

Dental fusion: A report of 2 cases

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Abstract

Fusion can be described as the complete or partial union between the dentin and enamel of two or more developing teeth. This union could be seen in the primary or permanent dentition or between a permanent tooth and a supernumerary tooth. Various theories have been put forward to explain the aetiology of fusion including that of increased force generated during growth, use of thalidomide or viral infection during pregnancy and a genetic aetiology. Fusion may cause aesthetic problems, occlusal disturbances, increased tendency for dental caries and periodontal disease. Developmental anomalies such as fusion are not observed frequently in clinical practice. Morphologic alterations of teeth can be observed as an incidental finding during thorough clinical examination. This case report discusses 2 such cases of fusion along with review of literature.

Keywords: Fusion, Developmental disturbance, Double tooth.

Introduction

Tooth development is an intricate process. Any alterations in this process can lead to anomalies in number, size, shape and structure. Fusion is one such anomaly, which results in the union between dentin and enamel of two or more separate developing teeth.¹ Fused teeth cause various aesthetic, functional, pulp and periodontal problems.^{2,3} This case report documents 2 cases of fusion along with their clinical and radiographic features.

Case 1

A 16-year-old male reported to our Institution for dental check-up. Past dental, medical history was unremarkable. On intra-oral examination, lower right central and lateral incisors presented with altered

morphology. The entire length of the clinical crowns from the incisal angle to the cervical area appeared to be joined with a deep groove of demarcation in between. There was no degree of separation between the two teeth (Fig. 1A). Based on the clinical features, a provisional diagnosis of fusion was given. Intra-oral periapical radiograph (IOPAR) was advised, which revealed fusion of the two teeth up to the cervical area, with two separate, distinct pulp chambers, root canals and roots (Fig. 1B), thus confirming the provisional diagnosis. The patient did not have any aesthetic concerns with respect to the fused teeth and hence no further specific treatment with respect to the fused teeth were carried out.

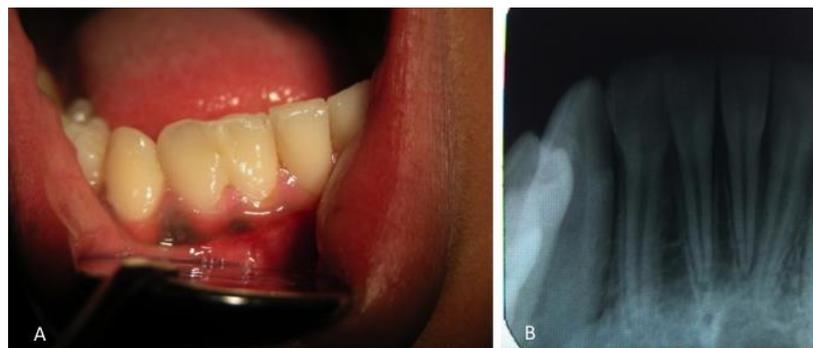


Fig. 1A: Lower right central and lateral incisors presenting with altered morphology, Fig. 1B: IOPAR showing fused teeth

Case 2

A 27-year-old male presented to our Dental Hospital with a chief complaint of decay in his left upper back tooth, which was associated with mild to moderate pain relieved on taking over-the-counter pain medication. Past dental, medical history was unremarkable. On intra-oral examination, dental caries

was found involving the pulp, IOPAR revealed rarefying osteitis with respect to the upper left second molar. The upper left second molar clinically showed altered morphology, with increased bucco-palatal dimension (Fig. 2A), IOPAR of the same revealed 2 distinct teeth fused up to the cervical region of the tooth (Fig. 2B) confirming the provisional diagnosis of fusion. Since the patient had a full complement of

dentition, we arrived at a diagnosis of fusion of the left maxillary third molar with a supernumerary tooth. As the patient did not have any aesthetic concerns with

respect to the fused teeth no further specific treatment with respect to the fused teeth were carried out.

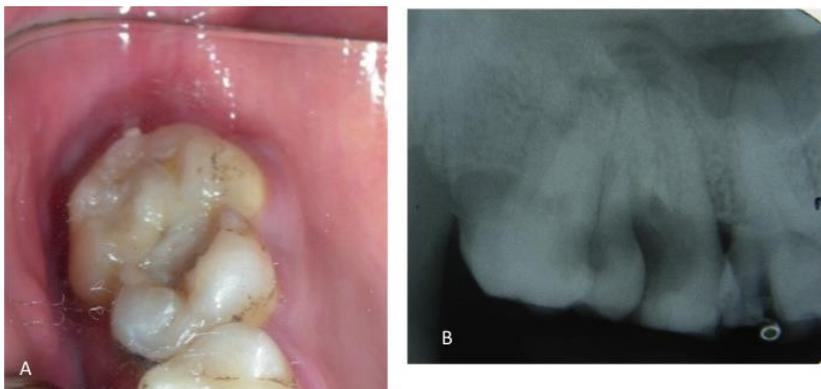


Fig. 2A: Left Maxillary third molar with altered morphology; Fig. 2B: IOPAR showing fused upper left third molar with supernumerary tooth

Discussion

The stage of development of the tooth dictates whether fusion is complete or incomplete. If fusion occurs before the initiation of the calcification of tooth, the teeth in question unite completely; but, if it occurs at a later stage, it results in separate crowns along with fused/ separate pulp canals. This union could be seen in the primary or permanent dentition or between a permanent tooth and a supernumerary tooth.¹ Fusion can occur between deciduous teeth or with an adjacent tooth as was seen in Case 1 or with a supernumerary tooth as in Case 2.

Fusion occurs in around 0.5% of deciduous teeth and 0.1% in permanent teeth. Around 0.1% cases of fusion are associated with permanent supernumerary teeth.^{4,5}

It is often difficult to distinguish between fusion and gemination based on radiographic features alone. In fusion, the tooth count usually reveals a missing tooth except in cases where the fusion has occurred with a supernumerary tooth.

This conflicting diagnosis of fusion and gemination is simplified by the 'Two tooth rule', according to which, if the number of teeth in the dentition is less than normal, fusion can be considered as the diagnosis and if the number of teeth is the same, it is considered either as germination or as fusion between a normal and supernumerary tooth.⁶⁻⁸ In both our cases (Case 1 and Case 2) the number of teeth in the dental arch was found to be less. Fusion, which occurs with a supernumerary tooth, as in case 2, presents as two dissimilar halves of the crown.⁵

The aetiology of fusion has been explained by many theories. The most accepted one states that tooth buds in close association contact each other and fuse during development. Other theories include thalidomide usage, viral infection and genetic factors and well as a part of various syndromes. Fusion is mostly seen

occurring in the deciduous dentition affecting incisors and canines. Clinical features of fusion include a single large tooth structure with / without an alteration in tooth number.⁴ Intraoral radiographs are used in diagnosis. Radiographic features include the presence of a single large pulp chamber with separate root canals in case of fusion at an early stage or separate pulp chambers and canals if fusion was at a later stage of development.

Fusion may be associated with cosmetic problems especially when involving anterior teeth and may cause crowding and occlusal dysfunction in posterior teeth.⁵ Increased predispositions to caries and periodontal disease are seen due to the deep fissures on the tooth. In deciduous teeth, delayed resorption and delayed or ectopic eruption of permanent teeth may occur as a consequence of greater root mass.

Treatment of fused teeth is mostly for aesthetic purposes. Management depends on the presence or absence of separate pulp chambers and root canals. Some authors advocate tooth separation and restoration of the teeth whereas others advise restoration of one tooth, extraction of the other and orthodontic closure of the space. Another suggested treatment is the grinding of the affected tooth in order to reduce the width of the crown.⁹ In the present cases, the patients did not have any aesthetic concerns with respect to the fused teeth and hence no further specific treatment with respect to the fused teeth were carried out.

Conclusion

A methodical clinico-radiographic examination is essential to identify any developmental anomalies of teeth. Diagnosis and management of fusion is required to avoid further complications.

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