

Management of mandibular first premolar with vertucci type III root canal configuration**Maj(Dr) Lakinepally Abishek^{1*}, Edulapalli Keerthi², Samarth Dileep³, Nishant Sinha⁴**¹*Army Dental Corps, Department of Conservative Dentistry & Endodontics, New Delhi, India*²*PG Resident, Department of Prosthodontics, S.V.S.Institute of Dental Sciences, Mahabubnagar, Andhra Pradesh, India*³*Senior Lecturer, Department of Conservative Dentistry & Endodontics, S.V.S.Institute of Dental Sciences, Mahabubnagar, Andhra Pradesh, India*⁴*Army Dental Corps, Department of Conservative Dentistry & Endodontics, CMDC(CC), Lucknow, India***Received: 30-09-2018 / Revised: 05-11-2018 / Accepted: 10-12-2018****Abstract**

Mandibular premolars exhibit a complex and variable root canal morphology and the identification of these variations requires thorough knowledge of root canal morphology and proper interpretation of radiographs for successful root canal treatment. These teeth may require skillful root canal preparation and obturation techniques. This article reports an unusual case of a mandibular first premolar with Vertucci Type III root canal pattern which is seen in 3% of cases.

Keywords: bifurcation, mandibular premolar, root canal vertucci classification.**Introduction**

A 35 year old female patient reported with the chief complaint of pain in lower left back tooth region. Patient medical history was non contributory. Clinical examination revealed tenderness to percussion of 34. Preoperative radiograph of the tooth revealed periapical radiolucency suggestive of periapical abscess. Vertucci [1] developed a system for canal anatomy for teeth and classified them as Type I to Type VIII (Figure 1). The radiographic finding was the unique pattern of the canal system resembled the Vertucci type III (1-2-1) canal system, there was a single large canal orifice that divided into two canals and the two root canals again joined in the apical one third to form a single canal with a single apical foramen (Figure 2). The tooth was anaesthetized with 2% lidocaine (Lignox A, Warren Indoco) solution and isolated under optra dam plus (Ivoclar Vivadent AG, Schaan).

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Unlike rubber dam the usage of optradam plus helped in taking radiographs without time consuming removal and reinsertion. The access cavity is extended onto the cusp tip to gain a straight line access and the canal orifices enlarged with Gates Glidden drills (Dentsply Maillefer, Ballaigues, Switzerland). The buccal root canal was negotiated with No 15 size k file, lingual canal was difficult to instrument for which access was gained by running a pre bent No 8 size file down the lingual wall of the main buccal root canal until orifice is located. Following the working length determination, the buccal root canal was enlarged till the working length and lingual root canal enlarged short of working length at the region of joining with buccal root canal. During cleaning and shaping minimal preparation was done using hand instrumentation to avoid merging of the canals. Copious amount of 5.25% NaOCl was used and activated with EndoActivator. The canals were dried with sterile paper points, and the access cavity was sealed with Cavit. At the second visit, the canals were irrigated with NaOCl and dried. Master cone radiograph confirmed the apical extension of gutta percha and the root canals were filled with continuous wave compaction of gutta percha (Figure 3). Follow up clinical examination after 3 months showed healing of the periapical lesion and absence of clinical symptoms. The patient was recalled after 6 months which showed complete healing of periapical region (Figure 4).

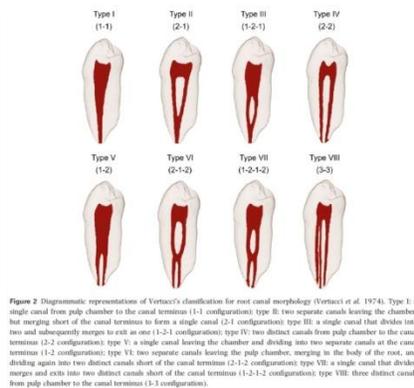


Figure 1



Figure 2



Figure 3



Figure 4

Mandibular premolars exhibit a complex and variable root canal morphology and for this reason they are one of the most difficult teeth to treat endodontically and considered as enigma to endodontist.[2] Vertucci Type III root canal pattern in mandibular first premolars is seen in 3% of cases.[3] Variations in the canal configuration should be recognised since having a single tapering canal and apical foramen is the exception rather than the rule.[4] Thus a careful understanding and diagnosis of root canal anatomy is of utmost importance for successful management of such cases. Several clinical techniques can be used in the detection of additional root canals in mandibular second premolars. The pulp chamber deviating from normal configuration and seems to be either oval or

triangular in shape, more than root one canal should be suspected.[5] Martinez Lozano [6] et al. recommend up to 40° mesial angulation from horizontal as more reliable in identifying the extra root canals. A sudden narrowing of the main canal on a parallel radiograph can identify root canal multiplicity. Tactile examination of all the walls of the major root canal with a small precurved K file is recommended, in order to probe for a catch which may indicate the orifice of an additional root canal. Dyes, fiberoptic transillumination, magnifying loupes, and sodium hypochlorite bubbling in the extra root canals help in locating additional root canals.[7] Modification of the access cavity and use of use of all the available

diagnostic aids to locate and treat the entire root canal system in such cases.

Conclusion

Coronal flaring and using pre-bent hand files help in the location of the additional root canals. The possibility of existence of two or more root canals in the mandibular premolars should be considered while performing endodontic therapy.

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Conflict of Interest: None

Source of Support: Nil