

FUSION PRESENTING AS GEMINATION-A RARE CASE REPORT

Manish Bhargava¹ Deepak Chaudhary² Shivani Aggarwal³

¹Reader, ²Senior Lecturer, ³Professor & Head Dept of Oral Pathology, Manav Rachna Dental college, Faridabad, Haryana, India.

Corresponding Author: Manish Bhargava, 179 Munirka Vihar, New Delhi-110067,
Tel: +91-987-157-4157, Email: drmanishbhargava@gmail.com

Abstract

Odontogenic anomalies can occur as a result of conjoining or twinning defects. These include fusion, gemination and concrescence occurring in both primary and permanent dentition. Double tooth is a term used to describe connate tooth and includes both dental fusion and gemination. The phenomenon of gemination occurs when two teeth develop from one single bud leading to a larger tooth. Fusion is a condition in which the crowns of two separate teeth have been joined together during the crown development. Fusion occurs infrequently but could cause esthetic, spacing and periodontal problems. The present article highlights the presence of double teeth in a 44 year old man clinically presenting as gemination, but on radiographic evaluation turned out to be fusion. Correct diagnosis of the condition implicates in a better prognosis for the patient.

Keywords: Fusion, Gemination

Introduction

Dental anomalies have always been of great interest which may be due to abnormalities in the differentiation of dental lamina & tooth germs (anomalies in shape, size number) or due to abnormalities in the formation of dental hard tissue (anomalies in structure), occurring both in primary and permanent dentition¹.

Various terms have been used to describe joined / fused tooth. Gemination, Fusion, concrescence, twinning, double tooth all suggest certain kinds of abnormalities in which one tooth is conjoined with another^{2,3,4,5}.

Gemination is a developmental anomaly of form, which is recognized as an attempt by single tooth germ to divide resulting in a large single tooth with a bifid crown and usually a common root & root canal in which the tooth count is normal when the anomalous tooth is counted as one.^{6,7}

Fusion is recognized as union of two separate tooth buds during odontogenesis, therefore one fewer tooth than normal in the dentition if the affected tooth is counted as one.^{2,6,7}

However, these definitions also make differentiation between fusion and gemination difficult when fusion involves a normal tooth and a supernumerary tooth.^{8,9,10,11}

It is important to observe that

supernumerary teeth are not uncommon and they appear in .3-3.8 % of population¹². Mesiodens followed by 4th molars and para molars are the most common supernumerary teeth.^{12,13}

The present article reports a unique case of fusion of 2 maxillary peg lateral incisor with two roots and two root canals with discussion of clinical implications and treatment methods.

Case Report

A 44 year old male patient reported to college OPD for stains on his teeth. The clinical intraoral examination revealed the presence of abnormally large right maxillary lateral incisor (Fig. 1) along with caries in 25,26,36,37. Parental, family history was negative to familial tendency to fused teeth. Clinically, a bucco lingual groove was seen extending from the incisal edge to the cementum of the maxillary lateral incisor (Fig 2, 3), a provisional diagnosis of gemination was given. Radiographically, two fused crowns via dentin with separate root and root canals were seen (Fig.4). The number of teeth in the arch was normal (Fig 5). A diagnosis of fusion/ conjoined teeth between two peg shaped lateral incisors was given and the patient was advised to get aesthetic rehabilitation of the same. Thorough oral prophylaxis was done along with restoration of carious teeth.



Fig: 1



Fig: 2



Fig: 3



Fig: 5



Fig: 6

Discussion

Double teeth are the most common type of dental anomaly in primary dentition⁵, characterized by formation of clinically wide teeth³. The prevalence of fusion is about 0.1-5% in primary and 0.05% in the permanent dentition based on geographic, racial or genetic factors^{2,5,7,21}. Due to this low prevalence the importance of these anomalies tends to be underestimated⁵. Both germination and fusion are common, with incisors being more commonly affected.^{15,16}

The etiology of double teeth may be attributed to evolution, trauma, hereditary and environmental factors, although the pathogenesis is not clear, there is strong evidence of genetic control of fused teeth as evidenced in family.^{17,18,19}

Tannenbaum, defined germination as the formation of the equivalent of two teeth from the same follicle, with evidence of an attempt for teeth to be completely separate, indicated clinically by a groove or depression which delineate two teeth.¹⁹

Despite the considerable number of reported cases, the differential diagnosis between these abnormalities is difficult. Clinically and radiographically, gemination can be distinguished from fusion by presenting a single root and root canal with a mirror image due to a coronal groove.^{2,6,7,9,16}

Gellin reported that hypodontia of lateral incisor was seen when double teeth involved lateral incisors.⁴

Madder's "two tooth" rule may be a practical way of differentiating between fusion and gemination. If fused teeth 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 a normal and supernumerary teeth²⁰. A diagnostic consideration would be that supernumerary teeth are often slightly aberrant or cone shaped, thus fusion between a normal teeth and supernumerary teeth will show differences in two halves of the joined crown. However in gemination the two halves of the joined crown are mirror images also there is a buccolingual groove that extends to the incisal edge.^{1,6,7,15}

In the present case, the lateral incisors were peg shaped with the two halves being mirror images of each other separated by a buccolingual groove extending beyond the cemento-enamel junction and were fused radiographically in coronal portion of teeth and showing two separate root canals, suggestive of fusion. However, the tooth number count in the arch remained normal.

Since the course of odontogenesis cannot be witnessed fusion and germination seem to be equivalent. Hence in present case we prefer to use the term conjoined or joined teeth. The anomaly can cause unpleasant esthetic appearance due to irregular morphology, when deep grooves are present, these teeth may be susceptible to caries and periodontal disease. The treatment of choice depends upon the patients orthodontic, periodontal, esthetic and functional requirements.

With Fusion, deep groove present may predispose the teeth to development of dental caries and periodontal disease. Bacterial plaque accumulation in these areas is high. Strict oral hygiene is imperative to maintain periodontal health.

Different cases require a variety of knowledge about alternative operative techniques and abilities. Usually a multi disciplinary approach may contribute to the success of the treatment.

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