

ENDODONTIC TREATMENT IN 2ND PREMOLAR WITH ANATOMICAL COMPLEXITY: CASE REPORT

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ABSTRACT

The lower second premolar presents commonly, simply, with a single root, tapered and straight. However, different morphological aspects of this tooth root and canal are not uncommon occurrences may appear with bow root, double and canals with bifurcations in remote places to perform the complete cleaning and shaping, while also having the tooth inclination in the arcade one the factors of difficulty in performing coronary opening and the location of the canal. In this case, it is of a lower second premolar having three canals and two foramina opening where it was held, instrumentation and root canal filling. Therefore, the purpose of the authors of this study is to describe step by step the case report of the patient who possess the anatomical differentiation mentioned above, so that it may contribute to the elucidation of common questions among endodontists and general clinical to the subject.

KEYWORDS: Endodontic treatment, second premolar, anatomical variation.

1. INTRODUCTION

The lower premolars may represent one of the great difficulties to perform a root canal treatment successful when compared to other teeth because the canal has large anatomical variation, which associated with lack of knowledge of root morphology leads to a high failure rate¹. Their internal anatomy can present very complex, such that some authors claim that a root with tapered canal and a single foramen is an exception and not a rule². Errors such as canal drift during instrumentation, several drilling or iatrogenic are commonly committed due to lack of anatomical knowledge, leading some patients to feel pain after the operation and/ or tooth loss.

For a correct procedure, it is necessary to clean, shape and filling the space of the canal in all its dimensions. There will be an adequate and satisfactory sealing, always assuming that the tooth may have roots and/ or extra canals: one canal and one foramen; one channel that forks in the middle third forming two separate foramina; one foramen that bifurcates at the apical third,

forming two separate foramina; two canals from the cervical third and apical third, forming two separate foramina; two canal that forking in any third of, or can be found with anatomical variations canals, that are blended to form two or three canals³.

The objective of this study is to report the case of a patient who has as anatomical variation a lower premolar with three channels from its initial radiograph to the filling of the canal, with clinical and radiographic accompaniment for a period of 6 months.

2. CASE REPORT

Patient aged 40, serviced in the dental office, reported sensitivity to touch in the posterior region of the left mandible. In clinical and physical examination, the element 35 had to be sensitive to vertical and horizontal percussion test, and clinically show a fistula in the apical region.

Radiographically, the element in a matter showed the presence of an extensive radiolucent image in the apical region of the mesial root. After a careful history and physical examination, the patient reported that the dental element was subjected to a replacement of an amalgam restoration with a resin to four years ago. The digital periapical element proved the presence of a different conventional anatomy. The main conduit was clear only until the end of the middle third of the root, disappearing to the apex. This image, suggested the presence of more than one canal in the apical third of the root.

In the initial consultation, after the performance of prophylaxis in the tooth 35, anesthesia of the region was carried out using two tubes of mepivacaine (DFL. RJ-RJ. Brazil), with the total isolation of the element. We then carried out the coronal opening and obtained access to the mouth of the canal. For the initial operation of the canal was used files type K-08 (Dentsply-Malleifer.

Switzerland). After this procedure, the progressive decontamination of the cervical and middle thirds of the main conduit with the use of Pro-S design files was performed (Easy-Belo Horizonte, Brazil). With the use of hand files sizes 08, 10 and 15 the initial apical instrumentation was performed, it is possible to differentiate two distinct conduits (Figure 1).



Figure 1. Exploitation of canals with hand files type K.

After the field of apical anatomy, we performed the complete mechanical preparation of the element, through automated continuous rotary technique. After thorough decontamination and modeling of the conduits, was then inserted into the root canal dressing ($\text{Ca}(\text{OH})_2$), temporary restoration with Coltosol, for a period of 15 days.

In the second session, it was found clinically total regression of symptoms and absence of fistula. It was then removed the dressing used carried out the power of the auxiliary chemical substance (2.5% NaOCl) with the aid of specific ultrasound tips (Irrisomic - Helse, Ribeirão Preto, Brazil) and performed the obturation of the conduits through the technique of gutta percha plasticized term. Was also performed the radiographic evidence of the filling quality, final restoration of the dental element with glass ionomer cement (Figure 2).



Figure 2. A: cone beam radiography; B: Radiographic evidence of obturation quality.

After 6 months completed treatment, the patient was called for radiography of preservation, which reported no signs and symptoms in addition to the radiographic image demonstrate complete regression of the lesion, showing the success of the proposed treatment (Figure 3).



Figure 3. Radiograph of preservation of the case after 6 months.

3. DISCUSSION

For execution of an satisfactory endodontic treatment should always reveal the internal anatomy the canals and their anatomical variations. These morphological changes in endodontic therapy difficult, as it requires the professional greater knowledge of internal anatomy, external and variations of the pulp chamber, thus changing the method of performing the diagnosis and treatment³. Research indicates that the presence of three canals in the lower premolars may occur due to racial differences in the morphology of ducts. Trope (1986)⁴ found in a studied performed with the American people that the number of premolars that has more than one root in blacks is

32.8% whites and 13.7%. In this case we are reporting, our patient was Caucasian.

The X-ray for a tooth to be held an endodontic treatment is essential in the planning, because in cases that observes the pulp chamber, cervical-third of the large root canal and then this path radiolucent disappears, you can usually suspect the presence of more than one canal⁵. Some authors reported in their studies that the microscope use during treatment, assists in locating extra channels, and special techniques for preparing and filling^{6,8}.

In addition to the radiographic use, we use a factor for determining the number of canals or branches is that the use of stainless steel instruments with pre-bends, which is a clinical procedure that can provide three-dimensional information of the internal anatomy of the root canal⁹. In our case described, was used, and pre-curved conventional file, pre-curved nickel-titanium rotary files were used. This was possible due to the heat treatment that these files passed in its manufacturing process, thus allowing after its pre-bending, not return to the original format.

The lack of knowledge or professional skill in time to find canals or extra roots are one of the reasons for the failure of treatment by the patient to perform retreatment¹⁰. Leonardo *et al.*, (2005)¹¹ emphasizes careful not to be too much wear during coronary opening and dilation of the cervical and middle thirds. These maneuvers could somehow facilitate the surgery, however, the sharp removal of mineralized tissue in this region invariably cause a weakening of the tooth structure, thereby undermining the longevity element in the oral cavity.

4. CONCLUSION

The difficulty in performing endodontic therapy in cases of premolars with apical complex anatomies increases due to the occurrence of these cases had entered into a single conduit and it is divided after the middle third. Knowledge of the professional on the internal and external anatomy the canals and their variations, as well as care for the location and identification of it and respecting the work steps are key to successful treatment.

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