WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 10, Issue 1, 1366-1370. Case Study ISSN 2277– 7105

ENDODONTIC MANAGEMENT OF MANDIBULAR CANINE WITH TWO ROOTS AND TWO CANALS - A CASE REPORT

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Article Received on
03 Nov. 2020,

Revised on 23 Nov. 2020,
Accepted on 13 Dec. 2020

DOI: 10.20959/wjpr20211-19469

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ABSTRACT

Anatomical variation in the human mandibular canine is illustrated with this clinical case report. Endodontic treatment may sometimes fail because morphological features of the tooth adversely affect the treatment outcome. Researchers have reported the variations in the anatomy associated with mandibular canines. In general mandibular canines have one root and one root canal in most cases, although approximately 15% may have two canals or sometimes two roots. The focus of this case report is to describe a clinical case of mandibular canines with two roots and two canals.

KEYWORDS: - Mandibular canine, Two canals, Two roots.

INTRODUCTION

Positive outcome of endodontic treatment is dependent on thorough knowledge of root canal morphology. Endodontic treatment aims at removal of infection, debridement of root canal space, thorough irrigation, three dimensional obturation and prevention of reinfection.[1] Failure to do so may lead to postoperative pain, reinfection and other complications. Therefore, the clinician should be aware of any anatomical variations which may alter the prognosis for root canal therapy.

One of the most common causes for failure of endodontic treatment is a missed canal because of not knowing the anatomical variations.[1]

Usually, mandibular canines presents as a single root and single canal. The occurrence of two roots and two canals is a rare condition. Though the occurrence of two roots and two canals in a mandibular canine is very rare, the clinician should keep in mind the variations in the number of roots and canals for positive outcome of the case.[2] Uncertain findings in the root canal morphology of mandibular canines have a great effect in endodontic treatment. This case presents successful management of a mandibular canine with two roots and two canals.

Case report

A 28 year old female patient reported to the clinic, with a chief complaint of pain in lower left anterior region. Patient was relatively all right 4-5 month back. She experienced pain in lower left anterior region of the jaw. Pain was intermittent which was aggravated by hot and cold beverages. For this she took medication from the medical shop. Few days ago she again experienced pain in the same region which was continuous, severe and shooting in nature. Patient also gave history of nocturnal pain.

On clinical examination it was revealed that mandibular left canine and lateral incisior are having deep proximal caries. The teeth gave no response to vertical percussion. Intraoral periapical radiograph was taken with mandibular left canine and it reveals a radiolucent area in the crown region involving enamel dentin and approaching pulp. Radiograph also reveals presence of two roots and canals with the same. Pulp vitality test – EPT was done with mandibular left canine which gave delayed response.

Based on clinical and radiographic findings a clinical diagnosis of chronic irreversible pulpitis was made and root canal therapy was recommended.

Administration of local anesthesia in the required region was done and the entire procedure was performed under a rubber dam. The access cavity was prepared with an endo access # 1 round diamond bur and endo-Z tapered safe-end bur.

Modification in the access cavity preparation is carried out i.e. Extension of the cavity preparation in the buccolingual direction to remove the buccal shelf and to gain access for the buccal canal. After location of both the canals patency of the canal was checked by no. 10 k file and working length was taken with the help of no 15 k file (fig.1). The radiographs were exposed in two different angulations to confirm the presence of two canals. Apical preparation was done till size 25 k file and canals were instrumented till protaper F2 and

master cone x-ray taken (fig.2). After each file, the canals were irrigated with 5.25% sodium hypochlorite and 17% ethylenediaminetetraacetic acid (EDTA). The root canals were dried with paper points and obturated with gutta percha cones and AH-Plus Sealer using the lateral compaction technique (fig.3). The access opening was sealed with a glass ionomer cement as a base and completed with a bonded composite as a permanent restoration.

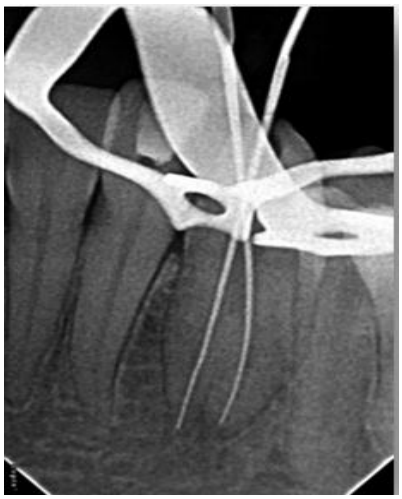
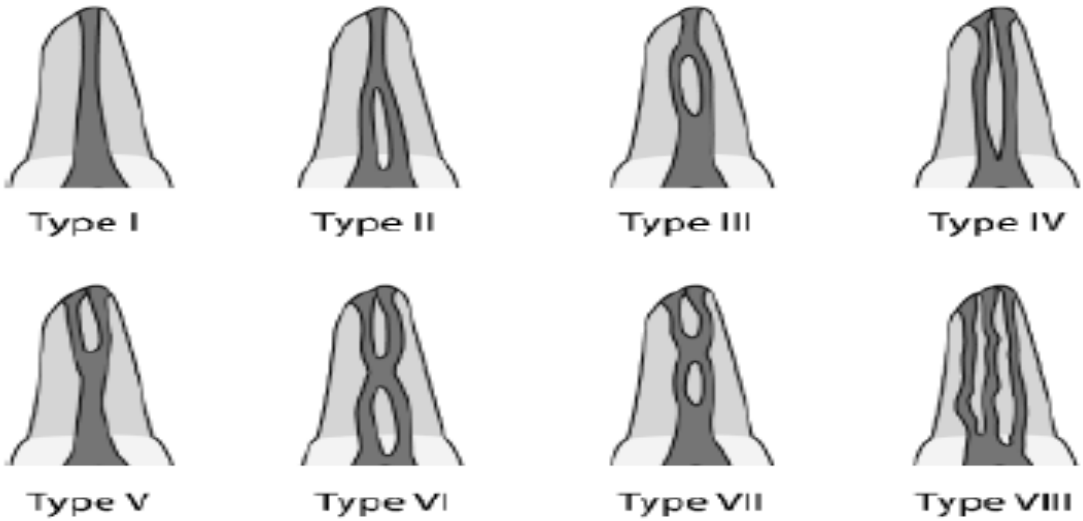


Fig. 1: Working length determination, Fig. 2: Master cone, Fig. 3: Obturation.

DISCUSSION

The complex nature of root canal morphology of canines should be thoroughly understood. Good qualities radiographs are taken at two different horizontal angulations are very helpful in providing the clues about the number of root canals a tooth can have. During radiographic examination, a careful interpretation of periodontal ligament space could suggest the presence of an extra root or canal.[2] Also fading of the canal in the middle portion of the root also suggest presence of two canals additional root canals if not detected, are a major reason for failure. Nevertheless, manual exploration of root canal system with an endodontic file or explorer is a reliable way to identify the exact configuration of root canal, especially the number of foramina. Mandibular canines are recognized as usually having one root and one root canal in most cases, although approximately 15% may have two canals or sometimes two roots.[3] Type I -70%, Type I I-4-12%, Type III-4-6%, Type I V-4-10%, Type V-2%, straight canals in 53.84-60.71%, curved canals in 46-39%, apical foramen located centrally in 34.61-57.14%, & apical foramen located laterally in 65.38-42.85% of cases.[4]

Vertucci's canal configurations.[5]



Presence of single root with two canals in mandibular canines was observed by many authors. However, the presence of two roots in mandibular canines is rarely observed. Quellet described the occurrence of two roots and two canals in mandibular canines in only 5% of all analyzed teeth. Laurichesse et al. described the second root of mandibular canines in only 1% of cases.

CONCLUSIONS

- Clinicians should be aware of anatomical variations in the teeth they are managing, and should never assume that canal systems are simple.
- Even though the most common anatomy of mandibular canines comprises a single root and a single root canal, clinicians should consider the possible variations and always search for the second root canal in teeth with either one or two roots.

Conflict of interest: None declared

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