Bilateral Agenesis of Mandibular Permanent Central Incisors: A Case Report

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Abstract

Congenitally missing teeth are among one of the commonly known dental anomalies. The most frequently missing teeth in the permanent dentition, excluding the third molars, are mandibular second premolars and maxillary lateral incisors. Exclusive agenesis of both mandibular central incisors is a rare occurrence and only a few cases have been reported. This paper reports a case of non-syndromic bilateral agenesis of permanent mandibular central incisors canines in a healthy seven and half year- old male patient. Reporting such cases are required to determine the prevalence of anomalies in literature.

Keywords: Tooth agenesis, Mandibular arch, lower central incisors.

INTRODUCTION

Tooth agenesis, one of the most common developmental dental anomalies in humans, is the congenital absence of one or more teeth. It is diagnosed by dental examination and radiographic assessment of the oral cavity.1The reported incidence of tooth agenesis is 3%-10% depending on the population being studied.2, 3the incidence is higher in females, and 60% of individuals exhibit unilateral tooth agenesis.3 Hereditary is believed to be the most frequent cause of these developmental disturbances. Most previous studies dealing with Caucasian populations have revealed that the most commonly congenitally missing teeth are either the mandibular second premolars or the maxillary lateral incisors.4Both environmental and genetic factors are involved in the aetiology of hypodontia, with the latter playing a more significant role.5The aim of this article is to present a rare case report of congenitally missing bilateral permanent central incisors in the mandibular region.

CASE REPORT

An 7 and half year old male patient reported to the department of pediatric and preventive dentistry, Annoor Dental College, Muvattupuza with a chief complaint of loose milk tooth in lower front tooth region. There were no relevant associated symptoms reported. This was his first dental visit. There was no history of any severe systemic diseases, trauma or infections to the anterior region. Family history revealed no such finding in any members of the family. On general physical examination, he was conscious, cooperative and oriented with steady gait. No relevant extra oral finding were identified.

An oral cavity examination indicated that the patient was in mixed dentition stage. Intraoral examination showed multiple decayed teeth in maxillary and mandibular arch with a retained primary teeth (grade 1 mobility) in mandibular midline (figure 1). Both permanent mandibular central incisors were missing clinically.

Radiographic examination (figure 2) revealed congenital absence of permanent mandibular both central incisors. Extraction of retained mobile deciduous central incisor and management of carious teeth were planned. The treatment option is to wait till the eruption of other permanent teeth and later orthodontic treatment if necessary.

DISCUSSION

The exact etiology for congenital absence of both central incisors is unknown, four theories mainly for the cause of agenesis of incisors. Heredity or familial distribution is the primary cause. Second, anomalies in the development of the mandibular symphysis may affect the dental tissues forming the tooth buds of the lower incisors. Third, a reduction in the dentition regarded as nature's attempt to fit the shortened dental arches (an expression of the evolutionary trend) and finally, localized inflammation or infections in the jaw and disturbance of the

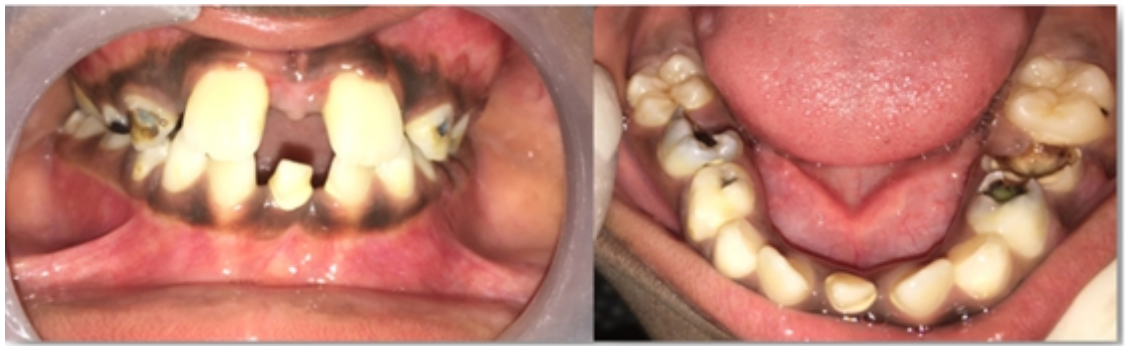

Figure 1 shows clinically missing 31, 41 with retained primary teeth

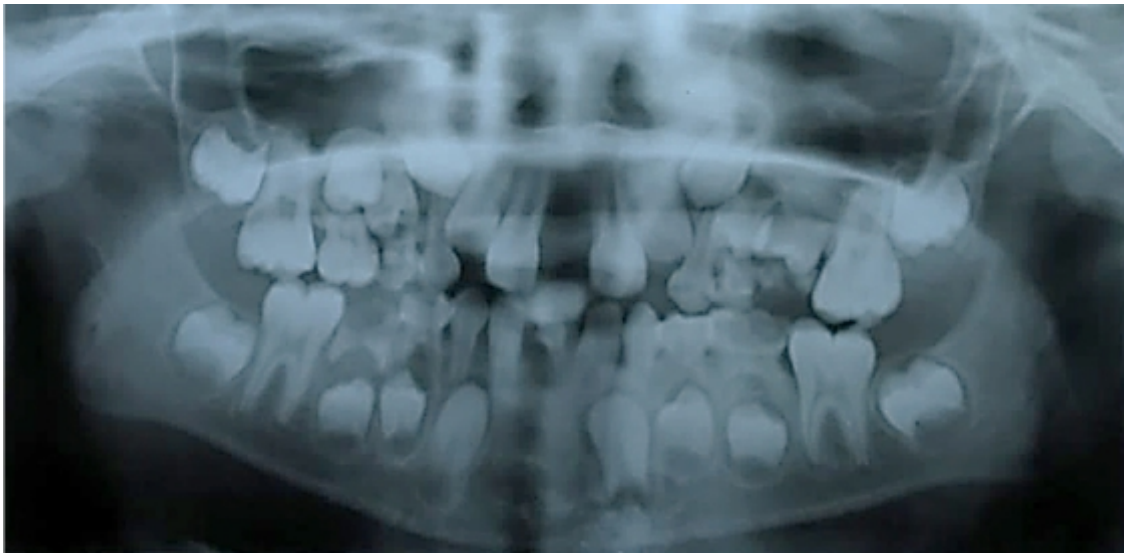

Figure 2:
Orthopantamogram showing agenesis of 41, 31 with retained primary teeth in midline

endocrine system destroying the tooth buds.6there are published reports of conditions with missing permanent mandibular central incisors by sathishet al7, Kodanda Ram8.

This condition have been frequently reported in cases of oral and facial clefts, Rieger syndrome, Down syndrome, Witkop syndrome, Book syndrome, hemifacialmicrosomia and also shown to accompany other conditions, such as microdontia, palatal impaction of canines, taurodontism, tooth transposition and rotation, ectopic eruption, retained primary teeth and alveolar bone hypoplasia.5In our case, patient was without any syndrome

A specified set of homeobox genes including MAX1, PAX9, and AXIN2 program the development of human dentition where any mutations or alterations in signaling of these genes lead to agenesis of the respective tooth, it being a mandibular incisor in this case.8Pani in 2011 has reported that homeobox gene AXIN2 is implied to be involved with incisor agenesis but its mode of transmission is still left uncertain.9

Mandibular incisor agenesis is distinct from other hypodontia conditions as it has an influence on esthetics affecting the child's physical and emotional status and has a significant impact on the growth of the mandibular symphysis and maturation of its skeletal pattern. Although closure of the mandibular symphysis occurs in the 1st year of life, growth modifications in the anterior region are seen up to eruption of the permanent canines. Growth at symphyseal region and mandibular bone height is well associated with bone apposition at the dentoalveolar complex, especially during tooth eruption. Hence, patients with absence of mandibular central incisors exhibit significantly smaller mandibular symphysis area and greater retroclination of the mandibular alveolar bone than the normal patients.10

This condition can also results in altered muscular forces due to imbalance between tongue and lip pressure that further deteriorates occlusal discrepancies like class II div I, anterior deep bite and reduced lower facial height. Insignificant volume of alveolar bone and smaller symphyseal region have influence on placement of future endosseous implants.11

Treatment of mandibular incisor agenesis requires an interdisciplinary approach that includes a team of a pediatric dentist, a prosthodontist, an orthodontist and an oral and maxillofacial surgeon. The treatment objectives include preservation of space, main-

tenance of alveolar integrity and prosthetic replacement of missing teeth to improve the function and enhance the esthetics. In the present case, considering the mixed dentition stage and age of the patient, it has been decided to wait till the eruption of mandibular canines and later orthodontic treatment if necessary.

CONCLUSION

Bilateral agenesis of mandibular central incisors is very uncommon which can pose a variety of problems. Detailed characterization and presentation of more cases not only strengthen clinical diagnosis and treatment for the patients but facilitate the search for etiological factors of the disorderKnowledge of the existence of such condition is important from the clinical point of view. Multidisciplinary treatment planning is required in management of this condition. Pediatric dental surgeon plays a vital role in diagnosing and treatment planning in children with hypodontia.

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