

Endodontic Management of Maxillary First Premolar with Three Root Canals

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ABSTRACT

Successful endodontic treatment requires effective biomechanical preparation of the root canals and three-dimensional obturation of the root canal system. The aim was to detect the special cases with variations rare of anatomy of roots. In between incisors and molars they are premolars. The maxillary first premolars are bi-rooted with two canals, it may rarely have three roots with three canals and the third one sometimes get miss detected. Higher magnification and illumination can be useful for access cavity preparation and to recognize and locate additional canals for ideal outcome of treatment. The dentist by new technologies can easily detect what is normal, abnormal, any something rare variation. These case reports describes variations of anatomy of roots, how detect multi roots and treat endodontic management of maxillary first premolar with 3 root canals.

KEYWORDS: Diagnosis, Endodontic Treatment, Elective, Maxillary First Premolar, Root Canal Morphology

INTRODUCTION

The steps usual involved in the endodontic treatment process are access cavity preparation, cleaning shaping canals with nice irrigation to be clean, followed by obturation, are prerequisite in achieving a proper and perfect endodontic treatment. But inadequate knowledge about anatomy of human teeth will be lead us to the one of major reasons for failure of RCT.^{1,2}

The maxillary first premolar occupies a high percentage of all the teeth in variation in root anatomy and root canal morphology. In some cases as anomalies with variation, different in number, anatomy of roots. Maxillary first premolars with two canals may be considered as normal but in some differences in the root canal morphology of this and other premolars have been established. The small molar may also call for three canals of maxillary first premolar, mesiobuccal, distobuccal and palatal are three canals.³

The incidence of one root varies from 22% to 49.9%; two roots, 50.6% to 72% and three roots, 0 to 6%. Several studies dealing with the canal morphology of the first maxillary premolar have revealed that in most instances they have two canals, although teeth with one or three canals do exists.

9.2% is a ratio of first maxillary premolars with three canals based on Mariusz.

In general, this article acknowledges the case of an Endodontic treatment of maxillary first premolar with three canals.

CASE REPORT

A 48 years old male patient reported to Department of

Endodontic, with a Chief complaint of food lodgment in the upper right back region. X-ray of the maxillary right posterior region showed poorly obturated # 14 with an improper coronal amalgam restoration (Figure 1).



Figure 1: Preoperative X-ray

The patient was advised retreatment of # 14 followed by a crown. The procedure was commenced under local anesthesia and rubber dam. After removal of the restoration, the access cavity was modified. Gutta-percha was retrieved from the buccal and palatal canals. On careful examination and exploration, an extra canal was located in the buccal root. An x-ray was taken to confirm the presence of the third canal, and working length of all three canals was verified using both the x-ray and apex locator. (Figure 2)

The canals were prepared with protaper next (Dentsplymallifer), by paper points, the canals were dried and obturation was done with the corresponding protaperNext cones using AH plus sealer. (Figure 3 A and B)

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Figure 2: Determine working length for 3 roots, 3 canals



Figure 3A: Obturation after cleaning and shaping with final restoration.
3B: Obturation after cleaning and shaping with final restoration

DISCUSSION

In the past, with the existence of a lack of technical sufficiency and treated with two canals and sometimes misses the third canal, with new technique like higher magnification, microscope and illumination can be useful for access cavity preparation and to recognize and locate additional canals for ideal outcome of treatment.⁴⁻⁶

According to Vertucci, two radiographic signs indicate the presence of three-rooted maxillary first premolars.³ First, if it was radiographically detected that the middle third of the root has a mesiodistal distance equal to or greater than the cervical third, this might indicate that there are two buccal roots or two root canals in a single-wide buccal root. The second radiographic sign is the rapid disappearance of the continuity of radiolucent image of the root canal. In this clinical case, the sudden disappearance of the continuity of the radiolucent image related to the root canal, as observed in the initial

radiograph was suggestive of a third root canal.⁷

To confirm the presence of the third canal in the maxillary premolar, in this case, the operative optical microscope was used for improved clinical visualization. According to Karapinar-Kazandag et al. The optical microscope has many advantages because it provides better illumination and visualization of the operative field with a magnification up to twenty times. Therefore, high magnification helps the identification of the anatomical details of the pulp chamber floor and orifices of the root canal entrance.⁸

CONCLUSION

Morphological difference in pulpal anatomy must be always believed before starting treatment. Careful clinical and radio graphical examination is essential for successful endodontic treatment. Use of an operating microscope or loop can promote the visualization of the pulp chamber and extra canal orifice.

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