

Fusion in primary dentition- A case series

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Abstract

Though anomalies of tooth are reported consistently in literature, cases of bilateral fusion of teeth are still rare and the etiology is still to be explored. Once fusion has been diagnosed these teeth require constant monitoring and treatment planning since problems with aesthetics and exfoliation can occur along with caries formation in cases of incomplete fusion. This report presents two cases of bilateral fusion of deciduous laterals and canines in mandibular arch and two other cases of unilateral fusion of lateral incisor with canine and central incisor and will add to the existing literature.

Keywords: Fusion, germination, dental anomaly, Canine, Lateral incisor.

Introduction

Developmental anomaly of various aspects, such as defects in structure, shape, size, and number are usually encountered by complex anatomic structures i.e teeth. Developmental anomaly of shape of tooth formed by union of two independently developing primary or secondary teeth is called as Synodontia or fusion which is frequently encountered during routine dental examination.¹ It commonly leads to increased susceptibility to dental caries, crowding and spacing in dental arches which can result in various aesthetic problems in pediatric patients.

Fusion is the most unusual and a rare developmental anomaly of the shape of the tooth having usually a hereditary pattern which is commonly identified as the union of two distinct dental sprouts, occurring in any

stage of the dental organ.¹ It may be complete or incomplete depending upon the stage of development involving either the complete length of teeth or the roots only, however the dentin is affluent in true fusion. The Clinical presentation ranges from two separate crowns or a single crown of double size and may be delineated with a notch or groove running bucco-lingually on the entire crown.²

Thus, the purpose of this article is to highlight four different cases of fusion with a discussion of their clinical implications and dental management.

Case report 1

A 9 yr old male patient presented to the OPD of Department of Pediatrics with the chief complaint of irregular teeth in the upper front tooth region. Medical, family history was non significant. Intra oral examination revealed dental caries wrt 74, 84 along with unilateral presence of unusually large teeth in the right lower incisor-canine region, suggesting conjoined primary lateral incisor and canine. Count of the total teeth was reduced in the mandibular arch (Figure 1). There was shallow labial-lingual groove extending from occlusal surface to the middle third of the crown. The right mandibular primary canine was missing confirming it to be a case of fusion and not germination. On radiographic evaluation the morphology of 82, 83 showed bifid pulp chamber with single pulp canal (Figure 2). The fused teeth were caries free. Because of absence of any carious lesion, a preventive approach was planned along maintenance of oral hygiene in order to avoid dental caries, along with 6 monthly periodic follow up.



Fig.: 1



Fig. : 2

Case report 2

A 9 year old boy reported to the outpatient department of Paediatrics with the chief complaint of retained milk teeth in lower front region since one years. No history of difficulty in speech, mastication or any soft tissue trauma. Intraoral examination revealed mixed dentition. Clinically, integration of mandibular primary central and lateral incisors was seen on the left side which resulted in lingual eruption of permanent central and lateral incisors and retained primary fused central and lateral incisors (Figure 3). Clinically, a shallow groove was observed from incisal edge till the cervical third but the crowns of two teeth were fused. There was no caries and periodontal problem in relation to fused mandibular primary incisors.



Fig.: 3

Intraoral periapical radiograph (IOPAR) revealed fused crowns of primary left central and lateral incisors with two discrete pulp chambers. But the roots of primary teeth were not visible as they were superimposed by roots of permanent central and lateral incisors. So, final diagnosis was made as fusion in relation to primary left mandibular central and lateral incisors(Figure 4)

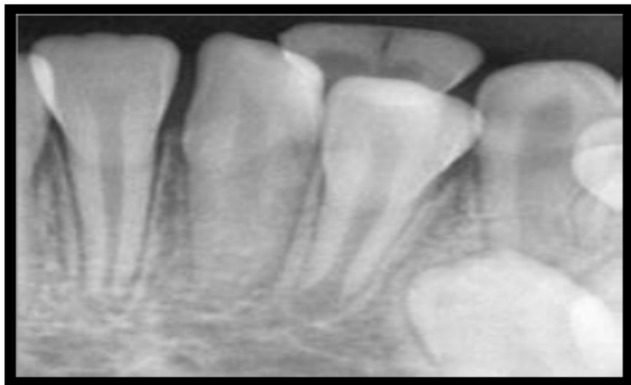


Fig. : 4

Management

Treatment planning consisted of extraction of retained primary teeth. The patient was quiet apprehensive so behaviour management techniques predominantly tell show do was used. Extraction of the teeth was carried out under local anaesthesia (2% lignocaine hydrochloride). After extraction, the fusion appeared to be of incomplete type as a linear groove was seen extending from the incisal edge till the apical third of the fused left primary central and lateral incisors. But the groove was shallow in

nature (Figure 5) Patient was recalled after one month for follow up.



Fig.: 5

Case report 3

An eight year old girl reported to the department of Pediatrics for regular check up with non significant medical, dental and family history. Prenatal history from mother was non-contributory. Intraoral examination revealed bilateral fusion of mandibular deciduous lateral incisor and canine. On the right side, a partial groove was seen between the two fused teeth while on left side a complete groove was seen.

Radiographically, there was complete fusion of right deciduous lateral and canine with a single root canal. While on left side the fusion was incomplete and there were two separate pulp chambers and root canals between fused teeth. The OPG of the patient showed lesser number of permanent tooth buds than normal thus indicating the possibility of either fusion or missing teeth in permanent dentition also. (Figure 6)



Fig.: 6

Case report 4

A 9 year old patient was seen at the Department of Pediatrics with the chief complaint of carious teeth with non significant medical, dental and family history.

Intraorally, clinical examination showed bilateral fusion of primary mandibular laterals & canines with a thin groove between the crown portions on both sides of mandible.

Radiographically, on right side the root of the fused tooth was almost resorbed with grade III mobility(physiologic) and lateral incisor was erupting lingually(Figure 7). The fused tooth exfoliated by itself within a week.



Fig.: 7

On left side there was a definite groove between the crown and root portion of fused mandibular primary lateral incisor and canine but root was not much resorbed(Figure 8)The number and size of permanent unerupted teeth were normal on OPG(Figure 9). So definite diagnosis of

incomplete fusion of primary lateral and canine on left side was made.

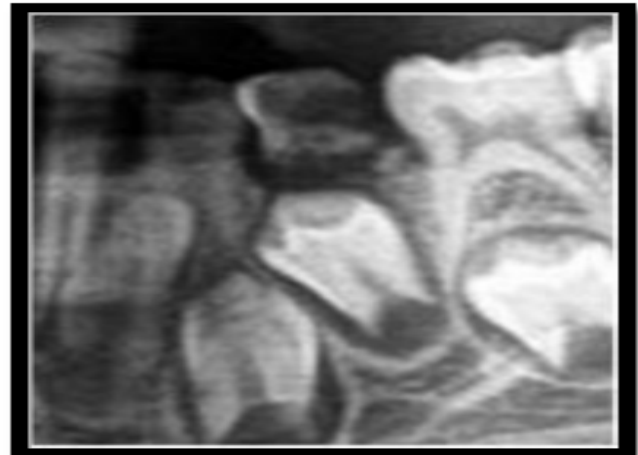


Fig. : 8



Fig.: 9

Discussion

Developmental dental disorders which can be anomalies in number, size, and shape, or due to abnormalities in the formation of the dental hard tissues may occur due to abnormalities in the differentiation in the tooth germs and dental lamina . The terms often used to describe fused teeth are “connate teeth,” “double formations,” “synodontia,” or “joined teeth” .³

The prevalence of tooth fusion is 0.5%- 2.5% in primary dentition. Duncan reviewed and analyzed 38 published papers in the dental literature and reported the prevalence of unilateral double primary teeth at 0.5% and that of bilateral at 0.02%.¹ Due to this low prevalence the importance of these anomalies tend to be underestimated.

There are several schools of thought regarding the etiology of fusion and most of the studies suggest fusion of two tooth germs occurs due to some physical forces or pressure while some suggest this anomaly results due to two tooth buds coming closer and resorbing the interdental or genetic inheritance can also be one of its cause.

Differential diagnosis for fusion is germination. Gemination causes crowding while fusion more commonly causes ectopic eruption. Mader's "two tooth" rule is a popular way of identifying the difference between fusion and germination.⁵ Milazzo and Alexander suggested counting of teeth in a dentition for diagnosis. If the number is normal or reduced then it is a case of fusion.⁶

Comprehensive history, clinical features, and radiographic findings are the principal criteria for the diagnosis of tooth fusion. Fused teeth due to their irregular morphology if present in the anterior region may appear aesthetically displeasing. In these cases presented, the fused teeth were not located in aesthetic zone and the parents and patient were unaware of this phenomenon.

In case 1 no treatment was done and patient was kept on regular follow ups.

In case 2, the treatment planning was done which consisted of extraction of retained primary teeth.

In case 3, clinical and radiographic examination showed incomplete fusion between 72 and 73 whereas complete fusion was seen between 82 and 83. Moreover, on observing the OPG it was found that the permanent tooth buds were also less than normal which gives an indication of fusion of permanent laterals and canines also thus making it a rare case.

Similarly in case 4, incomplete fusion was seen between 72 and 73. Since 82 and 83 was near exfoliation and resorption of the roots had taken place, so it was difficult to conclude the type of fusion but according to partial

developmental groove, incomplete fusion could not be ruled out. The fused tooth exfoliated by itself within a week.

In one of the cases bilateral fusion was seen and it has been seen that the cases of bilateral fusion are less frequent. Hageman reported that such patients have a 75% chance of lacking the succedaneous lateral incisor.⁷ The most common problem related to fused teeth is hypodontia of succedaneous teeth which was observed in one of our cases.⁸

Another dental concern related to fusion of primary teeth is malocclusion.³ The deep groove present on the crown surface may predispose the teeth to development of dental caries which may continue down the length of the root surface and may lead to periodontal complications. The presence of pulpal involvement requires endodontic treatment as multi-rooted tooth.⁹

In the reported cases the fused teeth showed the presence of groove; caries free and no periodontal problem was diagnosed. Although the patient had multiple carious molars, the fused tooth was unaffected.

Thorough follow-up is necessary as greater root surface area of fused primary teeth & delayed resorption of the root due to greater root mass may delay exfoliation. In cases where esthetics is of concern with no other underlying factors, a conservative use of tooth reshaping, direct composite bonding, or porcelain veneers and crowns has been recommended.

Fusion of primary teeth may be associated with various types of anomalies of dental origin like microdontia and delayed tooth formation.¹⁰

Very few cases of fusion in mandibular primary dentition have been reported from the Indian population. In Caucasians, it is 0.02%, and in Japanese population, it is 0.32%.¹¹

The fusion of primary teeth usually is asymptomatic, but its presence may result in disturbances in the eruption of permanent teeth. Fusion of the primary lateral incisor and cuspid might result in early loss of the cuspid, along with a potential loss of arch length or midline shift. Preservation of arch space and form should be considered to prevent this complication.

Management of tooth fusion requires a minimal intervention approach, preventive procedures, and long-term follow-up.

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