Maxillary Canine With Two Root Canals : A Case Report

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Abstract: Endodontic therapy is essentially a micro neurolog surgical procedure involving complete debridement and three dimensional obturation of the root canal system to obtain a fluid impervious seal. The foundation of the procedure is based on the intimate knowledge and thorough understanding of the anatomy of both the pulp chamber and the root-canal system. Teeth exhibit variations in their root canal anatomy and pose a challenge in diagnosis and treatment. Maxillary canine are statistically more commonly single rooted, single canalled but rarely may have single root with two root canals.

Key words : Endodontic Treatment, Maxillary Canine, Root Canal Anatomy, Two Root Canals

INTRODUCTION

The pulp canal system in any tooth has the potential of being very complex with branching and divisions throughout the length of the root. Diagnosis and identification of variations in number of roots and root canals are the key factors in endodontic treatment. The anatomy of root canal systems dictates the condition under which root canal therapy is carried out and can directly affect its prognosis. Extra root canals if not detected are a major reason for failure of endodontic therapy.

Maxillary canines are statistically more common to be single-rooted, single-canaled teeth. It has been reported that 39% have straight canals, whereas 32% have root canals curved distally. Lateral canal are present in 30% cases. Two root canals in a permanent maxillary canine is a rare condition. Of those having two canals, majority join in apical third and exit at single apical foramen.

CASE REPORT

A 34 year old male patient reported to the department of conservative dentistry and endodontics with a chief complaint of pain in upper front region past 4 months. Subjective symptoms included dull, continuous, non radiating pain that aggravated on mastication and relieved on medication. Past dental history and medical history were non contributory.

Oral examination revealed deep dental caries extending subgingivally with no direct pulpal exposure. Tooth was asymptomatic on palpation and tested negative using electric pulp tester. Periodontal status was within normal limits. Radiographic examination spotted abnormal root canal anatomy, single root with two root canals. Periapical radiolucency was seen with size less than 1 cm in diameter. Provisional diagnosis made was chronic periapical abscesses.

Endodontic treatment was started under local anaesthesia. Access cavity was made using #1014 round diamond bur and endo-Z carbide bur, pulp extirpation was done using bared broach. Root canals were negotiated with #10 k-file and working length was established. Crown down root canal preparation was done, coronal preparation was done using #4,#3,#2 gates-golden drills(Tulsa dental, dentsply) middle and apical preparation by hand files (k-files) preparing the apical till #30. The chemo-mechanical preparation was performed under copious irrigation using 5.25% sodium hypochlorite and 17% EDTA after use of each file. Final irrigant used was 2% chlorohexidine. The root canals were obturated with gutta percha and zinc oxide eugenol sealer using lateral condensation technique. Finally the tooth was restored with composite resin.

DISCUSSION

Knowledge to basic concepts is more important than the tools of measurement. Therefore it is of utmost importance to locate and treat all root canals in a tooth.

During the past years, there have been many studies of pulp morphology. The anatomical studies of Vertucci¹, Pineda and Kutler², Black³, and Green⁴ all state that maxillary incisors have a single root 100% of the time. The percentage of permanent maxillary canines with type V canal configuration (one canal leaves the pulp chamber and divides short of the apex into two type V canal configuration) one canal leaves the pulp chamber and divides short of the apex into two separate and distinct canals with separate apical foramina ² was 2.17 and type III canal configuration (one canal leaves the pulp chamber, divides into two within the root, and merges to exit as one canal) was 4.35. A review of the literature revealed that Alapati et al.⁵ reported a maxillary right canine with type II canal configuration and Weisman reported a bi-rooted maxillary left canine.

In the present case two distinct root canal orifices were located in a labial/palatal configuration. The palatal canal coursed laterally and then curved back to join the buccal canal in the apical third, forming a type II canal configuration. Although one of the two canals, the one most continuous with the large main passage, is usually amenable to adequate enlarging and filling procedures, the preparation and filling of the other canal is often extremely difficult.
CONCLUSION
Clinicians should be aware of anatomical variations in the teeth they are managing, and should never assume that canal systems are simple. Even though the most common anatomy of maxillary canines comprises a single root and a single root canal, clinicians should consider the possible variations and always search for the second root canal in teeth with either one or two roots.

REFERENCES
LIST OF PHOTOGRAPHS

Fig: 1 Pre - Operative IOPAR

Fig: 2 Working Length Estimation

Fig: 3 Master Cone IOPAR

Fig: 4 Post Obturation IOPAR