Management of Maxillary Canine With Two Canals: A Case Report

Sukhinder Kaur Soni[1], Dakshita Joy Sinha[2], Neha Verma[3], Aditya Gupta[4]

Post Graduate Student[1]
Dept. of Conservative Dentistry & Endodontics
Inderprastha Dental College & Hospital
Sahibabad 201010

Head of Department[2]
Dept. of Conservative Dentistry & Endodontics
Inderprastha Dental College & Hospital
Sahibabad 201010

Post Graduate Student[3]
Dept. of Conservative Dentistry & Endodontics
Inderprastha Dental College & Hospital
Sahibabad 201010

Post Graduate Student[4]
Dept. of Conservative Dentistry & Endodontics
Inderprastha Dental College & Hospital
Sahibabad 201010

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Introduction

Thorough knowledge and understanding of pulp chamber and root canal system anatomy are essential for successful root canal therapy. Familiarity with variations in tooth anatomy and characteristic features in various racial groups can aid location and negotiation of canals[1].Missed extra root canals are major reason for endodontic failure[2].

According to the previous study the various canal configurations reported in maxillary canines were Type I (81.6%), Type II (2.8%), Type III (11.6%), Type IV (0.8%), and Type V (2%) based on Vertucci's classification. Pulp canal system is complex with branching and divisions throughout the root length [3].

Vertucci (1984) classified the root canal configurations of human permanent teeth into various types ranging from single to three separate distinct canals. Permanent maxillary canines are more commonly single rooted, single canal teeth. Presence of two root canals is a rarity. Majority of them join in apical third and exit as single apical foramen[4].

Case Report

A 45-year-old female patient reported to Department of Conservative Dentistry and Endodontics, Inderprastha Dental College with chief complaint of food lodgement and spontaneous pain from five days in maxillary left anterior region.

The pain was sharp, severe, continuous, throbbing pain and is aggravated by taking hot foods and relieved by medication. Past medical history was non contributory. Tender on percussion was positive i.r.t 13.From clinical examination it revealed a deep carious lesion involving maxillary right canine. No mobility was seen. Radiographic examination revealed abnormal root canal morphology.

A diagnosis of acute irreversible pulpitis with symptomatic apical periodontitis i. r .t 13 was established and endodontic treatment was planned after taking informed consent from patient.

Pre-OP Image

Following local anesthesia with 2% lidocaine, the tooth was isolated with rubber dam [Hygienic; Coltene Whaledent], and an endodontic access

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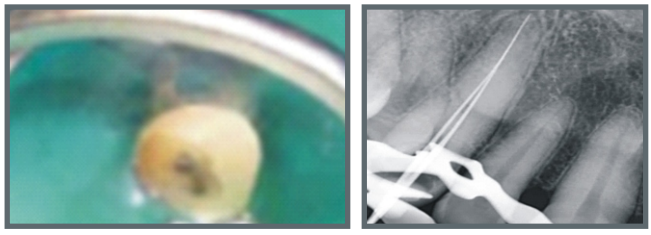
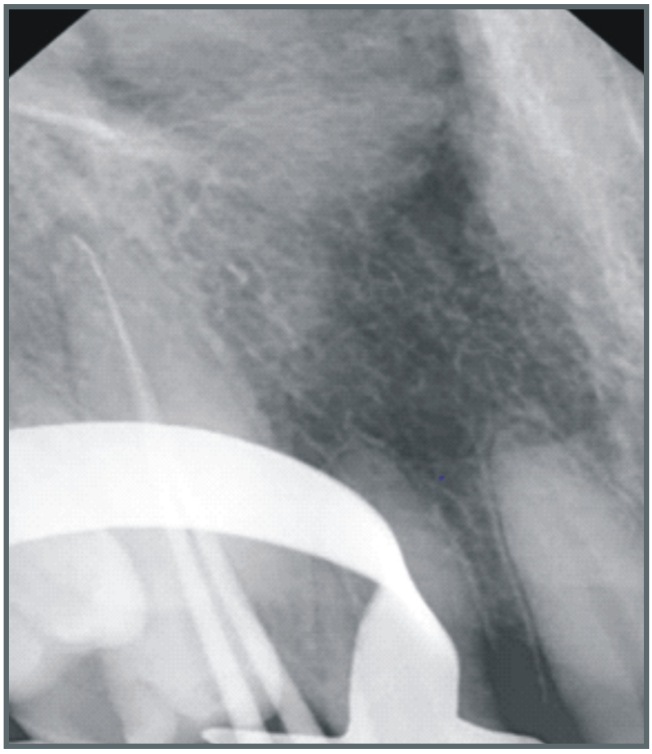
was made on palatal side with round bur and Endo-Z carbide bur. The vital pulp was extirpated and initially two canal orifices were located with the help of DG 16explorer.

Working length of 25 mm for buccal canal and 23.5 mm for palatal canal was measured by Dentsply #15 K files using apex locator and confirmed using radiograph. Apical preparation was carried out using hand K flex files [Dentsply] to size #40. Copious irrigation with 5.25%sodium hypo-chlorite, 17% EDTA was performed after use of each file.



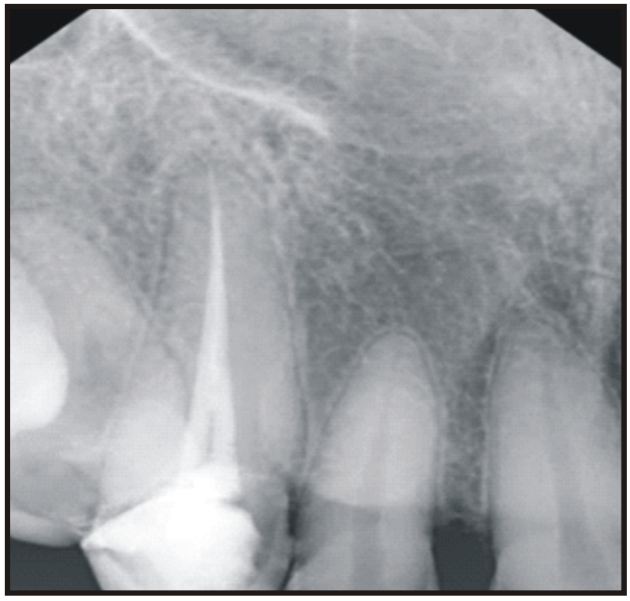
Working Length



Master Cone

The palatal canal joined the buccal canal in apical third of root canal (Vertucci and Weine's type II canal configuration) The canals were cleaned and shaped using Neo –endo rotary files(Orikam Healthcare, India) till #25 (4%) irt lingual and buccal canal.2% chlorhexidine was used as final irrigant. The two canals were cleaned, shaped, filled with calcium hydroxide paste and the tooth was temporized using Cavit.

After one week the canals were dried with paper points and obturated with single cone gutta-percha and AD seal sealer. Post-endodontic Composite restoration was done.



Obturation

Discussion:

Maxillary central and lateral incisors have single canals. Debridement of root canal to remove pulpal remnants, bacteria, and their byproducts before obturation is primary requisite for successful endodontic treatment. Being unable to locate and fill a canal results in failure of root canal therapy[5].

Therefore, it is imperative to have knowledge of anatomic variations as endodontic success is related to canal debridement. Radiographs from different angles, some with a file in place may be helpful in finding and locating extra canals[6].

The diagnostic difficulty and possible canal superimposition on radiographic examination should be kept in mind when examining such cases. The relationship of the two canal orifices to each other is also significant, as the closer the orifices are to each other, the greater the chances that the two canals join at some point within the body of the root[7].

In finding extra canals, it is important to identify periodontal ligament space that often projects on the tooth and may resemble a canal[8].

Conclusion:

Several variations exist in the root canal system and clinicians should be aware of the variations for complete infection removal and prevention of re-infection. Special care with careful endodontic exploration, different angle radiographs, and magnification with surgical microscope aids in detection and treatment of extra canals.

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