



Research Paper

Endodontic management of Radix entomolaris of Mandibular 1st molar: a case report

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ABSTRACT:

Mandibular first molars show most of the anatomical variations not only in the presence of number of roots but also in the presence of number of canals and their morphology. Mandibular molars may sometimes have an additional root located lingually (the radix entomolaris) or buccally (the radix paramolaris). If encountered, an awareness and understanding of this unusual root and its canal morphology can contribute to the successful outcome of root canal treatment. This case report discusses the endodontic treatment of mandibular first molar with a radix entomolaris (RE).

KEYWORDS: Radix Entomolaris, Mandibular first molar,

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I. INTRODUCTION:

Successful outcome of root canal treatment is determined by the awareness, knowledge, and thorough cleaning and shaping of all the root canals before the root canal obturation. Like the number of root canals, the number of roots may also vary.

Carabelli in 1844 first mentioned a major anatomical variant of the two rooted mandibular first molar; a tooth with a third root that is a distolingual root named as the Radix Entomolaris (RE). The occurrence of third root varies in different ethnic groups, with the incidence of <5% in Indian population.

The preliminary diagnosis of these variations is done routinely with radiographic techniques. Radiographic diagnosis plays an important role in successful endodontic treatment, and when taken at different angulations gives information about extra canals or roots and aids in the better understanding of the anatomy of the root canal system and the treatment approach with sufficient knowledge and absolute clinical thoroughness for successful root canal treatment. This case report discusses the diagnosis and successful endodontic management of one case showing unusual root canal configuration in a mandibular first molar (46) showing three roots and four canals.

II. CASE REPORT:

A 32-year-old male patient reported to the Department of Conservative Dentistry and Endodontics with a chief complaint of pain in lower-right back tooth region. The patient revealed a history of intermittent pain for the past 2 months, which had increased in intensity during the past 3 days. The patient reported prolonged sensitivity to hot and cold substances. The pain was spontaneous and aggravated particularly at night.

On clinical examination deep occlusal caries with pain on percussion with 46. Radiographical examination revealed radiolucency of carious lesion involving the pulp & additional root as a distolingual root

(radix entomolaris) with respect to 46 (Figure1). Based on the clinical and radiographic findings, a diagnosis of symptomatic irreversible pulpitis with respect to 46 was made, informed consent was obtained, and endodontic treatment was initiated.

The tooth was anesthetized using lignocaine. Rubber dam isolation was done(Figure2). Access cavity was prepared on tooth 46 withround and safe-end tapered fissure bur (Figure3). On inspection with a DG-16 endodontic explorer initially, the pulp chamber floor revealed three canals – mesiobuccal, mesiolingual, and the distal. A search for the second distal canal was made by further exploration of the pulpal floor with a DG-16 endodontic explorer.The orifice of theradix entomolaris was located at the lingual aspect to the orifice of the distal root canal. Negotiation of the canals was carried out with ISO size 6, 8, and 10 K files.

The working lengths were determined electronically with Apex ID apex locator. Thereafter, the readings of the apex locator were verified radiographically [Figure 4].



Figure1:Preoperative
IOPA 46



Figure2: Preoperative
intraoral occlusal view



Figure3: Access cavity
preparation.



Figure 4 : Working length
determination

During cleaning and shaping, the root canals were irrigated with copious amounts of 2.5% sodium hypochlorite solution. Mesiobuccal and mesiolingual canals were enlarged up to F2 ProTaperGoldfiles .and the distobuccal canal was enlarged up to F2 ProTaperGoldfile. As the radix root is narrow its canal enlarged only up to F1 ProTaper Gold file. After through irrigation,canals were dried using paper points and the corresponding sized gutta-percha master cones for the four canals were selected (Figure5)then obturation was done with sealapex sealer and gutta percha.Postendodontic permanent restoration was performed with nanohybrid composite(Figure6).

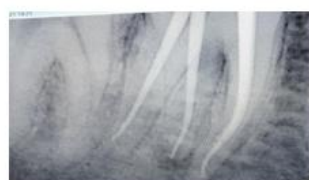


Figure5: Master cone
Determination IOPA 46



Figure 6:Postbturation
radiograph

III. DISCUSSION

Anatomical variations are an accepted feature of permanent mandibular molars. A thorough knowledge of internal and external anatomy coupled with a correct diagnosis, adequate cleaning, and shaping of the root canal system will normally lead to a successful outcome¹. The presence of radix entomolaris or a radix paramolaris has clinical implications in endodontics, and an accurate diagnosis of these supernumerary roots can

avoid complications or a “missed canal” during root canal treatment. Because radix entomolaris is mostly situated in the same buccolingual plane as the distobuccal root, a superimposition of both roots can appear on the preoperative radiograph, resulting in an inaccurate diagnosis².

Variable frequency of occurrences of radix entomolaris was reported in different population in different parts of world. The maximum frequency of 3.4%–4.2% has been reported in the European population for radix entomolaris. Tratman et al revealed 0.2 % of radix entomolaris prevalence in Indians. Around 5- 29 % reported in chinese traits³. The maximum rate of occurrences was observed in mongoloids, may indicates heritable extra supernumery root in lower molars.

Carlsen & Alexandersen classified radix entomolaris (RE) into four different types based on the location of its cervical part⁷;

TYPE A The RE is located lingually to the distal root complex which has two cone-shaped macrostructures.

TYPE B The RE is located lingually to the distal root complex which has one cone-shaped macrostructures.

TYPE C The RE is located lingually to the mesial root complex.

De Moor et al. Classified radix entomolaris based on the curvature of the root or root canal⁸:

TYPE 1A-Straight root or root canal

TYPE 2A-Curved coronal third which becomes straighter in the middle and apical third

TYPE 3A-Initial curve in the coronal third with a second buccally oriented curve which begins in the middle or apical third

IV. CONCLUSION:

Clinicians should be aware of these unusual root morphological variations of the radix entomolaris in terms of root inclination and root canal curvature. Preoperative radiological assessment from different angles, clinical evaluation of a root canal number and morphology using various diagnostic methodologies, a proper access preparation, and thorough examination of the pulp chamber to locate and debride all the canals are important. Knowledge of the location of the additional root and its root canal orifice will result in a modified access opening with extension to the distolingual. The initial diagnosis of radix entomolaris is important to facilitate the procedures during treatment and avoid the mislocation of any canal.

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