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Full Length Case Report

ENDODONTIC MANAGEMENT OF MAXILLARY FIRST MOLAR WITH FIVE CANALS-A CASE REPORT

***Shailja Singh, Ramesh Chandra, JyotiJain, Supratim Tripathi, Manjusha Mohan, Sanjay Jaiswal and Poonam Singh**

Career Post Graduate Institute of Dental Sciences and Hospital, Lucknow, U.P., India

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ABSTRACT

A thorough knowledge of root canal anatomy is essential for the endodontic therapy. Aberrations in the root canal system, especially in multirooted teeth, can pose a considerable challenge to the endodontist during root canal treatment. The endodontist should be familiar with various root canal con Figurations and their variations for successful endodontic therapy. It is important to evaluate each individual case for variations. There are variations in number of root canals with altered con Figuration rarely existent in maxillary and mandibular molars can affect treatment outcome.

INTRODUCTION

Atypical root canal morphology in multirooted teeth is a continuous challenge for diagnosis and successful endodontic treatment.Success of root canal therapy requires a systematic understanding of both the external and internal anatomy as well as its canal morphology (Fava, 2001). Any change in canal morphology as well as anatomy may lead to endodontic failure (Aggarwal *et al*., 2009) Most commonly permanent maxillary first molar has three roots i.e. one mesiobuccal root with two canals while one distobuccal and one palatal root with one canal. According to Buhrley *et al* only 17.2% second mesiobuccal canal are found by using conventional examination techniques whereas by using magnification this number increased upto 62.5%. The incidence of a maxillary first molar with two separate canals in the palatal root is less than1% (Cleghorn *et al*., 2006; Hartwell *et al*., 1982; Thews *et al*., 1979). Although, the incidence of an extra canal in the palatal root is not high therefore, it is important endodontist should be familiar with various root canal con Figurations and their variations for successful endodontic therapy. The following case report is the endodontic management of a maxillary first molar with a variant root canal anatomy, having five root canals, with mesiobuccal root having two canals (MB1, MB2) , distobuccal root having one canal (DB) and the palatal root having two canals (P1, P2).

****Corresponding author: Shailja Singh,***
Career Post Graduate Institute of Dental Sciences and Hospital, Lucknow, U.P., India.

Case report

A 25-year-old male patient was referred to the Department of Conservative Dentistry and Endodontic, Career Post Graduate Institute of Dental Sciences and Hospital, Lucknow with a chief complaint of pain in the left upper back tooth region since few days.The buccal and palatal aspect of the tooth did not reveal any tenderness on palpation. Interestingly, this tooth had Cusp of Carabelli of an unusually large size. Radiographic examination of the concerned tooth revealed coronal radiolucency involving the pulp space and widening of periodontal ligament space. The clinical and radiographic findings, were suggestive of symptomatic irreversible pulpits. Informed consent of the patient was taken. Anesthesia was administered and isolation was done using Rubber dam. Endodontic access cavity preparation was done using Endoaccess bur and Endo Z bur. All the orifices were explored using DG-16 endodontic explorer and canals were negotiated using ISO 10 K files.In Fig. a intraoral periapical radiograph revealed two separate canals in a single palatal root which join in the apical third (Vertucci type II) and in Fig. b intraoral periapical radiograph the mesiobuccal root also revealed two

separate canals which joined in the apical third (Vertucci type II). Whereas, the distobuccal root had a single canal. The canals were then prepared with Hero Shaper hand instruments using copious amount of Glyde as a lubricant during the preparation. Canal disinfection was performed using 2.5% sodium hypochlorite. Once the tooth was asymptomatic, obturation was done with gutta-percha and endomethasone sealer (Fig. C). The access cavity was sealed with a temporary restorative material and the patient was recalled for permanent restoration.

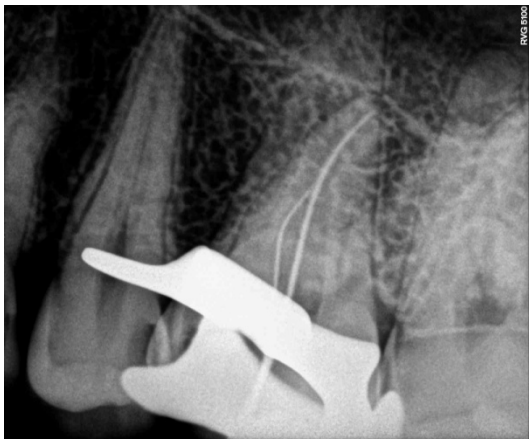

Fig. a. Two separate palatal canals

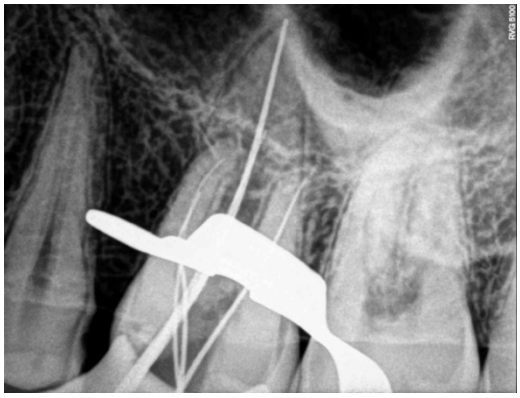

Fig. b. Two separate mesiobuccal canals

Fig. c. Obturation

DISCUSSION

The majority of endodontic literature describesthe maxillary first molar as having 3 roots with 3 or4 root canals. A secondmesiobuccal canal in the mesiobuccal root (MB2) is the most common variation for the root canal anatomy of maxillary first molar. It is found in 50.4-91% of the cases (Baratto-Filho, 2002). The prevalence of maxillary first molars with two palatal canals is rare. Benenati [21] described a maxillary second molar with two palatal roots and a groovelocated on the palatal side of the tooth as a result of theformation of the two palatal roots. Also literatureis limited regarding presence of two separate palatalcanals with separate orifices/ separate exits or singleexit (Thews *et al*.,1979; Sidow *et al*., 2000; Deveaux *et al*., 1999; Christie *et al*., 1991; Wong *et al*., 1991; Maggiore *et al*., 2002), Weine *et al* (Weine *et al*., 1969), and Vertucci (1984) provided the clinical classification of variations in the root canalsystem and stressed the importance of familiarity with the root canal morphology before starting the endodontic treatment. In the present case report the presence of an unusually large cusp of Carabelli suggested toward the presence of an additional root canal which was later confirmed clinically and radiographically.

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