

Radix entomolaris: Uncommon is common- A case report

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Abstract

Variations in the root morphology called Radix Entomolaris may be seen sometimes in mandibular molars, in which the tooth has an extra root attached to its lingual aspect. Clinician must know variations in tooth/canal anatomy and characteristic features as such knowledge can help in location and negotiation of canals. A diagnosis and appropriate clinical endodontic skill application can favorably change the prognosis of mandibular molars with such type of root morphology.

Keywords: Radix Entomolaris, Mandibular first molar, Extra Root.

Introduction

A wide knowledge on the root canal anatomy is a basic requirement for the endodontic treatment success.⁽¹⁾ Mandibular molars may present sometimes a variation known as radix entomolaris, in which an extra root is attached to the lingual aspect of the tooth. This extra root complicates the endodontic management of such tooth if it was misdiagnosed or untreated.⁽²⁾ Understanding the presence of such unusual external and internal root canal morphology aids in the successful outcome of the root canal treatment.⁽³⁾ This case report reviews the successful management of one of such radix entomolaris cases.

Case Presentation

A 22-year-old female patient complained of pain in a lower right back tooth since 1 month. Examination of that tooth revealed a huge class I carious lesion and tenderness to percussion. The tooth mobility was within the physiologic limits and vitality tests revealed it to be nonvital. The patient's medical history revealed no problem. Radiographic examination (Fig. 1) revealed the radiolucency involving the floor of the pulp chamber and periapical lamina dura widening. It additionally showed the occurrence of an extra supernumerary root on distolingual side, and also dilaceration of the distal root. Chronic apical periodontitis due to pulpal necrosis of the right lower first molar tooth was the diagnosis in this case.

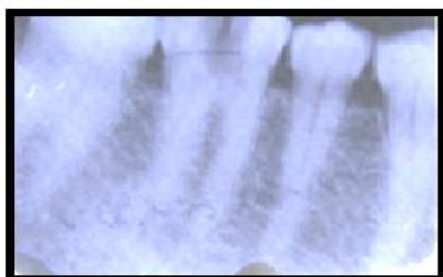


Fig. 1: Preoperative Radiograph

Treatment plan

Conventional access cavity preparation was done under local anesthesia and rubber dam, and two mesial canal orifices and one distal canal orifice were located. In addition a dark line guided towards an extra orifice located towards the distolingual part of the pulpal floor. The working length radiograph clearly showed the curvature of the extra root tilted towards the distal side, and shorter than the other two roots and also dilaceration of the distal root at the apical third (Fig. 2). The root canal orifices were enlarged using gates glidden drills (Mani Inc., Kiyohara industrial park, Utsunomiya, Japan) to get a straight line access, which was greater towards the trapezoidal form. The root canals were negotiated with precurved K-file ISO number 15 (Dentsply Maillefer, Ballaigues, Switzerland). All the canals were then instrumented using the ProTaper rotary files (Dentsply Maillefer, Ballaigues, Switzerland). While instrumenting the canals, copious irrigation was done using 1% sodium hypochlorite (I-Dent, Rohini, Delhi, India) and lubricated using Glyde (Dentsply Maillefer, Ballaigues, Switzerland). Later the root canals were completely obturated using AH plus sealer (Dentsply, Maillefer, Ballaigues, Switzerland) and corresponding ProTaper gutta percha points (Fig. 3&4).

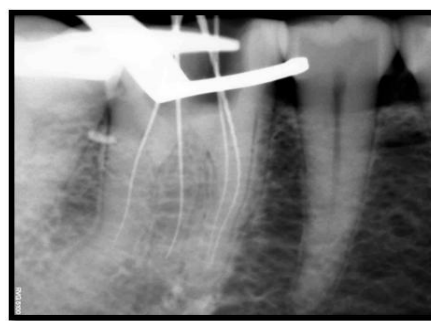


Fig. 2: Working length Radiograph

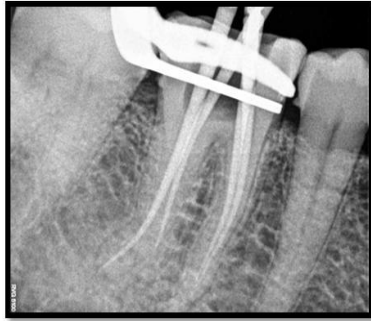


Fig. 3: Master G.P Cones



Fig. 4: Post-Operative Radiograph

Discussion

Radix entomolaris is a major variation in the mandibular first molars. It has a frequency of less than 5% in white Caucasian (UK, Dutch, Finnish, German), African, European and Asian populations. Those who have characteristic Mongoloid features, like the Chinese, Eskimos, and native American populations, it may occur at a frequency of 5 to over 30%.^(4,5) Bilateral occurrence of the Radix from 50 to 67%, was reported in few studies. Such third lingual root, the radix entomolaris, was first mentioned within the literature by Carabell. The etiology behind the Radix Entomolaris formation is still not clear. Its formation may be related to penetrance of an atavistic gene or polygenetic system or to external factors during odontogenesis. The occurrence of Radix has clinical implications in endodontic treatment. Correct diagnosis of the supernumerary roots can avoid complications during root canal treatment. As the Radix is most commonly situated in the same buccolingual plane as the distobuccal root, preoperative radiograph may show a superimposition of both roots, resulting in an inaccurate diagnosis. Appropriate inspection of the preoperative radiograph and interpretation of particular characteristics, like an unclear view or outline of the distal root contour or the root canal, may dictate the presence of a 'hidden' Extra root. To reveal the Radix, an alternative second radiograph can be taken from a more distal or mesial angulation (30 degrees). In that way an accurate diagnosis may be made in many of the cases. In case of Radix entomolaris, orifice is located disto- to mesiolingually from the main canal in the distal root. Sometimes severe root inclination, particularly in at the apical third of the root, may form

shaping aberrations like ledge formation or straightening of the root canal, which causes root canal transportation and loss of working length. Hence after relocation and enlargement of the orifice of the Radix, root canal exploration initially should be done with small K files (size 10 or less) along with radiographical root canal length and curvature determination, and thus creating a glide path before preparation. These should be the step-by-step actions that are needed to be followed to avoid procedural errors.⁽⁶⁾

Take home message

The dentist should be wide aware of such uncommon anatomy in the mandibular first molars and must diagnose it before the start of the endodontic treatment, so as to avoid mislocation of any canal and future problems. Extra aids such as operating microscope, CBCT, and radiographs of different angulations may help in achieving the above.

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