

RADIX ENTOMOLARIS

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Treatment of a Mandibular First Molar with Distolingual Root

Abstract

Mandibular molars may present anatomical variations such as an additional distal root (Radix Entomolaris). This report discusses the diagnosis and root-canal treatment of a mandibular first molar with Radix Entomolaris.

Learning objectives

After reading this article, the reader should be able to:

- Identify Radix Entomolaris and Radix Paramolaris
- Understand the genetic occurrences of Radix Entomolaris
- Learn how to treat for Radix Entomolaris

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Introduction

The main objective of endodontic therapy is the three-dimensional obturation of the root-canal system after cleaning, shaping, and filling procedures.¹ It is generally accepted in the literature that the reasons for the failure of the root-canal treatment are the inability to locate all the root canals, remove all the pulp tissue and microorganisms, and adequately obturate the whole space of the root-canal system.²⁻⁵ A deep knowledge of aberrant canal morphology is necessary for a successful root-canal treatment.

Mandibular first molars normally present two differentiated roots (one mesial and one distal), and three canals (two mesial and one distal) or four canals (two mesial and two distal), but anatomical variations are not uncommon, like the presence of three mesial canals, or the presence of three distal canals.⁶⁻¹⁰

The most common anatomical variation in this tooth was first mentioned in the literature by Carabelli (1844)—which consisted of a third root, located lingually—later termed Radix Entomolaris (Bolk, 1915). When this third root is located buccally, it is called Radix Paramolaris.¹¹⁻¹³

The distolingual root can be partially fused with the other roots, or separated.¹³ The root length of the distolingual roots in Radix Entomolaris is generally shorter than the distobuccal roots.¹⁴ Also, distolingual roots have a greater angle of curvature and a smaller radius of curvature in a buccolingual orientation.¹⁵

The location of the distolingual root-canal entrance is usually slightly extended in a distolingual direction—therefore, the access opening to the root canal has to be modified into a trapezoidal cavity.^{15, 16}

The prevalence of this morphological feature in mandibular molars appears to be less than 5 percent in Eurasian and Indian populations, less than 4.2 percent of Europeans, less than 3 percent in African populations, and 5 percent to more than 40 percent of the population with Mongolian traits. The three-rooted variation of the mandibular first molar seems to be a genetic characteristic in Mongoloid populations. This morphological variation may also appear in second and third mandibular molars.¹⁴⁻²⁰

The following report describes the diagnosis and root-canal treatment of one case of Radix Entomolaris.

Case report

A 41-year-old Caucasian female, with no relevant medical history, presented decay on the mesial of tooth #3.6 (Fig. 1). Radiographic examination clearly showed the outlines of a second distal root (Fig. 2).

Clinical diagnosis

No evidence of vertical or horizontal percussion, buccal palpation sensitivity, mobility or periodontal probes was found. There was, however, a high response to a cold pulp test. Radiographic examination showed no signs of apical periodontitis (Fig. 2).

Treatment

The situation was explained to the patient and the decay would be removed to ascertain whether there is pulp communication.

Under local anesthesia with 2 percent lidocaine and proper rubber dam isolation with clamp #7, carious exposure of the pulp was determined (Fig. 3) and root-canal therapy initiated. Access preparation to pulp chamber was completed. The root



Fig. 1
Preoperative radiograph of #3.6. Mesial decay close to the pulp.

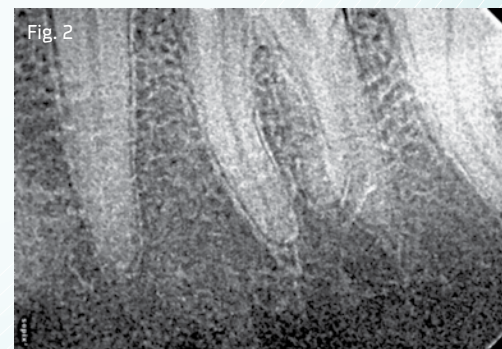


Fig. 2
Radiographic examination showing the outlines of a second distal root.



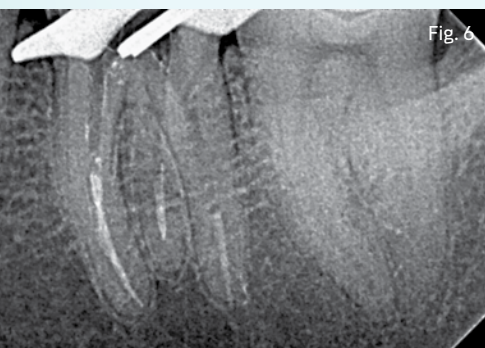
Fig. 3
Carious exposure of the pulp



Radiographic work lengths



Gutta-percha cone fit



Downpack radiograph (above)
Backfilling radiograph (below)



It is generally accepted in the literature that the reasons for the failure of the root-canal treatment are the inability to locate all the root canals, remove all the pulp tissue and microorganisms, and adequately obturate the whole space of the root-canal system. A deep knowledge of aberrant canal morphology is necessary for a successful root-canal treatment.

canals were located using an endodontic explorer (DG-16) and dentinal map appeared to be slightly extended in a disto-lingual direction.

The access opening to the root canals was modified with an ultrasonic tip into a trapezoidal cavity. Canal orifices were enlarged with an SX rotary file (ProTaper Universal—DENTSPLY). All canals were instrumented with a size 08, 10, and 15K file to obtain manual glide path. Working length was established, both using the electronic apex locator and radiographically (Fig. 4):

MB 21mm – Ref. MB
ML 23mm – Ref. ML
DB 23mm – Ref. DB
DL 22mm – Ref. DL

Apical patency was maintained during all the instrumentation with a 08K file to prevent blockage of the apical foramen and to maintain the working length.

The “shaping for cleaning” was completed using MTwo (VDW) nickel-titanium (NiTi) rotary instruments. The instrumentation sequence for all the root canals was size 10/04, 15/05, 20/06 and 25/06. During the instrumentation, root canals were irrigated using 5 percent sodium hypochlorite (NaOCl) solution.

Apexes were calibrated with a 25K

file, and gutta-percha cones were calibrated as well to 0.25mm using a tip-snip device, and disinfected in a 5 percent sodium hypochlorite (NaOCl) solution for one minute.

The final irrigation protocol was performed by alternating 5 percent sodium hypochlorite solution (NaOCl), 18 percent ethylenediaminetetraacetic acid (EDTA), and 5 percent sodium hypochlorite (NaOCl) solution. This final irrigation protocol was associated to passive ultrasonic activation for one minute. The root canals were dried using Surgitip-endo, an endodontic aspirating tip for the root canal (ROEKO-COL-TENE), and paper points. Obturation was performed with the warm vertical condensation technique and AH Plus sealer (DENTSPLY) (Figs. 5-8).

Access cavity was restored with a glass ionomer base and composite A3.5 and A3 using sectional technique (Figs. 9-10, pp. 139 and 140). Periodical controls were advised.

Discussion

The root canal presents complex morphology systems. This was described for the first time by Walter Hess (1925).²¹ Currently, new technologies, such as micro-CT, offer a noninvasive reproducible technique for the 3D assessment of

root-canal systems. This allows clinicians to study ex vivo dimensional variations of the root-canal systems.^{19, 20, 22-26}

The prevalence of Radix Entomolaris is directly related to the ethnicity of the population with Mongolian traits (5 percent to more than 40 percent). Therefore, the three-rooted variation of the mandibular first molar must be considered a normal anatomical occurrence in the Asiatic racial background.¹⁴⁻²⁰

De Moor classified the distolingual root of first mandibular molars into three types, according to the canal curvature: Type I (straight root), Type II (an initially curved entrance and then continuing as a straight root), and Type III (a curvature in the coronal third and buccal curvature from the middle third or apical third of the root).^{16, 20}

In this case, the distolingual root was straight in the coronal third and continued with a buccal curvature in the middle third. In most cases, the Radix Entomolaris is situated in the same buccolingual plane as the distobuccal root. This superimposition of both roots can appear on the preoperative radiograph, resulting in an inaccurate detection. Distal angle (30°) radiographic examination or CBCT can clearly reveal the outlines and curvature of a second distal root.^{14, 15, 27}

The examination of the pulp-chamber floor anatomy reveals the location of the distolingual root. For this reason, the access opening was modified into a trapezoidal cavity.^{13, 14, 17, 26, 28}

In the presented case, coronal flaring of the root canals was carried out using SX NiTi rotatory file (ProTaper Universal, DENTSPLY), and the shaping for cleaning was done with Mtwo (VDW) NiTi rotatory files until 25/06. During all the canal preparation, patency was confirmed with a 08K file. In case of severe canal curvature, it is recommended to use flexible NiTi instruments, in order not to remove an excessive amount of dentin in the lingual side of the curvature of the Radix Entomolaris. This avoids complications during the mechanical



Fig. 8
Occlusal view of the pulp-chamber floor and obturated root canals. Notice the modified access opening extended in a distolingual direction (red arrow).



Fig. 9
Immediate postoperative. Access cavity restored with glass ionomer and composite resin

Distolingual roots in mandibular first molars have a greater angle of curvature and a smaller radius of curvature in a buccolingual orientation. For severe canal curvature, it is recommended not to remove an excessive amount of dentin in the lingual side of the curvature, in order to avoid complications during mechanical preparation of the root canal.



Postoperative radiograph

preparation such as stripping, perforation or instrument separation.^{13, 29-33} However, instrument choice and sequence remains a personal decision of the clinician, depending on the case.

After mechanical preparation of the canals, apices were calibrated using a 25K file, as well as gutta-percha tips using a tip-snip device, to a 0.20 mm, in order to improve apical fit.³⁴

Sodium hypochlorite was used throughout instrumentation. Once the shaping was completed, the final irrigation protocol for an effective smear layer removal was employed as follows: 5 percent sodium hypochlorite

solution followed by 18 percent ethylenediaminetetraacetic acid (EDTA), and a final rinse of 5 percent sodium hypochlorite solution. This irrigation protocol was carried out using passive ultrasonic activation.³⁵

Root-canal system obturation was performed with warm vertical condensation technique³⁶⁻⁴⁰ and AH plus sealer. In the literature, there are no statistically significant differences reported when comparing different obturation techniques.⁴¹⁻⁴⁴

The access cavity was restored with a glass ionomer base and composite A3.5 and A3 using a sectional technique

with mesial cusp coverage. Segmented stratification of composite resin prevents contraction of this restoration material.⁴⁵

Conclusion

Anatomical occurrence of Radix Entomolaris in the mandibular first molar is directly related to the ethnicity of the population studied. This variation appears to be a genetic characteristic in Mongoloid populations. Distal angle (30°) radiographic examination or CBCT can clearly reveal the outlines and curvature of a second distal root.

The presence of extra roots/canals requires an access-opening modification. Therefore it is essential to examine carefully the chamber-floor anatomy. Distolingual roots in mandibular first molars have a greater angle of curvature and a smaller radius of curvature in a buccolingual orientation. For severe canal curvature, it is recommended not to remove an excessive amount of dentin in the lingual side of the curvature, in order to avoid complications during mechanical preparation of the root canal. ■

References

- Schilder H. Cleaning and shaping the root canal. *Dent Clin North Am.* 1974Apr; 18(2):269–96.
- Berman LH, Hargreaves KM, Cohen SR. *Cohen's Pathways of the Pulp Expert Consult.* 10th ed. Mosby; 2010.
- Ingle JL, Bakland LK. *Endodontics – 5th ed.* Bc Decker. Inc; 2002.
- Antonopoulos KG, Attin T, Hellwig E. Evaluation of the apical seal of root canal fillings with different methods. *Journal of Endodontics.* 1998Sep;30; 24(10):655–58.
- Sjogren U, Hagglund B, Sundqvist G, Wing K. Factors affecting the long-term results of endodontic treatment. *Journal of Endodontics.* 1990Oct; 16(10):498–504.
- Acharya N, Singh A, Samant PS, Gautam V. Endodontic management of radix paramolaris with six canals: a clinical case report. *Kathmandu Univ Med J (KUMJ).* 2013Sep;30;11(44):338–41.
- Puri S, Ponnappa KC, Pandya M, Patel K. Mandibular first molar with multiple canals report of two cases. *International Journal of Dental Clinics.* 2011;3(1):94–95.
- Bains R, Verma K, Loomba K, Bains VK, Loomba A. Mandibular First Molar with Middle Distal Canal: A Case Report. *Journal of Oral Health & Community Dentistry.* 2013;7(1).
- Navarro LF, Luzi A, García AA, García AH. Third canal in the mesial root of permanent mandibular first molars: review of the literature and presentation of 3 clinical reports and 2 in vitro studies. *Med Oral Patol Oral Cir Bucal.* 2007Nov;30;12(8):E605–9.
- Fabra-Campos H. Three canals in the mesial root of mandibular first permanent molars: a clinical study. *Int Endod J.* 1988Dec;31;22(1):39–43.
- Lunkaszpie von GC. *Systematisches Handbuch der Zahnheilkunde.* 1831.
- Bolk L. Bemerkungen über Wurzelvariationen am menschlichen unteren Molaren. *Zeitschrift für Morphologie und Anthropologie.* E. Schweizerbart'sche Verlagsbuchhandlung; 1915Jan.1;17(3):605–10.
- Calberson FL, De Moor RJ, Deroose CA. The Radix Entomolaris and Paramolaris: Clinical Approach in Endodontics. *Journal of Endodontics.* Elsevier; 2007Jan.;33(1):58–63.
- Cantatore G, Berutti E, Castellucci A. Missed anatomy: frequency and clinical impact. *Endodontic Topics.* Wiley Online Library; 2006;15(1):3–31.
- Abella F, Patel S, Durán-Sindreu F, Mercadé M, Roig M. Mandibular first molars with distolingual roots: review and clinical management. *Int Endod J.* 2012Jun.11;45(11):963–78.
- De Moor RJG, Deroose CAJG, Calberson FLG. The radix entomolaris in mandibular first molars: an endodontic challenge. *Int Endod J.* 2004Oct;31;37(11):789–99.
- de Pablo OV, Estevez R, Heilborn C, Cohen N. Root anatomy and canal configuration of the permanent mandibular first molar: Clinical implications and recommendations. *Quintessence Int (Berl).* 2011Dec;31;43(1):15–27.
- Chen G, Yao H, Tong C. Investigation of the root canal configuration of mandibular first molars in a Taiwan Chinese population. *Int Endod J.* 2009Nov;42(11):1044–9.
- Gu Y, Lu Q, Wang H, Ding Y, Wang P, Ni L. Root canal morphology of permanent three-rooted mandibular first molars—part I: pulp floor and root canal system. *Journal of Endodontics.* Elsevier; 2010;36(6):990–4.
- Gu Y, Lu Q, Wang P, Ni L. Root Canal Morphology of Permanent Three-rooted Mandibular First Molars: Part II—Measurement of Root Canal Curvatures. *Journal of Endodontics.* 2010Jul;31;36(8):1341–6.
- Hess W. Formation of Root-canals in Human Teeth *J Am Dent Assoc* 8 (1921), pp. 704–34.
- Plotino G, Grande NM, Pecci R, Bedini R, Pameijer CH, Somma F. Three-dimensional imaging using microcomputed tomography for studying tooth macromorphology. *JADA.* 2006Oct;26;137:1555–61.
- Grande NM, Plotino G, Gambarini G, Testarelli L, D'Ambrosio F, Pecci R, et al. Present and future in the use of micro-CT scanner 3D analysis for the study of dental and root canal morphology. *Ann. Ist. Super. Sanita.* 2012;48(1):26–34.
- Somma F, Leoni D, Plotino G, Grande NM, Plasschaert A. Root canal morphology of the mesiobuccal root of maxillary first molars: a micro-computed tomographic analysis. *Int Endod J.* 2009Jan;31;42(2):165–74.
- Kim Y, Chang S-W, Lee J-K, Chen I-P, Kaufman B, Jiang J, et al. A micro-computed tomography study of canal configuration of multiple-canal mesiobuccal root of maxillary first molar. *Clin Oral Invest.* 2013Jun;30;17(6):1541–6.
- Souza-Flamini LE, Leoni GB, Chaves JFM, Versiani MA, Cruz-Filho AM, Pécora JD, et al. The Radix Entomolaris and Paramolaris: A Micro-Computed Tomographic Study of 3-rooted Mandibular First Molars. *Journal of Endodontics.* Elsevier; 2014May;1-6.
- Abella FF, Mercadé MM, Durán-Sindreu FF, Roig MM. Managing severe curvature of radix entomolaris: three-dimensional analysis with cone beam computed tomography. *Int Endod J.* 2011Aug;31;44(9):876–85.
- Krasner P, Rankow HJ. Anatomy of the pulp-chamber floor. *Journal of Endodontics.* 2004Jan.;30(1):5–16.
- Uroz-Torres D, González-Rodríguez MP, Ferrer Luque CM. Effectiveness of a manual glide path on the preparation of curved root canals by using Mtwo rotary instruments. *Journal of Endodontics.* 2009May;35(5):699–702.
- Uroz-Torres D, González-Rodríguez MP, Ferrer-Luque CM. Shaping ability of Mtwo and Twisted File rotary systems in curved root canals. *J Clin Exp Dent.* 2012;;e275–80.
- Busquin SSK, França RC, Siqueira EL, Santos dos M. Evaluation of canal transportation and centering ability of two nickel-titanium rotary instruments. *Clinical and Laboratory Research in Dentistry.* 2014;20(1):10–5.
- Sonnag D, Ott M, Kook K, Stachniss V. Root canal preparation with the NiTi systems K3, Mtwo and ProTaper. *Aust Endod J.* 2007Jul;31;33(2):73–81.
- Hälsmann M, Peters OA, Dummer PM. Mechanical preparation of root canals: shaping goals, techniques and means. *Endodontic Topics.* Wiley Online Library; 2005;10(1):30–76.
- Silva EJ, Rocha AC, Ferreira C, Herrera DR, Coutinho-Filho TS. Assessment of the tip surface of gutta-percha cones after different cutting methods. *Acta Odontol Latinoam.* 2011;24(3):236–9.
- Young GR, Parashos P, Messer HH. The principles of techniques for cleaning root canals. *Aust Dent J.* 2007Feb;28;52(1 Suppl):S52–S63.
- Schilder H. Filling root canals in three dimensions. 1967. *J Endod.* 2006. p. 281–90.
- Buchanan LS. Filling root canal systems with centered condensation: concepts, instruments, and techniques. *Dent Today.* 2004Oct;31;23(11):102–passim.
- Ruddle CJC. Filling root canal systems: the Calamus 3-D obturation technique. *Dent Today.* 2010Mar;31;29(4):76–81.
- Venturi MM, Breschi LL. Evaluation of Apical Filling After Warm Vertical Gutta-Percha Compaction Using Different Procedures. *Journal of Endodontics.* 2004May;31;30(6):436–40.
- Castellucci A. *Endodontics. Il Tridente (Firenze);* 2005.
- Peng L, Ye L, Tan H, Zhou X. Outcome of root canal obturation by warm gutta-percha versus cold lateral condensation: a meta-analysis. *Journal of Endodontics.* 2007Jan;31;33(2):106–9.
- Hugh CL, Walton RE, Facer SR. Evaluation of intracanal sealer distribution with 5 different obturation techniques. *Quintessence Int (Berl).* 2005Oct.;36(9):721–9.
- Agrabawi JA. Outcome of endodontic treatment of teeth filled using lateral condensation versus vertical compaction (Schilder's technique). *J Contemp Dent Pract.* 2006Feb;14;7(1):17–24.
- De-Deus G, Gurgel-Filho ED, Maniglia-Ferreira C, Coutinho-Filho T. Influence of the filling technique on depth of tubular penetration of root canal sealer: a scanning electron microscopy study. *Braz. J Oral Sci.* April/June 2004;3(9):433–8.
- Manauta J, Salat A. *Layers.* Quintessence Publishing (IL); 2012.

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- 1) **Which is the most common anatomical variation in the first mandibular molar?**
 - A) Radix Paramolaris
 - B) Third canal in the mesial root
 - C) Radix Entomolaris
 - D) Third canal in the distal root
- 2) **In Mongoloid populations, the prevalence of this morphological feature in mandibular molars appears to be:**
 - A) Less than 5%
 - B) Less than 4.2%
 - C) 5% to more than 40%
 - D) Less than 6%
- 3) **Radix Paramolaris is an anatomical variation which consisted in:**
 - A) A third root located lingually in the first mandibular molar
 - B) A third root located lingually in the first maxillary molar
 - C) A third root located buccally in the first mandibular molar
 - D) Three mesial canals
- 4) **De Moor classified the distolingual root of the first mandibular molars:**
 - A) Type I: Curvature in the coronal third and straight continuation to the apex
 - B) Type I: No curvature
 - C) Type II: Curvature in the coronal third and buccal curvature from the middle third or apical third of the root
 - D) Type III: Curvature in the coronal third and lingual curvature from the middle third or apical third of the root
- 5) _____ **radiographic examination can clearly reveal the outlines and curvature of a second distal root.**
 - A) Mesial angle (30°)
 - B) Mesial angle (45°)
 - C) Mesial angle (90°)
 - D) Distal angle (30°)
- 6) **The access opening in Radix Entomolaris is**
 - A) Slightly extended in a disto-buccal direction
 - B) Modified into a circular cavity
 - C) Slightly extended in a disto-lingual direction
 - D) Modified into a triangular cavity
- 7) _____ **can clearly reveal the outlines and curvature of a second distal root.**
 - A) Examination of the pulp chamber floor
 - B) Distal angle (90°) radiographic examination
 - C) CBCT
 - D) Mesial angle (90°) radiographic examination
- 8) **Which irrigant is suggested for an effective smear layer removal:**
 - A) Sodium hypochlorite
 - B) Ethylenediaminetetraacetic acid (EDTA)
 - C) Chlorhexidine
 - D) Orthophosphoric acid
- 9) **How many types of curvature of RE have been classified by De Moor?**
 - A) 2
 - B) 3
 - C) 4
 - D) 5
- 10) **The RE appears to be:**
 - A) A dentin mineralization defect
 - B) Structural anomalies of enamel
 - C) A genetic characteristic in Mongoloid populations
 - D) The less common anatomical variation in mandibular molars

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by *Andrés Villanueva Ortiz, DDS, and Juan Carlos Lema Rama, DDS*

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