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Case Report

A Maxillary Third Molar with Two Distobuccal Canals: A Case Report

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Abstract: Knowledge about the anatomy and morphology of the root canal system plays an important role in the prognosis of endodontic treatment and its success. Maxillary third molars with two distobuccal canals have been rarely reported. Herein, we report a third maxillary molar with two canals in the distobuccal root and describe its successful endodontic treatment. Our patient was a 67 year-old man referred to a private endodontic clinic complaining of pain in his maxillary right third molar tooth. With the diagnosis of irreversible pulpitis, the tooth underwent root canal therapy, during which, after thorough negotiation of orifices, a second distobuccal canal was found. Cleaning and shaping were carried out and root canals were filled. A follow up was scheduled to ensure a successful endodontic treatment. In this case, we did not use any adjunct diagnostic modality. We only found the additional canal by extending the access cavity and paying attention to landmarks by probing the fissures and grooves between the main orifices but it seems that use of new methods can enhance a successful treatment especially in the elderly patients.
Keywords: Maxilla; Molar, Root Canal Therapy; Third

INTRODUCTION

The main goal of endodontic treatment is to completely remove the microorganisms and debris from the root canal system followed by cleaning and shaping of the root canals by use of appropriate instruments and irrigants and efficient techniques.

On the other hand, Knowledge about the anatomy and morphology of root canal system is an important factor to determine the prognosis of endodontic treatment. Adequate knowledge, precision of work and patience to find the canals are all important in this respect.

The morphology of the root canal system is variable. A number of factors that could affect the root canal morphology are included of: ethnic background [1], age of patient and gender [2]. There are case reports reporting teeth with four [3], five [4], six [5], seven [6] and eight [7] canals; C-shaped configuration of the canals has also been reported. Ghoddusi et al. [8] reported a maxillary first molar tooth with five canals including one palatal,two mesiobuccal and two distobuccal root canals.

Martinez –Berna and Ruiz Baddanelli [9] described a maxillary first molar with six canals including three mesiobuccal canals, two distobuccal canals and one palatal canal. Kumar [10] reported a first maxillary molar with three separate roots and seven canals namely three mesiobuccal**,** two distobuccal and three palatal canals. Alavi *et al*. [11] reported that the incidence of two distobuccal roots was 1.90%; whereas, in a report by Thomas *et al*., [12] the incidence of double canals in distobuccal roots was 4.30%. Malagnino *et al*., [13] in 1997 stated that third maxillary molars could have omnifarious root forms that included three fused roots (37%), two fused roots (7%),four fused roots (2%) and four separate roots (<2%).

Sidow *et al*., [14] in 2000 evaluated the number of maxillary third molar roots and reported the prevalence of only one root to be 15%, two roots to be 32%, three roots to be 45% and four roots to be 7%. The number of canals varied from one to six in one root, three to five in double rooted teeth, two to five in three rooted teeth and four to five canals in teeth with four roots.

There are many different ways to define the position of the canals. Pomeranz and Fishelberg [15] described the importance of extension of the access cavity and probing the fissures and grooves between major canals to scrutinize the accurate morphology of the pulp chamber. The advent of dental operative

microscope significantly enhanced finding extra canals in endodontic treatment.

Herein, we report a third maxillary molar with two canals in the distobuccal root and describe its successful endodontic treatment.

CASE REPORT

Our patient was a 67 year-old man referred to a private endodontic clinic in Hamadan. His chief complaint was pain in his maxillary right third molar tooth. The tooth #1 was abutment of a short span bridge and had not been endodontically treated (Figures 1 and 2). The bridge was removed and the patient was referred with his radiograph ordered by his previous dentist.

Vitality tests revealed that tooth #1 had irreversible pulpitis. Periradicular tissues did not have any problem. His medical history was unremarkable. The tooth had physiologic mobility and probing depth was less than 3 mm. Periodontal prognosis was good.

First, local anesthesia (lidocaine with 1:100,000 epinephrine) was injected and then a rubber dam was placed and access cavity was prepared. After negotiation of the major orifices (palatal, first mesiobuccal, distobuccal) and considering the fact that we have to consider the presence of second mesiobuccal canal in all maxillary molars, we proceeded to find the second mesiobuccal canal in the expected area between the first mesiobuccal and palatal canals, but despite the attention to anatomical landmarks and after following the groove between the first mesiobuccal and palatal orifices, the second mesiobuccal canal was not found. With further negotiation of the pulp chamber floor, another orifice was found in the distal area.

A #8 K file (Dentsply Maillefer, Ballaigues, Switzerland) was introduced into the canal and a radiograph was obtained, which revealed that the orifice probably belonged to the second distobuccal canal.

Then, #10 and 15 (Dentsply Maillefer, Ballaigues, Switzerland) initial files were placed in the canals and using an apex locator (J Morita, USA), we determined the working length and radiographically confirmed it (Figure 3).

Instrumentation was completed using MTWO (VDW GmbH, Munchen, Germany) rotary system (#30, 0.06 for palatal canal and #25, 0.07 for mesiobuccal and distobuccal canals) using standard technique and Rc prep (Premier Dental Products, USA) as a chelating agent with 5.25 % sodium hypochlorite irrigant.

After cleaning and shaping, the root canals were filled with gutta percha (Gapadent, Korea) and AH26 sealer (Detroy, Dentsply, USA) using lateral compaction technique.

The patient was referred for the restoration and the tooth was restorated with compositr resin.

The post-operative radiograph showed that the additional canal was near the first distobuccal canal (major distobuccal canal), thus, it was considered as the second distobuccal canal (Figures 4 and 5).

Clinical and radiographic follow-ups were scheduled for the patient to ensure a successful endodontic treatment.

Fig-1: Panoramic radiograph of the patient

Fig-2: The short-span bridge

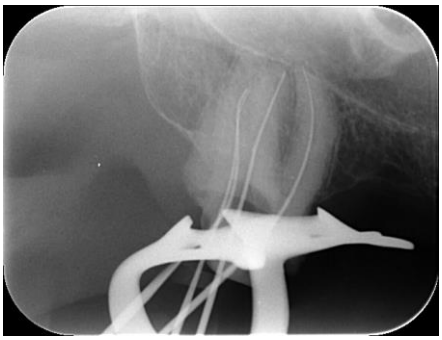

Fig-3: The working length radiography

Fig-4: Final radiography

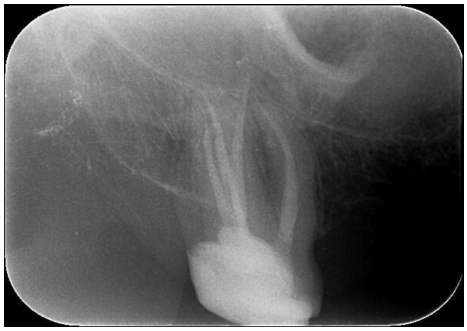

Fig-5: Six-month radiograph

DISCUSSION

Appropriate endodontic treatment in molars with extra canals is important to ensure favorable prognosis of root canal therapy. Inability to find the extra canal and perform suitable treatment may lead to failure.

We reported a maxillary third molar tooth with an additional canal. Use of new methods such as ultrasound and spiral computed tomography [16], cone beam computed tomography [6] and dental operative microscope [10] can help clinicians to identify the accurate morphology of canals and pulp chamber to perform a successful endodontic treatment.

In this case, we did not use any of the new methods. We only found the additional canal by extending the access cavity and paying attention to landmarks by probing the fissures and grooves between the main orifices but it seems that use of new methods can enhance a successful treatment especially in the elderly patients.

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