

## “PRF - BOON IN REGENERATION” – A NOVEL APPROACH IN ENHANCEMENT OF ATTACHED GINGIVA

### Dental Science

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### ABSTRACT

**Background:** To maintain gingival health and oral hygiene, augmentation of attached gingiva is performed on routine basis.

**Aim:** To enhance attached gingiva and vestibular deepening with a technique using platelet rich fibrin (PRF).

**Method:** PRF prepared using 10ml of blood from antecubital site was placed over the prepared recipient site and stabilised with suture.

**Result:** A gain of 3mm in keratinised gingiva was achieved using vestibular extension with PRF technique.

**Conclusion:** PRF for augmentation of keratinized gingiva promises to be less technique sensitive with good healing and patient compliance.

### KEYWORDS

Platelet Rich Fibrin, Attached gingiva, Vestibuloplasty.

### INTRODUCTION:

Periodontal plastic surgery is defined as the surgical procedures performed to correct or eliminate anatomic, developmental or traumatic deformities of gingiva or alveolar mucosa.<sup>[1,2]</sup> The term mucogingival surgery was initially introduced in the literature by Friedman.<sup>[3]</sup> Later in 1996 world workshop in clinical periodontics renamed mucogingival surgery as periodontal plastic surgery<sup>[1]</sup>, a term originally proposed by Miller in 1993.<sup>[2]</sup>

Despite having almost no attached gingiva some patients perform good oral hygiene and maintain gingival health. However, for individuals with less than optimal oral hygiene, oral health can be maintained by augmenting keratinised gingiva and vestibuloplasty. Vestibular deepening procedure for increasing keratinised gingiva involves incising at mucogingival junction to deepen the sulcus. The most common standard procedures for increasing attached gingiva are sub-epithelial connective tissue graft, free gingival graft, vestibuloplasty and rotated pedicle flap. However, drawbacks of gingival and palatal donor graft include retaining their original tissue characteristics, delayed healing, tissue morbidity and unaesthetic appearance.

PRF is a three dimensional architecture belonging to second-generation autogenous leukocyte. Dohan et al developed PRF in 2001 and preparation protocol given by Choukron et al. It is composed of cytokines, leukocytes, transforming growth factor-beta, vascular endothelial growth factor, platelet derived growth factor, glycoprotein in a meshwork of dense fibrin. Its use in hard and soft tissue augmentation has been very popular in recent years. Promising results and good patient compliance have made us use this PRF as an adjunct for vestibular deepening procedure in mandibular anterior teeth.

### CASE REPORT

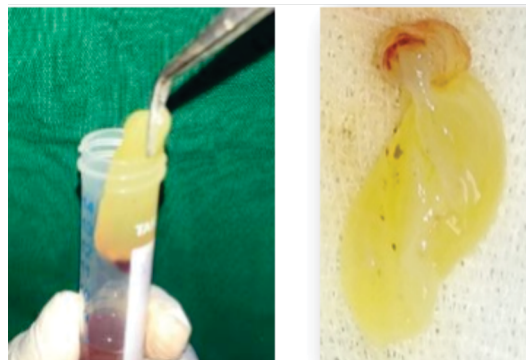
A 23-year-old male patient reported to the Department of Periodontology with chief complaint of deposits in relation to lower front teeth and inability to perform oral hygiene. Intra oral examination revealed moderate deposition of calculus, plaque and inflamed gingiva over 31 and 41 with inadequate keratinised gingiva of one mm. Phase I periodontal therapy including scaling and root planing was carried out. Chlorhexidine digluconate mouth rinse (0.2%) and oral hygiene instructions were given. Patient was explained on the importance of keratinised gingiva for gingival health and motivated for augmentation of attached gingiva using PRF as an adjunct.



**Figure-1: Preoperative view showing deposition of calculus and inadequate width of keratinised gingiva (1mm)**

### Preparation of PRF membrane

After obtaining informed consent from the patient, 10 ml of blood drawn from antecubital site was collected on glass coated plastic tube. Blood filled tube was immediately centrifuged for 15 min at 3000 rpm. PRF clot thus obtained was separated from red corpuscles and dried in a special purpose metal box- A PRF box.



**Figure-2: Prepared Platelet Rich Fibrin**

### Surgical technique

Following administration of 2% local anaesthesia at site of surgery, incision was placed at mucogingival junction using size 15 BP blade from canine to canine (33 to 43). The sulcus was deepened from canine to canine (33 to 43) to provide suitable vestibular width and depth. Base of the sulcus was sutured to the periosteum using 3-0 BBS suture and bleeding was controlled. PRF membrane was then placed over the surgical site and stabilised using vicryl 5-0 suture. Periodontal dressing was given to protect the wound site.



**Figure-3: Incision placed and labial sulcus deepened**



**Figure-4: PRF membrane placed and sutured using vicryl 5-0**



**Figure-5: Periodontal dressing**

#### Post-Operative Care

Patient was prescribed with oral NSAIDS (T. paracetamol 500mg SOS) and irrigation of oral cavity with 0.2% solution of chlorhexidine was advised for 15 days. No post-operative complications were observed during the period.



**Figure-5: Three months Postoperative view with gain in keratinized gingiva of 3mm**

#### RESULTS

Better healing with good patient compliance were noticed with this technique using PRF. At 3-months follow up, a good amount of gain in keratinized gingiva (3 mm gain) was achieved with excellent aesthetics.

#### DISCUSSION

Widening the attached gingiva favours effective plaque control, excellent aesthetics, reduction in inflammation of gingival tissues and better binding of gingiva to teeth. Gingival recession shift the margin of gingiva apically, decreasing the depth of vestibule. Minimal amount of keratinized gingiva with no vestibular depth benefit from mucogingival correction. At present, options are limited on grafting techniques; due to the patient morbidity, as a result of graft harvesting and inability to restore the tissue that is esthetically similar to the native tissue has led to the search for alternative treatment options.<sup>[4]</sup> Present case report reveals an inadequacy of attached gingiva with shallow vestibule associated with marked difficulty in performing effective oral hygiene measures.

In the last few decades, a lot of grafting materials, autogenic, alloplastic material have been used as substitute for palatal donor graft tissue with different rate of success.<sup>[5]</sup> PRF is an autogenous fibrin matrix with best healing potential that can be used for both hard and soft tissue regeneration technique. PRF is enriched with platelets, growth factors and cytokines increasing the healing potential of both

hard and soft tissue.<sup>[6,7]</sup> Preparation of PRF is inexpensive and very easy to procure. The alpha granules present in platelets contain growth factors such as platelet derived growth factor, transforming growth factor-beta, vascular endothelial growth factor and epithelial growth factor.<sup>[8]</sup> PRF membrane has mechanical adhesion and biologic regenerative function, which contributes it as a significant biomimetic material in periodontal regeneration technique.

#### CONCLUSION

The surgical procedure with PRF membrane to augment attached gingiva is a good alternative to standard procedure. Time saving, less technique sensitive, no involvement of secondary site with better colour match to adjacent tissue make PRF a sole grafting material in this novel approach of augmenting the attached gingiva. Further studies and clinical trials are necessary to thoroughly evaluate the success of this modern approach.

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