

## Treatment of Endodontic –Periodontic lesion with combination therapy: PRF and DFDBA.

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**Abstract:** The relationship between periodontal and pulpal disease was first described by Simring and Goldberg in 1964. The endo-perio lesion is a condition caused due to cross infection between the root canal and periodontal ligament via various anatomic and non-physiologic pathways. In treatment of endo-perio lesion it is important to do a thorough diagnostic examination to decide a proper course of treatment. The present article is a case report on primary endodontic and secondary periodontic lesion treated with a combination therapy of PRF (Platelet Rich Fibrin) and DFDBA (Demineralized Freeze Dried Bone Allograft).

**Keywords:** Endo-perio lesion, PRF, DFDBA.

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### I. Introduction

Tissues of dental pulp and periodontium are interlinked from the embryonic stage. The dental papilla (precursor of dental pulp) and the dental sac (precursor of periodontal ligament) are of common mesodermal origin. Therefore any part of periodontium can get affected by pulpal inflammation and vice versa.

The endo-perio lesion is a condition characterized by the association of periodontal and pulpal disease in the same dental element. The cross infection between the root canal and periodontal ligament can occur via

- A. Anatomic pathways
  - 1. Apical foramen
  - 2. Lateral and accessory canals
  - 3. Dentinal tubules
  - 4. Palatogingival grooves
- B. Non-physiological pathways
  - 1. Iatrogenic root canal perforations
  - 2. Vertical root fracture

These pathways determine the spread of infection. Periodontal diseases cause destruction of bone in a coronal to apical direction while direction of endodontic lesions is from apical to coronal.<sup>1</sup>

A true combined lesion results from the development and extension of an endodontic lesion into an existing periodontal lesion. The pain from the involvement of dental pulp is the most common presenting complaint of patients with combined lesions. In these patients thermal pulp testing provides information relative to the status of the pulp and dental radiographs can confirm the presence of apical changes and the extent of bone loss. Careful probing confirms the presence and morphology of any periodontal pocket and permits the location of the communication with apical lesions. Lesions resulting from pulpal disease tend to resolve with endodontic therapy. If the periodontal lesion is an advanced, multi walled bony defect, the success of therapy likely depends on the ability to fill or regenerate attachment to obliterate the defect. Therefore the decision to treat and retain teeth with combined endodontic and periodontal lesion should be carefully considered in regard to the overall dental treatment plan.<sup>2</sup>

### Case history

A 28 year old female patient reported to the Department of Periodontology with the chief complaint of bleeding gums from lower right back region since 3 months. Bleeding of gums aggravated on consumption of food and brushing.

### Clinical Examination

Clinical Examination revealed Gingival polyp of about 3×3 mm with deep periodontal pocket 15 mm with 46 and grade II furcation involvement. (Fig 1, Fig 2, Fig 3)

### Radiographic Investigation

Radiograph was taken using position indicating device and radiographic grid. Radiograph confirmed radiolucency in furcation & periapical region. (Fig 4)

Following clinical and radiographic investigation diagnosis of endo- perio lesion with primary endodontic & secondary periodontic involvement was stated.

Endodontic treatment was done with 46. After 3months of endodontic treatment periodontal regenerative procedure was planned for treatment of furcation defects (Kirkland flap - Bone graft and Platelet rich fibrin membrane).For periodontal regeneration procedure informed consent was taken from the patient.

### **Surgical procedure**

After taking care of asepsis and sterilization the surgery was planned. The area selected for surgery was anesthetized using lignocaine hydrochloride with adrenaline (1:80,000).

Gingival polyp excision was done with no :15 surgical blade following which crevicular incision was placed and full thickness flap was elevated, vertical releasing incision extending into the alveolar mucosa was given for proper access to the defect. After reflection, thorough debridement of defect was done using Gracey's curette # 13 and 14. Also thorough scaling and root planning was carried out on the exposed root surface area of the defect. (Fig 5)

After debridement adequate isolation of area was done and bone graft material sterile decalcified freeze dried bone allograft(DFDBA) mixed with few drops of saline was carried to the site with bone graft carrier and placed .Following condensation of bone graft material in increments; Platelet rich fibrin(PRF) membrane was placed.(Fig 6, Fig7, Fig 8)

### **Preparation of Platelet rich fibrin(PRF)**

(For platelet rich fibrin ,10 ml of intravenous blood by venipuncture from the patient's antecubital vein was withdrawn ,which was transferred into a test tube without any anticoagulant and was immediately centrifuged at 3000 revolutions per minute for 10 minutes. The PRF layer that lies between poor plasma layer and red corpuscles base (approximately middle of the test tube) was separated using sterile tweezers and scissors.)

After placement of PRF membrane flaps were approximated and sutured using 4-0 black braided silk sutures. Vertical releasing incision were approximated and sutured with 6-0 nylon sutures.

Periodontal dressing was placed. Post-operative instructions were given to the patient. Patient was advised to avoid mechanical plaque control at the surgical site for 2 weeks and to resume the same thereafter. Patient was instructed to main oral hygiene using 0.2% chlorhexidine gluconate mouthwash. Patient was recalled after 14 days for periodontal dressing and suture removal and to evaluate the healing at the surgical site.

Patient was recalled at an interval of 6 months following which radiograph was taken using grid (Fig 9).

## **II. Discussion**

In primary lesions of endodontic origin the teeth typically exhibit symptoms suggestive of periodontal lesion like mobility, bone loss in furcal and crestal area, deep pocket, tenderness to percussion, chronic draining sinus tract, and purulent exudates from gingival sulcus and foul taste. In such cases for differential diagnosis patient may not have any periodontal disease in other areas of the mouth. The other feature present may be presence of either a large carious lesion or previous restoration close to the pulp<sup>3</sup>. In lesions of primarily of endodontic origin with secondary involvement of periodontal tissues or endodontic lesion occurring in periodontally involved tooth, endodontic treatment should precede periodontal therapy. Periodontal treatment may involve curettage, flap surgery or regenerative procedure. When the etiology is purely endodontic, calcium hydroxide can be used as an intracanal medicament. It is an excellent medicament in general, because it is bactericidal, anti-inflammatory and proteolytic; it inhibits resorption and it favors repair. It is especially effective in endodontic lesions with extensive periapical pathology and pseudo pockets, because of its temporary obturating action which would inhibit periodontal contamination of the instrumented canals via patent channels of communication. This regimen usually will resolve the pseudo pocket within a few weeks .A typical periodontal lesion will not resolve in response to root canal treatment even if the associated tooth is pulpless. Such cases generally show a conical –shaped probing i.e the probing may start from a sulcus depth that is within normal limits, then gradually step down a slope to the apical extent of the lesion and then step up again on the other side to a sulcus depth within normal limits.<sup>3</sup> The prognosis of such tooth is based on resolving the periodontal lesion. In primary periodontal disease with secondary endodontic involvement the apical progression of periodontal pocket may continue until the apical tissues are involved. In such cases pulp may become necrotic as a result of infection entering via lateral canals or the typical apical foramen. Treatment for such cases is endodontic treatment followed by periodontal treatment.

In this case report pulp vitality test revealed nonvital tooth suggesting of primary endodontic involvement. In combined endo-perio lesion, periapical healing is anticipated following a endodontic treatment.

The periodontal tissues however, may not respond well to the treatment. In such cases regenerative procedure i.e use of bonegraft and membrane can be beneficial.

In this case report after 3 months of endodontic treatment periodontal lesion did not did not subside completely with no change in the clinical parameters. This confirmed a secondary periodontal involvement along with primary endodontic component.

A periodontal regeneration procedure was carried out using demineralized freeze dried bone allografts (DFDBA) and Platelet rich fibrin(PRF) membrane placement. Periodontal regeneration can be done using different bone graft material combined with placement of barrier membrane. Schallhorn and McClain(1988) reported on improved clinical results in intrabony defects and degree II furcations , following a combination therapy including barrier membranes plus DFDBA and citric acid root conditioning.<sup>4</sup> Anderreg et al. (1991)compared the effect of GTR treatment alone with GTR combined with DFDBA and found significant improvement in terms of horizontal probing attachment level in the group of mandibular degree II furcation treated with combination therapy.<sup>5</sup> Lekovic et al.(1990)carried out the same study and found that the combination therapy resulted in greater extent of furcation fill, indicating a possible added benefit from the use of grafting material in combination with bioabsorbable barrier membranes for the treatment of mandibular degree II furcation. Anderreg et al. (1991) compared the effect of GTR treatment alone with GTR combined with DFDBA and found significant improvement in terms of horizontal probing attachment level in the group of mandibular degree II furcation treated with combination therapy.

Nanavati et al (2013) used decalcified freeze dried bone allograft (DFDBA) along with guided tissue regeneration (GTR) membrane in grade II furcation defect. This combination therapy resulted in a significant amount of bone fill and reduction in probing depth.<sup>6</sup>Mittal et al(2013) evaluated the effectiveness of demineralized freeze dried bone allograft (DFDBA) as a bone graft for the treatment of osseous defects in an anterior tooth with endo-perio lesion and concluded that DFDBA improves healing outcomes, namely, reduction of probing depth, resolution of osseous defects and tooth mobility.<sup>7</sup>Goya L (2013) treated endo-perio lesion in right maxillary lateral incisor with platelet rich fibrin (PRF) and alloplastic bone substitute after conventional endodontic therapy and concluded that at the end of 6 months there was gain in clinical attachment, increased radiographic bone fill and reduction in probing depth which was maintained till 18 month follow-up.<sup>8</sup>Karunakar P et al(2014) treated two cases of primary periodontal lesion with secondary endodontic involvement with root canal treatment was done followed by periodontal therapy with the use of platelet-rich fibrin (PRF) as the regenerative material of choice and concluded that after 9 months follow up there was absence an intraradicular lesion, pain, and swelling, along with tooth stability and adequate radiographic bone fill.<sup>9</sup> Singh S treated a primary endodontic and secondary periodontic lesion of maxillary canine using platelet-rich plasma concentrate and an alloplastic bone substitute after conventional endodontic therapy and concluded that at the end of three months, there was a gain in the clinical attachment level and reduction in probing depth and radiographic evidence showed that there was significant bony fill.<sup>10</sup> Narang et al. (2011) treated a primary endodontic and secondary periodontic lesion of right mandibular first molar initially with endodontic therapy. Following the endodontic treatment, the furcation defect was treated using bioactive glass in a putty form. At the end of 9 months, there was a gain in the clinical attachment level and reduction in probing depth. Radiographic evidence showed that there was a significant bony fill.<sup>11</sup>

### **III. Conclusion:**

In treatment of endo-perio lesion it is important to do a thorough diagnostic examination .This will help to decide a proper course of treatment plan. In this case report the use of freeze dried bone allograft (DFDBA) along with Platelet rich fibrin (PRF) membrane resulted in a significant amount of bone fill and reduction in horizontal probing depth .

### **References**

- [1]. Hacer A,Serper A. A case series associated with different kinds of endo perio lesions. J Clin Exp Dent.2014;6(1):91-95.
- [2]. Ammons W, Harrington GW . The Periodontic-Endodontic Continuum in Newman M, Takei H, Klollevoid PR, Carranza F. Clinical Periodontology.10<sup>th</sup> edition. Elsevier publication,Missouri;2010:871-879.
- [3]. Shenoy N, Shenoy A. Endo-perio lesions: Diagnosis and clinical considerations. Indian J Dent Res.2010; 21(4):579-585.
- [4]. Schhallhorn and McClain. Combined osseous composite grafting, root conditioning and guided tissue regeneration. Int J Periodontics Restorative Dent.1988;4: 9-31.
- [5]. Anderegg C. Mellonig J. Clinical evaluation of the use of decalcified freeze dried bone allograft with guided tissue regeneration in the treatment of molar furcation area. J Periodontol. 1991;62: 264-268.
- [6]. Nanavati B,Bhavsar NV,Mali J. Endo Periodontal Lesion – A Case Report. J Adv Oral Research . 2013 ; 4(1):23-27.
- [7]. Mittal A , Khan S, Singh RK. Combined Endo-Perio Lesion in an Anterior Tooth, its Management & Resolution - A Case Report. Journal of dentofacial sciences.2013;2(2):9-12.
- [8]. Lata G. Clinical effectiveness of combining platelet rich fibrin with alloplastic bone substitute for the management of combined endodontic periodontal lesion. Restor Dent Endod. 2014 ;39(1):51-55.
- [9]. Karunakar P, Prasanna JS, Jayadev M, Shrivani GS. Platelet-rich fibrin, “a faster healing aid” in the treatment of combined lesions: A report of two cases. J of Indian Soc of Periodontol. 2014;18(5):651-655.

- [10]. Singh S. Management of an endo perio lesion in a maxillary canine using platelet-rich plasma concentrate and an alloplastic bone substitute. J of Indian Soc of Periodontol. 2009;13(2):97-100.
- [11]. Narang S, Narang A, and Gupta R. A sequential approach in treatment of perio-endo lesion. J of Indian Soc of Periodontol. 2011;15(2):177-180.

**Figures**



**Figure 1. Gingival polyp of about 3×3mm.**



**Figure 2. Deep periodontal pocket of 15mm with 46**



**Figure 3. Grade II furcation involvement with 46**



**Figure 4. Radiograph confirmed radiolucency in furcation & periapical region .**



**Figure 5. Area of defect after debridement and thorough scaling and root planning.**



**Figure 6. Platelet rich fibrin (PRF) membrane.**



**Figure 7. Condensation of bone graft material in increments followed by placement of Platelet rich fibrin (PRF) membrane.**



**Figure 8 .Suturing sutured using 4-0 black braided silk sutures Vertical releasing incision were approximated and sutured with 6-0 nylon sutures.**



**Figure 9. 6 months follow showing bone fill.**