



Case Report

Mandibular Canine With Two Root Canals

Authors

Dr Priyanka Bawa¹, Dr Sunanda Gaddalay², Dr Anita Kale³

¹Junior Resident, Department of Conservative Dentistry & Endodontics, Maharashtra Institute of Dental Science and Research, Latur, Maharashtra, India

²Professor and Head, Department of Conservative Dentistry & Endodontics, Maharashtra Institute of Dental Science and Research, Latur, Maharashtra, India

³Associate professor, Department of Conservative Dentistry & Endodontics, Maharashtra Institute of Dental Science and Research, Latur, Maharashtra, India

Corresponding Author

Dr Priyanka Bawa

Junior Resident, Department of Conservative Dentistry & Endodontics, Maharashtra Institute of Dental Science and Research, Latur, Maharashtra, India

Email: piyubawa.pb@gmail.com, Mobile no. 9420695583

ABSTRACT

Endodontic treatment may sometimes fails because morphological features of the tooth adversely affect the treatment procedures. The knowledge of root canal system of different human teeth is a "road map" for the successful root canal treatment. Many investigators have reported the anatomical variations associated with mandibular canines. Mandibular canine usually contains one root with a single root canal. Two-rooted mandibular canine is rare. Human mandibular canines do not present internal anatomy as simple as could be expected; there are such Canines with a single root and two canals, two roots or fused roots. This paper describes two cases of root canal therapy of permanent mandibular canine with two root canals and one apical foramen (Type II) in one root.

Keywords: *Anatomy, Endodontics treatment, Mandibular canine, Two canals.*

INTRODUCTION

The aim of endodontic treatment is the elimination of infection from the root canal and the prevention of reinfection. 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.^[1] Therefore, endodontists should be aware of any variations or additional canals to improve the predictability of root canal therapy.^[2] Many investigators have reported on the anatomical variations associated with mandibular canines.^[3,4] An in Vitro study of permanent human mandibular canines show variation in canal configuration as Type I -70%, Type I I-4-

12%, Type III-4-6%, Type I V-4-10%, Type V-2%, straight canals in 53.84-60.71%, curved canals in 46-39%, apical foramen located centrally in 34.61-57.14%, & apical foramen located laterally in 65.38-42.85% of cases.⁽⁵⁾ This paper reports the case of a patient with mandibular canines with two root canals and one apical foramen.

CASE REPORT

Case One

A 42 year old female patient reported to the Department of Conservative Dentistry and Endodontics, with the chief complaint of dull aching pain in the lower right front teeth region since one month. History of present illness revealed intermittent pain with hot and cold

stimuli for the past three months. On careful evaluation of the diagnostic radiograph, it was seen that in the mandibular canine two canals were present. Local anesthesia was administered and rubber dam was placed. Access was achieved using a round diamond bur. The two orifices were located one buccal and one lingual [Figure 1A]. Working length was established radiographically for both canals [Figure 1B]. Chemo mechanical preparation was performed using Pro Taper File system in crown down manner. A 3% solution of sodium hypochlorite and 17% ethylenediaminetetraacetic acid were used alternatively as irrigants at every change of instrument. The apical preparation was done until F2 file size in both the canals and the canals were obturated with corresponding Pro Tapercones [Figure 1D].

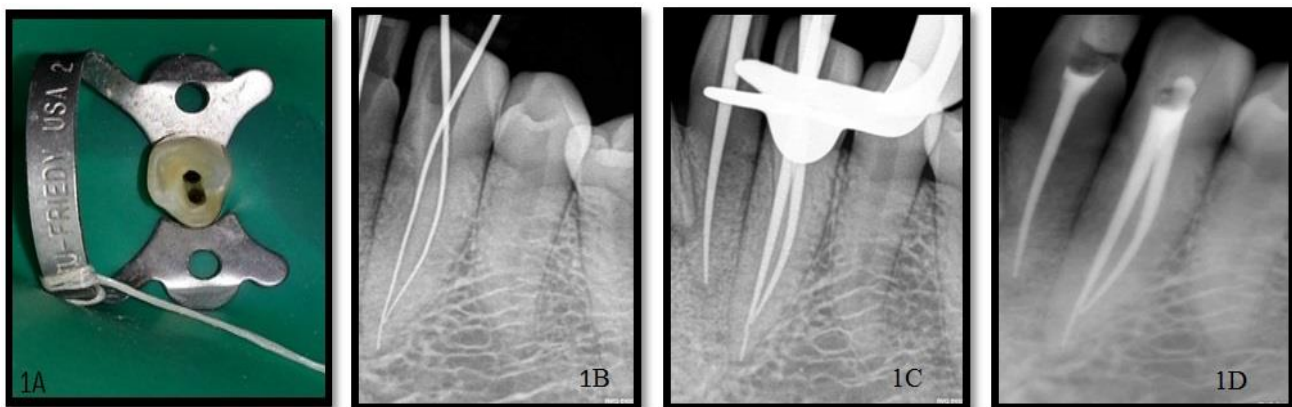


FIGURE 1A- Access opening done (2 orifice located), **1B-** Working length determined, **1C-** Master cone selection, **1D-** Obturation done

Case Two

A healthy 29-year-old male was referred to the Department of Conservative Dentistry and Endodontics for endodontic treatment. Initial periapical radiographic examination revealed the presence of two canals on right mandibular canines. Endodontic treatment was performed in a single session because the teeth presented pulp vitality on clinical examination. The access cavity was prepared with round diamond point bur and caries was excavated completely. After reaching the pulp chamber, the roof and overhanging dentin from lateral walls were removed. The orifices of labial and lingual canals were explored and canals

were located with #8 & #10 k files [Figure 2B]. For the straight line access, GG drills were used with crown down method to enlarge the orifices. Irrigation was done using 3% sodium hypochlorite. Working length was estimated with an apex locator and confirmed by a radiograph. Canals were then prepared with protaper and then obturated [Figure 2D].

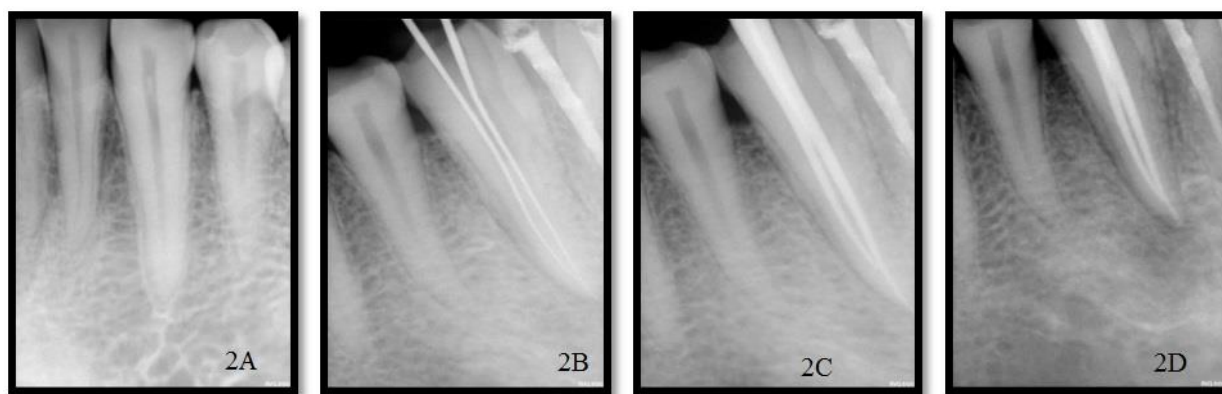


FIGURE 2A- Preoperative radiograph, **2B-** Working length determined, **2C-** Master cone selection, **2D-** Obturation done

DISCUSSION

Proper diagnosis and identification of the number of roots and root canals are key to success of endodontic treatment^[6]. The studies of Greene, Hess and Vertucci revealed 13%, 15% and 18% of two canals in single root of mandibular canines respectively^[6-8]. It has been reported that 15% of mandibular canines presented with two canals with one or two foramina.^[8-9]

Careful examination of preoperative radiographs can aid in locating additional canal or roots. Thus, root canal therapy of these teeth should be carried out by using X-rays from different angulations, efficient explorers, wider access openings, adequate illumination and whenever possible, image magnification. Necessary precautions have to be taken during root canal therapy of these teeth and hence instrumentation of these canals was carried out using nickel titanium files, due to their flexibility, lesser risks of ledge formation and perforations.^[10]

CONCLUSION

Clinicians should be aware of anatomical aberrations in the teeth they are treating and should never assume that root canal morphology is simple. Careful radiographic interpretation with different angulations is helpful in cases of unusual root canal morphology. The majority of mandibular canines have one root and root canal, but 15% may have two canals, and a smaller

number may have two distinct roots, both of which should be identified and managed.

REFERENCES

1. Nair PN, Sjögren U, Krey G, Kahnberg KE, Sundqvist G. Intraradicular bacteria and fungi in root-filled, asymptomatic human teeth with therapy-resistant periapical lesions: A longterm light and electron microscopic follow-up study. *J Endod* 1990;16:580-8.
2. Friedman S. Prognosis of initial endodontic therapy. *Endod Topics* 2002;2:59-88.
3. Andrei OC, Mărgărit R, Dăguci L. Treatment of a mandibular canine abutment with two canals. *Rom J MorpholEmbryol* 2010;51:565-8.
4. Versiani MA, Pécora JD, Sousa-Neto MD. The anatomy of two rooted mandibular canines determined using micro-computed tomography. *IntEndod J* 2011;44:682-7.
5. Sikri V, Kumar V. Permanent Human Canines: Configuration And Deviations Of Root Canals: An In-Vitro Study. *Journal of Conservative Dentistry* 2003;6(4):151-2.
6. Green D. Double canal in single roots. *Oral Surg. Oral Med and Oral Pathol.* 1973;35:689-696.
7. Hess W. The anatomy of the root canals of teeth of the permanent dentition. New York: Williams Wood Co.; 1925.

8. Vertucci FJ. Root canal anatomy of the mandibular anterior teeth. [3] *J Am Dent Assoc.* 1974;89:369-371.
9. Pineda F, Kuttler Y. Mesiodistal and buccolingualroentgenographic investingation of 7,275 root canals. *Oral Surg Oral Med Oral Pathol* 1972;33:10.
10. Shrivastava N, Nikhil V, Arora V, Bhandari M. Endodontic management of mandibular canine with two canals. *J IntClin Dent Res Organ* 2013;5:24-6.