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Endodontic management of maxillary central incisor with two root canals: A case report

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Abstract

The success of endodontic therapy requires thorough knowledge of the internal and external dental anatomy and its variations. The internal anatomy of the maxillary central incisor is well known and usually presents with one root and one canal system. This case report describes an endodontic treatment of a maxillary central incisor with one root and two canal systems, demonstrated by radiography and computerized tomography examinations.

Keywords: Cone beam computed tomography, maxillary central incisor, root canal anatomy

1. Introduction

One of the main objectives of nonsurgical endodontic treatment is to eliminate of infections from the root canal system and the prevention of reinfection of the root canal system [1]. However, there are several reasons for endodontic treatment to fail, such as diagnostic errors, persistence of the infection in the root canal system, errors in debridement and shaping of the root canal systems, instrument fractures, and poor restorations. Thus, to have the knowledge of internal dental anatomy is of prime importance for successful endodontic treatment. The dentist should consider the anatomical variations of root canal systems. These variations can also be found in the maxillary central incisors. The literature shows incidence of two canals, but it is rarely (0%) presents with these group of teeth [1-4].

The objective of the present study is to describe a clinical case of endodontic treatment of a maxillary central incisor with one root and two root canals, demonstrated by radiography and cone-beam computed tomography (CBCT) examinations.

2. Case Report

A 19-year-old male patient reported to the Department of Conservative Dentistry and Endodontics, with the chief complaint of pus discharge in upper anterior region since ten days. The patient gave the history of undergoing root canal treatment in the same tooth one year back. The medical history of the patient was non-contributory.

On the clinical examination sinus opening was present in upper front tooth region and crown in #11, 21. Radiograph showed periapical radiolucency with root canal treated tooth in #11 and 21. (Figure 1). So after clinical and radiographical examination a diagnosis of periapical abscess #21 was established and after receiving patient consent non surgical retreatment of #11 and 21 was initiated. After gutta percha was retrieved under 2.5 magnification (Unicorn Denmart, New delhi, India) presence of two canal were suspected in #21.

To ascertain the presence of two canals and to determine the aberrant anatomical architecture of tooth CBCT was performed. The CBCT of #21 confirmed the presence of two canal (i.e one buccal, one palatal canal with one root) (Figure 2). CBCT scan provided valuable information regarding canal configuration which was not evident in conventional radiograph.

On subsequent visit, as patient was asymptomatic, working length was determined using #15 k file and apex locator (PROPEX II, Dentsply maillefer, ballaguies, Switzerland) and later confined using radiograph (Figure 3). Chemomechanical preparation was done with k file system (Dentsply maillefer, baalaguies, Switzerland) upto #40 for buccal and #30 for palatal in #21 and #50 in #11 and it was confirmed with mastercone radiograph (Figure 4).

Copious irrigation with a normal saline solution (0.9% of NaCl) and 5.5% sodium hypochlorite (Parcan, septodont, FRANCE) and 15% EDTA (canalarge, Ammdent, INDIA) was used between each file throughout the entire procedure.

The canals were dried using paper points and canals were obturated with Guttapercha and AH-Plus sealer (Dentsply, ballaigues, Switzerland) and the teeth permanently restored with composite resin core (3M Fillek P60) (Figure 5).

2.1 Figures



Fig 1: Preoperative Radiograph

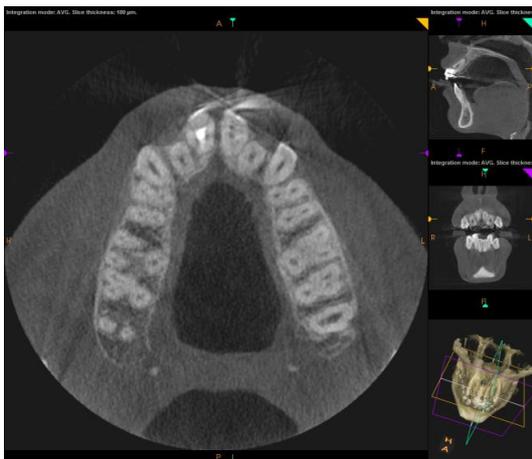


Fig 2: CBCT Image

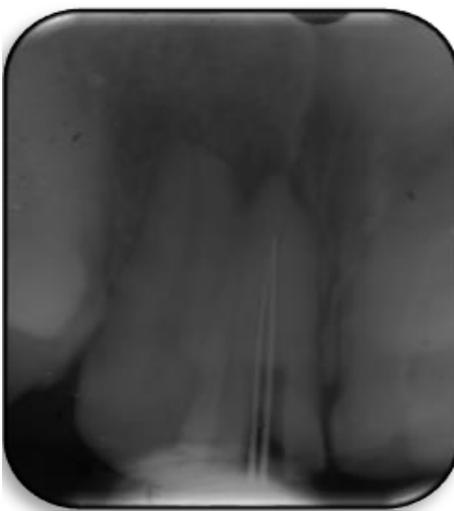


Fig 3: Working Length Radiograph

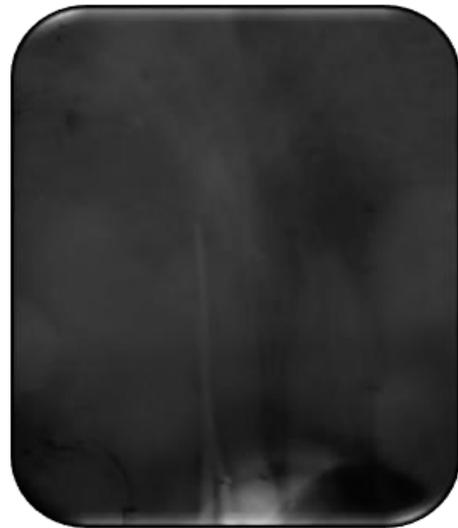


Fig 4: Master Cone Radiograph

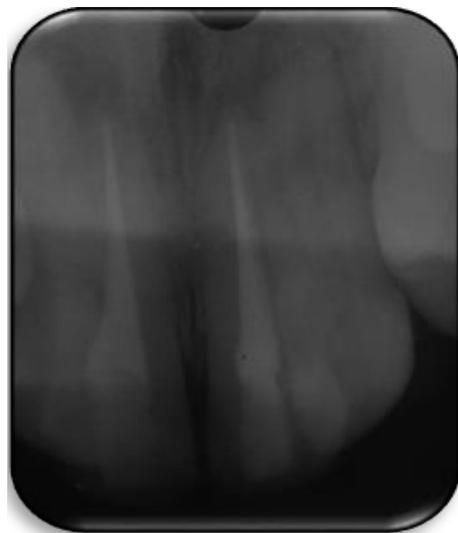


Fig 5: Obturation Radiograph

3. Discussion

A rare case of maxillary central incisor with two root canals is illustrated in presented case report. As described in literature [5], the morphological variability of the root canal has no limits. So, the need for practitioners to take into consideration anatomical variations both in number and architecture of the root canal systems is emphasized. Two canals at the apex of the second premolar have a reported incidence to be as low as 4% and as high as 50% [6]. But finding more than one canal in maxillary central and lateral incisors is quite rare. The fact is that literature [7] says that 100% of these teeth show single canal, although a survey conducted by **De Deus (1992)** [1] reported that 3% of maxillary lateral incisors may have two canals. The anomalies like fusion, gemination or dens invaginatus may result in multiple canals in these teeth which are presented in limited case reports [8-15]. Morphological alteration, such as macrodontia and fusion, may also result in two canals in maxillary central incisors as reported in the literature through few case reports [2-4].

To have a clue to the type of canal configuration present, examination of the floor of the pulp chamber offers a great help. When there is only one canal, it is usually located rather easily in the center of the access preparation. If single orifice found and is not in the center of the tooth, probably there is another canal present and the operator should search for it on

the opposite side. Radiographs from various angles, some with a file in place, may be helpful. CBCT scan also provides valuable information regarding canal configuration, which might not be evident in conventional radiographs. The relationship of the two canal orifices to each other is also significant. The closer the orifices are to each other, the greater are the chances that the two canals join at some point within the body of the root.

4. Conclusion

The lack of knowledge about all possible root canal anatomical configurations and the nonuse of different diagnostic resources can lead dentists to leave remaining necrotic tissue and toxic products used during endodontic procedures in the interior of the non-treated canal, resulting in an unsuccessful endodontic treatment. Thus, this study demonstrated the importance of a correct diagnosis for the endodontic practice

5. Reference

1. De Deus QD. Endodontia, 5th ed. Medsi: Rio de Janeiro, 1992.
2. Genovese FR, Marsico EM. Maxillary central incisor with two roots: a case report. *J Endod.* 2003; 29:220-1.
3. Cabo Vale M, Gonzales JM. Maxillary central incisor with two root canals: an unusual presentation. *J Oral Rehabil.* 2001; 28:797-8.
4. Cimilli H, Kartal N. Endodontic treatment of unusual central incisors. *J Endod.* 2002; 28:480-1.
5. Slowey RR. Radiographic AIDS in the detection of extra root canals. *Oral Surg.* 1974; 37:762-72.
6. Hess W. Anatomy of the root canals of the teeth of the permanent dentition, Part I, New York, William Wood & Company, 1925, 27-29.
7. Vertucci F. Root canal anatomy of the human permanent teeth. *Oral Surg.* 1984; 58:589-99.
8. Goldberg JM, Gross M, Rankow H. Endodontic therapy involving fused mandibular second and third molars. *J Endod.* 1985; 11:346-7.
9. Thompson BH, Portell FR, Hartwell GR. Two root canals in a maxillary lateral incisor. *J Endod.* 1985; 11:353-5.
10. Reeh ES, Eldeeb M. Root canal morphology of fused mandibular canine and lateral incisor. *J Endod* 1989; 15:33-5.
11. Wong M. Treatment considerations in a geminated maxillary lateral incisor. *J Endod* 1991; 17:179-81.
12. Mangani F, Ruddle CJ. Endodontic treatment of a "very particular" maxillary central incisor. *J Endod* 1994; 20:560-1.
13. Peyrano A, Zmener O. Endodontic management of mandibular lateral incisor fused with supernumerary tooth. *Endod Dent Traumatol* 1995; 11:196-8.
14. Beltes P. Endodontic treatment in three cases of dens invaginatus. *J Endod.* 1997; 23:399-402.
15. Hülsmann M. Dens invaginatus: Aetiology, classification, prevalence, diagnosis, and treatment considerations. *Int Endod J.* 1997; 30:79-90.