CASE REPORT

Incongruity in human permanent mandibular molar: A case report

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Abstract

The success of endodontic therapy depends on the complete debridement of the root canal. Usually, permanent mandibular molar has two roots with three root canals. This case report presents a diagnosis and endodontic treatment of an unusual case of permanent mandibular molar with an additional root in 16-year-old boy. The incidence of this variation in Indian population is 5.97% only. Correct interpretation of the radiograph and proper knowledge of external morphology of the tooth are a key to achieve the endodontic success for a clinician.

Keywords: Dentistry, diagnosis, radix entomolaris, stomatognathic system

Introduction

Human permanent mandibular molars, usually, have two roots, one mesial, and one distal. The three rooted mandibular molars were first described by A. E. Taylor in England in 1899. The additional third root in permanent mandibular molar on the buccal side is called as radix paramolaris whereas on the lingual side is called as radix entomolaris. This third root may come from a division of the apical third of the mesial root or, less frequently, from the distal root.

Radix entomolaris can be present on first, second, and third mandibular molars occurring least frequently on the second molar.[¹] Incidence of its bilateral occurrence is between 50% and 67%.[¹,²] In spite of its high prevalence in all races, its incidence in Indian population is found to be 5.97% only.[³] Clinician should be able to diagnose this unusual root morphology and treat it in order to achieve endodontic success. The present case report describes the diagnosis and endodontic management of a case of radix entomolaris in a 16-year-old Indian boy.

Case Report

A 16 year Indian old boy reported to my dental clinic with a chief complaint of sharp pain in his right side back tooth region of the lower jaw on chewing. On general examination, the boy was apparently healthy. Patients past medical and dental history were noncontributory. Extra-oral examination was nonsignificant. Intra-oral clinical examination showed extensive occlusal carious lesion in tooth 46. The pulp vitality tests showed a negative response for the involved tooth. The tooth was sensitive to vertical percussion test. No mobility was observed for the same. A provisional diagnosis of an acute apical periodontitis was made. On intraoral periapical (IOPA) radiographic examination [Figure 1], radiolucent area representing the caries was seen involving the pulp. Furthermore, an unusual root pattern was seen in relation to distal root of 46. An additional 20 degree mesial angulation IOPA radiograph [Figure 2] was made for the same tooth. The furcation area and periapical area around mesial and distal roots and of the affected tooth showed radiolucency. The treatment planned for this tooth was root canal therapy. Local anesthesia was administered, and the tooth was isolated under rubber dam. Access preparation was carried out with endo access bur no.1 (Dentsply, Switzerland). The mesiobuccal and mesiolingual orifices were found under mesiobuccal cusp and mesiolingual cusp, respectively. The distal orifice was found slightly away from center (more buccally) indicating the presence of second orifice on lingual side. Access cavity shape was modified from
triangular to trapezoidal form [Figure 3]. All the orifices were explored with the help of DG16 explorer. Working length radiograph confirmed the presence of an additional distolingual canal orifice in extra distolingual root [Figure 4]. All the canals were cleaned, shaped, and obturated with protaper system. Endodontic access cavity was then restored, and a post-obturation radiograph was obtained [Figure 5]. The patient was recalled for follow-up on regular intervals of 1 month, 6 months, and 1 year interval [Figure 6].

**Discussion**

Permanent mandibular molars, usually, have two roots, mesial, and distal and three root canals but variations in a number of roots and canal morphology do occur.[4,5] The additional third root in permanent mandibular molar on the buccal side is called as radix paramolaris, whereas on the lingual side is called as radix entomolaris. Radix entomolaris can be present on first, second, and third mandibular molars occurring least frequently on the second molar.[1] Incidence of its bilateral occurrence is between 50% and 67%.[1,2] According to Quackenbush, the extra root occurred unilaterally in approximately 40% of all the cases and predominantly on the right side.[6] The prevalence of three rooted mandibular molar is reported in different population. It is <3% in Blacks,[7] about 3-4.2% in Whites,[8] <5% in Eurasians and Asian population[9] and approximately 5-30% in mongoloid traits.[10] In spite of its high prevalence in all races, its incidence in Indian population is found to be 5.97% only.[1] In the cases of extra distal root in permanent mandibular molar, a clinician should always read and interpret radiograph correctly for root morphology and canal pattern. An additional radiograph at mesial or distal angulation should be taken to confirm the unusual anatomy. Access preparation should always be modified from triangular to trapezoidal form in order to gain accessibility to distolingual orifice. To locate this additional orifice...
canal orifice following measures can be applied clinically-law of symmetry and law of orifice location, use of special instruments like DG16 explorer, micro-openers or path finders for locating canal orifices, Champagne test, digital radiograph in various angulations, use of surgical loupes or operating microscope, use of micro computed tomography or magnetic resonance microscopy.

Conclusion

The possibility of extra root should be considered and looked for carefully by the clinician in Indian population. Proper angulation and interpretation of radiograph are a key to diagnose and treat the case of radix entomolaris in dental practice. Radiographs at two different horizontal angulations are required to locate this variation. The endodontic access cavity should be modified from triangular to trapezoidal shape in order to locate and treat the radix entomolaris.

References