Management of Radix Entromolaris: A Case Report

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Abstract
There are many causes of root canal failure, among them the most common cause is undiagnosed root canal. Mandibular molars typically have two roots mesial and distal. However, sometimes an additional root buccally (radix entomalris) or lingually (paramolaris) may be present. Awareness, diagnosis, and biomechanical preparation of additional canal is important for successful outcome of root canal therapy. This article presents successful management of mandibular first molar with radix entomolaris.

Keywords
- endodontics
- mandibular first molar
- radix entomolaris

Introduction

The aim of root canal treatment is to remove microorganisms from the root canal system and prevent reinfection. It is possible to achieve this through biomechanical cleaning of the pulp space and hermetic sealing with obturating material. However, root canal treatment is frequently complicated by variations in root canal anatomy. As a result, meticulous knowledge of the variant root canal anatomy is required for successful endodontics.

Mandibular molars typically have two roots: mesial and distal.1,2 Distal root has one bean-shaped root canal, and mesial root mostly have two root canals mesiobuccal and mesiolingual. Two possible configuration of mesial root canals are either end as two separate canals or merge to form a single canal. Mandibular molars with varying numbers of roots and root canals configuration have been observed during dental procedures although these occurrences are uncommon.

The presence of extra root in the mandibular first molar, named radix entomolaris (RE) was first mentioned by Carabelli.3 The supernumerary root located distolingual to the mesial root of the mandibular molars is termed as radix entomolaris. An additional root present buccally of the distal root of the mandibular molar is radix paramolaris (RP).2

The prevalence of three-rooted mandibular molars reported in the Indian population is 5.97 percent.4,5 The presence of unusual root canal morphology has impact on root canal treatment success. In the following case report, we are discussing about endodontic treatment of mandibular first molar with RE.

Case History

A 32-year-old female patient was referred to the department of conservative dentistry and endodontics with a chief complain of severe pain in the right lower back region since past 3 days. The patient gave history of treatment from private practitioner but her pain was not relieved. On clinical examination, found temporary restoration in 46. The tooth was tender on percussion. The patient was carrying intraoral periapical radiograph of 46 that showed restoration close to pulp and two roots mesial and distal (Fig. 1). RVG (Satelec, France) of 46 was taken that showed an additional root (Fig. 2). A diagnosis of symptomatic irreversible pulpitis
was made. Root canal treatment was planned and informed to the patient. Local anesthesia was administered and tooth was isolated with rubber dam. Temporary restoration was removed. Access cavity was modified with distolingual extension to provide proper access to distolingual canal. Canal orifices were located and working length was determined with RVG (Fig. 3).

Biomechanical preparation was done with rotary Neo-Endo (Orikam, India) files system. Sodium hypochlorite 3% (Vista Dental Products, India) was used as irrigant during preparation. Mesial canals were prepared until 25/0.04. Distal and radix was prepared until 30/0.04. Next, 17% EDTA was used as a final irrigant. Temporary restoration was done and the patient was recalled after 5 days.

On the next visit, the patient was asymptomatic. Master cone RVG was taken (Fig. 4). Canals were dried and obturated with corresponding gutta percha (Dentsply, USA) using zinc oxide eugenol sealer (Fig. 5).
Discussion

The etiology of the RE formation is still unknown. Its formation in dysmorphic, supernumerary roots could be attributed to external factors during odontogenesis, or to the penetrance of an atavistic gene or polygenetic system.6

De Moor et al’s classification of RE, based on the curvature, identifies three. Type I refers to a straight root/root canal, type II refers to an initially curved entrance that continues as a straight root/root canal, and type III 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.7

The most common failure of endodontic therapy in RE is a missed canal. This is due to the radix root overlapping with the mesial or distal roots in radiographs. As in the above case, intraoral periapical radiograph of the mandibular first molar of the patient was showing two roots mesial and distal.

Thorough examination of preoperative radiographs and interpretation of specific features such as distal root contours or vague views or contours of the root canal indicate the presence of a “hidden” RE. A second radiograph should be taken from a more mesial or distal angle to reveal the RE (30 degrees).2 In most cases, an accurate diagnosis can be made this way.

To ensure straight line access to the apical one-third of the canal, locate the orifices, and prevent instrument separation, the access cavity must be trapezoidal in shape. Visual aids such as loupé, intraoral camera, or dental microscope can be helpful. A dark line on the pulp chamber floor can indicate the precise location of the RE canal orifice.

According to the literature, the majority of radices entomolaris are curved. Visual access and greater instrument control during access preparation will help to avoid any mishaps.

Conclusion

Anatomical variations must be kept in mind while planning root canal treatment of mandibular first molar. A good preoperative radiograph and proper access opening are key to success.

Conflict of Interest
None declared.

References
3 Carabelli G. Systematisches Handbuch der Zahnheilkunde, 2nd ed. Vienna: Braumuller und Seidel; 1844:114