

Fusion in Deciduous Mandibular Anterior Teeth-A Case Report of Three Cases

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ABSTRACT

Dental anomalies referring to either fusion or gemination (double teeth) are predominantly encountered during a routine dental checkup. Tooth fusion arises through a union of two separated tooth germs at any developmental stage of a tooth resulting in an enlarged tooth instead of two normal teeth. This anomaly frequently results in improper spacing in dental arches, crowding, susceptibility to dental caries, and aesthetic concerns in pediatric dental patients. The present case emphasizes the importance of early diagnosis of anatomical anomalies of teeth. These teeth can be managed quite efficiently by a preventive approach along with a long-term follow-up program.

Keywords: Dental anomaly, Double tooth, Fusion, Gemination, Tooth agenesis

INTRODUCTION

Dental anomalies such as fusion, gemination are usually discovered during the regular intraoral examination and frequently causes crowding or abnormal spacing in dental arches, increased susceptibility to dental caries, becomes an aesthetic concern among paediatric dental patients and their parents¹. Fusion is a rare morphological anomaly that stems from the embryogenic union of two tooth germs during the morpho differentiation stage of tooth development resulting in a single enlarged tooth structure. It is also known as conjoined teeth, double teeth, or twinned teeth.^[1,2,3] Fused teeth have an unknown aetiology, but the possible causes could be the influence of physical forces resulting in a close approximation of developing tooth buds, trauma, lack of space or maybe a genetic predisposition.^[1,4,5] Fused teeth may form a part of various syndromes like chondrodysplasia, chondroectodermal dysplasia, focal dermal hypoplasia, and osteopetrosis.^[6]

The literature suggests fusion has a higher incidence in deciduous dentition (0.5-2.5%) than in permanent dentition (0.1-1.0%). They are predominantly found in the anterior region, incisors and canines are the most frequently affected

teeth. It can be unilaterally or bilaterally present. It may occur in both arches, but they are more frequently present in the mandible. It does not have any gender predilection. ^[1,2,7]

Fusion can occur between teeth of a same dentition or mixed dentition and between teeth of normal series and a supernumerary tooth such as mesiodens or distomolar. ^[2,8] Clinically, the appearance of the involved teeth may be normal or large, depending upon the stage at which embryonic union occurs during development. Most fused teeth show an anomalous broad crown and two distinct root canals or one common pulp chamber. Typically, the crown appears as melded together, with a small groove between the mesial and distal parts. Radiographically, these teeth may be characterized by one pulp chamber with two independent endodontic systems, or one common pulp canal. ^[9,10] The purpose of this case report is to explore the clinical consequences and dental therapy of a series of three cases of unilateral fusion of primary mandibular anterior teeth.

CASE 1

A 7-year-old girl patient reported to the Department of Pediatric and Preventive Dentistry with a chief complaint of decayed teeth in the lower back teeth region since 1 year. The medical history of the patient was not contributory. The family history did not reveal any dental abnormality and the parents had a non-consanguineous marriage. The general and extra-oral examinations appeared to be noncontributory. On intra-oral examination, the patient was found in the early mixed dentition stage with all permanent first molars (16,26,36,46) and permanent mandibular central incisors (31,41) erupted. On the right side of the mandibular arch, the deciduous lateral incisor and first molar (82&84) were found missing, root stumps of canine (83) and decayed deciduous molar (85) were present (Figure 1). On the left side of the same arch decayed deciduous molars (74,75) and an abnormal size lateral incisor with a deep labio-lingual groove was present (Figure 2). The oral hygiene of the patient was satisfactory. An orthopantomogram radiograph showed unilaterally fused deciduous mandibular lateral incisor and canine (72-73) and the absence of bilateral tooth bud of permanent lateral incisors (32 & 42) and in mandibular molars (36, 46) crown size was larger than normal so it was suspected to be taurodontism, but it will be confirmed later, after the completion of the roots of first permanent molars (Figure 3). For confirmation, Intra oral periapical radiograph (IOPA) was taken (Figure 4) which revealed two pulp chambers fused and one root canal in the region of lateral incisor and canine in the right mandibular arch. The treatment done in this case were restoration of carious teeth, extraction of root stump and oral prophylaxis. No treatment was done for fused teeth as it was asymptomatic. The patient was kept on observation and recalled for periodic follow-up.



Figure 1: Intraoral front view



Figure 2: Intraoral picture showing fusion of the deciduous lateral incisor (72) and canine (73) on the left side of the mandibular arch.

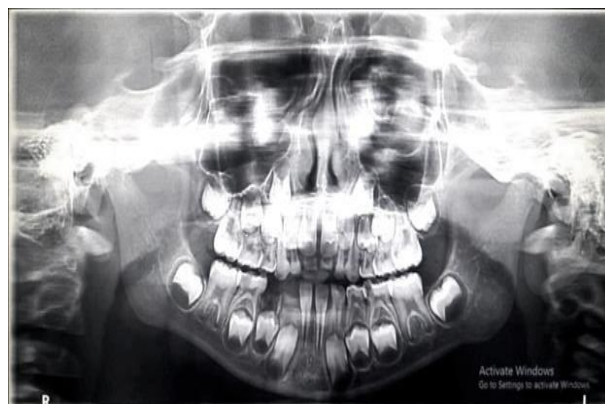


Figure 3: Orthopantomogram showing fusion of deciduous lateral incisors and canine on the left side of the mandibular arch and bilaterally missing permanent lateral incisors 32&42 in the same arch.



Figure 4: Periapical radiograph showing fusion of lateral incisor (73) and canine (74).

CASE 2

An Eight-year-old-girl reported to the Department of Pediatric and Preventive Dentistry with a chief complaint of mal-aligned teeth and a large-sized tooth in the left lower front teeth region of mouth. The patient had no significant medical history; also, general and extra-oral examinations were found to be non-contributory. On intra-oral examination, patient was found in the early mixed dentition stage with erupted permanent first molars (16, 26, 36, 46) and central incisors (11, 21, 31 and 41) (Figure 5). On the left side of the mandibular arch, there was an abnormal increase in the size of lateral incisor. Clinically, a buccolingual groove extended from the incisal edge to two third of the crown (Figure 6). Orthopantomogram (OPG) (Figure 7) revealed two crowns with one large pulp chamber, confirming fusion of deciduous lateral incisor (72) and canine (73) and congenital absence of unilateral tooth bud of permanent lateral incisor (32). The treatment involved were oral prophylaxis and counselling about eruption sequences and the size-shape of the fused teeth. No treatment was done for fused teeth. The patient was kept on observation and recalled for follow-up visits.



Figure 5: Intraoral front view



Figure 6: Intraoral picture shows unilateral fusion of the deciduous lateral incisor and canine on the left side of the mandibular arch.

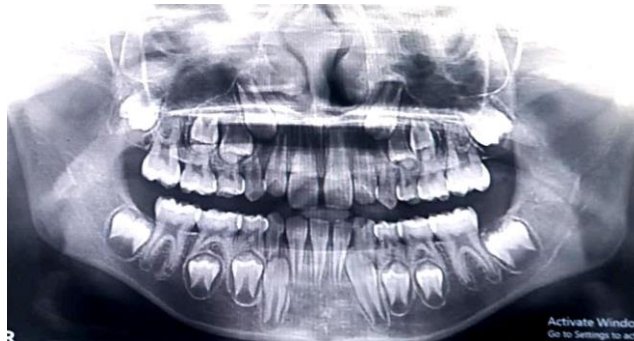


Figure 7: Orthopantomogram showing:

1. Unilateral fusion of the deciduous lateral incisor and canine on the left side of the mandibular arch and
2. Congenitally missing permanent lateral incisor (32)

CASE 3

A 10-year-old boy reported with a chief complaint of decayed teeth in the right lower back teeth region of mouth since 2-3 months. The child had no significant medical, or family history. General and extra-oral examinations were found to be non-contributory. On intraoral examination, patient was found in the early mixed dentition stage with erupted permanent first molars (16, 26, 36, 46), permanent central incisors (11, 21, 31 and 41) and permanent lateral incisors (12, 22, and 32) (Figure 8). On the right side of the mandibular arch, there was an abnormal increase in the size of lateral incisors. Orthopantomogram (OPG) (Figure 9) revealed two crowns with one fused pulp chamber and two distinct roots in the region of the lateral incisor (82) and canine (83) were seen. A radiographic examination revealed fusion of deciduous mandibular lateral incisor (82) and canine (83). Clinically, a buccolingual groove extended from the incisal edge to two third of the fused crown. Pit and fissure caries was present in right second deciduous molar (85). The treatment involved were restoration of the decayed tooth (85) with GIC, oral prophylaxis and counselling about eruption sequences and congenital absence of permanent mandibular lateral incisor (42). No treatment was done for fused teeth. The patient was kept on observation and recalled for follow-up visits after 3 months and 6 months and after 1 year.



Figure 8: Intraoral picture showing unilateral fusion of the deciduous lateral incisor (82) and canine (83) on the right side of the mandibular arch



Figure 9: Orthopantomogram showing:

1. unilateral fusion of the deciduous lateral incisor (82) and canine (83) on the right side of the mandibular arch.
2. Congenitally missing permanent lateral incisor (42)

DISCUSSION

Tooth fusion is defined as the union of two normally separated developing tooth germs. It is a rare anomaly and depending on the development stage, it can be complete or incomplete. ^[1]

Complete fusion begins before the calcification stage, results in a single tooth of normal size or slightly large tooth which incorporates enamel, dentin, and pulp. However, if the contact of tooth buds occurs later i.e. after calcification, the tooth might exhibit separate crowns and fusion may be limited to the roots alone with pulp canals fused or separated.

The aetiology is still unknown but most of the researchers suggest, it results from close contact between developing teeth due to any physical force, trauma or pressure, viral infection, environmental condition, and genetic inheritance.

In our first case, the mother had psoriasis during the pregnancy and was on medication for the same during pregnancy. Fusion has also been reported along with congenital anomalies such as cleft lip and X-linked congenital conditions^[9]. But there was no such history in the cases reported here.

The prevalence rate of tooth fusion is estimated as 0.5-2.5% in primary dentition and a much lower prevalence in permanent dentition. It may occur in both primary and permanent dentitions, with higher frequency in anterior maxillary regions.^[6] These anomalies may be bilateral or unilateral. Fusion may affect two normal teeth or it may develop between a normal and a supernumerary tooth.^[5]

Fusion and gemination are two different morphological and developmental anomalies involving a characteristic large crown that may appear clinically similar in both conditions. Fusion is often confused with Gemination and there are controversial concepts to correctly differentiate between the two in the literature.^[8,11] Clinically these two developmental anomalies can be distinguished by a practical method of counting teeth in the dental arch as suggested by Levitas.^[12] Reduced number of teeth will be seen in fusion if the affected tooth is counted as one whereas in Gemination the number is normal.

Radiographically fusion anatomy may range from separate pulp chambers and root canals to common root canal systems. Therefore, radiographic examination is required for diagnosis and its management. Tooth fusion is usually asymptomatic but possesses numerous dental problems like esthetics, malocclusion, missing succedaneous permanent teeth, and delayed eruption of permanent teeth^[9]. In all our three cases, the permanent successor tooth was absent. The agenesis of successor permanent tooth may result due to failure in the initiation of tooth germ, decreased odontogenic potential of dental lamina or arrested development in early stages.^[13] Aesthetics is the most common concern among parents as fused anterior teeth appear irregular in shape. Another concern for fused primary teeth is malocclusion including both spacing and crowding in the dental arches. The abnormal dental spacing was evident in all three cases reported here. Fused teeth mostly exhibit labial and lingual grooves running vertically on the surface of the crown. In case of incomplete fusion, these grooves may be more pronounced and difficult to clean resulting in dental caries.^[1,2] Placement of pit & fissure sealant or composite may reduce the risk of dental caries. However, in all three cases reported, no caries was found associated with the fused dentition.

In the present cases, there was no requirement for any treatment as involved teeth belong to the deciduous dentition, they were even caries-free. Hence only universal preventive advice was given to the parents and patient. Nevertheless, a careful clinical examination and regular dental visits are necessary to prevent additional orthodontic problems, particularly since the patient already presented space problems in the anterior region of the mandible. Successful management of such cases depends on the early diagnosis, morphology of fused teeth, skills of the clinician and prompt intervention.

CONCLUSION

One of the rare and unusual irregularities in the formation of the tooth's shape is fused teeth or double teeth. Although they are asymptomatic, sequelae may result in several dental problems. The associated potential clinical issues can be managed by a multi-disciplinary approach. Therefore, to establish the right treatment plan, radiographs are required, combined with an early diagnosis and careful clinical observation. In most cases, a long-term follow-up is crucial, coupled with general preventive measures and modest intervention when necessary.

REFERENCES

1. Sultan A, Juneja A, Augustine M. Fusion in deciduous mandibular anterior teeth- A report of two rare cases. Int J Oral Health Dent 2018;4(3):180-183
2. Shafer WG, Hine MK, Levy BM. A Textbook of Oral Pathology, Elsevier.54
3. Joseph A, Regezi, James J, Sciubba, Richard CK. Jordan; Oral Pathology: Clinical Pathologic Correlations in "Abnormalities of teeth" Saunders Publications. 5:362.
4. Eduardo Nunes,IVALDO GOMES, DE MORAES, PAULO MARCIO DE, OLIVEIRA NOVAES, SIMONE MARIA GALVAO DE SOUSA. Bilateral Fusion of Mandibular Second Molars with Supernumerary Teeth-Case Report; Braz Dent J 2002;13(2):137-141.
5. Sun-Young Kim, Sung Chul Choi, Youn-joo Chung. Management of Fused Permanent Upper Lateral Incisor: A Case Report; Oral Surgery, Oral medicine, Oral pathology, Oral radiology and Endodontology 2011;111(5):649-652
6. Schuurs AHB, van Loveren C. Double teeth: review of the literature. ASDC J Dent Child 2000;67:313-325.
7. Sun-Young Kim, Sung Chul Choi, Youn-joo Chung. Management of Fused Permanent Upper Lateral Incisor: A Case Report; Oral Surgery, Oral medicine, Oral pathology, Oral radiology and Endodontology 2011;111(5):649-652.
8. Sultan A, Juneja A, Bhatnagar S. Bilateral fusion of permanent mandibular central and lateral incisors: A case-report of a rare developmental anomaly. Int J Oral Health Dent 2017;3(3):192-194
9. Saxena A, Pandey R K, Kamboj M. Bilateral Fusion of Permanent Mandibular Incisors: A Case Report. J Ind Soc Pedod Prevent Dent 2008;26(5):S32-S33.
10. Tewari N, Pandey RK. Bilateral fusion in primary mandibular teeth: a report of two cases. J Indian Soc Pedod Prev Dent 2011;29(1):50-52.
11. Prasad Rao VA, Reddy NV, Krishnakumar, Sugumaran DK, Mohan G, Senthil, Eagappan AR. Primary double tooth with partial anodontia of permanent dentition – a case report. J Clin Exp Dent 2010;2(2): e79-81.
12. Levitas TC. Geminatio, fusion, twinning, and concrescence. ASDCJ Dent Child 1965 32:923-100
13. Juuri E, Balic A. The biology underlying abnormalities of tooth number in humans. J Dent Res 2017;96(11):1248-1256.