CASE REPORT

Oligodontia of the permanent dentition- A rare case report

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ABSTRACT

When six or more than six teeth are congenitally missing in the permanent or primary dentition it is known as Oligodontia. Hypodontia is defined as the the developmental absence of one or more teeth either in the primary or permanent dentition. The absence of many permanent teeth congenitally is an extremely rare condition. It may appear as part of a syndrome or as a non-syndromic form. Literature reports various cases with missing lateral incisors or canines or second molars, but very few literature is available regarding congenitally missing 6 permanent teeth in the maxilla and mandible excluding the 3 rd molars. This paper presents an isolated case of oligodontia with the absence of bilateral maxillary lateral incisors, right maxillary second premolar, bilateral mandibular central incisors and right mandibular second premolar in a slight mentally retarded 11 year old boy. Treatment planning for Oligodontia is challenging, the key to a successful outcome is early diagnosis, working together with other concerned specialties and proper treatment planning.

KEYWORDS: Oligodontia, Hypodontia, Congenitally Missing Teeth, Partial Anodontia

INTRODUCTION

Congenitally missing six or more teeth (except third molars) is known as Oligodontia. A congenital absence of up to five primary or permanent teeth (excluding third molars) is known as Hypodontia whereas Anodontia is the absence of all primary or permanent teeth which is a rare condition.[1] Congenitally missing one or two primary or permanent teeth is one of the most common dental anomaly seen. The most common cause for congenitally missing teeth has been attributed to the disturbances during the early stages of tooth development.[2] The Polder et al.(2004) reported prevalence of permanent tooth agenesis, varied from 2.2-10.1% excluding third molars.[3] The prevalence becomes smaller gradually as the number of missing teeth increases. Various literatures suggest the incidence of oligodontia to vary from 0.08 to 0.16%.[4] True dental agenesis can be classified into two groups; total and partial agenesis: The absence of all teeth is known as total agenesis or anodontia which is a very rare condition. It most commonly affects the permanent dentition, and its pattern is autosomal recessive.[5,6,7] Hypodontia is the absence of five or less teeth, but the most common ones missing are mandibular second premolar (3.4%), maxillary lateral incisors (2.12%) and maxillary second premolar. It may be unilateral or bilateral. There are various different etiologies for hypodontia .[5,7,8]

CASE REPORT

In March 2017, an 11 year old child reported to the department with his parents complaining of extraoral swelling on the right side of his face involving the lower third along with pain and difficulty in eating since 3 days. A detailed history was recorded from the parents which revealed that the patient is slight mentally retarded due to complications during birth. The patient had been under medical care during the starting years of life, but at present, the patient is not under any medication. The patient also did not have any previous dental experience. There was no history of supernumerary teeth or congenitally missing teeth in his family.

Extraoral Examination: Extra-oral examination revealed no skeletal abnormality, but facial asymmetry was present due to the swelling on the right lower third of the face.

Intraoral Examination: On intra-oral examination, a large midline diastema was seen along with distally diverging maxillary central incisors with an anterior open bite. (Fig 1)

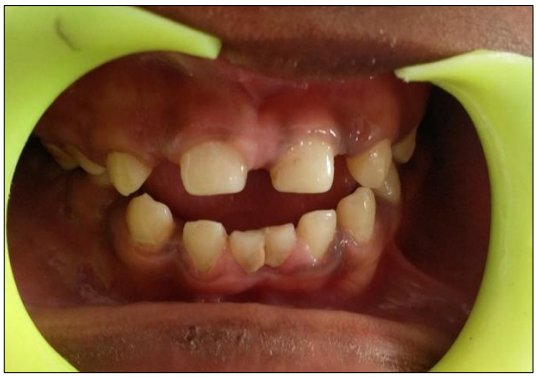

Fig 1: Anterior Open bite

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Permanent maxillary lateral incisors, right maxillary second premolar, permanent mandibular central incisors and right mandibular second premolar were not present clinically. Primary right maxillary second molar was clinically present along with primary mandibular central incisors (Fig 2 & Fig 3). Carious lesions were present on right maxillary permanent first molar, and root stump was present in respect to right mandibular permanent first molar. Periodontal health of the patient was poor. Parents of the patient were asked and they revealed that the missing teeth were not due to extraction or trauma and confirmed that the primary predecessors of these teeth i.e. *52, 62,54,84* had erupted. *71* and *81* were still present clinically.

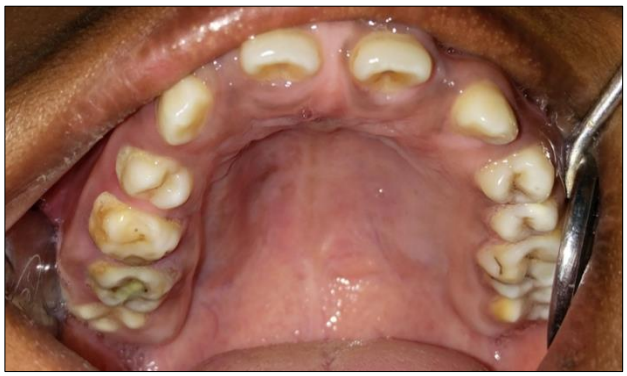

Fig 2: Maxillary dentition

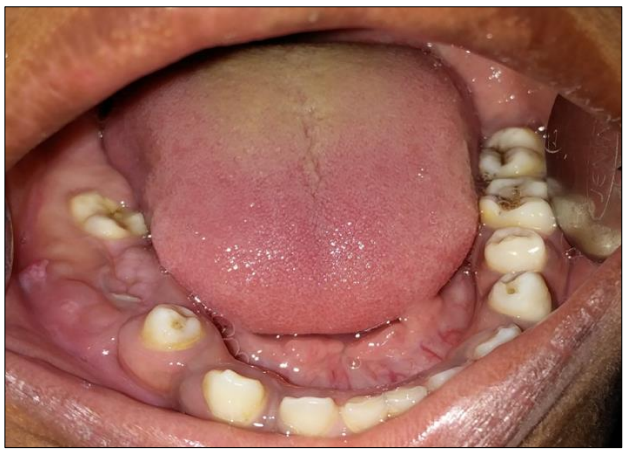

Fig 3: Mandibular dentition

Teeth present clinically in the maxillary dentition were permanent central incisors, permanent canines, first premolars, right primary second molar, left second premolar, permanent first and second molars.

Teeth present in the mandibular dentition were primary central incisors, permanent lateral incisors, and canines, first premolars, left second premolar, permanent first and second molars although right permanent first molar was a root stump.

Radiographic evaluation: An orthopantomogram was advised (Fig 4). After the assessment of the radiograph, it was revealed that *12,22,15,31,41,45,* are congenitally absent and all other permanent teeth excluding third molars were present.

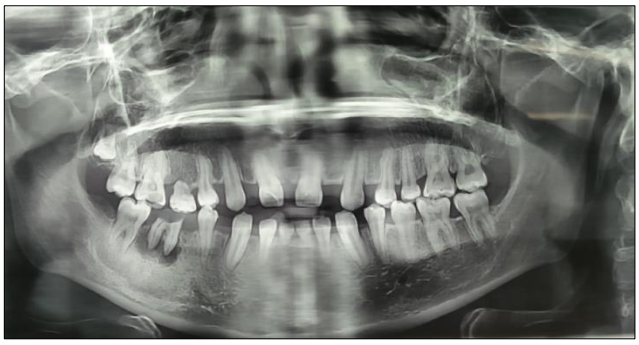

Fig 4: Orthopantomogram

Radiograph also revealed a periapical abscess in respect to mandibular right permanent first molar root stump and an extraction was done.

The thorough physical evaluation was conducted with special attention to the skin, hair, nails, eyes, and ears of the patient all of which were normal. No skeletal abnormality was found. The parents gave no history of sweating abnormality, and the family history was nonsignificant.

A total of six permanent teeth (*12,22,15,31,41* and *45*) were missing congenitally. A diagnosis of a case of '*non-syndromic oligodontia of permanent dentition'* was established after a thorough evaluation.

DISCUSSION

Various independent pathologic mechanisms may be the reason for missing teeth and can cause one or more of the following:[9]

- Physical interruption of the dental lamina.
- Space limitation.
- Functional abnormalities of the dental epithelium.
- Failure of initiation of the underlying mesenchyme.

The congenital absence of teeth may occur as an isolated condition or may be associated with systematic condition or syndrome. The best way to detect anomalies in primary and permanent dentition is through dental and radiographic examination. In case of oligodontia treatment should aim to restore masticatory function and aesthetics regardless of age or missing teeth.[9]

Here, the patient reported with the congenital absence of *6* permanent teeth. Various studies reported about the prevalence of Oligodontia, and have shown that one or more congenitally missing teeth is there in more than 80% of the population while less than 1% have six or more teeth missing.[10]

Other findings in this patient were deficient alveolar bone in the mandibular arch and a midline diastema in the maxillary arch.

Although the exact reason for teeth agenesis is not clear, but genetics has been reported to play a crucial role in majority of cases. It has been suggested that both *MSX1*, *PAX9* and *AXIN2 or* genes are essentially required for early tooth development.[11,12,13] A number of subtle traits

are apparent within humans who possess identifiable gene mutations along with hypodontia. The *msx1* function is mostly associated with premolar and occasionally molar agenesis, while *PAX9* mutations are almost always associated with missing molar and only occasionally premolar teeth. In contrast, hypodontia associated with *AXIN2* mutations involves a wider range of tooth types.[14]

Replacing the missing teeth and improving the patient's appearance, speech and masticatory efficiency is the main aim of treatment in such cases. Usually the absence of teeth is managed with fixed/removable prostheses and dental implants. With development of dental implantology, implant-supported prostheses may be chosen increasingly for the treatment of congenitally missing teeth. Psychological stress was very much evident in this patient's behavior. Congenital absence of teeth usually create a dental and facial disfigurement, which might lead to social withdrawal.[15] However, implantation during childhood should be restricted to those patients who may not be conventionally provided with an aesthetically and functionally satisfying prosthodontic rehabilitation because of the extent of missing teeth present.

However, when the present case was found, the parents did not complain about any aesthetic or functional problem. The patient has been accustomed to the masticatory efficiency for so many years, which differs from that of tooth loss resulting from various factors acquired. The patient's parents did not want any prosthodontic rehabilitation for the missing teeth and neither did they want any restoration of the carious tooth.

CONCLUSION

A proper and effective management of Oligodontia requires the input of multiple clinicians. When teeth are missing, fixed prosthodontics offers an excellent option for the restoration of esthetics and function and are the most appropriate treatment modality for such patients.

REFERENCES

1. Umber Zahra Syed, Arham Nawaz Chohan, Non-syndromic Oligodontia of Primary and Permanent Dentition - Clinical Features and Early Rehabilitation with an Esthetic Space Maintainer in an 8 years old Patient. International Dental Journal Of Student's Research| January 2015;Volume 2:Issue 4.
2. Alshahrani I, Togoo RA, Alqarni MA, A review of hypodontia: Classification, Prevalence, Etiology, Associated anomalies, Clinical implications and treatment options. World J Dent. 2013;4(2):117-125
3. Suda N, Ogawa T, Kojima T, Saito C, Moriyama K. Non-syndromic oligodontia with a novel mutation of PAX9. J Dent Res 2011;90:382-6.
4. Singer SL, Henry PJ, Lander ID, A treatment planning classification for oligodontia. Int J prosthodont 2010;23:99-106
5. Silverman N, Ackerman J. Oligodontia: a study of its prevalence and variation in 4032 children. American Society of Dentistry for Children. 1978; 46(6):470-477.
6. Dummett C Jr. Anomalies of the developing dentition. Pinkham JR, Casamassimo P, Fields HW, McTigue D, Nowak A, editors. Pediatric Dentistry: Infancy through Adolescence. 4th edition. Philadelphia, PA: Mosby; 2005,pp: 61-73.
7. McDonald RE, Avery DR, Hartsfield JK. Acquired and developmental disturbances of the teeth and associated oral structures. In: Dean JA, Avery DR, McDonald RE, editors. McDonald and Avery Dentistry for the Child and Adolescent.9th ed. St. Luis: Mosby; 2011, pp: 85–125.
8. Gibson A. Concomitant hypo-hyperodontia. British Journal of Orthodontics. 1979; 6(2):101-105.
9. Nunn, J.H., Carter, N.E., Gillgrass, T.J., Hobson, R.S., Jepson, N.J., Meechan, J.G. and Nohl, F.S. (2003) The Interdisciplinary Management of Hypodontia: Background and Role of Paediatric Dentistry. British Dental Journal, **194**, 245- 251. http://dx.doi.org/10.1038/sj.bdj.4809925
10. Larmour CJ, Mossey PA, Thind BS, Forgie AH, Stirrups DR. Hypodontia: A Retrospective study of prevalence and etiology (Part 1). Quintessence Int, 2005;36:263-70.
11. Mostowska A, Kobielak A and Trzeciak WH. Molecular basis of non-syndromic tooth agenesis: mutations of MSX1 and PAX9 reflect their role in patterning human dentition. Eur J Oral Sci 2003; 111: 365-370.
12. Kim JW, Simmer JP, Lin BP and Hu JC. Novel MSX1 frameshift causes autosomal-dominant oligodontia. J Dent Res 2006; 85: 267-271.
13. Nieminen P, Arte S, Tanner D, Paulin L, Alaluusua S, Thesleff I and Pirinen S. Identification of a nonsense mutation in the PAX9 gene in molar oligodontia. Eur J Hum Genet 2001; 9: 743-746.
14. Cobourne MT. Familial human hypodontia- is it all in the genes? Br Dent J 2007; 203: 203-208.
15. Giray B, Aksa K. Two year follow up of a patient with oligodontia treated with implant and tooth supported fixed partial dentures. A case report. Int J Oral Maxillofac Implants 2003;18;905-911

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