CASE REPORT

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Endodontic Management of Two Rooted Mandibular Canine

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ABSTRACT:

Endodontic treatment may sometimes face failure due to lack of knowledge about internal anatomy of canal space and failure to detect extra canals, which will lead to periapical infection and loss of tooth. The mandibular canine is very much important as abutment for any type of restoration and it present with complex internal anatomy. In spite of the low incidence of variations in the number of roots & root canals in mandibular canine (15%) the possibility of variations in canal anatomy of mandibular canine should not be ignored by endodontist. This paper describes variations in morphology of mandibular canine including two roots as well as two root canals, which leads us to conclude that although this variation is rare but should not be overlooked when treating mandibular canine.

Keywords: Internal anatomy, Mandibular canine, Two roots, Two canals.

INTRODUCTION

The aim of root canal treatment is to eliminate infection from root canal system, and to accomplish this process thorough knowledge of root canal anatomy is mandatory. An endodontist should always consider the possible variations in number of roots and root canals. Most of the time mandibular canine recognized as monoradicular tooth. But careful evaluation of research material has shown reported anatomical variations associated with mandibular canine which includes single root with two root canals, two roots and three root canals and two roots with two separate root canals.[1, 2,3,4,5] The occurrence of two roots and even two root canals is approximately 1% to 5%.[4, 6] The following case reports describe endodontic treatment of two mandibular canines with two separate roots as well as two root canals.

CASE 1:

A 22 year old female patient presented with chief complaint of severe pain in right anterior region of mandible. The diagnostic radiograph revealed carious lesion involving pulp and periapical radiolucency in 43. Radiograph also showed presence of two separate roots and root canals (Figure 1). The tooth did not respond to pulp vitality testing methods. The access cavity was prepared with round diamond bur (DENTSPLY Maillefer) and pulp chamber was opened extensively to negotiate location of buccal and lingual canals. For the straight line access, after using 10K file , Gates glidden drill were used with crown down method to enlarge orifices. Working length calculated radiographically (Figure 2) and both canals prepared by using protaper rotary instruments till size F_2. A 5.25% solution of sodium hypochlorite and EDTA and carbamide peroxide (Glyde File Prep, DENTSPLY Maillefer Ballaigues, and Switzerland) were used alternatively as an irrigant at every change of instrument. Canals were sealed with protaper gutta percha (F_2) with AH Plus sealer using lateral compaction method (Figure 3).

CASE 2:

A 50 year old female presented with severe pain in left anterior mandible. IOPA revealed

CASE 1

Figure 1: Preoperative radiograph of tooth 43 shows a periapical lesion and two roots

Figure 2: Estimation of working length

Figure 3: Periapical radiograph with obturation

CASE 2

Figure 4: Periapical radiograph of tooth 33 indicating two roots

Figure 5: Estimation of working length

Figure 6: Periapical radiograph with obturation

carious lesion involving pulp in 33. A thermal test with ethyl chloride spray and percussion test produced severe, long lasting pain. A diagnosis of irreversible pulpitis was established. Diagnostic radiograph also demonstrate abrupt narrowing of canal space around middle third. This radiographic feature indicates bifurcation of canals or presence of two separate roots (Figure 4). Taking this fact into account access cavity was prepared under rubber dam with round diamond bur. Roof and overhanging dentin from lateral walls were removed to negotiate buccal and lingual canals. Working length calculated radiographically (Figure 5) and it showed presence of two separate roots and root canals. The canals were prepared and filled as described in previous case (Figure 6).

DISCUSSION

Diagnosis and identification of variations in number of roots and root canals are key factors for successful endodontic treatment.[7] Mandibular canine is considered usually having one root and one root canal. The presence of two separate roots and two separate root canals is rarely observed.[4, 6] The radiograph at different angulations and magnification devices are helpful adjuncts in diagnosing and treating such complicated cases. The diagnostic radiograph is very important because bifurcation in the cervical and middle third may be observed radiographically when X-ray incidence angle does not cause superimposition of images.[7] Therefore care should be taken during interpretation of diagnostic radiograph as well as during access preparation because exploration and location of canal orifices act as a guide to navigate the canals. In the present cases, identification of two roots was easy due to diagnostic radiograph which was taken at different angulations.[8] Even though the most common anatomy of mandibular canine is single root and root canal, Endodontist should always keep in mind about possible variations in internal anatomy of mandibular canine to do treatment appropriately, because without thorough knowledge of variations ultimately will lead to failure of endodontic treatment.

CONCLUSION

Successful endodontic therapy depends on proper diagnosis, awareness of anatomic variations in the teeth and never expects it to be simple. Failure to do so leads to adverse impact on treatment.

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