



## CASE REPORT: GENERALIZED MICRODONTIA WITH MULTIPLE RETAINED PRIMARY TEETH, A DIAGNOSTIC DILEMMA

**Dr. Tharani**

Senior Lecturer, Department of Pedodontics and Preventive Dentistry, Priyadarshini Dental College and Hospital, Pandur, Thiruvallur-631203

**Dr. Veerakumar**

Professor and Head, Department of Pedodontics and Preventive Dentistry, Priyadarshini Dental College and Hospital, Pandur, Thiruvallur-631203

**Dr. Rupak Kumar Dasaraju**

Reader, Department of Pedodontics and Preventive Dentistry, Priyadarshini Dental College and Hospital, Pandur, Thiruvallur-631203

**Dr. Pavithra J**

Reader, Department of Pedodontics and Preventive Dentistry, Priyadarshini Dental College and Hospital, Pandur, Thiruvallur-631203

### ABSTRACT

This report presents a 11 year old female patient with generalized microdontia and multiple over retained primary teeth. Radiographic and haematological investigations were done. Extraction of over retained teeth followed by prosthetic rehabilitation and orthodontic correction was planned. An interdisciplinary approach that includes pedodontics-prosthodontics-orthodontics will help in integral rehabilitation of such patients.

**KEYWORDS :** Microdontia, Retention, Syndrome, Anomalies, Genesis

### INTRODUCTION

Microdontia is a condition, a rare dental anomaly where teeth appear smaller than its usual size. Pathophysiology of microdontia is disruption of normal dental developmental processes, it could be due to environmental and/or genetic reasons<sup>(1)</sup>.

Exfoliation of primary teeth is a normal physiological process, whereas in certain cases over retention of primary teeth occurs and it is not an uncommon finding. The possible causes could be – failure in primary teeth root resorption and is due to defective osteoclastic activity, ankylosis of primary teeth, presence of supernumerary teeth, following pulpal therapy, absence of permanent successor, deviation in the eruption of the teeth due to systemic disorder<sup>(2,3)</sup>.

This article presents an unusual case of non-syndromic generalized microdontia and multiple retained primary teeth in a child aged 11 years.

### Epidemiology

Microdontia has female predilection with an overall incidence of 1.5 to 2%<sup>(4)</sup>. Maxillary lateral incisor is the most commonly affected tooth with microdontia, the descriptive term called "peg lateral"<sup>(5)</sup>.

Lestari ZD et al reported that about 20.85% of children had over retained primary teeth and 10 years old children showed highest prevalence. Mandibular primary incisor showed the highest prevalence of over retained teeth, in which 67.55% causing malocclusion.<sup>(6)</sup>

### Case Report

A 11-year-old female visited the Department of Pedodontics and Preventive Dentistry, Priyadarshini Dental college and Hospital, Thiruvallur with a chief complaint of crowded teeth in lower front teeth region.

General appearance and physical development of the patient was normal. No Medical history or dentofacial trauma was reported by the patient. No history of any genetic or dental anomalies in her family. No relevant periodontal, dermatological disorder.

Extraoral examination was non-contributory.

Intra oral examination did not show any soft tissue

abnormality. A Clinical dental examination revealed the presence of following teeth in her maxilla: 16, 15, 55, 14, 53, 13, 12, 52, 11, 21, 62, 23, 63, 24, 65, 26 and in the mandible: 46, 45, 44, 84, 83, 43, 82, 42, 81, 41, 31, 71, 32, 72, 33, 73, 74, 34, 35, 36

The crown size of all the teeth were smaller than usual which is described as "microdontia". There was an maxillary midline diastema, over retained teeth in relation to 55,74,84 and carious tooth in relation to 65,74 and 84. There was grade I mobility in all the lower anterior teeth. Molar relationship was Angle's class I on both right and left side.

On radiographic examination, roots of 55, 53, 52, 62, 63, 65, 71, 72, 73, 81, 82, 83 were intact showing no resorption as seen on 74 and 84 respectively.

The laboratory tests (CBC, T3, T4, TSH, Prothrombin time-PT, PTH, Alkaline Phosphatase, Ca and P) were requested and the results were in normal range.

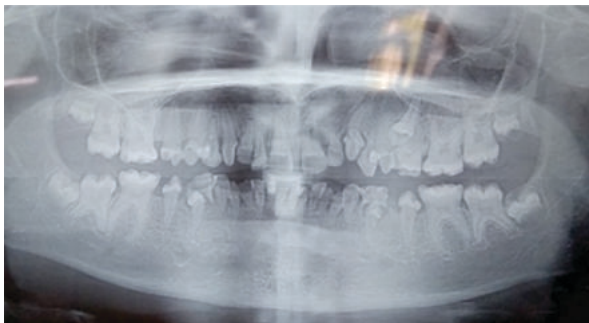


Extraoral View



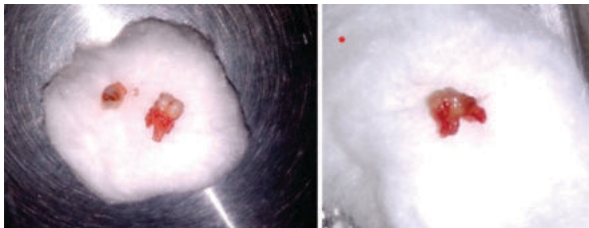


Pre treatment intra oral view- Front, Right side, Left side, Upper occlusal, Lower occlusal



OPG showing microdontia and several over retained teeth

Treatment plan made was extraction of over retained teeth, extraction of mobile lower anterior teeth followed by prosthetic replacement and orthodontic correction of upper and lower teeth.



Extraction Of Over Retained Teeth



Post treatment intra oral view- Upper occlusal, Lower occlusal

After obtaining informed consent, extraction of over retained teeth 55,74,84 was done along with 65 and sent for histopathological examination and the result was normal. Patient parent was not willing for prosthetic replacement and orthodontic intervention.

**DISCUSSION**

Genetic component is one of the causative agents for dental agenesis<sup>[7,8]</sup> with an autosomal dominant pattern of inheritance, incomplete penetrance and variable expression<sup>[9]</sup>. Syndromes, endocrine disorders, infection, irradiation, trauma are the environmental factors which influences tooth development<sup>[10]</sup>.

A study done by O'Connell et al stated that tooth eruption disorder occurs because of unusual persistence of Hertwigs epithelial root sheath, lack of primary teeth resorption and its over retention. It is also reported that 75% of patients older than 7 years reported problems with permanent tooth eruption and they need extraction.<sup>[11]</sup>

Shafer, Hine, and Levy<sup>[12]</sup> classified microdontia into three types:

- (1) Localized Microdontia – involves single tooth;
- (2) relative generalized microdontia - relatively small teeth in large jaws and
- (3) true generalized microdontia - all the teeth are smaller than normal

The syndromes associated with microdontia are pituitary dwarfism, Gorlin-Chaudhry-Moss syndrome, Williams's syndrome, Chromosome d/u, 45X [Ullrich-Turner syndrome], Chromosome 13[trisomy 13], Rothmund-Thomson syndrome, Hallermann-Streiff, Orofaciodigital syndrome (type 3), Oculo-mandibulo-facial syndrome, Tricho-Rhino-Phalangeal, type I Branchio-oculo-facial syndrome.<sup>[13]</sup>

Overretention of primary teeth may cause dental disorders, so providing a meticulous history and careful clinical examination could prevent this condition. The clinical implications of genetically controlled patterns of dental abnormalities are very important in the early diagnosis and appropriate orthodontic intervention.

As the patient in our case report did not show any abnormal systemic manifestations, all the syndrome associated with the dental anomalies were ruled out. To our knowledge, it's a case of generalized microdontia with multiple retained primary teeth and the most likely explanation is genetic factor as the etiology of dental anomalies (size, shape, number, position of teeth and time of eruption)

**CONCLUSION**

The dental finding seen in the case is certainly rare. The simultaneous presence of generalized microdontia and over retention of teeth is rare. Dental treatment for such cases are complex and needs multidisciplinary approach.

**Conflict of Interests**

The authors of this case report declared no conflict of interests

**REFERENCES**

1. McKinney R, Olmo H. Developmental Disturbances Of The Teeth, Anomalies Of Shape And Size. 2022 Nov 29. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. PMID: 34662069.
2. Stewar RE, Barber TK, Troutman KC, Wei SHY. Pediatric Dentistry: Scientific foundations and clinical practice. StLouis: Mosby Elsevier; 1982, pp. 276-7.
3. Dayal PK, Shodan KH, Bihani VK. Prolonged retention of multiple primary teeth. Journal Dentistry of Children. 1982; 49(2):145-6.
4. Guttal KS, Naikmasur VG, Bhargava P, Bathi RJ. Frequency of developmental dental anomalies in the Indian population. Eur J Dent. 2010 Jul;4(3):263-9.
5. Fekonja A. Prevalence of dental developmental anomalies of permanent teeth in children and their influence on esthetics. J Esthet Restor Dent. 2017 Jul 08;29(4):276-283.
6. Lestari ZD, Wibowo TB, Pradopo S. The Prevalence of Overretained Primary Teeth and Malocclusion in 6-12 Years Old Children. Indonesian Pediatric Dentistry Journal. 2010; 2(1):9.
7. Kurisu K, Tabata M J. Human genes for dental anomalies. Oral Dis 1997; 3: 223-8.
8. Vastardis H, Karimbox N, Guthua S W, Seidman J G, Seidman C E. A human MSX1 homeodomain missense mutation causes selective tooth agenesis. Nat Genet 1996; 13: 417-21.
9. Nunn J H, Carter N E, Gillgrass T J, Hobson R S, Jepson N J et al. The interdisciplinary management of hypodontia: background and role of paediatric dentistry. Br Dent J 2003; 194: 245-51.
10. Polder B J, van't Hof M A, Van der Linden F P, Kuijpers-Jagtman A M. A metaanalysis of the prevalence of dental agenesis of permanent teeth. Community Dent Oral Epidemiol 2004; 32: 217-26.
11. O'Connell AC, Puck JM, Grimbacher B, Facchetti F, Majorana A, Gallin JL, et al. Delayed eruption of permanent teeth in hyperimmunoglobulinemia E recurrent infection syndrome. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology. 2000; 89(2):177-85.
12. Shafer WG, Hine MK, Levy BM: A Textbook of Oral Pathology. 1958, Philadelphia: W.B. Saunders Co, 26. 1st edition.

13. Bargale, S.D., Kiran, S.D.P Non-syndromic occurrence of true generalized microdontia with mandibular mesiodens - a rare case. *Head Face Med* 7, 19 (2011).