

Management of a Primary Periodontal - Secondary Endodontic Lesion by Combination of Periodontal and Endodontic Therapy Along with Placement of a Regenerative Collagen Membrane at the Furcal Area - A Case Report

Kazi Hossain Mahmud^{1*}, Rina Niroula² and Muktadir Hossain³

¹Assistant Professor, Conservative Dentistry and Endodontics, Update Dental College and Hospital, Dhaka, Bangladesh

²Intern Doctor, Update Dental College and Hospital, Dhaka, Bangladesh

³Medical Officer, Conservative Dentistry and Endodontics, Update Dental College and Hospital, Dhaka, Bangladesh

***Corresponding Author:** Kazi Hossain Mahmud, Assistant Professor, Conservative Dentistry and Endodontics, Update Dental College and Hospital, Dhaka, Bangladesh.

Received: November 29, 2021

Abstract

Endodontic-periodontal lesions or retrograde pulpitis can be caused by the bacteria in periodontal pockets affecting the dental pulp. More than half of all tooth problems are caused by pulpal and periodontal disorders. Inflammatory periodontal disease and pulpal problems might make diagnosis and treatment planning more complex. The efficiency of a bio absorbable barrier membrane in the therapy of a furcation defect linked with an endo-perio lesion in a left mandibular first molar is examined in this case report. The hard and soft tissue lesions have completely healed on follow-up radiographs. For a long-term prognosis, the tooth with endo-perio lesions should be extensively examined for any cracks or fractures, particularly in the furcation zones. It was demonstrated in this case study that a three-month treatment interval between endodontic therapy and periodontal surgery has no negative impact on periodontal tissue healing.

Keywords: Endo-Perio Lesion; Mandibular Molar; Furcation; Treatment Interval

Introduction

The dental pulp and periodontal tissue are closely related to each other, originating from the periodontium. The pulp originates from the dental papilla and the periodontal ligament from the dental follicle which are separated by Hertwig's epithelial root sheath [1].

Due to its complex anatomy and physiology, the interface between periodontal tissue and teeth has long been an area of interest. When inflammation related to dental pulp and periodontal pathology occurs in a tooth, it is classified as a perio-endo lesion [2]. Pulp and periodontal problems account for more than half of dental mortality [3]. Simring and Goldberg first described the relationship between periodontal disease and endodontic disease in 1964. To describe these lesions generated by inflammatory products found in both periodontal and pulpal tissues, the term

"endo-perio lesion" has been used since then [1]. Both tooth pulp and periodontal lesions are infected by a variety of microbial anaerobes. Combined endoperio lesion (EPL) disease is caused by the simultaneous inflammation of the pulp system and periodontal tissues to varying degrees [4]. Etiological components mainly caused by bacteria, but also other factors, such as tooth deformity, history of trauma, iatrogenic perforation, and external or internal root resorption, all have a place in the progression of endo perio lesions [4].

Simon., *et al.* divided endo-perio lesions (EPL) into primary endodontic disease, primary periodontal disease, and comorbidities including primary endodontic disease with secondary periodontal disease and primary periodontal disease with secondary endodontic disease and true combined disease. This classification has been used and is very valuable in helping to make sound clinical decisions [1]. The main factors to take into account the decisions

of the treatment are the vitality and the type and extension of the periodontal defect. If endodontic and periodontal disorders cannot be distinguished, a precise diagnosis is essential for effective treatment [1].

Case Report

A 40-year-old female patient came to the Department of Conservative Dentistry and Endodontics, with a history of acute pain and localized swelling in the left mandibular molar area. On examination, gingival reddening and swelling on the buccal side of the tooth were present. Periodic pus discharge from the periodontal pocket, sensitivity to percussion, mild tooth movement, and intermittent discomfort were all reported by the patient.

Radiographs revealed a bone defect in the furcal and periapical areas of tooth #36. The furcal region probing depth was 12 mm and was likely entire (grade III furcal lesion). So, the case was diagnosed as necrosis of the pulp followed by chronic apical abscess of tooth no# 36. Endodontic treatment followed by specific periodontal surgery was planned.

The patient was told about the treatment's methods and hazards. Endodontic treatment was performed, and three months later, treatment outcomes were evaluated, demonstrating that the furcation lesion remained intact. As a result, periodontal regeneration surgery was planned to correct the furcation abnormalities.



Figure 1: Initial radiograph.



Figure 3: Detection of perforation.



Figure 2: Initial photograph.



Figure 4: Flap retraction and debridement.

Procedure

Following intracrevicular incisions and a vertical releasing incision, a muco-periosteal flap was raised at the buccal aspect after local anesthetic was administered. A vertical release incision was made into the alveolar mucosa, not more than one tooth away from the affected area. After reflection, the defective region was thoroughly degranulated and debrided. On the exposed root surface region of the defect, extensive scaling and root planning were also performed. The root surfaces were cleaned with saline solution after instrumentation to try to eliminate any leftover detached fragments from the defect and surgical field. After that, collagen membrane was placed and stabilized in the furcation area. Non resorbable black silk [3-0] suture was used to close the flap's primary soft tissue utilizing an interrupted suturing approach. The patient was encouraged to maintain adequate plaque control and was given a week's supply of 0.12 percent chlorhexidine mouthwash to rinse twice daily.



Figure 5: Placement of collagen membrane.



Figure 6: Periodontal dressing.

After the procedure, patient was comfortable and gradually became symptom free over next 2 weeks. Ten days after surgery, the sutures were removed. A recall radiograph six months after the procedure revealed evidence of osteogenic regeneration in the furcation defect. Patient was advised for further 18 months periodic follow up.

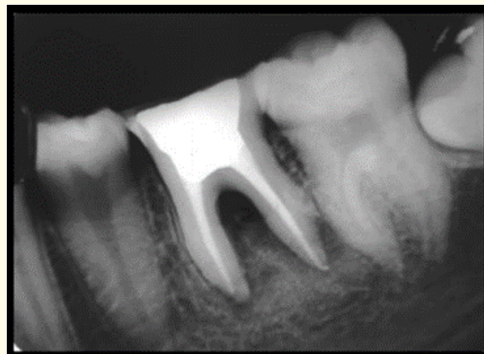


Figure 7: Bone regeneration.



Figure 8: Six month follow up.

Discussion

The pulp and periodontium are embryonic, anatomic and functionally related. Simring and Golberg began by explaining their relationship. Endo-perio lesion (EPL) treatment is one of the most common clinical issues today. The presence of pulpal problems and inflammatory periodontal diseases at the same time might complicate diagnostic and treatment planning, as well as impact the sequence of care to be provided [5,6]. The diagnosis of basic

endodontic disease and primary periodontal disease is usually straightforward. The vitality tests are the first step in a good diagnosis. Although the vitality test cannot determine the histology condition of the dental pulp, it is quite capable of registering pulp life [1]. The ability of vitality tests to detect non-sensitive reactions indicating necrotic pulp was reported to be 89 percent with the cold test and 88 percent with the electrical test [7,8].

When the apical advancement of a periodontal pocket continues until the apical tissues are implicated, an endodontic periodontal lesion (EPL) with primary periodontal disease arises. Although there was no sign of caries, there was a deep periodontal pocket spreading apically in the tooth, with signs of continuous and dull pain, therefore we diagnosed an endodontic periodontal lesion with primary periodontal disease. If tooth is non vital clinically and the presence of periodontal lesion is evident then periodontal therapy along with the endodontic treatment is recommended for better clinical outcome [9,10]. Root canal cleaning and shaping were combined with irrigation with sodium hypochlorite and inter appointment calcium hydroxide treatment in this case study to render the root canal system free of cultivable microorganisms [1].

Proper treatment is the key factor for treatment success. Poor endodontic treatment allows canal re-infection, resulting in treatment failure [11]. Furthermore, there are other variables that can contribute to endo-perio lesions (EPL). Any artificial paths between periodontal and pulpal tissues, such as cracks and fractures, should always be analyzed in terms of the tooth. The source of both illnesses should be identified and eliminated [1]. The endodontium and periodontium are closely related and diseases of one tissue may lead to the involvement of the other [12]. If the clinician has a better understanding of the diagnosis, treatment sequences, and intervals, treatment outcomes will be more predictable. As a result, prompt and accurate therapy of endo-perio lesions (EPL) can prevent natural tooth loss and postpone more complex therapies.

Conclusion

Pathogenesis of a perio-endo lesion (EPL) can range from extremely simple to relatively complex. Understanding these disease processes is critical for making an accurate diagnosis. This allows for the development of a proper treatment plan in which unnecessary, lengthy, or even harmful treatment is avoided. Sometimes managing a case like this is frustrating and disappointing for the patient and the operator. So, to avoid potential conflict between the clinician and the patients, a proper pre-operative counseling about the treatment and its duration of favourable outcome should be conducted.

Bibliography

1. Aksel H, Serper A. A case series associated with different kinds of endo-perio lesions. *J Clin Exp Dent*. 2014;6(1):e91-e95.
2. Sonde N, Edwards M. Perio-Endo Lesions: A Guide to Diagnosis and Clinical Management. *Prim Dent J*. 2020;9(4):45-51.
3. Bender IB. Factors influencing the radiographic appearance of bony lesions. *J Endod*. 1997;23(1):5-14.
4. Dakó T, Lazăr AP, Bică CI, Lazăr L. Endo-perio lesions: diagnosis and interdisciplinary treatment options. *Acta Stomatol Marisensis J*. 2020;3(1):257-261.
5. Kambale S, Aspalli N, Munavalli A, Ajgaonkar N, Babannavar R. A sequential approach in treatment of endo-perio lesion a case report. *J Clin Diagnostic Res*. 2014;8(8):22-24.
6. Simring M, Goldberg M. The pulpal pocket approach: retrograde periodontitis. *J Periodontol*. 1964;35(1):22-48.
7. Petersson K, Söderström C, Kiani-Anaraki M, Lévy G. Evaluation of the ability of thermal and electrical tests to register pulp vitality. *Endod Dent Traumatol*. 1999;15(3):127-131.
8. Tripathi A, Ahmad N, Negi K. Non-Surgical Management of a Tooth with Endo-Perio Lesion : A Case Report. *International Journal of Health Sciences and Research*. 2021;11(1):265-267.
9. Fujii R, Muramatsu T, Yamaguchi Y, Asai T, Aida N, Suehara M, et al. An endodontic-periodontal lesion with primary periodontal disease: a case report on its bacterial profile. *Bull Tokyo Dent Coll*. 2014;55(1):33-37.
10. Petersson K, Söderström C, Kiani-Anaraki M, Lévy G. Evaluation of the ability of thermal and electrical tests to register pulp vitality. *Endod Dent Traumatol*. 1999;15(3):127-131.
11. Peters LB, Wesselink PR, Moorer WR. The fate and the role of bacteria left in root dentinal tubules. *Int Endod J*. 1995;28(2):95-99.
12. Preetinder Singh. Endo-Perio Dilemma: A Brief Review. *Dent Res J (Isfahan)*. 2011;8(1):39-47.

Volume 5 Issue 4 April 2022

©All rights reserved by Kazi Hossain Mahmud., et al.