

RADIX ENTOMOLARIS – A CHALLENGE

Abhishek Singh¹, R Deirimika Lakiang², D Arunagiri³, Sandeep Agarwal⁴, Latika Singh⁵

¹MDS, Sr. Lecturer, Department of Conservative Dentistry & Endodontics, Dental College, Azamgarh.

²MDS, Sr. Lecturer, Department of Conservative Dentistry & Endodontics Dental College, Azamgarh.

³MDS, Professor, Department of Conservative Dentistry & Endodontics Dental College, Azamgarh

⁴Ex Professor, Dept Of Conservative Dentistry, Jannayak Chowdhary Devi Lal Dental College, Sirsa

⁵BDS.

ABSTRACT

Endodontic treatment depends upon the proper identification of root canals, their complete chemo-mechanical preparation and their three dimensional obturation. Radix entomolaris is considered an Asiatic trait. A mandibular tooth usually has two roots but in a few tooth, number of roots may vary. The extra number of root is called Radix entomolaris /paramolaris. This article presents a case report of mandibular first molar with an extra root.

Key words: Radix entomolaris, Chemo-mechanical preparation, Obturation.

INTRODUCTION

For a successful root canal treatment, it is important to have a thorough knowledge of tooth anatomy, morphology and its variations from normal. The tooth which have irregular anatomy or extra canal/ extra root are difficult to treat and failure of the clinician to identify and locate extra canal / root may lead to incomplete instrumentation, thus failure of root canal treatment.¹

The extra root was first identified by Carabelli in 1844 and is called Radix Entomolaris (RE). The location of an extra root either on distolingual or mesiobuccal is called radix entomolaris / radix paramolaris².

Clarksen and Alexanderson classified four different types of RE according to the location of cervical part of RE³.

Type A – Distally located cervical part with two normal distal root component.

Type B – Similar as type A but only one normal distal part.

Type C- Mesially located cervical part.

Type AC - Central location between mesial and distal root part.

Based on the curvature in buccolingual direction De Moor et al classified RE into 3 types:-

Type 1- straight root/ root canal

Type 2- Initially curved which continues as straight root / root canal.

Type 3- Initial curve in coronal third of root canal and buccally oriented curve starting from middle to apical third⁴.

Prevalence of Radix in Mandibular Molar

The presence of an extra root is primarily associated with certain ethnic population. RE most commonly occurs in Mongoloid traits (such as Chinese, Eskimo and American Indian) and ranges from 5% to 30%^{5,6}.

In African population maximum frequency of 3% is found. In Caucasians RE is not very common with a maximum frequency of 3.4 to 4.2%. RE can be found on mandibular molars, mostly on second molar. Bilateral occurrence of RE varies from 50 to 67 %⁷.

CASE REPORT

A 45 year old male patient reported with a chief complains of pain in the lower right back tooth region. He gave history of intermittent pain since two weeks .On examination, right mandibular first molar was found to be carious with pulpal involvement. Thermal and electric pulp test was done. Medical history was noncontributory. A diagnosis of irreversible pulpitis was made and an additional root was seen in the initial intra-oral periapical radiograph. Two radiographs with horizontal angulation were made which confirmed that, an additional root was present and is located distolingual to the mesial root (Fig A).

The tooth was anaesthetized and then isolated under rubber dam. Access cavity was prepared using Endoaccess bur. Mesial and distal canals were located. On close inspection, dark line was detected on the distal canal orifice and distolingual corner of the pulp chamber floor. The working length was determined with radiograph (Fig B) and an apex locator. Cleaning and shaping was done with protaper rotary files with crown down technique. Irrigation was done between each instrument by 2.5% sodium hypochlorite and 17% EDTA. After the master cone selection (Fig C), canals were obturated with F1 gutta-percha and Endomethasone root canal sealer (Fig D). Post Endodontic restoration was done.

DISCUSSIONS

The exact cause of RE is still unknown. Some authors believe that, it may be due to the disturbances in odontogenesis or may be due to an atavistic gene. RE and RP can be found on the first, second and third mandibular molar, with the least frequency on the second molar. Bilateral occurrence of the RE ranges from 50 to 67%⁷.

A misdiagnosis of supernumerary root can cause endodontic complication which can be avoided by thorough inspection of preoperative radiograph. To identify RE a second radiograph should be taken from a more mesial or distal angle (20°). This way a more reliable diagnosis can be made of the presence of an extra root. Other effective way of identifying RE is the clinical inspection of crown and analyzing cervical morphology of roots by a periodontal probe which can help to identify the presence of an additional root. An extra cusp (tuberculum paramolare) or more prominent occlusal distal or distolingual lobe in combination with cervical prominence or convexity can indicates the presence of an additional root. If an RE or RP is diagnosed before endodontic treatment, a modified access cavity(more rectangular or trapezoidal outline form following the dentinal map) can be prepared and the clinician knows what to expect or where to look for the additional canal once the pulp chamber has been opened. A good knowledge of law of symmetry and law of orifices and various methods like, visualizing the dentinal map and canal bleeding points, using DG-16 explorer, micro-opener, troughing of the grooves with ultrasonic tips, staining the chamber floor with 1% methylene blue dye, champagne bubble test, magnetic

resonance imaging and micro-computed tomography will be useful to locate the canals. Advanced diagnostic tools can also be used such as Loupe, intraoral camera or dental microscope⁸.

CONCLUSIONS

Variation of tooth anatomy always challenges the clinician. This particular variation Radix Entomolaris may presents a challenge for the clinicians who don't have proper diagnostic aids and knowledge of the tooth anatomy. Correct diagnosis should be made with two preoperative radiograph taken at two different angulation before starting the treatment.

FIGURES



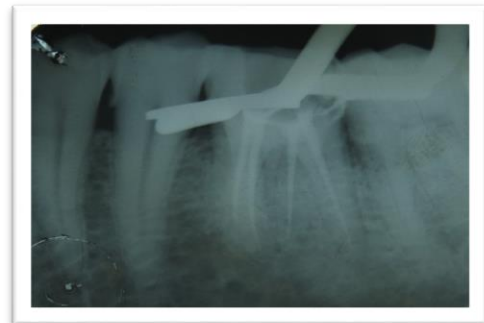
(A) INITIAL RADIOGRAPH



(B) W/L RADIOGRAPH



(C) MASTERCONE RADIOGRAPH



(D) OBTURATION RADIOGRAPH

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