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Case Study

Endo-Perio Lesion Management: A Regenerative Approach

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ABSTRACT:
The endodontic and periodontal (Endo-Perio) lesions are common Problem associated with the tooth and are responsible for the half of tooth mortality. The Periodontium and endodontium are closely related to each other and thus the disease of any of one tissue may lead to disease of other tissue. The communication between these two spaces mediated by various anatomical routes such as, dentinal tubules, lateral and accessory canals and apical foramen. Treatment of such lesion involves the healing of endodontic as well as the periodontic, though the healing of periodontic component determines the prognosis of tooth. This paper describes the diagnosis and treatment protocol of endo-perio lesion with primary periodontal and secondary endodontic involvement and the importance of periodontal therapy. In present case report the tooth was treated endodontically first and then the periodontal therapy was done that includes open flap debridement of the furcation defect followed by the placement of bone graft and guided tissue regeneration (GTR) membrane.
Keywords: Endo-Perio, furcation, bone graft, Regenerative approach, Resorbable membrane.

1. INTRODUCTION

Initially Simring and Goldberg (1964) had described the relationship between pulp and the surrounding epithelium [1]. Two primary sites of dental infections from oral bacteria are periodontal tissue and pulp spaces. The hard shell of dentin separates these two spaces but they may communicate via multiple channels such as dentinal tubules, root canal foramina and crack lines on tooth through which microbial irritants can reach the two spaces [2]. The furcation involvement leads to bone defects in the interradicular spaces of multirooted tooth and it is the major challenge for the clinician during the treatment of endo-perio lesions [3].Thus, the treatment should be planned in such way that the preservation of dentition along with periodontium can be achieved.

Various treatment modalities [4] are used for the treatment of endo-perio lesions such as open flap debridement procedures,various regenerative procedures and biomodification of root surfaces. The treatment procedure that involves the endodontic therapy followed by the regenerative procedures with the bone grafts in furcation defects have excellent prognosis [5]. Bone grafts have many properties such as osteoinduction, osteoconduction, osteogenesis. A new property osteobiomodulation has also reported in some graft materials [6].

Till date there are many classifications available for the endo-perio lesions , the first classification was presented in year 1972 by Simon et al [7]. They classified endo- perio lesion into five types

a. Primary endodontic lesion: Primary pulp infection can lead to chronic periradicular periodontitis through which periapical radiolucency develops and usually migrates cervically.

b. Primary periodontal lesion: These results in extensive breakdown of alveolar crest which migrates from cervical area to apical region.

c. Primary endodontic lesion with secondary periodontal involvement: primary pulpal and primary periodontal lesions can occur simultaneously in an “independent” endo-perio lesion, and exhibits characteristics of both lesions.

d. Primary periodontal lesion with secondary endodontic involvement, and

e. True combined lesion

On the basis of where the periodontal pocket originated, Torabinejad and Trope offered a different clinical classification in 1996 [8] as; Endodontic origin, Periodontal origin, Combined endo-perio lesion, Separate endodontic and periodontal lesions, Lesions with communication, Lesions with no communication.

In year 1999 another classification was suggested by the World Workshop for Classification of Periodontal Diseases [9], and presented as periodontitis associate with the Endodontic diseases that is Endodontic-periodontal lesion, Periodontal-endodontic lesion and combined lesion.

The prognosis of primary with secondary periodontal infections are more favorable [10]. However, in primary periodontic lesions the removal of necrosed cementum and

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dentin should be done post endodontic therapy , so that there will be no any deleterious effects on the pulp and minimal chances of further spread of infection . The good outcome of disease can be achieved by avoiding the chemical irritants and use of rotary and ultrasonic scaling instruments [11].

2. CASE REPORT

A 47 years old male patient reported at the department of periodontology and implantology with chief complain of pain and pus discharge in the lower right back teeth region,since 3-4 months. On intraoral examination, an intra oral sinus was present irt, 46.To know the path of sinus a intraoral radiograph was taken with gutta purcha inserting the sinus. It had manifested that sinus was associated with the inter-radicular space of 46. Also widening of periodontal ligament on mesial as well as the distal root was noticed. Furcation area shows radiolucency. The vertical probing depth*(VPD)* of 46 was measured by UNC-15 probe was 8 mm and the horizontal probing depth (HPD) of furcation was measured by the Naber's Probe (Fig A). On the basis of measurements and the radiograph it was evaluated as grade II furcation defect. To check the vitality of tooth the patient was taken to the referred department of endodontics .The electric pulp testing confirms that tooth was non-vital. The treatment planning was done based on the fact that tooth was non vital and a grade II furcation was present.

Initially phase I periodontal therapy was done, then patient was advised to go for endodontic treatment and after the treatment 10-12 weeks follow up was done. After the follow up the IOPAR was taken in which grade II furcation was still present and the vertical bone defect was evident distal to 46 .The clinical measurements, shows no significant reduction in VPH and HPD. Thus the periodontal regenerative surgery was planned.

3. SURGICAL PROCEDURE

After sterilization the surgery was planned .The area was anaesthetized using the xylocaine with adrenaline 1:200000. A full thickness mucoperiosteal flap was elevated (Fig C) using intracrevicular and vertical incisions. The flap was designed so that the proper visibility of furcation defect can be easily facilitated. Beyond the mucogingival junction split thickness, flap was designed so that the flap can be placed coronally and furcation defect can be covered. After reflecting the flap a thorough debridement and degranulation was done at the defect area, Gracey curettes no. #13 and #14 was used. A thorough scaling and root planning was also done at the exposed root surface.

After surgical debridement the grade II furcation was evident (Fig D) . The vertical bone bone defect was also present distally (Fig E) . The defects were filled with hydroxapetite graft (Fig F). A barrier membrane was placed over the graft material (Fig G). The flap was sutured slightly coronally with black silk suture (3-0) using interrupted suturing technique and the coe-pak was placed (Fig I). Post operative instructions given as patient instructed for proper plaque control and advised 0.12% chlorhexidine mouthwash twice daily. Analgesics and antibiotics prescribed to the patient. Patient was recalled after 10 days for suture removal. The post operative healing was satisfactory with minimal discomfort. Patient was advised to continue chlorhexidine mouthwash for another 3 weeks. Follow up was planned after 1 month, 3 month and 6 months and 1 year.

3. DISCUSSION

It's very important to make a proper diagnosis in cases of endo-perio lesions. The proper history of the patient should be taken and treatment planning should be done accordingly. The prognosis of tooth depends upon the periodontal repair/regeneration [3]. In present case scenario the patient had Chronic periodontal disease that leaded to the sinus tract formation and long standing periodontal infection ultimately compromised the vitality of tooth.

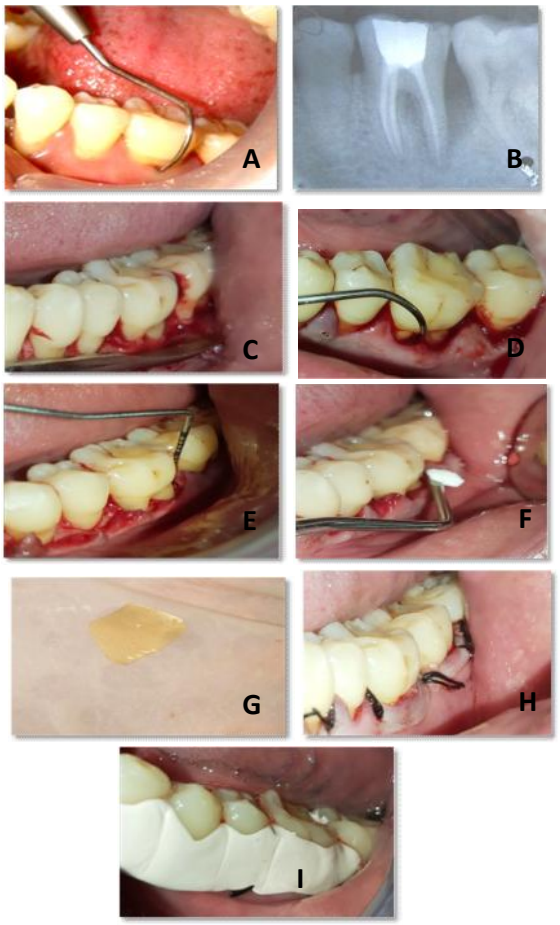

Fig 1: A: Pre-surgical measurement, B: IOPAR post endodontic treatment, C: flap Elevation, D: Evaluation of Furcation defect, E: Evaluation of bone defect, F: Placement of bone graft , G: Resorbable GTR membrabe , H: GTR membrane placed & Suturing done , I: Coe-Pack placed

The treatment for primary periodontal involvement with secondary endodontic involvement relies on how the disease presents clinically. Root canal therapy should be started first in cases of acute discomfort, which is typically of

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endodontic origin. At the same time, periodontal therapy should be started to reduce the bacterial load in the periodontium [2]. The non-surgical periodontal therapy with scaling and root planning is started in cases of primary periodontal with secondary endodontic involvement. Only after the electric pulp testing is the root canal procedure should be started. The Periodontal surgical procedures should be done after the reevaluation of the lesion.

In cases of Primary endodontic involvement the infected root canal can lead to chronic inflammation which can easily extend through the gingival sulcus and cause tissue breakdown, and can drain through the sinus tracts. The intracanal medicament plays an important role in purely endodontic lesions it inhibits resorption and favours regeneration.

The symptoms of these lesion ranges from slight pain and discomfort to severe pain, reddish and tender gingiva , tooth sensitivity , tooth mobility and pain during chewing food. In chronic cases the suppuration and deep periodontal pockets with bleeding and probing can be seen due to destruction of underlying periodontium [12].

In present case, diagnosis was primary Periodontal followed by secondary Endodontic lesion, As the tooth was non-vital, thus the primarily endodontic treatment was done followed by the periodontal surgery. Reevaluation of lesion was done after 10-12 weeks of the endodontic therapy. The furcation defect was present, and periodontal involvement with insignificant pocket reduction was present after endodontic therapy. The buccal furcation region was involved, thus the regeneration via bone graft has been planned.

Bone graft we used in this particular case was B-ostIN bone graft , it's a synthetic bone graft. It is a biocompatible material and composed of hydroxyapetite that naturally found in bone. The Ca/P ratio of B-ostIN is 1.67 which is similar to mineral content of human bone [13]. This graft possess osteoconductive property, the size of this particular material was ranging from 300-700µm and has very good potential of bone growth.

Also the restorable collage membrane (Periocol®) was also stabilized over the graft material for the guide tissue regeneration (GTR). The restorable collagen membrane was used on the basis of the fact that collagen (Type 1) is the primary component of periodontal connective tissue and it provides reduced immunogenicity, ease of manipulation, and the capacity to increase tissue thickness for periodontal ligament fibroblasts and gingival fibroblasts [14].

The closure of the furcation defect by the regeneration of lost periodontal apparatus is most acceptable results of furcation therapy [15], The regeneration of periodontal tissue with complete bone fill in fucation defects was presented in a case published in the year 2020 [16].

4. CONCLUSION

The outcome of endodontic treatment is highly predictable but when it is about periodontal regeneration its highly questionable. The endodontic treatment will only lead to the healing of endodontic component. Thus a thorough diagnosis and subsequent treatment planning is very important for the preservation of tooth.

5. REFERENCE

1. Solomon C, Chalfin H, Kellert M, Weseley P. The Endodonticperiodontal Lesion: A Rational Approach to Treatment. J Am Dent Assoc. 1995;126;473-9.
2. Newman MG,Takei HH, Klokkevold PR, Carranza FA. Third South Asia edition, Newman and Carranza's Clinical Periodontology; An imprint of Elsevier, India,2019.
3. Nanavati B, Bhavsar NV, Mali J. Endo periodontal lesion – A case report. J Adv Oral Research. 2013; 4:23-7.
4. Muller HP, Eger T. Furcation diagnosis. J Clin Periodontol. 1999;26:485-98.
5. S Deepak, Anjaneyulu K, MS Nivedhitha. Surgical Management of Endo-Perio Lesion using Bonegraft and Guided Tissue Regeneration - ACase Report. Int J Dentistry Oral Sci. 2020;S10:02:004:19-23.
6. Zhao R ,Yang R, Cooper PR, Khurshid Z, Shavandi A, Ratnayake J. Bone Grafts and Substitutes in Dentistry: A Review of Current Trends and Developments. Molecules. 2021; 26(3007):1-27.
7. Simon JH, Glick DH, Frank AL. The relationship of endodontic- periodontic lesions. J Periodontol. 1972;43:202-8.
8. M. Torabinejad and M. Trope, "Endodontic and periodontal interrelationships," in Principles and Practice of Endodontics, R. E.Walton and M. Torabinejad, Eds., 1996.
9. Armitage GC. Development of a classification systemfor periodontal diseases and conditions. Annals of Periodontology. 1999; 4: 1–6.
10. Tseng CC, Harn WM, Chen YH, Huang CC, Yuan K, Huang PH. A new approach tothe treatment of true-combined endodontic–periodontic lesions by the guidedtissue regeneration technique. J Endod 1996;22:693–10.
11. Parolia A, Gait TC, Porto IC, Mala K. Endo-perio lesion: A dilemma from 19 th until 21 st century. Journal of Interdisciplinary Dentistry. 2013; 3(1).
12. KT Chandrashekar, Chhavi Saxena. Hopeless To Hopeful: A Clinical Study On Management Of Periodontal Abscess With Grade II Furcation Involvement – Endodontic And Periodontal Interdisciplinary Approach:Case Report. Rev Clín Pesq Odontol. 2010; 6:107-12.
13. Yip I et al. Defect healing with various bone substitutes. Clin. Oral implants Res. 2015;26:606-14.
14. Jain D, Deepa D. A comparative evaluationof freeze-dried bone allograft with and without bioabsorbable guided tissue regeneration membrane Healiguide® in

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the treatment of Grade II furcation defects: A clinical study. J Indian Soc Periodontol. 2015;19:645-50.
15. Das A C, Panda S, Kumar M, Mohanty G, Das U. Management of Endo-perio Lesion by Guided Tissue Regeneration: A Case Report. Indian J. Forensic Med. Toxicol. 2020;14: 8405-09.
16. Raja S, Nath G, Emmadi P, Ramakrishnan, Ahathya. Treatment of an isolated furcation involved endodontically treated tooth – a case report. J Conserv Dent. 2007; 10:129-33.

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