Quest Journals
Journal of Medical and Dental Science Research
Volume 8~ Issue 7 (2021) pp: 28-30
ISSN(Online) : 2394-076X ISSN (Print):2394-0751
www.questjournals.org

Research Paper

Clinical Management of Radix Entomolaris: An Endodontic Challenge – A Case Report

Dr. Rinky Hajong[1], Dr. Seema D. Pathak[2], Dr. Pradnya V. Bansode[3], Dr. M. B. Wavdhane[4],

1. Post-Graduate Student, Department of Conservative Dentistry and Endodontics, GDC & Hospital, Aurangabad/ MUHS, INDIA
2. Professor, Department of Conservative Dentistry and Endodontics, GDC & Hospital, Aurangabad/ MUHS, INDIA
3. Professor & Head of the Department, Department of Conservative Dentistry and Endodontics, GDC & Hospital, Aurangabad/ MUHS, INDIA.
4. Associate Professor, Department of Conservative Dentistry and Endodontics, GDC & Hospital, Aurangabad/ MUHS, INDIA.
Corresponding Author: Dr. Rinky Hajong

ABSTRACT
Permanent mandibular first molars usually have 2 roots placed mesially and distally and 3 root canals. However, Radix Entomolaris (RE), an anatomical variant of permanent mandibular first molar, is characterized by the presence of additional or extra distolingual root. Clinicians should be aware of this unusual root morphology in mandibular first molars for the successful outcome of root canal treatment. This report discusses endodontic treatment of three rooted mandibular molars with Radix Entomolaris.
KEYWORDS: *Anatomic variation; Radix entomolaris; Distolingual root*

Received 26 June, 2021; Revised: 06 July, 2021; Accepted 08 July, 2021

I. INTRODUCTION

A thorough understanding of root canal anatomy and morphology is required for achieving high level of success in endodontic treatment. Incomplete instrumentation and cleaning of the root canal space and faulty obturation are the main reasons for failure of endodontic treatment. Root canals are often left untreated because the operator fails to recognize their presence, especially in teeth exhibiting anatomic irregularities or accessory or aberrant root canals.[1] The majority of mandibular first molars are two rooted with one mesial and one distal root with two mesial and one distal canal. **The major variant in this tooth type is the presence of an additional third root; a supernumerary root is found lingually referred as distolingual root, Radix entomolaris (RE), first described by Carabelli, is an anatomical variant found in the permanent mandibular first molar**. Radix entomolaris (RE) refers to mandibular molars having an additional root located lingually.

Endodontic literatures on Radix entomolaris in permanent mandibular first molars revealed its incidence ranging from 0%-43.7%, with highest prevalence among the Mongolian and Eskimo traits. Based on different methods of investigation, the prevalence of Radix entomolaris is also found to be high among Taiwanese (Chinese) population and found to be ranging from 21.1% to 33.33%. In spite of high prevalence of Radix entomolaris in certain races, its incidence among the Indian population is found to be very low and only 0.2%.[3] An awareness and understanding of this unusual root and its root canal morphology, locating the canal orifice, chemo mechanical cleaning and shaping of the root canals before a dense root canal filling with a hermetic seal can contribute to the successful outcome of root canal treatment.

This case report is about the detection and management of radix entomolaris (RE) in a mandibular first molar.

II. CASE REPORT

A 38 year old female patient was reported to Department of Conservative dentistry & Endodontics with throbbing pain in her mandibular left first molar for the past four days. On clinical examination of the

patient her mandibular left first molar tooth no #36 had a deep carious lesion (Fig 1). Patient gave history of night and continuous pain. Intra Oral Periapical (IOPA) Radiograph showed a broad coronal radiolucent area involving the pulp. Radiograph also revealed the presence of an extra distal root with accompanying apical radiolucency (Fig 2). CBCT was done to confirm the additional root as distolingual root [RADIX ENTOMOLARIS] w.r.t tooth no.#36 (Fig 3). The clinical examination, radiographic examination and vitality tests led to a diagnosis of Symptomatic Irreversible Pulpitis w.r.t tooth no #36 requiring endodontic therapy. The tooth was anaesthetized by way of left inferior alveolar nerve block using a 2% solution of lignocaine hydrochloride containing 1:80000 adrenaline (Lignox 2% A, Warren, Indoco). The tooth was isolated using Rubber Dam. Endodontic access cavity was prepared using endo access bur. A sharp DG16 explorer was utilized to locate the canal orifices, and the access was modified accordingly. Four distinct canal orifices were located and negotiated using k file ISO 15 (Dentsply Malliefer) (Fig 4). Pulp extirpation was done and canal patency was maintained, size 10 k(Dentsply-Maillefer) files were inserted and working length determined using radiograph and affirmed utilizing Root ZX apex locator. Cleaning and shaping of the canals were performed using crown-down technique under copious irrigation with 5.25% sodium hypochlorite solution and 17% EDTA (Ethylenediaminetetraacetic acid). The canals were dried with paper points, closed dressing was given after completion of chemo-mechanical preparation and patient was re-appointed after three days for obturation. In follow-up appointment, as the tooth was completely asymptomatic, master cones radiograph was taken (Fig 5). The canals were obturated with cold, lateral compaction of gutta percha cones (Dentsply) and sealapex sealer (Kerr, SybronEndo). Radiograph after obturation is taken. Post-obturation restoration was done and post-operative radiograph was taken (Fig. 6).

FIGURE 1

FIGURE 2

FIGURE 3

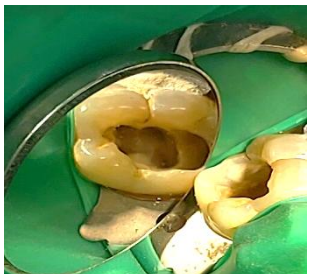

FIGURE 3

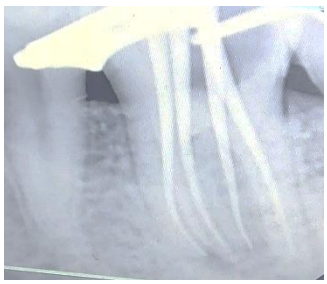

FIGURE 4

FIGURE 5

III. DISCUSSION

Anatomic variations of permanent mandibular molars are documented in the literature. The Radix entomolaris is located distolingually, with its coronal third completely or partially fixed to the distal root. In dysmorphic, supernumerary roots its formation could be related to external factors during odontogenesis of an atavistic gene or polygenetic system where as in eumorphic roots, racial genetic factors influence the more profound expression of a particular gene that results in the more pronounced phenotypic manifestation.[4] An Radix entomolaris can be found on the first, second and third mandibular molars, occurring least frequently in

second molar. Some studies report a bilateral occurence of the Radix entomolaris from 50-67%. Calberson et al. described 4 types of Radix entomolaris, and De Moor et al. classified Radix entomolaris evaluated from extracted teeth into types I–III.[5]

Based on the curvature of the separate Radix entomolaris variants in buccolingual orientation De Moor et al. (Ribeiro & Consolaro) classified:

- Type l: refers to a straight root canal
- Type ll: refers to an initially curved entrance which continues as a straight root/root canal
- Type lll: refers to an initial curve in the coronal third of root canal and a second curve beginning in the middle and continuing to the apical third.

The presence of Radix entomolaris has clinical implication in endodontic treatment. An accurate diagnosis of these can avoid complications or '**missed canal**' during root canal treatment.[6] Because the (separate) Radix entomolaris is mostly situated in the same buccolingual plane at the distobuccal root, a superimposition of both roots can appear on the pre-operative radiograph and resulting in an inaccurate diagnosis. A thorough inspection of the pre-operative radiograph and interpretation of particular characteristics such as an unclear view or outline of the distal root contour or the root canal can indicate the presence of 'hidden' Radix entomolaris.[7] To reveal the Radix entomolaris , a second radiograph should be taken from a more mesial or distal angle (30°).[8] Clinically, with a good knowledge of law of symmetry and law of orifices and using various methods for canal locations are helpful.[9] Further, good illumination and the use of accessories like magnifying loupes, microscopes etc are also valuable in locating and managing Radix entomolaris.[10]

IV. CONCLUSION

Clinicians should be aware of these unusual root morphological variation of the Radix entomolaris in terms of root inclination and root canal curvature demand careful, adapted diagnostic and clinical approach to avoid or overcome procedural errors during endodontic therapy. The initial diagnosis of a Radix entomolaris before Root Canal Treatment is important to facilitate the endodontic procedure and to avoid 'missed canals'. Pre-operative periapical radiographs exposed to two different horizontal angles, CBCT and clinical diagnosis are required to identify these additional roots.

REFERENCES

[1]. Segura-Egea JJ, Jimenez-Pinzon A, RiosSantos JV. Endodontic therapy in a 3-rooted mandibular first molar: Importance of a thorough radiographic examination. J Can Dent Assoc. 2002;68(9):541-4.
[2]. Carabelli G. Systematisches Handbuch der Zahnheilkunde, 2nd ed. Vienna: Braumuller und Seidel, 1844:114.
[3]. Pai V, Singh V, Vaitheeswaran MB, Thapa A, Kundabala M. Radix entomolaris: A case report. J Nepal Dent Assoc. 2010;11(2):162- 165.
[4]. Tu MG, Huang HL, Hsue SS, Hsu JT, Chen SY, Jou MJ, et al. Detection of permanent three-rooted mandibular first molar by conebeam computed tomography imaging in Taiwanese individuals. J Endod. 2009;35: 503-7.
[5]. De Moore RJ, Deroose CA, Calberson FL. The radix entomolaris in mandibular first molar: an endodontic challenge. Int Endod J. 2004;37:789-99.
[6]. Sperber GH, Moreau JL. Study of the number of roots and canals in Senegalese first permanent mandibular molars. Int Endod J. 1998;31:117-22
[7]. Calberson FL, DeMoore RJ, Deroose CA. The radix endomolaris and paramolaris: clinical approach in endodontics. J Endod. 2007;33:58-63.
[8]. Carlsen O, Alexandersen V. Radix paramolaris in permanent mandibular molars: identification and morphology. European Journal of Oral Sciences. 1991;99(3):189-95.
[9]. Barker BC, Parson KC, Mills PR, Williams GL. Anatomy of root canals. III. Permanent mandibular molars. Aust Dent J. 1974;19:403-13.
[10]. Vertucci FJ. Root canal anatomy of the human permanent teeth. Oral Surg Oral Med Oral Pathol. 1984;58:589-99