

An Unusual Single Quadrant Dental Anomaly: A Case Report

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Anomalies of the dentition present real challenges to the dental practitioner. The occurrence of multiple supernumerary teeth in the absence of an associated systemic condition or syndrome is considered as a rare phenomenon. Here, we discuss a case of four supernumerary teeth in one maxillary quadrant with a fusion of supernumerary tooth to maxillary permanent central incisor, which was evident on radiological and clinical examination. Various radiographic views including intraoral periapical radiograph, maxillary occlusal radiograph, orthopantomograph, and cone-beam computed tomographic (CBCT) imaging were done to identify and locate the presence of supernumerary and supplemental teeth. The present case emphasizes the importance of different radiographic views and modalities in correct identification of the dental anomalies and thereby providing a prompt diagnosis and treatment as the exact identification of supernumerary teeth and differentiating it from permanent tooth is of prime importance in treatment planning and management.

Keywords: Fusion, Impacted, Nonsyndromic, Radiographic evaluation, Supernumerary tooth

INTRODUCTION

Dental anomalies often present real challenges to the dental practitioner.¹ The occurrence of multiple supernumerary teeth in the absence of an associated systemic condition or syndrome is considered to be a rare phenomenon. Various syndromes are associated with the occurrence of multiple supernumerary teeth, such as Gardner's syndrome, Fabry-Anderson syndrome, Ehlers-Danlos syndrome, or cleidocranial dysplasia.² The prevalence of non-syndrome multiple supernumerary teeth is estimated to be <1%. The prevalence of only one supernumerary tooth is around 76-86% and the presence of two supernumerary teeth is 12-23%. The prevalence of "multiple supernumerary teeth," five or more supernumerary teeth is reported to be <1%.² Supernumerary teeth can lead to various pathological conditions including delayed eruption or non-eruption, displacement of permanent teeth, resorption or malformation of the adjacent roots and cystic formation.^{2,3}

Supernumerary teeth occur in the upper jaw ten times more frequently than in the lower jaw.⁴

Tooth fusion is defined as the union between the dentin and or enamel of two or more separate developing teeth.⁵ Fusion can be partial or total depending upon the stage of tooth development at the time of union.⁵ Fusion may be unilateral or bilateral and most common in the primary dentition with more predilection for anterior teeth. Fusion can occur between two healthy teeth or between a healthy tooth and a supernumerary tooth. Fusion of permanent and supernumerary teeth is rare compared to fusion between permanent teeth. Hachisuka reported that the frequency of fusion between permanent and supernumerary teeth is 0.1% and that this type of fusion usually involves maxillary anterior teeth.⁵ According to Mader, fusion might cause clinical problems related to esthetics, the loss of space in the dental arch and periodontal problems.⁵

Impacted supernumerary tooth is usually detected using a thorough clinical examination and radiographic surveys. Comprehensive radiographic screening plays an important role in establishing an accurate diagnosis of supernumerary tooth. A combination of radiographic views is often required to provide adequate information.⁶ It is essential to enumerate and identify the teeth that are present clinically and radiographically, for definitive

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diagnosis and proper treatment plan, as supernumerary teeth are often an important cause of dental retention.⁷ Here, we discuss a case of four supernumerary teeth in one maxillary quadrant with a fusion of supernumerary tooth to maxillary permanent central incisor which was evident on radiological and clinical examination.

CASE REPORT

A 10-year-old boy reported to our department of oral medicine and radiology with a complaint of irregularly placed upper front teeth and desired to get it corrected. There was no significant medical history. No case of fusion of teeth was reported in the family. Intraoral examination revealed age-specific dentition with Class I occlusion. Cross bite was present in relation to tooth number 22 which was palatally placed and shift of midline of the maxillary arch to the left side, and pre shedding mobility was present in relation to tooth number 63. The crown of tooth number 21 appeared larger in size than usual with indentation present on the medial aspect of the crown (Figure 1). Two supernumerary teeth were present palatal to tooth number 21, and fusion of mesial aspect of one supernumerary tooth to the permanent central incisor was evident on clinical examination (Figure 2). On clinical examination, a tooth-like structure was palpable high in the sulcus in the region of tooth number 21 (Figure 3).

Radiographic examination was done which confirmed the fusion of the maxillary left permanent incisor to a supernumerary tooth. Additional findings were noted on subsequent radiological examination with periapical, maxillary topographical occlusal, oblique occlusal, and panoramic radiographs (Figures 4-7). Intraoral periapical radiograph revealed presence of a supplemental tooth in the midline with longer root than standard mesiodens with incomplete root development hence was considered as a supplemental tooth rather than mesiodens. A tooth-like

structure was seen superimposed over the crown of tooth number 21 indicative of supernumerary tooth fused to permanent left maxillary central incisor (Figure 4).

Occlusal radiograph revealed presence of 1 supplemental and one supernumerary tooth which was fused to tooth number 21 in the maxillary anterior region. In addition



Figure 2: Supernumerary tooth palatal to 21



Figure 3: Supplemental tooth palpable high in the sulcus in the region of 21



Figure 1: Fused maxillary central incisor 21



Figure 4: IOPAR showing tooth structure superimposed over 22 and 23

to this, an inverted tooth-like structure was seen in the posterior part of the hard palate morphologically resembling mesiodens (Figures 5 and 6). Therefore, the presence of an inverted mesiodens in the palate was considered radiographically. On panoramic radiograph in addition to the findings in periapical and occlusal radiograph roughly round radio-opaque structure with same radiodensity as that of tooth was present at the apices of tooth number 21, probably supplemental tooth to tooth number 21 (Figure 7).

The radiological findings were suggestive of multiple supernumerary teeth present only in the left maxillary quadrant. The three-dimensional reconstruction cone-beam computed tomographic (CBCT) showed labially erupting tooth, supplemental tooth number 21, horizontally impacted mesiodens in the hard palate with closed apex and two supernumeraries palatal to central incisors (Figures 8 and 9).

DISCUSSION

Multiple supernumerary teeth rarely occur without being associated with syndromes. The condition is infrequent and normally asymptomatic. The diagnosis is usually made as a casual finding during routine radiographic examinations.⁸ The case described represents unique characteristics of multiple supernumerary teeth and fusion of supernumerary to a permanent tooth affecting a single quadrant. The etiology of hyperdontia is still unclear. Hattab *et al.* described hyperdontia as “a multifactorial inheritance disorder which originates from the hyperactivity of the dental lamina,” while some others suggested that supernumerary teeth were formed due to dichotomy of the tooth bud.^{2,9}

Clinical and radiographic examination is the best way to determine supernumerary tooth. Generally, if there are no

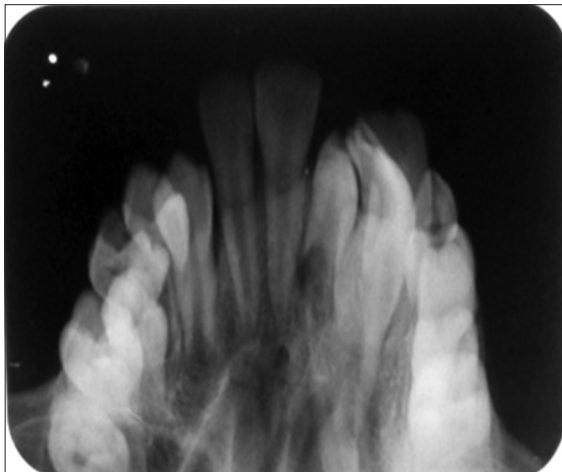


Figure 5: Maxillary occlusal radiograph showing tooth structure in the midline with incomplete root development and inverted mesiodens on the left side posterior palate

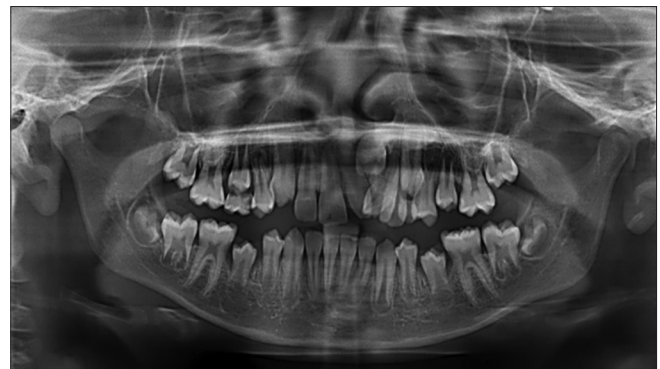


Figure 7: Orthopantomogram showing mixed dentition with permanent teeth at various stages of eruption. Teeth present are 11, 12, 13, 14, 55, erupting 15, 16, 17, 21 in addition to 21 a radioopaque tooth structure is present in the apical region indicative of supplemental tooth apical to 21. An additional tooth structure with incomplete root development is present in the midline. An additional tooth-like structure with radio densities same as tooth was present superimposed over the crown of 22 indicative of supernumerary tooth

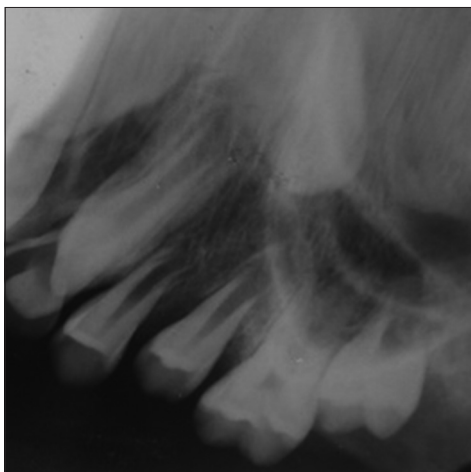


Figure 6: Maxillary oblique occlusal radiograph showing retained canine 63 and erupting 23. There is a radio-opaque tooth-like structure seen on the left side of palate indicative of the supplemental tooth



Figure 8: Three-dimensional reconstruction cone beam computed tomography showed labially erupting tooth supplemental 21, horizontally impacted Mesiodens in a hard palate: Closed apex, also two supernumeraries palatal to central incisors

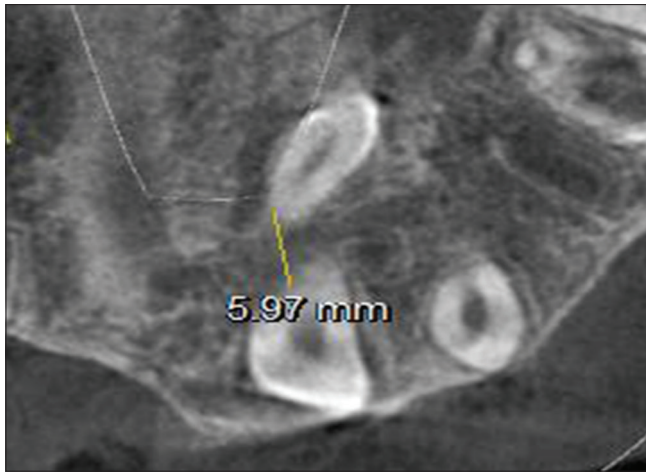


Figure 9: CBCT axial section showing mesiodens at 17° to midline and 6 mm palatal to supplemental tooth to 21

symptoms, supernumerary tooth can be identified during radiographic examination by coincidence.⁷ Radiographic imaging plays a significant role in assessing the location and nature of supernumerary teeth, indeed the required information can be obtained from periapical, occlusal, and panoramic radiographs, but these radiographs cannot provide complete information about spatial relationship of supernumerary tooth to surrounding structures.¹⁰ Aberrant anatomic tooth structures may prevent conventional radiography from providing sufficient information for diagnosis and operative treatments. Several cases have been reported in the literature showing inaccuracy of conventional two-dimensional radiographic views in identification of supernumerary teeth which was later identified accurately using three-dimensional imaging.¹¹ Conventional intraoral periapical radiographs produce only two-dimensional images, and can result in superimpositions, incorrect angulations, and magnifications of three-dimensional structures.¹² Recent developments in 3D imaging systems have enabled dentists to better visualize supernumerary teeth, with more details. CBCT has a significant role in diagnosis and treatment planning of patients with supernumerary teeth.¹³

In the case reported here, initially it was quite difficult to differentiate the supplemental teeth present and the erupting permanent tooth. The supplemental tooth palatal to tooth number 21 had morphological resemblance to cuspid, so initially it was considered as malpositioned permanent canine, later in oblique occlusal radiograph permanent canine was found erupting which was helpful in diagnosis of teeth palatal to tooth number 21 as supernumerary, further imaging with orthopantomograms and CBCT aided in diagnosis and exact location of other supplemental teeth in the left maxillary quadrant. The case described here emphasizes the importance of different radiographic views and modalities in correct identification of the dental

anomalies and thereby providing a prompt diagnosis and treatment. The exact identification of supernumerary teeth and differentiating it from permanent tooth is of prime importance in treatment planning and management.

CONCLUSION

The ability to accurately evaluate supernumerary teeth and to determine their relation to the adjacent teeth and other anatomical structures is necessary for the decision about treatment, especially when extractions or orthosurgical interventions are indicated.¹⁴

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