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Case Note

The endodontic - periodontal lesion: A case report

Gorkhali RS[1], Pradhan S[2]

[1]Resident, [2]Professor, Periodontics Unit, Department of Dental Surgery, Bir Hospital, National Academy of Medical Sciences, Kathmandu, Nepal.

Abstract

Endodontic–periodontal lesions present challenges to the clinician as far as diagnosis, prognosis and treatment planning are concerned. When a periapical lesion communicates with a deep periodontal pocket, the etiology can be either endodontic or periodontal . Treatment and prognosis of endodontic–periodontal diseases vary and depend on the cause and the correct diagnosis of each specific condition.

We report a clinical case of advanced endodontic-periodontal lesions treated primarily with endodontic treatment and observation of increase in radio opacity at the furcation area suggesting a gain in bone height.

Key words: Endodontic- periodontal lesion, Root canal treatment, Non surgical periodontal therapy, Smoking

Introduction

Simring and Goldberg in 1964 first described the relationship between periodontal and endodontic disease[1]. An intimate relationship exists between the pulp of a tooth and its surrounding periodontium. The pulp originates from the dental papilla and the periodontal ligament from the dental follicle and is separated by Hertwig's epithelial root sheath[2].

The possible pathways for the spread of inflammation, infection or both could be through either the main or accessory canals to produce periodontal breakdown, root perforations and fractures, a periodontal pocket into the root canal system itself and dentinal tubules[2].

The various etiologic factors for the progression of disease are bacteria, fungi, viruses as well as trauma, root resorptions and dental malformations[3].

Simon and Colleagues[4] in 1972 classified endodontic-periodontal lesion as

i) Endodontic lesion
ii) Periodontic lesion
iii) Endodontic lesion with secondary periodontal involvement
iv) Periodontal lesion with secondary endodontic involvement
v) True combined lesion

Correct diagnosis and proper treatment plays a very important role for the success of the treatment. In our case the diagnosis was periodontal lesion with secondary endodontic involvement. The treatment plan consisted of endodontic treatment first followed by periodontal therapy. Adequate root canal treatment induces healing of lesions and nonsurgical or surgical periodontal therapy should only be initiated after radiological evaluation of the healing process. The timing of the healing process depends largely on various hereditary, environmental or behavioral risk factors. Among the environmental risk factors, tobacco smoking has been found to be associated with an increased prevalence and severity of periodontal disease[5].

Tobacco use alters the turnover of cells during periodontal tissue repair and the immune response of the affected host. This modifiable habit is considered a major risk factor for periodontal diseases and a potential risk factor for endodontic diseases[6].

Case Report

A 49-year-old male was referred to the Periodontics unit, Department of Dental Surgery, Bir Hospital with a chief complaint of pain in right lower posterior region. The patient was in good general health with poor oral hygiene and with a history of consumption of 20-25 cigarettes per day for 35 years. Clinical examination

Correspondence

Dr. Ranjita Shrestha Gorkhali, Resident, Periodontics Unit, Department of Dental Surgery, Bir Hospital, National Academy of Medical Sciences, Kathmandu, Nepal, E-mail: ranjish2@yahoo.com

revealed generalized inflammation of gingiva, bleeding on gentle periodontal probing, presence of subgingival calculus and periodontal pocket in relation to 46. Gingival recession in relation to 46 was 2mm and the tooth was tender to percussion. The vertical probing depth was 9 mm in buccal surface (measured with William's periodontal probe) and > 6mm horizontal component (measured with Naber's probe) in furcation area in relation to 46 showing Class III furcation involvement (according to Glickman's classification) and increased tooth mobility (Grade I). Balancing interference was present and pulp vitality test was negative.

An intraoral periapical radiograph of right lower first molar revealed radiolucency at the furcation area which extended close to the apex of the distal root (Fig 1). The absence of any carious process and the presence of the typical radiographic feature of an infrabony defect in the furcation led us to consider the periodontal aetiopathogenesis and trauma from occlusion. Hence a diagnosis of chronic generalized periodontitis along with endodontic- periodontal lesion in relation to right lower first molar was made.

Root canal treatment was initiated on the same tooth with selective grinding to remove balancing interference and was completed in consecutive appointments. Clinical examination after the completion of root canal treatment showed reduction in mobility and absence of pain. Nonsurgical periodontal therapy i.e., scaling and root planing was performed using ultrasonic and hand instruments. The patient was given oral hygiene instructions including use of dental floss and interdental brushes and the modified Bass technique was initiated. The patient was informed about the impact of his smoking habit on periodontal and endodontic diseases. Smoking cessation was recommended and assistance offered.

The patient was recalled after 2 months for the evaluation of the periodontal condition. Due to non compliance the patient came only after 6 months for follow up. The affected tooth was sound and no mobility was present and was functioning well. Clinically it revealed 6 mm probing depth buccally (Fig 4) and the intraoral radiograph showed reduction in radiolucency at furcation area. (Fig 2 and 3)

The patient reduced his smoking consumption to 5-6 cigarettes per day but was not able to quit completely. Subgingival scaling and root planing was performed and the further procedures planned were to open debridement of the tooth (46) and to make the furcation area easily cleansable.

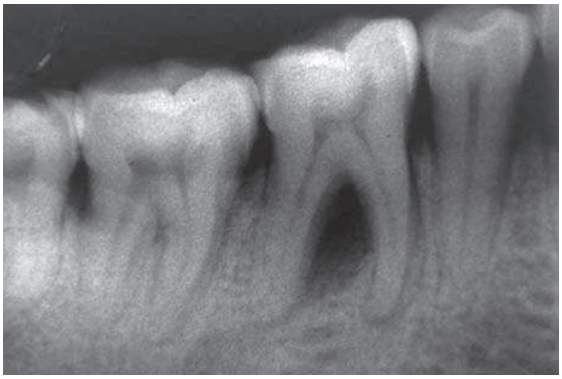

Fig 1: IOPA showing furcation involvement and radiolucency in relation to 46

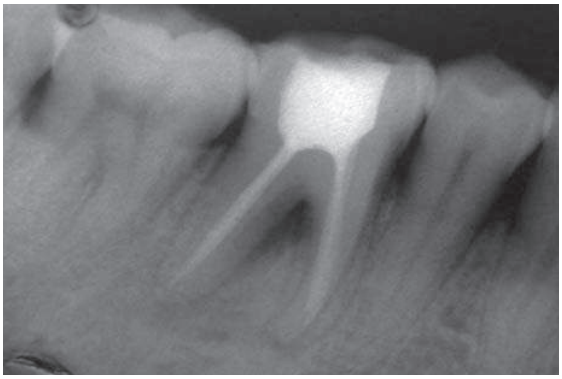

Fig 2: Post-obturation 6 months after Root canal Treatment

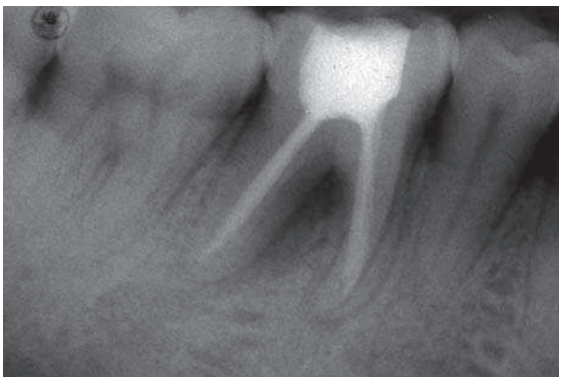

Fig 3: 9 months after Root Canal Treatment

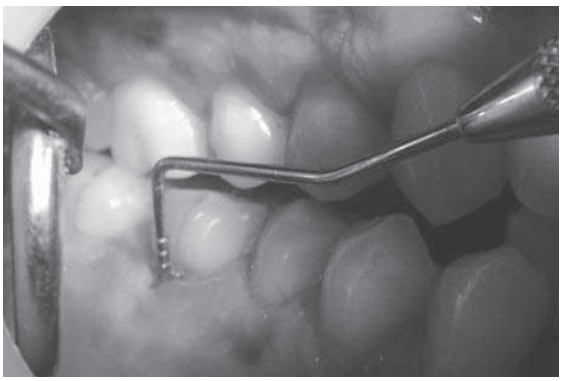

Fig 4: Clinical feature showing periodontal pocket of 6mm

Discussion

Periodontal defects that communicate with periapical lesions may have a favorable prognosis if they are diagnosed correctly on time. The main factors to consider for treatment decision-making are pulp vitality, type and extent of the periodontal defect. Diagnosis of primary endodontic disease and primary periodontal disease presents no clinical difficulty. It appears that the pulp is usually not severely affected by periodontal disease until the periodontal tissue breakdown has opened an accessory canal to the oral environment[7].The effects of endodontic infection on periodontal probing depth and the presence of furcation involvement in mandibular molars were also investigated[8]. It was found that endodontic infection in mandibular molars was associated with more attachment loss in the furcation area.

The prognosis and treatment of each endodontic–periodontal disease type varies. Primary endodontic disease should only be treated by endodontic therapy while primary periodontal disease should only be treated by periodontal therapy. In this case, the prognosis depends on the severity of the periodontal disease and the patient compliance. Primary periodontal disease with secondary endodontic involvement should first be treated with endodontic therapy. Treatment results should be evaluated in 2–3 months and only then periodontal treatment should be initiated. This sequence of treatment allows sufficient time for initial tissue healing and better assessment of the periodontal condition. It also reduces the potential risk of introducing bacteria and their byproducts during the initial phase of healing. It was suggested that aggressive removal of the periodontal ligament and underlying cementum during interim endodontic therapy may adversely affect periodontal healing[9].

In the present case, performing endodontic treatment gave good result and relief of pain to the patient. Increase in radio-opacity at the furcation suggests gain of bone height, which is visible in radiographs taken in follow up after 6 months (Fig 3) and 9 months (Fig 4). Conventional endodontic treatment led to reduced radiolucencies around the affected roots. Presence of 6 mm residual periodontal probing depth could be attributed to the non healing due to persistence of smoking habit and non compliance.

Smokers have increased risks of experiencing periodontal attachment loss, radiographic bone loss and tooth loss post-treatment. The use of tobacco disrupts the physiological balance between anabolic and catabolic mechanisms due to alterations in the immune system and tissue mechanisms[10]. Using the motivational interviewing technique, the patient was informed briefly about the pathogenesis of tobacco-related diseases both in general and with special focus on periodontal and endodontic diseases. The patient was advised to stop smoking. In spite of these measures, this patient was not willing to give up smoking but has reduced the rate of smoking.

However, evidence from a systematic review suggests that counseling conducted by oral health professionals may increase tobacco abstinence rates[11].Therefore; dentists play an important role in educating and motivating patients for tobacco cessation.

Conclusion

For the endodontic-periodontal lesions to be treated successfully, an accurate diagnosis is mandatory that must cover both the endodontic and the periodontal component of the lesion. Environmental factors such as smoking should also be taken into considerations and patient should be counseled and motivated to quit smoking and comply with the treatment for a successful outcome.

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