

Endodontic management of mandibular first molar with 4 roots and 6 canals – A case report

Abstract

Mandibular first molar usually has two roots, but, occasionally, it has three and rarely four, with two or three canals in the mesial root and one, two, or three canals in the distal roots. The anatomy of teeth is not always normal. A great number of variations could occur in formation, number of roots, and their shape. Abnormalities are rare, but it is possible that a patient referred may have one of these rare anatomic variations. Hence the clinician must have thorough knowledge and be cautious in treating them.

Keywords: Mandibular molar, Four roots, Six canals

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Introduction

Understanding the morphology of the root canal plays a key role in the success of a root canal therapy. Thus considerations of the anatomic variations, in the process of diagnosis and treatment of the maxillary and mandibular posterior teeth, should be done by the clinicians.¹ A thorough examination of pre-operative and post-operative radiographs plays a critical role in endodontic success. Variations in the anatomy are an acknowledged characteristic feature of mandibular permanent molars. Ingle et al. stated that incomplete obturation of the root canal system, is the major cause for failure of the root canal treatments.² Hence, the correct location, vigorous instrumentation and three dimensional obturation of all canals are important procedures. Fabra-Campos studied 145 first mandibular molars and found that 2.75% of the teeth had five canals.³

This case report describes endodontic therapy on 4-rooted, 6-canaled mandibular first molar.

Case presentation

A 27 year old male patient reported with a chief complaint of pain in the left mandibular first molar, since 4 months. The patient gave a history of spontaneous pain around the periapical area of the tooth, and also pain upon mastication. On thorough clinical examination, that tooth had class 2 carious lesion and was tender on percussion. The patient's medical history revealed no problem. The radiographic examination showed diffused radiolucency in the periapical area of the distal root and also widening of the periodontal ligament space of both the roots. Presence of four roots in the tooth #36 was not noticed in pre-operative radiograph (Figure 1).



Figure 1

The diagnosis was done as chronic apical periodontitis due to pulpal necrosis, of the lower left first molar tooth.

Conventional access cavity preparation was done after the administration of local anesthesia and under rubber dam, which revealed 5 canals 3 mesial (mesio-buccal, middle-mesial and mesio-lingual) and 2 distal (disto-lingual and disto-buccal). A radiograph was taken to determine the working length (Figure 2), which was angulated mesially showed 4 roots (2 mesial and 2 mesial), which was further confirmed using a CBCT of the tooth #36 (Figure 3) (Figure 4), revealed 4 roots and 6 canals. Hence cautious instrumentation was done to find the missing 6th canal which was located between the disto-lingual and disto-buccal canals (middle distal). BMP of that tooth was done using protaper rotary files (Dentsply Maillefer, Ballaigues, Switzerland) till #F₂ and obturated using lateral condensation technique using corresponding protaper G.P (Figure 5) (Figure6).



Figure 2

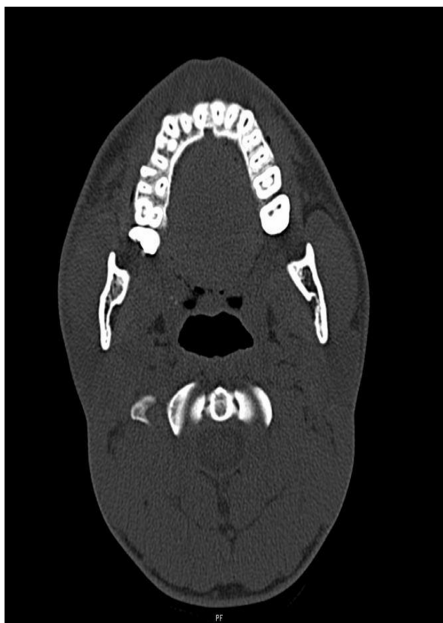


Figure 3



Figure 4



Figure 5



Figure 6

Discussion

Mandibular first molar with more than four canals and two roots is an unique example of variations in anatomy. Skidmore & Bjorndal⁴ in 1971 reported that about 88.8% of distal roots of the mandibular first molars have only one canal. The variations in the quantities is from the maximum percentage of 56.7% that was reported by Wasti et al. Many researchers have studied the presence of two canals in the mandibular first molars distal roots. These results deviate from 43.3% to a minimum of 11.2% in Skidmore & Bjorndal⁴'s study.⁵ Previous reports have studied extensively on the mandibular first molar with three mesial canals and two distal canals, but very little have reported a four rooted mandibular first molar with more than two distal canals.

Conclusion

Thorough knowledge on all the normal and abnormal anatomies of the molars states the parameters for proceeding in root canal treatment and has a direct affect on the success rate. Therefore clinicians must be well known with all the molar abnormalities and make use of advanced equipments in their diagnosis and treatment planning them.

Acknowledgment

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Conflict of interest

None.

References

1. Ersan Cicek et al. The root canal treatment in maxillary molars with five root canals: Two case reports with two years follow up. *IJCRI*. 2012;3(5):11–5.
2. Ingle JI. Endodontics. 3rd ed. PA: Saunders: Philadelphia, 1985.
3. Fabra-Campos CH. Unusual anatomy of mandibular first molars. *J Endod*. 1985;11:568–72.
4. Jamileh Ghoddusi, et al. Mandibular First Molar with Four Distal Canals. *J Endod*. 2007;33:1481–3.
5. Skidmore AE, Bjorndal AM. Root canal morphology of the human mandibular first molar. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 1971;32:778–84.