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Full Length Case Report

FUSION OF MAXILLARY LATERAL INCISOR AND SUPERNUMERARY TOOTH: A RARE CASE REPORT

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Abstract

Fusion is a rare developmental anomaly of shape of tooth characterized by the union of two adjacent teeth and has very little documentation in Indian population. The prevalence of this anomaly is less than 1% and most common in the primary dentition in incisor-canine region. The purpose of this article is to report a rare case of fusion of maxillary lateral incisor and supernumerary tooth in a 14 year old male patient.

Keywords: Fusion, Germination, Permanent lateral incisor, Supernumerary Tooth

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INTRODUCTION

Developmental anomaly in number, size and shape may be due to abnormalities during the morpho-differentiation stage of the dental lamina and the tooth germ. Dental anomalies of such form may occur in the primary and permanent dentition. Various terms have been used to describe fusion such as germination, dental twinning, concrescence, double teeth, conjoined teeth, twinned teeth, double formations, geminifusion, vicinifusion, and syndontia (More and Tailor, 2013). Germination is defined as an attempt of single tooth bud to divide with the resultant formation of a tooth with a bifid crown and usually a common root and root canal. Fusion is the union of two teeth normally with separated tooth buds leading to the formation of joined tooth with confluence of dentin (Sharma et al., 2012).

Kelly suggested that in germination the two halves of the joined crowns are usually mirror images, in contrast to fusion, which manifests with a distinct difference in the two halves of the crown (Kelly, 1978). These types of anomalies may be unilateral or bilateral and may affect either dentition, although the primary teeth are more commonly affected. The incidence of this anomaly is 0.5% in the primary dentition and 0.1% in the permanent dentition. (Kelly, 1978). Fusion of permanent and supernumerary teeth occurs less frequently than fusion between permanent teeth. In cases of fusion, the crowns are united by enamel and/or dentin and there are two roots or two root canals in a single root and if the fused tooth is counted as 1 unit, there will be one tooth less in the arch than normal.

In contrast, in gemination, the structure most often presents two crowns, either totally or partially separated, with a single root and one root canal and if the anomalous tooth is counted as 1 unit, the number of teeth in the arch will be normal. Gemination may be differentiated from fusion by the increased number of teeth, except in unusual cases, in which the fusion is between a supernumerary tooth and a normal tooth (Tannenbaum and Alling, 1963).

The clinician must then depend on both clinical examination and radiographs to make the final diagnosis between fusion and gemination. The purpose of this article is to report a case of fused permanent maxillary lateral incisor and supernumerary tooth. Though there are several cases reported in the dental literature of fusion; very few cases have been reported in which a supernumerary tooth was fused to the maxillary lateral incisor; thus making it a rare anatomic variant.

CASE REPORT

A 14-year-old boy reported to the department of pedodontics and preventive dentistry, College of Dental Sciences with the chief complaint of discolored front tooth. Medical and family history was nonremarkable. Intraoral examination revealed discolored 11, 21 and a presence of unusually large maxillary left lateral incisor associated with abscess (Figure 1), but the patient was asymptomatic. This unusually large maxillary left lateral incisor appeared to be the fusion between 22 and 23. The mesial half of which showed morphology of maxillary lateral incisor and distal half showed morphology resembling

maxillary canine (Figure 2), and moreover permanent canine was not seen clinically in maxillary arch, there was presence of only deciduous left maxillary canine. To rule out this a radiographic examination was carried out which revealed that there was complete fusion between 22 and supernumerary tooth with a large pulp chamber and a single wide canal, because radiographically we could see the presence of 23 which was not yet erupted in the oral cavity (Figure 3). Treatment plan was aimed at composite veneering with 11, 21, endodontic treatment with fused 22 and supernumerary tooth, followed by oral prophylaxis.



Figure 1: Intra oral photograph illustrating unusually large maxillary left lateral incisor associated with abscess



Figure 2. Intra oral view of the tooth exhibiting the morphology of two teeth



Figure 3. IOPA showing Fusion between 22 and supernumerary tooth

DISCUSSION

Fusion is defined as a single enlarged tooth or joined tooth in which the tooth count reveals a missing tooth when the anomalous tooth is counted as one. It can be classified into two types, complete and incomplete. It is complete when it begins before calcification and the crown incorporates the features of both participating teeth in relation to enamel, dentin, cementum, and pulp. Incomplete fusion occurs at a later stage. The tooth might exhibit separate crowns, and fusion may be limited to the roots alone with pulp canals fused or separate (Sharma *et al.*, 2012). Our case revealed complete fusion of two teeth involving 22 and supernumerary tooth with large pulp chamber and single wide canal.

The differential diagnosis for fused teeth includes gemination and macrodontia. Much confusion still exists in differentially diagnosing fusion and germination clinically which are two different morphological dental anomalies, characterized by the formation of a wide tooth. Madder's "two tooth" rule may be a practical way of differentiating between fusion and gemination. If fused tooth are counted as one and the number of teeth in the dental arch is less, then the term fusion is considered. However, when the abnormal tooth is counted as one and the number of teeth in dental arch is normal, then it is termed as gemination or is a case of fusion between normal and supernumerary teeth (Sharma *et al.*, 2012).

The portion of the fused tooth that is formed by the supernumerary tooth is conical in morphology and is smaller when compared with other fused component that is separated by a developmental groove, whereas in gemination both the halves are mirror images of each other (Muthukumar *et al.*, 2012). The present case revealed two disproportionate components with dissimilar morphology separated by a groove and also it was large in its mesiodistal diameter. The etiology of fusion remains unclear. Evidence related to etiopathogenesis of double teeth has been cited in the literature. Few authors claim that local metabolic interferences which occur during Morpho differentiation of the tooth germ may be the cause. Other etiological factors could be physical forces or pressure causing the contact of developing teeth, trauma, viral infection during pregnancy, or genetic basis possibly autosomal dominant with reduced penetrance (Tsesis *et al.*, 2003). Environmental factors have also been implicated in the etiology. Thalidomide embryopathy may induce dental fusion and as cited in literature, few authors have produced the anomaly in animals treated with trypan blue and high doses of vitamin A (Prabhakar *et al.*, 2009). Syndromes commonly associated with double teeth are Wolf-Hirschhorn syndrome, achondroplasia, focal dermal hypoplasia, osteopetrosis, and chondroectodermal dysplasia (Sharma *et al.*, 2012).

Teeth with such abnormalities are unaesthetic due to their irregular morphology. They also present a high predisposition to caries, periodontal diseases, and spacing/crowding problems. The periodontal complications occur due to the presence of fissures or grooves in the union between the teeth involved. If these defects are very deep and extend subgingivally, the possibility of bacterial plaque accumulation in this area is quite high. Strict oral hygiene is imperative to maintain periodontal health.

Furthermore, fusion may have an adverse effect on occlusion, causing deviation and sometimes delayed eruption of other teeth. In our case, presence of deep developmental groove on palatal surfaces of teeth led to pulpal involvement and abscess formation. Several treatment methods have been described in the literature with respect to the different types and morphological variations of fused teeth, which include endodontic, restorative, surgical, periodontal and/or orthodontic treatment (Turell and Zmene, 1999). However routine endodontic therapy remains the treatment of choice in cases with periapical involvement.

Conclusion

Fusion is rare developmental anomaly which needs early recognition and recording. With its abnormal morphology necessitates prophylactic treatment to avoid complications.

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