management of Radix entomolaris – A case report

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abstract

One of the several variations of mandibular molar includes an additional root either placed distoligually called as radix entomolaris (RE) or in very rare cases located mesiobuccally called radix paramolaris (RP). This paper reports the diagnosis and successful endodontic management of mandibular first molar with extra distolingual root with buccolingual curvature.

Key Words: Radix entomolaris; Radix paramolaris; Mandibular molar

introduction

To achieve success in endodontics, a thorough knowledge of the dental anatomy and an understanding of the potential for variations from the norm are required. The mandibular first molar has two roots and three canals, but it can display several anatomical variations. One of the several variations of mandibular molar includes an additional root either mesially or distally. It was first mentioned in the literature by Carabelli. If this root is placed distoligually it is called as radix entomolaris (RE) and in very rare cases when it is located mesiobuccally it is called radix paramolaris (RP). This extra distolingual root is generally smaller than the distobuccal root and is usually curved requiring special attention when root canal treatment is being considered. Tu et al found highest prevalence of RE among Taiwanese (Chinese) population and found to be ranging from 21.1% to 33.33%, with a bilateral incidence ranging from 53.65% to 68.57% in them. Chandra et al found 13.3% occurrence of RE in the South Indian population, which was lower than that of other patients of Mongolid origin. So the proper diagnosis and management of such condition is necessary to achieve success. This paper describes two such cases which were diagnosed as RE in mandibular first molar and its successful management.

Case Report

A 32-year-old male patient reported to the department of conservative dentistry with pain in right mandibular first molar for last one week. Pain was continuous, dull, throbbing in nature. The pain was aggravated on exposure to cold and hot food items and upon mastication. His medical history was noncontributory. Clinical examination of 46 revealed a restoration carious lesion and it was tender to both percussion and apical palpation. The periodontal status of 46 was within the normal limits. Thermal and electric pulp test were done on 46 which showed no response. Intraoral periapical radiography of 46 revealed a radiopacity along the distal root. This led to the probability of an additional or extra root distally. Based on the clinical and radiographic examination, a diagnosis of Pulp necrosis with chronic peri-apical abscess in 46 was made. Informed consent from the patient was taken and the treatment plan was explained to him. Root canal treatment in 46 was initiated under the rubber dam isolation. After removal of restoration and secondary caries an access cavity preparation was done using Endo access bur. Careful exploration of the pulp chamber using Endodontic explorer revealed four orifices i.e., two mesial and two distal, confirming the presence of an additional distal canal. Working length determination was done with the help of an apex locator. The IOPA was taken to confirm the presence of extra distolingual root. All the canals of 46 were cleaned and shaped using X smart rotary device and rotary Nickel–Titanium Protaper files till F1 size. All the canals were irrigated using 5.25% sodium hypochlorite and 17 percent EDTA solutions. Calcium hydroxide was used as an intracanal medicament and access opening was sealed with temporary cement. After one week, the tooth was asymptomatic; the obturation was done using gutta-percha master cones, AH Plus sealer and lateral condensation method. Then the temporary restoration was done and IOPA was taken.

Discussion

Clinically, radiographic examination is regarded as suitable procedure for preoperative identification and assessment of RE. In the current case report there was suspicion of presence of additional distolingual root, which was suspected, in the preoperative radiographs. So this explains the importance of taking preoperative radiographs in every case which helps in proper diagnosis. De Moor et al classified RE based on the curvature of RE variants in bucco-lingual direction. Type I refers to a straight root/root canal, Type II which refers to an initially curved entrance which continues as a straight root/root canal and Type III which refers to an initial curve in the coronal third of the root canal and a second curve beginning in the middle and continuing to the apical third. In the present case report, we found Type III RE pattern possessing an initial gradual curvature in the coronal third and additional buccolingual curvature starting from the middle third to apical third of the root. Carlsen and Alexanderson classified RE according to the location of the cervical part of the RE. Types A and B refer to a distally located cervical part of the RE with two normal and one normal distal root components,
respective, type C refers to a mesially located cervical part, type AC - refers to a central location, between the distal and mesial root components.2

According to the pattern of their curvature, it was found that the majority of the REs were type III with an additional curve starting from the mid-root portion or in the apical third.11 Therefore, after relocation and enlargement of the orifice of the RE, initial root canal exploration with small files (size 10 or less) together with radiographical and electronic root canal length determination, and the creation of a glide path before preparation, are step-by-step actions that should be taken to avoid procedural errors.2 With the distolingually located orifice of the RE a modification of the classical triangular opening cavity to a trapezoidal form in order to better locate and access the root canal is essential; straight line access must be established.10 If the RE canal entrance is not clearly visible after removal of the pulp chamber roof, a more thorough inspection of the pulp chamber floor and wall, especially in the distolingual region, is necessary.

Conclusion
Preoperative X ray in every case is mandatory to know properly the anatomy of the tooth. Diagnosis of the radix entomolaris in the initial phase of root canal therapy is crucial so as to avoid the future complications. Radix usually present with curvature of root in most of the cases so one has to be very careful during treatment to avoid procedural errors.

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