

# Endodontic Miscellaney – A Challenging Protocol of First Molars with Quinary Canal : Series of 2 Cases

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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 configurations 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 configuration rarely existent in maxillary and mandibular molars can affect treatment outcome.

The first case report presents 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).

The second case report presents the endodontic management of a mandibular first molar with a variant root canal anatomy, having five root canals, with mesial root having two canals (MB,ML) and distal root having three canals (DB, MD, DL).

**Keywords :** Billateral Cusp of Carabelli , Vertucci type II

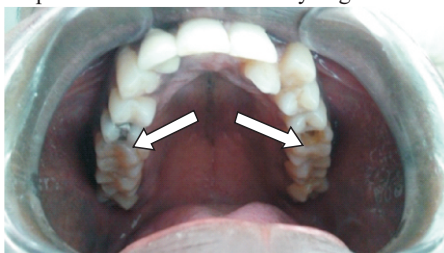
**Introduction**

**R**oot canal system disinfection is of paramount importance in endodontic treatment . Efforts are made during instrumentation to remove infected pulp tissues and debris from the root canal system spaces. However, achieving a sterile environment is impossible because of presence of lateral canals, ramifications, and intercanal communications. A thorough knowledge of root canal anatomy is essential for the endodontic therapy. The endodontist should be familiar with various root canal configurations and their variations for successful endodontic therapy. It is important to evaluate each individual case for variations.<sup>1,2,3</sup>

**Case Report-1**

**Maxillary First Molar with Five Canals**

A 25-year-old male patient was referred to the Department of Conservative Dentistry and Endodontics ,Carrier Post Graduate Institute of Dental Sciences & Hospital ,Lucknow with a chief complaint of pain in the left upper back tooth region since 2 days. The pain was spontaneous, throbbing in nature and intensified by thermal stimuli and on mastication. Patient's medical history was non-contributory. Clinical examination revealed that the upper left first molar (#26) had deep caries, which was sensitive to probing, non tender on percussion and periodontally sound. Palpation of the buccal and palatal aspect of the tooth did not reveal any tenderness . Interestingly, this tooth had cusp of Carabelli of an unusually large size .



Billateral Cusp of Carabelli

IOPA was taken Radiographic examination of the concerned tooth revealed coronal radiolucency involving the pulp space and widening of periodontal ligament space. From the clinical and radiographic findings,a diagnosis of symptomatic irreversible pulpitis was made .Written informed consent was taken. Anaesthesia was achieved. 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 file. It revealed two separate canals in a single palatal root which join in the apical third (Vertucci type II)the mesiobuccal root also revealed two separate canals which joined in the apical third (Vertucci type II), and 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. One weeks later, once the tooth was asymptomatic, obturation was done with gutta-percha and ZOE sealer. The access cavity was sealed with a temporary restorative material and the patient was recalled for permanent restoration.

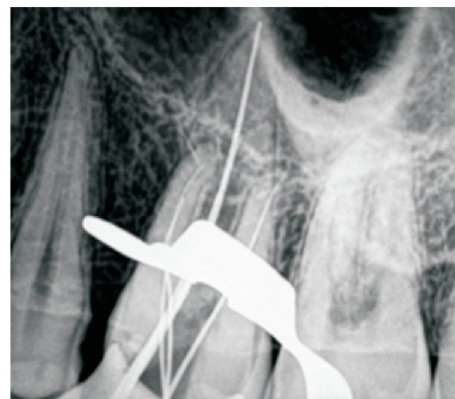


Fig.1 Working Length Radiograph.



Fig.2 Pulp chamber floor showing five canal orifices.

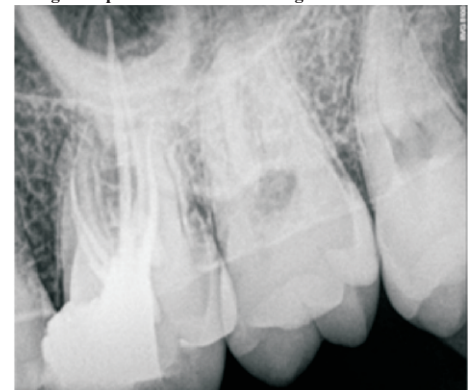


Fig.3 Postobturation radiograph

**Discussion**

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. the most frequent variation is the presence of second mesiobuccal canal (MB2). Beatty reported a maxillary first molar with five canals, three of them located in the mesiobuccal root<sup>6</sup>. Thomas et al. reported incidence of two canals in palatal root of maxillary first molar is 0.9 % in USA population while Caliskan et al. reported 33.3 % in Turkey population. Wong reported a case of a maxillary first molar with the

palatal canal trifurcating at the apical level, with three independent foramina<sup>8</sup>. In the present case report two separate canals in a single palatal root which join in the apical third (Vertucci type II), the mesiobuccal root had two separate canals which joined in the apical third (Vertucci type II), and the distobuccal root had a single canal. Recently, Kottor et al. reported the presence of seven canals in maxillary first molar (three in the mesial root, two in the distal root and two in the palatal root). Kottor et al. also reported the presence of eight canals in the maxillary first molar

### Case Report-2

#### Mandibular First Molar with Five Canals

A 27-year old female patient was referred to the Department of Conservative Dentistry and Endodontics, Carrier Post Graduate Institute of Dental Sciences & Hospital, Lucknow with a chief complaint of pain in the right lower back tooth region since 3 days. The pain was spontaneous, throbbing in nature and intensified by thermal stimuli and on mastication. The patient's medical history was non contributory. A clinical examination revealed a carious mandibular right first molar which was tender on percussion. Palpation of the buccal and palatal aspect of the tooth did not reveal any tenderness. From the clinical and radiographic findings, a diagnosis of symptomatic irreversible pulpitis with symptomatic apical periodontitis was made and endodontic treatment was suggested to the patient.

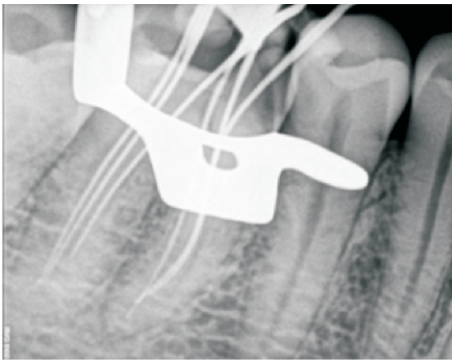


Fig.1: Working Length Radiograph.

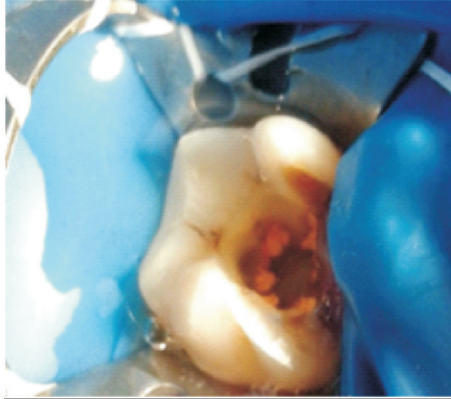


Fig.2: Pulp chamber floor showing five canal orifices

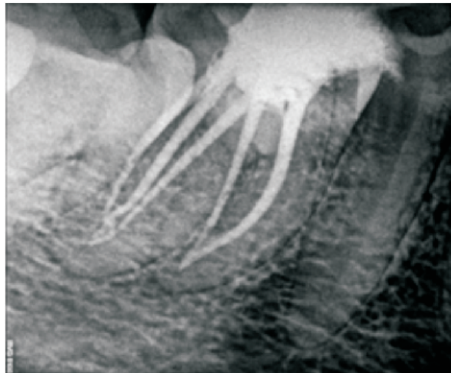


Fig.3: Postobturation radiograph

### Discussion

Baugh & Wallace (2004), reported that the prevalence of a middle mesial canal in mandibular first molar was 1–15%. but the existence of three canals in the distal root of the mandibular first molar is uncommon. Caliskan et al. Reported incidence of three canals in the distal root of the mandibular first molar is 1.7% in Turkey population. Previously, only two case reports have been reported with three root canal orifices within the distal root of mandibular first molar (Reeh 1998, Chandra et al. 2009)<sup>9</sup>. In the present case report, distobuccal and mid-distal canal joined at the apical third of the root and existing through a single apical foramen (Vertucci type II) whilst the distolingual canal had a separate canal orifice and foramen.

### Conclusion

Excellent knowledge, understanding and appreciation for root canal system anatomy influence predictably successful treatment outcome. Thus, multiple angulated radiograph and close clinical inspection of the pulp chamber floor is essential whilst treating teeth that have a high incidence of extra canals.

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