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Is it a primary tooth or a supernumerary tooth? : A report of an unusual case

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Abstract

Ectopic eruption or abnormal position of the successor permanent tooth is one of the reasons of delayed or stopped root resorption of a primary tooth, which causes a long presence of the primary tooth in the oral cavity. The aim of this report was to present the situation of an unusual case that had a primary tooth which had not been exfoliated and had a vision like a supernumerary tooth. CBCT images were obtained according to the initial findings which addressed a supernumerary tooth. However, after the examinations on CBCT images, it was well understood that the unusual structure was a partially resorbed primary first molar tooth, and the extraction was completed. The right choice for the imaging technique plays a crucial role in having the definitive diagnosis and deciding on the optimal treatment plan in unusual and complicated situations such as the one in the present case.

Keywords: CBCT, ectopic eruption, exfoliation, primary tooth, supernumerary.

1. Introduction

Primary teeth have important roles during the growth process of children such as chewing, speaking, and maintaining a space for permanent teeth [1]. If there is no abnormal situation, these teeth are replaced by permanent teeth on their exfoliation time [2]. In normal dentition, the root or roots of a primary tooth undergo gradual resorption concurrently with the eruption of the successors. The normal interrelationship between the eruption of a permanent tooth and the resorption of the root of the primary tooth is well described [3]. On the other hand, the successor tooth may erupt in abnormal way or position, and the root resorption of the primary tooth may not totally occur. Therefore, the exfoliation of the primary tooth may delay or stop, and primary tooth proceeds to stay in the arch for a long time. So, the exfoliation process may not always be completed successfully for every primary tooth [2]. The aim of this report was to present the situation of an unusual case that had a partially resorbed primary tooth which was not exfoliated and had a vision like a supernumerary tooth.

Case Report

A 12-year-old female child, who was directed by a dentist from a different medical centre, applied to the Bülent Ecevit University, Department of Paediatric Dentistry with a complaint of a malpositioned permanent tooth which was thought to be affected by a supernumerary tooth in the maxillary left premolar region. On general examination, the patient was apparently healthy without any significant past medical history. Intraoral examination revealed a left maxillary first premolar tooth, which erupted and was dislocated buccally according to the adjacent teeth. According to the patient, there was no extraction history for the maxillary first primary molar tooth. Additionally, in the palatal side of the maxillary first premolar tooth, a half impacted unusual structure which seemed like a tubercle of a tooth crown was also detected (Fig. 1). The structure had no mobility, and there was no space which could be clinically observed by using periodontal probe between the abnormal structure and the first premolar molar tooth. Although some periapical radiographs were taken in various angles from the related area, they were not adequate to understand the exact situation of the structure (Fig. 2). Thus, the patient was directed to the Department of Oral and Maxillofacial Radiology to have Cone Beam Computed Tomography (CBCT) images from the related region. The patient was imaged by using CBCT; Veraviewepocs 3D R100 / F40 (J Morita Mfg. Corp., Kyoto, Japan) and a flat-panel detector with six fields of view.



Fig 1: The clinical view of the abnormal structure which was located on the palatal side of the maxillary first premolar tooth.

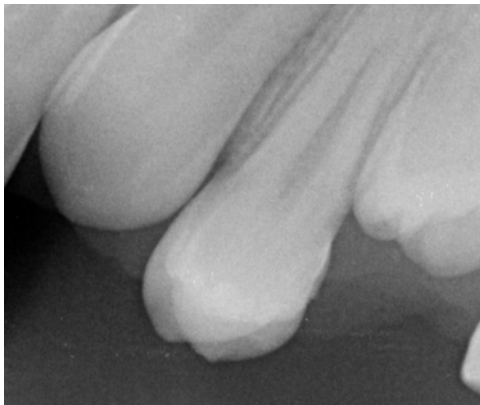


Fig 2: The periapical radiograph of the related area. The abnormal structure could not be clearly observed.



Fig 3: The reconstructed 3D CBCT image of the related area in axial plane (The abnormal structure was shown with a white arrow).

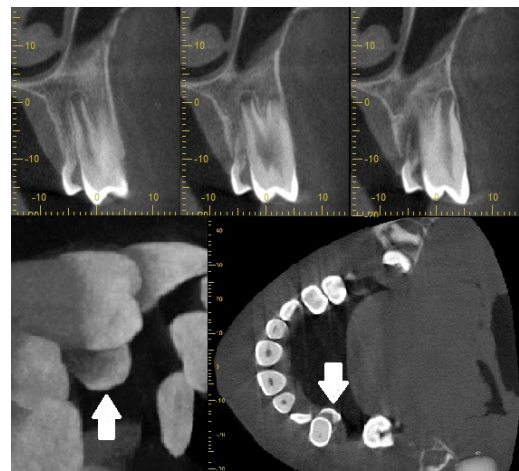


Fig 4: The multiplanar CBCT images of the related area. (White arrows show the abnormal structure).

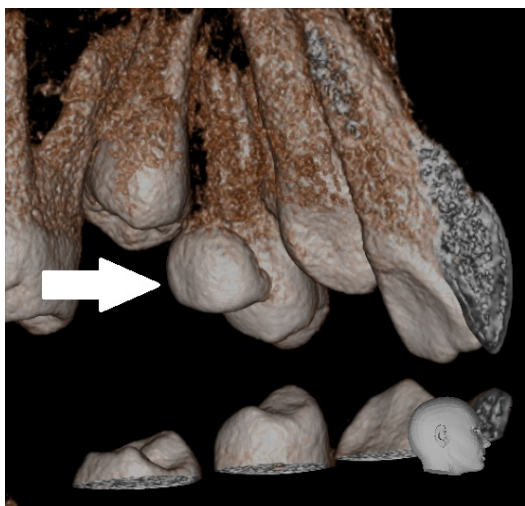


Fig 5: The reconstructed 3D CBCT image of the related area in sagittal plane (The abnormal structure was shown with a white arrow). The crown of the structure was similar with a maxillary primary first molar.

The scan was managed with a 4-cm field of view, at 0.125-mm voxel resolution with 75 kVp and tube current of 3 mA with imaging time of 17s. All of the CBCT images were produced in high-resolution mode. Axial scan and multiplanar reconstruction were obtained, and volumetric data were displayed using the system software to provide serial coronal and sagittal section along the structure plane. All images were displayed on a 23-inch flat-panel screen (Eizo Nanao Corporation, Ishikawa, Japan) and evaluated by two paediatric dentists and one oral and maxillofacial radiologist. Initially, the structure was observed as a fused supernumerary tooth crown in axial plane (Fig. 3) in a reconstructed 3D CBCT image. However, it was well understood that the structure was independent from the first premolar tooth, and a thin radiolucent line, between the structure and the first premolar tooth, was observed. Additionally, presence of a thin partially resorbed root formation of the structure was noted in a multiplanar reconstructed image (Fig. 4), and the morphology of the crown was similar like a maxillary primary first molar in sagittal plane in a reconstructed 3D CBCT image (Fig. 5). Considering these findings, it was decided that the structure was the primary first molar tooth. Extraction of the primary tooth was determined as the treatment choice. The process was carried out with a local anaesthesia, the left maxillary primary first molar tooth was extracted, and all components of the tooth were removed. Two weeks later, an appointment was arranged and the wound healing was observed. The patient was directed to Department of Orthodontics to resolve the orthodontic problems.

Discussion

The exfoliation of a maxillary first primary molar tooth is commonly completed until the age of 10 for both genders, if there is no reason which delays this process such as ectopic eruption or malposition of successor permanent tooth [2, 4]

However, primary teeth may continue to stay in the oral cavity as in the present case when its exfoliation is prevented by a reason stated above. The exfoliation times of incisor primary teeth are earlier than primary canines and primary molars, [4] and parents can easily notice an abnormality in the anterior region of the dental arch. However, it may be hard to detect an abnormality when it occurs in the posterior region. In the present case, neither the parents nor the patient are aware of an asymptomatic primary tooth crown which was located in the palatal side of the first premolar tooth. Furthermore, the crown of the primary tooth was seen as a tubercle of a half impacted tooth crown without any mobility, and there were no sharp margins on the structure which may be seen as a residual primary root. So, these findings were disorienting as the structure might be a fused supernumerary tooth. Finally, the necessity of having CBCT images raised to clear any suspicious condition.

Conventional radiographs are the most frequently used imaging techniques by paediatric dentists for the diagnosis of dental abnormalities [5] However, determining the location, the position and the situation of a pathologic formation is getting harder with only two dimensional (2D) imaging due to some reasons such as overlapping of anatomical structures and magnification on the image [6, 7]. In recent years, Cone Beam Computed Tomography (CBCT) has become popular in clinical dental practice for diagnosis in the oral and maxillofacial region [6, 8]. The working principle of CBCT includes using a conical beam of radiation in a single 360° rotation and creating 3D images in high resolution of 0.001 mm³ that provides more clear and understandable images of examined regions. So, CBCT can be more helpful than conventional radiographs for indications and treatment plans. Thus, in the present case, conventional radiographs were insufficient, and the details about the structure could be obtained by using CBCT images. By the help of the CBCT images, the specific morphological properties of the primary teeth [9] were observed on the unusual structure. These properties which could be seen clearly in figure 5 and 6 include that the buccal and lingual surfaces of the primary molars are flatter above the cervical curvatures than permanent molars and the primary teeth crowns are wider mesiodistally than permanent teeth in comparison with crown width. Taking the emerging findings into consideration, it was well understood that the structure was the maxillary first primary molar tooth, and the extraction process was managed with no doubt.

Conclusion

Although the paediatric dentists commonly experience various cases, they may encounter with extraordinary cases in Paediatric Dentistry at anytime, and the present case was very interesting because the first findings about the abnormal structure did not address to a primary tooth. Thus, as in this case, primary teeth might have the vision of supernumerary teeth in the dental arch for a long time and can mislead the dentist by its fake vision. So, in the present case, the certain decision was made by only the help of clear 3D images with using CBCT. In complicated cases as the present one, the right choice of the necessary imaging technique and to have adequate knowledge about the primary and permanent teeth morphology play a significant role in making the definitive diagnosis and determining the right treatment choice.

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