

## ENDODONTIC TREATMENT OF MAXILLARY CENTRAL INCISOR WITH ANOMALOUS ROOT FORMATION- A CASE REPORT

### ANORMAL KÖK FORMASYONLU ÜST SANTRAL KESİCİNİN ENDODONTİK TEDAVİSİ- BİR VAKA RAPORU

Yrd. Doç. Dr. M. Sinan EVCİL\*

Dt. Erdal ÖZCAN\*

Prof. Dr. Mustafa KÖSEOĞLU\*

Yrd. Doç. Dr. K.Meltem ÇOLAK TOPÇU\*

**Makale Kodu/ Article code:** 128

**Makale Gönderilme Tarihi:** 11.05.2009

**Kabul Tarihi:** 13.08.2009

#### ABSTRACT

This article reports root-canal treatment of maxillary right incisor fused with a supernumerary tooth. Radiographically, an accessory root we could decide to which tooth it belonged was observed. It was diagnosed as an acute apical abscess with pulp necrosis. The treatment was completed successfully.

**Keywords:** Accessory root, Fusion, Groove, Maxillary central incisor, Supernumerary tooth

#### ÖZET

Bu makale de füzyonlu fazla bir üst sağ kesici dişin kök kanal tedavisi rapor edildi. Radyografik olarak hangi dişe ait olduğuna karar verdiğimiz bir yan kök incelendi. Pulpal teşhiste nekrotik ve periapikal teşhiste akut apikal abse oluşmuştu. Tedavisi başarılı bir şekilde tamamlandı.

**Anahtar Kelimeler:** Yan kök, Füzyon (kaynaşma), oluk, Maxillar santral kesici, Fazla diş

#### INTRODUCTION

Fusion and gemination are developmental anomalies of dental hard tissue. Fusion implies a union of enamel or dentine of separate tooth germs.<sup>1,2</sup> In gemination, the tooth germ tries to be divided, but this division is incomplete and results in more-or less completely separated roots and crowns.<sup>3</sup> Clinically, it is often difficult or impossible to differentiate between fusion and germination.<sup>4,5</sup> In gemination, the arch will contain the normal complement of teeth whereas in fusion there will be one less than the normal complement. In cases where fusion has occurred with a supernumerary tooth, the number of teeth in the arch would remain normal.<sup>4</sup> The term 'double tooth' has suggested to cover both of these possibilities when the true etiology cannot be determined.<sup>6</sup>

A tooth with an acute periradicular abscess will be very painful to biting pressure, percussion, and palpation. This tooth will not respond to any pulp

vitality tests and will exhibit varying degrees of mobility, and the radiograph or image can exhibit anything from a widened periodontal ligament space to periradicular radiolucency.<sup>7</sup>

Few articles have been written regarding the endodontic treatment of the geminated or fused tooth,<sup>8-10</sup> The following case report describes the endodontic treatment of a maxillary central incisor having two separate roots and an accessory root.

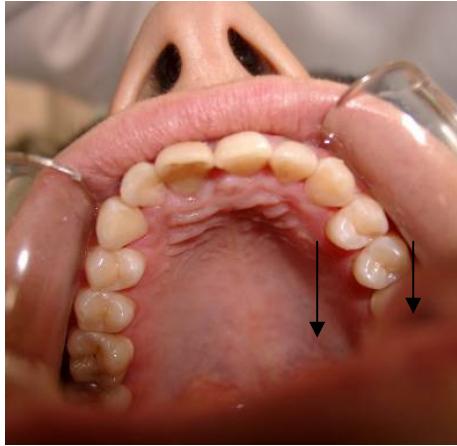
#### REPORT

A 21-year-old female was admitted to Endodontic Clinic of the University of Atatürk, complaining of a severe pain associated with the maxillary right central incisor. The tooth was symptomatic and tender to percussion. The labial cortical plate was tender to palpation. Electric pulp tester and thermal tests elicited no response from the tooth. There was no swelling or fistula.

\*Department of Endodontics, Faculty of Dentistry, Atatürk University, Erzurum, Turkey



The maxillary right central incisor had an anomalous clinical crown. The tooth was wider bucco-palataly but it had the same dimensions mesio-distally in comparison to the symmetric one (Figure 1). The tooth had a groove and except for this groove it had no aesthetic problems. The groove was surrounded cingulum bucco-palataly and did not exceeding the beneath of the gingiva. The groove is clearly seen in radiography. However, further examination revealed neither a carious defect nor restoration. Radiographic investigation indicated the tooth had two roots and an accessory root. Periapical radiolucency was clearly observed in the radiograph of this tooth. (Figure-2) It was diagnosed as an acute apical abscess with a necrotic pulp.

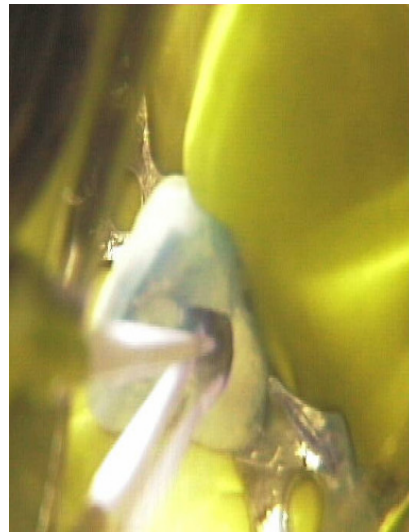


**Figure 1.** The tooth was wider in direction of bucco-palatal in comparison to the symmetric one.



**Figure 2.** Preoperative radiograph of the teeth showing an anomalous anatomy. The groove can be detected radiographically

The tooth was anaesthetized and isolated with rubber dam. Three separate root canal orifices were found on the same level of the pulp chamber floor. (Figure 3) Canal orifices were in bucco-palataly order. The length of the root canals was determined using an apexlocater (AMADENT INC. Cherry Hill. NJ). The buccal root canal didn't reach to the apical area. The root canals were prepared in a crown-down method using rotary Hero 642 (Micro- Mega, France) NiTi instruments. Finally, apical preparation was finished by hand with using NiTi files. For irrigation, 5 % sodium hypochlorite solution was used. The canals were dried with paper points. Calcium hydroxide paste was used as an intracanal medicament. A sterile cotton pellet was placed in the pulp chamber and Cavit (3M ESPE AG, Germany) was used to seal the access cavity. One week later, all symptoms had disappeared and root canal treatment was completed; the canals were rinsed 5 % sodium hypochlorite solution, dried with sterile paper point and obturated with gutta-perca and Sealapex (Kerr, Romulus, MI USA) using cold lateral compaction technique. Final radiograph was taken to establish the quality of the obturation (Figure 4). After completion of root canal treatment, the tooth was restored with a composite filling (Z250, 3M Dental products, St. Paul, Minn.) In order to eliminate aesthetic problems, it was restored with composite in groove parts. (Figure 5)



**Figure 3.** Three separate root canal orifices were found on the same level of the pulp chamber floor.



**Figure 4.** Final radiograph was taken to establish the quality of the obturation.



**Figure 5.** After the treatment.

## DISCUSSION

Dental anomalies are seen either in the primary or permanent dentition.<sup>11</sup> Gemination and fusion present most often in the incisor region of the primary and permanent dentition, occurring with a greater frequency in former.<sup>12</sup>

The malformed tooth is often a challenge to the dentist. It is frequently difficult to diagnose the specific developmental disturbance before the formation of a treatment plan to restore function and appearance.<sup>13</sup>

The same clinical and radiographic appearance can be result of either gemination or fusion. Fusion may be differentiated from gemination by the presence, respectively, of two separate roots or a single root, and by counting the teeth.<sup>5,14</sup>

In this case the number of teeth was normal and differentiation between fusion and gemination is difficult. However, it was seem as a mesiodens which is frequently seen in this area and the bucco-palatal fusion of the central tooth. There was no clue from the point of root shapes and dimensions about which root belonged to the supernumerary tooth,<sup>15</sup> yet when we took the palatal groove surrounding the cingulum of the tooth and the shap of the tooth crown into account together. In this case we couldn't detect any evidence about which tooth the accessory root belonged to. Since the root canal treatment of accessory root was carried out successfully and there was no palatal groove related to accessory root, resection of the accessory root and radiculoplasty wasn't taken into consideration.

## CONCLUSION

Differential diagnosis between fusion and germination is difficult when a normal tooth and a supernumerary tooth are involved. Careful clinical and radiographic examination is essential to decide on the treatment of the tooth. In this case, radiographic investigation indicated that the tooth had two roots and an accessory one. Clinical examination revealed that this was a fusion of central incisor with a supernumerary tooth and the palatal root belongs to the supernumerary tooth. However clinical and radiographic examinations were not sufficient to find out which tooth the accessory root belongs to.

## REFERENCES

1. Duncan WK, Helpin ML: Bilateral fusion and gemination: a literature analysis and case report. *Oral Surg Oral Med and Oral Path* 1987;64: 82-7
2. Libfeld H, Stabholz A, Friedman S. Endodontic therapy of bilaterally geminated permanent maxillary central incisors. *J Endodon* 1986;12:214-216

3. Blaney TD, Hartwell GR, Bellizzi R. Endodontic management of a fused tooth: a case report. J Endodon 1982;8:227-30
4. Spatafore CM. Endodontic treatment of fused teeth. J Endodon 1992;18:628-31
5. Mader CL. Fusion of teeth. JADA 1979;98:62-4
6. Lowell RD, Solomon AL. Fused teeth. JADA 1964;68:762
7. Berman LH, Hartwell GR. Diagnosis. In: Cohen S, Hargreaves KM, Keiser K. eds. Pathways of the pulp, 9. edition, Mosby Elsevier. 2006: p, 2-39
8. Kim E, Jou YT. A supernumerary tooth fused to the facial surface of maxillary permanent central incisor: case report. J Endodon 2000;26:45-8
9. Michanowicz AE, Michanowicz JP, Ardila J, Posada A. Apical surgery on a two-rooted maxillary central incisor. J Endodon 1990;16:454-5
10. Braun A, Appel T, Frentzen M. Endodontic and surgical treatment of a geminated maxillary incisor. Int Endodon J 2003;36:380-6
11. Sawyer M, Peikoff MD, Trott JR. Endodontic therapy in an usual case of fusion. J Endodon 1980;6:796-8
12. Tsesis I, Steinbock N, Rosenborg E, Kaufman AY. Endodontic treatment of developmental anomalies in posterior teeth: treatment of geminated/fused teeth-report of two cases. Int Endodon J 2003;36:372-9
13. Itkin AB, Barr GS. Comprehensive management of the double tooth: report of case. JADA 1975;90:1269-72
14. Tannenbaum KA, Alling EE. Anomalous tooth development; case report of gemination and twinning. Oral Surg Oral Med Oral Path 1963;16:883-887.
15. Hall A., Onn A., The development of supernumerary teeth in the mandible in cases with a history of supernumeraries in the pre-maxillary region. J of Orth.,2006, 33: 250-255

#### Corresponding Author

Yrd. Doç. Dr. Mehmet Sinan EVCİL  
Atatürk University  
Faculty of Dentistry  
Department of Endodontics  
Erzurum 25240/Turkey  
E-mail: evcil\_sinan@yahoo.com  
Phone number: 090 442 2311791  
Fax number: 090 442 2360945

