

Case Report

Mandibular Premolars With Concealed Canals Demand Caution: A Case Report

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Abstract

The main causes of endodontic failure are incomplete obturation, insufficient instrumentation in the canal, and distinctions in the anatomy of the canal. Mandibular premolars have complex architecture, which makes endodontic treatment quite challenging. The present case report shows a rare occurrence of the extra canal in the first premolar in which endodontic treatment was performed intentionally to replace the missing 35.

The present case contributes an important perspective to the reservoir of knowledge concerning distinct canal configurations in lower premolars.

Keywords: Aberrant anatomy, Lower first premolar, Missed canal, Rare occurrence, Two Canals.

Introduction

Endodontics demands complete debridement and obturation of the root canals, leading to a three-dimensional seal. This is hard to accomplish without extensive knowledge of the anatomy of the root and the root canal, from a precise diagnosis to canal negotiation, especially concerning the broad range of root canal anatomy encountered in human teeth. The most significant factors contributing to endodontic failure consist of variations in the anatomy of the canal, inadequate instrumentation in the canal, and obturation. According to Ingle, mandibular premolars are extremely difficult to treat endodontically as a result of their intricate anatomy.¹

In a study by Slowey, with all the teeth, the mandibular premolars may prove the most challenging to efficiently treat with endodontic therapy. The rate of failure of Non-Surgical Root Canal Therapy(NSRCT) in all teeth was investigated in a 1955 research study carried out at the University of Washington.²

Case Report

A 42-year-old male patient (OPD no.- 200752158) was referred to the Department of Conservative Dentistry and Endodontics, Inderprastha Dental College and Hospital for intentional RCT i.r.t 34 since the patient wanted a replacement of missing 35. Clinically attrition was present i.r.t 34 and the patient reported no sensitivity or pain. The patient had undergone extraction w.r.t 35 about 5-6 years back.

Radiographic Findings

Radiographically attrition was seen w.r.t 34 with slight periodontal widening w.r.t 34.

There was no tender on percussion w.r.t 34. Diagnosis of Asymptomatic irreversible pulpitis was made. Non-surgical endodontic therapy was initiated after obtaining consent from the patient.

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Figure 1: Pre-operative IOPA

Procedure

1. Local anesthesia (2% lignocaine) was administered and under rubber dam isolation access was prepared with Endo access bur (Dentsply Sirona).
2. Since on the radiograph fast break appearance was seen, the access was modified and extended in buccal and lingual direction.
3. After locating the buccal canal, the cavity preparation was extended a bit more to the lingual aspect and with the help of a DG-16 probe and champagne bubble test another orifice was located.

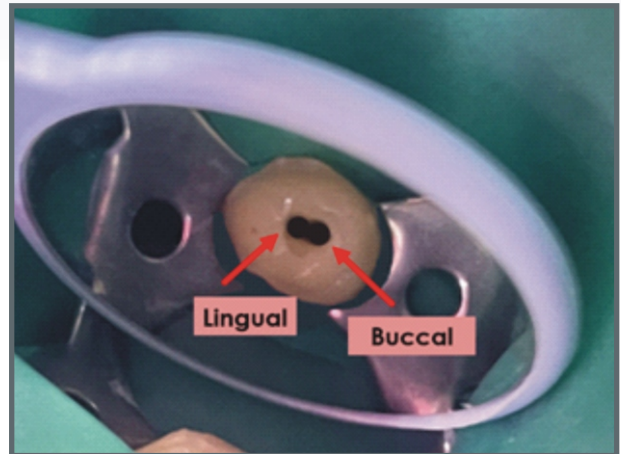


Figure 2: Clinical Image Showing Lingual and Buccal orifices

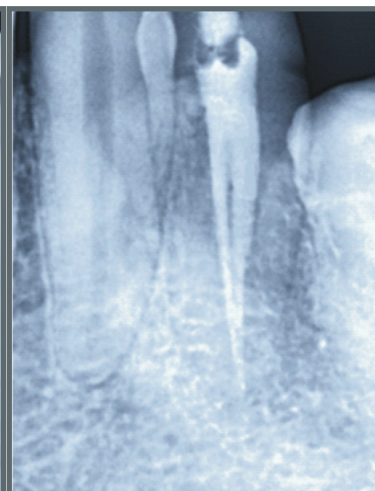
4. Canal patency was achieved by using 10K Files (Dentsply Maillefer, Switzerland) in both canals working length was determined using an apex locator (Woodpecker V Apex locator, Unicorn Denmart) and later confirmed by radiographs
5. Glide path was achieved with 15K and 20 K files and canal shaping was done with NeoEndo flex rotary files (Orikam Healthcare, India) in the sequence of #17(4%), #20(4%), and #25(4%) in both the canals.
6. Irrigation was performed using normal saline (Nirma Pvt limited, Gujarat, India), and 5.25% sodium hypochlorite solution (Vishal Dental Products, Mumbai, India).
7. Obturation was performed with 25.04% gutta-percha as master cone in both the canals along with Sealapex resin sealer (Sybron Endo, Kerr Endodontics)
8. After completion of root canal treatment, the access cavity was restored using resin composite (IvoclarTe-Econom Plus)



Figure 3: Working Length Radiograph



Figure 4: Master Cone Radiograph



Obturation

Discussion:

Preoperative radiographs that are detailed, angled, and straight, and that utilize the parallel technique are of the utmost importance for offering hints concerning the number of roots available.³

The intricate internal anatomy of mandibular first premolars and an elevated frequency of congenital absence⁴ can be attributed to genetic pre-responsibility and/or evolutionary patterns. Missed root canals are often found during re-treatment and according to Pink and Hoen, missed canal contributes to 42% of the teeth that have been re-accessed for treatment.⁵

The current case falls under the following classification

- Vertucci Classification: - Type II
- Weine Classification: - Type II
- Ahmed et. al.: - '34²⁻¹

In contrast to Vertucci's study, which detected no Type II canals, Sandhya et al.'s investigation found the Type II canal pattern in 9% of the samples.⁶

Neglecting a, missed canal may result in microbial reinfection as the bacteria become the nidus. As a consequence, root canal therapy will not be beneficial, and the infection may spread throughout the periapical area and result in other disorders such as periapical abscesses. Therefore, effective canal negotiation is essential to detecting and effectively treating such issues and preventing tooth extraction.⁷

Conclusion:

In the past, the mandibular first premolar's intricate root and root canal anatomy were overlooked. When performing root canal therapy in the mandibular first premolar, if two or more canal systems are not consistently located with diligence, the extra canals may be overlooked, increasing the likelihood of failure. Clinicians should never believe that canal systems are simple to work with and should be conscious of anatomical fluctuations in the teeth they are managing.

References:

1. Ingle JI, Bakland LK, Baumgartner JC. Textbook of Endodontics-6th ed. Hamilton: BC Decker. 2008.
2. Slowey RR. Root canal anatomy. Road map to successful endodontics. Dent Clin North Am 1979;23:555-73.
3. Silha RE. Paralleling long cone technic. Dent Radiogr Photogr 1968;41:3-19.
4. Smith TM, Tafforeau P, Reid DJ, Grün R, Eggers S, Boutakiout M, et al. Earliest evidence of modern human life history in North African early Homo sapiens. Proc Natl Acad Sci USA. 2007;104:6128-33.
5. Hoen MM, Pink FE. Contemporary endodontic retreatments: An analysis based on clinical treatment findings. J Endod. 2002;28:834-36.
6. Sandhya R, Velmurugan N, Kandaswamy D. Assessment of root canal morphology of mandibular first premolars in the Indian population using spiral computed tomography: An in vitro study. Indian Journal of Dental Research. 2010 Apr 1;21(2):169-73.
7. Sibal A, Ikhar A, Singi SR, Wanjari MB. The Hidden Anatomy of a Lower Premolar with Two Canals. Cureus. 2022 Jul 28;14(7).

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