Case Report

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ENDO PERIODONTAL LESION: A CASE REPORT

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ABSTRACT:

The pulp and periodontium have embryonic, anatomic and functional inter- relationships. The simultaneous existence of pulpal problems and inflammatory periodontal disease can complicate diagnosis and treatment planning. This case report evaluates the efficacy of decalcified freeze dried bone allograft along with bioabsorbable barrier membrane in the management of furcation defect associated with an endo-perio lesion in a right mandibular first molar. A 56-year-old male patient with an endo-perio lesion in the right mandibular first molar was initially treated with endodontic therapy. Following the endodontic treatment, the furcation defect was treated using decalcified freeze dried bone allograft (DFDBA) along with guided tissue regeneration (GTR) membrane. 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.

Key Words: DFDBA, GTR membrane, furcation, endo- perio.

INTRODUCTION:

The actual relationship between periodontal and pulpal disease was first described by Simring and Goldberg in 1964.[1] since then, the term “endo-perio” lesion has been used to describe lesions due to inflammatory products found in varying degrees in both the periodontium and the pulpal tissues. The endodontium and periodontium are closely related and diseases of one tissue may lead to the involvement of the other. The differential diagnosis of endodontic and periodontal diseases can sometimes be difficult but it is of vital importance to make a correct diagnosis so that the appropriate treatment can be provided. 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.

Furcation involvement presents one of the major challenges in endodontic therapy with periodontal involvement. Although the role of pulpal pathology in the etiology of furcation involvement is still unclear, the high incidence of molar teeth with accessory canals supports such an association.Various treatment modalities [2] have been proposed for the treatment of furcation involvement including open flap debridement, bio-modification of root

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surface and various regenerative procedures including GTR and bone grafts. Bone grafts having a property of osteogenesis, osteoinduction and osteoconduction have been used in the past.

A new property of osteostimulation [3] has been reported in some recently available materials. This case report attempts to utilize a decalcified freeze dried bone allograft with the property of osteostimulation as bone replacement graft in the treatment of a combined endo-perio lesion with furcation involvement.

Relationship between pulp and periodontium:

Pulpal and periodontal problems are responsible for more than 50% of tooth mortality. The periodontium and pulp have embryonic, anatomic and functional interrelationship. The relationship between pulpal and periodontal disease can be traced to embryological development, since the pulp and the periodontium are derived from a common mesodermal source. [4] At the stage of tooth development, the developing tooth bud pinches off a portion of mesoderm that becomes pulp, while the remaining mesoderm develops into the periodontium. Ectomesenchymal cells proliferate to form the dental papilla and follicle, which are the precursors of the periodontium and the pulp, respectively. This embryonic development may give rise to an anatomical connection between these two vital structures throughout the life of a tooth. Three main pathways [4] have been implicated in the development of periodontal-endodontic lesions, namely:

1. Dentinal tubules
2. Lateral and accessory canals
3. Apical foramen

Classification:

The most commonly used classification was given by Simon *et al*.[5]

1. Primary endodontic lesion
2. Primary periodontal lesion
3. Primary endodontic lesion with secondary periodontal involvement
4. Primary periodontal lesion with secondary endodontic involvement
5. True combined lesion

CASE DETAIL:

A 56-year-old patient reported to the Department of Periodontics, with a complaint of pain in the lower right back tooth region associated with pus discharge since 1 month. On intraoral examination, a periodontal abscesss was found to be present in relation with 46 (figure 1). A radiograph was taken and it showed widening of periodontal ligament space in relation with 46 and radiolucency in the furcation area (figure 2). The horizontal probing depth (HPD) with Naber's probe and vertical probing depth (VPD) with the UNC-15 probe were measured which were found to be 4 mm and 8 mm (figure 1), respectively. The

patient was then referred to department of conservative dentistry to evaluate tooth vitality. Electric pulp testing was done, which confirmed that the tooth was nonvital.

Treatment planning was done taking into consideration that the tooth was nonvital with grade II furcation involvement as well. Root canal treatment was performed first and the patient was followed up for 3 months. At the end of third month, IOPA was taken with 46 which showed that the furcation involvement still prevailed. On clinical examination, it was observed that there was no change in the soft tissue measurements. Therefore, periodontal regenerative surgery using DFDBA along with GTR membrane was planned for treatment of furcation defect

Figure.1 HPD of 4 mm with Naber's Probe

Figure.2 Radiograph showing grade II furcation involvement

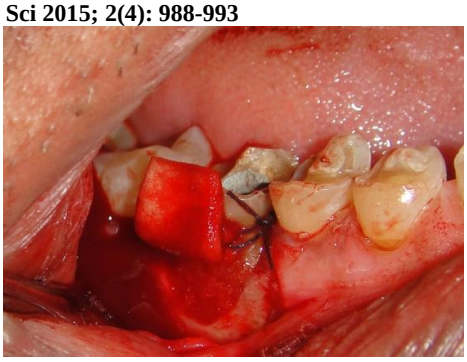

Figure.3 Bone grafting with DFDBA along with barrier membrane (GTR)

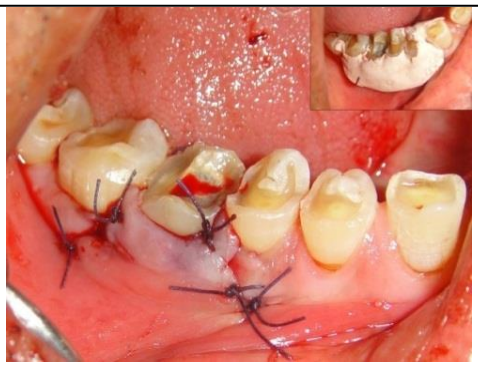

Figure.4 Postoperative

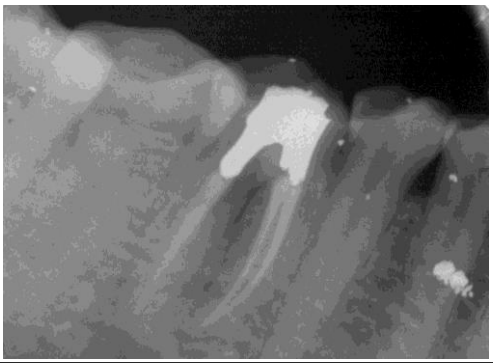

Figure.5 Radiograph at 9 months showing bone fill in furcation area.

Surgical procedure: After taking care of asepsis and sterilization the surgery was planned. The area selected for surgery was anesthetized using xylocaine with adrenaline 1:100,000. A full thickness flap was raised at the buccal aspect following intracrevicular incision and vertical

releasing incision. A vertical releasing incision was placed extending into the alveolar mucosa not closer than one tooth to the involved area, i.e. 46. Full thickness flap was raised till the base of furcation defect followed by split thickness flap beyond the mucogingival junction. This was done so as to facilitate the coronal positioning of flap, there by resulting in complete coverage of the defect with the material used. After reflection thorough degranulation and debridement was done at the defect area 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. Decalcified freeze dried bone allograft with osteoconductive and osteostimulative properties was placed and stabilized in the furcation area with guided tissue regeneration (GTR - PERIOCOL) membrane (figure 3). Primary soft tissue closure of the flap was done with nonresorbable black silk (3–0) suture using interrupted suturing technique.

DISCUSSION:

When a clinician cannot make a definitive diagnosis in the case of an endo-perio lesion, it may be prudent for him or her to initiate either of the treatment modalities and hope for repair. However, this could be overcome by proper history taking and sequential treatment planning. When the etiology is purely endodontic, calcium hydroxide can be used as an intracanal medicament. It is an excellent medicament in general, because it has bactericidal, antiinflammatory and proteolytic properties and 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. However, lesions which are not true combined lesions, little or no improvement would be seen with the periodontal perspective after endodontic treatment, leaving a very poor and often hopeless prognosis. But with the advent of new regenerative materials, however, successful periodontal treatment of such lesions has been possible. In this report the pulp vitality test which showed the nonvital nature of the tooth was a pivoting finding suggesting the primary endodontic 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 reduce to an extent on radiographic evaluation after 3 months but did not subside completely with no change in the clinical parameters. This confirmed a secondary periodontal involvement along with primary endodontic component. Periodontal regeneration has been attempted with variety of grafting materials, among which demineralized freeze dried bone allografts

(DFDBA) apparently facilitated regeneration in humans.[6] Schallhorn and McClain(1988)[7] reported an improved clinical results in intrabony defects and degree II furcations, following a combination therapy including barrier membranes plus DFDBA and citric acid root conditioning. Guillemin et al.(1993)[8] compared the effect of DFDBA alone with a combination of barrier materials and DFDBA in intrabony defects with significant amount of CAL gains and bone fill at six months, but no differences was found between the treatments. Anderreg et al. (1991)[9] 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. Lekovic et al.(1990)[10] 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.

CONCLUSION:

The healing of an endodontic lesion is highly predictable, but the repair or regeneration of periodontal tissues is questionable if associated with it. Endodontic therapy mostly should precede periodontal pocket elimination procedures in the case of a primary endo and secondary periodontal involvement; however, endodontic therapy would result only in resolution of the endodontic component of involvement and would have a little effect on the periodontal lesion. Therefore a thorough diagnostic examination usually will indicate the primary etiology and, thereby, direct the proper course of treatment plan as presented in this case. The results of this case report suggest that decalcified freeze dried bone allograft (DFDBA) along with guided tissue regeneration (GTR) membrane resulted in a significant amount of bone fill and reduction in HPD.

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