



Research Paper

## Radix Paramolaris: A case report and its clinical implications

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### Abstract:

Permanent mandibular first molars usually have 2 roots, placed mesially and distally and 3 root canals. However, variations exist in the number of roots present and the morphology of the roots and root canals. Anomalies in the tooth are often encountered, which poses difficulties in dental treatments. As like any other tooth, mandibular first molars are also prone for anatomic malformations. One such anatomic variation is the presence of extra root distolingually or distobuccally. An additional lingual root in mandibular molars is called Radix Entomolaris and an additional buccal root in the mandibular molars is called Radix Paramolaris [4]. This supernumerary root is most often the cause for persistent infection in the periapical and furcation areas of the mandibular molars and it often poses a challenge to endodontic treatment as well as intraalveolar extraction of tooth [1]. Thus, it is crucial to be familiar with the root number and shape morphologies which can help in accurate diagnosis and efficient clinical management of tooth, so as to favourably alter the prognosis of the mandibular molars with this root morphology.

**Key words:** Anatomic variations, Mandibular first molars, Radix Paramolaris, Supernumerary root.

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### I. Introduction:

The first line of treatment of a tooth that is pulpally involved and symptomatic is Root Canal Treatment. For a successful endodontic treatment, thorough cleaning and shaping of the root canals and providing a bacterial and fluid impervious three-dimensional obturation is essential. However, often root canal treatment is complicated by the presence of variations in the root canal anatomy. Hence, meticulous knowledge about the variant root canal anatomy is mandatory for successful endodontics.

Mandibular first molars normally have two roots, the mesial and the distal ones. The major variant is the occurrence of a third root, which is often reported in the literature. If this additional root is located buccally, it is called radix paramolaris and if located lingually, it is called radix entomolaris (RE). This was first described by Carabelli.<sup>[1]</sup>

The frequency of occurrence of Radix Entomolaris in Indian population is roughly around less than 5% with a prevalence for the Right side of the mandible and in Females. The frequency of occurrence of Radix Paramolaris is extremely rare, about 0.12%. [2]. The frequency of occurrence of Radix Paramolaris in mandibular 1<sup>st</sup> molars is reported to be 0%.

## **II. Case Report:**

A 14 year old girl reported to the Department of Dentistry at our hospital with the chief complaint of pain in lower left back teeth region since 3 months. Pain was aggravated 1 day back. On further questioning, patient gave history of intense, spontaneous pain, which was aggravated on mastication and on eating hot and cold food and history of nocturnal pain, suggestive of acute exacerbation of chronic irreversible pulpitis. Patient had no other systemic disease history and no history of any drug allergy.

### **On Examination :**

The extraoral examination revealed slight facial asymmetry on visual inspection with mild swelling present over the left body mandible region. The swelling measured approximately 2x1 cm in size, it was diffuse and tender on palpation. The overlying skin was afebrile and no draining sinus tract was observed intraorally or extraorally on visual inspection and palpation. No abnormality detected with the lymph nodes .

The intraoral examination revealed deep disto-occlusal caries in relation to mandibular left first molar, with food lodgement in the cavity and localised calculus and gingival inflammation. Intense pain on percussion was elicited. Caries involved the enamel , dentin and the pulp. There was no pain on percussion in any of the other teeth in the involved quadrant. No other relevant hard tissue or soft tissue findings were present. A small pus point was observed buccal to the above mentioned tooth.(fig 1)

### **Investigations :**

An orthopantomogram (fig 2) was advised for the patient to begin with, which revealed diffuse radiolucency involving the enamel, dentin, and pulp suggestive of dental caries in relation to mandibular left first molar . Diffuse radiolucent lesion involving the periapical area of the mesial and distal roots of 36 was noted. Radiolucency also involved the furcation area of the same tooth . The presence of a third additional root was suspected on the distobuccal side. This root can be attributed as the cause of persistent periradicular infection.

The provisional diagnosis of chronic irreversible pulpitis with symptomatic apical periodontitis was taken into consideration.

### **Surgical Management :**

Based on the provisional diagnosis and the extent of the lesion (which was aggravated by local factors i.e., plaque and calculus) , it was agreed upon to undergo intra-alveolar extraction of 36 under local anaesthesia, under antibiotic coverage. 2% lignocaine with 1:200000 adrenaline was used as the local anaesthetic agent and Inferior alveolar nerve block was given. When no objective symptoms were elicited after the administration of the IAN Block, the gingival flap was separated. The tooth was extracted after elevating and luxating it adequately from the socket, so as to ensure the tooth to be extracted intact.(fig (3,4,5)).Pressure pack was given to achieve haemostasis. Patient was recalled after 24 hours for post operative follow up.

## **III. Discussion:**

The etiology behind the formation of the supernumerary tooth in mandibular molars is still unclear. Attributes can be made to racial genetic factors which can be atavistic or polygenetic factors

On ex-situ examination of the first mandibular molar, an extra distobuccal root was found to be present (Fig 3,4) . Hence it is called Radix Paramolaris, based on its location of occurrence.

Radix Paramolaris is extremely rare as compared to the occurrence of Radix Entomolaris. According to Visser, the prevalence of Radix Paramolaris for mandibular 1<sup>st</sup> molars is 0% , for mandibular 2<sup>nd</sup> molars is 0.5% , and for mandibular 3<sup>rd</sup> molars is 2%. [2]

### **Classification :**

Carlsen and Alexandersen (1991) classified Radix Paramolaris into two different types-

Type A :- Cervical part is located on the mesial root complex

Type B :- Cervical part is located centrally between the mesial and distal root complexes.

The dimensions of the Radix Paramolaris can vary from a short conical extension to a mature root, which can be separated or fused. Literature also suggests that an additional root is moreover associated with an additional cusp on the tooth. [2]

In this case, the 1<sup>st</sup> mandibular molar exhibits Type B morphology (Carlsen and Alexandersen classification), i.e., the cervical part is located centrally between the mesial and the distal roots. The Radix Paramolaris is shorter in height and all other dimensions. It extends only up to half the length of the distal root.

#### **IV. Conclusion :**

The Knowledge and understanding of the presence such anatomic variations of a supernumerary root is essential for determining the etiology and accurate planning of the treatment for the patients. Such missed root canals may compromise the prognosis of the tooth by harbouring infected organic tissue. Further mandibular 1<sup>st</sup> molars have comparatively lower success rate following root canal treatment, due to factors like missed canals, for the same reason, 1<sup>st</sup> molars have a high rate of extraction and early identification of the extra root will minimize complications related to Exodontia, like root breakage. Also, the role of radiographs in early identification of the extra root, thereby aiding in proper treatment planning, cannot be denied.

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**Fig.1**

Intraoral examination revealing carious 36 with a small pus point on the buccal aspect



**Fig.2**

Orthopantomogram showing diffuse radiolucency around the mesial root and on the mesial aspect of distal root with periapical radiolucency around the mesial root. Third root (radix paramolaris) noticed arising from the mesial aspect of the distal root. Deep Carious lesion is seen on the distal aspect of 36 involving the pulp.



**Fig 3**  
Extracted 36 with



**fig 4**  
radix paramolaris



**Fig.5**