

CASE REPORT



# Diagnosis and management of mandibular hyperdontia in a non-syndromic patient: A rare case report

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## Abstract

Odontogenic anomalies are frequently observed by the pediatric dentist in their routine practice. These anomalies may pose a challenge to the dentist considering the magnitude of severity and the developing dentition of the child. Hyperdontia in the mandibular anterior region is a rare occurrence. We describe a case report of an 8-year-old child presenting with the concurrent occurrence of geminated tooth and a supplemental tooth in the mandibular anterior (incisor) region. Timely extraction of the geminated tooth was done to avoid tooth material arch length discrepancy. The surgical removal of the geminated teeth alleviated the mandibular anterior crowding in the patient, improved esthetics, and prevented the malocclusion due to the tooth material arch length discrepancy from progressing to a more severe form. The patient is presently being monitored every 3 months and will be evaluated for the orthodontic treatment once he attains the complete permanent dentition. It is very important for the dentists to have sound knowledge of the odontogenic anomalies seen in children. Early diagnosis and prompt treatment will help to achieve better occlusion, function, and esthetics in the patient and prevent malocclusion.

**Keywords:** Dental fusion, gemination, supernumerary teeth, supplemental teeth, tooth anomaly

## Introduction

Developmental dental disorders occur due to the abnormalities in the differentiation of the dental lamina and the tooth germs resulting in the anomalies in number, size, or shape of the tooth. They can occur in the primary as well as permanent dentition.<sup>[1]</sup>

Anomalies in the tooth number may be present due to fusion, gemination, or the presence of a supernumerary tooth. The terms double tooth, linking tooth, fused teeth, jointed tooth, dichotomy, connotation, dental twining, synodontia, and schizodontia have been used to describe fusion or germination.<sup>[2]</sup>

Fusion has been described as a developmental anomaly characterized by the union of two adjacent teeth. This union of two separate tooth germs may be either complete or incomplete. Fused teeth have separated or shared pulp chambers and canals.<sup>[3]</sup> It might occur between a normal teeth and supernumerary teeth or between two normal teeth.

Gemination is a developmental disturbance of the shape of teeth and is usually recognized as a partial cleavage of a single tooth germ resulting in one root and one pulp space with two partially or totally separated crowns.<sup>[4]</sup> In fusion, the crowns are united by enamel and/or dentine, but there are two roots or two root canals in a single root. In contrast, in gemination,

the structure most often presents two crowns, either totally or partially separated, with a single root and one root canal.<sup>[5]</sup>

The frequency of gemination or fusion ranges from 0.01% to 0.04% in the primary and 0.05% in the permanent dentition.<sup>[6]</sup> Gemination and fusion are generally asymptomatic. However, they can cause unesthetic appearance, space management problems, caries and periodontal disease, and impaction of adjacent teeth also.<sup>[7]</sup> Geminated teeth have a characteristic appearance; the mesiodistal diameter of the clinical crown is larger than normal, and from the incisal edge to the apex of the root, a groove of unequal depth divides the tooth into two, usually unequal parts.<sup>[6]</sup>

Supernumerary teeth are odontostomatologic anomaly characterized by the existence of an excessive number of teeth in relation to the normal dental formula.<sup>[8]</sup> The incidence in the mandibular anterior tooth area is about 0.01%.<sup>[9]</sup>

## Case Report

An 8-year-old male patient reported to our department with the chief complaint of irregularly placed lower anterior teeth for the past 3–4 months. The patient was moderately built and nourished. Medical history was non-contributory.

Extraoral examination did not reveal any abnormality. Intraoral examination revealed the presence of four mandibular incisors along with a large tooth in the left anterior region. The right mandibular incisor was rotated [Figure 1]. The number of mandibular incisors present is five after counting the large tooth as one single tooth. All the mandibular anterior were vital, non-carious, and in a good periodontal health. Hence, four mandibular anterior teeth were identical in shape and one teeth was large (two crowns fused together).

Panoramic radiographic examination confirmed the presence of five mandibular incisors [Figure 2]. It also showed the union of two incisors on the left side with a groove on incisal edge and single root and root canal with incompletely formed root apex, thus confirming the tooth as gemination of mandibular left lateral incisor. Blunderbuss canal was present in the geminated tooth as seen on intraoral periapical radiograph. Extraction under local anesthesia was done for the geminated tooth [Figure 3]. It was uneventful. The patient is currently under observation for the orthodontic alignment of the mandibular anterior region [Figure 4].

## Discussion

Dental fusion and gemination are different morphological dental anomalies characterized by the formation of a clinically wide tooth. They may develop during the tooth bud morphodifferentiation

as a result of a developmental aberration of ectoderm and mesoderm. The severity of the anomaly depends on the stage of development of the involved teeth.<sup>[2]</sup>

Gemination occurs when two teeth develop from one tooth bud; as a result, the patient has a larger tooth but a normal number in contrast to fusion where the patient would appear to be missing one tooth.<sup>[1]</sup> It is also called as Mader's "two tooth rule."<sup>[10]</sup> In geminated teeth, division is usually incomplete and results in a large tooth crown that has a single root and a single canal.<sup>[5]</sup> In our case also, the patient exhibited a large crown in the mandibular anterior region and the tooth count was more (five mandibular incisors). Radiographically, a single root and root canal are seen. Hence, it confirms the presence of gemination along with a supplemental supernumerary mandibular incisor which makes five mandibular incisors including the geminated tooth.

The exact etiology of supernumerary teeth is still obscure. The dichotomy theory of tooth germs states that the tooth bud splits into two equal or different sized parts, resulting in two teeth of equal size or one normal and one dysmorphic tooth, respectively. Localized and independent hyperactivity of dental lamina can also lead to supernumerary teeth.<sup>[11]</sup> Various authors have proposed



Figure 1: Pre-operative intraoral labial view

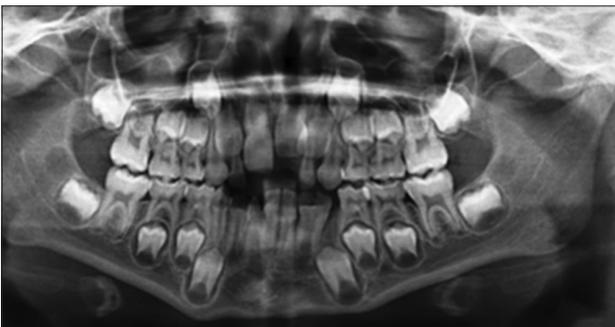


Figure 2: Panoramic view



Figure 3: Extracted geminated tooth



Figure 4: Intraoral labial view after 16 months

different classifications of supernumerary teeth, based on their location in the dental arches or on their morphology. The term supplemental tooth is used when the teeth are extra but have the shape and size of normal teeth.<sup>[4]</sup>

Several treatment modalities have been described in the literature for the management of geminated teeth. They are generally asymptomatic but are unesthetic. They may influence tooth alignment, interdilatation, and arch symmetry causing crowding, delayed eruption of other teeth, and deviation of midline.<sup>[12]</sup> The possible complications with geminated teeth are the presence of labial and lingual vertical grooves on the crown surface which are difficult to clean and may result in plaque accumulation and caries. Hence, good oral hygiene maintenance and sealing these fissures with composite resin would decrease the caries risk. Various other treatment modalities such as selective grinding, surgical separation followed by pulp therapy of retained segment, and orthodontic correction may be carried out depending on an individual case.<sup>[13]</sup>

The present case is extremely rare and interesting as a supplemental mandibular incisor as well as a geminated mandibular incisor are present, both in the mandibular anterior region. Simultaneous occurrence of the two anomalies makes the management of this case tricky. Since five mandibular incisors were present, a severe tooth material arch length discrepancy is inevitable and the geminated tooth caused an unesthetic appearance also. Hence, the geminated tooth was extracted which was uneventful. The patient presently has mixed dentition, and the fixed orthodontic treatment will be planned once all the permanent teeth erupt.

## Conclusion

Early detection and timely intervention of dental anomalies through a thorough clinical and radiographic examination are important to maintain esthetics, function, and space management in the developing dentition of the patient. Timely intervention by the dentist can help in preventing malocclusions and/or preventing it from becoming more severe. The parents and school teachers should plan routine dental check ups for children.

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