

Case Report

Complete Fusion of Permanent Mandibular Right Central and Lateral Incisors - Report of A Rare Case with Literature Review

Nagaveni NB*

Garike Dental Care, Davangere, Karnataka, India

Abstract

Fusion of teeth is the developmental anomaly characterized by union of two or more developing adjacent teeth. It may occur either unilateral or bilateral and most frequently seen in primary dentition compared to permanent dentition. Based on the stage of union during developmental stage two types of fusion are mentioned in the literature like complete and incomplete fusion. Although this clinical entity does not cause any obvious signs and symptoms, various treatment modalities are available for management of fused teeth in the literature. Literature search shows numerous reports on occurrence of fusion in primary dentition. But reports on the fusion involving permanent teeth are rarely reported. Therefore, the purpose of this article is to show the occurrence of complete type of fusion involving permanent mandibular right central and lateral incisors in an Indian patient.

Keywords: Fusion; Germination; Permanent teeth; Mandibular teeth; Central; Lateral incisors

Introduction

Fusion of teeth is an uncommon developmental dental anomaly showing the union of two or three adjacent teeth. Union of three teeth very rare compared to fusion of two teeth. The prevalence of this dental rarity varies in both primary and permanent dentition showing highest prevalence in the primary dentition (0.5% to 2.5%). In permanent teeth its prevalence is seen as low as from 0.1% to 1%. [1] There is no gender predilection for occurrence of this dental anomaly. Most of the time fusion occurs in the anterior region mainly involving lateral incisors and canines. Fusion may occur as complete or incomplete type based on the development stage of the tooth buds during embryogenesis. The complete fusion occurs when contact between two tooth buds occurs before calcification whereas in incomplete fusion the contact occurs after crown formation and it is seen at the root level. Clinically the complete fused teeth seen as an abnormally wide crown with a developmental groove separating the mesial and distal aspect of the crown. Separate crowns with separate pulp chambers and root canals are seen in incomplete fused teeth [2].

The exact etiology behind development of fusion cases is not known. However, it is suggested that the physical pressure between two adjacent teeth during embryological development of tooth germ which further caused by many factors like inherited, congenital, idiopathic, racial predisposition, and trauma and acquired factors. Naturally these teeth may not cause any clinical problems and hence do not require any treatment. Rarely this anomaly can lead to few

clinical problems like dental caries, esthetic impairments, crowding, and periodontal disease and thereby requiring clinical intervention [3].

Case Presentation

A 14-year-old male patient reported to a private dental practice seeking treatment for his irregular set of teeth. On physical examination patient was found apparently well-nourished with no obvious any systemic or syndromic features. Intraoral examination revealed patient with complete permanent dentition including central, lateral incisors, canines, first and second premolars and first and second molars in both upper and lower arches. On further examination in the mandibular arch both right central and lateral incisors appeared as joined together resulting in one tooth with large crown size (Figure 1). On contralateral side central and lateral incisors appeared normal in size, shape and number. Suspecting the fusion, an intra-oral periapical radiograph was made. On radiographic examination complete union of both central and lateral incisors was found starting from tip of crown to root apex level (Figure 2). The two separate teeth (central and lateral incisors) were joined completely by cementum. There were two separate crowns and roots and absence of splitting in the crown portion and absence of single root. Therefore, based on both clinical and radiographic examination the case was diagnosed as complete fusion of central and lateral incisors. As the tooth was asymptomatic no treatment was carried out for this particular tooth and patient was scheduled for fixed orthodontic treatment according to patient wish.

Discussion

There are reports on occurrence of fusion in primary teeth. Although fusion most commonly involves two adjacent teeth there are reports showing fusion of three teeth [4,5]. Nagaveni et al. [4] in 2016 reported a case of occurrence of both triple and double teeth within the same quadrant of an Indian patient. However, this was related to primary dentition. The same author along with co-authors in 2015 reported fusion between permanent maxillary lateral incisor and with a supernumerary tooth [5].

There are no established standardized clinical protocols for

Citation: Nagaveni NB. Complete Fusion of Permanent Mandibular Right Central and Lateral Incisors - Report of A Rare Case with Literature Review. *J Pediatr Dent Hyg.* 2023;2(1):1009.

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Publisher Name: Medtext Publications LLC

Manuscript compiled: July 28th, 2023

***Corresponding author:** Nagaveni NB, Garike Dental Care, Davangere, Karnataka, India, Tel: +91-8971695506

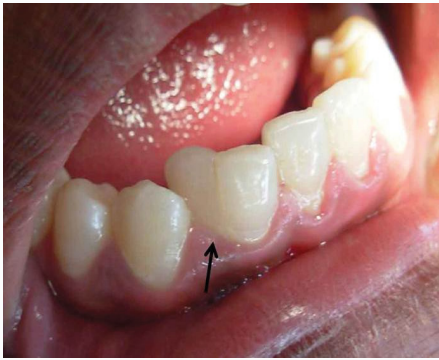


Figure 1: Intraoral photograph showing fused permanent mandibular right central and lateral incisors (black arrow).

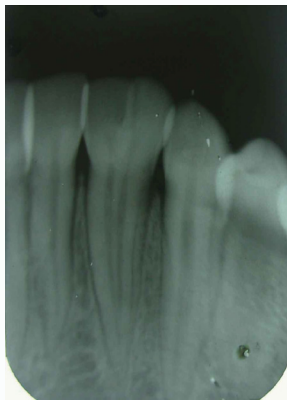


Figure 2: Intraoral periapical radiograph showing complete fusion of central and lateral incisors.

management of fused teeth as it is a rarely seen clinical finding. Therefore, each fused teeth cases should be treated individually based on clinical presentation of the tooth with associated clinical symptoms. Management of fused teeth includes multidisciplinary approach with combined treatment procedures like endodontic, restorative, surgical, prosthodontic and orthodontic interventions. Goh and Tse [6] in 2020 reported management of both complete and incomplete fusion (bilateral occurrence) of mandibular permanent teeth. In this report, authors successfully managed bilateral fusion of mandibular lateral incisors with canines by combined treatment approach including surgical resection, restorative, endodontic and finally orthodontic intervention. In 2015 article authors performed endodontic treatment for the fused lateral incisor and supernumerary tooth as this tooth was associated with periapical abscess. Therefore, the treatment strategy depends on the clinical presentation of the fused teeth [5]. However, in the present case no treatment was carried out as the fused teeth did not show any developmental grooves or any caries associated periapical pathology.

Veerakumar et al. [2] in 2011 reported a case of fusion in primary maxillary central and lateral incisors. Surprisingly they also noticed fusion of permanent same successors on the radiograph. This enlightens follow-up observation is very essential and when we come across any dental anomalies in primary dentition it is mandatory to rule out and also to follow the same case even in the permanent dentition. In 2011, Sekerci et al. [3] evaluated the prevalence of fusion and germination in permanent teeth in Coppadocia region in Turkey based on clinical assessment and panoramic radiographs of 8229

patients. From their study, they found that the prevalence of double teeth (both fusion and germination) in the permanent teeth was 0.29%. Among these 14 (0.17%) patients had fusion and 12 (0.14%) had geminated teeth. The maxillary incisors were more commonly affected by this condition followed by mandibular premolars. Hans et al. [7] reported a rare case of bilateral occurrence of complete fusion in the permanent maxillary anterior region. Affected teeth by fusion were central and lateral incisors. An Indian case report shows presence of fused maxillary permanent central incisor with a supplemental lateral incisor. In this case authors performed an endodontic treatment for these teeth as there was a periapical abscess in relation to this condition. This case was almost similar to the case reported by another Indian case report [8]. Vashisth [5] in 2013 reported fused primary supernumerary tooth associated with maxillary primary and permanent lateral incisors. Malcic and Goranka [9,10] reported a case of fused permanent maxillary central and lateral incisor which were treated by endodontic, restorative and prosthodontics procedures to restore esthetics.

Report of this condition in archaeological literature is rarely mentioned due to taphonomic processes leading to scarcity in information and also due to general low occurrence of the defect itself. Collina et al. [1] reported the first case study of two fused permanent incisors in the European archaeological literature. This dental anomaly was recognized in an adult man buried in the Longobard cemetery of Guidizzolo (VI-VII century A.D., northern Italy).

From this article with review of literature on fusion, it is evident that all the case reports including the prevalence study shows that fusion of permanent teeth reported in maxillary arch. Reports of fusion in the mandibular arch pertaining to permanent teeth are not reported so far [1-10]. Therefore, the current case report is the first report showing occurrence of complete fusion of permanent teeth in the mandibular arch and thereby being the rarest and different from the existing literature.

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