International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

Interdisciplinary Management of Endo-Perio Lesion: A Case Series

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Abstract: ***An Endo perio lesion has been one of the most common problems associated with the tooth. The simultaneous involvement of pulpal problems and inflammatory periodontal disease can complicate diagnosis and treatment planning. The present case series shows the importance of periodontal therapy that includes open debridement of the defect followed by placement of PRF, PRF+bone graft, PRF+bone graft +GTR membrane in the furcation defect crated by endo-perio lesions. The tooth was first endodontically treated that was followed by periodontal treatment. 3 months post operatively there was significant gain in clinical attachment level. Radiographically there was a significant amount of bone fill observed.***

Keywords: endo-perio lesion, furcation defect, bone graft

1. Introduction

Pulpal and periodontal problems are responsible for more than half of the tooth mortality[1]. The relationship between periodontal and pulpal disease was first described by Simring and Goldberg in 1964[2]. Since then, the term "endo-perio lesion" has been used to describe this type of lesions due to same inflammatory products found in both periodontal and pulpal tissues[3].

Periodontic-endodontic lesions are complex in nature and have varied pathogenesis. Treatment, decision making and prognosis depends primarily on the diagnosis of the specific disease. To have the best prognosis, clinician must refer the case to various areas of specialization, to perform restorative, endodontic and periodontal therapy either singly or in combination[4].

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[5].

Various treatment modalities have been proposed for the treatment of furcation involvement alone 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[5].

Classification

According to Simon, Glick and Frank in 1972 classified as[6]

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

Case 1

Primary endodontic lesion with secondary periodontal involvement

A 36 year old patient came to the department with chief complaint of pain with 46 and 47. Patient's medical status was noncontributory. The patient complained of periodic discharge of pus from the periodontal pocket, grade I tooth mobility, and intermittent pain. Radiographs displayed a bony defect in the furcal and periapical area of 46 and 47. Endodontic treatment was performed and treatment results were evaluated 3 months later which showed that the furcation lesion still remained intact. Therefore, periodontal regenerative surgery was planned for the treatment of the furcation defect. During surgery PRF was stabilized in the furcation defect. 3month recall radiograph showed considerable bone repair in the furcation defect 46 and 47 [Figure 1].

(a) (b) (c) (d)

Figure 1: (a) 3 month recall after RCT showing radiolucency in furcation area (b) Flap refection (c) PRF placement (d) 3 month recall after regenerative flap surgery showing considerable bone fill in the furcation defect.

Case 2

Primary endodontic lesion with secondary periodontal involvement

A 22yearold male patient reported with a chief complaint of pain, food lodgment, and mobile tooth in the right lower

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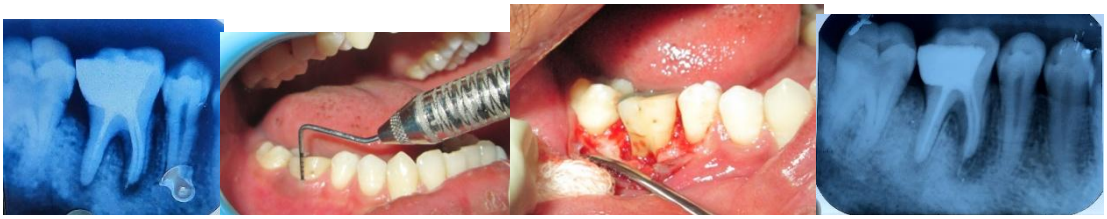
back tooth region from 6 months. Medical history was noncontributory. Intraoral examination revealed deep dental caries with 46 which showed a positive response to percussion.9mm periodontal pocket was noted and grade I mobility in relation to 46.Radiographic examination revealed periapical and furcal radiolucency. Endodontic treatment was completed. After 3 month radiograph showed radiolucency in furcation area was still intact. Therefore periodontal regenerative surgery was planned.

During surgery the bone defect was filled with a PRF + Decalcified freeze dried bone allograft (DFDBA)in the furcation area defect.3month recall radiograph showed considerable bone repair in the furcation defect[Figure 2].



(a) (b) (c) (d)

Figure 2: (a) 3 month recall after RCT showing radiolucency in furcation area and along the mesial root (b) 9 mm periodontal pocket (c) Flap refection, PRF +DFDBA bone graft placement (d) 3 month recall after regenerative flap surgery showing considerable bone fill in the furcation defect.

Case 3

Primary endodontic lesion with secondary periodontal involvement

A 45-year-old patient reported to the department with chief complaint of pain and localised swelling with pus discharge in lower right back tooth region. On examination, silver amalgum filling was seen; periodontal pocket of 14 mm was present with 47. Radiograph showed radiolucency approaching pulp and in periapical area suggesting secondary caries. Endodontic treatment was taken first and the patient was followed up for 3 months. At the end of third month deep pocket was still present and radiograph showed that the furcation involvement still prevailed. Therefore, periodontal regenerative surgery was planned.

During surgery the bone defect was filled with a PRF + Decalcified freeze dried bone allograft (DFDBA) stabilized in the furcation area with guided tissue regeneration (GTR-PERIOCOL) membrane. 3 month recall radiograph showed considerable bone repair in the furcation defect [Figure 3].

(a) (b) (c) (d) (e)

Figure 3: a) 3 month recall after RCT b) 14 mm periodontal pocket c) After flap reflection d) PRF + DFDBA bone graft with GTR membrane e) 3 month recall after periodontal regenerative flap surgery considerable bone fill was seen.

2. Discussion

The diagnosis and prognosis of the tooth having endo-perio lesions presents a challenge to the clinicians. Correct diagnosis is important to determine the treatment and longterm prognosis. However, treating a complex endodontic periodontal lesion is still one of the most common challenges in today's clinical practice. The simultaneous existence of pulpal and periodontal tissue destruction can complicate the diagnosis and subsequently affect the prognosis of the involved teeth[7].

This highlights the importance of following a critical diagnostic strategy to ensure a correct treatment plan. It also requires thorough understanding of wound healing process involving both complex tissues. Treatment of endo–perio lesion requires both endodontic treatment and periodontal regenerative treatment. The treatment strategy is to first focus on debridement and disinfection of the root canal system followed by an observation period. The goal of periodontal surgery is to remove all necrotic tissues from the surgical site and facilitate the regeneration of hard and soft tissue along with the formation of new attachment apparatus[8].

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[3]. 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[4].

In this case, following endodontic treatment the periodontal lesion reduced to an some extent on radiographic evaluation after 3 months but did not subside completely with no change in the clinical parameters. This confirmed a

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secondary periodontal involvement along with primary endodontic component.

The PRF appears to hold great promise for improving wound healing and clinical outcomes in periodontal therapy. In addition, PRF combined with osteoinductive/ osteoconductive bone substitutes showed beneficial effect by providing a stable scaffold for various growth factor of PRF, prevention of soft tissue collapse in bone defect, accelerating cellular in growth, revascularisation of the wound site[9].

Periodontal regeneration has been attempted with variety of grafting materials, among which demineralized freeze dried bone allografts (DFDBA) apparently facilitated regeneration in humans[10].

Karunakar P (2014)[11] showed that the combined treatment approach with PRF was effective in treating the intrabony defects as well as combined perio-endo lesions.

Vineetha Varughese et al (2015)[12] in their case report concluded that the combination therapy of a blend of PRF and bone graft and GTR shows successful results with elimination of pain and mobility, improvement inperiodontal parameters and patient satisfaction.

Dr. Asha Prabhu et al (2015)[13] in their case report stated that 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.

3. 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 series.

This case series also suggest that PRF alone, PRF + DFDBA and PRF + DFDBA along with GTR membrane resulted in significant amount of bone fill.

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