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Case Report

Management of middle mesial canal under dental operating microscope



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Introduction

A thorough understanding of the morphological variations of the root canal system is of paramount importance for successful endodontic treatment and to have favourable prognosis.¹ Anatomical variations aren't uncommon and the chances of finding multiple root canal systems and roots have increased recently due to the availability of contemporary equipments like dental operating microscope (DOM).² The usual anatomy of the mandibular first molar has two roots with two canals in the mesial root and either two or one canal in the distal root. Some deviations of the internal anatomy like radix entomolaris, C-shaped canals and multiple canals have been discussed in the literature.³

In addition, literature also describes occurrence of an extra canal in the mesial root of the mandibular molars referred to

as “intermediary mesial canal” or the “middle mesial canal”.⁴ The percentage of this clinical phenomenon is low and usually cited subsequent to careful exploration of the isthmus connecting the main mesiobuccal (MB) and mesiolingual (ML) canal. This paper describes successful non-surgical management of two cases of mandibular first molar with middle mesial (MM) canal under DOM.

Case report

Case 1

A 24-year-old male patient with noncontributory medical history was referred to the dental clinic with the chief complaint of pain in the lower left back teeth region for the past two months. Clinical examination revealed dental caries in left mandibular first molar (36). Intra oral periapical radiograph (IOPA) revealed carious lesion involving the pulp (Fig. 1a). Clinical and radiographic evaluations were suggestive of irreversible pulpitis of 36.

After obtaining the informed consent of the patient, the tooth was anaesthetized using 2% lignocaine (Lignox, Indoco Remedies Ltd, India) and was isolated using rubber dam. Endodontic access cavity was prepared using endo-access bur under DOM (Seiler Revelation[®], Seiler Instruments, St Louis, Missouri, USA). Initial exploration of the floor of the pulp chamber using an endodontic explorer revealed two mesial and two distal canals.

Careful examination of the fissure connecting the mesio-buccal and mesiolingual orifices at the floor of the pulp

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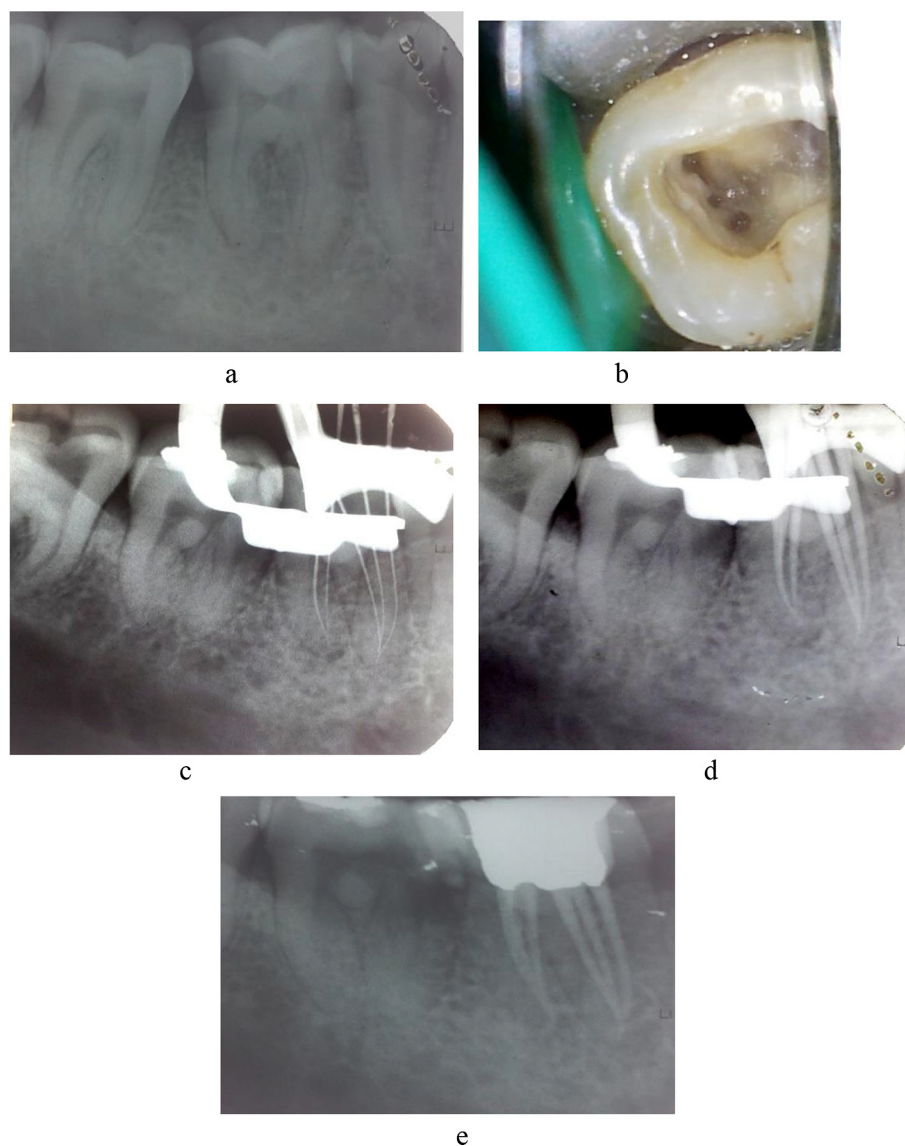


Fig. 1 – (a) Preoperative IOPA. (b) MM canal under DOM. (c) Working length IOPA. (d) Master cone IOPA. (e) Completed obturation.

chamber under the operating microscope of X5 magnification revealed an extra orifice in between the two mesial canals suggestive of middle mesial canal (Fig. 1b). No. 10 K-file (Mani, Inc; Tochigi, Japan) was inserted in all the canals and a radiograph was taken with 20° mesial angulation to authenticate the intraoperative finding of middle mesial canal. Radiographic finding confirmed the presence of middle mesial canal (Fig. 1c).

The working length was established using an electronic apex locator (Root ZX, J. Morita Corp., Tokyo, Japan) and confirmed with the radiograph. Cleaning and shaping of the root canal was carried out using Mtwo (VDW GmbH, Germany). Rotary system well supplemented by Sodium hypochlorite along with 17% EDTA. Calcium hydroxide (Metapex, Meta Biomed Co., Ltd.) intracanal medicament was given and the patient was recalled after a week for obturation. Appropriate gutta percha (GP) mastercones (Dentsply Maillefer,

Ballaigues, Switzerland) (Fig. 1d) were selected and the canals were obturated by cold lateral condensation method using AH plus (Dentsply DeTrey, Konstanz, Switzerland) resin sealer (Fig. 1e). Subsequent follow up revealed the patient was asymptomatic.

Case 2

A 22-year-old male patient reported with pain in his lower right back tooth for past 3 months. Clinical and radiographic evaluation was suggestive of irreversible pulpitis in right mandibular first molar (46) (Fig. 2a). The local anaesthetic was administered and the access cavity was prepared under DOM. Examination of the floor of the pulp chamber under DOM with X5 magnification suggested the presence of middle mesial canal (Fig. 2b). The extracanal was explored using no. 10 K-file and confirmed with 20° mesially angulated IOPA. The working

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