

Periodontology

Comparative evaluation of root coverage (vista technique) with PRF v/s Collagen membrane



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Abstract

|| Brief Background

Gingival recession presents with breakdown of both soft and hard tissues and can cause major functional and esthetic problems. Many therapeutic options are available for treatment of gingival recession defects with predictable outcomes in isolated defects and especially multiple recession defects, presents a challenge because several recession defects must be treated at a single surgical session to minimize patient discomfort. Current case series introduces a novel, minimally invasive approach, i.e. vestibular incision subperiosteal tunnel access (VISTA) in combination with platelet-rich fibrin (PRF) membrane and collagen membrane in the treatment of gingival recession.

|| Materials and Methods

Seven patients with multiple GRs were selected for this case series. The VISTA technique allowed coronal repositioning of the gingival margin, which was then stabilized by the coronally anchored suturing technique. PRF membrane was inserted inside the subperiosteal tunnel in 4 patients and collagen membrane was inserted in 3 patients, and the vertical incision was sutured. Patients were kept under observation for 6 months.

|| Discussion

Gingival recession is clinically manifested by an apical displacement of gingival tissues, leading to root surface exposure, which often causes poor esthetics, increased susceptibility for root caries and dentinal hypersensitivity. Treatment of gingival recessions has become an important therapeutic issue due to the increasing number of cosmetic requests from patients.

|| Summary and Conclusions

This use of PRF membrane along with the VISTA technique allows clinicians to successfully treat multiple GR defects.

|| Key Words

Fibrin; gingiva; gingival recession; membranes; sutures; wound healing.

|| Introduction

Gingival recession is an apical shift of gingival margin with exposure of the root surface to the oral cavity¹. It can be treated using a variety of therapeutic options with varying degrees of success, depending on the initial presentation and treatment approach. Each technique has its own indications, contraindications, advantages, disadvantages, and success rates. Connective tissue graft (CTG) is considered the gold standard². In the cases of multiple adjacent gingival recessions, patients request that treatment is done in a single stage. The surgical treatment of such recessions requires a larger volume of donor connective tissue.

This tissue is taken from the palate which greatly increases the difficulty and the probability of complications throughout the surgery and even afterwards. In order to minimize these disadvantages, the method of GTR (guided tissue regeneration) with biodegradable and non-biodegradable membranes and biologically active substances such as acellular dermal matrix allograft (ADM), enamel matrix derivate (EMD), platelet-rich plasma (PRP), platelet-rich fibrin (PRF) and more has been introduced. The platelet-rich fibrin (PRF) was first introduced for the first time by Choukroun et al. in 2001 and is regarded as a second generation platelet concentrate.

This autogenous biomaterial slowly releases growth factors which last for at least 7-28 days. In patients with multiple contiguous gingival recession defects, these disadvantages are even more problematic thus using a technique that is ideal for multiple root coverage is essential. One such technique is the vestibular incision subperiosteal tunnel access (VISTA) Technique.

The purpose of the current report is to compare the treatment of multiple recession defects in the maxillary anterior region using VISTA technique with PRF and VISTA with collagen membrane.

Clinical Presentation

Seven patients with a chief complaint of poor aesthetics and hypersensitivity attributable to gingival recession were treated at the Department of Periodontology, Terna Dental College, Nerul, Navi Mumbai. The patients presented with Class I and Class II multiple recession defects in the maxillary anterior region. At the initial visit, thorough scaling and root planing was performed, and the patient was put on

strict oral hygiene maintenance and recalled after 1-week. The recession height was recorded mid-buccally, preoperatively and 6 months postoperatively. PRF was used as a barrier membrane for GTR in four patients whereas Collagen membrane (Periocol®) was used in three patients as a barrier membrane for GTR.

PRF Procurement

The preparation of PRF was performed as per the protocol developed by Choukroun et al³. Intravenous blood (10mL; antecubital site) was centrifuged using a table top centrifuge at 3,000 rpm (1,000g) for 10 minutes. After centrifugation, the PRF clot was removed from the tube using sterile tweezers, separated from the red blood cell (RBC) base (leaving a small RBC layer) using scissors, and transferred onto sterile gauze. The PRF was obtained in the form of a membrane by squeezing out the fluids in the fibrin clot⁴.

Surgical Technique

The selected cases exhibited multiple recession defects. The VISTA approach began with a vestibular access incision in the midline of the maxillary frenum. Through this incision, a subperiosteal tunnel was created, exposing the facial osseous plate and root dehiscences. This tunnel was extended at least one or two teeth beyond the teeth requiring root coverage to mobilize gingival margins and facilitate coronal repositioning. Additionally, the subperiosteal tunnel was extended interproximally under each papilla as far as the embrasure space permitted, without making any surface incisions through the papilla.

The mucogingival complex was then advanced coronally and stabilized in the new position with the coronally anchored suturing technique, which entails placing a horizontal mattress suture at ~ 2 to 3 mm apical to the gingival margin of each tooth (or within the band of keratinised tissue). The suture was tied to position the knot at the mid-coronal point of the facial aspect of each tooth, which was then secured with the help of composite resin to prevent apical relapse of the gingival margin during the initial stages of healing.

Once coronal advancement of the gingival margin was established, the freshly prepared PRF membrane or a resorbable collagen membrane was trimmed and inserted inside the subperiosteal tunnel with an elevator. Stabilization of the membrane was achieved

Vista with PRF

Case 1



Fig.1(Case 1): Pre Operative



Fig.2(Case 1): Six-month recall

Case 2



Fig.1(Case 2): Pre Operative



Fig.2(Case 2): Six-month recall

Case 3



Fig.1(Case 3): Pre Operative



Fig.2(Case 3): Six-month recall

Case 4



Fig.1(Case 4): Pre Operative



Fig.2(Case 4): Six month recall

Vista with Collagen Membrane



Fig.1(Case 1): Pre Operative



Fig.2 (Case 1): Six month recall

Case 2



Fig.1 (Case 2): Pre Operative



Fig.2 (Case 2): Six month recall

by the application of gentle pressure for 3 minutes. The vertical incision was then approximated and sutured. Sutures at the access incision were removed after 1 week, and coronally anchored bonded sutures were removed at the 3-week postoperative visit.

Clinical Outcomes

Six-months after surgery, the root coverage, with a significant gain in clinical attachment level was seen with all the seven patients. Mean gingival tissue thickness and Keratinised tissue width also increased

Case 3



Fig.1 (Case 3): Pre Operative



Fig.2 (Case 3): Six month recall

significantly. Tissue at the site appeared healthy, with no visible signs of inflammation. But the gingival recession defects treated using PRF showed a lot better results than those treated using a resorbable collagen membrane.

|| Discussion

New materials and techniques are currently being developed to predictably satisfy patient-centred aesthetic demands⁵. Treatment of gingival recessions has become an important therapeutic issue due to the increasing number of cosmetic requests from patients⁶. The patient's aesthetic demands, due to exposure during smiling or function, of portions of the root surface are the main indication for root coverage procedures.⁶ Another factor to be considered is that gingival recession is very seldom localized to a single tooth.⁶ The minimally invasive VISTA approach affords various advantages in that regard. The VISTA approach overcomes some of the short-comings of intrasulcular

tunnelling techniques used for periodontal root coverage⁷. The remote incision reduces the possibility of traumatizing the gingiva of the teeth being treated.⁷ Critical to the success of VISTA is a careful subperiosteal dissection that reduces the tension of the gingival margin during coronal advancement while at the same time maintaining the anatomical integrity of the interdental papillae by avoiding papillary reflection.⁷

An important technical difference between the VISTA and other tunnelling approaches and more classical techniques of gingival augmentation is the degree of coronal advancement of the gingival margin advocated during the procedure.⁷ As noted earlier, the gingival margin, is advanced to the most coronal level of the adjacent interproximal papillae rather than to the cemento-enamel junction. Sutures are then secured to the facial aspect of each tooth; effectively preventing apical relapses of the gingival margin during the initial stages of healing. In all the cases presented here, apical migration of the gingival margin over relatively long periods of follow-up was either minimal or nonexistent with this tunnel procedure. The rigid fixation of the gingival margins introduced with the present coronally anchored suturing technique minimizes micro motion of the regenerative site.⁷ Reduction of micro motion has proven to be a major advantage of the present technique over conventional methods, where gingival margin may be subject to displacement during facial movements.⁷ In VISTA technique, it was also possible to treat multiple recession defects without requiring secondary harvesting procedures. In a study by Zadeh⁷ (2011), they used β -TCP and PDGF in the VISTA technique. In our study we used a PRF membrane which is an easy-to-procure, economical, autologous healing biomaterial. When used along with VISTA technique, it appears to improve biotype and successfully treat multiple gingival recession defects.

|| Conclusion

To conclude, this technique can be used successfully in the treatment of multiple gingival recessions as an alternative to some of the limitations of the current techniques that include morbidity associated with harvesting of autogenous donor tissues and scar formation at the recipient site resulting from surface incisions. Further clinical data and long term follow up provide evidence that PRF membrane provides better results than collagen membrane.

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