

Congenital Bilateral Missing Primary Mandibular Canines while their Successors Exist: A Case Report

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Abstract

This article presents a very rare case of congenital bilateral missing primary mandibular canines despite the fact that their permanent successors are present. Congenitally missing teeth is not an uncommon phenomenon in primary dentition. Usually, in these cases, when primary teeth are missing, the permanent successors are also missing. Recently, some evidence has demonstrated the possibility of missing primary teeth without missing permanent teeth. As far as we know, this is the first documented case on missing primary canines while their permanent successors are radiographically present. The aim of this case report is to increase the awareness for such rare cases that may be related to other syndromes or anatomic variations.

Keywords: Hypodontia; Canines; Primary teeth; Orthodontic treatment

Introduction

Missing teeth are not an uncommon phenomenon in permanent dentition. Prevalence of 1.6-9.6% [1-3] was reported in the general population. However, prevalence is much lower in primary dentition, in which only 0.1-0.9% [1,4] were reported in the Caucasian population. Prevalence differs among different populations, with 2% [5] and 2.37% [6] of hypodontia in primary dentition reported among Asian children. Unilateral missing teeth are more frequently observed than bilateral missing ones [6,7]. In Caucasians, agenesis is found twice as frequently in the maxillary lateral incisor region than in the mandibular lateral incisor region [7], and the tooth most commonly missing is the maxillary lateral incisor [4]. Congenital absence of primary molars, canines and maxillary central incisors is extremely rare [7].

It is widely accepted that if the primary tooth is missing, its succedaneous (permanent) tooth will also be missing [8-11]. Nevertheless, there are a few studies demonstrating a very rare possibility of existing permanent teeth in children who were missing the primary predecessors [12]. To our knowledge, no such case report is available.

The aim of this article is to present a case in which permanent lower canines were normally developed in spite of the congenital absence of their primary predecessors.

Description of Case

Our patient (a 7 year 3 month old healthy male) was referred to our department by his family's general dentist. His parents brought him in for a dental examination for the first time in his life, with no specific complaints. The parents, Caucasians, deny any previous dentoalveolar trauma or dental intervention prior to that day. At the first visit, we got his parents informed consent for the examination and treatment. His upper dental arch was normal with significant amount of physiologic spacing including distal to the primary maxillary canines, as can be seen in Figure 1. The dentist revealed bilateral missing mandibular primary canines and referred him for further evaluation at our dental hospital. Upon examination, the patient had early mixed dentition, with four erupted permanent first molars and two central mandibular incisors. The mandibular canines were absent, as can be seen in his lower dental arch photograph (Figure 2). There were no further significant findings, and the patient was caries free. Fissure sealants were applied at that appointment.



Figure 1: Intraoral photograph of the normal upper dental arch.



Figure 2: Intraoral photograph of lower teeth, showing absence of primary mandibular canines.

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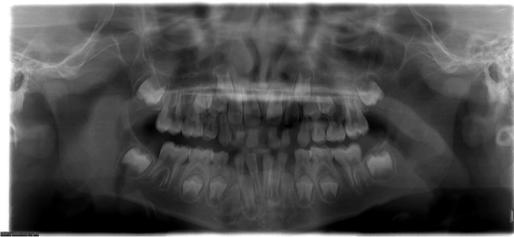


Figure 3: Panoramic radiograph revealing normal developing permanent dentition, including permanent mandibular canines.

On panoramic radiograph (Figure 3), the dental age was assessed as 7 years (staged according to standards) [10]. The primary mandibular canines were missing, and normally developing permanent canines were demonstrated. There was no evidence of developing third molars. All four first molars showed taurodontism and short roots (though not yet fully developed).

Discussion

Hypodontia of primary teeth appears to be inherited in an autosomal dominant fashion, with incomplete penetrance and variable expressivity, whereas some cases present an autosomal recessive or sex-linked pattern [1,12,13]. The likelihood ratio of eruption of permanent canines even though their primary predecessors are not erupted was found zero [12]. Higher values for the repetition of hypodontia and for fusion of primary teeth followed by missing permanent teeth were also demonstrated [12]. Acquired damage during early development has also some influence, suggesting multifactorial inheritance [1,12,13].

Hypodontia may also be a consequence of absence or severe damage to the appropriate dental lamina [1,14]. The dental lamina is extremely sensitive to external insults like trauma, infection, radiation, physical obstruction or endocrine disturbances [1]. Disruption of the dental lamina, space limitation, functional abnormalities of the dental epithelium or failure of initiation of the underlying mesenchyme – are all possible histologic explanations for that phenomenon [14].

The explanation for a very rare phenomenon, like in the presented case, can be genetic, environmental, or more likely the combination of both. Loss of developing tooth buds, as discussed earlier, appears to be genetically controlled. In spite of this, the environment may also influence the final result. Geographic location and fluoridation status at time of amelogenesis were not found to be related to the prevalence of hypoplasia in primary canines [15]. It has been suggested that the insult may occur around six months of age [16].

Taurodontism and a reduced tooth length have been reported to occur in patients with oligodontia. About a tenth of mandibular first molars in patients with oligodontia showed taurodontism and short roots [17]. In the reported case, all four first permanent molars were such teeth.

Although very rare, apparently there are cases of missing primary teeth accompanied by existing permanent successors. Among these rare cases, very seldom are the primary canines and first molars teeth reported to be congenitally missing. Every previously reported case of their congenital absence has been followed by absent permanent teeth [18].

It has been reported that in rural areas in East Africa there is a

tradition of extracting the primary canine tooth buds [19]. The reason for that extraction is a common belief, that unerupted primary canines cause diarrhea, vomiting and fever in infants [19]. Since the reported case does not concern an African child, there is no reason to suspect any previous intervention, but rather congenitally missing teeth.

Conclusions

In every case of missing primary teeth, we should carefully examine the child, clinically and radiologically. Our case report demonstrates that if the primary teeth are missing, it cannot be assumed as well that the following permanent teeth are missing, too. In those rare cases of existing permanent teeth, it is advised to examine the child periodically in order to avoid possible space loss due to tipping of adjacent teeth toward the space created by the missing tooth. If space is already lost, it might be necessary to gain it back and then to use a space maintainer, till the permanent tooth is erupted.

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