

Case Report

Clinical management of a fused mandibular lateral incisor with supernumerary tooth: A case report

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ABSTRACT

The purpose of this report is to present a rare case of a fused mandibular lateral incisor with supernumerary tooth with a follow-up for 18-months. A 35-year-old female patient was referred to our clinic with an extraoral sinus tract in the chin. The intraoral diagnosis revealed the fusion of her mandibular lateral incisors. Vitality pulp tests were negative for mandibular right central and lateral incisors. Radiographic examinations showed a fused tooth with two separate pulp chambers, two distinct roots, and two separate root canals. There were also periapical lesion of fused teeth and mandibular right central incisor, so endodontic treatment was carried out the related teeth. Radiographic examination revealed a complete healing of the lesion postoperatively at the end of 18-months. This paper reports the successful endodontic and restorative treatment of unilateral fused incisors. Because of the abnormal morphology of the crown and the complexity of the root canal system in fused teeth, treatment protocols require special attention.

Key Words: Endodontic, fusion, supernumerary tooth, treatment

Received: June 2015
Accepted: August 2015

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INTRODUCTION

Fusion could be defined as a conjunction of two separated tooth germs and identify as radiographically two separate pulp chambers and root canals.^[1] The prevalence of the defect is approximately 0.1% in the permanent dentition. The etiology of fusion is still unknown, but the influence of pressure or physical forces producing close contact between two developing teeth was reported as a possible cause. The genetic inclination was also reported as contributing factors.^[2,3] Fusion may lead to a reduced number of teeth or may occur between a normal and supernumerary tooth. Concrescence is a form of fusion can occur by cementum, which may take place even before the eruption of teeth.^[4] If, it occurs very

late, one tooth almost twice the normal size would develop.^[5]

Clinically, it appears as a two separate crowns joining together or a crown of bigger than normal. The union may occur all along the long axis of the tooth or the roots only, in such a case cementum and dentin are shared. Root canals may also be separated or shared, which may lead to a reduced number of teeth or may occur between a normal and a supernumerary tooth.^[3,6] The presence of deep fissure in fused teeth predisposes them to dental caries and periodontal diseases. Different treatment choices can be implied according to the requirements of the situation.^[6] The

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How to cite this article: Aydemir S, Ozel E, Arukaslan G, Tekce N. Clinical management of a fused mandibular lateral incisor with supernumerary tooth: A case report. Dent Res J 2016;13:80-4.

Access this article online



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best treatment plan depends on the nature of the anomaly, the morphology of the pulp chamber, the subgingival extent of the separation line, and the patient compliance.

The purpose of this report is to present a rare case of a fused mandibular lateral incisor with supernumerary tooth by a multidisciplinary approach involving endodontic and restorative treatment, in which the complex was successfully treated with nonsurgical endodontic therapy.

CASE REPORT

A 35-year-old female patient with an extraoral sinus tract in the chin was referred to our clinic. Clinical examination revealed also intraroral sinus tract in the mandibular anterior region and anomalous shape of a tooth resulting esthetic and functional problem regarding her mandibular right central incisor. There was no significant medical history and no family

history of dental anomalies. Her parents had no hereditary diseases, and her mother did not use any medication and was not exposed to radiation or trauma during pregnancy.

The mandibular right lateral incisor was anomalous, with a mesiodistal width of 7.5 mm and an evident buccal and palatal groove dividing the crown into mesial and distal segments. All the other teeth were in normal size and shape. While radiographic and clinically examinations, a supplemental tooth between the mandibular right central and lateral incisor was detected. The diagnosis was fusion, caused by union of the lateral and a supernumerary tooth.

Radiographic examination [Figure 1] showed that the mandibular right lateral incisor had two separate roots and pulp canals. Pulp vitality tests were negative, during clinical control, intra [Figure 2] and extra [Figure 3] oral sinus tract was revealed; also with a wide periapical radiolucency at the apex of the tooth [Figure 1]. The lingual view of teeth is presented in Figure 4. The

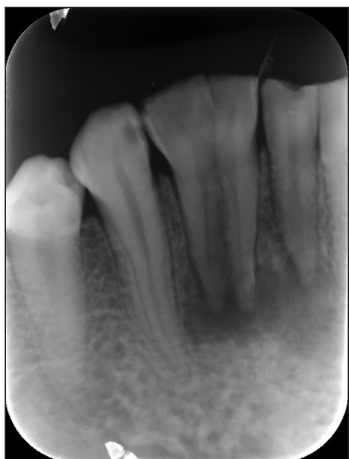


Figure 1: Preoperative radiograph of fused mandibular lateral incisor with supernumerary tooth.



Figure 3: Appearance of initial status of extraoral fistule originating from fused teeth.



Figure 2: Initial intraoral appearance of fused mandibular lateral incisor with supernumerary tooth.



Figure 4: Lingual appearance of fused mandibular lateral incisor with supernumerary tooth.

teeth were accessed using round bur under rubber dam isolation. The pulp chamber was then irrigated with 2.5% sodium hypochlorite. Working length was determined using an electronic apex locator (Raypex 6, VDW, Germany) and confirmed with periapical radiograph. The root canals were shaped with ProTaper (Dentsply, Maillefer; Switzerland) rotary instruments. Then calcium hydroxide paste (Sultan Chemists Inc. Englewood, NJ, USA) was used as intracanal medicament, and the access was sealed with temporary filling material (Cavit, ESPE, Seefeld, Germany). After 2 weeks, the teeth were asymptomatic, and the extraoral and intraoral sinus tract mark was showing slight improvement. Then, the root canals were obturated with gutta-percha and an epoxy-amin resin-based canal sealer (AH Plus, Dentsply DeTrey GmbH, Konstanz, Germany) using lateral condensation technique. A postoperative final radiograph was taken [Figure 5].

Following the root canal treatment, the tooth was restored with a two-step self-etch adhesive system (Clearfil SE Bond, Kuraray, Japan) and microhybrid composite material (Clearfil Majesty Esthetic, A2 shade, Kuraray, Japan). Polymerization procedures for both adhesive material and resin composite were performed using the light-emitting diode curing light (Elipar S10, 1200 mW/cm², 3M ESPE, St. Paul, MN, USA). The composite restoration was finished with a fine-grit finishing diamond burs (Diatech Dental AG, Heerbrugg, Switzerland), than polished with discs (Sof-Lex 3M ESPE, St. Paul, MN, USA). All application procedures and curing times were performed according to the manufacturers' instructions.

Follow-up

The patient was recalled at 6-month, 12-month and 18-month after endodontic and restorative treatment.



Figure 5: Appearance of fused teeth radiographically immediately after root canal treatment.

During recalls, the clinical appearance of the skin had returned to a healthy status [Figure 6]. The composite restoration was examined to determine clinical acceptability according to the criteria of the United States Public Health Service (USPHS) [Table 1] in terms of retention, color match, secondary caries, anatomic form, marginal adaptation, and surface texture [Figure 7]. Radiographic examination revealed the periapical lesions had resolved significantly [Figure 8].

DISCUSSION

Dental fusions can cause serious esthetic problems, malocclusions, and psychologic problems. In this case report, there was a large periapical lesion on central and fused lateral incisors while there was no clinically and radiographically caries detection on the

Table 1: USPHS criteria

Category	Scores	Criteria
Retention	Alfa	No loss of restorative material
	Charlie	Any loss of restorative material
Color match	Alfa	Matches tooth
	Bravo	Acceptable mismatch
	Charlie	Unacceptable mismatch
	Secondary caries	Alfa
Charlie		Caries present
Anatomic form	Alfa	Continuous
	Bravo	Slight discontinuity, clinically acceptable
	Charlie	Discontinuous, failure
Marginal adaptation	Alfa	Closely adapted, no detectable margin
	Bravo	Detectable margin, clinically acceptable
	Charlie	Marginal crevice, clinical failure
Surface texture	Alfa	Enamel-like surface
	Bravo	Surface rougher than enamel, clinically acceptable
	Charlie	Surface unacceptable rough

USPHS: United States Public Health Service.



Figure 6: Healed extraoral fistule after 18-month.



Figure 7: Clinically appearance of fused teeth after 18-month.

teeth. The reason of the lesion in this case might be chronic trauma due to the malocclusion resulting from fused crowns with abnormal dimensions of permanent dentition.^[7] Sinus tracts of endodontic origin are detected most frequently in the intraoral region. Eighty percent of extraoral sinus tracts are resulting from mandibular teeth with purulent drainage in the chin or submental region.^[8]

Periapical lesions develop as sequelae to pulp disease. They often occur without any episode of acute pain and are discovered on routine radiographic examination. Bacterial infection of dental pulp may lead to periapical lesions. They are generally diagnosed either during routine dental radiographic examination or following acute pain in a tooth.^[9] The formation of periapical lesions is not fully understood, though is accepted that pulp necrosis produces an ideal environment for the growth of microorganisms which in turn release toxins into the periapical tissues, inducing an inflammatory reaction and thus the formation of a periapical lesion.^[10] Dental trauma is one of the factors which is associated with disruption of blood supply to the pulp which is responsible for the occurrence of pulpal necrosis later developing into periapical lesions.^[11] Treatment options of periapical lesions include nonsurgical root canal treatment, apical surgery, or extraction. Initially, nonsurgical root canal treatment is attempted to control large periapical lesions.

Endodontic treatment should be performed when the pulp systems of both teeth are connected in a common pulp chamber or when communication exists between the two root canals. In the present case, despite the presence of two separate pulp chambers and root canals, endodontic treatment was mandatory because of teeth necrosis of an unknown etiology.

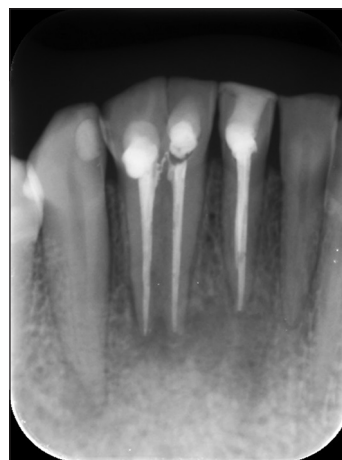


Figure 8: Appearance of fused teeth radiographically 18-month after root canal treatment.

In this case, the recalls were performed at the end of 6-month, 12-month and 18-month. After 18-month from the treatment, the healing was observed on the fused lateral and central teeth in terms of the periapical lesion. Atasu and Cimilli^[12] reported a case in which hypersensitivity and tenderness to percussion in a caries-free fused tooth necessitated endodontic therapy.

Various treatment considerations have been recommended to achieve ideal esthetics and occlusion, which usually require a multidisciplinary approach.^[13] In several cases, the treatment includes sectioning off the teeth.^[4,5,8,14,15] Different from them, in this case, there were enough places for the supplementary tooth on the dental arch. Hence, surgical choices were not conceived, thinking that the teeth taking place in the lower jaw and not threat of esthetic appearance of the patient. Furthermore, considering the age and expectations of the patient, a more conservative approach was preferred.

During 18-month follow-up, the clinical appearance of the skin had returned to a healthy status. The composite restoration was found successful according to the criteria of USPHS in terms of retention, color match, secondary caries, anatomic form, marginal adaptation and surface texture. The composite restoration was scored as alpha for all USPHS criteria at three recalls. The follow-up demonstrated a clinically asymptomatic and adequately functional tooth.

This case report presents a rare case of a fused mandibular lateral incisor with the supernumerary tooth. Fused teeth can be successfully managed by

comprehensive treatment protocols which include endodontic and restorative treatment.

Financial support and sponsorship

Nil.

Conflicts of interest

The authors of this manuscript declare that they have no conflicts of interest, real or perceived, financial or non-financial in this article.

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