

Endo-perio lesions prevalence in non-molar and molar teeth

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Abstract:

Background: To study prevalence of endo-perio lesions in non-molar and molar teeth. **Materials & methods:** A total of 50 teeth were enrolled as in 48 subjects. The presence/absence of periapical lesion, bone loss in the furcation region, and proximal area were evaluated. The results were analysed using SPSS software. The p- value less than 0.05 was considered significant. **Results:** It was found that 60% of the teeth were diagnosed with primary endodontic lesion, and that periodontal lesions were present in as secondary (12%), primary (8%), or combined (14%). **Conclusion:** The primary endodontic lesion was found in a greater proportion in teeth referred for endodontic treatment.

Keywords: periodontal, endodontic, prevalence.

Introduction

The endodontium and periodontium are closely related and diseases of one tissue may lead to the involvement of the other. The differential diagnosis of endodontic and periodontal diseases can sometimes be difficult but it is of vital importance to make a correct diagnosis so that the appropriate treatment can be provided. Endodontic-periodontal lesions present challenges to the clinician as far as diagnosis and prognosis of the involved teeth are concerned. Etiologic factors such as bacteria, fungi, and viruses as well as various contributing factors such as trauma, root resorptions, perforations, and dental malformations play an important role in the development and progression of such lesions. The endo-perio lesion is a condition characterized by the association of periodontal and pulpal disease in the same dental element. The relationship between periodontal and pulpal disease was first described by Simring and Goldberg in 1964.¹ Since then, the term 'perio-endo lesion' has been used to describe lesions due to inflammatory products found in varying degrees in both periodontium and pulpal tissues.

Endodontic-periodontal lesions are included in the category of other conditions that affect the periodontium by the new classification of the American Academy of Periodontology and the

European Federation of Periodontology.² Several other classifications have been proposed to date,^{3,4}

of which the classification by Simon et al.^{3,5} is the most widely used to identify etiologic factors, addressing different clinical conditions that consider the primary cause of the disease, such as the presence of a primary endodontic lesion; primary endodontic lesion with secondary periodontal involvement; primary periodontal lesion; primary periodontal lesion with secondary endodontic involvement; and true combined lesion.⁶ The pathogenesis of a true-combined lesion is identical to the pathogenesis of primary endodontic and periodontal lesions. These lesions are often indistinguishable from an advanced primary endodontic lesion with secondary periodontal involvement and/or a primary periodontal lesion with secondary endodontic involvement.⁷ True combined endodontic-periodontal disease occurs with less frequency. It is formed when a coronally progressing endodontic disease joins an infected periodontal pocket progressing apically.^{3,8} The radiographic appearance of combined endodontic-periodontal disease may be similar to that of a vertically fractured tooth. A fracture that has invaded the pulp space, with resultant necrosis, may also be labeled a true combined lesion and yet not be amenable to successful treatment. Hence, this study was conducted to study prevalence of endo-perio lesions in non-molar and molar teeth.

Materials & methods

A total of 50 teeth were enrolled as in 48 subjects. Visible plaque, probing depth, and bleeding on probing were evaluated. Endodontic evaluation included the presence or absence of caries, fistulas, pain, and pulp sensitivity was done. The presence/absence of periapical lesion, bone loss in the furcation region, and proximal area were evaluated. The results were analysed using SPSS software. The p- value less than 0.05 was considered significant.

Results

A total of 50 teeth were enrolled. The frequency and diagnosis of the type of endoperiodontal lesion was evaluated. It was found that 60% of the teeth were diagnosed with primary endodontic lesion, and that periodontal lesions were present in as secondary (12%), primary (8%), or combined (14%). The results demonstrated that true endodontic-periodontal combined lesion occurred more frequently in molar teeth when compared to non-molar teeth ($p < 0.05$).

Table 1: Frequency and diagnosis of the type of endodontic-periodontal lesion in non-molar and molar teeth

Type of lesion	Frequency N (%)	Teeth N (%)		P – value
		Non- molars	Molars	
Primary endodontic	30(60)	20 (66.7)	10 (50)	0.05
Primary endodontic with secondary periodontal involvement	6 (12)	4(13.4)	2 (10)	0.8
Primary periodontal	4(8)	3(10)	1 (5)	0.6
Primary periodontal with secondary endodontic involvement	3(6)	1(3.4)	2 (10)	0.2
True combined lesion	7 (14)	2(6.7)	5 (25)	0.01
Total	50(100)	30(100)	20(100)	

Discussion

Primary endodontic diseases usually heal following root canal treatment. The sinus tract extending into the gingival sulcus or furcation area disappears at an early stage once the affected pulp has been removed and the root canals well cleaned, shaped, and obturated. A review of patient, 4-6 months post-operatively should show healing of the periodontal pocket and bony repair.⁹ Surgical endodontic therapy has been shown to be unnecessary even in the presence of large periradicular radiolucencies and periodontal abscesses.¹⁰ Invasive periodontal procedures should be avoided as this may cause further injury to the attachment, possibly delaying healing.¹¹ Primary endodontic lesions with secondary periodontal involvement will not completely resolve with endodontic treatment alone. Root/re-root canal treatment is instituted immediately and the cleaned and shaped root canal filled with calcium hydroxide

paste. As it is bactericidal, anti-inflammatory and proteolytic, it inhibits resorption and favors repair. It also inhibits periodontal contamination from instrumented canals via patent channels connecting the pulp and periodontium before periodontal treatment removes the contaminants. The canals are eventually filled with a conventional obturation when there is clinical evidence of improvement.¹¹ Hence, this study was conducted to study prevalence of endo-perio lesions in non-molar and molar teeth.

In the present study, a total of 50 teeth were enrolled. The frequency and diagnosis of the type of endoperiodontal lesion was evaluated. It was found that 60% of the teeth were diagnosed with primary endodontic lesion, and that periodontal lesions were present in as secondary (12%), primary (8%), or combined (14%). A study by Shenoy N et al, the interrelationship between periodontal and endodontic disease has aroused confusion, queries and

controversy. Differentiating between periodontal and endodontic problems can be difficult. A symptomatic tooth may have pain of periodontal and/or pulpal origin. The nature of that pain is often the first clue in determining the etiology of such a problem. Radiographic and clinical evaluation can help clarify the nature of the problem. In some cases, the influence of pulpal pathology may create periodontal involvement. In others, periodontal pathology may create pulpal pathology. This review article discusses the various clinical aspects to be considered for accurately diagnosing and treating endo-perio lesions.¹²

In the present study, the results demonstrated that true endodontic-periodontal combined lesion occurred more frequently in molar teeth when compared to non-molar teeth ($p < 0.05$). Another study by Cucolo FCC et al, the results showed that pain was the main reason for seeking dental care in 63.3% of patients. The molar teeth demonstrated higher presence of probing depth (PD) ≥ 7 mm (38.3%) and higher PD mean (6.17 mm) than non-molar teeth ($P < 0.05$). It was verified that 65.4% of the teeth were diagnosed with a primary endodontic lesion and that the periodontal component was present in 34.6% of the teeth, either in a primary (10.6%), secondary (11.5%), or combined form (12.5%).¹³ Endodontic-periodontal disease refers to lesions that inflict both pulpal and periodontal tissues of a tooth. Due to the underlying anatomy, the pulpal and periodontal tissue structures are closely connected via three pathways. The main channels of communication between the pulpal and periodontal structures are dentinal tubules, lateral and accessory canals, and apical foramen.¹⁴ The relationship between endodontic and periodontal diseases was first described by Simring and Goldberg in 1964.¹ Currently, there is a common consensus among clinicians that bacterial infections are the main etiology of endodontic-periodontal disease.¹⁵ The bacteria can penetrate the periodontal tissue and the root canal system in different manners. The main access route between the pulpal and periodontal tissues for the microorganism is the root end foramen. Apart from that, other parts of the root canal system such as the abovementioned dentinal tubules, lateral canals, and accessory canals or foramen can also act as the medium of contamination for the bacterial byproducts.^{16,17} The presence of pulp exposure, caries, and periodontitis may aggravate the development of bacterial infection. The failure to treat the lesions and achieve a completely disinfected and sealed root canal may enable the

remaining bacteria to develop further endodontic-periodontal disease or endodontic reinfection.¹⁸ Additionally, the presence of vertical root fractures or root cracks may create a communication channel that links the pulp system to the surrounding periodontal tissue. When this happens, previous periodontal inflammation may spread to the surrounding areas, subsequently resulting in pulp necrosis.¹⁹ A perio-endo lesion can have a varied pathogenesis which ranges from quite simple to relatively complex one. Having enough knowledge of these disease processes is essential in coming to the correct diagnosis. It is important to remember that the recognition of pulp vitality is essential for a differential diagnosis and for the selection of primary measures for treatment of inflammatory lesions in the marginal and apical periodontium. Diagnosis of teeth with necrotic pulps can be difficult to establish. The entire dentition should be examined for possible causes of pain before commencing treatment. Some periodontal lesions of endodontic origin can heal following root canal treatment alone.²⁰ The endodontic treatment can be completed before periodontal treatment is provided when there is no communication between the disease processes. However, when there is a communication between the lesions of the two diseases, then the root canals should be medicated until the periodontal treatment has been completed and the overall prognosis of the tooth has been reassessed as being favorable. The use of non-toxic intracanal therapeutic medicaments is essential to destroy bacteria and to help encourage tissue repair.²¹

Conclusion

The primary endodontic lesion was found in a greater proportion in teeth referred for endodontic treatment.

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