a new papilla. The area was then rinsed and washed with normal saline and slingsling-anchored tooth suture was placed over it using 4-0 polyglactin 910 sutures. (fig5) The patient was told not to floss or brush their teeth in the treated region until the sutures were removed and was asked not to eat any hard food for three to five days following surgery. The patient was prescribed 500 mg of amoxicillin and 400 mg of ibuprofen twice a day for five days, as well as mouthwash containing 0.2% chlorhexidine to be used twice daily for 14 days following



Fig 5 : Flap coronally advanced and 4.0 polyglactin 910 sutures placed

surgery. Sutures removal was done after 2 weeks of surgery. (fig 6) Healing was uneventful without scar formation; adequate root coverage was achieved. The patient was instructed to use correct brushing technique using Stillman's technique. The patient was recalled after 6 months again for the follow-up (fig 7).



Fig 6 : Healing post 14 days of the surgery



Fig 7 : Healing post 6 months of the surgery

Discussion :

One of the most popular and reliable surgical techniques for treating gingival recession type 1 and type 2 is the coronally repositioned flap.⁶ Many techniques have been used over the years to cover gingival recessions, such as the laterally positioned flaps, semilunar flap, modified semilunar flap, oblique rotated flap, pedicle flap, coronally or laterally repositioned flap given by Zucchelli's and De Sanctis⁷ After "Norberg" (1926) established the pedicle tissue graft, the coronally repositioned flap is the most commonly performed surgical procedure. This technique's distinguishing characteristics include the absence of scarring following surgery, a flap with varying thickness that combines areas of partial and mucoperiosteal thickness, with the advantages of covering previously exposed root surface with the mucoperiosteal thickness flap.⁸ Other materials that can be used to restore NCL other than GIC can be bio-dentin and Biphasic resin which help in reattachment of fibroblasts. Therefore, in the present case, a patient with high aesthetic

standards with multiple adjacent tissue recession defects was treated using Zucchelli's coronally repositioned flap.⁹ Also, there are clinical and biological benefits offered by this modified surgical technique. According to Zucchelli et al. (2000) and Allen et al. (1989), the outcome was predictable and demonstrated an excellent color match.¹⁰ The limitations of this technique are shallow vestibule, adequate papillary height and presence of interradicular bone. Further modifications in this technique incorporate the avoidance of vertical releasing incisions so that the blood supply is not impeded, the use of biomatrices, Platelet rich fibrin, Subepithelial connective tissue graft, Xenogenic scaffold-Mucograft, Fibrogide, Alloderm, Biogide. Zucchelli's technique can be considered a versatile tool in the correction of marginal tissue recessions provided the prerequisites are present.

Conclusion :

It has been demonstrated that Zucchelli's coronally repositioned flap approach is a more effective as well as predictable procedure, with less scar formation, improved root coverage, and appropriate color mixing with the surrounding tissue.¹¹⁻¹³ The current case study revealed that patients with dentinal hypersensitivity and esthetic demands may benefit from Zucchelli's coronally repositioned flap for the correction of numerous marginal tissue recessions.

Abbreviations :

NCLs- Non-carious cervical lesions

MGJ- Mucogingival junction

CAF- Coronally advanced flap

GIC- Glass Ionomer Cement

RT- Recession Type Classification

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