

Agensis of Bilateral Primary Maxillary Lateral Incisors and Their Successors: A Rare Case Report

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Abstract

Hypodontia is the term used to describe the developmental absence of one or more primary or permanent teeth, excluding the third molars. Hypodontia is relatively uncommon in primary dentition. It has a prevalence of 0.1%-0.9% in the primary dentition. Hypodontia can occur as an isolated or non-syndromic form and it can occur in association with various syndromes/systemic disorders. The exact etiology of hypodontia is not known. The absence of teeth in young patients can cause esthetic, functional and psychological problems particularly if the teeth of the anterior region are involved. The present article reports a rare case of non-syndromic hypodontia in a four year old female patient with agensis of bilateral primary maxillary lateral incisors and their successors along with agensis of unilateral permanent mandibular lateral incisor.

Key words: Tooth agensis, Hypodontia, Primary teeth, Permanent teeth.

Introduction

Hypodontia is the term used to describe the developmental absence of one or more primary or permanent teeth, excluding the third molars. Hypodontia is relatively uncommon in primary dentition.¹ It has a prevalence of 1.6% to 9.6% in the permanent dentition, excluding agensis of the third molars. Hypodontia has a prevalence of only 0.1%-0.9% in the primary dentition and it has higher prevalence ratio for females, with a ratio of 3:2 (F/M).^{1, 2, 3} Maxillary lateral incisor is the most common congenitally missing tooth in the primary dentition.^{1,4} But, the agensis of bilateral primary maxillary lateral incisors and their successors is rarely reported. Hence the purpose of this article is to report a rare case of non-syndromic hypodontia in a four year old female patient with agensis of bilateral primary maxillary lateral incisors and their successors along with agensis of unilateral permanent mandibular lateral incisor.

Case report

A four year old female patient reported to the department of Pedodontics with a chief complaint of unerupted upper front teeth. On examination the child appeared to be physically normal, with no systemic abnormalities. There was no history of trauma to the teeth and no history of extraction of natal/neonatal teeth. The child was born to non-consanguineous parents. The mother stated that her pregnancy was normal. The patient's medical history was not significant and the family history did not reveal any missing teeth.

Intra oral clinical examination revealed bilaterally missing primary maxillary lateral incisors (Figure-1). All the other primary teeth were present and they were normal in size, shape and color. There were no decayed teeth in the oral cavity. A panoramic radiograph (OPG) was made to assess the missing teeth. The OPG revealed agensis of teeth # 52, 62, 12 and 22, it also revealed agensis of tooth # 42 (Figure-2). All the other permanent tooth buds were present except that of the third molars. The OPG findings were confirmed with IOPA radiographs. Thus the patient was diagnosed as a case of hypodontia.



Figure 1: Clinical photograph showing congenitally missing teeth # 52, # 62.

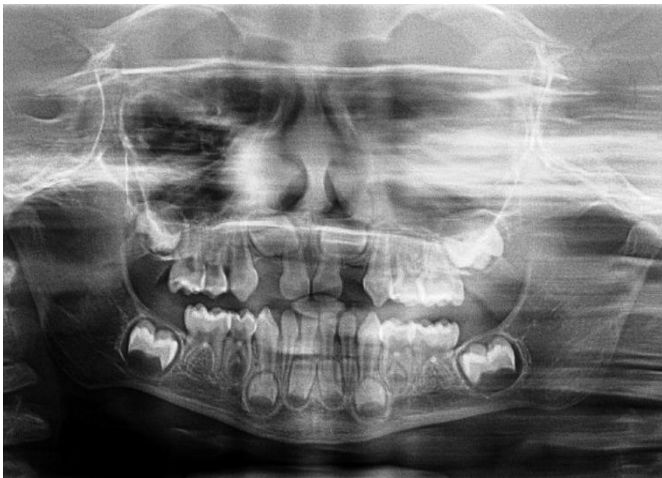


Figure 2: Orthopantomograph(OPG) showing congenitally missing teeth # 52, 62, 12, 22 and 42.

In view of the hypodontia, the patient was referred to a pediatrician to rule out any associated syndromes and systemic disorders. A detailed examination was done to rule out abnormalities associated with the skull, chest, vertebrae and clavicles. The ophthalmological, dermatological and neurological examination of the patient revealed no pathological symptoms/signs and showed no signs of mental retardation. Based on the above findings the case was finally diagnosed as non-syndromic hypodontia involving agenesis of bilateral primary maxillary lateral incisors and their successors along with agenesis of unilateral permanent mandibular lateral incisor. The clinical findings were clearly explained to the parents and the options for prosthetic rehabilitation of the missing primary teeth with acrylic partial denture was considered. Since the patient and her parents were not willing for the prosthesis, oral prophylaxis was done and dental health education was given. The patient was kept under observation to assess the further development of dentition.

Discussion

In general hypodontia is the term most frequently used to describe the phenomenon of congenitally missing teeth. A tooth is defined to be congenitally missing if it has not erupted in the oral cavity and is not visible in a radiograph.⁵ Various terminologies have been used to describe the agenesis of teeth in primary or permanent dentition. Hypodontia is used to describe the agenesis of one or few teeth; Oligodontia is used to describe agenesis of six or more teeth excluding the third molars. Anodontia is the extreme of oligodontia where there is total absence of any dental structure.^{1, 6} Hypodontia and oligodontia are classified as isolated or non-syndromic and syndromic hypodontia/oligodontia.³ Oligodontia is often associated with specific syndromes and/or severe systemic abnormalities, while anodontia is commonly seen in severe cases of ectodermal dysplasia.³ Hypodontia may arise as a familial condition. It may also arise in individuals with no hereditary history.^{7, 8} Familial tooth agenesis is transmitted as an autosomal dominant/recessive condition. Affected members within a family often exhibit significant variability with regard to the location, symmetry and number of teeth involved. The permanent dentition is more commonly affected than primary dentition. In permanent dentition the mandibular second premolar is the most frequently missing tooth after the third molar, followed by the maxillary lateral incisor and the maxillary second premolar.^{1, 9} Hypodontia is rarely seen in primary dentition. A high prevalence of absence of succedaneous teeth has been reported in cases where there is a congenital absence of the primary teeth.¹ Maxillary lateral incisor is the most commonly missing teeth in primary dentition. Unilateral occurrence of dental agenesis is more common than bilateral occurrence.⁸ Hypodontia is a common presenting feature in a number of systemic conditions, such as hypohidrotic ectodermal dysplasia, Down's syndrome and chondroectodermal dysplasia.^{2, 10} Although tooth agenesis is associated with more than 49 syndromes,¹⁰ several case reports describe non-syndromic forms that are either sporadic or familial in nature. Both environmental and genetic factors can cause failure of tooth development. Environmental factors include viral infections, children treated with irradiation during tooth developmental stages or those in whom chemotherapeutic agents have been administered. Genetic factors are constituted by two mutated genes, MSX-1 and PAX-9 in humans.^{8, 9} Congenital absence of teeth may be due to from physical obstruction or disruption of the dental lamina, space limitation and functional abnormalities of the dental epithelium or failure of initiation of the underlying mesenchyme.³ The developmental disruption arising from the presence of cleft lip and palate may also result in absence of teeth in that region, notably the maxillary lateral incisors.⁶ In humans, the upper lateral incisors are often affected by dental anomalies such as agenesis, alteration of shape/size and supernumeraries.^{6, 8} The morphology of the human face is established between the 5th and 10th prenatal weeks.⁶ Upper jaw is

formed by the fusion of medial nasal process with the maxillary processes. The premaxilla carries the upper central and lateral incisors. The developmental origin of upper primary lateral incisor is not clear. In humans, Ooe (1957) has proposed that the upper lateral incisor can originate partly on the maxillary process and partly on the medial nasal process.^{6,8} The complex origin of the upper lateral incisor can explain its developmental vulnerability resulting in anomalies of number, shape and size and are frequently associated with Oro-facial clefts.^{6,11} The present case report shows congenital absence of bilateral primary maxillary lateral incisors and their successors along with agenesis of unilateral permanent mandibular lateral incisor. It has been previously reported that there is a relationship between agenesis in the primary dentition and permanent dentition. Ravn (1971) has shown for the upper lateral incisor that out of 17 cases of agenesis in the primary dentition, 16 cases showed agenesis in the corresponding location in the permanent dentition.⁸ Kumar SH et al have reported a case of agenesis of bilateral primary maxillary lateral incisors and their successors along with the agenesis of permanent mandibular central incisors and unilateral lateral incisor.⁸ Several dental anomalies have been reported together with congenitally missing teeth. Examples of these are delayed formation and eruption of teeth, reduction in tooth size and form, ectopic eruption of teeth, infra-position of primary molars, teeth with short roots, taurodontism, rotation of premolars and or maxillary lateral incisors, enamel hypoplasia, hypocalcification and dentinogenesis imperfecta.³ However in the case reported here the remaining teeth were normal in size, shape and color. There were no carious teeth in the oral cavity but mild spacing between teeth was observed. Management of hypodontia and oligodontia patients generally requires a multidisciplinary approach to correct esthetic, functional and psychological problems.^{8,9,12} The prosthetic management of hypodontia varies and includes removable partial dentures, fixed partial dentures, over-dentures and implants. In the present case, rigid fixed prosthesis is contra-indicated. A removable partial denture is recommended, keeping in view the growing age of the patient. The rationale for the use of removable partial dentures is their easy care, acceptable cost, easy adjustment during growth, restoration of vertical dimension, and easy replacement of missing teeth.

Conclusion

Agenesis of teeth in primary dentition is a rare finding reported in the literature. Hypodontia cases should be evaluated carefully for the presence of any syndromes and managed appropriately. Patients suffering from hypodontia may have severe functional, esthetic and psychological problems. Hence, the management of such patients generally requires a multidisciplinary approach.

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