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## RESEARCH ARTICLE

### ENDO-PERIO LESIONS: DIAGNOSIS AND CLINICAL CONSIDERATIONS

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#### ABSTRACT

The relationship between periodontal and endodontic disease has aroused confusion, queries and controversy. Differential diagnosis has always been difficult for periodontal and endodontic diseases. A symptomatic tooth may have pain of periodontal or pulpal origin. The nature of pain for that symptomatic tooth helps in determining the etiology of such a problem. Radiographic and clinical diagnosis helps in clarifying 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 correct diagnosis and treatment.

## INTRODUCTION

The interrelationship between the pulp and the periodontium has always been extensively studied; however, questions regarding the diagnosis, prognosis and treatment are raised time and again. The pathways for the spread of bacteria between pulpal and periodontal tissues have been discussed with controversy. Pulpal infection can drain through the periodontal ligament space and give an appearance of periodontal destruction, termed retrograde periodontitis. Similarly, both pulpal and periodontal infections can coexist in the same tooth, termed combined lesions, where the treatment depends on the degree of involvement of the tissues. Both endodontic and periodontal diseases are caused by a mixed anaerobic infection. This article is an attempt to provide a rational approach to the perio-endo/endo-perio question in order to scientifically diagnose and treat these lesions with predictable success.

#### Pathways connecting endodontic and periodontal tissues:

There are two forms of possible pathways for bacteria and their products connecting the two tissues: Anatomical and Non-physiological

#### Anatomical pathways

The major connections between periodontal and pulpal tissues are the apical foramina.

In addition to these main avenues of communication, there are a multitude of branches connecting the main root canal system with the periodontal ligament. In addition to the apical foramina and accessory canals, there is a third possible route for bacteria and their products, the dentinal tubules.

#### Non-physiological pathways

Iatrogenic root canal perforations: They are serious complications during dental treatment and have a rather poor prognosis. Perforations may be produced by powered rotary instruments during the attempt to gain access to the pulp or during preparation for a post. Improper manipulation of endodontic instruments can also lead to a perforation of the root.

**Vertical root fractures:** The second group of artificial pathways between periodontal and pulpal tissues are vertical root fractures. Vertical root fractures are caused by trauma and have been reported to occur in both vital and non-vital teeth. In vital teeth, vertical fractures can be continuations of coronal fractures in the "cracked tooth syndrome," or can occur solely on root surfaces.

#### Clinical diagnostic procedures

#### Visual examination

A thorough visual examination of the lips, cheeks, oral mucosa, tongue, palate and muscles should be carried out. The

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alveolar mucosa and the attached gingiva are examined for the presence of inflammation, ulcerations or sinus tracts. Frequently, the presence of a sinus tract is associated with a necrotic pulp.

### Palpation

Palpation is performed by applying firm digital pressure to the mucosa covering the roots and apices. With the index finger the mucosa is pressed against the underlying cortical bone. This will detect the presence of periradicular abnormalities or "hot" zones that produce painful response to digital pressure.

### Percussion

Although this test does not disclose the condition of the pulp, it indicates the presence of a periradicular inflammation. An abnormal positive response indicates inflammation of the periodontal ligament that may be either from pulpal or periodontal origin. The sensitivity of the proprioceptive fibers in an inflamed periodontal ligament will help identify the location of the pain. This test should be performed gently, especially in highly sensitive teeth.

### Mobility

Tooth mobility is directly proportional to the integrity of the attachment apparatus or to the extent of inflammation in the periodontal ligament. Hypermobility is quite common in cases of primary endodontic involvement and should not be confused with true mobility caused by periodontal destruction. In cases of primary endodontic pathology, the mobility resolves within a week of initiating endodontic therapy.

### Radiographs

Interpretation of discrete periapical or lateral lesions and discrete periodontal lesions is of clinical importance in suggesting the cause of the lesion and the proper diagnostic procedures to follow to confirm the cause. Often, the initial phases of periradicular bone resorption from endodontic origin are confined only to cancellous bone. Therefore, it cannot be detected unless the cortical bone is also affected. However, when there is radiographic evidence that bone loss extends from the level of crestal bone to or near the apex of the tooth, the radiograph is of little value in determining the cause.

### Fistula tracking

Endodontic or periodontal disease may sometimes develop a fistulous sinus track. Inflammatory exudates may often travel through tissues and structures of minor resistance and open anywhere on the oral mucosa or facial skin. Intraorally, the opening is usually visible on the attached buccal gingiva or in the vestibule. Fistula tracking is done by inserting a semirigid radiopaque material into the sinus track until resistance is met. Commonly used materials include gutta-percha cones or pre-softened silver cones. A radiograph is then taken, which reveals the course of the sinus tract and the origin of the inflammatory process.

### Pulp testing

The most commonly used pulp vitality tests are cold test, electric test, blood flow tests and cavity test. The presence or

absence of vital tissue in a tooth with a single canal can be determined with confidence with the current pulp testing procedures. The same degree of confidence cannot be ascribed to positive pulp test responses in a tooth with multiple canals.

### Conclusion

Treatment of combined endodontic and periodontal lesions does not differ from the treatment given when the two disorders occur separately. The part of the lesion sustained by the root canal infection can usually be expected to resolve after proper endodontic treatment. The part of the lesion caused by the plaque infection may also heal following periodontal therapy, although little or no regeneration of the attachment apparatus can be expected. This suggests that the larger the part of the lesion caused by the root canal infection, the more favourable the prognosis is for regeneration of the attachment.

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