

Uncommon Finding of Addition Root in Mandibular First Molar: A Case Report

Kriti Dubey^{1*}, Yashvi Verma², Abhishek Norton¹, Krupa Kapadia¹, Mahendra Rajendra Jain³, Parthivi Singh¹

¹Department of Conservative and Endodontics, Peoples Dental Academy, Bhopal, Madhya Pradesh, India.

²Department of Conservative and Endodontics, Bonded Dental Officer, Government Jai Prakash District Hospital 1250, Bhopal, Madhya Pradesh, India.

³Department of Conservative and Endodontics, ACPM Dental College, Dhule, Maharashtra, India.

Abstract

A successful endodontic treatment relies on the thorough identification of all root canals and proper chemomechanical preparation therefore followed by 3D obturation having hermetic seal. Unusual tooth morphology is one of the major causative factors in failure of any of these steps. More commonly mandibular first molars contain two roots that is mesial and distal root in which three canals are present but in few cases, the number of roots may vary. Radix entomolaris (extra root presents lingually) or radix paramolaris (extra root present buccally) are two more common anatomic variants present. This article highlights the presence of rare occurrence which is two mesial root and one distal root. Pre-operative assessment of periapical radiograph is a key factor to achieve long-term successful implementation of root canal treatment.

Keywords: Radix paramolaris, Mesial root, Bifurcation, Preoperative radiograph.

INTRODUCTION

To perform endodontic therapy, clinician should have thorough knowledge of the internal and external anatomy of the tooth and root canal system. This permits the dentist to do cleaning, shaping, and filling the root canal three dimensionally, that is, the main purpose of nonsurgical root canal treatment.^[1] However, anatomic variation of root canal system or extra canal always present a challenge to clinician to treat, and if left untreated, they may jeopardize the prognosis of a otherwise healthy tooth because they may hiding infectious organic substances along with bacteria.^[2] Usually mandibular first molars contain two roots, one on mesial and one on distal, and normally have two canals on mesial root and one or two canals present on distal root.

In mandibular first molar, the most recurrent anatomical variation is the existence of a distolingually located third root. Depending on the patient's race, its prevalence may vary.^[3] The existence of an extra roots on mandibular first molar has been reported frequently.^[3-5] The existence of third root (present lingually) on a mandibular first molar was first described by Carabelli in 1844.^[6] Radix entomolaris name was given by Bolk in 1915.^[7]

However, if this root present buccally, it is known as radix paramolaris.^[8] The prevalence rate of radix paramolaris is lower than radix entomolaris.

This case report of a mandibular first molar having a third root presents on buccal position, that is, called radix paramolaris. Its existence is usually very rare, consequently, it is contemplated as exceptional root morphology.^[9]

CASE REPORT

A 15 year-old male arrived for treatment at the endodontic department complaining of non-persistent pain in his mandibular first molar. The patient had non-contributory medical history. When thorough examination had been done, the patient had no pain on percussion but high susceptible to cold in his mandibular left first molar. This tooth was diagnosed as symptomatic irreversible pulpitis (Figure 1). Pre-operative radiograph had been taken (Figure 2). To continue with the clinical procedure, isolation was done with rubber dam of concern tooth (Figure 3). Then, caries were removed and access cavity had been prepared with round bur (no.4),

Address for correspondence: Dr. Kriti Dubey,

Department of Conservative and Endodontics, Peoples Dental Academy,
Bhopal, Madhya Pradesh, India.
Email: kritidubey2512@gmail.com

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Final access cavity was refined with the help of Endo Z bur (Dentsply-Maillefer).

Working length was determined by 15 k file. Radiograph was taken (Figure 4). Henceforth confirmed, that this tooth was

having Two roots with two separate canals on the mesial side, and third root was present at distal that was of single root with two canals (Figure 5).

Cleaning and shaping were done with the protaper gold system. Mesio Buccal and mesio lingual canals were prepared upto F1 protaper gold system and Distal canals were prepared upto size F2. After every instrumentation, irrigation was done with 2.5% NaOCl, recapitulation was done with a No. 10 K-file. After thorough cleaning and shaping, all canals were dried then master cone radiograph was taken (Figure 6). Filling was done by lateral condensation technique. Post-endodontic restoration was done with amalgam. Final radiograph was taken (Figure 7). A follow-up after treatment was done after 3 months.

DISCUSSION

Mandibular permanent first molars possess several typical and different roots and canals, as well as several anomalies. The existence of four canals in mandibular first molar is frequent, but the existence of two mesial roots is uncommon.



Figure 1: Pre-operative occlusal view

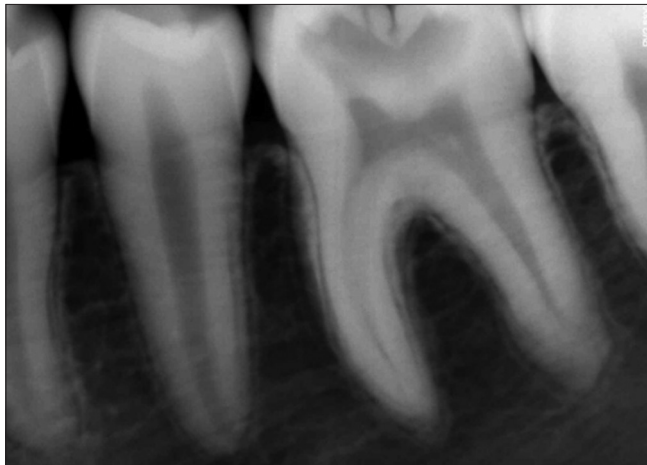


Figure 2: Pre-operative IOPA



Figure 4: Working length radiograph

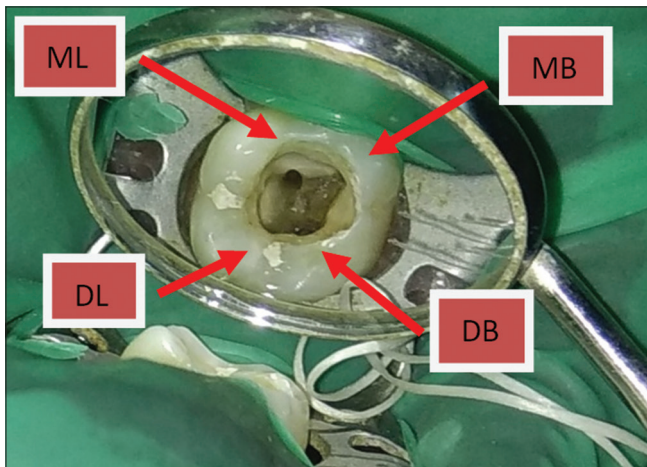


Figure 3: Access preparation under rubber dam

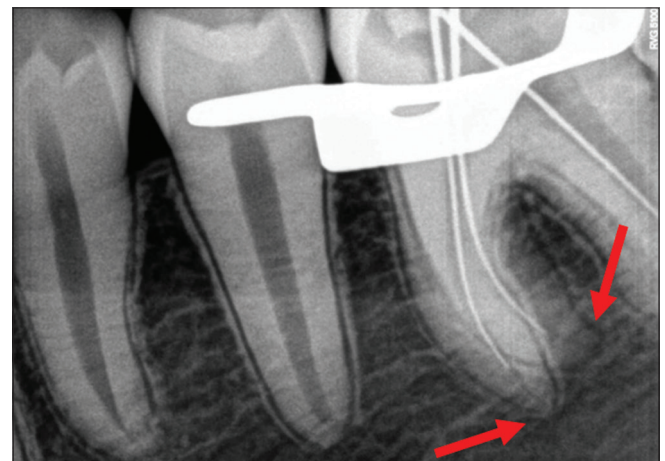


Figure 5: Working length radiograph with two separated root



Figure 6: Master cone selection

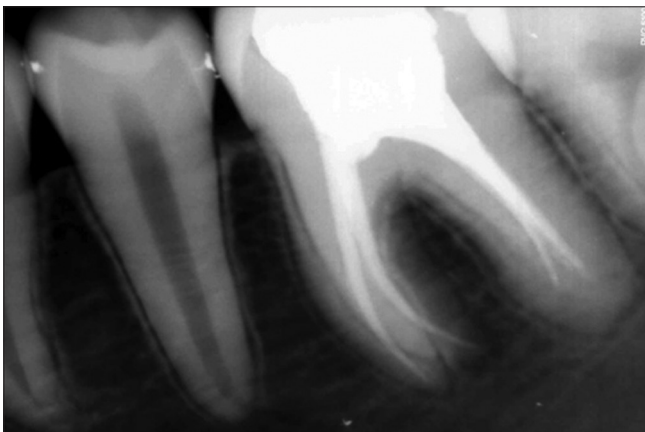


Figure 7: Post-obturation radiograph

According to Quackenbush, an extra distolingual root presents unilaterally in 40% of the cases.^[10]

In this case report, two roots present on mesial side. There are two reasons of increased number of root present in the mandibular first molar. First is relatively common, additional root present that is distolingual root. Second one is uncommon that is, bifurcation of the mesial root. A trait was found that 0.5% of mandibular first molars have bifurcation of mesial root.

In case reported here, a periapical radiograph of mandibular first molars was found to have double periodontal ligament space in both the mesial roots. This trait can be explained in three ways these are: Bifurcated mesial roots, existence of two mesial roots, or a mesial root that is very broad faciolingually.^[11] The most likely reason in this patient was existence of two mesial roots.

Knowledge of both common and uncommon anatomy of the mandibular molars presents the parameters for the

implementation of root canal procedure and can directly influence the likelihood of success. Therefore, practitioners should be aware with every molar abnormality.

This case focuses attention on importance of thorough radiographic examination, mainly preoperative radiograph, for execution of successful endodontic therapy. Although variation and anomalies could be found.

The third root could be seen radiographically in approximately 90% of cases;^[12] however, it may be difficult to recognize because of slender dimensions present. In such cases, mesially and distally angled views might be helpful.^[13]

CONCLUSION

This case presents a mandibular first molar having an uncommon number of roots. Dentist performing root canal therapy should consider this finding in mind while carrying out root canal treatment. Pre-operative radiograph is a major factors in the implementation of successful endodontic therapy; henceforth, the clinician should be conscious of the occurrence of the additional root in the mandibular first molar. This could be helped for thorough inspection of the pulpal anatomy of the chamber to achieve complete debridement of each root canal. This insures the long-term success of endodontic therapy.

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