Conjoined Permanent Maxillary Posterior Teeth: A Rare Anomaly

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ABSTRACT

Various acquired and inherited disorders of the teeth alter the size, shape and number of teeth. Individually, they are rare but collectively they form a vast body of knowledge with which all dentists should be familiar. One of the developmental defects affecting teeth is fusion, and is generally observed in the deciduous dentition. It affects not only the size of the teeth, but may also lead to malocclusion, concerns with aesthetics, periodontal problems, and, also increase the susceptibility to caries. Treatment of such teeth may require multidisciplinary care. A few case reports have been documented, reporting fusion of teeth in the permanent dentition. This case report brings to light an unusual and rare finding of fusion in the maxillary posterior region.

KEYWORDS: Fusion, Double tooth, Conjoined teeth, developmental anomaly, maxillary posterior region

INTRODUCTION

The occurrence of congenital abnormalities in shape, size and number of teeth is widespread and affects both the deciduous as well as permanent teeth.[1,2] Abnormalities in the form and number of teeth can be classified and categorised in a number of ways. A double tooth is a descriptive term used to describe a developmental anomaly where two teeth appear to be joined together.[1,3] Double teeth may be due to fusion, gemination or twinning.[1,2,3]

Fusion is a process wherein two or more tooth germs are united during embryonic development (synodonthia). Clinically it is seen as a large tooth. Depending on the stage of fusion, there may be slight notching or complete notching of the crown. The teeth may show separate roots and root canals. It characteristically shows a reduced number of teeth, when the large tooth is counted as one.[1,4]

Gemination is a developmental anomaly, wherein, one tooth germ forms two teeth by division (shizodonthia). It often results in a large single tooth, with bifid crown and usually common root and root canal. It is characterised by a normal number of teeth in the arch when the tooth is counted as one. Twin teeth - dentes geminati are placed in the group of twinning. Twinning develops from one tooth germ within one tooth follicle and often includes two teeth of equal size. Gemination and twinning are often used interchangeably.[1]

The differential diagnosis between gemination and fusion, based on clinical appearance, is difficult. This is especially so when a supernumerary tooth is involved along with the normal complement of dentition.[5] Thus, it is essential to carry out judicious clinical and radiographic examination to establish the diagnosis and, to decide the most appropriate treatment.

CASE REPORT

A 13 year old girl reported to the Department of Pedodontics and Preventive Dentistry with a chief complaint of severe pain in the lower right back region of her jaw. Her medical, dental and family history was non-contributory. Intraoral examination of the area of chief complaint showed destruction of the crown of 46 due to caries, and with furcation involvement. Further examination revealed the presence of malaligned teeth, with crowding in the anterior and posterior regions. A deviation of the mandibular midline towards the right was observed with teeth in occlusion (**Figure 1**). Examination of the maxillary arch showed presence of a supernumerary tooth in the first as well as the second quadrant, and an abnormally large sized right maxillary first molar (**Figure 2**). This large sized 16 presented with

Figure 1 intraoral photograph of child showing malaligned teeth

six cusps, three buccal and three palatal, separated by occlusal, lingual and buccal grooves. The supernumerary tooth present in the first quadrant resembled a miniature premolar, while that in the second quadrant showed signs of being a paramolar. Mandibular arch examination

How to cite this article:
Lele GS, Gandhi HB. Conjoined Permanent Maxillary Posterior Teeth: A Rare Anomaly. Int J Oral Health Med Res 2015;2(4):55-57.

revealed a missing premolar in the fourth quadrant (**Figure 3**). No one in the family had reported with any history of similar dental abnormalities. After an initial assessment, a provisional diagnosis of fusion between 15 and 16 was made.

Figure 2 Intraoral photograph of maxillary arch showing macrodont 16 and supernumerary tooth in first and second quadrants

Figure 3 Intraoral photograph of mandibular arch showing missing premolar in forth quadrant

An intra-oral periapical radiograph of the right maxillary first molar region was advised. This radiographic examination confirmed fusion between 15 and 16 (**Figure 4**). An orthopantogram was also advised to rule out the presence of any other impacted supernumerary teeth, and it confirmed the presence of supernumerary teeth in the first and second quadrants (**Figure 5**).

Figure 4 Intra-oral periapical radiograph of 16 region

For management of the area of chief complaint, parental informed consent was obtained and an emergency access opening was carried out in 46 to resolve the acute pain symptoms. The patient was prescribed medication for pain relief and scheduled for the following day. The patient was advised endodontic treatment for 46 followed by bicuspidization as a definitive treatment. However, the patient and the parents insisted on extraction. She has been advised orthodontic correction for the existing malocclusion. For the asymptomatic abnormally large 16, conservative treatment using light cure composite was carried out.

Figure 5 Orthopantomogram of the patient

DISCUSSION

Anomalies in form and number involve both the primary and the permanent dentition. Fusion is seen more frequently in the primary dentition, of which, the teeth most affected are the mandibular canines and lateral incisors followed by maxillary central and lateral incisors.[1] In the permanent teeth, it is the maxillary central and lateral incisors which are involved. [1] The prevalence of fusion in different studies reported ranges from 0.2 to 2.5% for the primary and 0.1 to 0.2% for the permanent dentition.[2,3] Fusion may occur unilaterally or bilaterally, in the maxilla or the mandible. Hagman[1] quotes a greater incidence in the lower than in the upper jaw. Fusion is observed very rarely in molars.[3] While DeLa Hoz CA et al. reported a case of fusion of the first and second left mandibular deciduous molars[2], very few cases have been reported, documenting fusion in the permanent maxillary posteriors.

The etiology of fusion is generally unclear.[3] Local metabolic interferences, which occur during morphodifferentiation of the tooth germ, could be the one of the causes.[3] Fusion is also reported to be a result of physical forces or pressure that cause the developing tooth buds to come close to each other and fuse.[6] According to some, fusion is a result of persistence of interdental lamina between the two buds during embryological development. [6] Many authors categorize fusion as an autosomal dominant trait with reduced penetrance. [6] Several other theories have been proposed which connect it to environmental influences, genetics, trauma, systemic diseases, thalidomide embryopathy, fetal alcohol exposure, lack of vitamins or lack of space in the dental arch.[1,2,7] Fusion in the deciduous dentition has been associated with various syndromes like Pierre-Robin syndrome, Trisomy 21, orodigitofacial syndrome or ectodermal dysplasia.[2]

It is seen that fused deciduous teeth show a high prevalance of dental agenesis in the permanent dentition of about 33-70%.[2] There is no specific treatment for fusion in case of deciduous teeth, but a thorough examination is required. A careful examination of the deciduous teeth will enable diagnosis of this anomaly and help in the prevention or management of the possible future problems such as delayed eruption or agenesis of the permanent dentition, crowding or malocclusions.[2,8,9]

Fusion is an anomaly which affects the size and shape of the tooth and hence may lead to higher caries incidence owing to the unusual number of fissures. In cases when the buccal and lingual grooves or fissures present at the site of fusion are deep or if they extend subgingivally, it increases plaque accumulation, and thus could lead to dental caries and periodontal diseases.[10] Fusion between two teeth which are normal complements of the dentition usually results in spacing between teeth. But when the anomaly involves a supernumerary tooth, diastema may not be seen.[10] Other consequences of fusion could also be malocclusion because of the abnormally large teeth and the resultant problems with spacing, alignment and function due to changes in the length of the dental arch. [2,11]Hyper or hypodontia of the successional tooth, deviation and delaying the eruption of the successional tooth and poor esthetics may also ensue. [2,11]

Muthukumar RS et al. reported a case involving bilateral fusion of mandibular second premolar and a supernumerary tooth.[10] They concluded that the abnormal morphology of such teeth demands prophylactic and early interceptive treatment in order to avoid the complicated pulpal and periodontal treatment related to these teeth. Tsesis I et al.[3] and Kiran S et al.[5] reported two cases of anomalous mandibular double tooth treated successfully by carrying out endodontic treatment, using multiple radiographs from different angles, reconstruction of the canal space prior to endodontic treatment and ensure success.[3,11] Mahabob MN et al. reported two cases of fusion in the permanent dentition, one involving the mandibular molar and another involving the maxillary molar and a supernumerary tooth.[6] Cho KM et al.[12] reported a case of fusion involving the maxillary premolar and a supernumerary tooth.

Mendez et al. have stated that treatment modality is different in the case of fusion in deciduous and permanent dentitions.[13] Case reports describe the treatment of fused permanent teeth as a multidisciplinary approach, comprising extraction, endodontic treatment, reduction in mesio-distal dimension of the tooth followed by orthodontic treatment, tooth hemisection, and intentional replantation.[3] In the current situation, as the tooth presented with only occlusal caries, no treatment besides composite restoration was necessary for the fused tooth. Hence periodic revisions were scheduled in order to prevent possible recurrence of dental caries. Since fusion involving a maxillary permanent molar and premolar has not been reported in the literature, it exhibits the present case as a rarity and emphasizes on the importance of thorough examination for early identification of any such anomaly which would help decide a conservative treatment plan.

CONCLUSION

The most frequent site of fused teeth is incisors and canines, very rarely are cases of the posterior region described.[14] Very little is reported about such anomalies in the maxillary permanent component. This report brings to light an unusual case of fusion in the posterior region, i.e., between a permanent maxillary molar and premolar. Failure to diagnose fused/ geminated teeth could lead to misdiagnosis and an improper treatment plan. Recognizing the condition at the earliest and employing multidisciplinary approach for such cases can bring about predictable successful outcomes.[14]

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Source of Support: Nil
Conflict of Interest: Nil