ROOT CANAL RE-TREATMENT OF MAXILLARY FIRST MOLAR WITH FOUR CANALS USING HYFLEX EDM: A CASE REPORT

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Abstract

The root canal system presents a complex anatomy. It is a myriad complex of canals and their various portals of exits. The maxillary first molar is an important tooth in the arch and is of prime functional importance. In maximum cases, the maxillary first molar shows presence of three canals viz. mesiobuccal, distobuccal and palatal canal. At times, there may be presence of four or five canals. These extra canals may be present as a second mesiobuccal canal, a second distobuccal canal or an extra canal in the palatal root. These canals are often missed by the clinician. Their identification has benefitted from technological innovations like microscopes and ultrasonics that have enabled easy identification of the orifices of these canals. This case report presents a case of root canal treatment of maxillary first molar with four canals.

1. INTRODUCTION

Root canal treatment is the most widely performed dental procedure that forms the main modality for alleviation of pain. Patients mostly report to a dentist with the chief complaint of pain following which often root canal treatment has to be performed. Many a time in spite of a good root canal treatment with proper hermetic seal of obturating material, many patients complain of persisting pain. Scientific research has shown that it can often be attributed to the presence of extra canals that have been missed during the procedure. These canals contain pulpal remnants and necrotic tissue that cause persistent pain to the patient. Hence, the identification of these canals is important to ensure a good root canal treatment.

The maxillary first molar is the tooth with the largest volume in the arch. It is also very important for mastication and maintaining the functional integrity of the dentition.

2. CASE REPORT

A 23 year old female patient reported to the Department of Conservative Dentistry and Endodontics with the chief complaint of pain in the upper right back tooth region. The pain was dull, continuous and increased during mastication. The tooth showed sensitivity on intake of hot and cold beverages. The patient had undergone root canal treatment in relation to the same tooth five years back. She gave history of pain since last two months. Preoperative radiograph showed incomplete obturation that was not up to the apex (Figure 1). A radiolucent line along the mesiobuccal

canal indicated that there might be an extra canal in the mesiobuccal root. The patient was advised retreatment in relation to upper right first molar.

Figure 1: Preoperative radiograph

After recording proper medical and dental history which was not significant, local anaesthesia was administered. The tooth was isolated under rubber dam and access opening was re- established. The old gutta percha was removed using H files (Figure 2).

Figure 2: After gutta percha removal

Mesiobuccal, distobuccal and palatal canals were then negotiated completely till the apex. Scouting was done to locate a suspected extra canal in the mesiobuccal canal. A second mesiobuccal canal was identified on the groove joining the mesiobuccal and palatal orifices. Working length was determined for all four canals using electronic apex locator (Figure 3). Glide path was established. The canals were then prepared upto 25/0.06 using

Hyflex EDM. Irrigation was done with 2.5% sodium hypochlorite in between each instrument change.

Figure 3: Working length determination

The canals were then dried with paper points and obturated with mono cone technique using sealer Sealapex. The post endodontic restoration was done with composite.

Figure 4: Post operative radiograph

3. DISCUSSION

Elusive “second mesiobuccal” (MB2) canal is one of the biggest mysteries in endodontics. It has been found that endodontically retreated teeth contain more undetected MB2 canals than 1st time treated teeth, suggesting that failure to locate, debride, and fill existing MB2 canals leads to a poorer prognosis. The second mesiobuccal canal orifice in maxillary molars is usually located either mesial to or in the pulpal groove connecting the main mesiobuccal canal and palatal canals, within 3.5 mm palatally

and 2 mm mesially from the main mesiobuccal canal.¹

Anatomical complexities impose limitations to the chemico-mechanical preparation of the root canal, leading to areas not touched by the instrument, resulting in unsuccessful cases. Such complexities are of great importance, especially in maxillary molars.²

The presence of the MB2 canal in maxillary first molars is said to range from 50% to 90% of cases. Knowledge of the morphology of the root canal system, therefore, is extremely important in planning endodontic therapy, as its success relies on the location of all of the canals that can then be disinfected, shaped, and filled.²

Understanding the incidence of MB2 canals and the distribution pattern of canal orifices on the pulpal floor may help clinicians to quickly identify and locate MB2 canals. According to Zhang et al, the majority of 3-rooted maxillary first molars showed 2 root canals (85.4%) in the mesiobuccal root and the incidence of MB2 canals had a significant association with the patients' sex and age.³

The entry of the MB2 canal is usually hidden due to dentinal cornice in the middle of the mesial surface of the pulp chamber. The canal usually departs in the groove joining the palatal and mesiobuccal orifices closer to the mesiobuccal canal. It mostly shows a mesial incline.⁴

4. CONCLUSION

An apparently good looking root canal treatment can become a failure due to missed extra canals. The treatment of these canals is of paramount importance in successful root canal treatment. The identification of MB2 has increased over the years. Further studies are needed that help in easier identification of these canals.

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