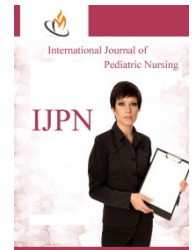




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A CASE REPORTING MAXILLARY FIRST MOLAR WITH 2 PALATAL CANALS WITHIN A SINGLE ROOT

*¹Gaurav Solanki, ¹Namita Lohra, ¹Jaya Lohra, ²Renu Solanki

¹Jodhpur National University, Jodhpur, Rajasthan, India.

²Lachoo Memorial College of Science and Technology, Rajasthan, India.

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ABSTRACT

The article presents a maxillary first molar with 5 canals. The morphology is different and rare because it is characterized by a single palatal root with 2 canals with separate orifices joining in the apical third. A review regarding the morphology of maxillary first molars is also discussed. Modifications to the access opening and examination of the pulpal floor for additional canals are more stressed.

INTRODUCTION

The dentist must have a thorough knowledge of root canal morphology to provide successful endodontic treatment as the complexity of the root canal system presents a constant challenge and every day a new finding is made [1]. The form, configuration and number of root canals present in maxillary first molars have been discussed for more than half a century [2]. Acosta Vigouroux reported 5 root canals in 2.25% of maxillary first molars while Gray reported 5 canals in 2.4% of the teeth he studied, with the following distribution: 2 MB, 2 DB and one palatal canal [3]. Harris reported 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 in which the palatal canals bifurcated at midroot into 2 distinct canals [4]. Martinez-Berna and Ruiz-Badanelli described 3 cases of maxillary first molars with

6 canals [5]. This article describes a permanent maxillary first molar with 5 root canals with unusual palatal canal morphology in which the two canals with separate orifices join in the apical third.

CASE REPORT

A 52 year old male patient presented with signs of irreversible acute pulpitis. He complained of pain, both spontaneous and temperature related, on the left side of the face for 6 months. The patient's medical history was not significant. A preoperative radiograph was obtained and the patient received local anesthesia of 2% lidocaine. A rubber dam was placed, 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, a small hemorrhagic 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.

Corresponding Author

GauravSolanki

Email: dr_gauravsolanki@yahoo.com

Case Report



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. Step back technique was used for the canal preparation. The tooth was then obturated and sealed. No post operative complications were noted.

DISCUSSION

This article focuses on the importance of locating canals and of ensuring adequate access to improve the likelihood that additional canals will be located. The tooth structure must be conserved as much as possible while establishing an endodontic access to allow for successful restoration of the tooth [6]. 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. A straight line access is important in any root canal therapy. 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 [7]. 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 needed [8]. 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 improving endodontic success [9]. Additional off angle radiographs are needed to rule out the possibility of additional canals. The dentist should be suspicious of additional canals if endodontic files are not well centered in the canal on the radiograph [10].

CONCLUSION

This article contributes to the understanding of the complexity of the root canal morphology found in maxillary first molars. Such cases occur infrequently; still the dentists should be aware of them when considering endodontic treatment of a maxillary first molar. Additional off angle radiographs are needed to ensure or rule out the presence of an additional canal.

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