



# Effect of Nano Hydroxyapatite and Platelet Rich Fibrin in Saving Mesio Buccal Root of Maxillary First Pre- Molar Through Bone Grafting and Root Amputation: A Case Report.

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## KEYWORDS

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## ABSTRACT:

The purpose of this study is to analyse the benefits of using Nano hydroxyapatite and Platelet Rich Fibrin in saving mesio buccal root of maxillary first pre- molar. A 29-year-old patient who had completely destroyed the buccal root of tooth number 14 was referred for advice by the Department of Periodontology because he was unwilling to have it extracted. The patient's steadfast desire to keep the tooth was a challenge that inspired us to modify the standard procedures. atypical approaches were needed to handle the case due to its atypical presentation and the unanticipated state of the surgical site. Despite having Grade I mobility, tooth number 14 underwent endodontic treatment, buccal root resection, nanohydroxyapatite graft, platelet rich fibrin, and free gingival grafting to cover the surgical site. At three months and six months interval, the tooth survived, its movement decreased, and the full root coverage operation with soft tissue was seen. Therefore, this case report explains how to rescue a maxillary first premolar recession defect with furcation involvement using an integrated, interdisciplinary strategy that includes root resection, endodontics, and a complex perioplastic surgical procedure.

## 1. Introduction

The term "gingival recession" refers to the exposure of the root surface as a result of the gingival edge being displaced apically toward the cemento-enamel junction. Its causes include tooth malposition, elevated frenum, plaque-induced inflammation, calculus, iatrogenic restorations, damage from poor oral hygiene habits, and uncontrolled orthodontic motions [1]. Another frequent side effect of medications used to treat periodontal disease is gingival recession [2].

Even though gingival recession can happen without any symptoms, it can nevertheless cause patients to worry about things like tooth loss, poor aesthetics, root caries, dentine hypersensitivity, and being unable to execute oral hygiene routines. By using perioplastic surgery and an interdisciplinary approach that includes endodontics, fresh treatment options have emerged to suit the rising

expectations of patients and can now save even the most severely damaged tooth. Management becomes difficult in premolars if there is concurrent furcation involvement, which has the worst prognosis. Root excision can remove the furcation, but perioplastic surgery with attempts at regeneration are needed to cover the remaining root. One of the most current new surgical techniques in periodontics to save a tooth is periodontal plastic surgery. It gives us a fantastic chance to return an individual's form, functionality, and aesthetics even under the most trying conditions. For root coverage [3] in incision design, the pedicle graft was the first periodontal plastic surgery technique proposed in 1956. Prior to root covering operations, all of these methods call for an acceptable width of connected gingiva [4]. In order to repair a maxillary first premolar recession defect with furcation involvement, this paper offers a case report in



which real results were obtained by combining an interdisciplinary approach incorporating advanced perioplastic surgical procedures, root resection, and endodontics.

## 2. Case Report

A 29-year-old male patient complained of recurring pain with root exposure in relation to the upper right first premolar over the past six months, as well as bleeding and receding gums throughout the mouth. The previous history was revealed: persistent apical migration of the marginal gingiva in number 14, and aggressive horizontal scrubbing brushing technique. Generalized recession and mild to moderate probing pocket depths (3-5 mm) could be seen during a clinical examination. The tooth number 14 displayed Grade I movement, Grade III furcation involvement, Grade I mobility, and total exposure of the buccal root (as determined by an electric pulp test).

## 3. Methods

Scaling and root planning, the rolling method of brushing, and occlusal corrections made up Phase I of treatment. Endodontic treatment, buccal root removal, and perioplastic surgery to hide the partially visible palatal root came next.

The afflicted tooth has a conspicuous buccal root that was entirely denuded, which would make therapy less successful. As a result, the buccal root was resected obliquely at the furcation level using a tapered fissure bur. The buccal side of the palatal root was almost entirely visible. Its apical third and palatal aspect were remained entrenched in bone, which is likely why Grade I mobility persisted despite significant bone loss. Later, a bone transplant and lateral pedicle flap from the neighboring premolar were planned. (Figure 1)



Fig 1: Pre- Molar

A no. 15 blade was used to remove the epithelium from the mesial papilla, and a recipient bed was prepared. A no. 11 blade was used to make a sub marginal incision in the second premolar after trans gingival probing was done over buccal connected gingiva to rule out dehiscence or fenestration. The second premolar's distal line angle was vertically incised, with a partial thickness flap raised above the mucogingival junction to produce tension-free flap coverage. The surgical site was covered with a nanohydroxyapatite graft, platelet rich fibrin, and free gingival graft. Later, the flap was carefully secured with interrupted and stabilizing non resorbable sutures before being moved laterally. Periodontal dressing was given over the site by aluminium foil.

After consulting with his treating physician, the patient was discharged with postoperative instructions, medications (Amoxicillin 500 mg tds for 5 days and paracetamol 625 mg bid for 3 days), and chlorhexidine mouthwash twice daily for 10 days. After ten days, the patient was called back for a checkup and suture removal. There were no complications following the procedure, and the healing was acceptable. By accident, the defect that was formed at the donor location began to heal. The patient was told to brush with a gentle toothbrush. Following surgery, he was observed every week to ensure proper dental hygiene around the surgical site. A three-month follow-up assessment of this area revealed no recurrence or recession. The recovery went smoothly. The gingival edge appeared stable and there was no recession after six months. ( Fig 2 to fig Fig 9)



Fig 2 : Root Amputation Done



Fig 3 : Palatal Graft Taken



Fig 6: periodontal dressing given



Fig 4 : Prf and nanohydroxyapatite graft placed



Fig 7: Periodontal dressing given



Fig 5 Graft placed and sutured



Fig 8: post operative view after 6 months



Fig 9 : Post operative view after 6 months

#### 4. Discussion

Although gingival recessions may happen without any symptoms, they may cause patients to worry about their appearance, their sensitivity, their ability to execute oral hygiene tasks, and the possibility of losing teeth. The etiological causes needed to be corrected as a first step. It is now possible to treat denuded roots and other mucogingival defects using a variety of techniques thanks to the development of more modern periodontal plastic surgical procedures, but it can be challenging to predict the success rate of root coverage procedures because it depends on a number of variables, including the type and location of the recession and the technique used. The selection of the surgical technique also depends on several factors, including the anatomy of the defect site, size of the recession defect, the presence or absence of keratinized tissue adjacent to the defect, the width and height of the interdental soft tissue, and the depth of the vestibule or the presence of frenula [5].

In the present case, a rigorous brushing technique that was initially addressed was thought to be the primary cause of recession. The success of the treatment is significantly impacted by the loss of the proximal interdental tissue and the prominence of the root. Due to the small root stem, there was early involvement of the furcation, which helps the disease grow. Additionally, the opening of the furcation in premolars is on the mesial and distal aspects, which worsens the prognosis and makes coverage challenging. In order to diminish the prominence of the root stem and totally remove the conspicuous buccal root. Due to healthy bone around the

palatal root, the tooth was only Grade I mobile. The result was aided by the proximal tissue's somewhat coronal level. However, here there was sufficient width, length, and thickness of keratinized tissue adjacent to the area of gingival recession. It is well stated that a better root coverage outcomes can only be achieved in cases with adequate height and width of adjacent keratinized tissue [6]. The advantages of free gingival graft has a very good blood. The graft's hue perfectly complements the location it is placed in, making this method esthetic. A bone graft was implanted to serve as a scaffold and make up for the ridge depression caused by root excision.[7]. The aesthetic results have improved [8]. In order to get the best esthetics, the CEJ and mucogingival junction must be precisely located before surgery, as well as the incisions must be placed precisely [9]. According to studies, treating isolated gingival recession with a free gingival graft and strict case selection is an effective strategy[10]. It has been suggested that root excision will remove the severance that favored the treatment. Advanced perio-plastic surgical techniques made it possible in this case to successfully handle a denuded buccal root of a maxillary first premolar while preserving the tooth, which was the patient's main concern. Clinical outcomes at one year after surgery were favorable with no recession. Thus, it may be inferred that, with careful planning, perioplastic surgery can be used to restore the patient's aesthetics and end the condition, even in the case of a premolar that has been affected by a furcation.

#### 5. Conclusion

In order to improve the patient's appearance, aesthetic surgery is performed to reshape the damaged components. When an increase in the apicocoronal amount of the keratinized gingival tissues with nanohydroxyapatite graft, platelet rich fibrin is a desired treatment outcome, the free gingival graft may still be the best option for treating gingival recession. The teeth that are typically pulled can now be saved thanks to perioplastic surgery and an interdisciplinary therapeutic strategy.

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