

Synodontia between Permanent Mandibular Central & Lateral Incisors

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Abstract

Dental fusion also called 'synodontia' is a rare dental developmental anomaly in which the union of two independently developing primary or permanent tooth buds occurs. Tooth fusion is defined as union between the dentin and / or enamel of two or more separate developing teeth. The fusion may be partial or total depending upon the stage of tooth development at the time of union. The etiology of fusion is still unclear. The overall prevalence of the tooth fusion is approximately 0.5%. Fusion may be unilateral or bilateral and most often occurs in primary teeth with more predilections for anterior teeth. Clinically fused anterior teeth frequently have a groove or notch on the incisal edge that goes in buccolingual direction and radiographically, the dentin of fused teeth always appears to be joined in some region with separate pulp chambers and canals. Hence the cases of fusion of permanent teeth in different ages are presented.

Key words: : fusion, gemination, supernumerary tooth, tooth anomaly.

Introduction

The anomaly of conjoined teeth has been described under a variety of names. 'Connate' was one of the first introduced terminologies by Tomes (1859). Later De Jome (1955) proposed the term 'Schizodontia' to describe teeth which originate by partial division of dental anlage & 'Synodontia' for those formed by the inability of adjacent tooth germs to retain their individuality. Miles (1954) suggested the term 'Double teeth' which appears to be more appropriate if the etiology is unknown.

Fusion is commonly observed as joining of two teeth of normal series or normal tooth & a supernumerary tooth by pulp & dentin during morpho differentiation of dental germs.

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The prevalence of fusion in permanent dentition is around 0.2%¹ which is rare, as compared to 2.5% in primary dentition. Fusion may be total or partial depending on the stage of odontogenesis & proximity of developing teeth. Found commonly in anterior teeth, this anomaly causes an unpleasant aesthetic tooth shape due to irregular morphology. It generally causes reduced number of teeth in the arch.

Case Report

Case 01: A 37 year old male patient reported to the department of oral medicine diagnosis and radiology with the chief complaint of pain in the left back region of the lower jaw. During oral examination, it was noticed that the patient had mild to moderate generalized periodontitis which was more marked in the mandibular anterior region. The number of teeth present in mandibular arch were less than the normal and one tooth (mandibular incisor of right side) was found to be disproportionately larger with missing mandibular right lateral incisor. The amount of calculi deposits and gingival recession in this region was comparatively greater than the adjacent teeth (Fig. 01).



Fig. 01: Fusion between 41 and 42 with a groove like depression in between which acts as a local plaque retaining.

Intraoral periapical radiographic examination revealed complete fusion of central & lateral incisors with one root & one pulp canal with two pulp horns present in coronal portion. Family history was not contributory (Fig. 02).



Fig. 02: Periapical radiograph showing complete fusion with wide pulp chamber, bifurcation of pulp horn and bone loss secondary to periodontitis.

Case 02: A 18 year old male patient came to the department of oral medicine diagnosis and radiology with the chief complaint of misaligned teeth. During clinical examination, it was noticed that the patient had mild to moderate localized periodontitis in the mandibular anterior region along with anterior overjet and overbite. There was a missing mandibular right lateral incisor replaced by one larger tooth on the same side. Calculi deposits and gingival recession in that region was more compared to other regions (Fig. 03).



Fig. 03: Fusion between 41 and 42 with a groove like depression in between the crown structure.

In Intraoral periapical radiograph we found complete fusion of central & lateral incisors with one root & one pulp canal with two prominent pulp horns (Fig. 04).



Fig. 04: Periapical radiograph showing complete fusion with wide pulp chamber, bifurcation of pulp horn with widening of periodontal ligament space.

Discussion

Fusion may be partial or total depending upon the stage of tooth development at the time of union, a distinguishing feature between fusio-totalis, partialis-coronalis & partialis-radicularis^{2,3}. If the contact occurs before the calcification stage, the teeth unite completely to form one large tooth. Incomplete fusion may be at root level if the contact & union occurs after formation of crown. The etiology of fusion is still an enigma & many different views have been put forward. Some authors believe that fusion results when two tooth germs develop so close together that as they grow, they contact & fuse before calcification⁴. Shafer et al speculated that a physical force or pressure generated during development causes contact of adjacent tooth buds.⁵ Lowell & Soloman believe that fused teeth result from some physical action that causes the young tooth germs to come into contact, thus producing necrosis of the intervening tissues & allowing the enamel organ & dental papilla to fuse together. Many authors have also suggested hereditary involvement as an autosomal dominant trait with reduced penetrance⁶.

Conclusion

In Conclusion the differential diagnosis between fusion & germination is difficult & some authors use the terms as synonyms. Teeth with these abnormalities are unaesthetic & have a higher predisposition to dental caries, periodontal disease & spacing problems (Diastema).

Presence of fissures or grooves extending gingivally in the union between the teeth involved will give rise to periodontal diseases due to accumulation of plaque. Proper case history, clinical & radiographic examinations are mandatory for the correct diagnosis of such abnormalities.

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