

Radix Entomolaris, A Rare Dental Finding

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ABSTRACT

The hard tissue repository of the human dental pulp takes on numerous configurations and shapes. A thorough knowledge of tooth morphology, careful interpretations of eccentric radiographs, proper access preparation and detailed exploration of the interior of the tooth are essential prerequisites of successful treatment outcome. Human permanent molars exhibit a varied anatomy. Mandibular molars play a principal role in mastication and help to maintain the vertical dimension of the face, continuity of the dental arch, maintain the cheeks and tongue in position and sustain a healthy aspect by conserving the filling of the cheeks. It is known that the mandibular first molar can display several anatomical variations and, like the number of root canals, the number of roots may also vary. A major anatomical variant of the two-rooted mandibular first molar is the third root known as Radix Entomolaris (RE). Here we present a rare case report of mandibular first molar having third root known as Radix Entomolaris (Figure 2 and 3) in a 35-year-old female who initially presented with spontaneous pain on lower right side of the mouth and was finally diagnosed having an acute, reversible pulpitis with incidental finding of mandibular first molar having three roots.

Keywords: Radix Entomolaris, SLOB RULE, peri-apical radiography, distal caries, reversible pulpitis

CASE REPORT

A 35-year-old female present with the pain on the right posterior region of the face. Patient also had sensitivity to hot and cold on lower right side in the mouth. Patient described discomfort as a severe, prolonged, and as a spontaneous pain that was also being referred to the ear. Oral examination revealed that the tooth was sensitive to percussion. Visual and radiographic examination showed distal caries on tooth number 46. Radiographic examination also showed widening of periodontal ligament space on the same tooth. Cold test was performed on the tooth number 46, which indicated prolonged pain even after the removal of the stimulus. Patient was diagnosed with Acute reversible pulpitis with symptomatic apical periodontitis. Intra-oral peri apical Xray revealed third root on the tooth present distolingually. Radiography was conducted using SLOB rule to verify the possibility of additional canal present, if any but radiographs did not reveal such incidence. Patient was advised to have root canal treatment on the tooth number 46.

After routine local anaesthesia and isolation with rubber dam, the access cavity was enlarged distolingually and mesiolingually [Figure 1] by means of an Endo-Z bur (Dentsply, Maillefer, Ballaigues, Switzerland). Careful investigation of the pulp chamber with a ProFinder™ #10 file (Dentsply, Maillefer) revealed a distolingual and mesiolingual canal orifice.

During the treatment, the canals were constantly irrigated with 3% sodium hypochlorite (NaOCl). Biomechanical preparation was done and calcium hydroxide dressing was placed. The access cavity was sealed with intermediate restorative material [Figure 2]. After 1 week, the tooth was restored with composite restoration and a full-cast crown was advised for long-term success. The patient remained asymptomatic when he last reported 9 months after the treatment and continues to be under active follow-up.



Figure 1: showing access cavity of tooth no 46

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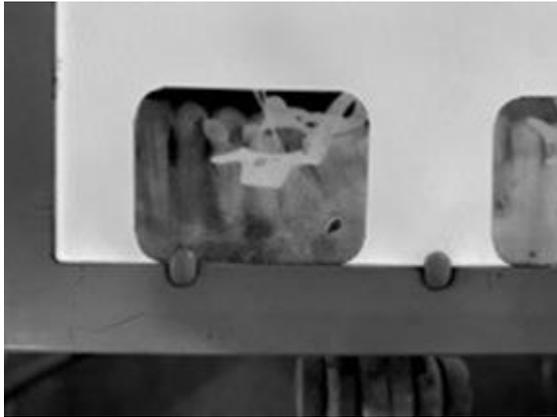


Figure 2: Showing working length of radix and distal root.



Figure 3: showing working length of mesial, Radix and distal root.

DISCUSSION

The main objective of endodontic therapy is the thorough mechanical and chemical debridement of the entire root canal system and its obturation with an inert material. Ingle listed the most frequent cause of endodontic failure as apical percolation and subsequent diffusion into the root canals.^[1] One of the main reasons for failure is a canal that is left untreated because a clinician fails to recognize it. The clinician must have a thorough knowledge of root canal morphology for successful endodontic treatment.^[2] The Vertucci study of the internal and external anatomy of teeth has shown that anatomical variations can occur within each group of teeth, within each person and, in general, within each racial group.^[3] A thorough understanding of the complexity of the root canal system is essential for understanding the principles and problems of cleaning and shaping, for the determination of apical limits and dimensions of canal preparation, and for successful treatment outcomes.^[3] The presence of an RE has clinical implications in endodontic treatment. An accurate diagnosis of these supernumerary roots can avoid complications or a missed canal during root canal treatment.

Apart from complicating the root canal procedures, RE has been found to be a contributing factor to localized periodontal destruction.^[4] In addition, reports correlate significantly higher probing depths with attachment loss at the distolingual aspect of three-rooted molars.^[4,5] An unclear view or outline of the distal root contour can indicate the presence of a hidden RE. The RE is usually situated in the same buccolingual plane as the distobuccal root, so a superimposition of both roots can appear on the preoperative radiograph and result in an inaccurate diagnosis.^[6] The proper application of Clark's rule or the buccal object rule facilitates locating additional canals or roots, and distinguishing between objects that have been superimposed.^[7,8] Hence, to reveal an RE, additional radiographs should be taken from a more mesial or distal angle.

Locating a second root canal requires much wider access than that provided at the apex of the triangle and hence widening this area buccolingually produces a trapezoidal opening. Thus, sufficient space is made available for the examination of the pulp chamber floor and a desirable canal preparation can be achieved.^[9]

With the frequency of occurrence around 5% in Indian populations, every possible effort should be made towards locating of any extra root in mandibular first molars. Unusual tooth morphology, such as an extra cusp or a more prominent distal or distolingual lobe, in combination with a cervical convexity can indicate the presence of an additional root. In addition to eccentric radiographs, visual aids such as loupes, endoscopes and dental operating microscopes, in conjunction with careful clinical examination for any unusual morphology, can help in the early diagnosis of these veiled macrostructures.

CONCLUSION

The anatomy of human teeth may present racial variations, which can lead to therapy failure when not recognized. The failure to localize, instrument and obturate root canals can lead to problems which could have been avoided. The development of various areas of odontology requires precise study of the morphology of human teeth with the objective of providing better oral health and restoring stomatognathic function.

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