

Agenesis of maxillary primary and permanent lateral incisor

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Abstract— Dental agenesis is one of the most common developmental anomaly in humans and is many a times associated with several other oral abnormalities. Hypodontia is uncommon in the deciduous dentition with a prevalence that ranges from 0.5% to 0.9%, with the maxillary lateral incisor being the most affected unilaterally or bilaterally. The absence of a deciduous tooth is associated strongly with an increased prevalence of a missing succedaneous tooth. A tooth is defined to be congenitally missing if it has not erupted into the oral cavity and has not been extracted or accidentally lost or is found missing in the radiograph. A disturbance during the early stages of tooth development can result in its congenital absence. Hypodontia can occur either as an isolated condition involving one tooth, a few or many teeth or can be associated with a condition or syndrome essentially reflecting the genetically and phenotypical heterogeneity of the condition. It is also more frequently observed in females than in males. In primary dentition early diagnosis of missing anterior teeth is not usual, and might go undiagnosed till the age of 12 years, till aesthetic treatment is sought, for missing permanent maxillary incisors. Hobkirk et al reported that in 451 patients treated for hypodontia, more than 50% were older than 12 years and all reported for aesthetic or prosthetic rehabilitation. An early x-ray examination, using periapical and panoramic techniques, and if necessary computed tomography, may be necessary to correctly diagnose the particular situation and get information regarding the treatment modalities. The delay in diagnosis and treatment of this condition can lead to an unpleasant smile, facial asymmetry, midline diastema, dental arch discrepancy, occlusal disharmony, canine impactions, decreased periodontal health and psychological conditions. The objective of this article is to bring awareness among the dentists and to stress upon the importance of early diagnosis of missing lateral incisors in the early mixed dentition period, its consequences and the possible earliest management during this period to restore aesthetics and function to the affected patient.

Index Terms— Dental Agenesis, Hypodontia, Lateral incisor, Pedodontics.

1 INTRODUCTION

Dental agenesis is one of the most common developmental anomaly in humans and is many a times associated with several other oral abnormalities. Hypodontia is uncommon in the deciduous dentition with a prevalence that ranges from 0.5% to 0.9%, with the maxillary lateral incisor being the most affected unilaterally or bilaterally. The absence of a deciduous tooth is associated strongly with an increased prevalence of a missing succedaneous tooth. A tooth is defined to be congenitally missing if it has not erupted into the oral cavity and has not been extracted or accidentally lost or is found missing in the radiograph. A disturbance during the early stages of tooth development can result in its congenital absence. Hypodontia can occur either as an isolated condition involving one tooth, a few or many teeth or can be associated with a condition or syndrome essentially reflecting the genetically observed in females than in males[1]

In primary dentition early diagnosis of missing anterior teeth is not usual, and might go undiagnosed till the age of 12 years, till aesthetic treatment is sought, for missing permanent maxillary incisors. Many studies have confirmed the association of agenesis of maxillary lateral incisors with other tooth anomalies. Patients with maxillary lateral agenesis has a sig-

nificantly increased prevalence rate of 18.2% in permanent tooth agenesis.[2] Ectopic eruption of canines, or canine impactions were considerably increased in incidence with agenesis of maxillary lateral incisor. Generalized microdontia was seen as a variable expression of agenesis in patients. Decreased periodontal health associated with maxillary lateral incisor agenesis is also of concern to the pediatric dentist.[3]

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2 CASE REPORT

A patient aged 8 years reported to the department of Pedodontics with the complaint of aesthetically displeasing excessive spacing in the midline and unerupted permanent maxillary lateral incisors. On clinical examination the erupted maxillary central incisors showed considerable median diastema, of 4-5mm and the lateral incisors were missing in the oral cavity.(Fig-1) A detailed history was taken to rule out the possibility of extraction or accidental loss of the primary lateral incisors, or the presence of any associated syndromes. The oral status of the patient was satisfactory and the gingival tissues appeared to be clinically of optimal health. The patient however did not report for further treatment due to personal reasons. She reported to us at the age of 11 years for the treatment of

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her median diastema. The canines had been extracted from elsewhere to accommodate her lateral incisors, which failed to erupt to date. She was referred to us for a thorough investigation and further treatment. Orthopantomogram showed the central incisors exhibiting considerable diastema of the crowns and roots and the bilateral absence of maxillary lateral incisors. (Fig-2) The other teeth in the dentition seemed to be healthy and erupting satisfactorily. The maxillary canine bilaterally was present and showed no signs of impaction or alteration in the path of eruption. There was however agenesis of the third molars. Dental age of the patient was considerably delayed. A provisional diagnosis of congenital absence of bilateral maxillary lateral incisors was made which resulted in considerable midline diastema. A multidisciplinary approach of management was planned, due to the complexity of the situation and necessity of a long duration of treatment. Treatment consisted of orthodontic, surgical, and a prosthodontic intervention. The treatment protocol was explained to the parents and their informed consent obtained. Orthodontic treatment commenced by the closure of the midline diastema with the help of a removable appliance incorporated with a split labial bow. (Fig-3 & Fig-4) Considering the young age of the patient closure of diastema was followed by the placement of a temporary removable functional prosthesis to restore aesthetics. (Fig-5) A periodic follow up of the patient would be necessary for a long period of time. The maxillary canines would have to be guided to the position of the missing lateral incisor and its recontouring done, with composite or crown, to resemble a lateral incisor, after its eruption. The second option would be the placement of an implant prosthesis on the edentulous ridge spaces after proper evaluation, at a later date.

Figure 1.



Figure 3.



Figure 2.

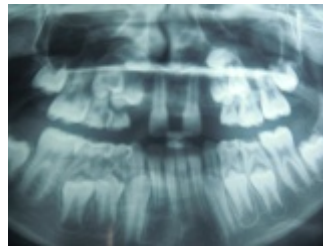


Figure 4.



3 DISCUSSION

Detailed examination is essential for the diagnosis of missing lateral incisors in the early primary dentition. With the eruption of the permanent teeth in the early mixed dentition asymmetric loss of primary teeth, midline diastema, tooth migration, midline shift to the affected side, over eruption of the

permanent antagonists, and microdontia can occur in the succedaneous permanent dentition which can result in an unaesthetic appearance. [5] Radiographs must be taken at the earliest to confirm diagnosis of missing succedaneous teeth. Orthopantomogram is the x-ray of choice as suggested by Pilo et al for an early diagnostic procedure in patients younger than 8 years. [6] In the event of agenesis of a primary lateral incisor and its successor, the paradoxical frequency of a malpositioned maxillary permanent canine shows the importance these teeth have as the guiding tooth in the eruption of the canines. [7,8] Maxillary canines have been believed to take the support of the root of the lateral incisor for guidance to erupt into the primary position. Hence its absence or malformation may result in deviation in its path. Genetic factor also has been attributed to the deviation of the path of its eruption. [3,9]

Patients with agenesis of maxillary lateral incisors had a significantly increased prevalence rate of permanent tooth agenesis of 18.2%, agenesis of 3rd molars, class II malocclusion, and overretention of mandibular central incisor. [4,10]

Figure 5.



However our patient exhibited no other anomaly than agenesis of the third molars. The assessment of the golden proportion in the facial view, that is, the tooth-tooth width proportion was found to be missing in majority of the cases treated with agenesis of maxillary lateral incisor. [11]. This was however not true in the situation encountered by us. The mesiodistal width of the remaining anterior teeth were found to be almost of normal values. The need for early recognition of the condition and its early intervention becomes extremely significant in the wake of these clinical signs.

4 CONCLUSION

There has been reported to be a close association between agenesis of the permanent maxillary lateral incisor and other tooth anomalies such as microdontia of the permanent maxillary lateral incisor, both in the individual and other relatives in a study. [3,10,12] Third molar absence is significantly more frequent in individuals with agenesis of the permanent maxillary lateral incisor as was evident in our patient. Influenced by several factors interacting at different levels a common genetic mechanism might be evidently controlling this phenomena. [3,13] Early diagnosis and effective clinical management of missing lateral incisor is hence very important as it can affect aesthetics and function and can psychologically affect the child's personality.

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