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Review Article

WHY EXTRACT WHEN WE CAN SAVE? THE PERIODONTAL - ENDODONTIC CONTINUUM

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ABSTRACT

Pulpal and periodontal pathologies, their diagnosis, prognosis and management have been well documented in the literature. However, there exists a communication between the pulpal and periodontal pathologies which worsens the prognosis of the individual pathologies. Such a combined lesion requires a multi-disciplinary approach at various visits for a suitable outcome. In this article, we present a classical primary periodontal, secondary endodontic lesion well managed by a series of endodontic and periodontal procedures including alloplastic bone graft. A proper diagnosis and the correct management approach will hence lead to decreased morbidity and mortality of the tooth in concern and prolong the life of the natural tooth in the oral cavity.

Keywords: Endo- Perio Lesion, Periodontal Pathology, Gingival, Periodontopathic Bacteria, Periodontitis.

INTRODUCTION

A periodontal pathology is characterised by a poly-microbial infection affecting the gingiva which leads to an inflammatory response. The periodontopathic bacteria evoke the host to release various inflammatory mediators that aid in destruction of the microbe as well as the host tissues itself. This finally leads to a cascade of inflammatory events that destroy the supporting structures of the teeth or the periodontal tissues. This causes progressive attachment apparatus loss of the gingiva, periodontal pocketing and bone loss. An endodontic lesion is a dental pulpal pathology caused mainly by the cariogenic bacteria which progressively leads to peri-apical periodontitis. There are inter-relationships between the pulpal and the periodontal disease primarily due to the intimate anatomic and vascular connections between the pulp and the periodontium. Such a relationship between the periodontal and pulpal disease was first described by Simring and Goldberg in 1964¹. Since then the term endo-perio lesions have been used to describe lesions due to inflammatory products found in varying degrees in both periodontal and pulpal tissues.

Classification and Diagnostic Criteria

The pulp and periodontium have embryonic, anatomic and functional interrelationships as they are ectomesenchymal in origin². The pulp originates from the dental papilla and the

periodontal ligament from the dental follicle. The endodontic-periodontic lesion presents a challenge to the clinicians as far as diagnosis and prognosis of involved teeth are of concern probably because these diseases usually occur as separate entities. Proper diagnosis of the lesion is essential for appropriate treatment. For an easier diagnosis, the endo-perio lesions have been classified as a primary endodontic lesion, primary periodontal lesion, primary endodontic lesion with secondary periodontal involvement, primary periodontal lesion with secondary endodontic involvement and a true combined lesion³⁻⁸.

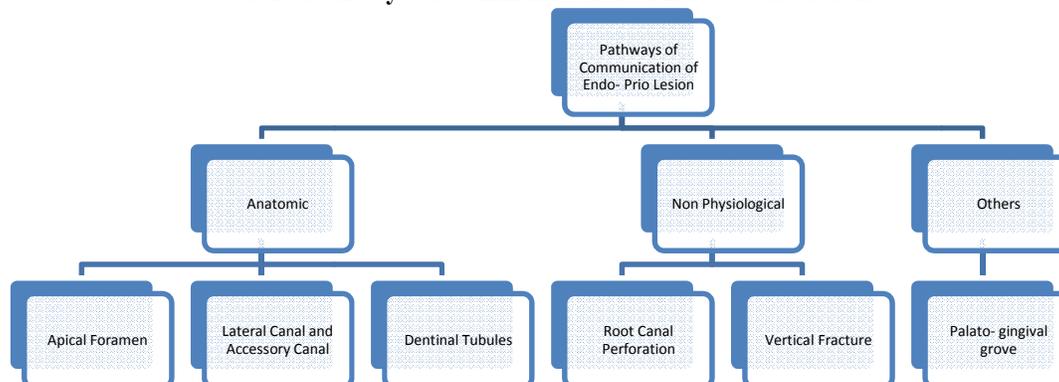
Pathways of Communication

The periodontal and pulpal diseases are closely related and many cases have shown a transmission of one disease to the other. The main pathways of communication of the periodontal and pulpal diseases have been broadly classified as anatomic and non-physiological pathways⁸⁻¹¹ [Table 1].

a) Anatomic pathways: The anatomic features that lead to communication of the pulpal and periodontal diseases are apical foramen, lateral and accessory canals and dentinal tubules.

b) Non physiologic pathways: The non physiologic pathways that can lead to communication between the pulp and the periodontium are root canal perforation, vertical root fractures and palate- gingival groves.

Table 1: Pathways of Communication of Endo- Perio lesions



Case Report and Management

A 24 year-old female patient was referred to the department of periodontics, Saveetha dental college with a chief complaint of pain in right lower back tooth region. The patient was in good general health with poor oral hygiene and with a history of pregnancy. Clinical examination revealed generalized inflammation of gingiva, bleeding on gentle periodontal probing, presence of sub-gingival calculus and periodontal pocket in relation to 46. Gingival recession in relation to 46 was 2mm and the tooth was tender on percussion. The vertical probing depth was 9mm (Fig 1) on the buccal surface (measured with William’s probe) in relation to 46 and increased tooth mobility (grade II). Balancing interference was present and the pulp vitality test was negative.



Figure 1: Pre operative probing depth of 9mm in 36

An intraoral periapical radiograph (IOPA) of right lower first molar revealed radiolucency on the furcation area which extended close to the apex of the distal root (Fig 2). The absence of any carious process and the presence of the typical radiographic feature of an infrabony defect in the furcation area favours 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. Scaling and root planning was performed using ultrasonic and hand instruments. The patient was given oral hygiene instructions including use of dental floss and inter-dental brushes and the modified bass technique was initiated.



Figure 2: Pre-op IOPA with furcation radiolucency in 36

The patient returned after a week and the absence of pain. A one-month recall revealed a stable situation and disappearance of pain; however, the pockets still persist around the tooth. It was decided to correct the defect after one month of the endodontic therapy, using alloplastic bone graft substitute. The site was surgically opened up for debridement and a circumferential defect was evident around the tooth (Fig 3).



Figure 3: Open flap debridement

This alloplastic bone graft substitute was placed to cover the exposed root and fill the defect (Fig 4) and was covered by a guided tissue regeneration membrane to stabilize the graft¹³ (Fig 5). The clinical appearance of the tooth had improved considerably at the time of evaluation, three and six months following treatment. The periodontal pockets had reduced from 8 mm to 0.5 mm mesially, from 6 mm to 1 mm labially, and from 7.5 mm to 1 mm distally (Fig 7). Radiographic evidence showed a significant bone fill (Fig 8). The results were stable and maintained at the end of six-months’ follow-up.



Figure 4: Bone graft in furcation defect



Figure 5: GTR membrane



Figure 6: Immediate post operation



Figure 7: After 6 months



Figure 8: JOPA after 6 months

DISCUSSION

Periodontal defects that communicate with periapical lesions may have a favorable prognosis if a correct diagnosis is made at the correct 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. The effects of endodontic infection on periodontal probing depth and the presence of furcation involvement in mandibular molars were also investigated. 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 endodontic disease with secondary periodontal involvement should first be treated by 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 by-products 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.

CONCLUSION

In the present era, where we have a substantial knowledge of the molecular, immunologic, genetic engineering and biosciences, we must make utmost effort to try to save and retain the tooth structures and try to save them rather than extracting them by having a look at the severity. In the present case discussion of a perio- endo lesion which appears to be a challenge to a routine clinical practitioner, has been wisely been treated using multi- disciplinary dentistry at various results to get a fruitful success. Similar attempts to save the tooth and the periodontium to should be made in the benefit of our patients.

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