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

Zakiyeh Donyavi,1 Mohammad Esmaeilzadeh,2 and Najme Kermani1,*

1Endodontics Department, Hamedan University of Medical Science, Hamedan, IR Iran
2Pediatric Dentistry Department, Hamedan University of Medical Science, Hamedan, IR Iran

Corresponding author: Najme Kermani, Department of Endodontics, Hamedan University of Medical Science, Hamedan, IR Iran. Tel: +98-8138324240; +98-953536780, Fax: +98-2126099848, E-mail: drnajmekermani@gmail.com

Received 2016 May 30; Revised 2016 October 02; Accepted 2017 January 07.

Abstract

Introduction: 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 3rd molars with 2 distobuccal canals are rarely reported. Herein is the report of a 3rd maxillary molar with 2 canals in the distobuccal root and description of its successful endodontic treatment.

Case Report: The patient was a 67-year-old male referred to a private endodontic clinic complaining of pain in his maxillary right 3rd molar tooth. With the diagnosis of irreversible pulpitis, the tooth underwent root canal therapy, during which, after thorough negotiation of orifices, a 2nd 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.

Conclusions: In the current case, no adjunct diagnostic modality was used. The additional canal was found only 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

1. 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 the root canals by appropriate instruments, 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 include ethnic background (1), age, and gender of the patient (2). There are several case reports on teeth with 4 (3), 5 (4), 6 (5), 7 (6) and 8 (7) canals; C-shaped configuration of the canals was also reported. Ghoddusi et al. (8) reported a maxillary 1st molar tooth with 5 canals including 1 palatal, 2 mesiobuccal, and 2 distobuccal root canals.

Martinez-Berna and Ruiz-Baddanelli (9) described a maxillary 1st molar with 6 canals including 3 mesiobuccal, 2 distobuccal, and 1 palatal canals. Kumar (10) reported a 1st maxillary molar with 3 separate roots and 7 canals namely 3 Mesiobuccal, 2 Distobuccal, and 3 Palatal canals. Alavi et al. (11) reported that the incidence of 2 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) stated that the 3rd maxillary molars could have omnifarious root forms including 3 fused (37%), 2 fused (7%), 4 fused (2%), and 4 separate roots (< 2%).

Sidow et al. (14) evaluated the number of maxillary 3rd molar roots and reported the prevalence of only 1 root as 15%, two roots 32%, three roots 45%, and four roots 7%. The number of canals varied from 1 to 6 in one root, 3 to 5 in double rooted teeth, 2 to 5 in three rooted teeth, and 4 to 5 canals in teeth with 4 roots.

There are many different methods 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 is the report of a 3rd maxillary molar with 2 canals in the distobuccal root and description of its successful endodontic treatment.

2. Case Report

The patient was a 67-year-old male referred to a private endodontic clinic in Hamadan, Iran. His chief complaint was pain in his maxillary right 3rd molar tooth. The tooth #1 was a short-span bridge-abutment not endodontically treated (Figures 1 and 2). The bridge was removed and the
patient was referred with his radiograph ordered by previous dentist.

Vitality tests revealed that tooth #1 had irreversible pul-ppatitis. Periradicular tissues had no problems. His medical history was unremarkable. The tooth had physiologic mobility and probing depth was less than 3 mm and 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, 1st mesiobuccal, distobuccal) and considering the fact that the presence of 2nd mesiobuccal canal in all maxillary molars should be considered, it was tried to find the 2nd mesiobuccal canal in the expected area between the 1st mesiobuccal and palatal canals, but despite paying attention to anatomical landmarks and after following the groove between the 1st mesiobuccal and palatal orifices, the 2nd 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 2nd 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), the working length was determined and radiography 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 distobuc-
cal 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 (De-troy, Dentsply, USA) using lateral compaction technique.

The patient was referred for the restoration and the tooth was restored with composite resin.

The postoperative radiograph showed that the additional canal was near the 1st distobuccal canal (major distobuccal canal); thus, it was considered as the 2nd distobuccal canal (Figures 4 and 5).

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

3. 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.

The current paper reported a maxillary 3rd molar tooth with an additional canal. Employment 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.

None of the new methods was applied in the current case. The additional canal was found only by extending the access cavity and paying attention to landmarks by probing the fissures and grooves between the main orifices, but it seems that the use of new methods can enhance a successful treatment especially in the elderly patients.

Footnotes

Conflict of Interest: None.

Funding/Support: None.

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