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A CASE REPORT ON MAXILLARY FIRST MOLAR WITH 2 PALATAL CANALS WITHIN A SINGLE ROOT OF A 49 YEAR OLD PATIENT

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ABSTRACT

Maxillary tooth normally has three roots and 3 canals. A case report is presented regarding a maxillary first molar with 5 canals. The morphology is atypical because it is characterized by a palatal root with 2 canals with separate orifices. A literature review regarding the morphology of maxillary first molars is also discussed. Modifications to the normal access opening and examination of the pulpal floor for additional canals are stressed.

INTRODUCTION

The normal morphology of maxillary tooth is of three roots and three canals. The complexity of the root canal system of maxillary molars presents a constant challenge, as the dentist must have a thorough knowledge of root canal morphology to provide successful endodontic treatment [1]. The form, configuration and number of root canals present in maxillary first molars have been discussed earlier by different researchers [2]. Differences between studies may be attributed to variations in the technique used to study the morphology. Acosta Vigouroux and TrugedaBosaans reported 5 root canals in 2.25% of maxillary first molars [3]. Beattyreported a case of 5 canals, with 3 in the MB area [4]. Harris documented a case where the palatal root of a maxillary first molar had 2 separate root canals. Cecic and others reported a case with 5 canals (2 MB, 1 DB, and 2 palatal), in which the palatal canals bifurcated at midroot into 2 distinct canals. Martinez-Berna and Ruiz-Badanelli described 3 cases of maxillary first molars with 6 canals (3 MB, 2 DB, and 1 palatal) [5]. Bond and others also presented a 6 canal first molar (2 MB, 2 DB, and 2 palatal). This case report describes a permanent maxillary first molar with 5 root canals (2 MB, 1 DB and 2 palatal); with unusual palatal canal morphology in those 2 canals with separate orifices [6].

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CASE REPORT

A 49 year old male patient presented with signs of irreversible acute pulpitis. After extensive clinical and radiographic examination, the maxillary right first molar was prepared for endodontic therapy. A preoperative radiograph was obtained. The patient received local anesthesia of 2% lidocaine with 1:100,000 epinephrine and a conventional endodontic access opening was made. In the pulp chamber floor, the 3 principal root canal

systems were identified: MB, DB, and palatal. K-type files were used for gross removal of pulp tissue in the 3 main canals. The pulp chamber floor was then explored to find the fourth canal in the MB root. After probing with an endodontic explorer, a small emorrhagic point was noted in a groove approximately 2 mm from the MB orifice in a palatal direction. At the same time a similar hemorrhagic point was noted near the orifice of the main palatal canal. A small amount of dentin that was occluding the orifice of the second palatal canal was removed. The conventional triangular access was modified to a trapezoidal shape to improve access to the additional canals. The palatal and mesial root had 2 orifices, fairly well separated, exiting from the floor of the pulp chamber. K-type files were used to clean and shape the canal system. Gates Glidden burs #2 and #3 were used to flare the coronal portion of the canals to improve straight line access. Frequent irrigation with 5.25% sodium hypochlorite was also carried out. All canals were stepped back in 1-mm increments for 3 file sizes larger than the master apical file. The tooth was dried with paper points and obturated using zinc oxide-eugenol sealer and laterally condensed gutta-percha. A temporary restoration was placed and a postoperative radiograph was taken. The immediate post treatment radiograph shows the unique palatal morphology. The tooth has been asymptomatic thereafter with no post operative complications.

DISCUSSION

This report emphasizes the importance of looking for canals and of ensuring adequate access to improve the likelihood that additional canals will be located [7]. The conservation of tooth structure must be kept in mind when establishing an endodontic access to allow for successful restoration of the tooth after root canal therapy. Endodontic access should be designed to provide direct access to the apical third of the root canal system, not merely to locate the canal orifice. The dentist should be able to visualize all aspects of the coronal third of the root canal system and all tooth structure or restorative material that interferes with straight-line access should be removed. It is important for the access cavity to have smooth externally diverging walls to improve visibility and prevent debris from migrating into the canal system. The traditional triangular access opening the MB, DB and palatal root representing the apex of each point of the triangle is often too constricted to allow straight-line access in maxillary molars. Thomas and others showed that 81% of the teeth they studied had a trapezoidal pulp chamber and that the use of a trapezoidal access cavity was warranted [8-15]. Christie and Thompson have recommended modifying the outline to an ovoid shape, so that the roof of the chamber when opened up is more parallel to the mesial marginal ridge. They believe that this outline provides better access for searching for additional canals, therefore improving endodontic success.

CONCLUSION

The normal morphology of maxillary tooth is of three roots and three canals. This case report presents a variety of 5 canals. This article contributes to our understanding of the complexity of the root canal morphology found in maxillary first molars. Although such cases occur infrequently, dentists should be aware of them when considering endodontic treatment of a maxillary first molar.

REFERENCES

1. Beatty G. (1984). A five-canal maxillary first molar. *J Endod*, 10(4), 156 - 7.
2. Harris E. (1980). Unusual root canal anatomy in a maxillary molar. *J Endod*, 6(5), 573 - 5.
3. Peikoff D. (1994). Canal configuration in the mesio-buccal root of the maxillary first molar, a clinical study. *J Endod*, 20(3), 135-7.
4. Barrows M. (2002). Effect of magnification on locating the MB2 canal in maxillary molars. *J Endod*, 28, 324 – 7.
5. Peters D. (1990). Incidence and configuration of canal systems in the mesio-buccal root of maxillary first and second molars. *J Endod*, 16, 311 – 7.
6. Bhargavi N. (2006). Endodontic management of a maxillary first molar with a single root and a single canal diagnosed with the aid of spiral CT, a case report. *J Endod*, 32, 687 – 91.
7. Gray R. (1983). The maxillary first molar, Anatomy and morphology of the human teeth. Iowa City, University of Iowa College of Dentistry.
8. Moule J. (1993). Root canal morphology of maxillary permanent first molar teeth at various ages. *Int J Endod*, 26 (5), 257 - 67.
9. Fahid A, Taintor JF. (1998).Maxillary second molar with threebuccal roots. *Journal of Endodontics*,14(4), 181-183.
10. Gopikrishna V, Reuben J, Kandaswamy D.(2008). Endodonticmanagement of a maxillary first molar with two palatalroots and a single fused buccal root diagnosed withspiral computed tomography-a case report. *OralSurgery, Oral Medicine, Oral Pathology, OralRadiology & Endodontic*, 105(4), e74-78.
11. Jacobsen EL, Nii C. (1994).Unusual palatal root canalmorphology in maxillary molars. *Endodontic & Dental Traumatology*, 10(1), 19-22.

12. Burns RC, Herbranson EJ. (2002).Tooth morphology and cavity preparation. In: Pathways of the pulp. S Cohen & RCBurns (Eds.); 8th Edn.; Mosby: An Imprint of Elsevier,St. Louis, pp173-229.
13. Gopikrishna V, Bhargavi N, Kandaswamy D.(2006).Endodontic management of a maxillary first molar with a single root and a single canal, diagnosed with a aid of spiral CT. a case report. *Journal of Endodontics,*32(7), 687-691.
14. Christie WH, Peikoff MD, Fogel HM. (1991). Maxillary molarswith two palatal roots: a retrospective clinical study.*Journal of Endodontics*, 17(2), 80-4.
15. De Moor RJ. (2002). C shaped root canal configuration inmaxillary First Molar. *International Endodontic Journal*, 35(2), 200-208.