Unilateral Fusion of a Supernumerary Tooth to a Maxillary Permanent Lateral Incisor: A Report of a Rare Case

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Abstract

A supernumerary tooth is an additional entity to the normal series of teeth that may occur in isolation or may be fused to a normal counterpart. Diagnosis and delineation of an accurate treatment plan in cases involving supernumerary teeth are often a challenge. This report describes a case of unilateral fusion of a supernumerary tooth to a maxillary permanent lateral incisor in which a conservative approach was used to reach a favorable outcome. *(J Endod 2015;41:420–423)*

Key Words

Anatomy, CBCT, fusion, supernumerary

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A supernumerary tooth is an additional entity to the normal series of teeth and may be seen in any quadrant of the jaws. These teeth may have a normal morphology, or they may be rudimentary and miniature. Supernumerary teeth are much more commonly seen in the maxilla than in the mandible (10 to 1) (1). Tooth fusion results from the union of 2 or more tooth germs during the developmental process and may occur between both the dentin and enamel layers, or it may involve just the enamel layer (2). Both the epithelial and mesenchymal germ layers are involved, which leads to irregularities in tooth morphology (3). In fused teeth the root canal systems may be connected or completely separate, depending on the developmental stage at which the union took place (2). The incidence of fusion is approximately 0.1% in the permanent dentition and 0.5% in the primary dentition in the white population (4). Fusion between supernumerary and permanent teeth occurs less frequently than fusion between other types of teeth (5).

Clinically, several complications may occur because of the fusion of teeth such as the development of caries in the groove between the fused crowns, tooth impaction, diastemas, aesthetic and periodontal problems, and pulpal pathosis. Many of these complications demand a multidisciplinary approach, and treatment depends on the type and position of the supernumerary tooth and on its relation to the adjacent teeth (5–8). If incomplete fusion is present and there is no communication of the root canal systems, nonsurgical root canal treatment may be rendered on the affected tooth only, preserving the vitality of the unaffected counterpart. A thorough diagnosis is paramount to the formulation of an accurate treatment plan that will lead to a favorable prognosis.

In endodontics, periapical radiographs are mandatory for diagnosis, treatment, and follow-up. However, they provide a limited 2-dimensional view of the true 3-dimensional (3D) anatomy. With the advent of cone-beam computed tomography (CBCT), accurate 3D imaging of teeth and their surrounding dentoalveolar structures is now readily obtainable (9). Because of shorter acquisition times and significant reductions in radiation exposure as compared with conventional CT imaging, CBCT scans are ordered with increasing frequency. The ability to accurately focus on specific regions by using a small field of view further avoids unnecessary radiation exposure and provides a minimally invasive approach to acquiring detailed diagnostic information (10).

This report describes a case of unilateral fusion of a supernumerary tooth to a maxillary permanent lateral incisor in which a conservative approach was used to reach a favorable outcome.

Case Report

A 20-year-old female white patient was referred to an endodontist for assessment and necessary treatment of her maxillary right lateral incisor (tooth #7). Her chief complaint was of spontaneous pain that necessitated 400 mg ibuprofen be taken every 8 hours for relief. Her medical status was noncontributory.

At this stage, the patient had been evaluated by both a periodontist and an oral and maxillofacial surgeon. Collaboratively, they had suggested that the supernumerary tooth lingual to tooth #7 be surgically extracted and that the resultant defect be bone grafted to prevent the development of future periodontal problems. It was believed that exploration of the potential for a more conservative approach was warranted; the patient was referred for endodontic consultation.

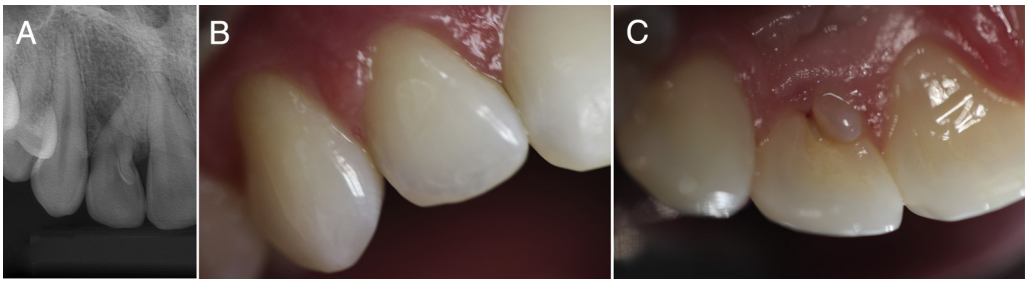

Figure 1. (*A*) Preoperative periapical radiograph: the maxillary lateral incisor (#7) and the supernumerary tooth are superimposed. (*B*) Buccal view of #7. (*C*) Palatal view of tooth #7 showing the small crown of the supernumerary tooth. Note that the crown is discolored when compared with #7.

During clinical examination, a deep cingulum pit was detected on the palatal aspect of tooth #7. Tooth #7 responded normally to hot and cold temperature testing, and the electrical pulp testing (EPT) reading suggested vitality at 36/80. Slight discomfort was noted on vertical percussion of tooth #7, whereas percussing the supernumerary's crown created an increased pain response. At this point, cold temperature testing and EPT of the supernumerary tooth were performed, which yielded no response to cold and an EPT reading of 80/80. Mobility of tooth #7 was within normal limits, and the supernumerary was not found to move independently from tooth #7.

Radiographic evaluation clearly depicted the supernumerary tooth to be overlapped by the lateral incisor. A radiolucent lesion with an ill-defined margin was seen around the apex of the supernumerary tooth, whereas the apical region of the lateral incisor appeared to be intact (Fig. 1).

Clinical diagnosis for the lateral incisor was normal pulp and periapical tissues, and the supernumerary tooth was deemed to have a necrotic pulp and symptomatic apical periodontitis.

To obtain more detail in regard to the relationship of the supernumerary tooth to its counterpart, a CBCT (Galileos 3D; Sirona Germany, Bensheim, Germany) scan of the anterior maxilla region was obtained. The scan revealed that the middle portion of the root of the supernumerary tooth was fused to the root of the right lateral incisor (Fig. 2). There was no evidence of communication between the 2 root canal systems. Because of the data acquired from the CBCT scan, extracting the supernumerary tooth was no longer an option because of a high chance of damaging tooth #7, which could ultimately lead to its loss. The possibility of creating a chronic periodontal defect would also have jeopardized tooth #7's prognosis.

Acknowledging that the lateral incisor responded to vitality testing, a conservative approach of nonsurgical root canal treatment of the supernumerary tooth only was decided on.

After obtaining local anesthesia and rubber dam isolation, the supernumerary tooth was accessed by using #2 round bur and conic diamond bur. The pulp chamber was then irrigated copiously with 5% sodium hypochlorite (NaOCl). Working length was determined by using an electronic apex locator (ROOT ZX; J Morita, Kyoto, Japan), and cleaning and shaping were performed by using the reciprocating WaveOne system (Primary, 25.08; Dentsply-Tulsa Dental, Tulsa, OK). Patency was checked regularly with #10 hand file (Dentsply-Tulsa Dental). Five percent NaOCl was used as an irrigant throughout the procedure, and 17% EDTA was used for smear layer removal. The canal was then

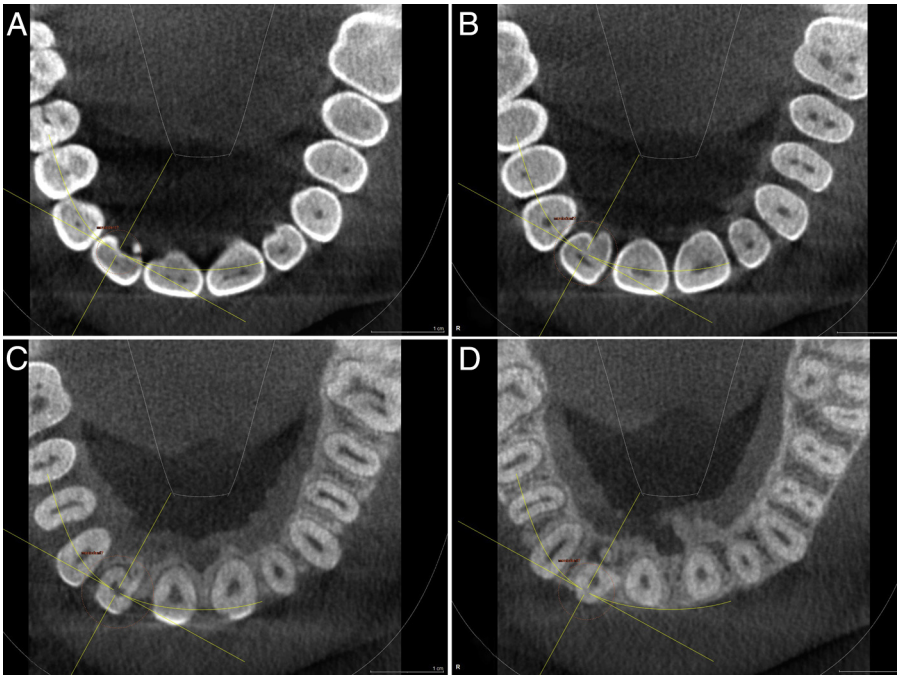

Figure 2. (*A*) CBCT scan: axial image of the coronal portion. (*B* and *C*) CBCT scan: axial image of the middle portion of the root showing that the teeth are fused. Two separate canals are evident. (*D*) CBCT scan: axial image of the apical portion revealing that the periradicular lesion involves only the apex of the supernumerary tooth.