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Review Article

Endo-Perio Decision Making

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Abstract

Introduction: In clinical practice, an often-encountered enigma is that of the endo-perio lesion. A source of confusion and dilemma to the dentist. As proper treatment protocol is a necessity for such a commonly encountered problem, also an in-depth knowledge is required in this subject. The approach to the treatment varies according to the etiology and the complexity in each case encountered. The resolution of the lesion also depends on the accurate diagnosis and the correct treatment methodology. There may be multiple treatments required, as in endodontic, periodontic, restorative or also the combination of the same. In this review article, a thoroughly scientific and evidence-based approach will be discussed with regards to the decision making in the challenging case of endo-perio lesions.

Aim of Work: A clear picture and analysis into the etiology and treatment approaches of endo-perio lesions to help the clinician in easy diagnosis and hence correct treatment.

Methodology: This review is using a comprehensive search of PUBMED from 1964 to 2004.

Conclusion: In challenging cases like that of endo-perio lesions, it is necessary that a multidisciplinary approach is undertaken. First and foremost, the etiology of the endo-perio lesion has to be identified which requires accurate diagnostic ability and skill. The treatment varies according to the major cause of the endo-perio lesion. The resolution depends on the complexity of the case if the endodontic cause is the major cause, and efficient root canal treatment helps the prognosis, with periodontic pathology, and even after treatment, the resolution is good with some amount of non-recoverable damage. In the worst-case scenario, extraction remains

Keywords: *Multidisciplinary; Etiology; Resolution*

Introduction

The pulp and periodontium are so interrelated that they are termed as the pulp-periodontium complex; this interrelationship makes it more difficult to treat as well as understand. Any of the infections might arise either of the endodontic origin or of periodontic origin and even due to a combination of both. The relationship between periodontal and pulpal disease was first described by Simring and Goldberg in 1964 [1]. This provided the origin of the term endo-perio lesion [1].

The pulp-periodontium interrelationship

The pulp and the periodontium are closely interrelated since the developmental stage. The presence of various pathways of communication enables the spread of infection from pulp to periodontium as well as vice versa. An anatomical, as well as functional relationship, is also seen in this complex as coined by and Simring and Goldberg. The various pathways seen are [2]:

Anatomical pathways

- Apical foramen, accessory canals/lateral canals
- Congenital absence of cementum exposing dentinal tubules
- Developmental grooves.

Pathways of pathological origin

- Empty spaces on the root created by Sharpey's fibers
- Root fracture following trauma
- Idiopathic root resorption - internal and external
- Loss of cementum due to external irritants.

Pathways of iatrogenic origin

- Exposure of dentinal tubules following root planning
- Accidental lateral root perforation during endodontic procedures
- Root fractures during endodontic procedures.

Commonest used classification of endo-perio lesions given by Simon, Glick, and Frank in 1972 [3]:

1. Primary endodontic lesion
2. Primary periodontal lesion
3. A primary endodontic lesion with secondary periodontal involvement
4. A primary periodontal lesion with secondary endodontic involvement
5. Truly combined lesion

Primary endodontic lesion

Necrotic pulp is present, communicates to the sulcus area leading to infection. The pocket present is narrow with no prominent periodontal findings. Sinus tract channel should be traced by placing a gutta-percha cone to find the origin. Prognosis is quite good with root canal treatment leading to resolution [3].

Primary periodontal lesion

In such lesions, chronic periodontitis is seen, which progresses apically. Pathogens causing periodontal diseases are the major factor. Generalized periodontitis with plaque and calculus can be seen. Depending on the stage of periodontal progression and efficacy of periodontal treatment, results will be seen [3].

A primary endodontic lesion with secondary periodontal involvement

The untreated primary endodontic lesion, when left for a longer time, may involve the periodontium. Sometimes it may be due to inefficient root canal treatment or may be iatrogenic in nature, caused by root fractures or perforations while placing posts, pins. The degree and severity of inflammation of the periodontal tissues will depend on the exact cause and duration of the lesion. A basic protocol of multi seating root canal treatment and basic oral hygiene procedures is advocated initially. Accordingly, in specific causes, like root fracture efficiency of reparative treatment with newer materials like MTA, will guard the prognosis [3].

A primary periodontal lesion with secondary endodontic involvement

Periodontal infection progressing apically leads to endodontic manifestations; infection may spread through the apical foramen or accessory canals. Initial oral hygiene therapy is necessary. Such lesions have a poorer prognosis. If required, periodontal surgery may be advocated. The results will also depend on the amount of apical extension [4].

Truly combined lesion

Such lesions occur infrequently and are seen due to the combination of endodontic infection progressing coronally and periodontal infection progressing apically. The prognosis is guarded in such cases, especially if the independent infections have joined together. Radio graphically, these lesions appear similar to that of the tooth with vertical fractures. Root canal therapy, advanced endodontic surgery and advanced periodontal surgery may be required. Advanced lesions which are difficult to diagnose should be considered endodontic lesion [4].

Diagnosis of endo-perio lesions

In diagnostics, it is easier to diagnose primary endodontic lesion due to the presence of teeth with infected and non-vital pulp and in the primary periodontal lesion, tooth presents healthy and vital pulp. It is the other three which put up similar manifestations and are difficult to diagnose. The following steps in diagnosis, aids in deciding an appropriate treatment plan [5].

Examination

1. Visual examination of lips, tongue, teeth are done. A special checkup is done to detect caries, fracture lines, cracks or chip off. Magnifying loupes and microscope may also be used [5].

2. Radiographs: Intraoral periapical radiographs are specially required to detect caries, fissures, cracks or fracture lines in the tooth. Periodontal manifestations especially bone loss, can be detected only after a certain degree. Defective restorations, periodontal ligament widening also can be seen [5].

3. Pulp testing: Pulp vitality indicates the absence of endodontic issues. The intense reaction shows signs of pulpitis whereas no reaction indicates pulp necrosis [5].

4. Pocket probing: This helps in differentiating between endodontic and periodontal lesions. A singular deep pocket indicates the presence of periodontal issues. Also, the generalized presence of plaque and calculus can be seen in such cases [6].

Treatment of endo-perio lesions

For primary endodontic lesions, conventional root canal treatment was the gold standard; follow up visits are advised to check the successful resolution. Often calcium hydroxide is advised as an intracanal medicament. Endodontic surgeries and periodontal invasive surgeries are to be avoided in such lesions [7].

For primary periodontal lesions, initial periodontal therapy is advised, the response will depend on the severity of the disease, efficacy of the treatment and also the patient's oral hygiene habits. Yet prognosis is poorer than primary endodontic lesions [8,9].

Combined lesions require both endodontic and periodontal treatment modalities; surgical intervention may also be required. Before surgery, basic periodontal therapy and root canal treatment should be completed. The prognosis of combined diseases mainly rests with the efficacy of periodontal therapy [10].

Conclusion

The diagnosis of endo-perio lesions is a complex task and requires a piece of thorough knowledge and scientific bent of mind. Multi-factorial involvement like the original cause, the immune response of the patient, the source of infection makes it a challenging endeavor. Hence a multidisciplinary approach and sequenced treatment plan are necessary for long term successful results.

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