



RADIX ENTOMOLARIS : CASE REPORT, ITS CLINICAL INFERENCE AND IMPLICATION.

Dental Science

Dr. Sarika Chawla

Dr. Ravneet Negi

Dr. Mehak Gupta

ABSTRACT

Usually first mandibular molars have one mesial and distal root but in some cases there are anatomical variations wherein the number of roots and root canals vary. Presence of an additional lingual root distally in mandibular molars is called Radix Entomolaris. Appropriate diagnosis is must before starting with root canal procedure in these teeth to make sure successful treatment outcome occurs. The report describes the endodontic management of mandibular molar with Radix Entomolaris.

KEYWORDS

INTRODUCTION

The main aim of the endodontic procedure is through the elimination of microbes from the root canal system and prevention of further reinfection, which is achieved by biomechanical preparation and cleaning of the pulp space followed by hermetic sealing with obturating material.

An awareness and comprehensive knowledge of the unusual root canal morphology can contribute to the success of the endodontic procedure. The majority of the mandibular first molars have one mesial and one distal root with two mesial canals and one distal one. [1,2]

In most cases, the mesial root has two canals, which may end up in two separate apical foramina or they may merge to form a single foramen at the root end. The distal root generally has one bean shaped root canal. But mandibular molars with a varied number of roots and root canals have been observed during dental/ endodontic procedures, though incidences are rare. This has a frequency of less than 5 % in white Caucasian (UK, Dutch, Finnish), African , Eurasian and finally Asian population. Carabelli was the first to mention the presence of an additional root I mandibular first molar and called it as radix entomolaris (RE). [3]

The RE is located distolingually, with its coronal third completely or partially fixed to the distal root. The dimensions of the RE can vary from a short conical extension to a mature root with normal length and root canal.

For successful endodontic treatment of all canals of the tooth careful radiographic diagnosis plays a crucial role. Radiograph should be taken at certain angulation to rule out presence of extra roots or root canals. 2-D radio-diagnostic machines don't seem to do justice to cases like RE. CBCT would be an excellent modality to overcome this drawback and help ensure that clinician knows the exact anatomy of tooth (curves and bends) being treated.

CASE REPORT

A 14-year old male patient reported to the Dental Department, Jallianwala Bagh Martyr's Memorial Civil Hospital, Amritsar with a chief complaint of severe, lingering pain and sensitivity in the right lower back tooth region since the last few days. The pain was intermittent in nature and aggravated on taking hot and cold food and beverages, lasted for 3-4 hours.

On clinical evaluation the caries was seen extending deeply towards the pulpal tissue. A diagnostic radiograph of mandibular first molar showed caries extending close to pulp and presence of an additional root (Fig. 1). Access cavity preparation was done under local anesthesia with endo access bur. The first distal canal was located towards the buccal side indicating the presence of one additional canal on the lingual side.(Fig 2&3)

Pre-Operative

The shape of the access cavity was modified from triangular to trapezoidal form to include and locate the fourth canal. DG-16

endodontic explorer was used to locate the root canal orifice. And 6# K-file(Denstply) was used to establish patency of the canals. Working length was determined using apex locator (Jmorita) and reconfirmed radiographically. Biomechanical preparation was done with rotary Gen X (coltene). During instrumentation , 2.5% sodium hypochlorite was used as irrigant and 17% EDTA was used as a final flush.

Obturation was performed with gutta-percha points using cold lateral condensation technique (Fig. 4). Restoration of access cavity was done with composite resin and a post- obturation radiograph was taken. (Fig. 5)

DISCUSSION

Anatomical variations are frequently encountered characteristic in mandibular first molars. Although mandibular molars are usually 2 rooted namely, mesial and distal root, but as some studies and this case report depicts an extra root is encountered in mandibular first root which has been termed as Radix Entomolaris (RE). RE can be classified into four different types depending on location of its cervical part. [4.]

- (i) Type A : the RE is located lingually to the distal root complex which has two cone-shaped macrostructures.
- (ii) Type B : the RE is located lingually to the distal root complex which has one cone-shaped macrostructure.
- (iii) Type C : the RE is located lingually to the mesial root complex.
- (iv) Type D : the RE is located lingually between the mesial and distal root complexes.

Each type has a sub-classification to allow for the identification of separate or non-separated RE>

Clinical triad of diagnosis, adequate chemo-mechanical preparation, and three- dimensional obturation determine the success of root canal therapy. RE occurs in first, second, third molars with the lowest generality within second mandibular molars. Although the presence of RE differs within associated ethnic groups , it should be considered as normal anatomical variation within the Mongoloid population. Studies show no significant predilection for gender or side distribution with bilateral occurrence ranging between 50-67%. [5.]

The unaccustomed occurrence of such an oddity requires that the clinician be vigilant in diagnosis and management of lower molar teeth.

CONCLUSION

Radix entomolaris has been reported to occur with a frequency of 0.2-32%. The convolution of the root canal system often pose a challenge to the clinician. Failure to identify the RE can affect the prognosis of endodontic treatment. Preoperative radiographs at 30 degrees mesial and distal angulations and their proper explication are mandatory to prevent any failure in the diagnosis of RE. Thus, an accurate diagnosis and in-depth knowledge about the variation in root canal morphology and canal configuration of radix entomolaris is essential to ensure success of endodontic treatment. Once diagnosed, management of the

extra canal and root can be done using armamentarium such as magnification aids, orifice & apex locators along with flexible files as some of the RE cases exhibit bends in the root morphology.



Figure 1. Showing Caries Extending Close To Pulp.



Figure 2. Showing Files In Their Respective Canals

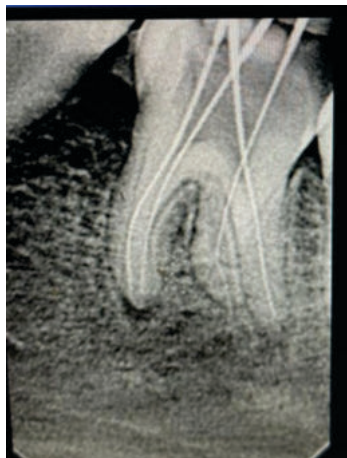


Figure 3. Radiograph Of K-files In The Canals And An Additional Root RE Seen



Figure 4. Gutta-Percha insertion into the canals



Figure 5. Post obturation Filling done with composite seen on radiograph.

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