

# Microsurgical Approach for the Coverage of Gingival Recession Defects using Vestibular Incision Subperiosteal Tunnel Access (VISTA™) Technique- A Case Report

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## ABSTRACT

Gingival recession which is described as the loss of gingival attachment due to apical migration of the gingival margin from the cemento-enamel junction leading to the exposure of the root surface, is one of the most prevalent diseases in the world. The treatment of gingival recession is therefore essential to achieve good aesthetics, relieve root hypersensitivity, prevent root caries and cervical abrasions. Till date, many root coverage techniques have been implicated for the coverage of recession defect. This case report focuses on the Vestibular Incision Subperiosteal Tunnel Access (VISTA™) technique for the root coverage procedure and simultaneous application of the microsurgical principles helps in executing the procedure in the most minimally invasive manner. Here, this technique has been accomplished in a 24-year-old female, with the chief complaint of poor aesthetics in the region of maxillary central incisors due to recession defects. Furthermore with the use of microsurgical instruments and magnifying loupes; complete coverage of the recession defects was achieved in a single stage surgery along with superior aesthetics, causing minimal trauma to the patient that was followed by an uneventful inflammatory phase.

**Keywords:** Aesthetics, Magnification, Platelet rich fibrin

## CASE REPORT

A 24-year-old healthy female patient reported to the Department of Periodontology, Shree Guru Gobind Singh Tricentenary University, Dental Hospital and Research Institute, Gurugram, India, with the chief complaint of poor aesthetics and sensitivity to cold fluids in the upper front teeth region since two to three months which gradually increased with time. On clinical examination, gingival recession defects of 1-2 mm were noticed in relation to the maxillary central incisors 11, 21. Radiographic examination revealed no bone loss. Patient's oral hygiene was well maintained.

All the clinical parameters were recorded- Plaque index, probing pocket depth, recession width, recession depth and clinical attachment loss, and gingival biotype, using Hu-Friedy's™ UNC-15 periodontal probe [1,2]. A diagnosis of Miller's class I gingival recession [3] [Table/Fig-1a,b] was thus made.



**[Table/Fig-1]:** a) Baseline recession depth wrt 11; b) Baseline recession depth wrt 21.

For the treatment of gingival recession, till date a number of root covering approaches have been suggested like advanced flap techniques, pedicle flap techniques, free gingival graft procedure, and sub-epithelial connective tissue graft procedure [4], but in the present case, the decision of performing VISTA™ technique (Zadeh H in 2011) was made so as to get an access to the multiple recession defects in the aesthetic area in a single-stage surgery with the preservation of interdental papillae simultaneously [5]. The patient was thoroughly explained about the procedure and an informed written consent was taken before starting the procedure.

**Surgical technique:** A presurgical rinse was advised using 0.2% chlorhexidine gluconate solution (Hexidine mouthwash, ICPA Health Products Ltd). Disinfection of the extraoral surfaces using 10% povidone iodine was done and local anaesthesia (Lignocaine 2% adrenaline, 1:200000; Indoco Remedies Ltd.) was administered near the operatory site to ensure anaesthesia at the site. The [Table/Fig-2] shows the armamentarium used in the procedure.

With the help of 15-C blade, surgical access to the site was made using the VISTA™ technique, where a small vertical vestibular access incision was made [Table/Fig-3]. The depth of the incision was extended up to the periosteum, so that a subperiosteal tunnel could be prepared between the periosteum and the bone with the help of a microsurgical periosteal elevator (Hu-Friedy™-[Table/Fig-4]). The subperiosteal tunnel was extended one tooth adjacent to the site of operation i.e from the mesial of the right maxillary lateral incisor to the mesial of the left maxillary lateral incisor. Adequate elevation of the tunnel was made beyond the mucogingival junction and through the gingival margins to facilitate adequate coronal repositioning of the tunnel without any tension during the advancement. The tunnel was also extended interproximally below each papilla without making any incisions, thereby preserving the anatomy of the papillae.



**[Table/Fig-2]:** Armamentarium: 1. Magnification loupes (Prism loupes, Carl Zeiss 3.5x); 2. Microsurgical papilla elevator (Hu-friedey™); 3. Microsurgical periosteal elevator (Hu-friedey™); 4. Microsurgical tissue holding forceps (Hu-friedey™); 5. Microsurgical needle holder (Hu-friedey™); 6. Ophthalmic blades-crescent shaped and 15-C surgical blade.

**[Table/Fig-3]:** Vestibular access incision. (Images from left to right)

To augment the healing [6], a Platelet-rich fibrin (PRF) membrane was freshly prepared by collecting 5 mL of whole venous blood in two sterile vacutainer tubes without any anticoagulant added in it. The tubes were then placed in the centrifugal machine at 3000 rpm for 10 minutes [7] [Table/Fig-5]. PRF was collected and trimmed to fit the recipient site, which was then carefully inserted into the subperiosteal tunnel and repositioned below the gingival margins of the surgical site [Table/Fig-6]. Coronally advanced mucogingival complex was then stabilised using 5-0 silk sutures in a manner that the suture knots were stabilised at the mid-coronal point of left central incisor, by placing a composite button made of the Ivoclar bulkfill composite [Table/Fig-7].



[Table/Fig-4]: Subperiosteal tunnel preparation.  
[Table/Fig-5]: Platelet rich fibrin. (Images from left to right)



[Table/Fig-6]: PRF placement in subperiosteal tunnel preparation.  
[Table/Fig-7]: Sutures secured with composite button. (Images from left to right)

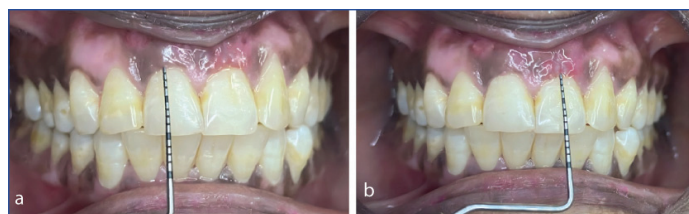
**Postoperative care:** The patient was prescribed with amoxicillin 500 mg thrice daily for five days and zerodol SP twice daily for next three days. Patient was further instructed not to pull or stretch the lip and keep the site of surgery undisturbed. Chlorhexidine gluconate mouthwash (0.12%) was prescribed for mouth rinse, twice daily for two weeks. The patient was followed-up and the sutures were removed second weeks after the surgery [Table/Fig-8]. The patient was then instructed to perform the roll brushing technique using a soft-bristled toothbrush [8]. The patient was further evaluated postoperatively at one month [Table/Fig-9 a,b] and after six months [Table/Fig-10 a,b] and all the parameters were again recorded. Oral hygiene instructions were reinforced during every visit. The [Table/Fig-11] depicts the clinical findings recorded preoperatively and on follow-up visit at six months, displaying complete root coverage.



[Table/Fig-8]: Postoperative healing at second weeks.

## DISCUSSION

Gingival recession is a common clinical feature present in the population, affecting single or multiple root surfaces. It could occur due to traumatic tooth brushing, traumatic occlusion or the



[Table/Fig-9]: Postoperative reduction of recession after one month a) 11, b) 21.



[Table/Fig-10]: Postoperative reduction of recession after six months month a) 11, b) 21.

S. No.	Clinical findings	Preoperative		Postoperative (Six months)	
		11	21	11	21
1.	Plaque index score	1	1	1	1
2.	Probing depth (mm)	1	1	1	1
3.	Recession depth (mm)	1	2	0	0
4.	Recession width (mm)	3	5	0	0
5.	Clinical attachment level (mm)	2	3	1	1
6.	Gingival biotype	Thick	Thick	Thick	Thick

[Table/Fig-11]: Clinical parameters recorded preoperatively and postoperatively.

periodontal disease, that would eventually lead to the exposure of the root surfaces causing aesthetic concerns to the patient; along with increased incidence of sensitivity and root caries [3]. Thus, the treatment of the underlying cause along with the coverage of the recession defect makes it essential for the clinician to relieve the patient's problems [3].

Many root coverage procedures have been proposed to treat various recession defects, VISTA™ technique given by Zadeh H in 2011, has been specified for the coverage of multiple recession defects being corrected in a single stage surgery, especially in the aesthetic zone [5]. The surgical access to the incisors was obtained through a vestibular vertical incision with the subsequent preparation of a subperiosteal tunnel, which was then coronally repositioned beyond the gingival margins to achieve coverage of the recession defects. The involvement of a single small incision differentiates it from other techniques in being least invasive and the avoidance of a second site of surgery as in case of the connective tissue grafts. Also, since the incision does not involve the interdental papillae, it helps us preserve the gingival tissues without hampering their anatomy [5]. The use of a small vertical incision has proved to be a conservative approach in the surgical procedure, thereby increasing the patient's compliance as well.

Zadeh H, used similar technique on a 48-year-old female who presented with Miller's class II recession defect of 4 mm at the maxillary right central incisor and a defect of 2 mm at the left central incisor. And in the tunnel prepared, a resorbable collagen membrane followed by  $\beta$ -TCP (beta-Tricalcium phosphate) embedded with rhPDGF-BB (recombinant platelet derived growth factor-BB), was placed for stimulating the healing potential of the periodontal tissues [5]. Complete coverage of the multiple recession defects was achieved in this case in a single step surgical procedure using the VISTA™ technique.

The use of a magnification system (Prism loupes-Carl Zeiss, 3.5x) and the microsurgical help in meticulous handling of the periodontal tissues, inflicting minimal trauma to the operating site [9]. This further

leads to passive closure of the wound and the patient experiences a comfortable inflammatory phase. These factors together help us achieve superior aesthetic outcomes, imperative to the clinician and the patient [9].

## CONCLUSION(S)

The result of the present case report indicates that VISTA™ technique used along with PRF can be a substitute for the conventional techniques for the root coverage procedures as this technique has been found to be much more minimally invasive, covering multiple recession defects in one step procedure simultaneously preserving the aesthetics of the concerned area. The use of an autologous material PRF, further enhances healing as it releases a large number of growth factors that are essential for regeneration of the periodontal tissues.

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