

## Morphological Variability In Mandibular Posteriors- Too Weird To Navigate, Too Rare To Detect

<sup>1</sup>Dr. Anil K Tomer, <sup>2</sup>Dr. Ayushi Khandelwal, <sup>3</sup>Dr. Nitika Verma,  
<sup>4</sup>Dr. Kanika, <sup>5</sup>Dr. Anooja V Chandran, <sup>6</sup>Dr. Ayan Guin, <sup>7</sup>Dr. Shivangi Jain

**\*Corresponding Author:**  
**Dr. Ayushi Khandelwal**

Type of Publication: Original Research Paper  
Conflicts of Interest: Nil

### Abstract

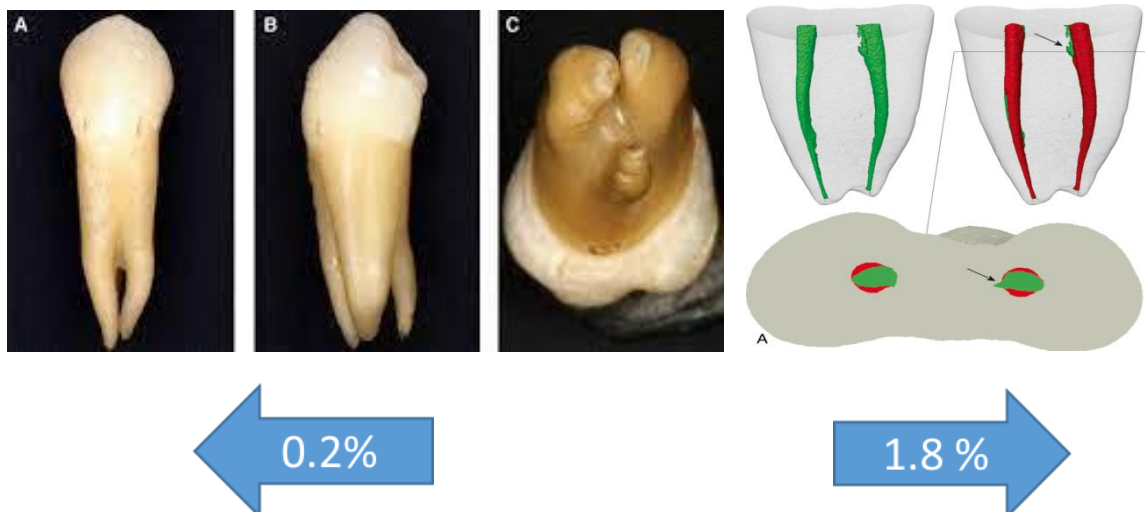
When endodontically diagnosing and evaluating the morphology and anatomy of roots and root canals, especially in multirooted teeth, clinicians must exercise extremely keen vision and give careful attention to minute details. Fundamental knowledge of the most common anatomic characteristics and the possible variations of these characteristics is necessary to provide successful endodontic therapy. While all mandibular posteriors have significant variations in roots and root canal configuration, mandibular posteriors perhaps present the biggest challenge. This article highlights the endodontic management of a mandibular posteriors with extra roots and one canal in each root along with orifice location assessment using developmental root fusion lines. Also a brief on future goals to achieve a better prognosis by using guided navigation methods.

**Keywords:** NIL

### Introduction

Over the years , it has been established that knowledge of common root canal morphology and its frequent variations is a basic requirement for endodontic success. Slowey has suggested that mandibular first premolar often called as “Endodontist’s enigma,” may present the greatest difficulty of all teeth to perform successful endodontic treatment.

Generally permanent mandibular first molar .....



But the number of roots for the mandibular first molar teeth may also vary due to external factors during odontogenesis. Mandibular first molars with supernumerary roots were the first to report. The third root was located on the disto-lingual side and was called Radix Entomolaris (RE).



The mandibular first molar can also have an additional root at the mesio-buccal side, called radix paramolaris.

### Case Report 1

A 15-year-old male patient referred to Department of conservative dentistry and endodontics following Orthodontic treatment presented with dull aching pain while chewing food on mandibular right first molar (tooth 46). Following clinical and radiographic evaluation, a diagnosis of pulp necrosis and presence of 2 distal roots was made and root canal treatment was started under rubber dam isolation.

After achieving adequate anesthesia, access opening was performed.

Exploration of the pulp chamber floor using an endodontic explorer revealed an extra canal orifice situated distolingually and confirmed the presence of RE.

Routine endodontic treatment was performed.

#### PRE-OPERATIVE i.r.t 46



#### WL DETERMINATION



#### MASTER CONE



#### OBTURATION



### Case Report 2:

1. A 27 year old male patient was referred to the Post Graduate Department of Conservative Dentistry and Endodontics with the chief complaint of severe pain and extraoral swelling in relation to lower right posterior teeth(45). The pain was severe, lancinating and

continuous in nature which aggravated on chewing.

2. The tooth was tender on percussion. Preoperative periapical radiographic examination revealed caries involving pulp, the presence of two roots with widening of the apical periodontium.
3. Acute apical periodontitis was the diagnosis.

4. The working length radiograph was taken which confirmed the presence of a single coronal canal bifurcating in the coronal one .The two canals exited in separate apical foramina located in the respective roots.
5. The canals were cleaned and shaped, irrigated using 3% sodium hypochlorite and a final rinse with saline.
6. Open dressing was given.And patient was recalled after 2 days.
7. In next appointment extraoral swelling subsides. Canal was irrigated thoroughly and an

intra canal medicament (calcium hydroxide) with oral antibiotic supplements were given for 5 days.

8. After that,on next appointment patient got relieved from pain ,canal was irrigated thoroughly with saline,dried with paper points and master cone x-ray was taken. Obturation was done.(apexit plus sealer).
9. A post obturation radiograph was taken to evaluate the quality of obturation.Post endo restoration was done.

**PPREOPERATIVE i.r.t 45**



**WL DETERMINATION**



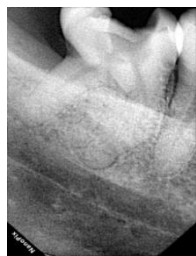
**MASTER CONE**



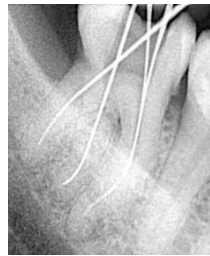
**OBTURATION**



**CASE REPORT 3- Radix Entomolaris I.R.T 48**



**PREOPERATIVE i.r.t 48**



**WL DETERMINATION**



**MASTER CONE**



**OBTURATION**

**Discussion**

**How Can We Overcome The Frightening Situation Of Missed Canal??**

1. Improvements on radiodiagnostic test such as Cone Beam Computed Tomography (CBCT) has enabled better knowledge of root canal system location and distribution, improving the root canal treatment success rate.
2. In addition, the development of computer-aided static (SN) and dynamic (DN) navigation techniques has helped to guide drilling during endodontic access cavity procedures.

3. Computer-aided navigation techniques enable more accurate and safer endodontic access to cavities than conventional freehand techniques .
4. Inaccurate endodontic access cavities may lead to intraoperative complications such as overextended access cavities, crown perforation, root perforation, missed root canals, fracture of root canal instruments during canal preparation , or weakening of the coronal structure.

**Conclusion**

1. When endodontically diagnosing and evaluating the morphology and anatomy of roots and root canals, especially in multirooted

teeth, clinicians must exercise extremely keen vision and give careful attention to minute details.

2. Fundamental knowledge of the most common anatomic characteristics and the possible variations of these characteristics is necessary to provide successful endodontic therapy. While all mandibular posteriors have significant variations in roots and root canal configuration, mandibular posteriors perhaps present the biggest challenge.
3. The use of digital technology is essential. The presented modification may become current and relevant as populations data reveal more and more molars in need of endodontics among aged adults.

### References

1. Jørgen Buchgreitz, DDS,\* Mikkil Buchgreitz, DDS,\*and Lars Bjørndal, DDS, PhD, Dr Odont, DSc†. Guided Endodontics Modified for Treating Molars by Using an Intracoronar Guide Technique. (J Endod 2019;:-1–6)
2. Samant P S 1, Tiwari T2, Somanath G3, Acharya N4. Mandibular first premolar with two roots:a morphological variation - two case reports. Journal of Nepal Dental Association | Vol. 13, No. 1, January-June, 2013
3. Ajit Hindlekar1 and Rasika kashikar2\*. Case Reports on Rare Anatomical Variation-Radix Entomolaris. Journal of General Dentistry 2022, Vol.3, Issue 2, 001-004
4. Álvaro Zubizarreta-Macho 1,\* , Sara Valle Castaño 1, José María Montiel-Company 2 and Jesús Mena-Álvarez 1. Effect of Computer-Aided Navigation Techniques on the Accuracy of Endodontic Access Cavities: A Systematic Review and Meta-Analysis. Biology 2021, 10, 212.