The Management of Patient with Oligodontia Associated With Attention Deficit Hyperactive Disorder – A Rare Case Report

A.Vasanthakumari[1], Bharathan R[2], Karthik Venkataraghavan[3], Nivethitha D.K[4]

ABOUT THE AUTHORS

1 Dr. A. Vasanthakumari,
Professor and Head
Dept. of Pedodontics and Preventive Dentistry
Sri Ramachandra University, Porur, Chennai, Tamil Nadu, India

2 Dr. Bharathan R,
Post Graduate Student
Dept. of Pedodontics and Preventive Dentistry
Sri Ramachandra University, Porur, Chennai, Tamil Nadu, India

3 Dr. Karthik Venkataraghavan,
Consultant Pediatric Dentist,
Vibha Dental Care Centre,
Bangalore, India

4 Dr. Nivethitha D.K
Post Graduate Student
Dept. of Pedodontics and Preventive Dentistry
Sri Ramachandra University, Porur, Chennai, Tamil Nadu, India

Corresponding Author:

Dr. A. Vasantha Kumari
Prof & Head
Department of Pedodontics and Preventive Dentistry
Sri Ramachandra University
Chennai , Tamil Nadu, India
Contact No : 91 – 9443615196
E-mail id : vkpedo@gmail.com

Abstract

Oligodontia is characterized by missing six or more teeth in primary and permanent dentition exclusive of the third molars. Hereditary is the main etiologic factor and the principal clinical features are reduction in number of teeth, changes in the morphology of teeth, their eruption time and improper development of alveolar ridges. Prevalence of Oligodontia is 0.35% in Indian population. Treatment of Oligodontia is through a multidisciplinary approach. Attention Deficit Hyperactive Disorder (ADHD) is the most commonly diag-nosed behavioural disorder of childhood. It is a problem with inattentiveness, over-activity, impulsivity, or a combination. It affects about 3-5% of school aged children. ADHD may run in families, but the etiology is unknown. Depression, lack of sleep, learning disability and behavioural problems may appear with ADHD.The aim of this study was to describe a clinical case of 7 year old child with multiple congenital missing teeth associated with ADHD syndrome.

Key words: Hypodontia, Agenesis, ADHD syndrome.

Introduction

Dental anomalies can result from many factors both genetic and environment. Although defects in certain genes are more influential etiological events in the prenatal and postnatal periods have also been blamed for anomalies in tooth dimension, morphology, position, number and structure.

Agenesis of some teeth is referred to as hypodontia which is preferable to term partial anodontia. Anodontia, which implies complete failure of the teeth to develop, is a rare condition. Oligodontia is sometimes used only when a few teeth develop, Stewart states that Oligodontia is the agenesis of num erous teeth (more than 6 teeth) [1].

Hypodontia is used as a synonym of Oligodontia that means partial edentulous arcade in which the missing teeth can be either primary and/or permanent. It is considered a severe condition due to the esthetic functional involvement caused by lack of multiple teeth[2].

Severe Hypodontia is frequently associated with delay in development and relative lack of alveolar growth resulting in an increased available space. The facial appearance may mimic that of the edentulous person, with mandibular protrusion and lip eversion on occlusion[3].

Causes of missing teeth, particularly anodontia an extreme, expression of oligodontia are very rare and challenging to the clinician. Scientific analysis of the congenital absence of teeth in human dates back to early 1900's. Teeth may be missing due to prior extraction or failure to develop or erupt. The most common dental anomaly occurring in association with congenital absence of the permanent lateral incisors/ second premolar is the absence of other teeth. Hypodontia among primary teeth is a rare occurrence with a prevalence less than 1% and usually affects maxillary lateral incisors and mandibular central and lateral incisors[4].

Attention Deficit Hyperactive Disorder (ADHD) is characterized by learning and behavioural problems that include persistent hyperactivity, impulsivity and inattention and these can have a major adverse impact upon an affected child's life as well as on the family and school of the child. Children with ADHD have associated with dental problems like bruxism, high risk for dental/oral trauma, poor oral hygiene and potential for increase caries[5].

This article represents a rare case of multiple missing primary teeth in a 7 year old male child associated with ADHD. Very limited literature available irrespect to Oligodontia associated with ADHD.

CASE REPORT

A 7 year old male patient reported with the chief complaint of space between his teeth and hence difficulty in chewing food. He had already visited another dental hospital for the same complaint three years back and the treatment was not completed. Mother reveals history of consanguineous marriage, normal pregnancy during which she did not take any medications followed by normal birth. His family history was non- contributory as no other member in the family had complaints of congenital missing teeth. His milestones of development were normal.

On general examination the child was behaving abnormal for his age. He had difficulty in paying attention to the instruction given and was easily distracted by external stimuli. He was observed to bidget with different objects around, talk excessively, difficulty in sitting quietly, leaving the chair when he was expected to be seated and running around. The findings revealed and confirmed the child to be hyperactive. His profile was straight. No other abnormalities were found with the skin, hair, nails or in tendency of sweating. On Intraoral examination(Fig-1,2,3) no evidence of permanent teeth seen clinically and only primary teeth 53,54,55, 61,63,64,65,71,73,74,81,82,83,84 were present and 52,62,72,75 and 85 seems to be clinically missing. Intra oral soft tissue examination revealed presence of high frenal attachment in the maxilla and thin alveolar ridges.

A provisional diagnosis of oligodontia was given and investigated further with Orthopantomogram and Intraoral periapical radiographs in relation to the missing teeth. OPG(Fig-4) rev-ealed erupting permanent teeth buds 11,14,16,21,24,26,33, 34,36,43,44,46 and congenital absence of primary teeth 52,62,72, 75,85 and IOPA findings also confirmed the same (Fig-5-9). As the child behaving abnormal for his age , the patient was referred to the Department of clinical psychology and had further consultation with the Pediatric Department and was diagnosed as Attention Deficit Hyperactive Disorder and undergoing the treatment for the same.

Based on the clinical examination and radiographic findings and other supportive consultation, diagnosis was made as oligodontia associated with ADHD disorder.

The clinical findings were clearly explained to the patient, the oral prophylaxis and options for the prosthetic rehabilitation for the missing primary teeth with acrylic partial denture. After obtaining consent from the parents, oral prophylaxis was carried out and Removable Partial Denture (Fig-10, 11) was delivered. Considering the age limit, patient was kept under observation for Maxillary high frenal attachment. Dental health education and periodic recall check-up were given.

DISCUSSION

The knowledge of Odonto-genesis is fundamental for under-standing of growth and dental dis-orders that affect the teeth. Many of these disorders follow hereditary patterns while others are congenital[6].

Hypodontia among primary dentition is a relatively rare occurrence and affects primary maxillary lateral incisors, mandibular central and lateral incisors. The absence of teeth may be unilateral or bilateral. Hypodontia in primary dentition also have a predisposition towards a similar phenomenon occurring in the permanent dentition. The maxilla is more commonly affected than the mandible. The incidence of hypodontia in primary dentition varies ranging from 0.5 to 5%[7].

Oligodontia is a rare genetic disorder which represents the congenital absence of 6 or more teeth in primary, permanent or both dentitions. The causes of oligodontia are hereditary, trauma, infection, radiation, metabolic disorder and idiopathic. Oligodontia is mainly determined by a dominant autosomal gene pattern with incomplete penetrance of the trait and variable expressivity. It can occur alone or associated with syndromes like ectodermal dysplasia, cleft lip/palate and chondro ectodermal dysplasia[8].

Oligodontia in primary dentition can cause impaired growth of alveolar process, reduced lower facial height, speech impairment and deep bite, all of which can have a physiological and psychological impact on individual[9].

Oligodontia is a rare condition that can occur in association with genetic syndromes or as a non-syndromic isolated familial trait or as a sporadic finding. Several cases where a single gene mutation is associated with oligodontia have been described in recent years. Sofar mutation in MSX1 and PAX9 have been shown in families with non- syndromic familial Oligodontia[10]

Tooth agenesis is usually a part of a syndrome associated more often with complex pathology known as Ectodermal dysplasia which originates from the abnormalities during the early stages of embryonic development. The most common development problems with this type of clinical picture is ectodermal dysplasia[11]. However this patient does not have peg lateral teeth, dry, scarry skin, straw like hairy, frontal bossing, wide spaced eyes or any problem with heat regulation and the features in this patient also are not consistent with any specific forms of ectodermal dysplasia. This case represents oligodontia which is not associated with ectodermal dysplasia but with ADHD which is a uncommon finding.

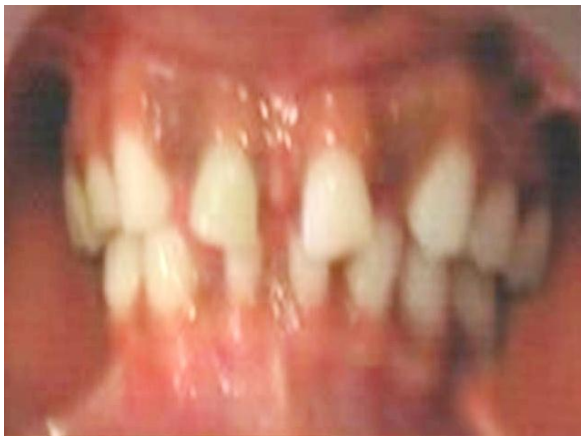

Fig: 1 Soft tissue examination- maxillary high frenal attachment

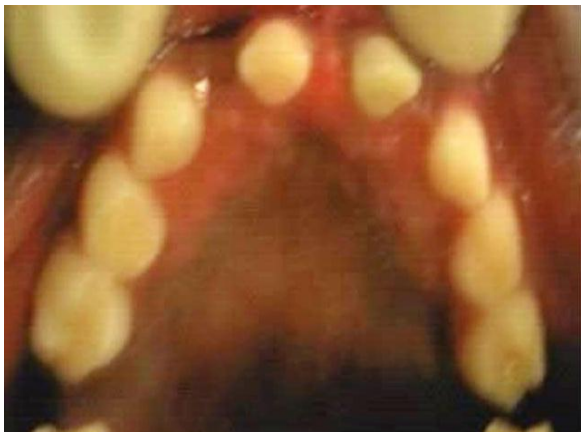

Fig: 2 Maxillary arch-missing 52,62

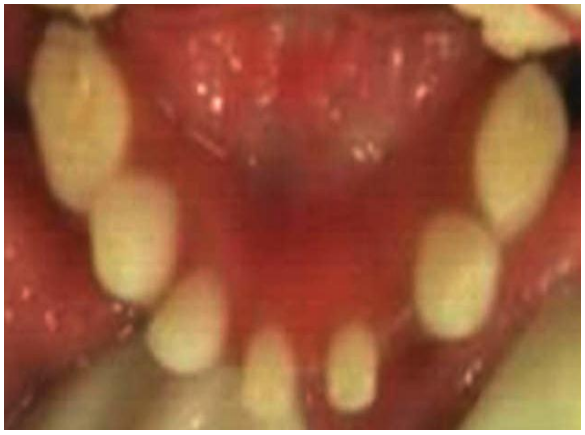

Fig: 3 Mandibular arch- missing 72,75,85

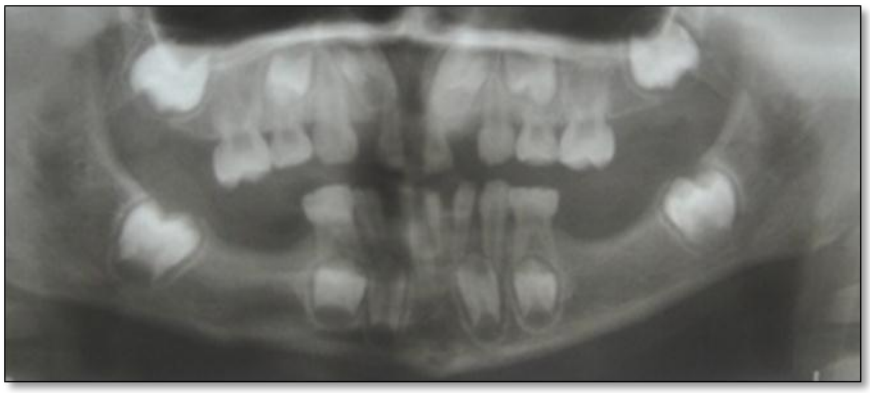

Fig: 4 Orthopantomogram

Fig:5 Missing 52

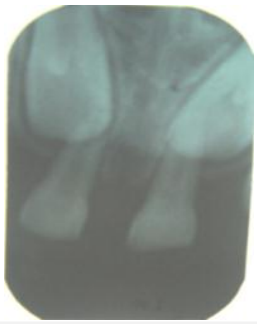

Fig:6 Missing 62

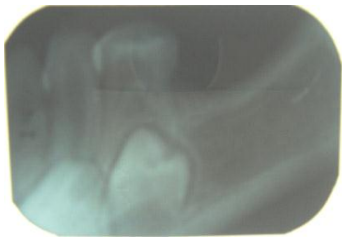

Fig:7 Missing 75

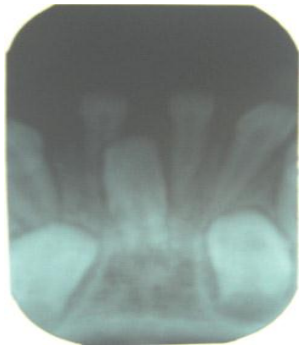

Fig:8 Missing 82

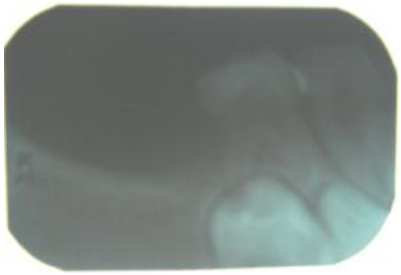

Fig:9 Missing 85

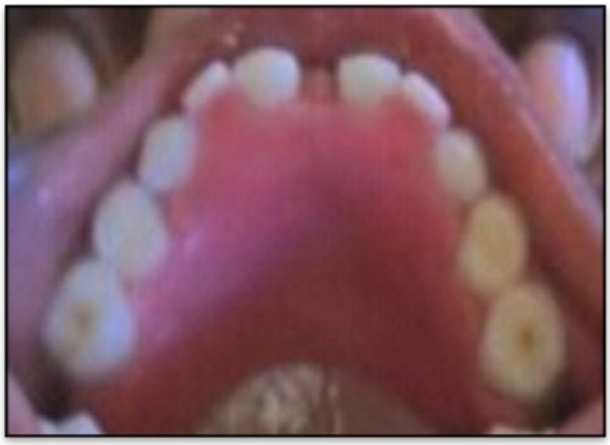

Fig:10 Maxillary Arch replacing with Removable Partial Denture– 52, 62.

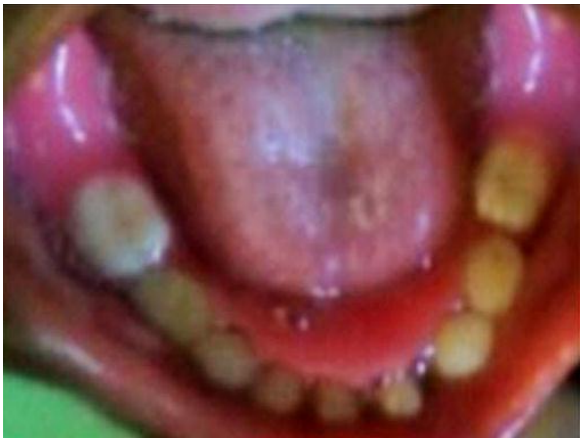

Fig:11 Mandibular Arch replacing with Removable Partial Denture– 75,85.

Literature revealed no significant sex difference in the prevalence of hypodontia in primary dentition. It is not known if there is a male predilection of this type of hypodontia or it is just confidential finding. Few other studies reported that girls have higher prevalence of hypodontia than boys[12]. As the finding here are attributed to a male patient, it highlights the rarity of this case.

ADHD is characterized by a persistent pattern if inattention and/or hyperactivity and impulsivity that impairs school and occupational activities and social interactions. The prevalence of ADHD is estim- ated to be between 3% to 5% in school aged children with boys and numbering girls by a 3:1 ratio[13]. Most children (60%) exhibit symptoms of both inattention and hyperactivity impulsivity and the present case also exhibited the same.

Hyperactivity is evident in preschoolers when they appear to run continually back and forth, jumps or climb on furniture and have difficulty in participating in sedentary activity such as listening to a story. As they enter the school, they have difficulty remaining seated, bidget with feet or legs excessively. Impulsively manifests in young children as impatience and difficulty in waiting their turn. In school, children with ADHD blurt out answers before questions have been completed. Frequently interrupt their classmates and fail to listen to directions. Inattention is evident in preschoolers with ADHD when they appear to be day dreaming and when they seems not to listen or hear what was just said. As they get older and enter school, class work is done carelessly and home work may also go uncompleted because of their inability to permit with their task and their distractibility[14,15].

Many children with ADHD are not cognizant of their deficits and have little insight. Family relationship suffer because others believe that the behaviours associated with ADHD are deliberate or merely signs of laziness[16].

The diagnosis of ADHD is based on a behavioural history obtained from parents/ care takers and teachers and medical / psychological and educational tests. To assist parents and other responsible parties in identifying the afore mentioned symptoms, they are often asked to fill out symptoms check lists or standardized rating scales, such as Achenback child behavior check list. The clinician then weighs the reliability and validity of the historian, elicits information about modifying circumstances, explores alternative explanation for the presence of symptoms(i.e. Tripolar disorder, learning disabilities, anxiety, Gilles de la Tourette's syndrome) and then arrive at the diagnosis. There are no specific medical or laboratory tests available to confirm the diagnosis[17].

In this case, the child was thoroughly examined and all the possible tests were made by trained psychologist and pediatricians and confirmed the diagnosis as ADHD.

Prosthetic treatment modes using removable partial dentures or a complete dentures and dental implants are the primary treatment alternatives for the clinical management of young patients with severe hypodontia. Oligodontia or anodontia associated with ectodermal dysplasia is often characterized by under developed alveolar bone structure with missing or reduced alveolar ridges.

Prosthetic treatment can play an important role in the dental management of children whose dentition fails to develop normally. The principles and techniques are essentially identical to those applied for adult therapy. The congenital absence of teeth align with tooth loss due to caries and traumatic injuries is one of the most frequent reasons for the need to provide complete or removable partial dentures for young children[18].

It may be observed by the planning and execution of the treatment that the removable partial prosthesis is extremely viable and indicated to aid in the treatment of patient with severe partial hypodontia, because they are capable of re-establishing the vertical dimension and getting a great level of occlusion and position of teeth. They also proportionate a simple method that facilitates the rehabilitation of the patient as well as easing the monitoring of the oral health being essential in evaluating the attitude of the patient facing the responsibility for his/her own maintenance and preparing the patient during the growth phase for the final treatment[18].

In this case removable partial denture was delivered in respect to clinically missing teeth to maintain the functional intergrity.

It is difficult for the clinician to distinguish between an abnormal and normal frenum attachment, especially in young children where the proportion of rectolabial frenums in the presence of evolving to normal is very high.

It has been observed that the gingival insertion increase and the labial frenum decrease in size in children between 0-9 years of age results from the alveolar ridges vertical growth, which is product of the primary dentition development and intra- alveolar eruption of the permanent maxillary incisors. In the present case , the high frenal attachment was observed and considering the age limit, patient was kept under observation and also assessment was done every month periodically with removable partial denture[19].

CONCLUSION

The diagnosis and monitoring of the hypodontia must start as early as possible so that it does not interfere with the craniofacial growth of the child. Young children associated with partial or total absence of the primary dentition suffer not only from the difficulties in alimentation and speech but also from poor esthetics. Early prosthetic treatment should be provided to encourage normal physiological development and to improve the function of the stomatognathic system, preventing the development of gastrointestinal disease. Dentist caring for patients with ADHD must exhibit compassion. In consultation with the physician or psychologist treating the patient's ADHD with the full

range of dental procedures can be provided to those individuals. Provision of comprehensive dental care to children under treatment for ADHD usually requires only minimal modification because their behavior in dental office often does not differ significantly from peers free of the disease.

REFERENCES

1) Garn S.M, Lewis AB, Kerewsky. X-linked inheritance of tooth size. J Dent Res.1965;44;439-441
2) Jarvinen S, Lentinen L. Supernumerary and congenitally missing primary teeth in Finnish children- An epidemiological study. ACTA Odontol Scand.1981;39;2:83-86
3) Tsaj PF et al. Oligodontia – A case report. Quintessence Int. 1988.39;3.
4) Hobbick J.A, Brook AH. The management of patient with severe hypodontia. J Oral Rehabilitation.1980;7: 289-290.
5) J M Broadbent, KMS Ayers, WM Thomson. Is Attention deficit hyperactive disorder a risk factor for dental caries? Caries Research.2004;38:28-32.
6) Zhu JF, Marcushomer M. King DL. Supernumerary and congenitally absent teeth – A literature review. J.Clin. Ped iatr. Dent.1996;20;2: 87-95.
7) Brook Ak, Ekanayak E. The etiology of Oligodontia – a family history. J Dent Child. 1980;15:32-35.
8) Shilpa, Thomas AM, Joshi JL. Idiopathic Oligodontia in primary dentition, case report and review of literature. J Clin Pediatr Dent.2007;32(1):65-67
9) Schour I, Massler M. Studies in tooth development growth pattern of human teeth Part II. J Am Dent Assoc. 1940; 24:19-22.
10) Stockton DW, Das P, Goldenberg M,Patel PI. Mutation of PAX9 is associated with Oligodontia. Nat Genet.2000; 24:18-19.
11) Levin LS. Dental and oral abnormalities in selected ectodermal dysplasia symdrome birth defects. Orig Article Ser.1998;24:205-227.
12) Hobkirth JA, Brook AH. The management of patients with severe hypodontia. J Oral Rehab. 1980;7:289-298.
13) Klorman R, Thatcher JE, Shaywitz SE et al. Effects of event probability and sequence on children with attention deficit/ hyperactive reading and moth disorder. Biol Psy-chiatry. 2002; 52:795-804.
14) Levin FR, Evans SM, Kieber HD. Practical guidelines for the treatment of substance abusers with adult attention deficit hyperactivity disorders. Psychiatri. Serv. 1999;50: 1001-1003.
15) Landgraf JM, Rich M, Rappapurt L. Measuring quality of life in children with attention deficit/ hyperactive disorder and their families development and evaluation of new tool. Arch Pediatr Adolesc Med. 2002; 156:384-391.
16) Dunne JE. Attention deficit/ hyperactive disorder and associated childhood disorders. Prim Care. 1999; 26: 349-372.
17) Smith AJ, Brown RT et al. Psychosocial adjustment and peer competence of siblings of children with attention deficit/ hyperactive disorder. J Atten Disorder. 2002; 5:165-177.
18) Pigno MA, Blackman RB, Cronin RJ, Carzon E. Prosthodontic management of ectodermal dysplasia- A review of literature. J Prosthet Dent. 1996;76:541-545.
19) Dewel B.E. The normal and the abnormal labial frenum. Clinical differentiation. J Am Dent Assoc.1946;33:318-329.