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## Research Article

### MANAGEMENT OF AN ENDO-PERIO CASE: A REGENERATIVE APPROACH

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#### ABSTRACT

Endo-perio lesions are common but difficult to diagnose problems. Although most cases resolve following endodontic management, extensive tissue loss calls for the surgical intervention. Currently more and more research is focused on regeneration of dental tissues. Recent advances in regenerative procedures like platelet rich fibrin have made the results of the procedure more predictable. In our case, a 45 year old male patient with endo-perio lesion in right maxillary first molar was treated with platelet rich fibrin and demineralized freeze dried bone graft after conventional endodontic therapy. At the end of 6 months, there was significant radiographic and clinical healing. The novel technique described in the case report will help the clinicians in managing an endo-perio case through regenerative procedures in an efficient way.

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## INTRODUCTION

The interrelationship of the pulp and the periodontal tissues influences each other during health, function and disease. The relationship between the periodontium and the pulp was first discovered by [Simring and Goldberg \(1964\)](#). Since then, the term 'perio-endo lesion' has been used to describe lesions due to inflammatory products found in varying degrees in both periodontium and pulpal tissues. Pulpal and periodontal problems are responsible for more than 50% of tooth mortality ([Bender IB, 1982](#)). Endodontic periodontal lesions present challenges to the clinician as far as diagnosis and prognosis of the involved teeth are concerned. A good prognosis for combined endodontic and periodontal (endo-perio) lesions, may be obtained by endo-perio therapy. However, when a significant loss of the periodontal attachment apparatus and osseous structure occurs, the long-term prognosis becomes poor ([Hacer A and Ahmet S, 2014](#)). Many treatment modalities have been proposed which includes open flap debridement, bio-modification of root surface and regenerative procedures including bone graft and GTR. ([Müller HP, Eger T, 1999](#)) This case report attempts to utilize a decalcified freeze dried bone allograft as bone replacement graft and platelet rich fibrin in the treatment of an endo-perio lesion.

## Case Report

A 45 year old male reported with the chief complaint of decayed tooth in the right back region of upper jaw. There was a history of pain in the same tooth few months back for which the patient took some analgesics. On clinical examination there was mesial caries in relation to tooth 16. Tooth was non-tender on percussion. Cold and electric tests failed to elicit any response in the involved tooth. Periodontal examination revealed gingival recession and vertical probing depth of 8mm on mesial side of the tooth (Fig 6A). Digital intra-oral periapical radiograph showed that the dental caries extending upto the pulp chamber and a radiolucent lesion along the mesial root of the tooth (Fig 1A). A diagnosis of primary endodontic lesion with secondary periodontal involvement was made. Root canal instrumentation was performed using K files (Dentsply Maillefer, Switzerland) in a step back technique. 3% sodium hypochlorite (Prevest Denpro) and 17% EDTA solution (Prevest Denpro, India) were used for irrigation and smear layer management respectively. Obturation was done using AH Plus sealer (DentsplyDeTrey GmbH, Germany) and laterally condensed guttapercha (Meta Biomed, Korea). Composite resin (Ivoclar Vivadent, Liechtenstein) was used for the post endodontic restoration. Patient was recalled after 3 months for

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the follow up. On follow up visit patient was asymptomatic, but there was no change in the pocket depth. Radiographically, there was no healing of the lesion (Fig 1B). So, periodontal regenerative surgery was planned for the treatment of the defect. The procedure was explained to the patient and consent was obtained.

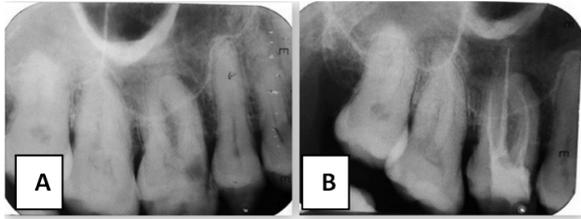


Figure 1 Preoperative radiograph (A) and 3 months after endodontic therapy no significant healing of the lesion(B)

### Surgical Procedure

The area selected for surgery was anesthetized using xylocaine with adrenaline 1:80,000 (Septodont, France). First crevicular incision was placed & full thickness flap was elevated buccally. After reflection, a defect around the mesial root was found (Fig 2). A thorough degranulation and debridement of the defect area was done using Gracey's curette # 13 and 14 (Hu-Friedy, USA).



Figure 2 Buccal flap showing bone defect along mesial root

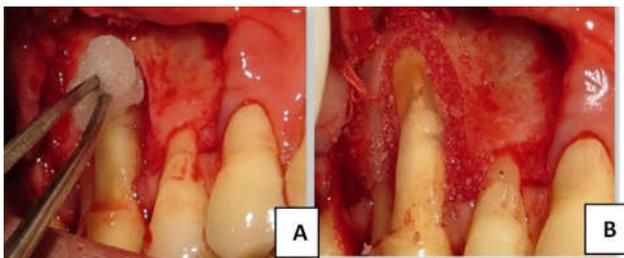


Figure 3 Root Modification with citric acid (A) and bone graft in place (B)

After complete degranulation, an intra-bony defect of vertical dimension of 8 mm was seen. After root conditioning with citric acid solution, adequate isolation of area was done with proper bleeding control and bone graft material (Tata Memorial Bone Bank, India) was placed in the defect (Fig 3). Platelet rich fibrin membrane made from patient's blood was placed over the graft material (Fig 4) and closure of flap was done using interrupted suturing technique (Fig 5A). Periodontal dressing (Coe Pak, GC India) was placed over the surgical area (Fig 5B) which was removed after seven days. Patient was scheduled for regular recall intervals at 3 and 6 months after surgery. PRF and bone graft resulted in substantial amount of bone fill (Fig

7B) and probing depth was reduced to 2mm (Fig 6B) in six months.



Figure 4 PRF placed over bone graft

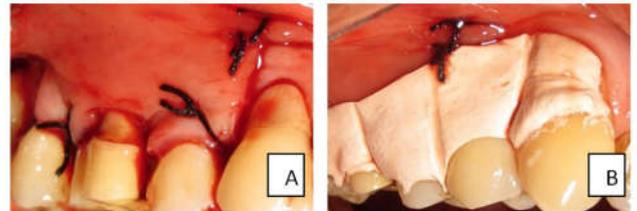


Figure 5 Flap sutured (A) and periodontal dressing placed (B)

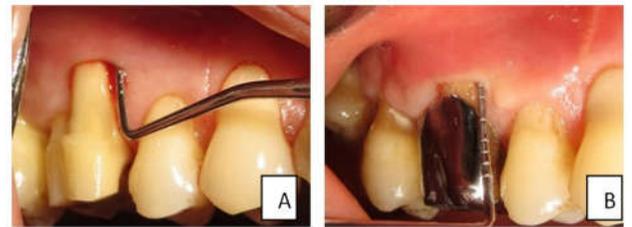


Figure 6 Probing depth before treatment (A) and after 6 months of surgery (B)



Figure 7 Preoperative radiograph (A) and healed lesion 6 months after surgery (B)

### DISCUSSION

Difficulty in the diagnosis of the endo-perio lesions complicates their management. Thorough history and careful clinical and radiographic examination are required to identify and accurately assess the contribution of each lesion to patient's problem, which in turn will determine the sequence that produces optimal results (Peters et al., 1994). In our case, pulp vitality tests showed the pulp to be non-vital. It was a pivotal finding suggesting the endodontic aspect of the disease. Infrabony pocket of 8mm on mesial side suggested a secondary periodontal involvement. Generally, in a case of combined endo-perio lesion, an adequate endodontic therapy would result in healing of the endodontic component, and the prognosis would finally depend on the efficacy of periodontal repair/regeneration initiated by either of the treatment procedures. In this case, following endodontic treatment the periodontal lesion did not reduce on radiographic evaluation after three months and there was no change in the clinical parameters. So, a periodontal regeneration procedure was

performed. Success rate for the treatment of the endo-perio lesion without concomitant regenerative procedure has been reported as 27-37% (Hirsch *et al.*, 1978). Platelet rich fibrin (PRF) is a recent but promising advancement in the field of regenerative therapy. High concentrations of tissue growth factor  $\beta$  and platelet derived growth factor present in PRF have angiogenic, proliferative and differentiating effects on osteoblasts (Okuda *et al.*, 2003). PRF has been successfully used with different graft materials in the treatment of infrabony defects (Dori *et al.*, 2007; Piemontese *et al.*, 2008). Besides promoting wound healing, bone growth and maturation, PRF with bone graft have the advantages of graft stabilization, wound sealing and hemostasis. In this case, it was observed that PRF with demineralized freeze dried bone allograft (DFDBA) resulted in significant clinical and radiographic healing.

## CONCLUSION

The use of PRF in regenerative periodontal therapy provides new opportunities for the bone and soft tissue healing. The technique describes an efficient method to harvest the regenerative capacity of this biomaterial.

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