Prima Journal of Oral and Dental Sciences
Vol.5, No.1, April 2022, hal.36-39
ISSN: 2615-1235 (online)
http://jurnal.unprimdn.ac.id/index.php/PrimaJODS

Management of five root canals in mandibular first molar tooth: A case report

Daryono[1]*

[1]*Departemen Konservasi Gigi, Fakultas Kedokteran Gigi Universitas Prima Indonesia*

ARTICLE INFO

***Corresponding Author**
Email: drgmdz_mail@yahoo.com

DOI: 10.34012/primajods.v5i1.2580

ABSTRACT

The five root canals configuration is one of the abnormal morphology of molar teeth commonly found in the mandibular first molar. The treatment of mandibular first molar with five root canals, of which three were located in the distal root and two in the mesial root. A third canal was found between the distobuccal and distolingual root canals. Cleaning, shaping and filling the root canal system effectively is the basis of successful root canal treatment for aberrant canal configuration. The aim for this case report was present the importance of knowledge of the internal anatomy of five root canals for the success of endodontic treatment in mandibular first molar tooth. A 12 years old girl patient with dull pain in his right mandibular first molar since 5 days ago came to the Department of Conservative Dentistry and Endodontics, Trisakti Dental College and Hospitals. She left that his tooth has cavity since 2 years ago. Objective assessment showed a cavity extended to the pulp involving occlusal area (positive percussion test, negative palpation test). Radiographic examination showed cavity extended to the pulp with apical lesion and periodontal ligament widening on his right mandibular first molar tooth. A diagnosis of irreversible pulpitis with acute apical periodontitis was made for the mandibular right first molar. Pulpectomy treatment for 46 tooth was conducted. Endodontic success in teeth with the number of canals above that normally found requires a correct diagnosis and careful inspection. Morphological variations in pulpal anatomy must always be considered before beginning treatment. Although the incidence of root and canal variations is rare, every effort should be made to find and treat all canals for successful clinical results. Five root canals treatment of mandibular first molar tooth proven to be successful.

Keywords : five root canals, mandibular first molar, pulpectomy treatment, internal anatomy

INTRODUCTION

Variation and configuration root canal anatomy present interesting challenges of success in endodontic treatment require an understanding of the root canal anatomy and morphology and that the entire root canal system must be cleaned, shaped, and filled. Thus, it is necessary for the clinican to have knowledge of not only the normal anatomy but also its variations.[1]

Anatomical characteristics of permanent mandibular molars are generally described as a group of teeth with two roots. The usual canal distribution is two canals in the mesial root and one or two in the distal root.[2] The variations in the normal anatomy of mandibular molar have been extensively studied in the literature.[3] Skidmore and Bjorndol,[4] Pineda and Kuttler,[5] Vertucci,[6] Pomeranz et al,[7] Martinez-Berna and Badanelli,[8] and Goel et al [9] has been reported of five canals in the mandibular first molar to vary between 1% and 15%. Fabra-Campos has been reported of the incidence three distal canals to be much lower at 0.6%.[10] Although Stroner et al have reported the presence of three distal canals in mandibular first molar as early as 1984, yet literature reveals paucity in the reports on the occurrence of middle distal canal in mandibular molars.[11] This case report describes the diagnosis and successful management of case of mandibular first molar with this unusual morphological variation of three distal canals.

The aim for this case report was present the importance of knowledge of the internal anatomy of five root canals with three distal and two mesial for the success of endodontic treatment in mandibular first molar tooth.

CASE REPORT

A 12 years old girl patient with dull pain in his right mandibular first molar since 5 days ago came to the Department of Conservative Dentistry and Endodontics, Trisakti Dental College and Hospitals. She left that his tooth has cavity since 2 years ago. Objective assessment showed a cavity extended to the pulp involving occlusal area (positive percussion test, negative palpation test). Radiographic examination showed cavity extended to the pulp with apical lesion and periodontal ligament widening on his right mandibular first molar tooth (Figure 1). A diagnosis of irreversible pulpitis with acute apical periodontitis was made for the mandibular right first molar. Pulpectomy treatment for 46 tooth was conducted.

Figure 1. Preoperative radiograph.

The tooth was anesthetized using 2% Lidocaine HCl with 1:100.000 epinephrine (Lignospan, Septodont Inc, USA) and isolated using rubber dam. Endodontic access cavity was established. The pulp chamber frequently flushed with 2,5% sodium hypochlorite to remove debris and bacteria. Inspection of the pulp chamber revealed five canal orifices (2 mesial and 3 distal, Figure 2). Canal patency was checked with number 10 K-file (Mani,Inc.;Japan). An electric apex locater (Root ZX Mini, Morita) and a no.15 file were used to establish working length that was confirmed radiographically (Figure 3a,3b).

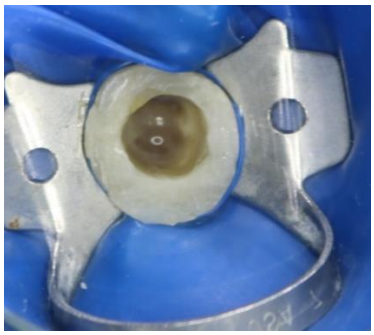

Figure 2. Inspection of the pulp chamber revealed five canal orifices

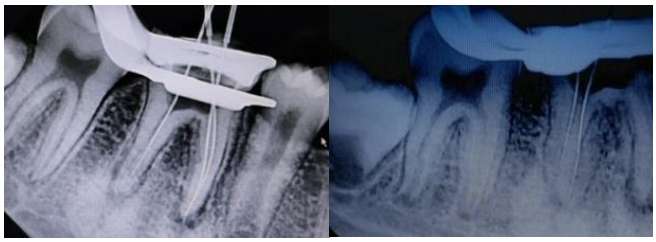

Fig 3a & 3b. Working length radiograph

Cleaning and shaping was performed using a crown down technique (Figure 4) with Protaper files (Maillefer, Dentsply, Switzerland) under abundant irrigation with 2.5% sodium hypochlorite solution in a 5 mL syringe and EDTA (Glyde, Maillefer, Dentsply, Switzerland). The canals were dried with paper points and an intracanal dressing with calcium hydroxide was applied for 14 days.

Fig 4. After cleaning and shaping

In the second visit, the calcium hydroxide intracanal dressing was removed, the master cone fit was checked (Figure 5a & 5b) and the root canals were dried with absorbing paper points.

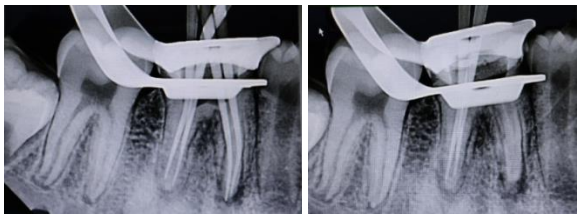

Figure 5a & 5b. The master cone fit was checked

Root canals were obturated using the warm vertical compaction technique with System B (Sybronendo) and calcium hydroxide resin sealer (Sealapex, Sybronendo). After obturation, Smart Dentin Replacement (SDR, Dentsply) was used for the sealing restoration (Figure 6-7).

Figure 6. After obturation

Figure 7. SDR sealing for 46

Discussion

Studies of the morphologic structure of root canal systems have demostrated the complexity, numbers, and distributions of canals in mandibular first molars. According to the literature the incidence of third distal canals is 0.6% (Fabra-Campos,1985). The incidence of third canal in the distal root of mandibular molars was found to be much lower than in the mesial root (Martinez-Berna and Badanelli,1985). The larger mesiodistal dimension of the dimension of the distal root, compared to mesial root, may account for the rare incidence of the third canal created by dentine apposition in distal roots.

In this case report there was confluence of the third middle distal canal with distobuccal and distolingual canals and having common apical termination. Instrumentation is one of the key factors in the success of endodontic therapy and the clinician should be aware of the varied anatomy. An avid clinician should be always keen to explore the possibility of additional canals whenever in doubt with the assistance of technologies such as the those of magnification and illumination.

CONCLUSION

Endodontic success in teeth with the number of canals above that normally found requires a correct diagnosis and careful inspection. Morphological variations in pulpal anatomy must always be considered before beginning treatment. Although the incidence of root and canal variations is rare, every effort should be made to find and treat all canals for successful clinical results. Five root canals treatment of mandibular first tooth proven to be successful.

REFERENSI

1. Ingle JI. Endodontics. 3rd ed. Philadelphia: Lea & Febiger.1985:37.
2. Venumuddala VR, et al. Endodontic Management of Mandibular First Molar with Middle Distal Canal: A Case Report. Case Reports in Dentistry.2012:1-4.
3. De Grood ME, Cunningham CJ. Mandibular Molar with five canals: Report of a Case. J Endod.1997;23:60-2.
4. Skidmore AE, Bjorndal AM. Root canal morphology of the human mandibular first moral. Oral Surg 1971;32:778-84.
5. Pineda F, Kuttler Y. Mesiodistal and buccolingual roentgenographic investigation of 7,275 root canals. Oral Surg 1972;33:101-10.
6. Vertucci F. Root canal anatomy of the human permanent teeth. Oral Surg.1984;58:589-99.
7. Pomeranz H, Eidelman D, Goldberg M. Treatment considerations of the middle mesial canal of mandibular first and second molars. J Endodon 1981;7:565-8.
8. Martinez-Berna A, Badanelli P. Investigacion clinica de molars inferiors con cinco conductos. Boletin de Informacion Dental 1983;43:27-41.
9. Goel NK, Gill KS, Taneja JR. Study of root canals configuration in mandibular first permanent molar. J Indian Soc Pedod Prev Dent 1991;8:12-4.
10. Fabra-Campos CH. Unusual anatomy of mandibular first molars. J Endodon.1985;11:568-72.
11. Stroner W, Remeikis N, Carr G. Mandibular first molar with three distal canals. Oral Surg 1984;57:554-7.