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Case Report

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Endodontic Management of Radix Entomolaris and pulp stone in Mandibular First Molar of 25 mm length - Case Report

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Abstract

A thorough knowledge and understanding of the root canal morphology including the variations is important for the successful outcome of endodontic treatment. The success of an endodontic treatment depends on the eradication of microbes from the root-canal system and prevention of re-infection [1]. The variations in mandibular first molar involves the number of roots, the number of root canals, and morphology. Radix entomolaris and the radix paramolaris are the additional root located lingually and buccally respectively [2]. This case report discusses endodontic treatment of a mandibular first molar with a radix entomolaris and pulp stone.

Keywords: Radix entomolaris, Root canal morphology, Mandibular molar, Pulp stone.

INTRODUCTION

In 1844 Carabelli was the first to mention about the major anatomical variant of the mandibular first molar; a tooth with an additional root that is a distolingual root named as the Radix Entomolaris (RE) Bolk described about the root placed bucally and it's called as the Radix Paramolaris [3-5].

CASE REPORT

A 23 year-old male patient presented with pain in mandibular right first molar (46). The tooth was sensitive to percussion. Pain was moderate and intermittent. Sensitivity to hot and cold items was present. The pain had been present for 2 weeks. A deep carious lesion of the right permanent first mandibular molar was revealed with clinical examination

On radiographic examination of tooth 46, apart from deep occlusal caries, the presence of an additional distal root outline was noticed on the radiograph . The preoperative radiograph showed carious lesion approximating the pulp and presence of pulp stone. From the clinical and radiographic findings, a diagnosis of symptomatic irreversible pulpitis was made and endodontic treatment was initiated.

Inferior alveolar nerve block anesthesia was given (2% Lignocaine with 1:200000 epinephrines). Following rubber dam isolation, access cavity preparation was done with endo-access bur.

Canal orifices were found with a DG 16 endodontic explorer. The pulp stone that was obscuring the straight line access to the canals was removed with the help of a scaler tip.

The access cavity was modified in order to locate the orifice distolingually. A fourth disto-lingual canal orifice was found. Initial negotiation of the root canals confirmed with ISO size #10 file. The working length determined with the help of an apex locator (J. Morita) Root ZX and confirmed using radiographs taken at different horizontal angulations.

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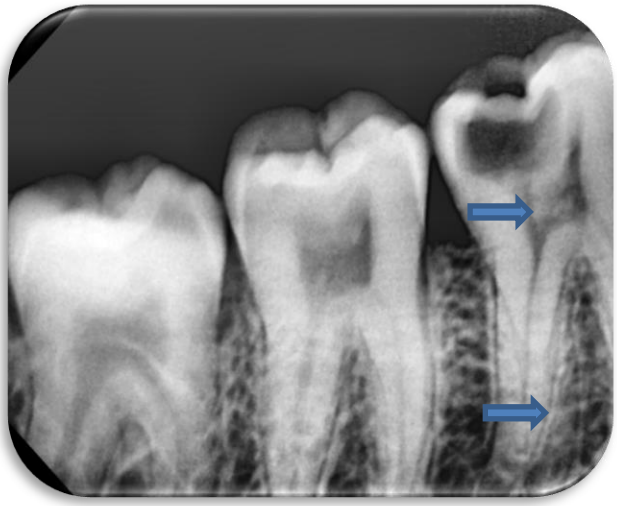

Figure 1: Preoperative radiograph of tooth 46 taken with a mesial angulation revealing the presence of lingually located additional distal root and presence of pulp stone

Figure 2: Working length radiograph

Figure 3: Master cone X-ray

Sodium hypochlorite 3% and EDTA was used to clean the canals; shaping was done with Neo Endo Flex File rotary system to # 20 6%. Irrigation was done with Asep RC, a 2% chlorhexidine gluconate solution. The chlorhexidine irrigation of the root canal ensures acceptable antimicrobial activity. A dressing of calcium hydroxide paste was placed and the patient was recalled 7 days later.

The patient was asymptomatic at the subsequent appointment. Temporary restoration removed and irrigation done with copious amounts of 3% sodium hypochlorite and 17% ethylenediaminetetra acetic acid. The canals were finally irrigated with sterile saline. Master cone selected and confirmed radiographically .

Canals were thoroughly dried with paper points and obturation (using single cone technique) was done by using zinc oxide eugenol based sealer.

DISCUSSION

According to Carlsen and Alexandersen RE have been classified into 4 types: A, B, C and AC. according to the location of the cervical part of the RE:

A lower first molar with two normal distal roots along with a radix which is distally located is type A and type B are molars with one normal distal root and a distally situated cervical part of the Radix [6].

Type C is if the cervical part is located mesially, and a more or less central location between the distal and mesial roots is referred to as type AC. These classifications helps in the identification of separate and non-separate RE.

A thorough inspection of the pre-operative radiograph and interpretation is important which can help in prevention of missing a canal during the root canal treatment [7]. Computed tomography (CT) and cone beam computed tomography (CBCT) are useful for visualizing and studying the true morphology of an RE in a noninvasive manner using less radiation [8]. However, cost and access to them are said to be the limiting factors.

Modification of the triangular access cavity into a rectangular or trapezoidal form along with the complete removal of roof of pulp chamber help in finding the distolingual orifice. Following a dark line on the floor of the pulp chamber may also help in locating the position of an RE canal orifice [9].

Initial root canal exploration using small files (size 10) creation of glide path along with the proper determination of the canal curvature and working length would reduce the procedural errors such as ledging and transportation.

CONCLUSION

The root canal anatomy is complex. The understanding and knowledge of the normal root canal anatomy and its variations, methods to determine the same and management determines the probability of a successful endodontic treatment.

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