

CASE REPORT

Maxillary lateral incisor with two roots: A case report.

Abdul Hafiz, Jophie Paikatt**, Punit Bharadwaj***, Shaniya Sain*****

Introduction

Success in non-surgical endodontics is achieved with the elimination of infections from the root canal system; a thorough mechanical and chemical cleansing of the pulp cavity and root canal followed by the three-dimensional obturation with an inert filling material. Failure is a result of diagnostic errors, persistence of the infection in the root canal system, errors in debridement and shaping of the root canal system, missed root canals, instrument fracture and poor restorations.¹ The literature published over the years reveal that the maxillary incisors are single rooted, single canaled teeth.²⁻⁴ However, a few case reports contradict these findings.⁵ Variations in the number of lateral canals and/ or position of apical foramen are reported. Multiple canals and roots in the maxillary incisors are rare⁶⁻¹⁴, whereas cases of maxillary lateral incisors with two roots have been reported.¹⁵⁻¹⁸

A B S T R A C T

Successful endodontic treatment of a tooth largely depends on proper diagnosis. Anatomical variations of a tooth are occasionally encountered and are challenging to diagnose and to manage as failure results due to the presence of untreated additional canals. This makes it imperative for the clinician to be able to identify the variation in the internal anatomy of the tooth being treated. We present the case of a permanent maxillary lateral incisor with unusual presentation of two roots which are dilacerated.

Keywords: *Maxillary lateral incisor, Two roots, Root canal anatomy*

Peri -apical radiography, panoramic radiography and CBCT are the diagnostic aids used to identify the internal anatomy of the teeth. The use of shift cone angle radiographic technique and parallel angle radiograph to diagnose superimposed roots and unidentified canals have been

advocated.¹⁹ Thus, a thorough knowledge and understanding of the internal anatomy and its variations is important to carry out successful endodontic treatment.¹⁸ We present a case of permanent maxillary left lateral incisor with two dilacerated roots and two root canals.

Case Report

A fourteen year old boy was reported to the Department of Paediatric Dentistry, MES Dental College, Perinthalmanna, Kerala, for endodontic treatment of a symptomatic permanent maxillary left lateral incisor along with the pre-treatment periapical (Fig 1) and panoramic radiographs (Fig 2). He was



Fig 1. IOPA Radiograph revealing anatomy of left maxillary lateral incisor

referred by a general dentist, probably due to the unusual root canal anatomy and the uncooperative behaviour of the child. The

parents gave a history of trauma when the



Fig 2. Panoramic radiograph revealing unilateral presentation of dilacerated 2 roots of 22

child was ten years old after which they consulted a dentist who attempted to treat the sub-luxated lateral incisor. Since then the child had developed a fear of dentistry. Non-pharmacologic behaviour modification techniques like tell-show-do and voice control were employed to carry out the treatment. On clinical examination, the tooth 22 was found morphologically similar to its left counterpart and both had palatal talons cusps (Fig 3). It was tender on percussion



Fig 3. Palatal talons cusps with 12 and 22

and an intra-oral sinus was present on the labial vestibule. There were no signs of dental caries. The panoramic radiograph revealed the presence of two separate dilacerated roots with two root canals. Thermal and electric

pulp vitality tests gave a negative response. Based on these findings, the tooth was diagnosed as having chronic irreversible pulpitis. Local anaesthesia was administered (2 % Lignocaine with 1:200000 Adrenaline) and access cavity was prepared under rubber dam isolation. The root canals were explored using endodontic explorers and two distinct root canals were identified. The pulp was extirpated using barbed broaches, accompanied by irrigation with Sodium hypochlorite (3.0 %) and normal saline. A working length radiograph was advised. Attempts made to take the working length radiograph proved futile because of the disruptive behaviour of the patient. The parents were informed of the need to perform the remaining procedure under sedation. The access cavity was sealed with Zinc-oxide eugenol cement. The recall visit was scheduled for the next week, for which the patient didn't turn up. When enquired, we were informed that the patient was relieved of the pain and was reluctant to continue the treatment.

Discussion

Maxillary incisors with more than one root canal are a rarity. Usually, when the maxillary incisors present with two roots or two root canals, it is associated with other conditions such as fusion, gemination, dens in dente, palatogingival or distogingival groove and some variations in the normal development of Hertwig's epithelial root sheath (HERS).⁶⁻¹⁵ There are numerous case reports showing the

maxillary lateral incisor teeth with two canals, three canals and even four canals.¹⁵⁻¹⁸ In this case, the pre-operative panoramic radiograph revealed the presence of two separate roots and clinically- two distinct root canals could be identified and explored- which is a rarity. Unfortunately, because of the uncooperative nature of the patient and unwillingness of the parents to continue the procedure under sedation, the treatment could not be completed. Maxillary lateral incisors show morphological variations which can pose diagnostic and treatment challenges. Inadequate knowledge of tooth morphology and canal systems can cause problems during endodontic treatment.²⁰ Thus, it is imperative that the morphology of the root canals and their numerous variations are assessed before initiating root canal treatment.^{4,21}

Conclusion

Many researches have been published projecting the maxillary lateral incisor as a tooth with a single root and a single root canal. However, some reports contradict this finding. In the present case report, we describe a permanent maxillary lateral incisor with two roots and two root canals, which is a rare condition. The prudent clinician should be aware of the variations in the root canal anatomy. Inability to identify and treat the additional canal(s) will compromise the success of endodontic therapy.

References

1. Weine FS. Endodontic therapy. 3rd Ed. St.Louis. CV Mosby 1982:1-23.
2. Greene D. A stereomicroscopic study of the root apices of 400 maxillary and mandibular teeth. Oral Surg 1956; 9:1224-32.
3. Pineda F, Kuttler Y. Mesiodistal and buccolingual roentgenographic investigations of 7275 root canals. Oral Surg 1972; 33: 101-2.
4. Vertucci F. Root canal anatomy of the human permanent teeth. Oral Surg 1984; 58:589-99.
5. Thompson B, Portell F, Hartwell G. Two root canals in a maxillary lateral incisor. J Endod 1985; 11:353-5.
6. Tagger M. Tooth germination treated by endodontic therapy. J Endodon 1975;1:181-4.
7. Creven J. Dens invaginatus type malformation without pulpal involvement. J Endodod 1975;1:79-80.
8. Christie W, Peikoff M, Acheron D. Endodontic treatment of two maxillary lateral incisors with anomalous root formation. J Endodon 1981; 7:528-34.
9. Wolfe R, Stieglitz H. A fused permanent maxillary incisor: endodontic treatment and restoration. NY State Dent J 1980;46: 654-7.
10. Friedman S, Mor H, Stabholz A. Endodontic treatment of a tooth fused with a permanent maxillary lateral incisor. J Endod 1984 ; 10:449-51.
11. Sinal I, Lustbader S. A dual rooted maxillary central incisor. J Endod 1984; 10:105-6.
12. Mader C, Conzelman J. A double rooted maxillary central incisor. Oral Surg 1980;50-99.
13. Todd H. Maxillary central incisor with two canals. J Endod 1976;2: 22-7
14. Zilich R,Ash j, Corcoran J. Maxillary lateral incisor with two root canals and dens formation: a case report. J Endod 1983; 9: 143-4.
15. Collins IJ. Maxillary lateral incisor with two roots. Aust Endod J 2001;27(1): 37-8.
16. Low D, Chan AW. Unusual maxillary lateral incisor : case reports. Aust Endod J 2004;30(1):15-9.
17. Sabala CL, Roane jB. Beware the maxillary lateral incisor. J Okla Dent Assoc 1986; 76(4):36-7.
18. Matta MS. Two rooted maxillary lateral incisor :a case report. Ir J Endod 2012;7(4):215-8.

ABOUT THE AUTHORS:



* Dr Abdul Hafiz is a Professor and Head in the Department of Paediatric dentistry, MES Dental College, Perinthalmanna, Kerala, India.



** Dr Jophie Paikatt is a Reader in the Department of Paediatric dentistry, MES Dental College, Perinthalmanna, Kerala, India.



***Dr Punit Bharadwaj is a Reader in the Department of Paediatric dentistry, MES Dental College, Perinthalmanna, Kerala, India.



****Dr Shaniya Sain is a Senior Lecturer in the Department of Paediatric dentistry, MES Dental College, Perinthalmanna, Kerala, India.

19. Emilio CS et al. Maxillary lateral incisor with two roots: a case report. J Endod 2006;32:1002-4.

20. Al-Qudah AA, Awawdeh LA. Root canal morphology of mandibular incisors in a Jordanian population. Intl Endod J 2006;39:873-7.

21. Kottoor J, Murugesan R, Albuquerque DV. A maxillary lateral incisor with four root canals. Intl Endod J 2011;44:1-5.

Acknowledgements-

Dr. N. Krishnan Kutty,^{BDS}, Dental Surgeon. Manjeri.