

## EDITORIAL

### **Anatomical Variations of Mandibular Molar Tooth morphology- An Endodontic importance**

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In the practice of dentistry the role endodontics has greatly broadened in scope in past decade. Although many factors are responsible, the most important reason behind the development is the extremely high predictability of endodontic success. Understanding of root canal morphology is so required for achieving this high level of endodontic success. Because, failure to recognize variations in root canal anatomy can result frustrating outcome causing lower the confidence level of a surgeon.

Hence, it is imperative that the clinician be well informed about the altered to the commonest anatomy. Although several teeth have their own variations, we desire to focus on mandibular molars. As the tooth is the earliest permanent posterior tooth to erupt, seems to be the tooth that most often require root canal treatment.

As we know that mandibular molar has two root: one is distal root usually has single canal and other is mesial root having two canals. Regarding variations of this tooth- four canalled molar with two roots, an extra root ( radix entomolaris and paramolaris), five canalled molar with three roots( where mesial root has three canals and disto lingual{Radix entomolaris/ Paramolaris} root has single canal & disto buccal root has one canal).Moreover, C-shaped canal can be found in mandibular molar teeth.

During last 6 months, the clinicians of outpatient department of update Dental college & Hospital diagnosed as well managed 800 cases of root canal treatment where 20(2.5%) cases were of radix entomolaris, 6(0.75%) cases were with five canalled, 10(1.25%) cases of four canalled and 2(0.25%) cases were with C-shaped canal. Most of those cases had

history of endodontic failure and during managing the cases we found that the teeth had variations. So, failure was due to missed canal or missed root. Whereas the third disto-lingual root in mandibular molar with an incidence less than 5%.<sup>1-3</sup> Probability of Mandibular molar with five canal is 1-15%.<sup>4</sup> The incidence of C-shaped canal is 0.5%.

An accurate diagnosis of the anatomical variations can avoid unnecessary complication or a 'missed canal' during root canal treatment. In this aspect careful observation of pulp canal orifice location and configuration is very much important. Moreover, thorough inspection of pre-operative radiograph is very important where there is radix present usually we can observe a hazy root outline as distal root superimposes the radix entomolaris and if necessarily take an x-ray by changing the angulations (30degrees) more mesial/ distal angle, the additional root become evident. In this way an accurate diagnosis can be made in the majority of cases.

Apart from a radiological diagnosis, clinical inspection of tooth crown and analysis of cervical morphology of the roots by means of periodontal probing can facilitate identification of an additional root. In case of C-shaped canal usually the roots are fused and orifice has a C-shaped arc. Once a diagnosis is reached, access cavity has to prepared to create a "straight- line" access. For this reason, modification of the classical rectangular access cavity to a trapezoidal form is required. During preparation of root canals we must avoid gouging or excessive removal of dentine. Hence used precurved file, to establish a smooth glide path with Ni-Ti file is useful. As extra root is narrower than the rectangular root we must ensure the successful irrigation with the solution having

tissue dissolving properties. This step is also important in treating C-shaped canal where we have the limitations of successful canal preparation. Finally, obturation of all the canals hermetically ensures the successful outcome.<sup>5,6</sup>

Treating extra canals may be challenging but the inability to find and properly treat root canals may cause failure. Although the incidence of root and variations is not common, every effort should be made to find and treat all canals for successful clinical results. The possibility of extra root or variable anatomy should be considered and looked carefully. Proper angulations and interpretation of radiographs help to identify chamber and root anatomy. Then the physician can face the challenge confidently to improve the quality of our clinical

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