



Treatment of Endodontic-Periodontal Lesions - Three Clinical Cases

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Received: November 09, 2020

Published: December 09, 2020

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Abstract

Endodontic-Periodontal lesions are clinical findings that presents both diagnostic and therapeutic dilemmas. Knowing the etiology is very important in determining the proper treatment protocol and the long term success.

Aim: The purpose of this report is to present three clinical cases with endodontic-periodontal lesions treated only with endodontic treatment.

Material and Methods: The study presents three clinical cases with periodontal bifurcation lesions. Treatment included metapex placed in the root canals for 1 week, followed by canal sealing with guta-percha and cement. The patients were followed up 12 months to 3 years.

Results: According to radiographic examination we saw healing of periradicular lesion in all three cases.

Conclusion: It is necessary to know all factors that can cause periodontal bifurcation lesions to differentiate the types of endodontic-periodontal lesions regarding to its origin, defining the best way for treat.

Keywords: Endo-perio Lesions; Diagnosis; Classification; Furcation Radiolucency; Canal Sealing

Introduction

The endo – perio lesions represent real challenges for the clinicians because of the difficulty in establishing the correct diagnosis as well as the complexity of their treatment, which in many cases requires an interdisciplinary approach. It is of great importance that a correct diagnosis should be established after a thorough clinical and radiological examination.

In many cases endodontic and periodontal pathologies are developed as separated lesions. In other cases, pulpal infection coexists with periodontal lesions, which makes it very difficult to decide if there is a pulpal infection or a periodontal one or both.

The pathways of pulpal – periodontal communications are different and complex. Apical foramen is the main route of access between endodontic space and periodontal system. However, accessory canals and lateral or secondary ones play an important role in the propagation of infection into the periodontal space, infecting the area [1]. Accessory canals in the furcation area of molars are found in 30-60% of molars [2], or 79% of molars in other studies

[1] and predispose this area to be a zone of intense communication between pulpal and periodontal tissues.

There are different classifications about endo-perio lesions. Oliet and Pullock's classification [3] is one of the earliest classifications given for endo-perio lesion. Grossman [4] has used this classification, which is based on treatment needs of the lesion. Another classification was given by Simon, et al. 1972 [5], separating lesions that involve both periodontal and pulpal tissues, depending on the cause of the lesion. Based on the origin of the periodontal pocket, a better clinical classification was provided by Walton, et al. in 1996 [6]. In 2014, Al-Fouzan [7] suggested a new endodontic-periodontal interrelationship classification, based on the primary disease and its secondary effect. The last classification increases the understanding of the disease process and its origin. Sometimes differential diagnosis of endodontic and periodontal disease may be difficult. Therefore, this understanding is essential in determining the correct diagnosis and providing the best treatment with predictable success.

Based on the origin of endo-perio lesions the treatment protocol starts with treatment of primary disease. If the lesions are not well treated and the canals are not correctly disinfected and sealed, they will house bacterial necrotic rests, which account for the progression of the lesion or even for the endodontic reinfection [8]. The aim of this paper is to present three clinical cases with endo-perio lesions and their successful management by endodontic treatment only.

Case 1

A 42-year-old female patient presented to the clinic with pain on first mandibular molar of the left side two days after changing the old restoration. Medical history revealed that the patient was systemically healthy. Intraoral examination revealed 36 tested positive to percussions. The tooth did not respond to pulp tests. On periodontal examination, the depth of sulcus was 3 mm.

Radiographic examination revealed furcal radiolucency extending throughout the length of the roots. Electric pulp testing and thermal testing were done to establish pulp status, which confirmed that the tooth was non-vital.

Based on the findings, diagnosis was made as an endo-perio lesion of primary endodontic with secondary periodontal involvement.

Treatment included Metapex placed in the root canals for 1 week, followed by canal sealing with guta-percha and cement.

The follow-up examination after 3 years showed progressive hard tissue repair in the periapical and furcal areas of tooth 36 as seen in figure 1-3.



Figure 1: Radiographic view of 36 before treatment.



Figure 2: Radiographic view of 36, 3 months after treatment.



Figure 3: Radiographic view of 36, 3 years after treatment.

Case 2

A 24-year-old female patient reported infection of first mandibular molar on the left side. The patient has a history of visiting different clinics for the treatment of the same tooth and was advised extraction. The patient had no clinical signs because she was under the effect of antibiotics suggested by the last dentist who visited her. Medical history revealed that the patient was healthy. Intraoral examination revealed 36 which was never definitively restored and tested positive to percussion. The tooth did not respond to pulp tests. On periodontal examination the depth of disto-buccal and disto-lingual sulcus was 3 mm and 4 mm respectively.

Radiographic examination revealed furcal radiolucency extending throughout the length of the roots. Electric pulp testing and thermal testing were done for pulp status, which confirmed that the tooth was non-vital.

Based on the findings, diagnosis was made as an endo-perio lesion of primary periodontal lesion with secondary endodontic involvement.

Treatment included Metapex placed in the root canals for 1 week, followed by canal sealing with guta-percha and cement. The patient was only advised to apply oral hygiene techniques, especially in the distal area of 36.

The follow-up examination after 6 years showed progressive hard tissue repair in the periapical and furcal areas of tooth 36 as seen in figure 4-6.



Figure 4: Radiographic view of 36 before treatment.



Figure 5: Radiographic view of 36 immediately after treatment.



Figure 6: Radiographic view of 36, 6 years after treatment.

Case 3

A 52-year-old male patient reported infection of first mandibular molar on the right side. The patient has a history of visiting different clinics for the treatment of the same tooth and was advised extraction. The patient had no clinical signs. Medical history revealed that the patient was healthy. The tooth had an old restoration and tested positive to percussion. The tooth did not respond to pulp tests and presented recession of gingiva. On periodontal examination the depth of mesio-buccal, disto-buccal and disto-lingual was 3mm.

Radiographic examination revealed furcal radiolucency extending throughout the length of the roots. Electric pulp testing and thermal testing were done for pulp status, which confirmed that the tooth was non vital.

Based on the findings, diagnosis was made as an endo-perio lesion of primary periodontal lesion with secondary endodontic involvement.

Treatment included Metapex placed in the root canals for 1 week, followed by canal sealing with guta-percha and cement. The patient was only advised to apply oral hygiene techniques.

The follow-up examination after 2 years showed progressive hard tissue repair in the periapical and furcal areas of tooth 46 as seen in figure 7-9.



Figure 7: CT view of 46 before treatment.



Figure 8: Radiographic view of 46, 6 months after treatment.



Figure 9: Radiographic view of 46, 2 years after treatment.

Discussion

In this study are presented three cases of endo-perio lesions where teeth were initially indicated for extraction. As it's been shown here, it is important to understand all the factors that contribute in establishing the correct diagnosis in order to provide the proper treatment. In all three cases the teeth presented pulpal necrosis with an important furcal implication which has made a difficult choice whether to retain the teeth or extract them. Among the factors that mostly contributed in the decision to retain the teeth were the good will and collaboration with the patients, good oral hygiene and especially the possibility to restore the teeth.

According to the protocols [6,9] teeth were firstly classified with primary endodontic or periodontal lesions. As for the treatment, they were initially mechanically instrumented and disinfected with sodium hypochlorite. Root canal shaping is an important step in endodontic therapy to achieve the apical healing and the cleaning and modeling of the root canal system [10]. The use of irrigating solutions is also needed to provide an antimicrobial effect, remove debris and neutralize the presence of organic compounds [10]. The aim is to reduce the remaining microbiota, which improves the efficacy of the intracanal dressing and increases the success rate of the endodontic treatment (Estrela, cit. de 10).

Several studies [11,12,13] recommend the use of calcium hydroxide as an intracanal dressing. According to Farhad [14], the high pH of calcium hydroxide due to the release of hydroxide ions, is capable of altering the structural integrity of the cytoplasmic membrane of bacteria. Also, it has an indirect effect on the anaerobic bacteria of the root canal because of the reaction between calcium ion and aqueous carbon dioxide. Calcium hydroxide can also result in the degradation of bacterial lipopolysaccharides. On the other hand, the reaction between calcium ions and the aqueous carbon

dioxide within the tissues results in the formation of crystals of calcium carbonate, which stimulate the deposition of hard tissue [10].

Sjogren, *et al.* [11] have shown that the remaining of intracanal dressing of calcium hydroxide for 7 days, efficiently eliminated bacteria which survived biomechanical instrumentation of the canal.

In our study, after chemo-mechanical preparation of root canals, in all three cases teeth were treated with Metapex for 1 week. Metapex is a mixture of calcium hydroxide, iodoform and silicone oil with strong antimicrobial properties. It has been indicated for disinfection of root canals with infection. In a comparative study of three calcium hydroxide formulations, Cwikla, *et al.* [12], have shown that Metapex has superior antimicrobial effect. According to them, this may be due to the combination of calcium hydroxide with iodoform and to the viscous and oily vehicle, which may prolong the action of the medicament. Studies have shown that oily vehicles increase the antimicrobial effects of calcium hydroxide against *E. faecalis* and other bacteria [15].

After 1 week sealed with Metapex, there were no infectious secretion in root canals and it was proceeded with the permanent filling with gutta-percha and cement and restored with resin composite restoration. During the follow up period of 2-6 years, all teeth were symptomless and showed progressive healing of surrounding hard tissues and no need for periodontal treatment.

Conclusion

When dealing with endo-perio lesions, it is important to establish the origin of the lesion to correctly treat the teeth and prolong their life. In this study we showed that 1-week treatment with Metapex, followed by root canal filling with gutta-percha and cement can be a suitable approach for teeth endo-periodontically involved, when the initial lesion has endodontic origin. Whereas, even in periodontal origin lesions, endodontic treatment and oral hygiene instructions have been sufficient for complete healing of the lesion. Asepsis during the treatment and the possibility of good coronal sealing are also of great importance.

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