

Vestibular incision subperiosteal tunnel access and multilayered advanced platelet rich fibrin membrane for management of multiple gingival recessions: A Novel Case Report

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Abstract

Treatment of multiple recession defects on the lingual is challenging owing to the site-specific anatomical features of this region. Surgical approaches based on the use of subepithelial connective tissue grafts are considered the “gold standard” for the treatment but represent various complications and morbidity. Various techniques have been suggested for the treatment of multiple adjacent recessions with less patient discomfort and enhanced esthetics. Advanced platelet-rich fibrin (A-PRF) has been shown to promote soft-tissue healing. A-PRF is a fibrin matrix network, in which platelets are trapped and release a high amount of growth factors which take part in soft tissue and hard tissue repair and regeneration. The current case report introduces a novel, minimally invasive predictable approach applicable for both isolated as well as multiple defects with the use of the (vestibular incision subperiosteal tunnel access) technique in combination with a multilayered A-PRF membrane.

Keywords: Advanced platelet-rich fibrin, gingival recession, subepithelial connective tissue graft

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INTRODUCTION

Gingival recession is an apical transference of the gingival margin with exposure of the root surface to the oral cavity.^[1] Indications for root coverage are a concern for esthetics, increased dentinal hypersensitivity, prevention of root caries and cervical abrasion, and to improve plaque control efforts.^[2] The treatment of gingival recession associated with multiple teeth poses an inordinate challenge to clinicians due to the presence of extensive avascular root surface, thin biotype, and diminished keratinized tissue.^[3] Furthermore, the requirement of larger connective tissue

from the palate increases the difficulty and the probability of complications.^[4]

Various intrasulcular tunnel techniques have been tried for the management of multiple recession defects. Nevertheless, trauma to sulcular epithelium may lead to unfavorable healing consequences.^[5] To overcome these limitations, the vestibular incision subperiosteal tunnel access (VISTA) approach was introduced. (Homayoun H. Zadeh, 2011) Shortcomings owing to the connective tissue graft have led to the use of various alternatives such as platelet-rich fibrin (PRF)^[6] to accelerate healing and enhance clinical outcomes. In 2013, novel blood-derived growth factors

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known as advanced PRF (A-PRF) were introduced.^[7] The ease of use (single spin without an anticoagulant), increased the presence of monocytes/macrophages, and growth factors, make A-PRF one of the predominant platelets concentrate which has become a focus of current studies.

Therefore, the purpose of this article is to present a pilot case of minimally invasive VISTA reinforced with multilayered A-PRF in the management of gingival recession defects.

CASE REPORT

A 35-year-old male reported to the department of periodontics with a chief complaint of sensitivity and unesthetic appearance in the upper left front tooth region for the past 3 months. Intraoral examination revealed Miller's class 1 gingival recession with relation to #21, #22, and #23 [Table 1]. The gingival biotype was measured and found to be thin^[8] (<1 mm) [Figures 1 and 2 and Table 1]. The patient was explained about the various treatment options and he desired minimal surgical trauma. Hence, VISTA in combination with A-PRF membrane was opted. Routine blood investigations were carried out, and written consent for the procedure was obtained from the patient.

Surgical procedure

Phase-I periodontal therapy was carried out 1 week before the surgical procedure. Root conditioning using 24% ethylenediaminetetraacetic acid was performed to remove the smear layer. Following administration of local anesthesia (2% Lignocaine with 1:80000 adrenaline), an access incision in the maxillary anterior frenum was given using a 15c blade [Figure 3], followed by elevation of a subperiosteal tunnel using a set of instruments (VISTA #1, # 2, #3, and #4) exposing the facial osseous plate and root dehiscences. Tunneling was extended up to #11 mesially till #24 distally, beyond the mucogingival junction apically and through the gingival sulci of the teeth coronally. This provided for adequate mobilization [Figure 4]. The mucogingival complex was then advanced 2–3 mm coronal to the cementoenamel junction of each tooth and stabilized in the new position using coronally anchored sutures (6-0 Trulene). Following this, three freshly prepared A-PRF membranes (1300 rpm/8 min)^[7] were stacked and pressed with a metal plate to attain a homogenous density [Figure 5]. This was then packed inside the subperiosteal tunnel [Figure 6], and apical periosteal mattress sutures were given to stabilize the membranes on the root surface. The vertical incision was then approximated and sutured [Figure 7]. Analgesics were prescribed as required, and the patient was advised to 0.2% chlorhexidine gluconate mouth rinse twice daily for 3 weeks. Sutures at the access



Figure 1: Preoperative recession depth with respect to tooth #21, #22, #23



Figure 2: Preoperative measurement of recession depth using UNC-15 Probe



Figure 3: Showing vertical access incision

incision were removed after 1 week, and coronally anchored sutures were removed at the 3-week postoperative visit.

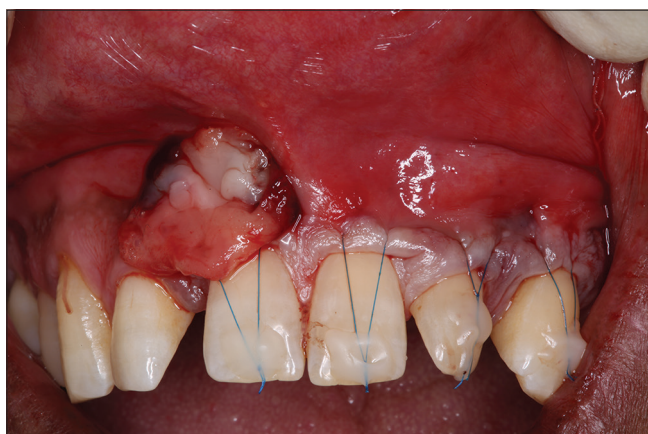
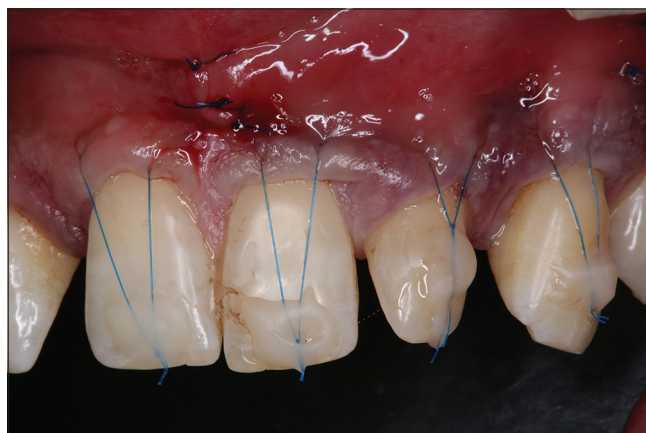
Clinical outcome

At 1 month, the wound healing was uneventful, and complete root coverage was obtained in all the involved

Table 1: Clinical parameters preoperative and 3 months postoperative

Clinical parameters	Tooth number					
	21		22		23	
	Preoperative (mm)	Postoperative (mm)	Preoperative (mm)	Postoperative (mm)	Preoperative (mm)	Postoperative (mm)
Recession depth	2	0	1	0	3	0.5
WKG	2.5	4.5	2	3	2.5	5
GT*	1	2	0.5	1.5	0.7	2

*GT>1.5 mm=Thick, GT<1 mm=Thin.^[8] GT: Gingival thickness, WKG: Width of keratinized gingiva

**Figure 4:** Coronal advancement of the mucogingival complex**Figure 5:** Three freshly prepared A-PRF membranes. A-PRF: Advanced platelet-rich fibrin**Figure 6:** Placing of multilayered A-PRF membranes inside the subperiosteal tunnel. A-PRF: Advanced platelet-rich fibrin**Figure 7:** Vertical incision approximation and suturing

teeth. At 3 months, the results were stable and the patient conveyed contentment as dental hypersensitivity was no longer persisted [Figure 8]. Furthermore, the gingival biotype was observed to be thick and the width of keratinized gingiva (WKG) had increased [Table 1].

DISCUSSION

New materials and techniques for the management of gingival recession are constantly being developed to minimize surgical procedures and enhance esthetics.^[9] The minimally invasive VISTA approach provides a number of advantages for the treatment of multiple recession defects including adequate access to the underlying bone and root dehiscence

by single vestibular vertical incision, maintenance of the integrity of interdental papilla, ample degree of coronal advancement, and minimal micromotion of the recipient site.^[5] Plenty of data exists on fibrin-assisted soft-tissue augmentation using PRF for recession coverage.^[6,7,10] When connective tissue grafts were compared to PRF for the management of gingival recession, no statistical difference in terms of root coverage and zone of keratinized tissue was observed in the course of 6 months. Furthermore, comfort for patients was significantly higher with the PRF group because of no intraoral donor site.^[6] Hence, PRF can also be suggested in treating patients with inadequate soft-tissue thickness at the graft donor site and in patients unwilling to



Figure 8: Three months postoperative view showing complete root coverage

undergo the graft harvesting procedure.^[11] Various authors have used a combination of the VISTA technique with PRF membrane and concluded that it can be successfully used for the treatment of multiple gingival recessions.^[12,13] Studies have also shown that VISTA with PRF and VISTA with connective tissue grafts had equally improved clinical outcomes with no significant differences between the two groups.^[14] In the present case report, multilayered A-PRF membranes were used along with the VISTA technique and this is possibly the first report of its own kind. The A-PRF membranes based on the “slow-speed concept” provide an increased amount of platelets, growth factors including vascular endothelial growth factor, bone morphogenic proteins, and extracellular matrix proteins as compared to the conventional PRF protocol. Furthermore, it offers local immunomodulation and entrapment of stem cells which promotes local regeneration.^[15] These properties account for complete root coverage and stable results. Furthermore, the PRF membrane is quite thin and resorbs completely within 21 days. The rationale of using multiple layers was to provide a denser remodeling matrix with an increased volume which was probably be the reason for the improvement in the patient’s gingival biotype.

CONCLUSION

It can be concluded that the addition of multilayered A-PRF-membrane along with VISTA for the management of multiple gingival recessions is beneficial and provided complete root coverage, enhancement of WKG, and gingival biotype. Clinical studies with a longer follow-up period and larger sample sizes are needed for further validation of this technique.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have

given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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