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Case Report

Minimize to Maximize: V Incision Technique for Isolated Root Coverage - A Case Report

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Abstract

Isolated gingival recession in anterior esthetic areas is often a great source of concern for the patient with respect to esthetics as well as dentinal hypersensitivity. The evolution of periodontal microsurgery has served an important role in allaying these concerns of both the patient as well as clinician. In this case report we introduce a novel microsurgical approach V incision technique for treatment of isolated canine recession. A modification of conventional Tarnow's semilunar technique, the results obtained over a period of 6 months were of satisfactory outcome. Patient selection and maintenance therapy are key to success for this procedure.

Keywords: *V Incision Technique; Root Coverage; Gingival Recession*

Introduction

Gingival recession describes the apical shift in the position of marginal gingiva. The causes are numerous ranging from anatomic alteration in tooth positions, developmental deformities, behavioural habits such as smoking or faulty tooth brushing techniques, iatrogenic due to orthodontic tooth movements or restorative procedures or most commonly due to periodontal disease. Isolated anterior tooth recession often become a concern for the patient in terms of dentinal hypersensitivity or for esthetic reasons.

Periodontal plastic surgery has shown enormous evolution in the past few years. The goal of surgery has shifted towards patient centric outcomes with minimal incisions, flap reflection, pain free postoperative time period with maximal esthetic benefit. Hence patient selection as well as selection of a suitable surgical technique has become a key to acquire maximal results. Periodontal microsurgery has shifted the way we approach surgical techniques. The use of operating microscopes or surgical loupes with microsurgical instruments and suture materials have enhanced the clinical skills along with minimal tissue trauma and maximal esthetic outcomes [1,2].

While connective tissue graft has always been considered the gold standard for root coverage, in the recent years' platelet concentrates have become widely used due to ease of preparation, patient acceptance and its widely publicized clinical benefits [3]. Advanced Platelet rich fibrin was introduced by Choukran., *et al.* in 2014. With a longer centrifugation time and slower centrifugation speed it forms a more tensile blood clot rich in growth factors that aid in improved angiogenesis and faster healing [4].

Coronally advanced flap has been one of the widely used root coverage procedure. Tarnow introduced the semilunar coronally advanced flap technique in 1952 [5]. With a simple semilunar shaped incision it involves creating a movable flap that is advanced coronally over the underlying exposed root surface. Though the lack of sutures in this technique may have increased the simplicity and ease of performing the technique, it often leads to displacement of coronally advanced flap and incomplete root coverage. A wide semilunar incision may also disrupt the blood supply of the advanced flap and lead to inconsistent results.

Hence we modified the original tarnows semilunar incision into a V shaped incision. This increased the mobility of the coronally advanced flap, improved angiogenesis at the site while retaining the ease of the conventional Tarnows technique. This case report presents the use of V shaped incision for isolated root coverage in anterior teeth with the use of orthodontic buttons using microsurgical approach with dental loupes.

Case Report

A 30-year-old male patient reported to the Department of Periodontology, Meenakshi Ammal Dental College Chennai with a complaint of hypersensitivity to cold and sweet foodstuff in upper left front tooth for the past 6 months. The patient reported no previous dental history or adverse medical history. On Intraoral examination Miller's class I Gingival recession was present in relation to tooth 23 (Figure 1). Phase I therapy was initiated with patient being given instructions on proper tooth brushing technique. The patient was reviewed 4 weeks after phase I therapy and root coverage procedure for tooth 23 was planned. The patient was concerned about post surgical discomfort as well as esthetic outcome for the treatment planned. Hence we employed the use of a microsurgical approach with dental loupes, using a novel technique - The V incision technique along with the use of Advanced PRF membrane.

The procedure was explained to the patient and a written informed consent was obtained.

Procedure

Preoperative preparation included thorough scaling and root planing. The clinical parameters evaluated included: Probing depth, Clinical attachment level, Recession depth (RD) and Recession width (RW). These were measured using Williams probe (Figure 1). Patient was asked to pre-rinse with 0.2% chlorhexidine mouth rinse.

Figure 1: *Pre-operative view.*

Infiltration local anesthesia (Lidocaine with 1:80000 epinephrine) was given at the region of tooth 23. The surgical procedure was performed under dental loupes with a 2.5 x magnification using microsurgical instruments and suture materials.

Preparation of advanced platelet rich fibrin

10 ml of venous blood of the patient is obtained. It is then centrifuged at 1500 rpm for 14 minutes. At the end of centrifugation cycle the test tube shows 3 layers. Upper layer is the plasma, middle layer is the fibrous A-PRF clot and the 3rd layer at the bottom is RBC's.

Surgical technique

A submarginal V shaped incision was given 2 mm above the mucogingival junction using a microsurgical blade. The incision does not extend to involve the interdental papilla. A crevicular incision is given for the same tooth and the supraperiosteal flap is tunnelled (Figure 2). Once the flap is adequately mobile it can be coronally advanced easily without any resistance. Advanced PRF obtained from patient's venous blood is placed under the tunnelled flap and secured over the defect area (Figure 3). The flap is coronally advanced and stabilized using 6-0 polyglalactin absorbable sutures and orthodontic button placed on facial surface of tooth 23 (Figure 4). Apically the incision is sutured with 6-0 polygalactin interrupted sutures. Periodontal pack is place over the surgical area (Figure 5). Patient was educated on postsurgical plaque maintenance. Antibiotics and analgesics were prescribed postoperatively for 5 days along with 0.12% chlorhexidine mouthwash. The patient was recalled after 10 days for suture removal and then recalled every month for the 1st three months and re-evaluated again at 6 months. Clinical parameters were re-evaluated at 3 months and 6 months postoperatively (Table 1). Pre-operatively recession depth (RD) was 3 mm and recession width (RDW) was 3 mm. At 3 months RD was 0.5 mm and RDW was 0 mm. At 6 months complete root coverage was obtained with RD - 0 mm and RDW -0 mm (Figure 6). The patient is on follow up and the results have shown to be well maintained over time.

Figure 2: *Incision placed.*

Figure 3: *Tunnelling done.*

Figure 4: *A-PRF membrane placed.*

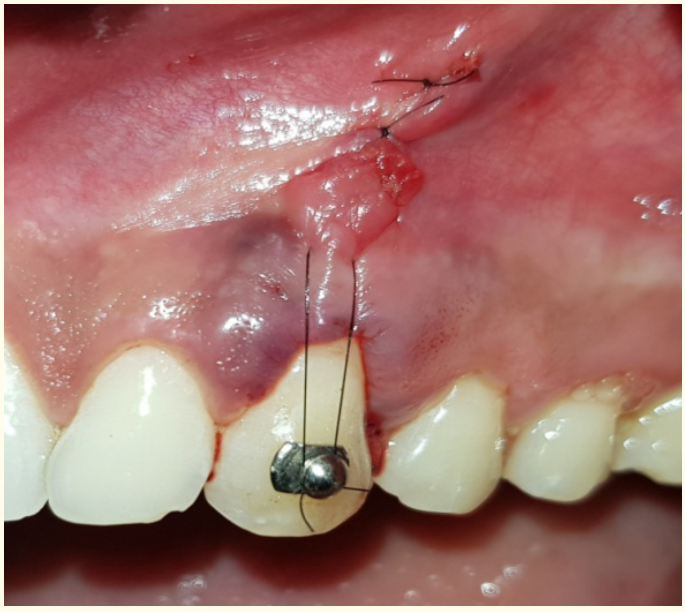

Figure 5: *Flap sutured.*

Figure 6: *3 months post-operative view*

Parameters	Pre-operative	Post-operative 3 month	Postoperative 6 months
Probing Depth	1 mm	2 mm	1 mm
Clinical attachment level	4 mm	2 mm	1 mm
Recession depth	3 mm	0.5 mm	0 mm
Recession width	3 mm	0 mm	0 mm

Table 1: *Evaluation of clinical parameters.*

Discussion

The evolution of periodontal microsurgery has changed the face of periodontal plastic procedures. Its works on three broad principles - Illumination, magnification and instrumentation. These 3 principles combined have resulted in shorter surgical time, better operator ergonomics with enhanced surgical skills, minimal tissue trauma and improved wound healing rates with exceptional esthetic outcomes [6].

The concept of minimal invasive surgery was introduced by Harrel and Ress in 1995 [7]. For root coverage procedures, minimally invasive surgical techniques have shown a greater patient acceptance, minimized soft tissue scarring and utilized various allografts that eliminate the need of palatal donor site morbidity. One of the earliest techniques was proposed by Allen., *et al.* with the Pouch and Tunnel technique [8]. In recent times we have Chao's Pin hole technique and gum drop technique for multiple recessions [9,10]. Tarnow's semilunar coronally repositioned flap is considered the technique of choice for Miller's class I and class II isolated anterior recession. However, a wider semilunar incision, inadequate supraperiosteal tunnelling with lack of sutures can often affect the stability of displaced flap and compromise the blood supply.

The use of small V shaped incision with microsurgical approach preserves the blood supply at the site. Since we do not involve the interdental papilla there is adequate blood supply at the site with no chances of postoperative iatrogenic black triangles in anterior esthetic area. One of the main disadvantages of Tarnow's technique is its limitation of use only in maxillary region. In this technique since the incision is small and we support the displaced flap with microsurgical sutures, the technique can be applicable for use in mandibular region as well.

The use of Advanced platelet rich fibrin gives an added advantage of improved vascularity and enhanced healing as it is rich with growth factors such as vascular endothelial growth factor (VEGF), platelet derived growth factor (PDGF), transforming growth factor (TGF-β) and fibroblast growth factor (b-FGF) among many others. The A-PRF blood clot is highly rich in neutrophilic granulocytes. These stimulate the migration of host monocytes into the site and facilitate removal of any necrotic remnants along with revascularization by recruitment of growth factors such as VEGF [11]. An additional benefit of using platelet concentrates is improvement in gingival biotype. Aroca., *et al*. showed a gain in gingival thickness with the use of PRF membrane with a coronally advanced flap [12].

In our study we utilized orthodontic buttons to stabilize the displaced flap. Ozcelik., *et al.* showed that orthodontic buttons when used in conjunction with CAF helps to stabilize the flap in its most coronal position and well as preserves the original morphology of gingival margin thus enhancing the results of the root coverage procedure [13].

The evaluation of patient was done at 1,3- and 6-month intervals. The patient showed a 100% root coverage at the 6 month recall evaluation with stability of results obtained after the procedure. The patient showed minimal postoperative discomfort, a result of using the microsurgical approach.

One of the limitations of using this technique is it is highly technique sensitive. There needs to be atleast 2 mm of keratinized gingiva for adequate displacement of tissue. This technique is only applicable for single tooth recession. The use of microsurgery definitely involves a learning curve and may take longer as compared to a conventional technique. Since this is a stand-alone case report we need to apply this technique in more number of patients to see its long standing effectiveness.

Conclusion

This case report presents the use of a novel microsurgical approach to treat isolated gingival recession in anterior esthetic region. This technique resulted in optimized root coverage and enhanced esthetic outcome with a satisfactory patient acceptance. However controlled studies with a longer evaluation time are needed to make a definite conclusion about the effectiveness of this procedure. As the conventional periodontal plastic surgical procedures evolve with time, the use of minimally invasive microsurgical approaches such as this will aid the clinician to achieve more predictable root coverage and patient centred outcomes.

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