

Endodontic management of mandibular first molar with radix endomolaris & five canals: A case report

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Abstract

The knowledge of variations in root canal morphology significantly affects the success of endodontic treatment. This article presents the endodontic management of a unique case of mandibular molar with an additional distolingual root with two canals and radix endomolaris which is quite uncommon. Mandibular molars can sometimes present a variation called radix endomolaris, wherein the tooth has an extra root attached to its lingual aspect. Accurate diagnosis and careful application of clinical endodontic skill can favorably alter the prognosis of treatment.

Keyword: Radix Endomolaris.

Introduction

Predictable success in endodontic treatment calls for a thorough understanding of root canal morphology and anatomy which in turn will facilitate the debridement, disinfection and obturation of the root canal. Thus, it is mandatory for the clinician to have knowledge of not only the normal anatomy but also its variations.¹ Mandibular molars generally have two canals in the mesial root and one or two canals in the distal root.² Studies have shown an incidence of five canals in mandibular first molar to show a variation of 1 and 15% where as three distal canals to be reported of about 0.6%.^{3,4} This case report describes the diagnosis and successful management of a case of mandibular first molar with this unusual morphological variation of three distal canals. The presence of two distal canals in distobuccal root and additional distolingual root demonstrates a rare anatomical configuration.

Case Report

A 24-year-old male patient came to the clinic with the complaint of pain in the posterior right mandibular region for the past two weeks. The pain was initially spontaneous and was later triggered by many factors, especially cold. His past medical history was found to be non-contributory. Clinical examination revealed a carious right mandibular first molar with tenderness on percussion. The clinical findings, vitality tests and radiographic findings led to a diagnosis of acute apical

periodontitis of the right mandibular first molar, necessitating endodontic therapy.

Radiographic evaluation of the involved tooth did not reveal any unusual anatomy (Fig. 1). The tooth was anesthetized using 2% lignocaine with 1:80,000 adrenaline (Lignox, Indoco Remedies Ltd., India) and isolated using rubber dam. Endodontic access cavity was established. For the straight line access, gates gliden drills were used with crown down method to enlarge the orifices. Inspection of the pulp chamber revealed five canal orifices. (Fig. 2a, 2b) canal patency was checked with number 10 k-file (Mani, Inc.; Tochigi, Japan). Working length was determined with an apex locator and confirmed by a radiograph. Irrigation was done using 5% sodium hypochlorite to remove debris and bacteria. Five canals were instrumented using k files till apical preparation #25 size. (Fig. 3a, 3b, 3c)



Fig. 1: Radiographic evaluation of the tooth

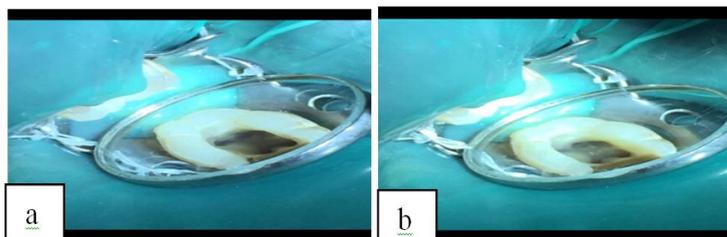


Fig. 2a, 2b: Inspection of the pulp chamber revealed five canal orifices

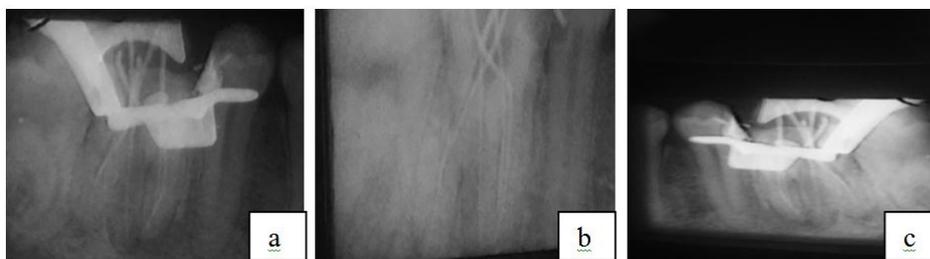


Fig. 3a, 3b, 3c: Five canals were instrumented using k files till apical preparation #25 size

Patient was then recalled after a week. The root canals were then dried with paper points, and obturated with cold, laterally condensed gutta-percha and ah plus resin sealer (dentsply) (Fig. 4).

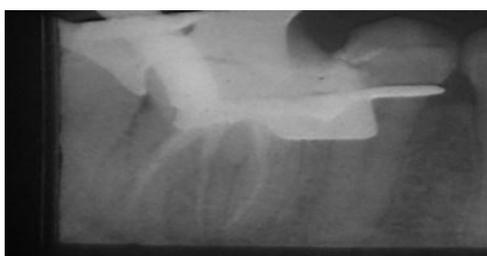


Fig. 4: The root canals were obturated with cold, laterally condensed gutta-percha (mailefer, dentsply, ballaigues, switzerland) and ah plus resin sealer (mailefer, dentsply, ballaigues, switzerland).

Discussion

Studies have reported Indian population to have an incidence of three canals in distal root to be 1.7%; 0.2% in Senegalese population; 1.7% in Turkish population; 0.7% in Burmese population; 1.6% in Thai population; and in Sudanese population 3% incidence has been reported.⁵ Radix endomolaris has been reported to occur with a frequency of 0.2-32% in different populations.⁶ The most commonly seen variations of root canal system of mandibular first molar is presence of middle mesial canal is incidence of 1-15%^{3,4} where as presence of disto buccal root with two canals and radix endomolaris is rare.

Radix endomolaris is commonly found as a short conical extension to a full length root located distolingually the extension of root may be unilateral or bilateral and may or may not contain pulpal tissue.⁷ Due to the high incidence of curvature, precurved filling is required to establish a glide path to the apical segment; therefore niti rotary files for biomechanical preparation is required.⁸

One of the most important causes of endodontic treatment failure is the incomplete obturation of the root canal system.⁹ Important cause attributed to the failure of endodontic treatment has been reported by vertucci as missing canals.¹⁰ Therefore, the correct location, thorough debridement, shaping, cleaning and obturating the entire root canal system are indispensable procedures.

Conclusion

Successful endodontic treatment requires knowledge of root canal anatomy and requires a correct diagnosis and careful inspection. The morphological variations in pulpal anatomy must always be evaluated before beginning treatment. The case presented shows distobuccal root with two canals and radix endomolaris in mandibular molars is one such variations. Even though the frequency is rare, each case should be evaluated carefully both clinically and correlated radiographically.

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