

## A combination of ovate pontic and platelet rich fibrin: a boon for creation of lost gingival contour in maxillary anterior region- A case report

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### Abstract

Most common complications after extraction of single tooth is the soft tissue change specially in anterior region results in an unesthetic appearance. In today's world, preservation of soft tissue and gingival aesthetics has been gaining immense importance. Ovate pontic helps in maintenance of interproximal soft tissue and also preservation of the interdental papilla, which in turn preserves the natural gingival contour after extraction. The ovate pontic creates an illusion that the pontic is emerging from the gingiva. Alveolar ridge deficiency is considered a major esthetic limitation, especially in the maxillary anterior region. Several approaches have been developed to enhance and increase soft tissue volume. Among those approaches are connective tissue grafts, platelet rich fibrin (PRF) membrane. This case report discusses about how a combined approach of the use of PRF along with ovate designed provisional restoration significantly changes the esthetic appearance of the patient.

**Keywords:** Emergence profile, esthetics, ovate pontic, platelet rich fibrin.

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**Submitted:** 26-Mar-2021 **Revised:** 30-Mar-2021 **Accepted:** 2-Apr-2021 **Published:** 15-Apr-2021

### Introduction

Replacement of maxillary anterior teeth, is a kind of enigma to the Prosthodontist. This is due to the fact that loss of teeth very often results in loss of interdental papilla also.<sup>[1]</sup> The alveolar ridge defect also compromises the esthetics making the prosthodontic management of such kind cases more challenging.<sup>[2]</sup> To overcome such a problem and to restore the ridge contour to more favorable situation, another recent promising option is the use of the platelet-rich fibrin (PRF).<sup>[3]</sup> The potential of the platelets as a regenerative option was first reported in the 1970s, as they contain growth factors responsible for enhancing the collagen production, increasing blood vessel growth, and the induction of cell differentiation, among others.<sup>[4]</sup> Chen *et al.* have used the PRF to augment the extraction socket with buccal cortical plate dehiscence, and they found that the use of PRF could offer

numerous advantages such as improving soft- and hard-tissue wound healing due to fibrin bandage and growth factors' release.<sup>[5]</sup> This case report describes a combination approach using the PRF as a preprosthetic preparation of a deficient anterior maxillary ridge and followed by the use of ovate pontic design provisional bridge immediately after the preprosthetic preparation which significantly enhanced the esthetic result of the patient and changed his smile.

### Case report

A 35 year-old male patient reported in the department of Prosthodontics with the chief complaint of a missing front tooth in the upper right quadrant (Figure 1). The tooth was extracted five days before reporting to the department. Thus, the socket was unhealed. The patient preferred fixed replacement of the tooth. Study casts were prepared after proper history taking.

Moreover, wax mock-up was done to assess the space availability for the provisional restoration. Clinical examination and radiographic and hematological investigations were carried out, and the patient was found to be fit for augmentation of the deficient ridge along with the unhealed socket with PRF, and then provide the patient with a Provisional ovate pontic bridge in the maxillary anterior region. Tooth preparations were carried out for both the upper left central and right lateral incisor teeth adjacent to the unhealed socket (Figure 2).

A volume of 15 cc of the patient's own blood was drawn to prepare the PRF (Figure 3). PRF membrane was placed into the socket by tunnel technique<sup>[6]</sup> (Figure 4) and then a fixed provisional restoration with an ovate pontic was fabricated. (Figure 5 and 6).

The neck surface of the provisional ovate pontic was modified and polished as per the soft tissue changes at subsequent visits. The tissue was allowed to heal. After satisfactory healing, after three months<sup>[3]</sup> the final impressions were made. The metal trial in was done (Figure 7).

The final ovate pontic anterior bridge was fabricated and delivered to the patient with acceptable esthetic outcome as shown in (Figure 8 and 9) and the patient is quite happy with his smile (Figure 10).

### Summary

Esthetics significantly improves the individuality of a person. A properly esthetic smile can boost up the confidence and becomes life changing for the person. It is also a matter of challenge for the Prosthodontist to create a new esthetic smile as per the expectation of the patient. According to Siebert's classification in this case, the patient had the residual alveolar ridge had a Class II defect. Zhao *et al.* studied the effect of using PRF as a sole grafting material, and they found it to preserve the alveolar ridge.<sup>[7]</sup> PRF membrane helps in

wound healing, protecting the surgical site<sup>[8]</sup>, promoting soft tissue repair; when mixed with bone graft, it may act as a "biological connector", which attracts stem cell, favors the migration of osteoprogenitor cells to the center of the graft, and provides a neo-angiogenesis.<sup>[9]</sup> The use of restorative design with ovate pontic is a well-established method to guide the soft-tissue healing to more favorable contour.<sup>[10]</sup> After 14days follow up visit of the patient, it was noticed slight change in gingival tissue contour and presence of black triangle specially mesial to the upper right lateral incisor. The ovate pontic Provisional restoration the was then adjusted and recontoured at the neck region by adding some amount flowable composite by slight compressing the soft tissue and to enhance the esthetic. The effect of consecutive recontouring of the provisionals made the black triangle that was formed initially to disappear completely in a 2 months time. After the cementation of the definitive prosthesis, the patient was very happy and was satisfied with his smile.

### Conclusion

It is extremely important to recognize potential outcome and the result of each patient's condition to make the most informed and realistic decisions about the best treatment options. According to the encouraging result obtained in this clinical case in regard to tissue healing and esthetic, the PRF can be used as one of the graft materials for small anterior or even posterior ridge defect areas. This may reduce the need of extensive bone augmentation procedures in such selected cases. However, this PRF procedure has several disadvantages and limitations such as the success and predictability of this protocol relies on the handling, blood collection time and its transference for the centrifuge, the patient may refuse the puncture required for blood collection, rigidity lack and fast degradation

of the PRF, the size of the defect and amount of bone loss.<sup>[11][12]</sup>

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**Figures:**



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6





Figure 7



Figure 8



Figure 9



Figure 10