

Endodontic Management of Radix Entomolaris- Review with 2 case reportsDr L. Krishna Prasad¹, Dr. Bhagat S Tanwar*², Dr Naveen Kumar K³¹Prof & HOD, Department conservative Dentistry & Endodontics, KVG Dental College & Hospital, Sullia, Karnataka, India²PG Student Dept. Conservative dentistry & Endodontics, KVG Dental College & Hospital, Sullia, Karnataka, India³Reader, Department conservative dentistry and endodontics, KVG Dental College & Hospital, Sullia, Karnataka, India**Case Report*****Corresponding author**
Dr. Bhagat S Tanwar**Article History**
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10.21276/sjds.2017.4.11.9**Abstract:** The success of root canal therapy depends on the appropriate diagnosis, knowledge of root canal anatomy, and recognition of correct morphology of the tooth along with proper biomechanical preparation and obturation. The awareness of roots and their anatomy is essential and utmost importance for correct diagnosis and to prevent errors. Some studies supported the possible occurrences of RE could be due to genetic makeup of atavistic genes.**Keywords:** root canal, radix entomolaris, atavistic genes**INTRODUCTION**

The success of root canal therapy depends on the appropriate diagnosis, knowledge of root canal anatomy, and recognition of correct morphology of the tooth along with proper biomechanical preparation and obturation. The awareness of roots and their anatomy is essential and utmost importance for correct diagnosis and to prevent errors. Unrecognition of these morphologic and variations may alter the success of endodontic treatment. Thus, it becomes necessary to identify them beforehand. Many anatomical variations have been suggested for mandibular molars with regard to its roots and root canals[1].

A major anatomical variant of the two-rooted mandibular first molar is the presence of an extra root found distolingually first mentioned in the literature by Carabelli known as radix entomolaris (RE)[2].

Etiology of RE is still unclear. Some studies supported the possible occurrences of RE could be due to genetic make-up of atavistic genes and polygenic traits [2].

Classification

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

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.

TYPE AC

The RE is located lingually between the mesial and distal root complexes. De Moor et al. Classified radix entomolaris based on the curvature of the root or root canal:

TYPE 1

A straight root or root canal

TYPE 2

A curved coronal third which becomes straighter in the middle and apical third

TYPE 3

An initial curve in the coronal third with a second buccally oriented curve which begins in the middle or apical third Song JS *et al.* (2010) further added two more newly defined variants of RE:

Small type

Length shorter than half of the length of the distobuccal root

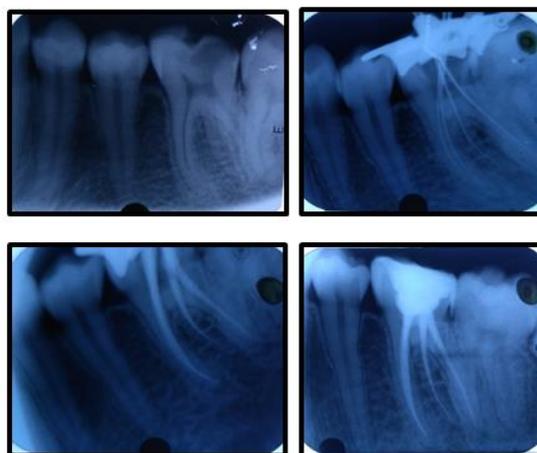
Conical type

Smaller than the small type and having no root canal within it. Aids used for visualisation such as such as CBCT, dental operating microscope, dental loupes, with additional angulation (mesial or distal angulation 20-30 degree may be helpful to identify extra distoangular root.

CASE REPORT 1

A 22 year old caucasian visited to department of conservative dentistry and endodontics KVG Dental College & hospital, Sullia for endodontic treatment of the permanent right mandibular molar. The tooth was symptomatic (Irreversible pulpitis) with radiographical examination showed widening of periodontal ligament (apical periodontitis) irt 46. The radiograph was taken at horizontal anagulation -20 degree mesial angulation using bisecting angle technique. The pulp chamber was deroofed with endo access burs and all canals located with DG 16 Endodontic Explorer (Densply United

Kingdom) and all canal was explored with a K-file ISO 15 (Dentsply Maillefer, Ballaigues, Switzerland). Initially working length was triangular with location of three canal orifices later a supernumery root was inspected distolingually and outline shape modified to trapezoidal with overlying dentine was removed with diamond non cutting tip bur. The working length measurement was done Rinn set (Densply) and apex locator (Root ZX) around 25 mm WL was estimated of MB,,DB and ML and supernumery root of RE. The root canals were shaped with ProTaper rotary universal instruments (Dentsply Maillefer). During preparation 5.25 % Sodium hypochlorite was used for disinfection and EDTA (Salvizol, Ravens, Konstanz, Germany) followed by 2 % chlorhexidine irrigation. The root canals were filled with gutta-percha and AH26 (De Trey Dentsply, Konstanz, Germany) using hybrid condensation with gutta-percha condensers (Dentsply Maillefer).

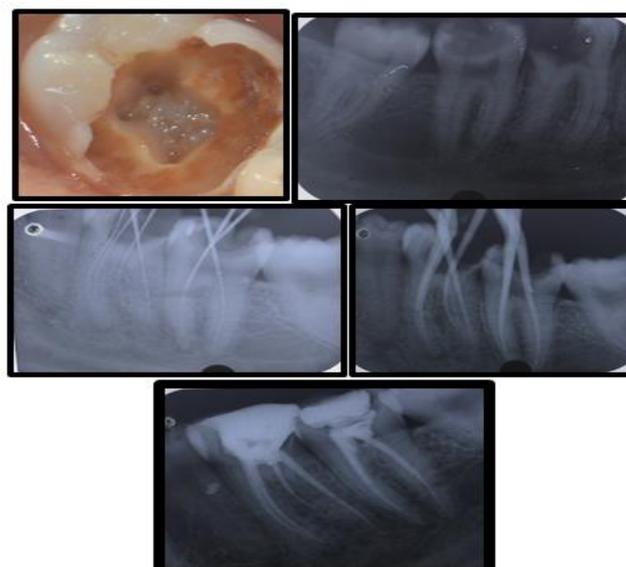


a) Preoperative radiograph, b) Working length IOPAR, c) Master cone IOPAR, d) Obturation
Fig-1: Case report 1- is type III AC (Carlson & Demoore) and root canal therapy completion

CASE REPORT 2

A 20 year caucasian visited to to department of conservative dentistry and endodontics KVG Dental College & hospital, Suliia for endodontic treatment of the permanent left mandibular molar. Tooth was symptomatic with irreversible pulpitis irt 36. On adjusting the opening cavity, four distinct canal orifices were found (Fig 2). and were coronally enlarged with Gates Glidden drills. Initial negotiation of the root canals was performed with a K-file ISO 15. Although the coronal enlargement and relocation of the canal orifices allowed straight-line access in three canals in coronal third with curvature in apical third, insertion of the file in the fourth, distolingual canal showed a more lingually oriented access inclination. Upon removal of

the file, the tip was deformed with a strong curvature to the mesial. This, together with the different access inclinations between the two distal canals, indicated the presence of two separate distal roots. The lengths of these canals were measured electronically. The canals were cleaned with sodium hypochlorite solution (5.25%) and EDTA (Salvizol, Ravens, Konstanz, Germany), and shaped with ProTaper instruments. Outline revealed trapezoidal shape with evidence a supernumery root orifice.root canal preparation with Protaper system (Densply) done. 5.25 % used for disinfection followed by 2 % chlorhexidine. All canals were filled with gutta-percha and AH26 sealer (hybrid condensation) and the opening cavity was sealed with Fuji IX (GC Corp., Tokyo, Japan).



a) Preoperative radiograph, b) Working length IOPAR, c) Master cone IOPAR, d) Obturation
Fig-2 : Type III AC with root canal treatment

DISCUSSION

Prevalence of Radix entomolaris

Variable frequency of occurrences of RE 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 RE[3,4]. In Indians and eurasians it was reported <5%[5]. Tratman et al revealed 0.2 % of RE prevalence in Indians[8]. Around 5- 29 % reported in chinese and eskimos traits. The maximum rate of occurrences was observed in mongoloids, may indicates heritable extra supernumery root in lower molars[7],

Clinical implications

An accurate diagnosis of the supernumerary roots or RE can avoid complications or a missed canal during root canal treatment. Ingle stated that the most frequent cause of endodontic failure is a canal that is left or untreated because a clinician fails to recognize it. A thorough inspection of preoperative radiograph and interpretation of cavity outline is essential and sometime “hidden root” possibly can be RE may affect the success of root canal therapy.

The calcification, which is often situated above the orifice of the RE, has to be removed for a better view and access to the RE. An initial relocation of the orifice to the lingual is indicated to achieve straight-line access. However, to avoid perforation or stripping in the coronal third of a severe curved root, care should be taken not to remove an excessive amount of dentin on the lingual side of the cavity and orifice of the RE.

A straight canal initially in coronal third excessive curvature in apical part of root canal as in type III RE (case report 1) possibly may lead to ledge formation or transportation or other iatrogenic errors ie.

Breakage of instruments. To avoid such errors glide path should be prepared and excessive use of flexible nickel titanium instruments and widening of coronal third with more centered preparation.

MANAGEMENT

Visualizing aids such as a loop, intraoral camera or dental microscope can also be useful to identify the variation in anatomy of supernumery root[1].

CONCLUSION

Knowledge of root canal morphology and anatomy is essential for favourable outcome of root canal therapy. Complexity of root canal anatomy should be evaluated first followed by widening of coronal orifice and glide path preparation in order to overcome the iatrogenic errors. Different working angulation preoperative radiograph can help in identify the extra supernumery root.

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