

## Mandibular mesiodens with agenesis of central incisors- A rare association

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### Abstract

Mesiodens is commonly located in maxillary central incisor region and rarely in the mandible. Congenital absence of mandibular central incisors is uncommon. We report a rare association of mandibular mesiodens with congenitally absent permanent central incisors. This is first case report of such an association.

**Keywords- Mesiodens, Missing central incisors)**

### Introduction

Supernumerary teeth are developmental disturbances occurring during odontogenesis resulting in the formation of teeth in excess of the normal number. Most commonly occurring supernumerary teeth are mesiodentes. They are commonly located in the maxillary midline. Their incidence in the mandibular region is very low. The incidence of missing lower central incisors is also reported to be low. We report a rare association of these two dental anomalies in a non-syndromic patient.

### Case report

An 18 year old girl presented with decayed teeth in her lower jaw. She had deep proximal caries in both the right and left mandibular first molars. Full complement of permanent teeth was found except for third molars and mandibular central incisors (**Figure 1**). A mesiodens was found in the midline of the lower arch. An intraoral periapical radiograph was taken in the lower anterior region. No tooth structures were found suggesting the absence of central incisors (**Figure 2**). The mesiodens appeared conical and peg shaped with a well formed root. The patient did not have any systemic illness and no syndromic associations were noted. The mesiodens was fully erupted into the oral cavity with completely formed root. It was well aligned in the mandibular arch with no occlusal interferences. Hence, no intervention was considered. The patient underwent endodontic treatment and restorations of the carious teeth.

### Discussion

The incidence of supernumeraries is reported to be 1-2% in the general population. They occur both in the deciduous (0.02-1.9%) and permanent (0.10-3.6%) dentition. Approximately 90% of supernumeraries are reported in the maxilla. Most commonly occurring supernumerary teeth are mesiodentes, followed by maxillary and mandibular fourth molars (distomolars or distodens), premolars, canines and lateral incisors. Supernumerary teeth exhibit a 2:1 male predominance. They may be



**Figure 2.** Intra oral periapical radiographic image of mandibular anterior region- Note the mesiodens and the missing central incisors

associated with craniofacial anomalies like cleft lip and cleft palate, as well as certain syndromes such as cleidocranial dysplasia, and Gardner's syndrome<sup>(1)</sup>.

The incidence of supernumerary teeth in the mandibular anterior region is low. Mesiodens is most commonly located in the maxillary central incisor region. A mandibular mesiodens is not very common<sup>(2)</sup>. Mesiodens may erupt normally, stay impacted, appear inverted, take an ectopic position, or follow an abnormal path of eruption. The literature reports 3 theories concerning the cause of mesiodentes which still remains a question of debate. It was originally postulated that mesiodentes represented a phylogenetic relic of extinct ancestors who had three central incisors. This theory, known as phylogenetic reversion (atavism), has now been largely discarded by embryologists. A second theory known as dichotomy suggests that the tooth bud is split to create 2 teeth, one of which is a mesiodens. The third theory, suggesting hyperactivity of the dental lamina, is the most widely supported. This theory, states that remnants of the dental lamina are induced to develop into an extra tooth bud, which results in a supernumerary tooth. Genetics also has a major role to play in the development of mesiodentes. These teeth have been diagnosed in twins, siblings and



**Figure 1.** Intra oral view of mesiodens and missing mandibular permanent central incisors

sequential generations of a single family. It has been proposed that the mode of inheritance is autosomal dominant with incomplete penetration<sup>(3)</sup>.

Mesiodentes can be classified into different types based on their occurrence in the dentition and their morphology. The former category consists of rudimentary mesiodentes in the permanent dentition and supplementary mesiodentes in the primary dentition. Based on the morphology, they can be classified as conical, tuberculate or molariform. Conical mesiodentes usually occur singly. They are generally peg-shaped and are usually located palatally between the maxillary central incisors, tending to displace the erupting permanent central incisors. They often have a completely formed root and can erupt into the oral cavity. However, they may be inverted, with the crown pointing superiorly, in which case they are less likely to erupt into the oral cavity. Inverted conical mesiodentes occasionally erupt into the nasal cavity. Tuberculate mesiodentes are barrel-shaped, with several tubercles or cusps, and have incomplete or abnormal root formation. They rarely erupt and also delay eruption of the permanent incisors. They can develop either unilaterally or bilaterally and are commonly associated with other supernumerary teeth. Tuberculate mesiodentes develop later than conical mesiodentes and usually occupy a more palatal position. A third, much rarer type is the molariform mesiodens, which has a premolar-like crown and a completely formed root<sup>(3)</sup>. Our case had a single, conical, fully erupted mandibular mesiodens with completely formed root (**Figure 2**).

Missing teeth (tooth agenesis) can occur in an isolated fashion, or as part of a syndrome. Isolated cases of missing teeth can be familial or sporadic in nature. Familial tooth agenesis is transmitted as autosomal dominant, autosomal recessive, or X-linked genetic condition. Several environmental factors like viral infections, toxins and radio - or chemotherapy may cause missing permanent teeth. Dominant inheritance of congenitally missing teeth has been shown both in hypodontia and oligodontia. However in both cases the amount and identity of missing teeth may vary between relatives. In hypodontia, the variability may

extend to no teeth actually missing ("reduced penetrance"). The variability is probably caused by other genetic and environmental factors, and in some cases the etiology is analogous to multifactorial traits. An example of recessive inheritance is given by Recessive incisor hypodontia (RIH). In this condition, a recessive gene causes congenitally missing several incisors, including lower permanent incisors and often deciduous incisors<sup>(4)</sup>. Studies indicate the order of most commonly missing teeth to be third molars, maxillary and mandibular premolars, maxillary lateral incisors, mandibular lateral incisors and mandibular central incisors. Missing teeth follow evolutionary trends. Commonly missing teeth are those that are most expendable in terms of function<sup>(5)</sup>. Our patient did not give any significant relevant history and examination of siblings and parents did not reveal similar anomaly. Hence, the absence of central incisors was thought to be sporadic.

Developmental dental anomalies are frequently observed during routine dental examinations. Obtaining a complete medical history is critical when a patient with supernumerary teeth is to be treated.

This case illustrates a rare association of these two dental anomalies. After an exhaustive pubmed search using keywords - Congenitally missing/absent mandibular central incisors, Mesiodens, we report the first such case.

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