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"DOUBLE TOOTH – GEMINATION OR FUSION AND DIAGNOSTIC CONFUSIONS: A CASE REPORT WITH CLINICAL CONSIDERATIONS"

Dental Science

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ABSTRACT

Developmental anomalies of teeth are a common clinical picture in dental practice. The most common developmental disorders characterized by alterations in morphology and number of teeth are gemination and fusion. There is always a diagnostic dilemma between gemination and fusion when teeth are congenitally missing or supernumerary teeth are present.

KEYWORDS

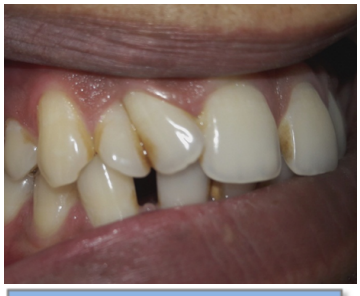
Gemination, Fusion, developmental anomaly.

INTRODUCTION

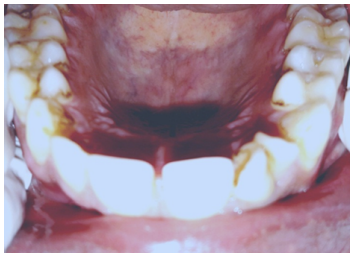
Any abnormality in the differentiation stage of tooth development leads to developmental anomalies. It can occur due to congenital, inherited, acquired, or idiopathic cause, which can result in abnormalities involving tooth number and morphology. [1] Most common site for gemination and fusion are the maxillary central and lateral incisors. [2] Gemination is a single enlarged tooth or joined tooth. Fusion is a union between two tooth germs which could be complete or partial. In gemination, the tooth count is normal , while in fusion the patient presents with a reduced number of teeth in the dental arch. [3] Gemination and fusion are often described by the terms "double tooth", "joined teeth", or "connoted teeth". [4] Radiographs are generally used to diagnose and assess the level of abnormality in this condition. According to the literature, the prevalence of gemination is 0.5% in primary dentition and 0.1% in permanent dentition. [5] The unusual crown size of the maxillary and mandibular anterior teeth creates inter-arch tooth size discrepancies which may be aesthetically disturbing and can cause malocclusion. [6] Geminated permanent teeth may require treatment for aesthetic, orthodontic and functional reasons. Here we report a rare case of gemination of maxillary right lateral incisors in a 27-year-old man.

CASE REPORT

A medically fit 27-year-old male patient reported to the department of oral medicine and radiology for a routine oral checkup. The patient was the second of 5 siblings of parents with no history of consanguinity. His past dental, medical, family history, general and extraoral examinations were noncontributory. Clinical examination revealed maxillary right lateral incisor with increased mesiodistal dimension and notching in the labial aspect, extending till the cervical third of the crown. (Figure 1,2).

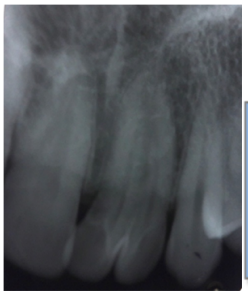


[Figure-1]: Intraoral photograph showing bifid crown in maxillary right lateral incisor.



[Figure-2]: Intraoral photograph showing maxillary occusal view

The periapical radiograph exhibited that the roots were fused with distinct pulp chambers and root canals in right maxillary lateral incisor. (Figure 3).



[Figure-3]: Intraoral periapical radiograph of maxillary right lateral incisor showing bifid crown with distinct pulp chambers and root canals

DISCUSSION

Abnormalities in the morphology and number of teeth are congenital and appear in both primary and permanent dentition. Developmental anomalies like fusion and gemination are clinically characterized by a wide tooth with increased mesiodistal dimension. According to literature various cases have been documented regarding the occurrence of both gemination and fusion, but still there is confusion regarding nomenclature and the diagnosis. Some writers have tried to distinguish them by counting the teeth or by observing the root morphology, others use fusion and gemination as synonyms. In cases where the abnormal tooth is counted as two teeth ,like one normal and an extra tooth in that region, then it is regarded as the fusion between a normal and a supernumerary tooth. [7] If the tooth count is normal, differentiation of fusion from gemination is seldom possible. In this case report, we could clearly see the morphological variation of the

right maxillary lateral incisor with increased mesiodistal dimension. (Figure 1). Clinical examination revealed normal compliment of teeth and on radiographic examination, two distinct pulp chamber and root canals could be appreciated. Considering these facts, the case was diagnosed as gemination of the right maxillary lateral incisor. Differential diagnosis is often challenging in these cases and depends on the number of teeth on the arch, clinical features and radiographic findings. In the present case, a differential diagnosis of fusion of right maxillary lateral incisor with supernumerary tooth germ was considered.

ETIOPATHOGENESIS

Although the precise cause of gemination and fusion is even unknown, environmental factors such as trauma, vitamin deficiencies, systemic diseases, and local metabolic interferences, which occur during morphodifferentiation of the tooth germ, may be the potential reasons. It may be associated with syndromes such as achondrodysplasia, and chondroectodermal dysplasia, or can be found in nonsyndromic patients as in the present instance. Gemination is the effect of "schizodontism" - the splitting of tooth germ during development or "synodontism" - fusion of a regular tooth bud with a supernumerary tooth bud. [8]

CLINICAL CONSIDERATIONS

Complications that can occur with gemination and fusion are many. Morphological abnormality of the affected teeth can be unaesthetic. Deep buccal and lingual grooves extending subgingivally favors plaque accumulation causing periodontal diseases. [9] Selective grinding, surgical separation followed by pulp therapy and orthodontic correction if required are the currently available treatment modalities. [10] Root canal anatomy of the anomalous tooth should be appreciated in order to avoid treatment complications. Operating microscopes can be an important tool for better diagnosis and better quality of care along with conventional radiography. [11] Rare case reports of the successful surgical division of germinated and fused teeth followed by endodontic therapy and crown fabrication have been documented [12]

CONCLUSION

Fused and geminated teeth contribute to various clinical and esthetic concerns, space problems, occlusal disturbances, and delayed eruption of the permanent successors. The present case, reported with an enlarged bifid crown with separate pulp chamber and a root canal is a rare phenomenon. A detailed case history, clinical and radiological examination will provide the necessary information needed for the diagnosis. The clinicians should be familiarized with such morphological variations and be well-equipped to diagnose and manage such anomalies.

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