Familial Hyperdontia in the Deciduous Dentition

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Abstract

Two young brothers had identical supernumerary teeth in the deciduous dentition. The necessity of obtaining radiographs when treating a patient with hyperdontia in the deciduous dentition is stressed, and the importance of utilizing a correct timed approach, when instituting treatment and management is emphasized. The etiology and dental implications of supernumerary teeth are reviewed. (*Journal of International Dental and Medical Research 2009; 2: (1), pp. 1-5)*

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Introduction

Supernumerary teeth or hyperdontia [OMIM 187100][a] is defined as an excess number compared to the normal dental formula. These teeth mimic normal tooth morphology, and classification is dependent on their position and form. Hyperdontia may occur as a single tooth, multiple teeth, unilateral, bilateral and in one or both jaws [1-5]. The morphological classification can be subcategorized into eumorphic (supplemental) and dysmorphic (rudimentary) elements. Eumorphic teeth have morphology similar to a tooth of the normal dentition, while dysmorphic teeth are small and conical, tuberculate or odontome.

The morphology of supernumerary teeth in the primary dentition is usually normal or conical, and may vary in the permanent dentition [6].

Supernumerary teeth in the primary dentition are often overlooked and undocumented. It is more frequently reported in the permanent dentition. The following reasons for this have been suggested:

1. Spacing often occurs in the primary dentition, which allows for extra teeth to be accommodated without producing irregularities.
2. Supernumerary teeth in the primary dentition have less effect upon adjacent teeth than do supernumerary teeth in the permanent dentition.
3. They often erupt and exfoliate without being noticed by the parents.
4. They are often are mistaken as germination or fusion anomalies.
5. At the time of the first dental examination the primary incisors have exfoliated.[4, 7, 8]

Since children are presenting to the dentist earlier for the routine dental examination, the incidence of documented supernumerary primary teeth is increasing.

In this article the dental manifestations in two Dutch brothers are depicted, documented and discussed. They presented with identical hyperdontia in their deciduous dentition. The familial occurrence of eumorphic (supplemental) supernumerary primary incisors in exactly the same position is very unusual.

Cases Report

A Dutch, Caucasian family consisting of healthy parents and their three children, all boys, presented for their routine dental examination at a private dental practice. The family's medical history was non-contributory, but the dental history revealed that the parents were aware of an anomaly present in the deciduous dentition of two of the boys.

Patient 1

A male child born in 2002 aged six years, the eldest of three brothers presented for a dental examination. Intra-orally, both dental arches were normal in form. The child had just started the exfoliation period, with subsequent eruption of the

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permanent mandibular central incisors.

No evidence of crowding was observed in this mixed dentition, and primate spacing was evident between the primary maxillary lateral incisors and mandibular canines.

The dental examination revealed the presence of a eumorphic supernumerary distal to the primary maxillary right lateral incisor. Mild dental attrition on these incisors and also on the molars (Fig 1) was indicative of bruxism, which was confirmed by the mother.

Fig. 1 Patient 1, primary maxillary dentition, with eumorphic supernumerary primary left lateral incisor distal to the lateral incisor.

Radiographic examination with an orthopantomogram verified the presence of a supplemental primary maxillary lateral incisor (Fig 2).

Fig 2. Orthopantogram of patient 1, supernumerary primary left maxillary lateral incisors, and supernumerary permanent maxillary lateral incisor.

Mild anterior crowding was expected in the pre-maxillary segment of the permanent dentition, since a permanent supplemental lateral incisor was present. From a peri-apical radiograph (Fig 3), the permanent maxillary right lateral incisor was normal in morphology and the supplemental lateral incisor was rotated so as to appear peg-shaped.

Fig 3. Occlusal radiograph of patient 1, a normal permanent left maxillary lateral incisor and rotated supplementary maxillary lateral incisor.

The patient was referred for orthodontic evaluation and it was decided to postpone invasive dental treatment.

At routine dental examination one and a half years later, the permanent maxillary central incisors had erupted with slight overlapping of these teeth. An orthopantomogram (Fig 4) showed that nearly 2/3 of the root formation of the permanent maxillary right lateral and supplemental incisors has occurred.

Fig 4. Orthopantogram of patient 1, one and a half years later, overlapping of the maxillary central incisors.

Patient 2

The youngest brother, born in 2004 and aged three years when first examined, had dental crowding in the right pre-maxillary arch. The arch form and occlusion for both the maxilla and mandible was normal. Dental examination revealed a supplemental primary maxillary right lateral incisor, in exact the same position as in his brother. Due to slight mesial rotation of the primary maxillary lateral incisor minor gingival recession was evident.

The supernumerary incisor was normal in form (Fig 5).

Fig 5. Patient 2, the primary maxillary dentition, with an eumorphic supernumerary primary left lateral incisor.

Compliancy during the examination was difficult but with effort an occlusal radiograph was obtained (Fig 6).

Fig 6. Occlusal radiograph of patient 2, root resorption of the primary left maxillary lateral incisor.

The primary maxillary right central incisor showed evidence of resorption and the supernumerary still had an open apex. One and half years later an orthopantomogram (Fig 7) revealed that this patient processed no permanent supplemental lateral incisor.

Fig 7. Orthopantomogram of patient 2, one and a half years later, with no supplemental permanent left maxillary lateral incisor.

Patient 3

The middle brother, born in 2003 and now aged five years, had a normal dental arch form and his deciduous dentition was clinically and radiologically normal in form and number. An orthopantomogram taken one and half year later, revealed a rotated permanent maxillary right lateral incisor (Fig 8).

Fig 8. Orthopantomogram of patient 3, one and a half years later, revealed no supplemental teeth, a rotated or cone shaped permanent right maxillary lateral incisor.

Dental management of the affected child (Patient 1)

The appropriate approach in this patient is to minimize invasiveness of the dental treatment. Unerupted or supernumerary teeth are usually removed surgically. Since there has not been any reason for intervention, such as cyst formation or delayed eruption, treatment has been delayed. In addition, it is relevant that older children tolerate this form of treatment better. The eruption of maxillary incisors is often delayed due to the presence of supernumerary teeth; in these circumstances the supernumerary teeth are often extracted surgically [9].

The orientation of the supernumerary teeth does not influence rotation or horizontal displacement of the permanent incisors, except for crowding as seen in Patient 1. Supernumerary teeth that are orientated vertically may cause eruption delay more frequently than those that are inverted [10].

In Patient 1, in order to relieve anterior crowding of the permanent maxillary central incisors, it was decided to extract the primary right lateral and supplemental incisors and the permanent supplemental incisor. This will be undertaken during a single surgical procedure in order to minimize psychological trauma.

Discussion

The presence of supernumerary teeth in the primary dentition is rare, quoted by some authors as occurring in about 0.3-0.6 %[1, 5, 7] and by others as 0.1-1% [11]. In contrast, supernumerary permanent successors are present in 1.5-3% [1, 12]. Although some authors suggest that there is an increase of supernumerary teeth on an evolutionary scale [4, 12],

this phenomenon could be explained more parsimoniously by the observation that children are visiting the dentist at an earlier age, and thus only the detection of supernumeraries has increased.

Approximately 90-98% of all supernumeraries occur in the maxilla with a strong predication (90%) for the premaxilla [3, 8]. Rajab and Handan have recently verified this point; their study revealed that 25% of these teeth are located in the midline, and that the most common supernumerary tooth is the lateral maxillary incisor [4].

Hyperdontia in the primary dentition is often overlooked due to the morphology being eumorphic and often occurring non-impacted as a supplementary maxillary lateral incisor [3, 4]. Males have shown a strong predilection to being affected with a sex ratio of 2.2:1 [4]. The occurrence of supernumerary teeth in both the primary and permanent dentitions of the same child has been reported and may occur in approximately one third of the cases [1].

In view of the predominance in males, the hereditary component which has been proposed does not conform to a simple Mendelian pattern [8]. Two separate cases of mirror imaging of supplemental primary incisors in the premaxillary area in identical twins have been documented [17, 18]. Other familial cases have also been reported [3, 15, 16, 17].

The case described in this article is unique as both brothers have eumorphic supplemental primary incisors in the same position in the pre-maxillary area. The inheritance pattern in this family could represent autosomal dominant transmission, with the lack of penetrance in some generations as explained in a theory by Sedano and Gorlin (1969) [18].

Autosomal recessive and X-linked transmission are also feasible, but in the absence of additional genealogical evidence, it is impossible to accurately determine the mode of inheritance.

Clinical problems which can occur due to supernumerary teeth are crowding, delayed eruption, diastema, rotations, cystic lesions, and resorption of adjacent teeth [1, 4, 5]. Early clinical and radiographic assessment is an essential step in the diagnosis and treatment planning [19]. Whenever a single supernumerary tooth is detected, an orthopantomogram is advisable in order to rule out the presence of multiple supernumerary teeth [1, 5, 20].

Given sufficient space and time, the majority of teeth prevented from erupting by a supernumerary tooth will erupt spontaneously following the removal of the supernumerary alone [13, 21, 22].

The optimal time for the removal of anterior supernumerary teeth is controversial [1]. Several factors influence eruption of the impacted tooth following the removal of the supernumerary. These include the type of supernumerary tooth, the distance the unerupted tooth was displaced at the time of surgical intervention, the space available within the dental arch for the unerupted tooth and the stage of root development [21, 23].

Most authors agree that the time taken for an unerupted tooth to appear following the removal of supernumerary is between 6 months and 3 years [19]. An interdisciplinary team management approach of pediatric dentist, orthodontist, and maxillofacial surgeon is advocated [19, 23].

Not all supernumerary teeth require extraction; some can be left in situ and monitored if they remain asymptomatic.

Conclusions

Although there is no consensus on the etiology of supernumerary teeth in the primary dentition, it is evident from this case, as well as from others in the literature that there is a genetic influence.

It would be of scientific importance to determine the precise hereditary factors which are involved. It is relevant that hyperdontia can be a component of a number of genetic syndromes, in which systemic ramifications may impact upon anaesthesia and other aspects of dental management.

From a clinical perspective, radiographic detection of supernumerary successors is crucial. Affected persons would benefit from an interdisciplinary approach to the treatment, where each step is correctly timed, based on the patient's dental age.

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