

Concomitant Bilateral Agenesis of Maxillary Lateral and Mandibular Central Incisors: A Case Report

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Abstract: Hypodontia is one of the most common dental developmental anomalies. It is the congenital agenesis of less than six teeth excluding the third molars. Hypodontia causes aesthetic and/or functional problems because they usually involve the anterior region of the maxilla and mandible. This is a case report of a young male, aged 8 and half years reported to a private dental clinic by his parents with a chief complaint of spaces between his upper and lower anterior teeth. Clinical and radiographic examination revealed bilateral agenesis of both the maxillary permanent lateral and mandibular central incisors. Proper examination and diagnosis particularly in young children is important to make a correct and rational treatment plan and avoid complications. The treatment of hypodontia requires an interdisciplinary approach that includes, orthodontics, paedodontics and restorative dentistry.

INTRODUCTION

Dental agenesis is a common developmental anomaly in humans and could be classified into anodontia or partial anodontia. Anodontia is the total absence of tooth development in primary, permanent or both dentitions. Partial anodontia is the lack of development and absence of one or more teeth. Partial hypodontia may be further subdivided into oligodontia which is the congenital absence of six or more teeth (third molars are not included) and hypodontia which is the congenital absence of less than six teeth (third molars are not included). Hypodontia is the most common form of this category of tooth anomalies. Hypodontia may occur as part of a syndrome or as an isolated condition, with the latter being more common. Prevalence of hypodontia varies between different ethnic groups from 2.8% to 11.3% [1]. Hypodontia is more frequently observed in permanent dentition than in deciduous dentition with more frequency for the upper arch than the lower arch with the unilateral occurrence of agenesis being more common than the bilateral [2]. The most common

teeth reported missing varies among different ethnicities. The maxillary lateral incisor was reported to be the most common in the Malaysian [3], Turkish [4] and American [5] populations, while the mandibular second premolars were the most common in the Japanese and European populations [1], while the mandibular central incisors were reported as the most common missing teeth in Chinese populations [6].

The aim of this article is to present a rare case of bilateral agenesis of maxillary lateral incisors with the simultaneous agenesis of the mandibular central incisors and discuss the possible future treatment options.

CASE REPORT

An eight-year old male patient was reported by his parents to a private dental clinic with the chief complaint of spaces between his upper teeth. The familial, medical, and dental histories were examined and nothing relevant was reported. An extra oral examination did not reveal any abnormality. The intra-oral examination of the maxillary and mandibular arches revealed that the patient was in the mixed dentition stage. Spaces were present between the two permanent central incisors in the maxillary arch and space between the two primary central incisors in the mandibular arch. Both the mandibular deciduous central incisors were retained and their permanent successors were missing clinically and the same was true for the maxillary lateral incisors (**Figure 1**).



FIGURE 1: Extraoral view

Family history revealed no such findings in any members of the family. A panoramic radiograph examination was done and revealed agenesis of the

permanent maxillary lateral incisors and the permanent mandibular central lateral incisors (Figure 2).



FIGURE 2: Panoramic x-ray of the patient
The case was explained to the parents and a multidisciplinary treatment plan was considered to restore both aesthetics and function. Reshaping the primary mandibular central and maxillary lateral incisors was planned for psychological reasons but was delayed until the eruption of the permanent canines in both arches. However, once the primary incisors are lost, fabrication of removable or fixed partial should be done until the time is suitable for orthodontic and prosthodontic treatment. Patient was kept under observation.

DISCUSSION

This is a case report of a patient with retained bilateral primary maxillary lateral and mandibular central incisors associated with congenital agenesis of their permanent successors. Bilateral agenesis of maxillary lateral incisors is reported in the literature [2,7] but there is a scarcity of data relating to bilateral agenesis of mandibular central incisors [8]. This is a very rare case combining both the agenesis bilateral maxillary lateral and mandibular central incisors.

This case demonstrated tooth agenesis with no association to any syndrome. Hypodontia may occur in the form of an isolated anomaly or in association with other systemic conditions like Cleft lip/palate, Down syndrome, Van der Woude syndrome, Ectodermal dysplasia, Hypohidrotic dysplasia, Incontinentia pigment, Witkop syndrome, Rieger syndrome, Holoprosencephaly. The etiology of tooth agenesis is not clearly understood. It might be due to environmental factors such as trauma, infection, chemical agents and radiations or it could be due to genetic factors resulting from mutations in genes responsible for tooth development such as MSX1, AXIN2, and PAX9. However, a combination of both environmental and genetic factors might contribute to the occurrence of dental agenesis [1], [9].

Early identification of dental agenesis and appropriate intervention, can reduce or prevent a

number of complications and allowing proper treatment. Tooth agenesis whether unilateral or bilateral causes a variety of esthetic and functional problems for the affected individual. Agenesis of the permanent lateral incisors may cause a diastema between the central incisors, spacing between permanent incisor and canine, mesial migration of canines, midline shift in case of unilateral missing tooth. On the other hand, agenesis of the mandibular central incisor may affect the growth and maturation of the mandibular symphysis [10]. It may also result in various disturbances like abnormal occlusion, loss of lip and tongue support, altered facial appearance which may cause psychological distress, difficulty in mastication and speech [11]. In general, the treatment of both arches requires a multi-disciplinary approach for rehabilitation of impaired esthetics and function.

In this case the treatment should be differentiated for each arch; thus in the mandibular arch, one option might be retaining the primary teeth to maintain the normal development of alveolar bone, which in turn is essential for future definitive treatment. An interim composite restoration might be provided to reshape the primary incisors and to maintain space mesiodistally and vertically for any of the definitive treatment options under consideration. The interim restoration may serve the normal appearance of the child's teeth before the child realizes that he is different from other children. As the child reaches adolescence, fixed prosthetic replacement of missing both central incisors, orthodontic treatment to close space and advanced treatment using dental implants are the treatments of choice in this case.

In the maxillary arch the definitive treatment may include either orthodontic closing of spaces of missing teeth followed by reshaping the canine (canine substitution) or opening these spaces and preparing adjacent teeth for fixed or removable prosthesis. However, dental implants might be a more appropriate treatment option after opening the space of missing teeth by orthodontics because they do not require preparing the adjacent teeth for fixed or removable prosthesis.

However, due to the age of the patient (8 years), the definitive treatment should be postponed until the eruption of adjacent permanent teeth and/or any necessary tooth movement has been completed and the jaws have stopped growing in adolescence, meanwhile the patient should be kept under regular follow-up.

CONCLUSION

Hypodontia is a common dental anomaly with an incidence of 2.8 - 11.3 %. Cases with a

combination of missing bilateral maxillary lateral and mandibular central incisors are rare. Such cases can lead to compromised dental and facial aesthetics and therefore requires a multidisciplinary approach involving a combination of orthodontics, paedodontics and aesthetic restorative dentistry is a must.

COMPETING INTERESTS

The authors declare that they have no conflict of interests.

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