



Case Report

Three Rooted Mandibular Molar; Radix Entomolaris and Paramolaris in Pediatric Patients: A Clinical Challenge

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ABSTRACT

Mandibular molars can have an additional root located lingually (the radix entomolaris) or buccally (the radix paramolaris). This report discusses endodontic treatment of three rooted mandibular molars with Radix Entomolaris, both of which are rare tooth macrostructures in pediatric patients. Normally the permanent mandibular first molar has two roots, one mesial and the other distal. Rarely an additional third root is seen. This extra root is typically smaller than the distal root and is usually curved, requiring special attention when root canal treatment is being considered for such a tooth. The aim of the present paper is to present two cases of permanent mandibular first molars with an additional third root.

Key Words: Anatomical Variations; Mandibular Molars; Radix Entomolaris; Radix Paramolaris; Endodontic Treatment.

INTRODUCTION

The majority of mandibular first molars are two rooted with one mesial root and one distal root. ⁽¹⁾ The number, location of roots and root canals of these teeth may vary. An additional third root in mandibular molar was first mentioned in the literature by Carabelli, is called the Radix Entomolaris (RE). ⁽²⁾ In RE the supernumerary root is located distolingual to the mesial root of the mandibular molars. Similarly an additional root at the mesiobuccal side of the distal root of the mandibular molar is called the Radix

Paramolaris (RP). ⁽³⁾ The prevalence of these three-rooted mandibular first molars appears to be less than 3% in African populations, not to exceed 4.2% in Caucasians, to be less than 5% in Eurasian and Asian populations, and to be higher than 5% (even up to 40%) in populations with Mongolian traits ⁽³⁾ and 5.97% in Indian population. ⁽⁴⁾ Because of its high frequency in these populations, the RE is considered to be a normal morphological variant. ^(4,5) In this report morphology, clinical approach to diagnosis

and endodontic treatment of RE and RP are presented.

CASE REPORTS

1. Nine years old male pediatric patient reported to Department of Pedodontics and Preventive Dentistry with a chief complaint of severe pain in the Left lower back tooth region since four days. Pain was of intermittent type, aggravated on taking hot foods and persisted even after the removal of stimulus. A diagnostic radiograph was taken which suggested deep caries with pulpal involvement. On keen observation, an additional root (Figure 1A) was noticed. Presence of additional root was confirmed by object localization radiographic method. Local anesthesia was administered and the tooth was isolated. Access preparation was done with an endo access bur no.1 (Dentsply Switzerland). The first distal canal was found

slightly away from the centre (buccally), and indicating that the other canal will be on the lingual side, the access cavity preparation was modified from a triangular shape to a trapezoidal form and the fourth canal was located (Fig 1 B-D). 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 instruments in a step-down manner. Glyde was used as a lubricant and the irrigants used were sodium hypochlorite, hydrogen peroxide and normal saline. Obturation was performed with cold lateral condensation (Figure 1b). Access cavity was restored with Zinc oxide eugenol cement and a post-obturation radiograph was taken. Patient was asked to follow up after a week.



Fig 1- (Preop radiograph) Fig 2(Access cavity) Fig 3 (working length and extra dista root) Fig 4 (working length) Fig 5 (Post obturation radiograph)

2. A 11 years old pediatric male patient came to Department of Pedodontics and Preventive Dentistry 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 (Figure 2a) shows periapical changes and distal pulp horn involvement. 2% Local anesthesia was administered and the tooth was isolated. Access opening was done with Endo access bur. Three canals were located but the dentinal map seems to be slightly extending in a distolingual direction. Access

preparation was modified in that direction with an extra shank round bur. The fourth canal was explored with DG 16 explorer (Dentsply, Switzerland). (Fig 2B) Canal orifices were enlarged with gates glidden drills, working length was determined radiographically, cleaning and shaping was performed with hand instruments in a step-back fashion. 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 2C).



Fig 2A (Working length)

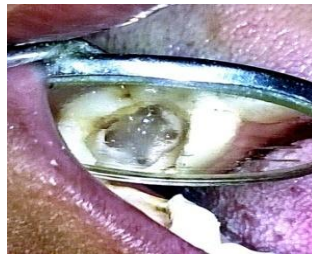


Fig 2B (Access cavity)



Fig 2C (Post obturation)

DISCUSSION

Anatomic variations of permanent mandibular molars are documented in the literature. Nonetheless, variations of the number and anatomy of the roots and the root canals in permanent mandibular first molars are not appreciated by a great number of pediatric dentists compared to endodontists. The third distolingual root (RE) in mandibular molar teeth, with an incidence ranging from 0.9 to 20% is possible in some populations. ⁽⁵⁻¹¹⁾ Thus the pediatric dentists must be aware of this anatomic root variation when diagnosing and managing any pathology associated with the permanent mandibular first molar with a Radix Entomolaris especially during endodontic treatment. 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. In apical two thirds of the RE, a moderate to severe mesially or distally oriented inclination can be present. ⁽¹²⁾

The presence of third root (RE) has clinical implications in endodontic treatment. An accurate diagnosis of this supernumerary root can avoid complications or a 'missed canal' during root canal treatment. Because the RE is mostly situated in the same buccolingual plane as the distobuccal root, a superimposition of both roots can appear on the preoperative radiograph, resulting in an inaccurate

interpretation of particular marks or characteristics, such as an unclear view or outline of the distal root contour or the root canal, can indicate the presence of a 'hidden' RE. To reveal the RE, a second radiograph should be taken from a more mesial or distal angle (30 degrees). ⁽¹²⁾

CONCLUSION

Pediatric Dentist should be aware of these unusual root morphologies in the mandibular first molars. The morphological variations of the radix entomolaris and paramolaris in terms of root inclination and root canal curvature demand careful, adapted clinical approach to avoid procedural errors during endodontic therapy.

Knowledge of the location of the additional root and its root canal orifice will result in a modified opening cavity. The morphological variations of the radix entomolaris in terms of root inclination and root canal curvature demand a careful and adapted clinical approach to avoid or overcome procedural errors during endodontic therapy.

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