

Endodontic Management of Maxillary Molars with Two Palatal Canals – Case Report

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Abstract: For successful endodontic therapy thorough knowledge of root canal morphology is essential. There are rare variations in canal number and configuration in maxillary molars, which could affect treatment outcome but possibilities should always be considered. This paper presents the endodontic management of a maxillary molar with two palatal canals which was successfully treated with root canal. This paper is intended to reinforce clinician's awareness of the rare. Morphology of root canals.

Keywords: abnormal morphology, root canal treatment, maxillary molars

I. Introduction

Variations in the root and root canal morphology, especially in multirooted teeth, are a constant challenge for diagnosis and management (1). Familiarity with various root canal configurations and variation is necessary for success endodontic therapy (2). The standardized method for categorizing root canal anatomic variations was proposed by Vertucci and more clinically relevant classification of root canal anatomy was proposed by Weine (3, 4). However, many variations exist and it is important to evaluate each individual case for variations (5). There are several reports in literature which relate variations in number of palatal roots and canals in maxillary molar. They describes the existence of either one palatal root with two canal or two separate palatal roots each with own canal (6).This case reports presents a clinical cases involving the endodontic management of maxillary second and first molar with an aberrant morphology having two palatal canals.

II. Case report

2.1 Case report 1

A 28 –year- old female patient reported department of conservative dentistry and endodontics with the chief complaint of pain in the posterior right maxillary region for preceding week. The pain was of continuous nature, throbbing type with moderate intensity. The clinical examination revealed a carious maxillary right second molar. The clinical and radiographic findings led to a diagnosis of irreversible pulpitis, necessitating endodontic therapy.

Pretreatment radiograph was taken (Fig.1 A) .Access opening was done under local anesthesia after rubber dam isolation. Clinical examination revealed 4 distinct orifices:2 distinct palatal orifices and 2 buccal orifices (Fig 2 B). Radiograph was taken with files place in palatal and buccal orifices confirming the two canals in palatal roots with type II weine configuration (Fig 1C). The working length was determined with the help of an apex locator (PropexII;(Dentsply Maillefer, Ballaigues, Switzerland.) and later confirmed with a radiograph. Cleaning and shaping was done using protaper Niti rotary instrumentation ((Dentsply Maillefer, Ballaigues, Switzerland). Irrigation between each instrument was done using 2.5% sodium hypochlorite solution and 17% EDTA. The root canal space was obturated using cold lateral condensation of gutta percha and a resin based sealer, AH plus (Fig 1D). The tooth was then restored. Subsequent follow up revealed the patient to be clinically asymptomatic.

2.2 Case report 2:

A 22 –year- old male patient reported department of conservative dentistry and endodontics with the chief complaint of decay in the posterior left maxillary region of the mouth since 15 day. Medical history was noncontributory.The clinical examination revealed a carious maxillary left first molar. The clinical and radiographic findings led to a diagnosis of irreversible pulpities of left maxillary first molar, necessitating endodontic therapy.

Radiograph of the involved tooth indicated an unusual anatomy with wide palatal root (Fig 2 A). Access opening was done under local anesthesia after rubber dam isolation (Fig 2B). Clinical examination of pulpal floor with endodontic explorer (GDC, DG16) revealed 3 distinct orifices: distinct palatal orifices and 2 buccal orifices.After removal of pulpal tissue with K type file ((Dentsply Maillefer, Ballaigues, Switzerland)in

the three main canal two orifices were observed in palatal root .Radiograph was taken with files place in palatal and buccal orifices confirming the two canals in palatal roots which join at the apical third(Fig 2C) .The working length was determined with the help of an apex locator (PropexII;(Dentsply Maillefer, Ballaigues, Switzerland).) and later confirmed with a radiograph. Cleaning and shaping was done using protaper Niti rotary instrumentation ((Dentsply Maillefer, Ballaigues, Switzerland). Irrigation between each instrument was done using 2.5% sodium hypochlorite solution and 17% EDTA. The root canal space was obturated using cold lateral condensation of gutta percha and a resin based sealer, AH plus (Fig 2D). The tooth was then restored. Subsequent follow up revealed the patient to be clinically asymptomatic.

III. Discussion:

Thorough knowledge of root and root canal morphology is required for successful endodontic therapy (1,5). A sound knowledge of location and dimension of pulp chamber can reduce iatrogenic errors such as perforation, excess removal of tooth structure which are common during the search of missing or extra canals.

It is generally accepted that the maxillary first permanent molar has 3 roots and 3 canals with an MB2 canal seen in 54.7% of the cases(7). The presence of two canals in mesiobuccal root of maxillary molar is high; however there are fewer reported cases of two canals in the palatal root of the maxillary molars.

The indistinct image of the palatal root on the preoperative radiograph should caution the author possibility of a second canal. The location of second canal was found with the aid of the radiograph which serendipitously revealed the two canal system. This case emphasizes the importance of looking for canals and of ensuring adequate access to improve the likelihood that additional canals will be located. 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. Morphological variations are usually unexpected and when they occur one must be quick to reevaluate the procedure and deal with the anomaly as it is present (8);.

References:

- [1]. Malagnino V, Gallottini L, Passariello P. Some unusual clinical cases on root anatomy of permanent maxillary molars. J Endod 1997; 23:127-8.
- [2]. Sert S, Bayirli GS. Evaluation of the root canal configuration of the mandibular and maxillary permanent teeth by gender in Turkish population. J Endod 2004; 30:391-8.
- [3]. Vertucci FJ. Root canal anatomy of the human permanent teeth. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1984; 58:589-99.
- [4]. Weine FS. Endodontic therapy. 6th ed. St. Louis: Mosby; 2004 109-10.
- [5]. Slowey RR. Root canal anatomy, road map to successful endodontics. Dent Clin North Am 1979; 23:555-73.
- [6]. Benenati FW. Maxillary second molar with two palatal canals and a palatogingival groove. J Endod 1985; 11(7): 308-10.
- [7]. Cleghorn BM, Christie WH, Dong CCS. Root and root canal morphology of the human permanent maxillary first molar: a literature review. J Endod 2006;32:813-21
- [8]. Wong M. Maxillary first molar with three palatal canals. J Endod 1991; 17(6):298-99.

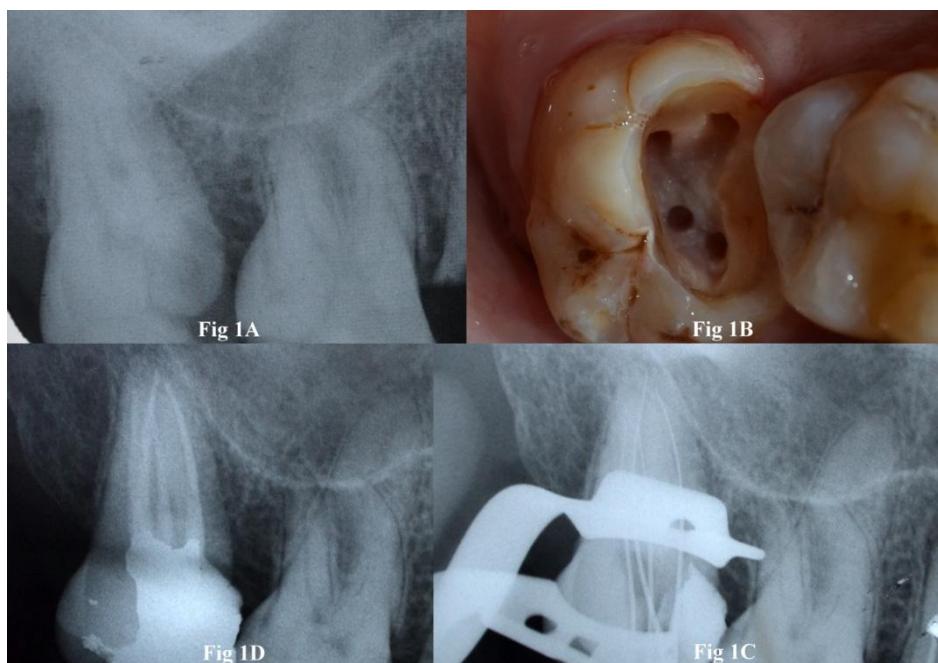


Fig 1 A.Preoperative radiograph, 1B Access opening of tooth, 1C Working length radiograph, 1D Postobturbation radiograph

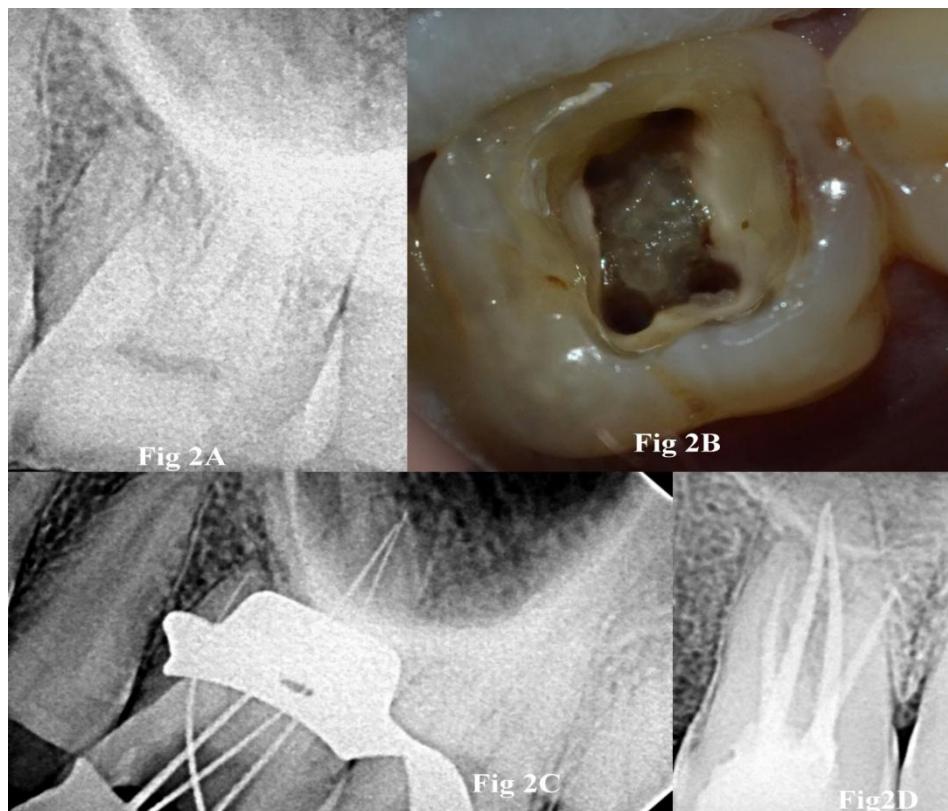


Fig 2 A.Preoperative radiograph, 2B Access opening of tooth, 2C Working length radiograph, 2D Postobturbation radiograph