

An Unusual Triplication of Supernumerary Teeth in Permanent Dentition: Report of a Rare Case

Daimi Dentisyonda Görülen Süpernümere Dişlerin Üçlü Füzyonu: Nadir Bir Olgu Sunumu

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ABSTRACT The word “synodontia or fusion” means union of two or more teeth that affects both primary and permanent dentition. Although double teeth are relatively common with a reported prevalence ranging from 0.1% to 1.55%; the union of three teeth, named as triple teeth or triplication, is rarely encountered in the primary dentition with a prevalence of 0.02%. Prevalence of triple teeth is well documented in primary dentition, but its occurrence in permanent dentition is a rare phenomenon. This article reports an unusual case of triplication of three supernumerary teeth in permanent dentition associated with periapical pathology in a 10-year-old male patient along with its clinical and radiographic features illustrated using dental volumetric tomography imaging.

Keywords: Tooth abnormalities; fused teeth; tooth, supernumerary

ÖZET “Synodontia ya da füzyon” terimi, süt ve daimi dentisyonu etkileyebilen 2 veya daha fazla dişin birleşimini ifade etmektedir. Prevalansı %0,1-1,55 arasında rapor edilen “ikili füzyon” nispeten sık karşılaşılan bir fenomen iken; 3 dişin birleşmesi anlamına gelen “üçlü füzyon” a oldukça ender rastlanmaktadır ve süt dentisyondaki prevalansı %0,02 olarak rapor edilmektedir. Buna ek olarak; üçlü füzyon olgularının, literatürde sıklıkla süt dentisyonda lokalize olması, daimi dentisyonda saptadığımız bu olgunun oldukça nadir gözlemlendiğini vurgulamaktadır. Bu makalede; 10 yaşında erkek hastada teşhis edilen süpernümere dişlerin üçlü füzyonunun klinik ve radyolojik özellikleri, dental volümetrik tomografi görüntüleri eşliğinde sunulmuştur.

Anahtar Kelimeler: Dişsel anomaliler; kaynaşık dişler; diş, süpernümere

Odontogenesis is a complex process, therefore, an imbalance in this process may cause abnormalities in the number, size, shape or structure of the developing tooth/teeth.¹ Synodontia, means union of two or more teeth and it may occur between teeth of the same dentition, mixed dentition, or between normal and supernumerary teeth. This anomaly may be the result of fusion, gemination or concrescence. Triple tooth can be described as the union of three separate teeth and it is more commonly seen in maxillary arch than the mandible with a male predilec-

tion.²⁻⁵ Although the prevalence of triple tooth in the deciduous dentition has been reported to be 0.02%, occurrence of union of three teeth in permanent dentition is a rarer phenomenon. There is only one study in literature reported by Gera et al. presenting a triple tooth case with the union of two permanent maxillary incisors and a supernumerary tooth in a 15 year old female.⁴ Still, we did not encounter any report with the union of three supernumerary teeth in permanent dentition. Herein, we present a case of triplication of three supernumerary teeth associated with periapical

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pathology in a 10-years-old male patient along with its clinical and radiographic features illustrated with dental volumetric tomography (DVT) imaging.

CASE REPORT

A 10-year-old male patient was referred to Ege University, School of Dentistry, with a complaint of delayed eruption in the anterior maxillary region. The family declared that the patient had no systemic condition or hereditary syndrome. Past medical and dental histories were non-contributory. No history of trauma was mentioned. Written informed consent was obtained from the parents. Intraoral examination revealed the presence of large fused triple tooth at the incisor region in addition to the rotated upper right permanent lateral on the right side. Furthermore, a supernumerary tooth was observed in the upper left premolar region and gingivitis symptoms due to malocclusion (Figure 1).

Orthopantomogram (OPG) evaluation didn't provide accurate information about the position and morphology of the teeth, thus the patient was advised for further radiographic information with DVT. (Figure 2) DVT examination revealed union of three supernumerary teeth with periapical lesion in the right anterior maxillary region. (Figure 3a) A supernumerary tooth causing malposition and another one causing impaction of canine were present at the left side of the maxilla. (Figure 3b,3c). Axial sections of DVT images were evaluated at two different portions as crown and root portion of triple tooth and the each portion evaluated at three different levels as cervical, middle and incisal (apical). The axial section of DVT

images of crown portion showed two separate pulp chambers and a continuous layer of dentin at cervical and middle third levels, whereas fusion of enamel and dentin was shown in the incisal third level (Figure 4). However, a single pulp chamber with three connected root canals detected at all levels of root portion of triple tooth (Figure 5). Based on radiological findings, it was diagnosed as an unusual case of incomplete fusion at the crown portion and complete fusion at the root portion of the triple tooth. The treatment was carried out by extraction of the fused triple tooth and two supernumerary teeth under general anesthesia. (Figure 6)

DISCUSSION

"Triple tooth" term was first used by Knapp and McMahon in 1984, a number of cases have been reported in primary dentition in the literature.⁶⁻⁹ Even though the prevalence has reported as 0.02% in primary dentition, its occurrence in permanent dentition is scarce. Only one study in literature was reported by Gera et al. presenting a case of triplication in permanent maxillary incisors and supernumerary teeth in a 15 year old female.⁴ Unlike to that case, our patient was a 10-year-old male and the triplication occurred between three supernumerary permanent teeth in anterior maxilla. As reported in literature, the triple tooth is more common in deciduous dentition, making our case unique, with the anomaly among three supernumerary permanent teeth.

Various studies cited the possible causes for triple tooth formation.⁶⁻⁹ This uncommon developmental anomaly may result from fusion, gemination,



FIGURE 1: Initial visit intra-oral images. Large fused triple tooth (a), maxillary anterior dental crowding due to dental anomaly and supernumerary teeth (b), supernumerary tooth in the upper left premolar region and a mild swelling in the canine region (c).

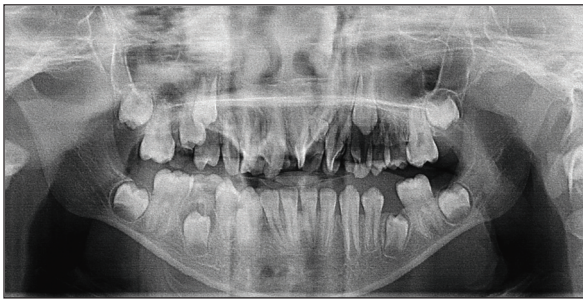


FIGURE 2: Orthopantomogram.

or concrescence. Among these abnormalities, the differential diagnosis of fusion and gemination is usually problematic. Levita's classification may be useful in such situations, where diagnosis can be established based on the number of teeth present in the arch. In case of fusion, it usually resulted in reduced number

of teeth in the dentition and this may help to differentiate it from gemination.³ However, there can be exceptions, like the present case, where the fusion was seen between three supernumerary teeth. Considering the fact that all permanent teeth were present and there was no reduction in tooth number, our case was diagnosed as the fusion of three supernumerary teeth.

Radiographic examinations may provide vital information about the exact morphology of such complex cases. However, a proper understanding of the tooth morphology is not always possible with 2-dimensional (2D) imaging techniques since they usually cause superimposition of a 3-dimensional object. DVT, a preferred mode of three-dimensional imaging modality due to its low radiation dose and effectiveness in the maxillofacial area, generates a volumetric image in identifying the morphology of

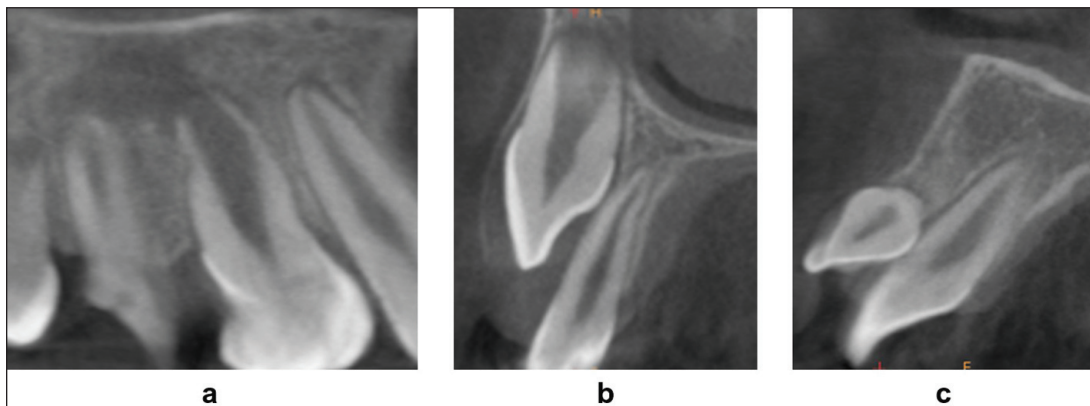


FIGURE 3: Sagittal dental volumetric tomography (DVT) image showing (a) fused teeth with periapical lesion. Coronal DVT images showing (b) a supernumerary tooth and impacted canine and (c) a supernumerary tooth causing palatal position of permanent left lateral incisor.

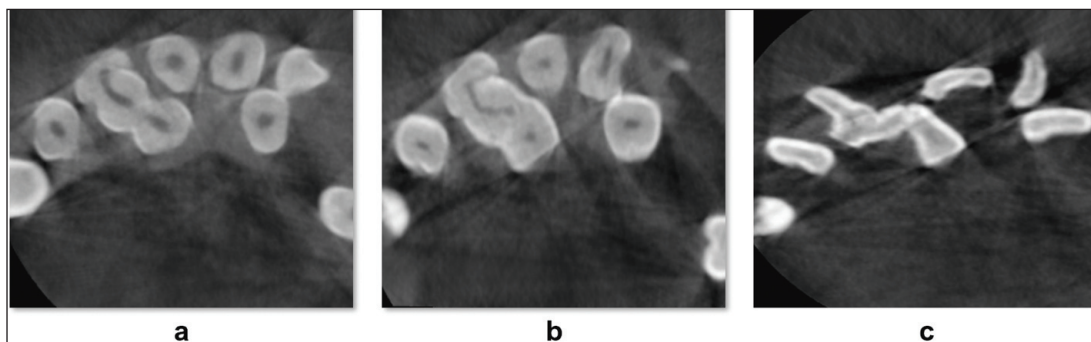


FIGURE 4: Axial dental volumetric tomography images showing (a) cervical third, (b) middle third and (c) incisal third level of crown of the triple tooth. Note that the crown portion of the tooth showed two separate pulp chambers.

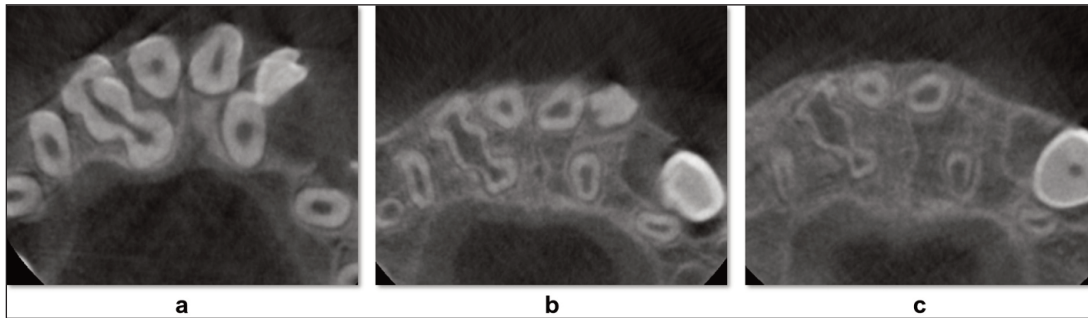


FIGURE 5: Axial dental volumetric tomography images showing (a) cervical third, (b) middle third and (c) incisal third level of root of the triple tooth. Note that the crown portion of the tooth showed two separate pulp chambers and a continuous single pulp chamber with three connected root canals detected at all levels of root portion.



FIGURE 6: Surgical treatment.

teeth with a greater accuracy in comparison with 2D imaging. Several studies confirmed that DVT has become an effective tool in successfully determining the anatomical configuration of tooth.^{10,11} To overcome the limitation of the 2D imaging and to confirm the unusual morphology, we decided to perform DVT imaging. Based on the clinical and radiological findings, final diagnosis of this unusual anomaly was confirmed as an incomplete fusion at the crown portion and complete fusion at the root portion.

Fused teeth have an unknown etiology but the pressure or physical forces producing close contact between two developing teeth have a considerable influence in its formation and have been reported as a possible cause. Other contributing factors could include heredity, racial differences, excess administration of vitamin A, viral infection and use of thalidomide drug during pregnancy.^{2,3} The triple tooth

that is presented in our study may be associated with the decreased space in the dental arch and the proximity between the supernumerary tooth germs.

Various treatment approaches have been described in the literature concerning different types and morphological variations of fused teeth, including endodontic, restorative, surgical and orthodontic treatment.^{2,12,13} Often these cases require a multidisciplinary approach to the treatment. Endodontic intervention would pose difficulties due to internal complexity of root canal system. When an endodontic complication occurs, extraction of the anomalous tooth and prosthetic rehabilitation eventually becomes exclusive treatment option. As a result of the low cooperation, the internal complexity of root canal system and esthetic complications of the patient in the present case, the surgical approach was chosen as a treatment option. After the extraction, the patient

referred for further treatment planning for orthodontic management.

In conclusion, after evaluation of all clinical and radiological information, we can report that this case represents an unusual triplication of three supernumerary anterior teeth. Despite the considerable number of cases and classifications reported in the literature, the differential diagnosis between morphological abnormalities is difficult. Therefore, careful clinical and radiographic examination is necessary for correct diagnosis and proper treatment planning in such abnormalities. At this point, 3D images produced by DVT may be beneficial to provide valuable information to understand the complex anatomy of the teeth.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Elif Şener, Nezaket Ezgi Özer; **Design:** Elif Şener; **Control/Supervision:** Elif Şener, İlkey Aydoğdu Şanlı, Nezaket Ezgi Özer; **Data Collection and/or Processing:** Nezaket Ezgi Özer, İlkey Aydoğdu Şanlı; **Analysis and/or Interpretation:** Elif Şener, Nezaket Ezgi Özer; **Literature Review:** Elif Şener, Nezaket Ezgi Özer; **Writing the Article:** Nezaket Ezgi Özer, Elif Şener; **Critical Review:** Nezaket Ezgi Özer, Elif Şener, İlkey Aydoğdu Şanlı.

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