



ABBERATION OF MANDIBULAR CUSPID WITH TWO ROOT CANALS- A CASE REPORT

Dental Science

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KEYWORDS

1. INTRODUCTION:

Proper diagnosis and correct identification of number of roots and root canals are very critical in determining success of an Endodontic treatment. Missed root canals is major reason of the failure of endodontic therapy.^[1] In Mandibular anterior teeth, the prevalence of two or three root canals has been reported to be as low as 1% and as high as 43%. Mandibular Cuspids are recognized as having one root and one root canal in the majority of cases. Researchers have reported on the anatomical variations associated with mandibular canines and that 15% of mandibular canines presented with two canals with one or two foramina.^[2] The mandibular canines do not always display the basic anatomy that we expect with one root and one canal.

Heling et al, reported a case report of a root canal retreatment in a mandibular canine with two roots and three canals^[3]. Orguneser and Kartal in their study recognized three canals and two foramina in a mandibular canine^[4] D'Arcangelo et al, also presented a root canal treatment of two Mandibular canines with two roots and two canals^[5] All these cases studies are suggested to be the result of the abnormal development of the tooth and the root.

Although the number of additional root and/or root canals is uncommon in mandibular cuspids, it is imperative for the clinician to have proper knowledge about the morphology of all possible variations in root canal system. The present case report presents a case of single rooted mandibular canine with 2 canals.

2. CASE REPORT:

A 56 year old male patient reported to our department of conservative dentistry and endodontics with a chief complain of pain in lower left front teeth region since 10-15 days. The pain was reversible in nature which aggravated on stimulus. Upon clinical examination it revealed deep cervical abrasion associated with mandibular left canine 33 and was tender upon percussion. Pre-operative radiograph revealed occlusal radiolucency involving enamel, dentin and overlapping pulp space and widening of pdl space. Another finding was presence of a large pulp canals in the coronal one third portion of the crown and root which got diminished in the middle third of the root, a condition called as "fast break" which was suspected to be indicative of separation of root canals (Fig.1). The diagnosis of symptomatic irreversible pulpitis was established and a root canal treatment was planned for 33. Root canal treatment was completed in 2 visits. After administration of local anesthesia, rubber dam was applied and secured with clamps. Access cavity was prepared using round diamod bur and safe end bur. Further modification and exploration of the access cavity discovered the presence of a different canal orifice, located palatal to the main canal (Fig 2). Canal patency was established using #10 K file and working length was estimated using apex locator and verified using radiograph. After creating glide path using hand files upto #20 K file, the canals were instrumented with Hyflex cm rotary instruments upto #20/4% and 5ml of 5.25% NaOCl and 17 % EDTA were used as irrigating agents, Final rinse with 2% chlorhexidine was performed and then the canals were dried using paper points and obturated with

gutta-percha and sealapex sealer and post endodontic restoration was done using composite resin cement (Fig 3).

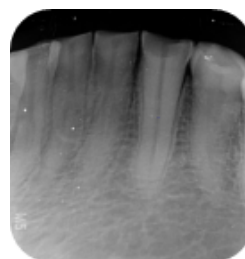


Fig.1.



Fig.2.



Fig.3.

3. DISCUSSION:

The objectives of any endodontic treatment are to debride the root canals of pulp tissue remnants, microorganisms and bacterial products prior to obturation, thus inducing a favorable environment for healing of periradicular and periapical tissues. Failure to find and fill a canal has been demonstrated to be a causative factor in the failure of endodontic therapy.^[6] The mandibular canine is the second longest tooth in human dentition. There is usually one canal present which usually exits in a single foramen at the apex. At times, two root canals, rarely three root canals or two roots can be present. So, the complex nature of root canal morphology of mandibular canines should be thoroughly understood because additional root canals if not detected, can be a major reason for failure of root canal treatment. Care should be taken during initial radiographic examination as well as during access preparation because exploration and location of canal orifices act as a

guide to navigate the canal.^[7]

Various studies have been carried out in different parts of the world on different races and used different methods. Genetic variations among populations also affect anatomy of tooth. Lambrianidis et al (2001)^[8] also stated that variations could be due to the differences in genetics and racial variations in the population, sample size, techniques, classification systems and the researchers' judgment and diagnosis. Pécora JD et al (1993)^[9] studied the internal anatomy, the direction and the number of roots of the mandibular canines. The study was done on 830 mandibular canines, and the results showed that 98.3% had only one root and of these 97.2% had one canal and one opening orifice, 4.9% two canals and one orifice, 1.2% two canals and two orifices. Two canals and two roots were present in only 1.7% of the cases. In 2006, Bakianian V et al.^[10] analyzed 100 canines after making transversal slices. They detected the presence of two canals in 12% of the cases. Similar results were obtained by Kaffe I et al (1985)^[11], in a radiological study on 400 mandibular canines, in vivo, which showed a percentage of 13.75%.

It is of supreme importance that all canals be located and treated during the course of nonsurgical endodontic therapy. Although the prevalence of the root canal anomalies is rare, they can be detected by careful examination. A meticulous knowledge of the root canal anatomy is essential for successful treatment. In addition, a careful endodontic exploration as well as radiographs from different angulations may lead to identification of additional canals and is undoubtedly essential to give the highest possible chance for success.^[10-11]

3. CONCLUSION:

The present case report describes an endodontic management of canine with an additional canal. Mostly mandibular cuspids have single root and root canal, but variations can occur which should be identified and managed properly. Failure to find and fill the canal has been a major cause of failure of endodontic therapy. Hence clinician must be aware of possible variations or aberrations in tooth morphology before commencing the endodontic therapy to detect and treat possible additional canals.

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