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Case Report

ZUCCHELLI'S TECHNIQUE WITH SUB EPITHELIAL CONNECTIVE TISSUE GRAFT FOR TREATMENT OF MULTIPLE GINGIVAL RECESSION: A CASE REPORT

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A B S T R A C T

Patients desire for improved aesthetics have increased dramatically in today's era which makes aesthetic procedures a major integral part of any periodontal treatment. Gingival recession is clinically manifested by an apical displacement of the gingival tissues, leading to root surface exposure. A novel technique for root coverage in multiple recession defect was proposed by Zucchelli and De Sanctis (2000). This case report highlights the Zucchelli's technique in combination with sub epithelial connective tissue graft for root coverage in multiple recession defect. It allows optimal adaptation of flap following its coronal advancement without placement of vertical releasing incisions and good color blend with respect to adjacent soft tissues. A successful outcome was achieved with careful case selection and surgical management.

INTRODUCTION

Gingival recession is defined as exposure of the root surface due to the displacement of the gingival margin apical to the cement-enamel junction (CEJ) (Albandar JM, Kingman A.1999). This brings about an unaesthetic appearance, root hypersensitivity, and root caries (Allen AL.1994). The hazard variables which have been hypothesized to assume a part in the etiology of gingival recession incorporate tooth malposition path of eruption, tooth shape, profile and position in the arch, alveolar bone dehiscence, muscle attachment and frenal pull, periodontal disease and treatment, iatrogenic restorative or operative treatment, improper oral hygiene methods (Wennström J.1996). A number of surgical techniques have been described and used for root covering: lateral sliding flap (Grupe HE 1966), double papilla positioned flap (Cohen DW, Ross SE. 1968), free gingival graft (Sullivan HC, Atkins JH), lateral positioned flap (Guinard EA, Caffesse RG.1978), coronally advanced flap with free gingival graft (Bernimoulin JP *et al* 1975), coronally advanced flap with subepithelial connective tissue graft (Langer B, Langer L 1985), semilunar flap (Tarnow DP 1986), and coronally positioned flap (Allen EP, Miller PD 1989), barrier membrane, growth factors platelet rich fibrin. A coronally advanced flap (CAF) with subepithelial connective tissue graft (SCTG) is the gold standard, since it offers a greater probability of achieving complete root coverage compared with other techniques (Jan Lindhe) As a result of their fundamental traumatic etiology, multiple gingival recession are even more frequent. Additionally in these types of defects the amount of avascular surface to be covered is more extensive, further bewildering the scene. Considering other anatomical characteristics such as thin biotype, root prominence, root proximity and decreased keratinized tissue width makes the choice of surgical treatment for multiple gingival recessions much more difficult than compared to localized gingival recession. Thus periodontal plastic surgical procedures treating various deformities in the meantime are the clinician's first decision. The modified coronally advanced flap (Zucchelli procedure) is a standout amongst the best system for Miller's class I and class II gingival recession. Sub epithelial connective tissue graft is considered as gold standard for treatment of gingival recession so combination of coronally advanced flap and sub epithelial connective tissue graft gives aesthetic and root coverage advantages along with the increase in gingival thickness and keratinized tissue. The aim of this case report was to clinically evaluate the effectiveness and the predictability of root coverage at adjacent multiple gingival recessions using a modified coronally positioned flap in combination with sub epithelial connective tissue.

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Case Report

A 36 year old male patient reported to Department of Periodontology, Bharati Vidyapeeth Deemed University Dental College and Hospital Pune with a chief complaint of tooth hypersensitivity in the maxillary anterior region for past 1 year. It increases while brushing and having cold drinks. Clinical examination showed 2 mm of Miller's Class I recession in the region of 11 12 13 21. He was also concerned about the slight yellow color on his teeth near the gum line. After thorough evaluation the patient was selected for a coronally advanced flap procedure using Zucchelli's technique with sub epithelial connective tissue graft for multiple tooth recession coverage.

G.Zucchelli and M.De Sanctis provided a new approach to cover the multiple recession defects in areas with Miller's grade I and II type defects. This modality has been proved to be of utmost success in the treatment of recessions of teeth in esthetic areas. Hence this technique was selected to be performed on this patient.

Pre surgical procedure

The entire procedure was explained to the patient also written consent was taken. A complete medical history, family history and blood investigations were carried out to rule out any contraindication for the surgery. Prepare the patient including scaling and root planing of the entire dentition and oral hygiene instructions were given to the patient.

Surgical procedure

After the administration of local anaesthesia (Lignocaine with 2 % epinephrine 1: 200,000), the incision outline was marked with a sterile pencil marker.Oblique submarginal incisions are made in the interdental areas and connected with intracrevicular incisions at the recession defects. The incisions involved 11 12 13 21 22 23 region (Fig 2 b). The incisions are extended to include one tooth on each side of the teeth to be treated to facilitate coronal repositioning of the flap. The oblique incisions over the interdental areas are placed in such a manner that the "surgically created papillae" mesial to the midline of the surgical field are dislocated apically and distally, while the papillae of the flap distal to the midline are shifted in a more apical and mesial position (Jan Lindhe)

Starting at the oblique interdental incisions, a split thickness flap is dissected (Fig 2 c). Apical to the level of the root exposures, a full-thickness flap is raised to provide maximum soft tissue thickness of the flap to be positioned coronally over the roots (Fig 1) (Bherwani C *et al* 2014). At the most apical portion of the flap, the periosteum is incised and followed by dissection into the vestibular lining mucosa to eliminate all muscle tension.

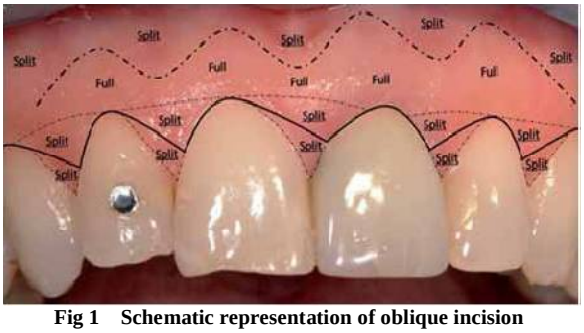

Fig 1 Schematic representation of oblique incision

For optimal and maximum root coverage with 11 a connective tissue graft was procured.The incision was extended 2 to 4 mm mesially and distally to the area of the CTG. to avoid perforation of the flap care was taken when going through the MGJ. After administration of local anaesthesia (Lignocaine with 2 % epinephrine 1: 200,000), a free SECTG was extracted from the palate (premolar to molar) using the trap door technique. Vertical incisions were given at either end of the incision to access to the underlying connective tissue. The exposed connective tissue was harvested using a scalpel and a periosteal elevator to obtain a 1.5 to 2 mm thick graft. The flap was repositioned to cover the donor site and sutured. The SECTG was placed over the prepared recipient site of 11 region (Fig 2 d). The tissue flap was coronally positioned over the graft at the level of the CEJ using interdental 5-0 mersilk nonabsorbable sutures (Bherwani C *et al* 2014) (Fig 2e).Exposed root surfaces were root planed using Gracey curets. The remaining anatomical interdental papillae was de-epithelialized to create connective tissue beds to which the surgical papillae were sutured. Pressure application for 3-4 mins was given to eliminate dead space and blot clot. Sling sutures were placed using 5-0 mersilk non absorbable sutures for the adaptation of coronally advanced flap against the teeth and interdental connective tissue beds. A periodontal dressing was applied to protect the surgical area from any injury.

Post-surgical infection control

Patients were instructed accordingly with no brushing the teeth in the treated area but to rinse with chlorhexidine solution (0.12%) twice daily for 1 min. the sutures were removed after 14 days. Plaque control was maintained by chlorhexidine rinsing for an additional 2 weeks. the patients were again instructed in mechanical tooth cleaning using a soft toothbrush and recalled for prophylaxis 1, 3 and 5 weeks after suture removal and, subsequently,once every 3 months.

Fig.2a Pre operative presentation with 15 no blade

Fig.2b Oblique interdental incisions

Fig.2c Split –full–split thickness flap raised

Fig.2d SECTG harvested in region 11

Fig.2e Sling sutures placed with 5-0 mersilk

Fig.2f 3 month post-operative view

DISCUSSION

In the etiology of dentin hypersensitivity, most important contributing factor is the exposure of root surfaces from gingival recession. The prime treatment is to cover the exposed root surfaces. To cover exposed root surfaces various surgical procedures have been introduced. The most commonly used is the 'coronally repositioned flap' introduced by Bruiestein in 1970 and modified by Allen & Miller in 1989.5 Zucchelli & Sanctis modified this technique further in 2000. In comparison with various treatment modalities, SECTG procedures shows good results and a high percentage of root coverage SECTG procedures are used as a "gold standard" for the evaluation of the safety and efficacy of new root coverage procedures (Jananni.M *et al* 2013). This case presents Zucchelli's modification of the coronally advanced flap which had better clinical and biological advantages over the conventional technique. It is an envelope type of flap without vertical releasing incisions and hence the blood supply is not compromised and there are no unaesthetic scars along incision line. Since it is also a split - full - split thickness flap, it guarantees adequate coronal advancement, good anchorage and ample blood supply to the surgical interdental papillae (Jananni.M *et al* 2013).

CONCLUSION

The basic line of defense to protect the tissue from bacterial infection is soft tissue maintainence. The aim of any therapeutic procedureds for root coverage must be to restore the tissue margin at the cemento-enamel junction also to achieve an attachment of the tissues to achieve a normal healthy gingiva. Many techniques have been proposed for isolated recession defect. However there is limited research on techniques used for root coverage of multiple adjacent recession type defects. The results of this case demonstrated that this approach to the coronally advanced flap technique in combination with Sub epithelial connective tissue graft was very effective for the treatment of multiple gingival recessions in patients with esthetic demands and dentinal hypersensitivity.

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