



ISSN Print: 2394-7489  
ISSN Online: 2394-7497  
IJADS 2018; 4(4): 305-307  
© 2018 IJADS  
www.oraljournal.com  
Received: 20-08-2018  
Accepted: 23-09-2018

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## **A cross sectional survey on prevalence of radix entomolaris or paramolaris in mandibular first molars in central Indian population**

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### **Abstract**

The aim of this present study was to evaluate the frequency of Radix Entomolaris or Paramolaris in Central Indian population. The clinician should be familiar with the ethnic variations in root and root canal morphology while treating the mandibular first and second molars. The diagnosis of any variation from normal with respect to the number of roots or root canals is an important factor in determining the success of endodontic therapy. The primary objective of root canal therapy, i.e., proper cleaning and debridement of the root canal, followed by three-dimensional obturation largely depends on the familiarity of the clinician with the complexities of the root canal system.

**Keywords:** Radix entomolaris, Central India, molars, prevalence

### **Introduction**

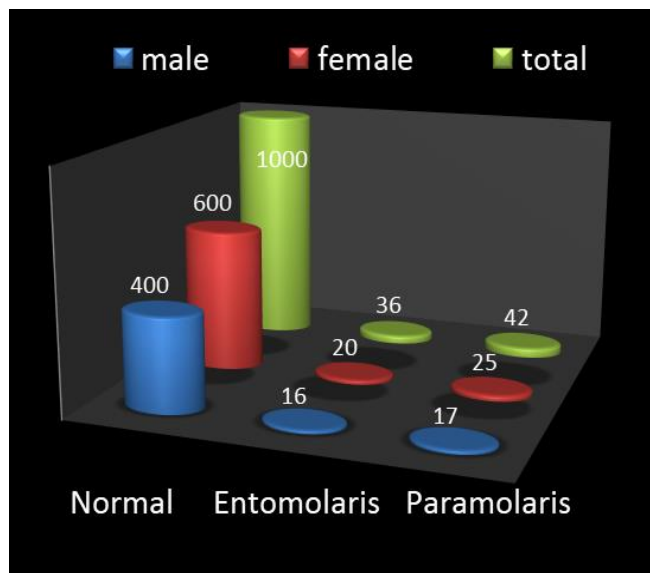
Successful root canal treatment depends upon the complete elimination of micro-organisms. Mandibular molars usually have two roots. However, occasionally three roots are present with two or three canals in the mesial and one, two, or three canals in the distal root. De Moor *et al.* reported that mandibular first molars occasionally have an additional distolingual root (radix entomolaris, RE) [1]. The occurrence of these three-rooted mandibular first molars is less than 3- 5%. Knowledge of its occurrence is important for endodontic considerations. A main variant in the mandibular molars is the presence of a supernumerary distolingual root (radix entomolaris [RE]) in the mandibular first molars and fused roots in the mandibular second molars [2, 3]. The supernumerary distolingual root was first mentioned by Carabelli and has been classified depending on the degree of curvature by many authors various previous epidemiological studies carried out in patients or on extracted teeth have already pointed out that this variation has a greater frequency in indigenous people of Eastern Asia, Southeast Asia, and the Arctic region of North America (5–30%) as compared to Caucasian populations (4%), and thus is seen as an Asiatic trait [4, 5]

### **Materials & Method**

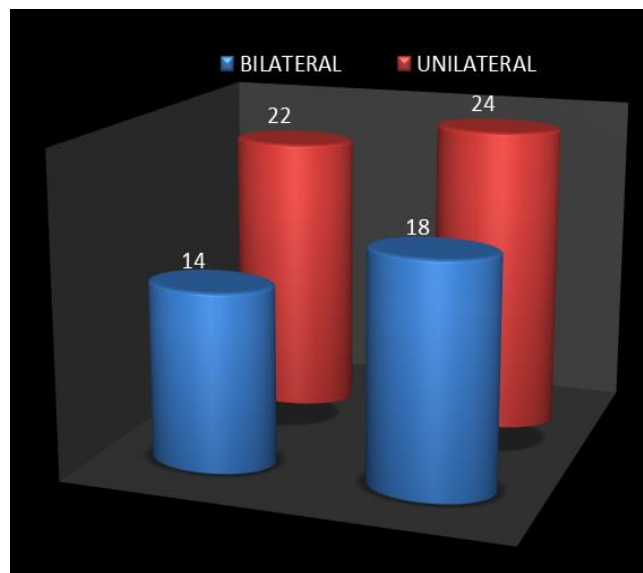
1000 intraoral periapical radiographs and OPG were randomly collected from radiology department in dental colleges of central India, between July 2016 to December 2016. Each of these patients had to be of North Indian origin and of at least 18 years of age. Personal details of age and gender were also recorded. The radiographs were separately inspected by two endodontists after placing them over a viewing box using magnifying glasses. The criteria for the identification of an extra root were justified by crossing of the translucent lines defining the pulp space and periodontal ligaments in the mandibular first molars, and for the mandibular second molars, the outline of the periodontal ligament was followed to see the presence of the fused roots, where the outline was confluent at the apex.

### **Results**

The total percentage of an extra distolingual root in mandibular first molars and fused root in mandibular second molars and their occurrence on the basis of gender and side were assessed using the Chi-square test( Table 1and 2, Graph 1 & 2).



**Graph 1:** prevalence of Radix entomolaris and paramolaris in male and female patient in central India population



**Graph 2:** Unilateral and Bilateral prevalence of Radix entomolaris and paramolaris in male and female patient in central India population

**Table 1:** Showing Unilateral and Bilateral prevalence of Radix entomolaris and paramolaris in male and female patient in central India population

	Entomolaris n (%)	Paramolaris n (%)
Bilateral	14 (38%)	18(42%)
Unilateral	22(61%)	24(57%)

**Table 2:** Showing percentage of Radix entomolaris and paramolaris in male and female patient in central india population

Gender	Subjects n (%)	Entomolaris n (%)	Paramolaris N (%)	Chi. sq. Value	P value
Male	400 (40%)	16(4%)	17(4.2%)	1.85	0.15(NS)
Female	600(60%)	20(3.3%)	25(4.1%)		
Total	1000	36(3.6%)	42(4.2%)		

**Discussion**

Among the mandibular second molars, the prevalence of teeth having bilateral entomolaris is 14 (38%) and bilateral paramolaris is 18(42%) of all the teeth examined. To the best of our knowledge, no study -has been published in central Indian population reporting the prevalence of fused roots in mandibular second molars. The results of this study are lower than the study on extracted teeth in a South-Chinese population in which 52% of the teeth studied showed a complete fusion and 55% of the teeth showed only two canals [6, 7] The incidence of root fusion and thus C-shaped root canal system is reported to be higher in Asian patients. In the present study, the females had a higher frequency of occurrence of this trait, but the difference on the basis of side was non-significant [8]

A radiographic detection of fusion on either buccal or lingual side is difficult, but radiographs present a noninvasive method for epidemiological studies on the basis of gender and side occurrence [9] The availability of extracted teeth has declined because of the improvements in general dental practice and nonsurgical endodontic therapy. Moreover, it is not possible to make inter-study comparisons relating to gender and bilateral differences unless detailed recordings were performed before tooth extractions. Walker and Quackenbush reported that the third root of the mandibular first molar radiographs was typical and readily evident in radiographs in 90% of cases [10] Clinically, additional radiographs with mesial and distal angulations may be helpful. Computed tomography (CT) or cone beam CT might be a more beneficial tool in this respect, but considering the

added radiation and cost, periapical radiography seems to be a satisfactory tool.

**Conclusion**

Anatomical variations are present in many cases and there proper diagnosis is mandatory for proper treatment outcomes. Presence of extra roots/ radix can also affect the treatment success, if untreated all the practitioners must be familiar with all variations to reduce failures caused by missing canals and roots.

**References**

1. De Moor RJ, Deroose CA, Calberon FL. The radix entomolaris in mandibular first molars: an endodontic challenge. *Int Endod J.* 2004; 37:789-799.
2. Hou GL, Tsai CC. The morphology of root fusion in Chinese adults (I). grades, types, location and distribution. *J Clin Periodontol.* 1994; 21:260-4.
3. Al Shalabi RM, Omer OE, Glennon J, Jennings M, Claffey NM. Root canal anatomy of maxillary first and second permanent molars. *International Endodontic Journal.* 2000; 33:405-14.
4. Gulabivala K, Aung TH, Alavi A, Mg YL. Root and canal morphology of Burmese mandibular molars. *Int Endod J.* 2001; 34:359-370
5. Slowey RE. Root canal anatomy: road map to successful endodontics. *Dent Clin N Am.* 1979; 23:555-573.
6. Chandra SS, Chandra S, Shankar P, Indira R. Prevalence of radix entomolaris in mandibular permanent first molars: A study in a South Indian population. *Oral Surg*

Oral Med Oral Pathol Oral Radiol Endod. 2011; 112:e77-82.

7. Goerig AC, Neaverth EJ. A simplified look at the buccal object rule in endodontics. *J Endod.* 1987; 13:570-2.
8. Krell KV, Johnson RJ, Madison S. Irrigation patterns during ultrasonic canal instrumentation. Part I. K-type files. *J Endod.* 1988; 14:65-8.
9. Teplitsky PE, Chenail BL, Mack B, Machnee CH. Endodontic irrigation – A comparison of endosonic and syringe delivery systems. *Int Endod J.* 1987; 20:233-41.
10. Walker RT, Quackenbush LE. Three-rooted lower first permanent molars in Hong Kong Chinese. *Br Dent J.* 1985; 159:298-9.