

Cone-beam CT Aiding in Endodontic Treatment of Tricanaled Mandibular Second Premolar: Report of A Case

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This paper presents a case report of mandibular left second premolar with three canals and three different apical foramina. A 12-year-old male patient was referred by his local dentist to the Endodontic Department of China Medical University Hospital for treatment of the mandibular left second premolar. We took a periapical film, panorex as a routine check, then used cone-beam CT (CBCT) for further confirmation. This was a rare case in which bilaterally all four mandibular premolars had three roots. Intraoral examination also showed that dens evaginatus occurred on all four mandibular premolars. Owing to the special anatomy of such a tooth, access cavity preparation is no longer to be done according to a pre-conceived classical ovoid form. Under microscope, ML, DL, and B canals were located, cleaned and shaped thoroughly, and then the canals obturated by warmed gutta percha compaction method. CBCT is characterized by rapid acquisition of volume images from a single low-radiation-dose scan of the patient. The exact root numbers of the tooth can be confirmed by CBCT and dentists can achieve successful endodontic treatment for these rare three-rooted mandibular canal cases. Cleghorn et al (2007) stated that, in anatomic studies, the incidences in the single-rooted mandibular second premolar teeth account for (99.6%) of cases, 2 roots (0.3%), and 3 roots (0.1%). The correct diagnosis of these variations by analysis of preoperative 2D radiographs and 3D CBCT can help location of more canals, thereby avoiding root therapy failure.