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RESORPTION INTERNAL WITH EXTERNAL COMMUNICATION: CASE REPORT

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ABSTRACT

The inner root resorption is a physiologic or pathologic process that starts within the pulp chamber and the root canal. As a result, it generates the loss of some mineralized structures such as dentin, cementum and alveolar bone, which may lead to impairment of the dental element. The evolution of this process can cause a perforation of the wall of the root canal leaving communication in pulp with the periodontal. Its pathogenesis is multifactorial, which is usually related to trauma, caries, pulpitis, orthodontic movement, deep restorations, among others. The diagnosis is only possible by routine radiographs, being asymptomatic. Usually it has a surrounding radiolucent image in the root canal or pulp chamber, clearly circumscribed. This paper reports a case of internal resorption with external communication, which aims to demonstrate that it is possible to obtain a satisfactory result that associated with the early diagnosis and correct treatment. We conclude that because of internal resorption be asymptomatic and unpredictable, from multiple sources, it is of paramount importance to establish an early and detailed diagnosis through radiographs and laboratory tests for a correct treatment planning and obtaining favorable results.

KEYWORDS: Root canal, pulp-inner-chamber, root resorption.

1. INTRODUCTION

According Soares & Goldberg (2001)[1], endodontics is the field of dentistry that studies the morphology of the pulp cavity, physiology and pathology of the dental pulp, and the prevention and treatment of pulp change and its effects on the periodontal tissues. Briefly, this specialty takes care of prophylaxis and treatment of endodonto and the apical and periapical region.

The endodonto is represented by dentin, pulp cavity and pulp, while the apical and periapical region are constituted by the tooth supporting tissues, which are cementum, periodontal membrane wall and the alveolar bone[2].

Paiva & Antoniazzi (1991)[3], state that "little by little the professionals come comprising the multiple problems of endodontic therapy and, therefore, convinced that no surgical or medical procedure is necessary outside the confines of the root canal".

The resorption is a loss of mineralized structures, the result of clastic cell action. As for location, it is commonly classified into internal and external, although the two types of communication can take place in one tooth[4,5]. The nature of the resorption process, Neville *et al.* (2004)[6] classified the injuries inflated tory resorption and replacement resorption.

According Lopes *et al.* (2004)[7], has the resorption occurrence and location is given by traumatic and / or infectious factors such as odontoclasts called cells, resulting generally from inflammatory cells and systemic factors. In fact, there are several factors that give rise to internal resorption where we can mention orthodontic movements, bruxism, decay, trauma, periodontal infection, iatrogenic procedures, among others.

In normal cases, the pulp wall is protected from the action of osteoclasts and by odontoblasts layer and pre-dentin, which prevents them from coming into contact with the mineralized dentin[8]. The cells involved are osteoclasts, multinucleated giant cells found in Howship gaps, which have signed only in the mineralized tissues, destroying these tissues, in case local conditions for it. As happens the trauma, a displacement of odontoblasts, where the mineralized dentin is exposed to the action of these cells resorptive[9].

In order to start the resorption process is necessary for the tooth introduce yourself with pulp vitality. Cease to pulp vitality also stops the growth of resorption, however total pulp necrosis can cause acute apical periodontitis and take the patient to the development of painful symptoms[10].

The internal resorption occur on the surface of the walls of pulp cavity, already affect the external walls of the root, specifically from the root in the root region, as well as the coronary portion. When the internal resorption is the image shows the increase of the channel light is typically a radiolucent area, symmetrical, ovoid or round-

ed, well-circumscribed and may involve one or more walls of the root canal. That is, it is confined within the channel, unless there is communication. These are the cases where untreated internal resorption can progress to the outer wall of the root and give thus rise to a combined internal-external resorption. The image that identifies the external is presented by a bone thinning[1,11].

The diagnosis of change requires a broad approach to the patient, such as physical examination, medical history, and laboratory tests. With interaction of these factors, it can identify the disease and thus establish a correct treatment plan. Early diagnosis is essential to achieving success in treatment. Another factor to be considered in the differential diagnosis is conducting several periapical X-rays from different angles, as the internal resorption tends to follow the beam, and the external, usually away from the x-ray beam. In the initial stage, the x-ray is not effective to diagnose root resorption[12].

The treatment of internal resorption consists in performing a pulpectomy, in which seeks the removal of the pulp and the remaining tissue, i.e. during biomechanical and subsequent preparation of shutter every portion of the channel, preceded the application of intra-channel medication, being one or several sessions in material a calcium hydroxide base, thus promoting necrosis of all clastic cells present at the site, due to the high pH material and the alkalization of the medium ceases, thus the resorption process[13,14]. The purpose of this paper is to report a case of combined internal-external resorption, considering the importance of the subject and its association with endodontics. Where the goal is to comment on its etiology and pathogenesis of combined resorption, as well as clarify the methods of diagnosis and a brief analysis on the treatment of this type of injury.

2. CASE REPORT

Male patient, 34 years old, attended a private dental office in the city of Umuarama, Parana State, Brazil, reporting the presence of a "ball of pus" in the upper right maxilla. During the interview, reported the history of a blow to the region, which took place five years ago. I never had any sensitivity in the region and noted the appearance of this "ball of pus" two weeks ago, seeking thus a professional help.

Was held radiographs and CT of the region through the TC in region of element 11, there has been a suggestive radiographic image of internal resorption in the middle third of the root area (Figure 1).

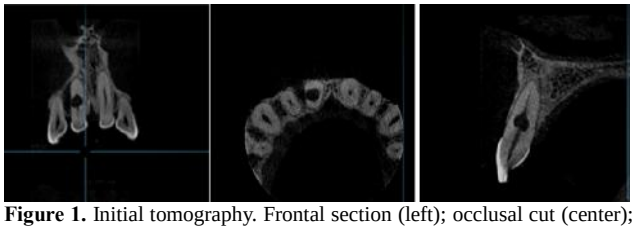

Figure 1. Initial tomography. Frontal section (left); occlusal cut (center); side section (right).

The patient has clinically, the presence of a fistula, which was screened using a cone of gutta percha accessory. After periapical radiography confirmed the origin of the pus (Figure 2). It was also carried out the pulp vitality test by heat test to cold, presenting negative for vitality. Thus, it shuts the diagnosis of an internal resorption with periodontal communication distal.

In the first session held after the prophylaxis and absolute isolation element involved only tooth 11, it was held, then the crown opening and obtained access to the mouth of the channel. Removing the pulp chamber ceiling was taken and carried to the path location operation of the channel element 11 with pre-bending maneuvers of endodontic files, it was possible location and operation of the entire length of the primary conduit of said element. (Figure 2).

Figure 2. Initial radiograph. Performing tracking fistula through an accessory cone gutta percha (left); location and operation of the whole length of the root canal (right).

Proceeded to maneuver chemi-mechanical root canal preparation using the S ProDesign files in sequence proposed by the manufacturer. As auxiliary chemical substance was used chlorhexidine gel 2%. After completion of instrumentation, we proceeded to energization of the auxiliary chemicals, carried out according to the protocol proposed by van der Luiss, but using different auxiliary chemicals that it uses only a power-maneuver, where employs uncertain of specific ultrasound for endodontics (Irisonic - HELSE, Stream - Black, Brazil) and stirred saline for 20 seconds, 17% EDTA for 20 seconds and again serum, 20 seconds.

After finishing the dentin qualification process, the insertion of the PA + propylene glycol Calcium hydroxide was performed as intracanal medication over a period of 15 days (Figure 3).

Thereafter, in the second consultation, the patient reported complete remission of the fistula, which was confirmed clinically. We proceeded then to a new dentin qualification, channel drying and its filling using MTA (Angelus, Londrina, Brazil) as filling material because it was

considered the material that has the best chemical, physical and biological properties for that contact direct with bloody tissues.

Figure 3. First session concluded with intracanal medication and provisional coronal sealing.

The MTA was handled with saline to the viscous consistency, where he was taken inside the conduit with the aid of a spiral Lentulus. They were held then periapical radiographs for evidence of complete filling of spaces (Figure 4).

After the final filling, the tooth was referred to the final restoration in composite resin and the six-month follow-up was carried out by X-ray examinations for a period of three years.

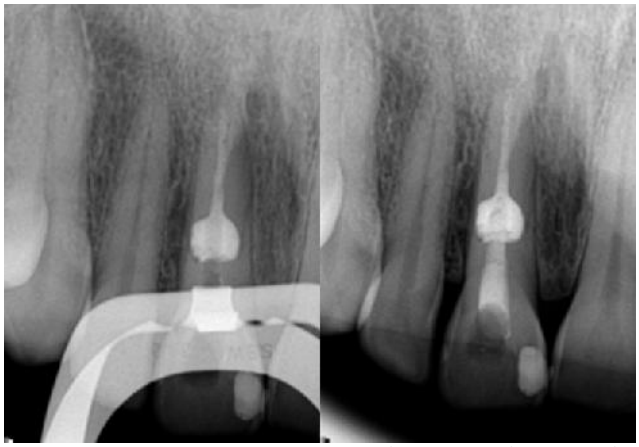

Figure 4. Final radiographs, immediately after the end of treatment for the complete filling of the canal confirmation.

After that, another x-ray and a CT scan was also performed to show the complete filling of dentin reabsorbed space, as well as bone formation in the affected region (Figures 5 and 6).

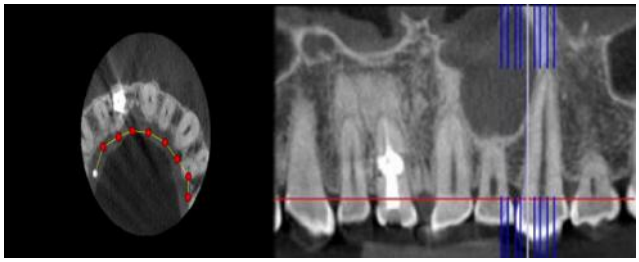

Figure 5. Final tomography.

Figure 6. Final radiography of the case.

3. DISCUSSION

The internal resorption is a pathology that rarely occurs, which affects one tooth[7,15]. Due to its location in the mouth, front teeth have a prevalence of 90% of internal root resorption, because they are more vulnerable to the impacts[16].

Such resorption is associated with several conditions, but based on the reviewed literature, most of the authors revealed that dental trauma is a major etiologic factor in internal resorption, and is asymptomatic and not showing clinical signs in most cases. In addition to trauma, other causes are suggested, such as periodontal infections, chemical injuries, occlusal forces and excessive orthodontic[17].

The endodontic treatment of teeth with internal resorption is complicated by the difficulty of removing clastic tissue cavity, where the walls are irregular and often with root perforations. With this, the remaining soft tissue may

invaginate, thus preventing scarring, only if

there is communication with the periodontium there is communication with the periodontium. However, this soft tissue can be dissolved by irrigation, but in our case it was done to neutralize the organic content of 2% chlorhexidine gel and the chlorhexidine has nonsolvent activity on tissues, however, this is overcome the gel form due to their rheological action capacity and lubricating of endodontic instruments during mechanical action of these. It can also be removed from that tissue invaginated by instrumentation and, starting from various intracanal medication switching, based on calcium hydroxide which in turn will promote the alkalization of the medium occurring death and elimination of osteoclasts and other resorptive cells in affected surface, also preventing a relapse reabsorption[18].

We chose this chemical auxiliary, as in CT examination revealed the conduit communicating with the periodontium in the middle third region of the root, which contra indicates the use of sodium hypochlorite because it could cause damage to the periodontal that region specific and also chlorhexidine in different concentrations, presents an antimicrobial activity of broad spectrum including Gram-positive bacteria, Gram-negative bacteria and fungi have their antimicrobial activity increased through the substantivity effect, biocompatibility is acceptable, relatively absence of cytotoxicity.

Ferraz *et al.* (2007 apud MARION *et al.*, 2013)[19] in their study showed that 2% chlorhexidine gel has many advantages over chlorhexidine 2%, while having antimicrobial properties and substantivity of biocompatibility and the like. The chlorhexidine gel lubricates the walls of the root canal, reducing the friction between the tool and the surface of the dentin, making the instrument easy, improving the performance of the instrument and reducing the risks of breaking this into the channel. Moreover, to facilitate the instrumentation, chlorhexidine gel improves the removal of organic tissue which compensates for its inability to dissolve them. The chlorhexidine gel leaves almost all open dentinal tubules because its viscosity keeps the debris in suspension, decreasing the formation of smearlayer, which does not occur with the liquid medium. Furthermore, the gel formulation can maintain the "active ingredient" of chlorhexidine in contact with the microorganisms for a long period by preventing its growth.

Chlorhexidine can be applied as an antimicrobial agent during all phases of root canal preparation, including disinfection of the surgical field during the instrumentation of root canals, chemical-mechanical preparation before clearing and foraminal enlargement (GOMES *et al.*, 2013 apud MARION *et al.*, 2013)[19].

Some authors recommend preceded calcium hydroxide exchanges for the purpose of forming a barrier to mineralized tissue which occurs less or no shutter on 20.21. A good condensation is considered essential to obliterate irregularities and defects of the channel. To this end, techniques thermoplasticized, has been recommended in the literature[22].

The resulting information of the diagnostic process directly influence clinical decisions, and with this survey data leads to better treatment plans and potentially a more predictable outcome. The accurate diagnosis of these injuries is critical to choose and successful treatment. It is highly desirable that the diagnosis is made at an early stage of development of the injury, but in many cases, can only be detected at a stage already evolved and may result thus in tooth loss[23].

Establishing the diagnosis, remove the pulp tissue immediately together with granulation, where the therapeutic is linked to the progression of resorption. It does not occur when the root perforation, it is recommended to immediate endodontic therapy, in order to paralyze the process. Drilling taking place below the bone level, it is advisable to attempt to remineralization with calcium hydroxide in the long run and subsequent root canal filling[24].

In our case, only one tooth was involved, where there was an internal resorption communicating with the periodontium after a physical trauma. The root canal filling was performed by the same technique that consists in filling the canal with MTA, providing the closing of pulpo-periodontal communication through its biocompatibility, bactericidal effect and good sealing. With this we obtained a favorable outcome.

In determining the prognosis of a tooth endodontically treated, especially in cases of resorptions, the dentist must in all cases notify the radiographic control convenience of the patient that must be carried out every six months, for at least two years. These periodic visits to the dentist is of prime importance to obtain a prolonged success of the case.

4. CONCLUSION

It is concluded that a history of the disease should be well elucidated for a good treatment. Early diagnosis of these injuries is decisive for the choice of treatment and prognosis, that is, the earlier the root resorption is diagnosed, the better the prognosis and successful treatment. This through a thorough medical history, and laboratory tests such as radiographs and vitality testing.

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