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## TREATMENT OF ENDO-PERIO LESION WITH SYRINGEABLE BIO ACTIVE ALLOPLASTIC BONE GRAFT MATERIAL: A CASE REPORT

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#### **ABSTRACT:**

Endodontic-periodontal lesions present challenges to the clinician as far as diagnosis andprognosis of the involved teeth are concerned. Etiologic factors such as bacteria, fungi, and viruses as well as various contributing factors such as trauma, root resorptions, perforations, and dental malformations play an important role in the development andprogression of such lesions. The relationship between the pulp and periodontium has been extensively studied. The pathways for the spread of bacteria between pulpal and periodontal tissues have been discussed with controversy. This case report presents a successful treatment of a 43 year old systemically healthy male suffering with endoperio lesions of upper right first and second molar teeth.

KEYWORDS: Endodontic-periodontal lesions, Syrigeable Bone Graft Material, Root Resection, Furcation Involvement.

### INTRODUCTION

Endodontic-periodontal lesions present challenges to the clinician as far as diagnosis and prognosis of the involved teeth are concerned. Etiologic factors such as bacteria, fungi, and viruses as well as various contributing factors such as trauma, root resorptions, perforations, and dental malformations play an important role in the development and progression of such lesions.

Treatment and prognosis of endodontic-periodontal diseases vary and depend on the cause and the correct diagnosis of each specific condition.

The relationship between the pulp and periodontium has been extensively studied. The pathways for the spread of bacteria between pulpal and periodontal tissues have been discussed with controversy <sup>1-3</sup>

.Pulpal infection can drain through periodontal ligament space and give an appearance of periodontal destruction. Similarly both pulpal and periodontal infections can coexist in the same tooth, where the treatment depends on the degree of involvement of the tissues. The furcation is an area of complex anatomic morphology that may be difficult or impossible to debride by routine periodontal instrumentation. Routine home care methods may not keep the furcation area free from plaque. The presence of furcation involvement is one clinical finding that can lead to a diagnosis of advanced periodontitis and potentially to

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a less favorable prognosis for the affected tooth or teeth. Furcation involvement therefore presents both diagnostic and therapeutic dilemmas. The etiologies of furcation involvement include extension of inflammatory periodontal disease, local anatomic factors, trauma from occlusion, pulpo- periodontal disease and root fractures involving furcations.

From the point of view of treating these cases efficaciously a better clinical classification was provided by Torabinejadand Trope in 1996.<sup>4</sup>

- Based on origin of periodontal pocket
   Endodontic origin
  - Periodontic origin
- Combined endo-perio lesions
- Separate endodontic andperiodontic lesions
- Lesions with communication
- Lesions with no communication

As the tooth matures and the root is formed, three main avenues for exchange of infectious elements and other irritants between the two compartments are created by dentinal tubules, lateral and accessory canals, and the apical foramen. This case report details about successfulinterdisciplinary treatment of endoperio lesion of a molar tooth using syringeable bioactive alloplast bone graft.

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### Case report

A 43 year old systemically healthy male complained of occasional swelling with pus drainage and bad breath in relation with his upper right first and second molar teeth. Clinical examination revealed chronically inflamed marginal gingiva which was positioned at CEJ level. under local anesthesia with Naber's probe Probing revealed a definitive horizontal and vertical component of bone loss. Periodontal probing with UNC probe revealed a probing depth of 7mm with Miller's grade II furcation involvement. Thermal vitality test indicated the tooth was non vital with no abnormal teeth mobility. IOPA showed haziness of alveolar bone in the furcation area (Fig.1). Patient was scheduled for initial non surgical periodontal therapy and intentional endodontic treatment. Non surgical therapy outcomes showed significant improvements in BOP, PD and clinical appearance of gingiva. Later patient was scheduled for surgical periodontal therapy after necessary blood investigations. Kirkland flap technique employed to reflect mucoperiosteal flap and thorough debridement of furcation area done (Fig.2). Surgical therapy included OFD and root resection of mesio buccal roots of both the molars with bone grafting (Fig. 3 and Fig.4.). The intrabony defect showed 5mm horizontal component and 6mm vertical component for first molar and 3mm horizontal component and 4mm vertical component for second molar. Root surfaces were conditioned with citric acid. Syrigeable bone graft material (Nova bone dental putty bio active alloplast bone graft) used to fill the defect(Fig.5). Resorbable collagen GTR membrane placed over the grafted site and flap was sutured back with resorbable 4-0 Vicryl (Fig.6). Necessary post operative antibiotics and analgesics prescribed andpost operative instructions advised. Patient was recalled after 1 week, 3 weeks, 3 months, 6 months and 9 months sequential follow up visits. Follow up visits showed no abnormal soft tissue and radiological hard tissue changes. Sequential radiographs revealed bone fill changes. No surgical reentry performed to check regeneration.

### Discussion

Successful treatment to retain furcation involved teeth remains one of the in most difficult treatments and thought to have a strong negative effect on prognosis in overall periodontal therapy<sup>5</sup>

Treatment of Endoperio lesions have always been challenging for the dentists; especially when complicated by furcation involvement. Furcation treatment and outcomes with OFD and bone grafting depends majorly on the vertical and horizontal component of bone loss and intactness of buccal and lingual cortical bone plates. As the patient did not had any other risk factors like smoking,diabetes etc., the treatment outcomes were more favorable. Intentional endodontic treatment was performed as tooth was non vital and to clear of infected pulp because of combined lesion. The use of syringeable bio active alloplast bone graft material provided bone graft stability because of bioactive seal it forms with the bone. Patient was motivated enough to maintain plaque free environment and better compliance with the oral hygiene instructions.

Several treatment modalities have been used to treat furcation involved teeth. Surgical therapy involving regenerative procedures are indicated in Grade IIand III furcation involvements<sup>6</sup>. The regenerative procedures used in these cases include bone grafts and guided tissue regeneration.

Results obtained from studies have revealed the positive effects of bone grafts for the treatment of furcation defects especially vertical defect fill. According to Tsao et al additional guided tissue membrane placement does not seem to enhance the treatment outcome achieved by bone graft alone<sup>7</sup>

In general, primary disease of one tissue, i,e., is periodontium or pulp, is present, and secondary disease is just starting, treat the primary disease<sup>8-11</sup>. When secondary disease is established and chronic, both primary and secondary diseases must be treated. By and large endodontic therapy precedes periodontal therapy. It appears that the pulp is usually not severly affected by periodontal disease until the periodontal tissue breakdown has opened an accessory canal to the oral environment<sup>12</sup>. At this stage, pathogens leaking from the oral cavity through the accessory canal into the pulp may cause a chronic inflammatory reaction, followed by pulp necrosis. However, if the mircovasculature of the apical foramen remains intact, the pulp may maintain its vitality<sup>13</sup> In this case, the pulp may become necrotic as a result of infection entering via lateral canals or the apical foramen. In single rooted teeth, the prognosis is usually poor. In molar teeth, the prognosis may be better.

A strong correlation between the presence of microorganisms in root canals and their presence in periodontal pockets of advanced periodontitis has been demonstrated, indicating that similar pathogens may be involved in both diseases<sup>14,15</sup>

Other treatment modalities that have been used successfully are root resection and hemisection procedures. In an attempt to eliminate the defect and create access to the interradicular area, root resection and hemisection has been proposed in the literature<sup>16</sup>

. The case presented in this report was more amenable to regenerative therapy than root resection or hemisection since there was complete bone support seen on the buccal side when the flap was raised. Moreover clinically the tooth showed no mobility. Anderegg et al have shown that vertical component can predict the extent of osseous repair following the regenerative therapy<sup>17</sup>

. Although the vertical component of furcation involvement in this case was extensive the lack of mobility and the presence of good bone support on the buccal side

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Fig. 1 Presurgical radiograph after intentional endodontic treatment of both the molars



Fig.3.First molar Mesio buccal root resected



Fig.2 .Reflection of mucoperiosteal flap



Fig.4. Second molar mesiobuccal root resected



Fig.5. Bone graft placed in the root sockets



Fig.6. GTR membrane placed over the grafted site

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# Clinical and Surgical Techniques

were factors that prompted us to make use of regenerative procedures instead of root resection or hemisection. Understanding the periodontic- endodontic continuum is a vital part of successful endodonntic and periodontal treatment. Patients with pulpal disease may have a healthy periodontium, gingivitis or varying amounts of attachment loss on the affected or adjacent teeth. Periodontal treatment is not required in the absence of any periodontal treatment. In cases with periodontal involvement the lesions can be independent of each other or can be combined or communicating with each other. The healing of an endodontic lesion is highly predictable, but the repair or regeneration of periodontal tissues is less predictable. Endodontic treatment should precede periodontal pocket elimination procedures. involvement of the apical periodontium by a pulpal lesion may obscure the symptoms of slowly progressing periodontal disease since the treatment of the pulpal problem provides relief to the patient and thus usually ignoring the coexisting periodontal lesion.

However endodontic therapy results in the resolution of the endodontic lesion but has little effect on the periodontal lesion. Therefore it is absolutely essential that the periodontal problem also be treated to obtain optimal therapeutic outcomes.

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