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RESEARCH ARTICLE

RADIX ENTOMOLARIS: A SERIES OF CASE REPORT

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ABSTRACT

Success of endodontic treatment depends on the proper scouting identification and thorough chemo mechanical preparation of all the canals followed by three dimensional obturation .The prime Failure to achieve this steps may be due to unusual tooth morphology. Usually mandibular molars have two roots with three canals (mesiobucccal, mesiolingual & distal) but in few teeth, the number of roots and canals vary. The variation in the number of roots is called radix entomolaris.(1) This article presents five case reports of mandibular first molars with extra roots. Also mentioned are the modifications in the canal preparation, problems encountered during the treatment, common iatrogenic errors which occur during the treatment and factors which affect the prognosis.

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INTRODUCTION

The main objective of root canal treatment is thorough mechanical and chemical cleaning of all the canals before obturation with an inert filling material. Generally flare-ups occur due to improper cleaning and shaping of canals, lack of understanding of root canal morphology, failure of establishment of hermetic seal, under fillings, over fillings and also due to improper identification of canals. This paper highlights the Radix Entomolaris, a developmental variation occuring in mandibular molars which is associated with an extra root and hence the extra canal. An extra canal may be present even without an extra root. Presence of an extra root on the lingual side of mandibular molar is known as Radix Entomolaris (RE) but not all the teeth with extra roots. The other variant of Radix is Radix Paramolaris which indicates the presence of extra root on the buccal side.

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CASE REPORTS

Case Report 1: A 32 year old male patient reported to Department of Conservative Dentistry and Endodontics with a chief complaint of severe pain in the right lower back tooth region since four days. Pain was of intermittent type, aggravated on taking cold foods and persists even after the removal of stimulus. A diagnostic radiograph was taken which show restoration closed to pulp. On keen observation, there appears to be an additional root. Another radiograph has been taken which with SLOB. Local anesthesia was administered and the tooth was isolated under rubber dam. Access preparation was done with an endo access bur no.1 .The firstdistal canal has been found slightly away from the centre (buccally), and indicating that the other canal will be on the lingual side The root canals were located with DG- 16 endodontic explorer and patency of canals was made with 15 number K -file (Mani Japan). Working length was determined radiographically. Cleaning and shaping was done with rotary ProTaper Next instruments in a step-down manner. Glyde was used as a lubricant and the irrigants used were sodium hypochlorite, and normal saline. Obturation was performed with lateral condensation. Access cavity was restored with

composite and a post-obturation radiograph was taken (Fig1-Fig4).

Case Report 2: A 29 year old male patient came with chief complaint of severe pain in the right lower back tooth region. Pain was of continuous type and with disturbed sleep. Pain aggravated on taking hot substances and even on mastication. Diagnostic radiograph shows no periapical changes but shows radiolucency involving pulp. Caries excavation was done,2% Local anesthesia was administered and the tooth was isolated under rubber dam. Access opening was done with Endo access bur. Three canals were located and Access preparation was modified, Canal orifices were enlarged with gates gidden drills, working length was determined radiographically, cleaning and shaping was performed first with hand till 25 k file then all the canals were prepared with protaper next.

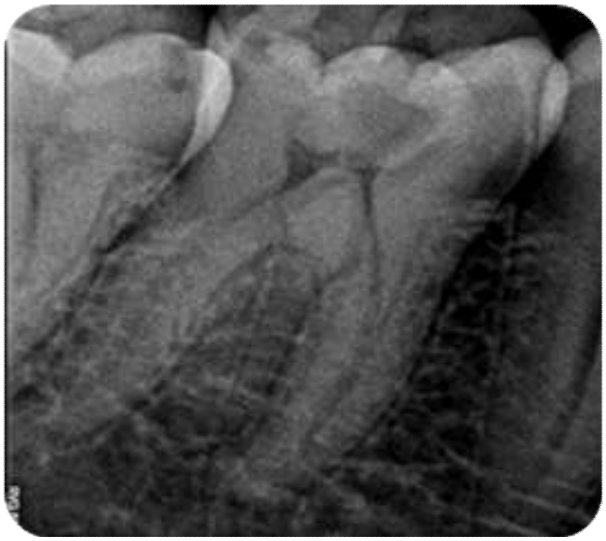

Fig. 1. Pre-operative radiograph

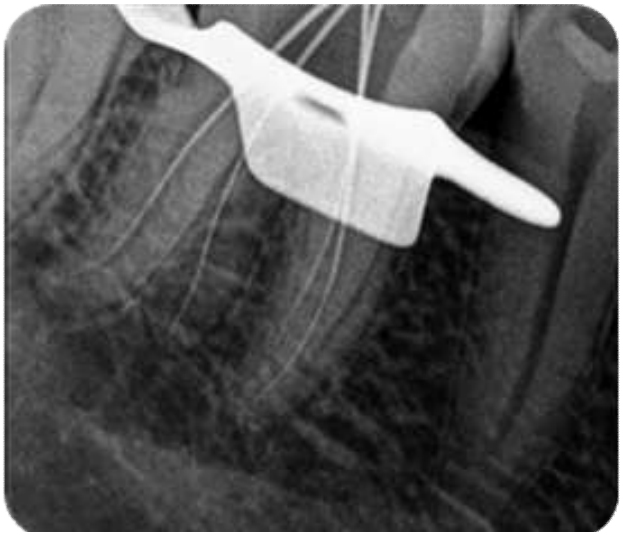

Fig. 2. Working length radiograph

The same irrigation regimen was followed as mentioned in the case report 1. Obturation was performed by cold lateral condensation and access cavity was restored with amalgam. Post obturation radiograph shows well obturated four canals (Fig. 5-Fig. 8).

Case Report 3: A 27 year old male patient was referred to department of endodontics with chief complaint of severe pain. Patient gives history of past dental treatment which was underwent few days back. Pain was of continuous type which also radiates to the ear.. Before starting the treatment, local anaesthesia was administered and the tooth was isolated under rubber dam.

Fig. 3. Obturation radiograph

Fig. 4. Post endo restoration

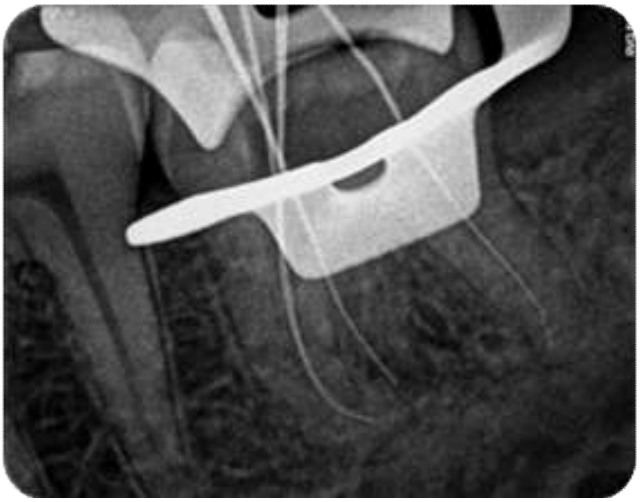

Fig. 5. Working length radiograph

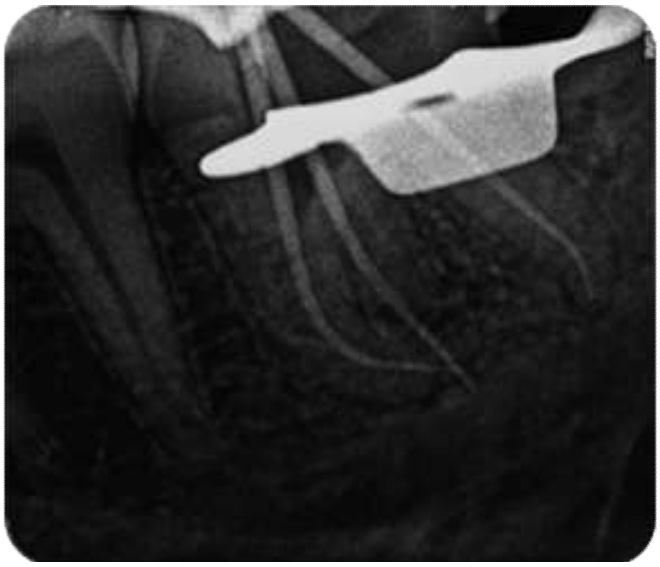

Fig. 6. Master cone radiograph

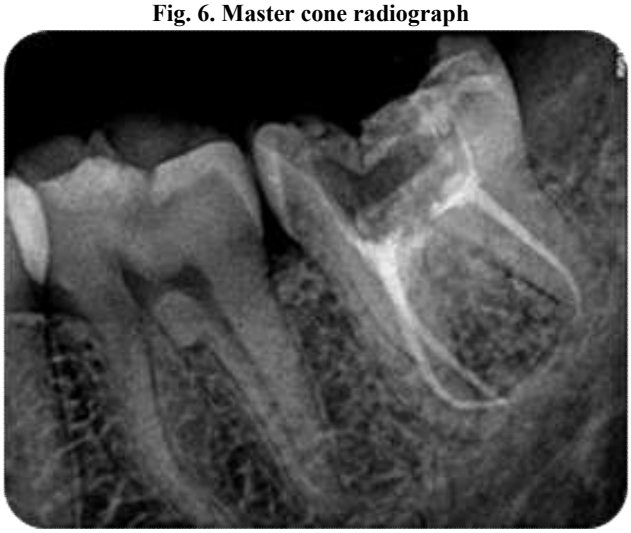

Fig. 7. Obturation radiograph

Fig. 8. Post endo restoration

Access cavity was prepared. In the process of removing the remaining roof in the distolingual corner, a bleeding spot was observed which when explored found to be an an additional canal. Theaccess cavity preparation was modified from a triangular to a trapezoidal form for proper accessibility of all the canals. After that the orifice enlargement was done, working length was determined radigraphically.

Fig. 9. Pre-operative radiograph

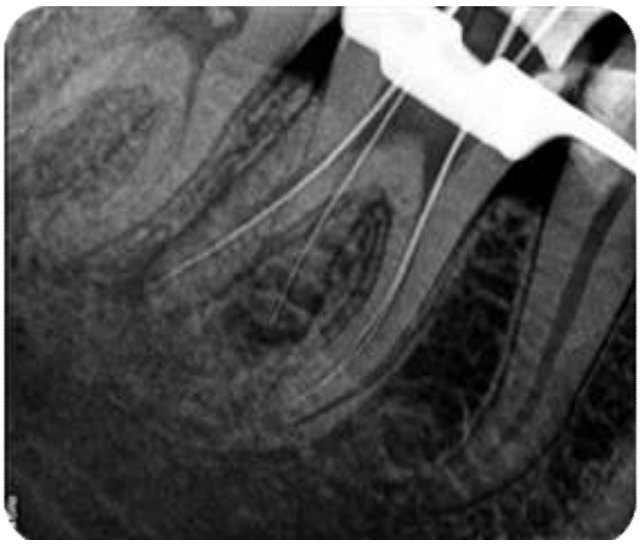

Fig.10. Working length radiograph

Fig. 11. Master cone radiograph

The same irrigation regimen was followed as mentionedin the case report 1. Cleaning and shaping was performed with rotary protaper nextinstruments in a stepdown fashion and obturation was performed with cold lateral condensation. Access cavity was restored with a composite and a post- operative radiograph was taken (Fig. 9-Fig. 12).

Fig.12. Obturation radiograph

Fig. 12. Post endodontic restoration

DISCUSSION

The exact cause of radix entomolaris is still not known. Some authors say that it may be due to disturbance during odontogenesis or may be due to an atavistic gene. Incidence varies from 5 to 30% and also among different populations (1). To achieve a correct diagnosis minimum of two diagnostic radiographs are necessary using buccal object rule. Even the presence of an extra cusp may sometimes indicate the presence of *radix entomolaris* Access cavity preparation should be modified usually from a triangular to a trapezoidal shape. The modification should be done following the dentinal map. Advanced diagnostic aids help in the better identification and visualization of all the canals.

Some of the common problems encountered during the treatment of *Radix Entomolaris* are

- Difficulty in Radiographic interpretation.
- Inability to locate the fourth canal.
- Modification in access cavity preparation.
- Confusion in working length determination.

Apart from these difficulties clinicians are prone to commit some iatrogenic errors liken straightening of a root canal resulting in loss of working length, ledge formation, zipping, transportation or even perforation.

Conclusions

Teeth are never alike. A number of variations occur which pose a challenge to a clinician. This particular variation *Radix Entomolaris* may be a challenge who do not have proper diagnostic aids and lack in proper knowledge of root canal anatomy. Correct diagnosis should be made with two preoperative radiographs taken at two different angles before starting the treatment. So thorough knowledge of root canal anatomy and awareness of the variations make the treatment more successful and if one exhibits proper skill, these cases can be done with ease.

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