

Endo Perio lesion – A case report

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Abstract

The pulp and periodontium have anatomic, embryonic and functional inter-relationships. The simultaneous presence of pulpal diseases and inflammatory periodontal disease can complicate diagnosis and further treatment planning ^[1]. This case report deals with the management strategy of an endo perio lesion in left mandibular first molar with grade III furcation involvement. A 28-year-old male patient with an endo-perio lesion in the left mandibular first molar was initially treated with endodontic therapy. Following the

endodontic treatment, the furcation defect and the bone defect was treated using beta tricalcium phosphate alloplast material (RTR) along with guided tissue regeneration (GTR) membrane. At the end of 7 months, there was a gain in the clinical attachment level and reduction in probing depth. Radiographic evidence showed that there was a significant bone fill.

Keywords: Endo perio lesion, Beta tricalcium phosphate, Guided tissue regeneration.

Introduction

Endo-perio lesion has been used to describe lesions occurring due to inflammatory products detected in varying degrees in both the tissues of periodontium and the endodontium. In 1964, Simring and Goldberg, first described the actual relationship between periodontal and pulpal diseases^[2].

The endodontium and periodontium are closely integrated and diseases of one tissue may lead a way to the involvement of the other. The differential diagnosis of endodontic and periodontal diseases can sometimes be arduous, but it is of vital importance to make a proper diagnosis so that the appropriate treatment can be performed.

Endodontic-periodontal lesions present significant challenges to the clinician as far as diagnosis and prognosis of the affected teeth are concerned. Etiological factors like bacteria, fungi, and viruses and contributing factors such as trauma, root resorptions, perforations, and dental malformations play a significant role in the development and progression of such lesions. Additionally, furcation involvement presents as one of the major challenges in endodontic therapy with periodontal involvement. Although the role of pathology arising from pulp in the etiology of furcation involvement is still unclear, the high incidence of molar teeth with accessory canals supports such an association. Various treatment strategies have been proposed for the management of furcation involvement alone or furcation involvement along with severe bone loss, including open flap debridement, bio-modification of root 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^[1].

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.^[3] 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^[3] have been implicated in the development of periodontal-endodontic lesions, namely dentinal tubules, lateral and accessory canals, apical foramen. The most commonly used classification was given by Simon et al.^[4]

- Primary endodontic lesion
- Primary periodontal lesion
- Primary endodontic lesion with secondary periodontal involvement
- Primary periodontal lesion with secondary endodontic involvement
- True combined lesion

Case report

A 28-year-old patient reported to the Department of Periodontics, with a complaint of pain in the lower left back tooth region since 2 months. On intraoral examination, the probing pocket depth in relation to 36 was found to be deep (6-9 mm) with Grade II mobility and Grade III furcation involvement. A radiographic examination revealed widening of periodontal ligament

space with angular bone loss in relation with 36 and radiolucency in the furcation area. Electric pulp testing was done to check for tooth vitality, which confirmed that the tooth was nonvital.

Endodontic treatment was taken up first and the patient was followed up after 2 weeks. At the end of 2 weeks, IOPA was taken with 36 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 RTR (β -Tricalcium Phosphate) alloplastic graft material along with collagen membrane was planned for management of the defect.

After taking care of asepsis and sterilization the surgery was planned. The area selected for surgery was anesthetized using lignocaine with adrenaline 1:80,000. A full thickness flap was raised at the buccal aspect and lingual aspect following intracrevicular incision. Vertical releasing incisions was placed extending into the alveolar mucosa not closer than one tooth to the involved area, i.e. 36. Full thickness flap was raised till the base of furcation defect. This was done so as to facilitate the coronal positioning of flap, thereby resulting in complete coverage of the defect and 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 planing was carried out on the exposed root surface area of the defect. RTR (β -Tricalcium Phosphate) bone allograft with osteoconductive properties was placed and stabilized in the defect with collagen membrane. Primary soft tissue closure of the flap was done with non-resorbable black silk (4-0) suture using interrupted suturing technique.

The patient was given necessary instructions and prescribed with systemic antibiotics, analgesics and 0.12% chlorhexidine mouthwash for rinsing twice daily. The sutures were removed 7 days after surgery and oral hygiene instructions were reinforced. The patient was also advised to continue mouthwash for another 3 weeks. After 6 months from the periodontal surgery, the grade of mobility and furcation involvement has progressively reduced from the pre-operative condition along with gain in the clinical attachment level and also there was evident of bone fill in the apical region of the tooth.



Fig.1: probing depth of 8mm



Fig.2: grade iii furcation involvement



Fig.3: pre-op. Radiograph



Fig.6: Biogide resorbable membrane



Fig.4: after debridement



Fig.7: Post op. 1 week

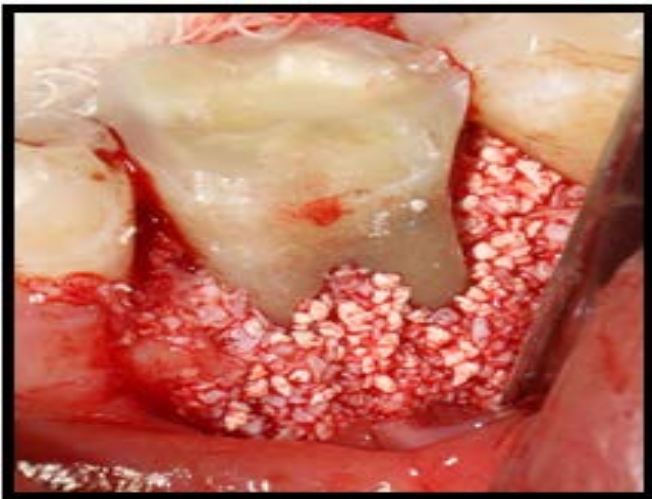


Fig.5: RTR cone bone graft



Fig.8: RVG - post op. 6 months

Discussion

Pulpal and periodontal tissues communicate with each other through various pathways such as the apical foramen vascular system, and lateral canals. These

patent foramina and canals can be potential communication routes of endodontic-periodontal inflammation^[11].

The similarity in the composition of cellular infiltrates also implies the connection between the pulp and periodontal tissues. Together, these findings can support the notion of cross-contamination between the pulp and the periodontal tissues^[5]. Periodontal inflammation may initially elicit degenerative change in the pulp. However, partial necrosis of the pulp may render a positive pulp testing value despite the existence of a combined lesion, especially in a multirrooted tooth^[6]. This is because the pulp usually does not undergo degenerative changes unless the main canal is involved, even when pathologic changes occur in the pulp derived from periodontal inflammation^[7].

Proper diagnosis and adoption of the bone graft technique or the guided tissue regeneration technique combined with osseous grafting followed by the removal of etiological factors will only ensure complete restoration of the health and function to a tooth with severe attachment loss resulting from a combined endo-perio lesion^[8,9].

Britain et al.^[10] showed that management of induced endo-perio lesions by bio absorbable collagen membranes alone or in combination with an organic bovine bone matrix resulted in enhanced amounts of bone and periodontal ligament and significant increase in the amount of new cementum when compared to open flap debridement alone.

In the present case report, endodontic treatment was performed prior to regenerative periodontal treatment. Degenerative and necrotic changes of the pulp had progressed due to long standing periodontal inflammation. Regenerative periodontal treatment was planned to address the remaining intraosseous defect.

Although the target tooth in the present case report was diagnosed as having primary periodontal lesion with secondary endodontic involvement, intentionally scheduling an initial endodontic treatment could help reduce pain and prevent undesirable secondary pulpal infection during regenerative periodontal surgery. During the periodontal surgery, RTR alloplastic bone graft was used with a resorbable membrane to fill the osseous defect. After 6 months from the periodontal surgery there was evidence of bone fill in the apical region of the tooth. The grade of mobility had progressively reduced from the pre operative condition along with gain in the clinical attachment level. Within the present observations, a combined approach of endodontic and periodontal therapy including regenerative procedure for an extensive endo-perio lesion could possibly regenerate the periodontium, reduce the progression of the disease and able to maintain the tooth in its function.

Conclusion

The management of endo-perio lesions is not unidirectional and involves various treatment strategies which will result in optimum resolution of the disease progression. The clinician should be aware of the underlying etiological and biological factors for successful treatment outcome of such cases.

In addition to conventional treatment procedures, inclusion of advanced techniques and regenerative procedures using GTR should be considered as per clinical situation which will result in a favorable long-time prognosis.

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