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ENDODONTIC TREATMENT AND PERIODIC RADIOLOGICAL REASSESSMENT OF MANDIBULAR MOLAR - CASE REPORT

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Summary

The aim of the study is to show the importance of performing a correct endodontic treatment followed by periodic radiological monitoring of teeth with extensive apical lesions.
Material and method: On radiological examination it was observed the existence of an extensive apical lesion at the level of the tooth 46.
Results: The chemo-mechanical treatment was performed, the root canals were filled, the rest oration was made with a crown and periodic radiographs were performed at 6,12 and 24 months.
Conclusions: Our study confirms that large periapical inflammatory lesions can be cured by non-surgical endodontic therapy.
Keywords: mandibular molar, non-surgical endodontic treatment, apical periodontitis, radiological reassessment

Introduction

Endodontic infection can be described as a bacterial colonization of the root canals, which occurs due to the exposure of the pulp caused mainly by caries or dental trauma. Thus, apical periodontitis is a result of endodontic infection and is characterized by bone degradation in response to bacterial infection inside the canals. Bone loss occurs as a defense mechanism of the host against infection. [1]

Endodontic therapy aims to eliminate endodontic infection by removing microorganisms from the root canal system by cleaning and modeling [2], in addition to healing periapical tissues using an inert and biocompatible material. [3] However, previous studies have already described that the chemical composition exposure of endodontic materials can affect the inflammatory response and repair processes [4] and can also interfere with systemic health, as these materials release toxic substances. [5,6]

Material and method

A 26-year-old patient presented to the dentist's office complaining of 4.6 tooth pain caused by chewing. After performing the clinical and radiological examination, the diagnosis of chronic apical periodontitis was established at the level of tooth 4.6, following its endodontic treatment.

Results

In the first treatment session, anesthesia was performed on the Spix spine followed by the application of the dam system to isolate the tooth 4.6. The access was made through the already existing coronary obturation, being identified 4 root canals with the following working lengths: MB-21 mm, ML-20 mm, DB-20 mm, DL-20 mm. The determination of the working length was performed with apex locator and Kerr file needles no.10. Mechanical preparation of root canals was performed with Reciproc Blue R25 rotary needles. Endodontic lavage was performed with endodontic irrigants: sodium hypochlorite 5.25% and EDTA 17% soil.

The root canals were dried using paper cones and then a paste with calcium hydroxide was applied to the root canals for two weeks. After the temporary treatment with calcium hydroxide, the final canal filling was performed using Reciproc R25 gutta-percha monocone and Ah Plus endodontic sealer. The cones were sectioned at the root canal emergency orifice with the help of hand tools heated to flame and condensed in the coronary area with a heated plugger. At the end of the session, a coronary filling was performed with glass ionomer cement, the patient being sent to the radiology office for an X-ray. A complete and homogeneous canal filling was observed at the radiological examination performed after the endodontic treatment. (fig. 2)

In the subsequent sessions, 2 glass pivots were applied and the dental crown was reconstructed with glass ionomer cement which was covered with a metal-ceramic coating crown.

Periodic reassessment at 6, 12, and 24 months did not indicate sensitivity to percussion and the radiographs exams showed clear evidence of bone regeneration (Fig. 2,4).

Fig. 1 Radiological appearance before endodontic treatment

Fig.2 Radiological appearance after endodontic treatment

Fig.3 Clinical aspect of the restoration

Fig.4 Radiological appearance two years after treatment

Discussions

Treatment approaches for large periapical lesions range from non-surgical endodontic therapy with or without endodontic surgery to tooth extraction. Microbial elimination or minimization from the pulp system using an effective chemical-mechanical preparation can lead to a successful treatment [7] Previous investigations have shown that large periapical lesions can be treated by non-surgical endodontic approaches [8]. In fact, this usually occurs when the lesion has a direct communication with the root canal system, which can be improved by draining the pus when preparing the access cavity [9]. On the other hand, when the lesion is separated from the apical foramen and well covered by an intact epithelium, it may not heal after non-surgical therapies [9,10].

Various treatment options for large periradicular lesions can range from root canal therapy to various surgeries [10,11]. Sufficient chemical-mechanical cleaning of the root canal system and adequate microbial removal are essential factors for obtaining a satisfactory result. [7] In this case an antibacterial dressing based on calcium hydroxide was applied. The whole mechanism of action of calcium hydroxide paste is unclear. Calcium hydroxide paste is said to improve periapical repair and eliminate residual microorganisms by reducing inflammation, stimulating calcification, canceling acidic osteoclast products, and neutralizing endotoxin [12,13]. Moreover, calcium hydroxide dressing has been shown to accelerate periapical healing, especially in young adults [14,15]. According to these studies, periapical bone healing occurred 6 months after endodontic treatment and continued for the next 9 months. Radiographic evaluations demonstrated bone regeneration depending on increasing density, trabecular reconstruction and hard lamina formation. Permanent restoration after endodontic treatment affects the prognosis and should be achieved as soon as possible. [16,17]

Conclusions

Given the favorable result, conservative, non-surgical endodontic therapy is certainly justified and should be tried when a good restorative and periodontal prognosis is projected, unless the patient is not motivated to keep the tooth.

In short, the process of repairing endodontically treated teeth depends not only on adopting the right clinical approaches to achieve better endodontic treatment (such as the use of a good irrigation solution, an effective endodontic sealant and a complete root canal filling) , but also systemic factors (such as chronic diseases, hormones and age) that can change the immune defense of the host and can interfere with the outcome of root canal treatment and the healing process.

Conflict of interest: nothing to declare

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