

SIMULTANEOUS OCCURRENCE OF HYPODONTIA AND MICRODONTIA IN A SINGLE CASE

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Abstract

Hypodontia is a clinical oral condition where number of the teeth present in the mouth is less than the normal condition. Hypodontia is the most commonly occurring congenital abnormality. There are three conditions related to missing teeth. In first condition few teeth are missing, this condition is called hypodontia, second condition have multiple missing teeth this is oligodontia and third one is anodontia, in this condition all teeth are missing. The etiology of congenitally missing teeth may be disturbance in the formation of the dental lamina due to some pathological mechanisms, failure of development of tooth germ, inadequate space due to malformed jaws and jaw size discrepancy. Microdontia refers to a condition where the size of the teeth is smaller than the normal. This condition may involve single to multiple teeth. Example of the most commonly occurring small tooth is maxillary lateral incisors which are commonly called 'peg laterals'.

Keywords: Hypodontia, Microdontia, Oligodontia, Anodontia, Supernumerary Teeth

Introduction

compared to the normal number of teeth, fewer teeth are present. Hypodontia may occur in deciduous dentition, permanent dentition or in both. Various studies indicate that the Incidence of hypodontia is greater in females as compared to males. The most common congenitally missing tooth reported in dental literature is mandibular second premolars followed by maxillary lateral incisors.¹

Microdontia refers to smaller sized teeth. In this condition a single tooth, a group of teeth or all teeth may be involved. Most frequently lateral incisors and third molars are affected with this condition.² Generalized microdontia is a very rare condition it may occur in few patients of dwarfism.³ Many cases have been reported and presented with hypodontia and microdontia individually but there are very few cases where microdontia with hypodontia are reported simultaneously. One such type of case is discussed in the present article.

Case Report

A 16 year old male patient reported to our department with a chief complaint of poor appearance. He wanted his missing teeth to be replaced. Also, he was not satisfied with the shape of his present teeth. Patient was normal in built and was not having any other clinical signs and symptoms suggesting no systemic involvement. He was a student of 10th standard in science extreme. When enquired he told that he is the only person who has this condition in his family. He did not give any history of trauma and extraction. He also told that his deciduous as well as permanent teeth were erupted late.

On intraoral examination all the soft tissues were found to be normal. Teeth 12, 15, 16, 17, 22, 25, 26, 27, 35, 36, 37, 41, 45, 46, 47 (FDI notation) were absent and teeth 55, 63, 65, 75, 81, 85 were retained (deciduous teeth). Crowns of all the present teeth were small in size and there was spacing all over (Figure 1a & 1b, Figure 2, Figure 3 and Figure 4). Teeth 81 and 55 were mobile. Orthopantomogram of this patient revealed absence of permanent tooth buds of teeth 12, 16, 17, 22, 25, 26, 27, 35, 36, 37, 41, 45, 46, 47 and impacted 15 (Figure 5). There

was calculus deposition and staining of the teeth. All the above mentioned findings lead to a diagnosis of concomitant occurrence of hypodontia and microdontia.



Figure 1a: - Frontal view of the patient



Figure 1b: - Frontal view of the patient after oral prophylaxis



Figure 2: - Showing Maxillary arch



Figure 3: - Showing Mandibular arch



Figure 4: - Maxillary and mandibular casts



Figure 5: - Orthopantomogram of the patient

Treatment

In the patients with this condition generally following features are seen- spacing due to missing teeth and microdontia, abnormal occlusion, altered facial appearance etc. In case of mild hypodontia the associated changes can be managed by orthodontic treatment only. But, if the case is severe, restorative implants and prosthodontic procedures are also required. According to Nohl management of the hypodontia and microdontia is a complex procedure which will involve several dental specialties working ideally as a close-knit team.⁴

In our case, patient was having generalized spacing due to some missing and smaller sized teeth. He was having retained deciduous teeth of which 55 and 81 were mobile. As the age of the patient was only 16 years, fix prosthetics and implants were not indicated. Hence patient was advised for extraction of teeth 55 and 81 and removable partial denture for 11 and space maintainer for 15; and he was

instructed to come after 2 years i.e. at the age of 18 when the options of implants and fixed prosthetics would also be available.⁵

Patient refused this treatment option because he did not want extraction of his teeth. Then, only his thorough oral prophylaxis was done and he was instructed to come for periodic check-up after every two months till the age of 18 years.

Discussion

Number of congenitally missing teeth may range from few teeth (hypodontia), to multiple teeth (oligodontia) and to the complete absence of teeth (anodontia).¹ The reason of congenitally missing teeth may be disturbance in the formation of the dental lamina due to some pathological mechanisms, failure of development of tooth germ, inadequate space due to malformed jaws and jaw size discrepancy.³ Clinically 3 to 10 % of the population is affected by hypodontia if third molar is not considered. Most commonly missing teeth are third molars, second premolars, central and lateral incisors.²

In a study Graber reported that cause of the congenitally missing teeth is one or more point mutations in a polygenic system and transmission of these mutations takes place in an autosomal dominant pattern with variable expressions.³

Although the aetiology of the single missing tooth is unclear yet the familial tendency has been observed in many cases. Various reports have been published regarding etiology, prevalence, location and severity of hypodontia in families. In a report, Parkin et al told that there is no correlation in the number and location of the missing teeth of the patients and their parents or siblings. The variation in the expression of hypodontia in families suggests that the cause of the hypodontia is not solely genetic but environmental factors and epigenetic also plays a major role.⁶

Anomalies of tooth number are not observed as a lone condition rather they have wider association with development of the dentition. A study was carried out to get the relationship between hypodontia, size of the crowns and supernumerary teeth to get the effect on the development of the dentition as a whole. In this study it was observed that, as the number of the missing teeth increased the size of the crowns of the remaining teeth decreased. The patients with supernumerary teeth were having larger crown dimensions especially in mesiodistal direction. These observations were present in generalised manner throughout the dentition.⁷

Brook et al performed a study related to tooth dimensions in a family with hypodontia in which mutation was confirmed. They observed that all the teeth were of smaller size in family members with hypodontia as compared to the control group. It was told that PAX9 mutation was responsible for congenitally missing teeth and smaller size of the crowns of the teeth.⁸

Studies on the mouse genetics have shown a large number of genes responsible for familial hypodontia, but in human

only three genes have been identified for this condition: MSX1, PAX9 and AXIN2.⁹

Conclusion

In the present case combination of different dental anomalies is usually found. Early diagnosis of these patients with such combination of multiple anomalies is required and multidisciplinary management is needed to restore the function and esthetics of these patients.

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