Case Report

JRAD Journal of Research and Advancement in Dentistry

J Res Adv Dent 2017;7:1:184-187.

Bilateral Mandibular Canines Having Two Separate Roots: A Case Report

Parvinder Singh Baweja[1*] DS Kalsi[2] Gurpreet Kaur[3] Ekta Suneja[4] Pooja Sood[5] Bhuvanesh Tandon[6]

[1]Reader, Department of Conservative Dentistry, BJS Dental College, Ludhiana, Punjab, India.
[2]Principal and Head, Department of Periodontology and Oral Implantology, BJS Dental College, Ludhiana, Punjab, India.
[3]Reader, Department of Prosthodontics, BJS Dental College, Ludhiana, Punjab, India.
[4]Professor and Head, Department of Conservative Dentistry, BJS Dental College, Ludhiana, Punjab, India.
[5]Reader, Department of Conservative Dentistry, BJS Dental College, Ludhiana, Punjab, India.
[6]Reader, Department of Conservative Dentistry, BJS Dental College, Ludhiana, Punjab, India.

ABSTRACT

Background: Studies on canal configuration have demonstrated a substantial variation in the number of roots and root canals in different teeth. Mandibular canines usually have one root and one canal. In this article, we report a rare case of bilateral mandibular canines having two separate roots.

Keywords: Bilateral, Canine, Roots.

INTRODUCTION

A thorough knowledge of tooth morphology, careful interpretation of angled radiographs, proper access preparation and a detailed exploration of the interior of the tooth are essential prerequisites for a successful treatment outcome. The main objective of endodontic therapy is thorough mechanical and chemical debridement of the entire root canal followed by a three dimensional obturation with an inert filling material and a final coronal restoration, thereby preventing access to microorganism. [1-7]

However, root canal treatment may fail because of factors including persistent infection of the root canal, unsatisfactory intracanal procedures that may lead to poor canal preparation, broken instruments and incomplete root canal fillings. Morphological features of the tooth may also adversely affect endodontic procedures. [8-10] Like the number of root canals, the number of roots may also vary. Careful evaluation of research material has, however, shown that variations in tooth morphology are common. [11] An awareness and understanding of the presence of unusual root canal morphology can thus contribute to the successful outcome of the root canal treatment. [12]

Mandibular canines are recognized as usually having one root and one root canal in most cases. But many investigators have reported the anatomical variations associated with mandibular canines. Green [13] observed two canals in a single root in 13 out of 100 mandibular canines examined. This is consistent with the findings of Hess, [14] who observed two canals in 15% of the cases. Vertucci [15] reported the presence of two canals in 18% of the mandibular canines. Mandibular canines with two separated canals have also been demonstrated in a recent case report. [16]

This article reports a rare case of bilateral two rooted mandibular canines.

CASE REPORT

A 28-year-old male patient reported with a chief complaint of pain with respect to tooth no # 23 (mandibular left lateral incisor). Pain was intermittent in that region of 2 months' duration,

Received: Sep. 10, 2017: **Accepted**: Oct. 3, 2017
***Correspondence Dr. Parvinder Singh Baweja.**
Department of Conservative Dentistry, BJS Dental College, Ludhiana, Punjab, India.
Email: drbaweja@gmail.com

pISSN 2278-0076
eISSN 2321-9270

which had increased in intensity for the past 2 days. Medical history was non-contributory. On clinical examination oral hygiene was found to be moderate, and tooth # 23 was carious on the lingual side. Tooth # 23 was tender on percussion. No periodontal pockets were present, and thermal and electrical pulp testing elicited a negative response. Clinical examination also revealed irregular morphology of tooth # 22(mandibular left canine) and 27(mandibular right canine), with increase in buccolingual width (fig 2). Preoperative radiograph showed widening of the periodontal ligament space with periapical radiolucency in relation to tooth # 23 (fig 1a). The radiograph also revealed an unusual anatomy of tooth # 22 with two roots (fig 1a). Interestingly, radiographic image of the contralateral tooth (# 27) also revealed the same unusual morphology with two roots (fig 1b). Tooth no # 23 was later root canal treated.

Figure 1a: IOPA photograph of the right side of the patient

Fig 1b: IOPA photograph of the left side of the patient- another view

Fig 2: Clinical photograph of the patient

DISCUSSION

Slowey stated that root canal anatomy of each tooth dictates the location of the initial entry of access [17] so a good knowledge of the root canal anatomy [18-20] and the correct diagnosis of anatomical variations is important for the success of endodontic treatment. [21-23] Endodontic access should be designed to provide direct access to the apical third of the root canal system. The dentist should be able to visualize all aspects of the coronal third of the root canal system, and all tooth structure or restorative material that interferes with straight line access should be removed. [24]

Because the root canals tend to lay one behind the other in the buccolingual plane, they are superimposed onto each other on dental films and easily go undetected. [25] Whenever the clinician suspects this unusual contour, further radiographs should be taken with a different angulation to confirm any unusual anatomical feature. [26] Apart from a radiological diagnosis, clinical inspection of the tooth crown and analysis of the cervical morphology of the roots by means of periodontal probing can facilitate identification of an additional root. [12]

The diagnosis and management of extra roots or root canals is undoubtedly an endodontic challenge. Lyroudia et al stressed the importance of familiarity with the root canal morphology before starting the endodontic treatment. [27] Slowey [28] emphasized that root canal morphology was limitless in its variability and that clinicians must be aware that anatomic variations constitute a formidable challenge to endodontic success. Inability to find and obturate a root canal has been demonstrated to

be a major cause of failure in endodontic therapy. [29] Hoen and Pink found 42% incidence of missed roots or canals in the teeth that needed retreatment. [30] Hence, it is of utmost importance that all the canals be located and treated during the course of non-surgical endodontic therapy.

The presence of two roots in mandibular canines is rarely observed. [31, 32] Quellet [33] described the occurrence of two roots and two canals in mandibular canines in only 5% of all analyzed teeth. Laurichesse et al. [34] described the second root of mandibular canines in only 1% of cases. Pécora et al investigated the internal anatomy, direction and number of roots and size of 830 extracted human mandibular canines found only 1.7% of the teeth with two roots and separate two canals. [35]

CONCLUSION

Many clinicians have the perception that a given tooth will contain a specific number of roots and/or canals. Careful evaluation of research material has, shown that variations in tooth morphology are common.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1) Rodig T, Hulsmann M. Diagnosis and root canal treatment of a mandibular second premolar with three root canals. Int Endod J 2003; 36: 912-9.

2) Baer J, Maki J.S. In Vitro Evaluation of the Antimicrobial Effect of three Endodontic Sealers Mixed with Amoxicillin. J Endod 2010; 36:1170-73.

3) Schilder H. Cleaning and shaping the root canal. Dent Clin North Am 1974; 18:269-96.

4) Walton RE. Histologic Evaluation of different methods of enlarging the pulp canal space. J Endod 1976; 2:304-11.

5) Ingle JI. A standardized endodontic technique utilizing newly designed instruments and filling materials. Oral Surg Oral Med Oral Path 1961; 14:83-91.

6) Ingle J, Beveridge E. Endodontics. 2nd ed. Philadelphia: Lea & Febiger, 1976.

7) Walton R, Torabinejad M. Principles and practice of endodontics. 2nd ed. Philadelphia: WB Saunders Co, 1996.

8) Nair R, Sjögren U, Krey G, Kahnberg KE, Sundqvist G. Intraradicular bacteria and fungi in rootfilled, asymtomatic human teeth with therapy-resistant periapical lesion: a long-term light and electron microscopic follow-up study.J Endod 1990; 16:580–8.

9) Ingle J, Bakland L. Endodontics. 5th ed. Hamilton: BC Decker, 2002.

10) England MC Jr, Hartwell GR, Lance JR. Detection and treatment of multiple canals in mandibular premolars. J Endod 1991; 17: 174-8.

11) C. D'Arcangelo, G. Varvara & P. De Fazio. Root canal treatment in mandibular canines with two roots: a report of two cases International Endodontic Journal 2001; 34: 331–334.

12) Fillip L. Calberson, Roeland J. De Moor, Christophe A. Deroose. The Radix Entomolaris and Paramolaris: Clinical Approach in Endodontcs. J Endod 2007; 33: 58-63.

13) Green D. Double canal in single roots. Oral Surg, Oral Med and Oral Pathol 1973; 35:689-696.

14) Hess W. The anatomy of the root canals of teeth of the permanent dentition. New York: Williams Wood Co.; 1925.

15) Vertucci FJ. Root canal anatomy of the mandibular anterior teeth. J Am Dent Assoc 1974; 89:369-371.

16) Ghoddusi J, Zarei M, Vatanpour M. Mandibular canine with two separated canals. N Y State Dent J 2007; 73:52-53.

17) Slowey RR. Root canal anatomy road map to successful endodontics. Dent Clin North Am 1979; 23:555-73.

18) Vertucci F. Root canal morphology and its relationship to endodontic procedures. Endod Topics 2005; 10:3-29.

19) Kittappa K, Sekar M. New Nomenclature for Extra Canals Based on Four Reported Cases of Maxillary First Molars with Six Canals. J Endod 2010; 36:1073-78.

20) Chai WL, Thong YL. Cross-sectional morphology and minimum canal walls widths in C-shaped roots of mandibular molars. J Endod 2004; 30:509-12.

21) Walker RT. Root canal anatomy of mandibular first premolars in a southern Chinese population. Endod Dent Traumatol 1988; 4:226-8.

22) Hulsmann M. Mandibular first premolar with three root canals. Endod Dent Traumatol 1990; 6:189-91.

23) Javidi M, Zarei M, Vatanpour M. Endodontic treatment of a ridiculous maxillary premolar: a case report. Journal of Oral Science 2008; 50:99-102.

24) Johal S. Unsual maxillary first molar with 2 palatal canals within a single root: a case report. J Can Dent Assoc 2001; 67:211-4.

25) Soraya Robinson, Czerny, Gahleitner A, Bernhart T, Kainberger F. M. Dental CT evaluation of mandibular first premolars root configurations and canal variations. Oral surgery Oral Medicine Oral Pathology Oral Radiol Endod 2002; 93:328-32.

26) Fava LRG, Dummer PMH. Periapical radiographic techniques during diagnosis and treatment. Int Endod J 1997; 30:250-61.

27) Lyroudia K, Mikrogeorgis G, Nikopoulos N, Samakovitis G, Molyvdas I, Pitas I. Computerized 3-D reconstruction of two 'double teeth'. Endod Dent Traumatol 1997; 13:218-22.

28) Slowey RR. Radiographic aids in the detection of extra root canals. Oral surgery, oral medicine and Oral Pathology 1974; 37:762-72.

29) Macri E, Zmener O. Five canals in a mandibular second premolar. J Endod 2000; 26:304-5.

30) Hoen MM, Pink FE. Contemporary endodontic retreaments: an analysis based on clinical treatment findings. J Endod 2002; 28:834-6.

31) Green D. Morphology of the pulp cavity of the permanent teeth. Oral Surg 1955; 8:743-759.

32) Kutler Y. Anatomia topografica de la cavidad pulpar. In: Endodoncia Prática. Kutler Y. Mexico: Alpha; 1961, p. 29.

33) Ouellet R. Mandibular permanent cuspids with two roots. J Can Dent Assoc 1995; 61:159-61.

34) Laurichesse JM, Maestroni J, Breillat J. Endodontie Clinique. 1st ed. Paris, France: CdP; 1986:64-66.

35) Pécora JD, Sousa Neto MD, Saquy PC. Internal anatomy, direction and number of roots and size of human mandibular canines. Braz Dent J 1993; 4:53-57.