

# Augmentation of Interdental Papilla with Advanced Platelet Rich Fibrin: A Case Report

C. Burnice Nalina Kumari<sup>1</sup>, Shalini Arumugam<sup>1</sup>, Vijayalakshmi Rajaram<sup>1</sup>

<sup>1</sup>Department of Periodontology and Implantology, Faculty of Dentistry, Meenakshi Academy of Higher Education and Research, Chennai. Tamilnadu, India

## Abstract

Esthetics in dentistry is of great concern for dental professionals as well as patients for the maintenance of oral health. The key esthetic component is the black triangle which is the presence of lost interdental papilla between the maxillary anterior teeth. The most common problems associated with black's triangle are phonetics, impaction of food and esthetic problems. Because of patient concern on esthetics, papilla reconstruction techniques are employed to regenerate the lost papillary tissues. Advanced platelet rich fibrin which is rich in platelets and growth factors allows predictable regeneration due to its advanced properties. This case report aims at evaluating the augmentation of interdental papilla along with A- Platelet rich fibrin.

**Keywords:** Esthetics, black's triangle, interdental papilla, A-platelet rich fibrin.

## Introduction

Dental Esthetics is a great concern for dental professionals and for the patients as well. The presence of interproximal papillae between the maxillary anterior teeth is the key component for an esthetic smile. Hence the loss of interdental papillae or tissues is known as the black triangle. Unaesthetic smile, phonetic problems and impaction of food are the most common difficulties associated with black's triangle<sup>[1]</sup>.

There are various treatment modalities for the reconstruction of the lost interdental papilla. Non-surgical treatment options comprise of repeated curettage, orthodontic treatment and restorative techniques for reconstructing the interdental papilla<sup>[2,3]</sup>. Surgical techniques aim in the correction of the lost interdental papilla which are the repeated interproximal

curettage, free epithelialized gingival grafts, developmental of interproximal tissue in the buccal direction, and connective tissue graft<sup>[4]</sup>.

The various surgical procedures for papilla reconstruction techniques are technique sensitive because of the compromised vascular supply in the interdental space. The periodontal surgical procedures included Beagle's pedicle graft procedure (Beagle, 1992), Han and Takei's semilunar technique in 1996, Cortellini et al's simplified papilla preservation flap (Cortellini, Prato, & Tonetti, 1995). The surgical procedures are successful when it is combined with or without regenerative materials. One among the most popular regenerative material used these days is the platelet concentrates. Advanced platelet rich fibrin when used as the regenerative material with its superior mechanical properties enhances periodontal regeneration in interdental papilla<sup>5</sup>. This shows the case report where A- Platelet rich fibrin was used to augment the interdental papilla in between 11 and 12 region.

---

## Corresponding Author:

**C. Burnice Nalina Kumari**

Department of Periodontology and Implantology, Faculty of Dentistry, Meenakshi Academy of Higher Education and Research, Chennai. Tamilnadu, India  
e-mail: drburnice.perio@madch.edu.in

**Clinical Presentation:** A systemically healthy 33 year old female patient reported to the Department of Periodontology with a chief complaint of unaesthetic smile in relation to the right upper front tooth region for the past two months. On intra-oral examination, an

isolated Norland's class 2 interdental papilla loss was present in between 11 and 12 other clinical findings showed the healthy gingiva. The treatment was planned and awritten informed consent was obtained from the patient.

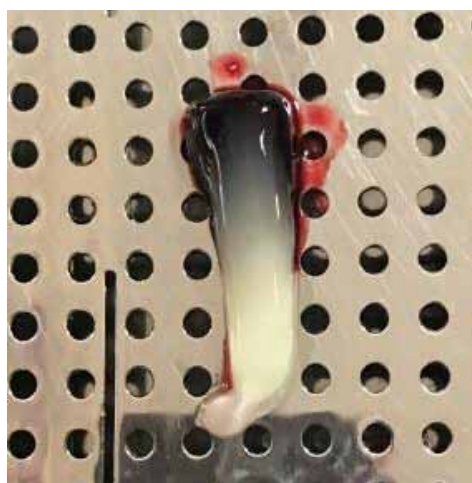
**Case Management:** In the phase 1 therapy the scaling and root planning was done. Patient was reviewed after two weeks prior to the surgical procedure. [Fig 1].



**Fig 1 Preoperative photograph**

A-PRF was prepared using the following protocol. 5ml of whole venous blood was collected in two sterile vacutainer tubes each and these tubes were centrifuged at 3000 revolutions per minute (rpm) for 10 minutes. Following this, the blood in the tubes settled into the three different layers: the lower-most fraction containing the red blood cells, the middle portion containing the fibrin clot and upper-most layer comprising of the acellular plasma fraction. Hence the platelet rich fibrin was procured by separating the middle layer from the centrifuged blood which was 2mm below the lower dividing line in the sterile tube and the A-PRF was ready to be placed on the surgical site. [Fig 2].

The defect sites was anesthetized using 2% lidocaine along with 1:100,000 epinephrine in relation to 11,12. A semilunar incision of 3-4mm was given with tunnel blade (0.2mm), 2mm coronal to the mucogingival junction and just above the papillary region and a crevicular incision was given over the teeth neighboring the defect and extending from the buccal aspect to the palatal aspect keeping the existing papilla intact and preserved. [Fig 3,4].



**Fig 2 Procured A-PRF**



**Fig 3 Semilunar Pouch created**



**Fig 4 A-PRF inserted into the pouch**

A Pouch was created at the apical aspect to the base of interdental papilla of 11 and 12. The preparation of A-PRF was done in accordance to the choukron's protocol. A-PRF was trimmed to get the desired size and then tucked and placed beneath the recipient site with the help of 5-0 vicryl sutures. [Fig 5]



**Fig 5 Sutures placed**

Periodontal dressing was placed over the surgical area. Patient was advised analgesics and antibiotics for 5 days along with 0.12% chlorhexidine digluconate two times a day for 2 weeks along with other post operation instructions.

The patient was asked to report after 24hrs and assessed for any post operative complications or discomfort. After 2 weeks the patient was recalled, the periodontal dressing was removed and healing was assessed at 3 and 6 months period post-operatively. After 6 months, post-operative photograph has been taken where the patient was satisfied for that esthetic outcome. [Fig 6].



**Fig 6 6 Months Post-operative view**

### Discussion

Loss of Interdental papilla is one of the troubling dilemmas in dentistry, posing the patients to functional, phonetic and esthetic problems. Various surgical and non-surgical techniques are proposed for the augmentation

of the lost interdental papilla. But most oftensurgical procedures fail to achieve long term stability because of the minor blood supply to the interdental papilla<sup>[6]</sup>.

Both surgical and non-surgical treatment modalities are used to reconstruct the lost interdental papilla. Surgical techniques aim in the correction the lost interdental papilla which are the repeated interproximal curettage, free epithelialized gingival grafts, developmental of interproximal tissue in the buccal direction, and connective tissue graft<sup>[7]</sup>.

In this study, A-PRF was used for the augmentation of the lost interdental papilla. A-PRF contains growth factors intracellularly which comprises of platelet-derived growth factors, transforming growth factor beta and insulin like growth factor-1<sup>[5]</sup>. All these factors release slowly from the fibrin matrix and aid in the healing of the surgical site. A-PRF along with other alloplastic materials like putty alloplastic material are used as new innovative minimally invasive method for management of intrabony defects with no post-operative complications that arises with conventional flap surgery. A-PRF has an advantage over connective tissue graft which is easy to procure, better healing of surgical site, no second surgical site required and is less expensive<sup>[8]</sup>.

Thus stable results are achieved with this technique along with A-PRF in our study. There was a complete reconstruction of papilla at 3 months and 6 months and the results were achieved.

The interdental papilla is scalloped and delicate. There is limited access to the interdental papilla, microsurgical instruments and surgical magnification benefits the surgeon by increasing visibility, facilitating access to the interdental papilla and eliminating unnecessary releasing incisions. Use of microsurgical instrumentation allowed the surgeon to elevate the flap atraumatically and avoiding vertical incisions, thus maintaining the blood supply to the surgical area<sup>[9,10]</sup>.

### Conclusion

Loss of interdental papilla its augmentation using A-PRF was completely achieved when reviewed at 3 and 6 months postoperatively. Thus the use of A-PRF gives a predictable and successful result in the reconstruction of the lost interdental papilla. The A-PRF membrane placement in the present case report seems to be effective, innovative, and more predictable method in treating isolated lost interdental papilla.

**Ethical Clearance:** Nil

**Source of Funding:** Meenakshi Academy of Higher Education and Research, Chennai, India

**Conflict of Interest:** Nil

### References

1. Chen MC, Chan CP, Tu YK, Liao YF, Ku YC, Kwong LK, Pan WL, Ju YR. Factors influencing the length of the interproximal dental papilla between maxillary anterior teeth. *Journal of Dental Sciences*. 2009 Sep 1;4(3):103-9.
2. Nemcovsky CE. Interproximal papilla augmentation procedure: A novel surgical approach and clinical evaluation of 10 consecutive procedures. *Int J Periodontics Restorative Dent*. 2001;21:553-9. ]
3. Chu SJ, Tarnow DP, Tan JH, Stappert CF. Papilla proportions in the maxillary anterior dentition. *Int J Periodontics Restorative Dent*. 2009;29:385-93.
4. Han TJ, Takei HH. Progress in gingival papilla reconstruction. *Periodontol 2000*. 1996;11:65-8.
5. Ghanaati S, Booms P, Orłowska A, Kubesch A, Lorenz J, Rutkowski J, Landes C, Sader R, Kirkpatrick CJ, Choukroun J. Advanced platelet-rich fibrin: a new concept for cell-based tissue engineering by means of inflammatory cells. *Journal of Oral Implantology*. 2014 Dec 1;40(6):679-89..
6. Beagle JR. Surgical reconstruction of the interdental papilla: Case report. *Int J Periodontics Restorative Dent*. 1992;12:145-51.
7. Blatz MB, Hürzeler MB, Strub JR. Reconstruction of the lost interproximal papilla – Presentation of surgical and nonsurgical approaches. *Int J Periodontics Restorative Dent*. 1999;19:395-406.
8. Marx RE, Carlson ER, Eichstaedt RM, Schimmele SR, Strauss JE, Georgeff KR. Platelet-rich plasma: growth factor enhancement for bone grafts. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*. 1998 Jun 1;85(6):638-46..
9. Tibbetts LS, Shanelec D. Principles and practice of periodontal microsurgery. *Int J Microdent*. 2009 Aug 1;1(1):2-12..
10. Burkhardt R, Hürzeler MB. Utilization of the surgical microscope for advanced plastic periodontal surgery. *Practical periodontics and aesthetic dentistry: PPAD*. 2000 Mar;12(2):171..