Atatürk Üniv. Diş Hek. Fak. Derg.
J Dent Fac Atatürk Uni
Cilt:22, Sayı:2, Yıl: 2012, Sayfa: 172-174

Olgu Sunumu/ Case Report

ROOT CANAL TREATMENT OF A MANDIBULAR SECOND PREMOLAR WITH THREE CANALS: CASE REPORT

ÜÇ KANALLI MANDİBULAR İKİNCİ PREMOLAR DİŞİN KÖK KANAL TEDAVİSİ: OLGU SUNUMU

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Makale Kodu/Article code: 459
Makale Gönderilme tarihi: 17.12.2010
Kabul Tarihi: 18.03.2011

ABSTRACT

Accurate diagnosis of root canal morphology and anatomy is essential for thorough shaping and cleaning of the entire root canal system and eventually successful root canal treatment. The possibility of additional root canals should be considered even in teeth with a low frequency of abnormal root canal anatomy. This case report presents root canal treatment of mandibular second premolar with three canals.

Keywords: Mandibular second premolar, endodontics, anatomical variations

ÖZET

Kök kanal morfolojisinin ve anatomisinin doğru teşhisi, bütün kök kanal sisteminin eksiksiz temizlenmesi ve şekillendirilmesi başarılı kök kanal tedavisi için gereklidir. Ek kök kanallarının olasılığı, düşük sıklıkla normalin dışında kök kanal anatomisine sahip dişlerde bile göz önünde bulundurulması gerekir. Bu olgu sunumu üç kanallı mandibular ikinci premolar dişin kök kanal tedavisini sunmaktadır.

Anahtar kelimeler: Mandibular ikinci premolar, endodonti, anatomik çeşitlilikler

INTRODUCTION

Prerequisite for successful root canal treatment is entirely understanding of root canal morphology and pulp chamber anatomy.[1] Additionally, a thorough knowledge of root canal anatomy, good-quality straight –on and angled radiographic images and close examination of the pulp chamber floor are desirable for detection of additional root canals and successful root canal treatment.[2] The one of the reason of unsuccessful endodontic treatment is that the variations in root canal and root canal anatomy cannot accurately be detected[3]. Mandibular premolars mostly have one root and one canal.[4,5] However, it is reported in the literature that mandibular second premolars also have anatomic variations.[6, 7] Zillich and Dowson[8] reported that three root canals occured in 0,4 % of the teeth. Tzanetakis *et al*[9] reported that the incidence of two or more canals in the mandibular seconder premolar may range from 1,2 to 34%. Calıskan *et al*[10] reported that the incidence of three canals in the mandibular second premolar in Turkish population was 0 %. Kartal and Yanıkoglu[11] in a study of mandibular premolars in Turkish population reported that the occurrence of two or three canals in one root was 9,62 %.

This clinical study demonstrates a case of a mandibular second premolar with three canals and one root.

CASE REPORT

A 15-year-old male with a non contributory medical history was referred to the Restorative Dentistry and Endodontics Department, Faculty of Dentistry, Ataturk University for endodontic treatment of the left mandibular second premolar performed initial endodontic treatment three week ago. The

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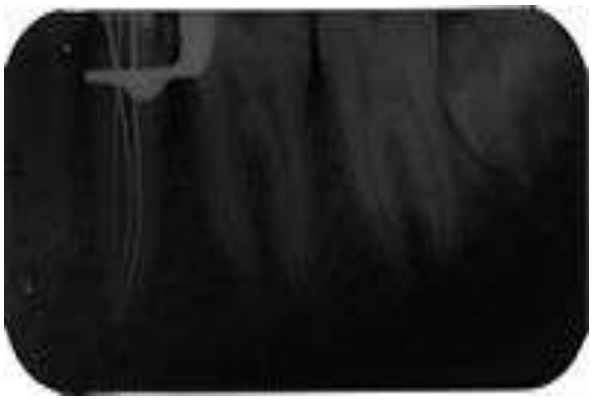
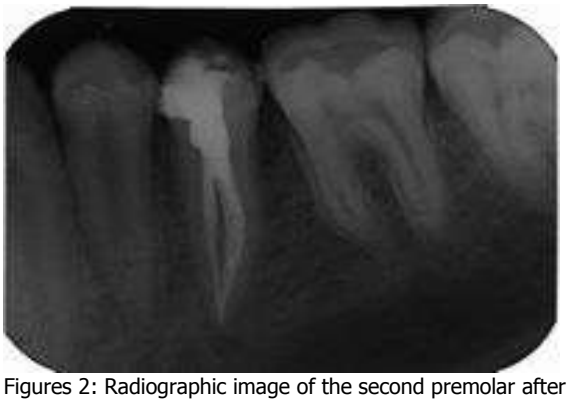
patient complained of spontaneous pain in the mandibular left second premolar. Clinical examination revealed that the mandibular left second premolar was tender to palpation and percussion. The tooth was isolated with rubber dam and temporary filling material was removed. An explorer was used to locate canal orifices under a magnification of 2.5x, using Magnification Loupes (Orascoptic loupes). Examination of the pulp chamber floor revealed three distinct orifices. These were mesiobuccal, distobuccal and lingual. The working lengths of root canals were determined using an electronic apex locator (Propex, Dentsply) and then verified by radyograph. All canals were instrumented using crown-down technique with protaper system (Maillefer, Dentsply) under copious irrigation with 5 mL of 2.5% sodium hypochlorite solution (Wizard, Rehber Chemistry, Istanbul, Turkey) between each file size. Following completion of the preparation, the canals were irrigated with 3 mL of 15 % EDTA (Wizard, Rehber Chemistry, Istanbul, Turkey). The canals were then flushed with 3mL of 2.5% sodium hypochlorite solution and 3 mL sterile water. The canals were dried with paper point and dressed with calcium hydroxide (Calcicur, VOCO,Cuxhaven, Germany) and coronally sealed with Cavit (ESPE, Seefeld, Germany). One week later, the patient presented symptom free. Cavit was removed and tooth isolated with rubber dam. Calcium hydroxide was removed with a 25 K file under copious irrigation with 2,5 % sodium hypochlorite. The canals were then dried with paper points and obturated with gutta percha and AH plus sealer (Dentsply, DeTrey, Konstanz, Germany) using the lateral compaction method.



Figures 1: Working length determination in the left mandibular second premolar



Figures 2: Radiographic image of the second premolar after obturation

DISCUSSION

Mandibular second premolars show a wide variety of root canal anatomy. Because of the varied morphology, mandibular second premolar is one of the most difficult teeth for the endodontic treatment[12,13]. The root canal number cannot be exactly known at the beginning endodontic treatment. Accordingly, proper access and magnification are necessary to locate and treat unusual canal anatomies successfully.[14] It is considerable that pulp floor is carefully examined for determining the number of canal orifices and their location[15]. For this purpose, Magnification loupes and surgical microscopes may be used. In this case, we located canal orifices using magnification loupes. In the present case, pulpal floor anatomy demonstrated one orifice in the lingual side and two in the buccal. Many practitioners recommended that Gates glidden drills facilitate to open the main canal for better visualization.[16] In our case, we used Gates-glidden drills to advance visualization and to simplify preparation. Exhaustive radiographic examination is essential for the detection of additional root canals and anatomical alterations of the root canal system[6, 17]. At the same time, because the root canals are likely to be superimposed on a radiograph, working lengths were primarily determined by an apex locator and confirmed by radiograph.

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