Case Report

JRAD Journal of Research and Advancement in Dentistry

J Res Adv Dent 2020;10:2:14-16.

Maxillary Central Incisor with Two Canals: A Rare Case Report

Abstract

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ABSTRACT

Background: Successful endodontic therapy requires the knowledge of internal and external anatomy and its variations. The internal anatomy of maxillary central incisor is well known and usually has one root and one radicular canal. This case report describes an endodontic treatment of a maxillary central incisor with one root and two canals systems, demonstrated by radiographic examination.

Keywords: Maxillary central incisor, root canal morphology, endodontic treatment.

INTRODUCTION

Proper diagnosis and identification of the number of roots and root canals are key to success of endodontic treatment [1-3]. Through cleaning and shaping and three dimensional obturation of the root canal system are mandatory for achieving endodontic success. Thus, understanding of root canal morphology, both the external and internal anatomy of human dentition is of great importance for conventional endodontic treatment. Several anatomic studies have declared that maxillary incisors are always comprised of a single root, while variations in the number of lateral canals and/or position of apical foramen are reported.[4] Several studies reported with maxillary central incisor has only one root and one canal in 100% cases (4,5) Maxillary central incisor with extra root canal is very rare however studies reported with variations in root canal (6,7,8,9, 10). Some cases described with maxillary central incisor having two roots or two canal morphology.(11,12,13) The incidence of additional canal in maxillary central incisor in 0.6%(14) So clinicians should have through knowledge root canal systems and should consider presence of anatomical variations in number of roots and root canal systems. The present case study describes an endodontic treatment of maxillary central incisor with two canal systems and without morphological anomaly of the crown demonstrated by radiograph.

CASE REPORT

A 35-year-old male patient was reported to our department with complains of pain in the upper front region of the jaw for the past 1 week. On elaborating the history, trauma occurs 6 months before in upper front teeth region. On examination,

Received: Oct. 21, 2019: **Accepted**: Dec. 24, 2019
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pISSN 2278-0076
eISSN 2321-9270

Fig 1: Preoperative radiograph.

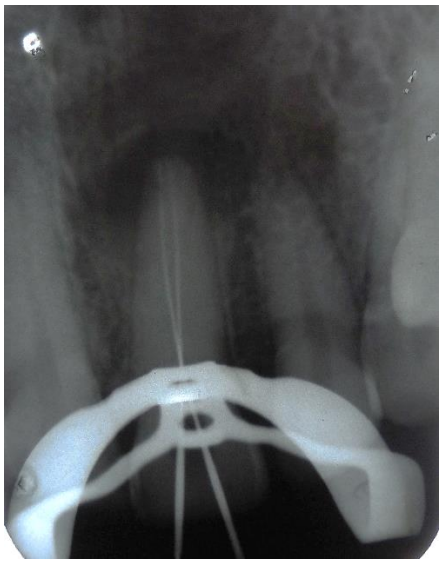

Fig 2: Working length radiograph.

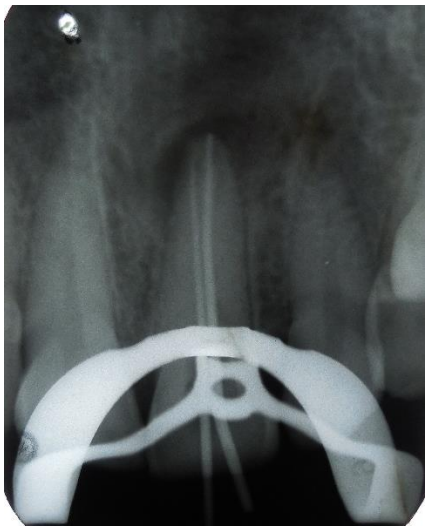

Fig 3: Master cone radiograph.

Fig 4: Post-operative radiograph.

tender on percussion noted in tooth no. 21. Radiographic examination did not allow a perfect view of the root canal, which led us to suspect the presence of two root canals.(figure 1) After the pulp vitality tests, the tooth was diagnosed with pulp necrosis with symptomatic apical periodontitis.

The tooth was isolated with a rubber dam and disinfected. Access to the pulp chamber was achieved with round bur number 2 (KG Sorensen, São Paulo, SP, Brazil) and Endo-Z bur (Dentsply Maillefer, Ballaigues, Switzerland). Two canal orifices, facial and mesio-palatal, were located with a DG-16 endodontic explorer using endodontic loupes. It was difficult to negotiate the mesio-palatal canal initially, but after careful exploration the other canal was negotiated with No. 10 k file and working length was determined (figure 2). After that, the biomechanical preparation by Crown-Down technique with protaper universal system (Maillefer-Dentsply, Switzerland) was carried out.

Root canal treatment was carried out in two visits. At the end of the first visit, a calcium hydroxide paste was used as an intracanal medicament and IRM (Dentsply, Switzerland) was used as temporary restoration. In the second visit, after 15 days, the intracanal medication was removed and the canals were filled with 17% EDTA for 3 minutes for smear layer removal, irrigated again with 2.5% NaOCl, dried with absorbent paper points, and filled by lateral condensation of gutta-percha and AH Plus sealer (Dentsply/De Trey, Konstanz, Germany) (Figure 3, 4).Sodium hypochlorite (2.5%) and EDTA (17%) solutions were used as irrigants. After the filling, the final radiographic exam showed two distinct canals with separate apical foramens.

DISCUSSION

The presented case report describes an unusual canal morphology of a maxillary central incisor with two root canals. Reports of cases with irregular morphology have a vital pedantic esteem. Documentation of such case reports may facilitate and encourage the clinicians for identification and proper management of unusual cases. Clear understanding of root canal morphology and its variations is key to success of endodontic treatment.

Most endodontic literatures describe the human maxillary central incisors with single root and single canal system[4]. But few cases of maxillary central incisors depict with additional canal or extra canal (13,15), along with morphological variations like macrodontia, fusion and germination of teeth.(16, 17) Cases reported of single rooted maxillary central incisor with two canals one buccal and one lingual (18), one mesial and one distal (19) are rare. Accurate preoperative radiographs both straight and angled, using a parallel technique are fundamental tools to guide to discover the number of roots that exist [20]. During obturation of canals AH Plus sealer is used because it has good sealing ability.(21)

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

REFERENCES

1.Green D. Double canal in single roots. Oral Surg. Oral Med and Oral Pathol. 1973;35:689-696.

2. Hess W. The anatomy of the root canals of teeth of the permanent dentition. New [2] York: Williams Wood Co.; 1925.

3.Vertucci FJ. Root canal anatomy of the mandibular anterior teeth. J Am Dent Assoc. 1974;89:369-371

4. Vertucci FJ. Root canal anatomy of the human permanent teeth. Oral Surg Oral Med Oral Pathol. 1984;58:589–99.

5. Kasahara E, Yasuda E, Yamamoto A, Anzai M. Root canal system of the maxillary central incisor. J Endod. 1990;16(4):158-61.)

6.Nezami M, Mokhber N. Endodontic treatment of a maxillary central incisor with three root canals. J Oral Sci. 2007;49(3):245-7.

7.Almeida-Gomes F, Sousa BC, Santos RA. Unusual anatomy of mandibular premolars. Aust Aust Endod J. 2006;32(1):43-5.

8. Almeida-Gomes F, Maniglia-Ferreira C, Santos RA. Two palatal root canals in a maxillary second Two palatal root canals in a maxillary second molar. Aust Endod J. 2007;33(2):82-3. Aust Endod J. 2007;33(2):82-3.

9. Almeida-Gomes F, Maniglia-Ferreira C, CarvalhoSousa B, Santos RA. Six root canals in maxillary Six root canals in maxillary root canals. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2009;108(3):e157-9.

10. Maniglia-Ferreira C, Almeida-Gomes F, Sousa BC, Lins CCSA, Santos RA. A case of unusual A case of unusual anatomy in second mandibular molar with four canals. Eur J Dent. 2008;2(3):217-9.

11.Ghoddusi J, Javidi M, Vatanpour M. Treatment of a two-canal maxillary lateral incisor. NY State Dent J. 2010 Apr;76(3):40-1.

12. Sheikh-Nezami M, Mokhber N. Endodontic treatment of a maxillary central incisor with three root canals. J Oral Sci. 2007;49(3):245-7.

13. Sponchiado Jr. EC, Ismail HA, Braga MR, Carvalho FK, Simões CA. Maxillary central Maxillary central incisor with two root canals: a case report. J. Endod. 2006;32(10):1002-4.

14. Genovese FR, Marsico EM. Maxillary central incisor with two roots: a case report. J Endod 2003;29:220 –1

15. Rodrigues EA, Silva SJA. A case of unusual anatomy: maxillary central incisor with two root canals. Int J Morphol. 2009;27(3):827-30.

16. CimiliH,KartalN. Endodontic treatment of unusual Cimili H, Kartal N. Endodontic treatment of unusual central incisors. J Endod. 2002;28(6):480-1.

17. Libfeld H, Stabholz A, Friedman S. Endodontic therapy of bilateral geminated permanent maxillary central incisor. J Endod. J Endod. 1986;12(5):214-6.

18.Genovese FR, Marsico EM. Maxillary central incisor with two roots: a case report. J Endod 2003;29:220 –1.

19. Emílio Carlos Sponchiado, Hanan Awwad Abdel Qader Ismail, Ac, Márcia Raquel Lima Braga, Fabrício Kitazono de Carvalho, Cláudia Andréa Correa Garcia Simões. Maxillary Central Incisor With Two Root Canals: A Case Report. J Endod.2006;32(10):1002-4.

20. Silha RE. Paralleling long cone technique. Dental Rad Photo. 1968;41:3-19.

21. Prajakta Patil, Vishnu P. S. Rathore, Chetan Hotkar, Snehal S. Savgave, Raghavendra K., Priya Ingale. A comparison of apical sealing ability between GuttaFlow and AH plus: An in vitro study. Journal of International Society of Preventive and Community Dentistry. 2016;6(4):377-82