Endodontic Management of Mandibular Biradicular Canine

Mohsin Kamaal, Deepak Raisingani, Ashwini B Prasad, Harshit Srivastava, Shrishti Shukla, Rahul Chaudhri
Department of Conservative Dentistry and Endodontics, Mahatma Gandhi Dental College and Hospital, Jaipur

Case Report

ABSTRACT

The mandibular canine is placed at the corner of the mouth hence commonly referred to as the cornerstone of the dental arch. It the longest tooth in the mouth usually having a single root and a single canal. The aim of this case report is to highlight the treatment protocol of a mandibular canine with two roots and two canals .

KEY WORDS: anatomical variations, biradicular canine; mandibular biradicual canine

INTRODUCTION:

The mandibular canine is an important tooth in the dental arch. Speculations are that the posterior teeth are protected laterally by the canine guided occlusion because of the anatomic location, anatomy and proprioceptive properties of the canine[1]. Therefore preservation of the canine becomes of prime importance irrespective of its morphologic variation.

The mandibular canine usually is single rooted with a single canal[2]. However, with the advent of newer diagnostic aids and magnification tools the morphological variations of the root canals are perceptible. It is an implicit obligation for the endodontists to have knowledge of the root canal morphology and then initiate root canal therapy to avoid any unforeseen complication.

CASE REPORT:

A 42-year-old female patient reported to the Department of Conservative Dentistry and Endodontics of Mahatma Gandhi Dental College and Hospital, Jaipur for examination of the left mandibular canine (#33) with chief complaint of severe pain in the same. The pain continued for several minutes even after the removal of stimulus, and also leading to disturbed sleep.

Corresponding Author:
Dr Mohsin Kamaal,
3rd Year Resident,
Department of Conservative Dentistry,
Mahatma Gandhi Dental College and
Hospital, Jaipur (Rajasthan)
Phone No.: 9829851290
E-mail: drmohsinkamaal21@gmail.com

Clinical examination revealed large carious lesions involving the distal aspect and mesial aspect of the mandibular canine and 1st premolar respectively. She had an uneventful medical or allergic history. Radiographic examination revealed sudden loss in continuity of canal in relation to 33 (Figure 1). On the basis of the aforementioned findings, the diagnosis of Irreversible pulpitis in relation to 33, 34 were made. Hence Non-surgical Root canal therapy followed by coronal prosthesis was the binding treatment plan.

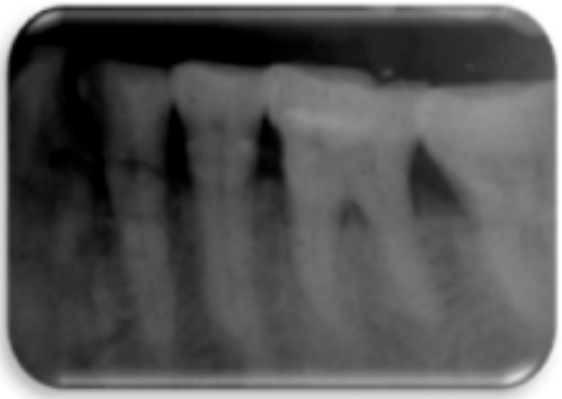

Figure 1: Preoperative IOPA.

Emergency Access cavity was prepared with 33 and 34 under Rubber Dam Isolation after anaesthetizing the tooth using an Endo Access bur (Dentsply Maillefer, Switzerland). Canal orifices were negotiated with DG16 and Working length was determined using a 10 K file (Figure 2). CBCT confirmed the presence of two roots and two canals irt 33 (Figure 3).

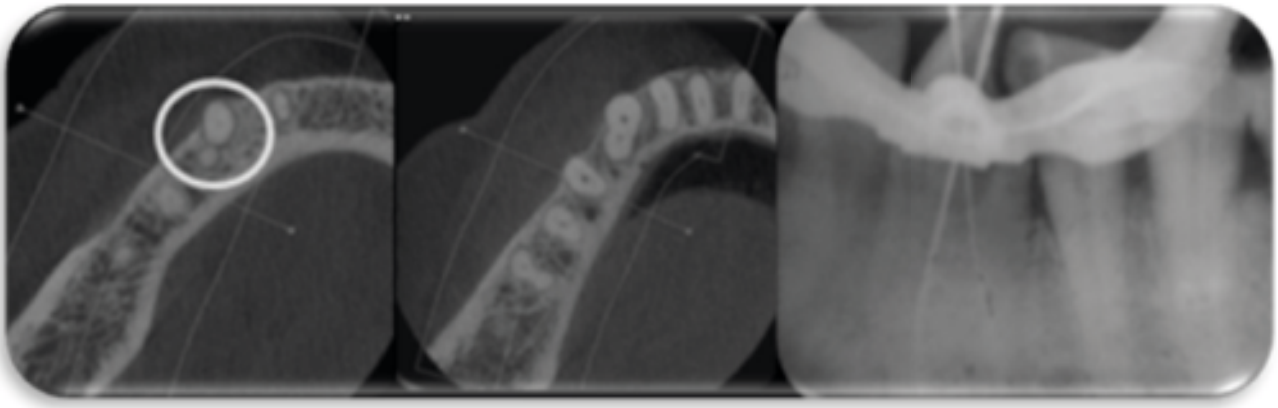

Figure 2 & 3: Working length & CBCT .

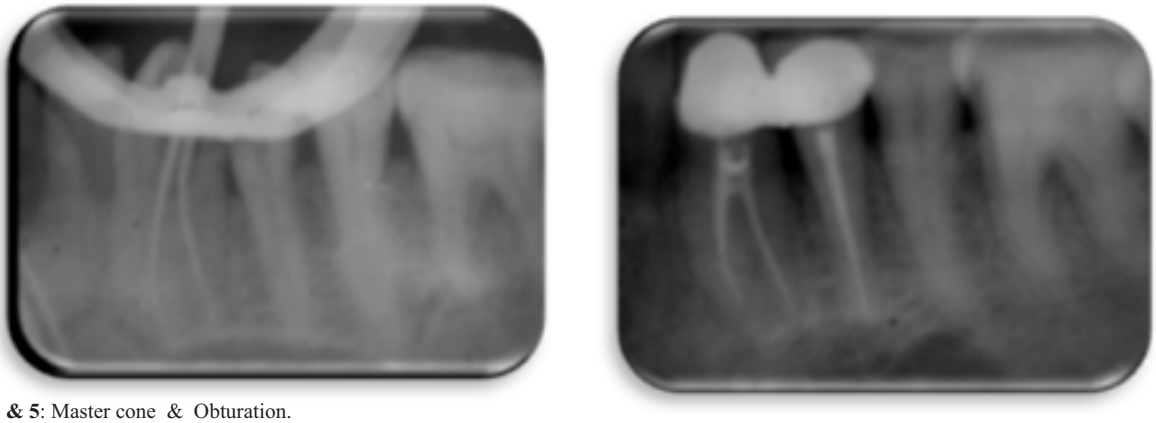

Figure 4 & 5: Master cone & Obturation.

The canal in relation to 33 had a Vertucci Type 4(2-2) and Weine's Type III(2-2) configuration. Biomechanical preparation with 33 was done till F1 in both the buccal and lingual canal using Protaper Gold (Dentsply Maillefer, Switzerland) file system following the Crown Down Technique. Subsequently irrigation was done using 5.2% Sodium Hypochloride, 17% EDTA and Normal Saline followed by calcium hydroxide dressing for 7 days.

In the second appointment, calcium hydroxide removed and canal was irrigated thoroughly with normal saline. Master cone radiograph was taken followed by obturation using the corresponding Guttapercha Cones (Dentsply Maillefer, Switzerland) using a calcium hydroxide based sealer (Sealapex). (Figure 4,5). Tooth 34 was treated as per the standard endodontic protocol.

The patient was recalled after 7 days and crown preparation was done followed by which the prosthesis was delivered.

DISCUSSION:

A thorough knowledge of tooth morphology, careful interpretation, adequate access, and exploration of the tooth are rerequisites for successful root canal treatment[1.2,3].

Canines, morphologically, have a single root[4]. Every mandibular canine are not consistent with a single root and a single canal. There are indications of mandibular canines with unusual findings[5,6].

Having knowledge of internal anatomy relationships is important before taking endodontic therapy for which the periapical radiographs should be carefully evaluated[7]. An additional canal is indicated by sudden change in the radiographic density of the pulp space, or a bifurcation or trifuraction of root is identified by sudden narrowing or disappearance of the root canal space[8].

The Prognosis of Root canal Therapy is governed by the anatomy of the root canal system. One of the major reasons for failure of the treatment is an undetected canal. The treatment can possibly fail from incomplete debridement of the pulp space[9].

The ProTaper Gold was used in this case as its convex triangular cross-section, progressive taper, noncutting tip design allows the instrument to follow the original shape of the root canal. The heat treatment

to the files makes it metallurgically advanced[10]. Also, better root canal cleanliness is obtained by using 17%EDTA which when combined with 5.2% NaOCl provides a greater antimicrobial effect[11].

Good pre-operative radiographs, proper access cavity preparation and optimum obturation are the prerequisites of a successful endodontic treatment. Recent diagnostic aids like CBCT, Dental operating microscope, RVG are the required armamentarium to help complete the diagnosis and plan the appropriate treatment.

CONCLUSION:

Inspite of the low existence of the incidence of mandibular canine with two roots and two canals, they subsit. Root canal peculiarities should be detected using a comprehensive knowledge of the Tooth and Root canal morphology, clinical exploration, intricate radiographic interpretation in addition to the use of Groundbreaking Diagnostic aids.

REFERENCES:

1. Rinchuse DJ, Kandasamy S, Sciote J. A contemporary and evidence-based view of canine protected occlusion. Amer J Orthodon Dento Facial Orthop. 2007;132(1): 90-102.
2. Versiani MA, Pécora JD, Sousaneto MD. Micro-computed tomography analysis of the root canal morphology of single rooted mandibular canines. Intern Endod J. 2013;46(9):800-7.
3. SomalingaAmardeep N, Raghu S, Natanasabapathy V. Root canal morphology of permanent maxillary and mandibular canines in Indian population using cone beam computed tomography. Anat Res Intern. 2014;20-14.
4. Arora V, Nikhil V, Gupta J. Mandibular canine with two root canals—an unusual case report. Int J Stomatol Res. 2013;2(1):1-4.
5. Alenezi MA, Al-Hawwas AY. Permanent mandibular canine with two roots and two root canals: Two case reports. Saudi Endodo J. 2016;6(2):98.
6. Kulkarni NR, Kamat SB, Hugar SI, Nanjannawar GS. Mandibular canine with two roots and two root canals–a rare case. J Clin Diagn Res. 2016;10(9):ZJ07.
7. Vertucci FJ. Root canal morphology and its relationship to endodontic procedures. Endodo Topics. 2005;10(1): 3-29.
8. Cantatore G, Berutti E, Castellucci A. Missed anatomy: frequency and clinical impact. Endodontic Topics. 2006;15(1):3-1.
9. Andrei OC, Margarit R, Daguci L, Margarit R, Daguci L. Treatment of a mandibular canine abutment with two canals. Rom J Morphol Embryol. 2010;51(3):565-8.
10. Yang GB, Zhou XD, Zhang H, Wu HK. Shaping ability of progressive versus constant taper instruments in simulated root canals. Intern Endodo J. 2006;39(10): 791-9.
11. Hülsmann M, Heckendorff M, Lennon A. Chelating agents in root canal treatment: Mode of action and indications for their use. Int Endod J. 2003;36:810–30.

Cite this article as: Kamaal M, Raisinghani D, Prasad AB, Shrivastava H, Shukla S, Chaudhary R: Endodontic Management of Mandibular Biradicular Canine. PJSR; 2020:13(1):47-49.
Source of Support: Nil, Conflict of Interest: None declared.