WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 10, Issue 8, 130-136. Research Article ISSN 2277– 7105

A MULTIDISCIPLINARY APPROACH ON CONGENITALLY MISSING TEETH

Cristina-Crenguta Albu[1*], Romina Christiana Pavlovici[2], Adriana Vasilache[1] and Stefan-Dimitrie Albu[1]

[1]University of Medicine and Pharmacy "Carol Davila", 37 Dionisie Lupu Street, 1st District, 020021, Bucharest, Romania.

[2]Lucky Dental, 1Vergului Street, 2nd District, 22412, Bucharest, Romania.

Article Received on
08 May 2021,

Revised on 29 May 2021,
Accepted on 19 June 2021

DOI: 10.20959/wjpr20218-20896

***Corresponding Author**
Cristina-Crenguta Albu
University of Medicine and Pharmacy "Carol Davila", 37 Dionisie Lupu Street, 1st District, 020021, Bucharest, Romania.

ABSTRACT

Congenitally missing teeth, a multifactorial dental anomaly, the result of disturbances during the early stages of development, is one among the foremost common anomalies with negatively affect both esthetics and oral function. We are presenting a special case of a patient with a rare combination of non-syndromic, non-hereditary, bilateral mandibular congenital dental aplasia, clinically manifested in the permanent dentition, as an isolated case, probably determined by a spontaneous, de novo mutation, associated with a maxillary central incisor (1.1) in a vestibular position. The study was performed in Bucharest, Romania by a multidisciplinary team in accordance with the Declaration of Helsinki - Ethical Principles and Good Clinical Practices and after acquiring the patient's informed consent.

KEYWORDS: congenitally missing teeth, non-syndromic, non-hereditary, de novo mutation.

INTRODUCTION

Congenitally missing teeth, congenital absence of teeth, congenital dental aplasia, or dental agenesis, a multifactorial dental anomaly, the result of disturbances during the early stages of development, is one among the foremost common anomalies with negatively affect both esthetics and oral function through complications like malocclusion, periodontal damage, changes in jaw density, decreased chewing capacity, the difficulty of speaking (strident

sounds), trouble eating, alterations in skeletal relationships and an unsatisfactory appearance.[1-4]

Congenitally missing teeth are classified based on the number of missing teeth in hypodontia, oligodontia, and anodontia. In mild cases, usually less than three teeth are missing.[5]

The prevalence of congenitally missing teeth in primary dentition is between 0.1% and 2.4%, and in the permanent dentition ranges between 0.15% and 16.2%, excluding the third molars.[1, 6]

In the European population, congenitally missing teeth affect approximately 7% of the population and mainly the female sex, with the predominance of bilateral maxilla congenital dental aplasia.[7]

MATERIALS AND METHODS

We hereby present the case of a male patient (proband III9 of the genealogical family tree) aged 17, with a normal general phenotype and with no family history of genetic disorders.

The study was conducted in accordance with the Declaration of Helsinki - Ethical Principles and Good Clinical Practices and after acquiring the patient's informed consent.

The clinical and paraclinical oral investigations, performed by the Orthodontics Department of L.D. Dental Clinic, and the genetic study, performed by the Genetics Department of A.S. Medical Center, in Bucharest, Romania, entailed the following stages: the anamnesis, the clinical oral and general medical examination, the radiological investigation, the photographic examination, and the investigative genetic genealogy.

RESULTS

The clinical oral medical examination highlighted, a maxillary central incisor (1.1) in a vestibular position and two mandibular congenitally missing teeth (3.5 and 4.8) in the permanent dentition (Fig. 1 - Fig. 3). The radiological exam confirmed the clinical oral diagnosis (Fig. 4).

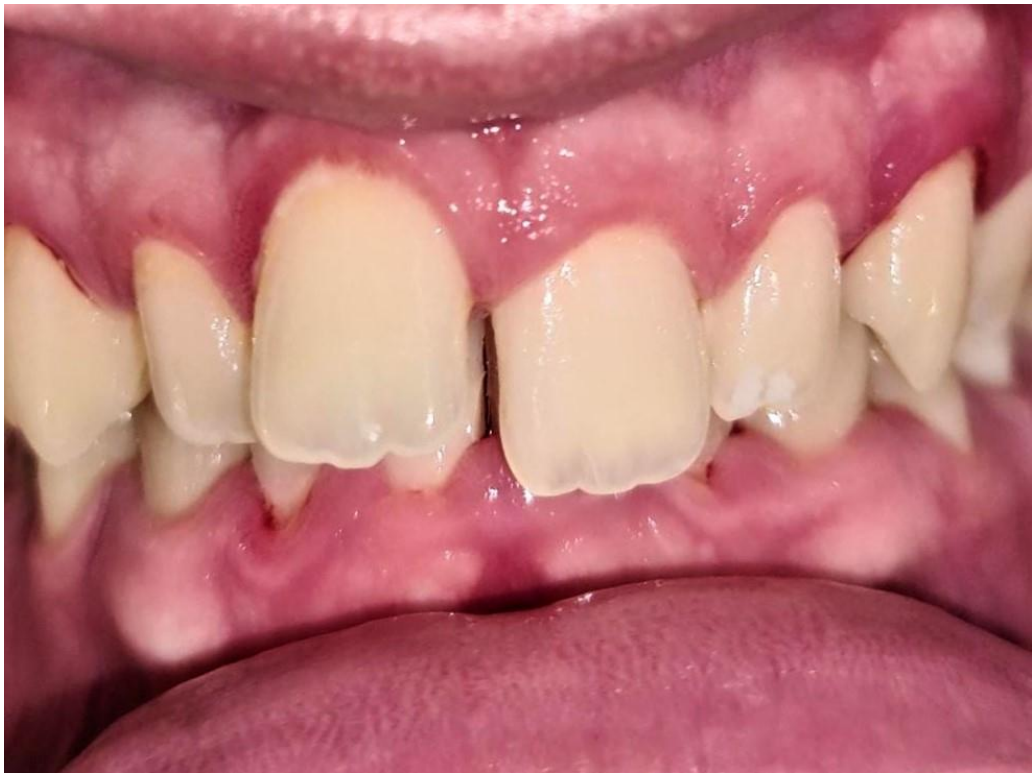

Figure 1: Intraoral frontal view in occlusion denoting the clinical dental phenotype.

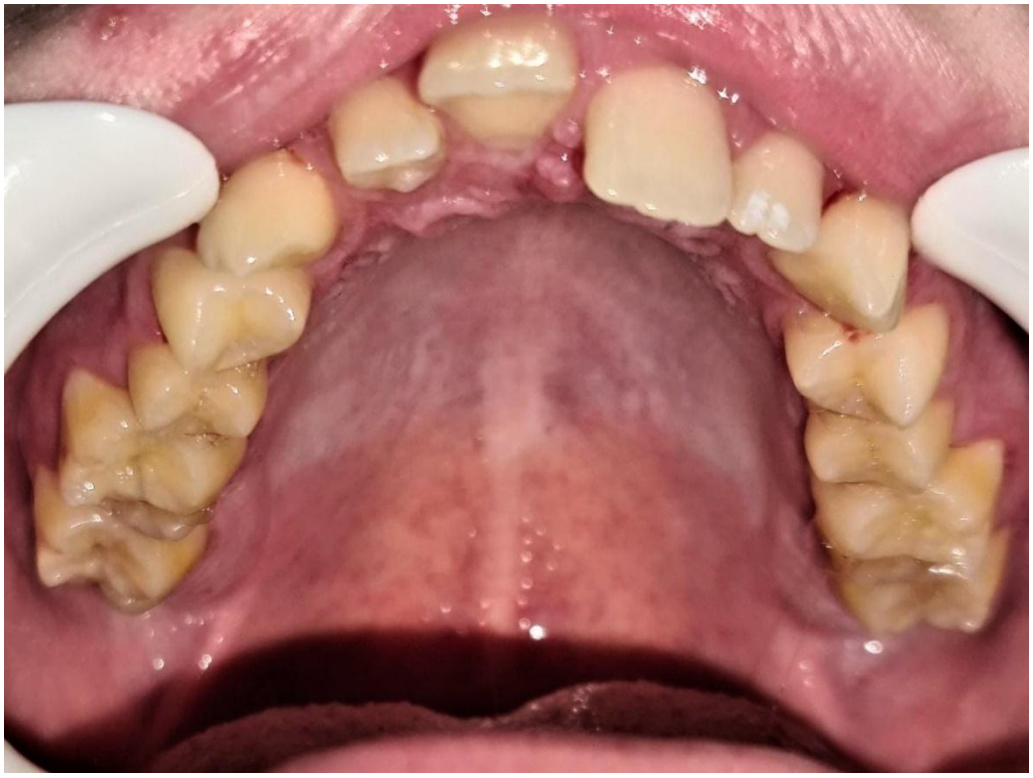

Figure 2: Intraoral occlusal view of the upper arch highlights the clinical dental phenotype.

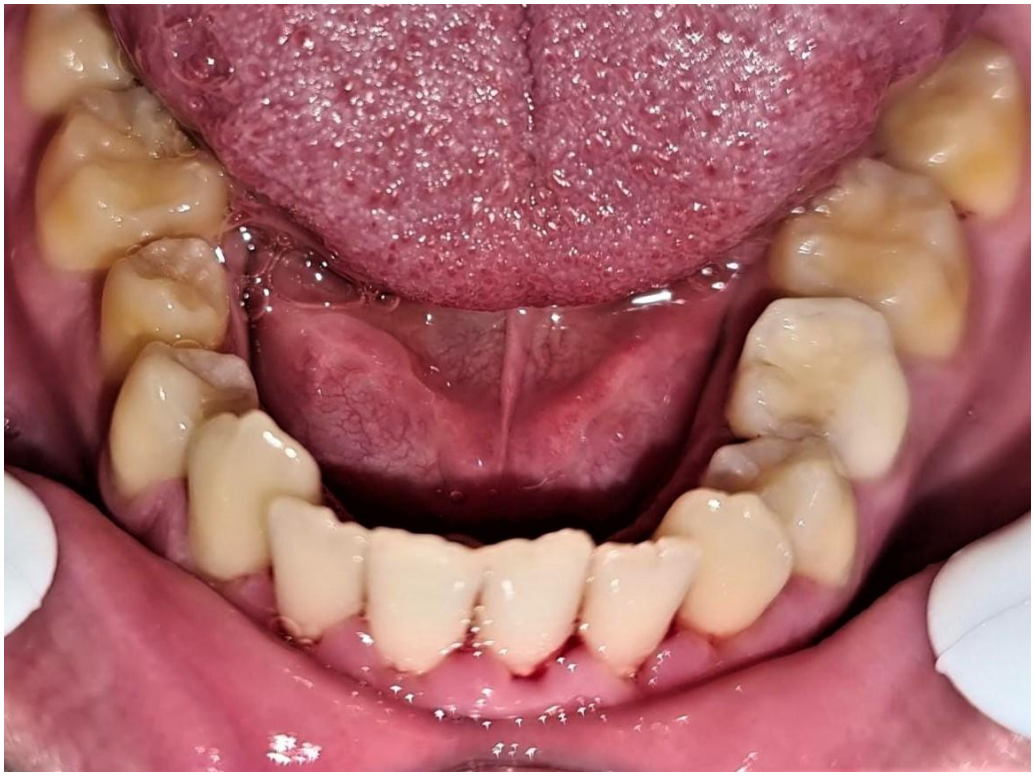

Figure 3: Intraoral occlusal view of the lower arch denoting the clinical dental phenotype.

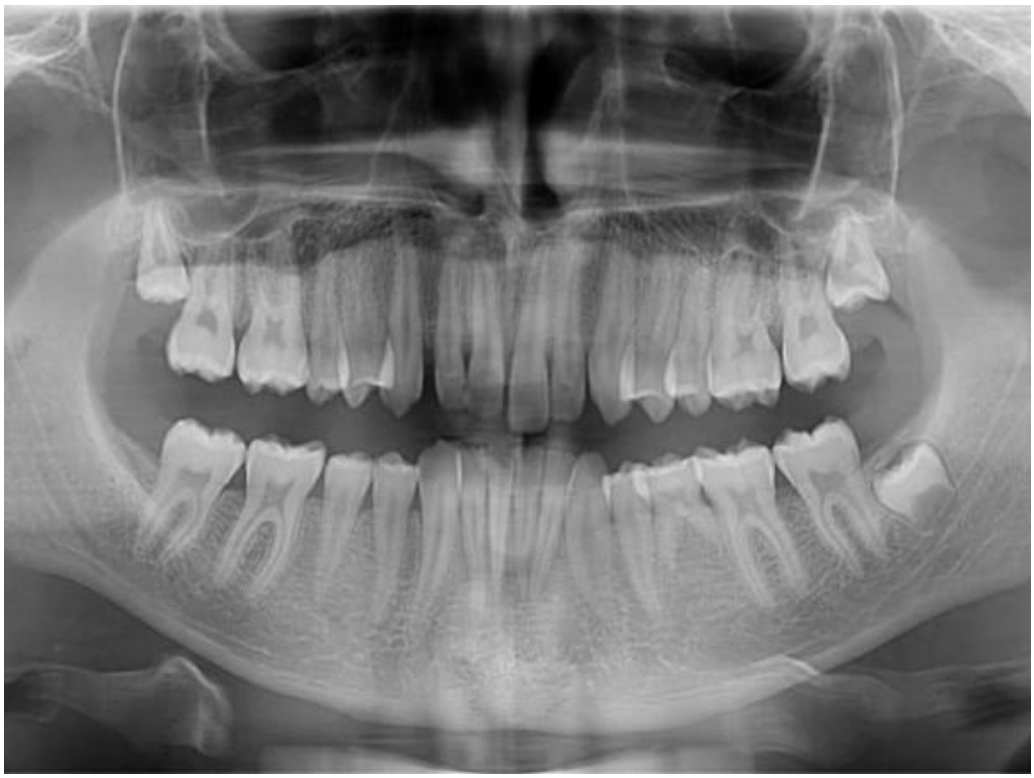

Figure 4: Panoramic radiograph showing two mandibular congenitally missing teeth (3.5 and 4.8) in the permanent dentition.

Based on the data listed in the medical file for congenital malformations, we further performed the family pedigree of the studied family (Fig. 5).

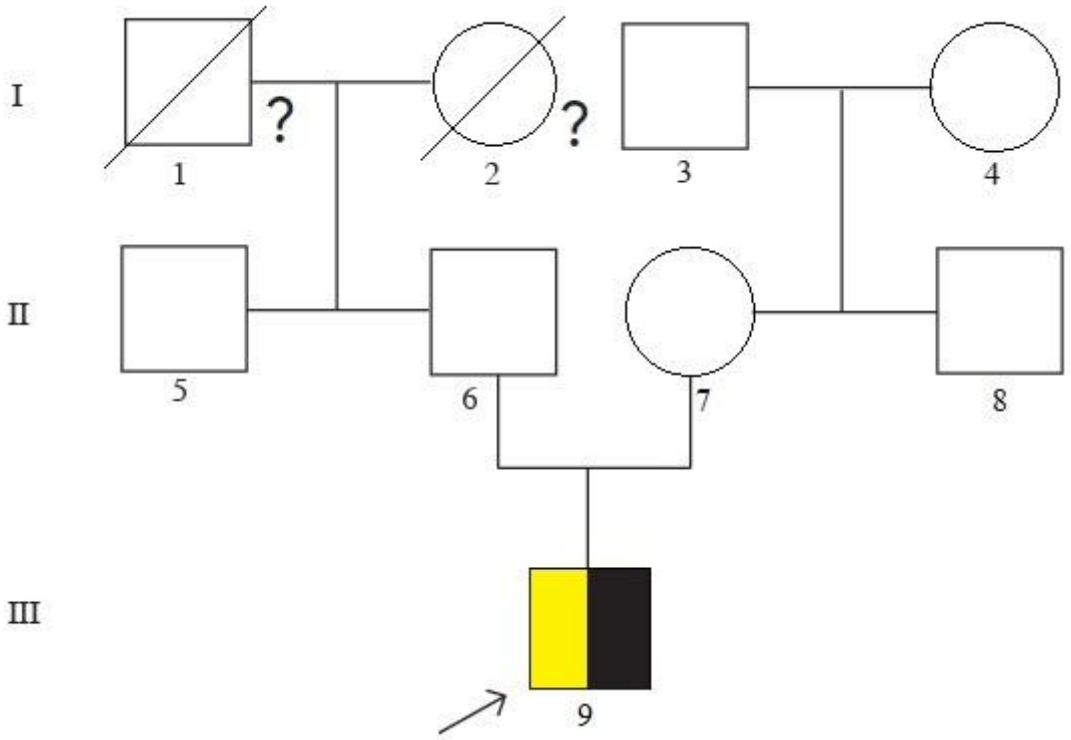

Figure 5: Family pedigree.

I = first generation, II = second generation, III = third generation congenitally missing teeth (3.5 and 4.8), vestibular position (1.1)

The analysis of the genealogical family tree illustrates the existence of an isolated case of congenitally missing teeth in the permanent dentition, not hereditary, probably determined by a spontaneous, de novo mutation, associated with a maxillary central incisor (1.1) in a vestibular position.

DISCUSSION

Congenitally missing teeth are also classified as either isolated, which refers to those cases without syndrome, or syndromic, which occurs as part of a syndrome such as ectodermal dysplasia, Rieger syndrome, Ellis van Creveld syndrome, Witkop syndrome, van der Woude syndrome, Book syndrome, hemifacial microsomia, Bloch-Sulzberger syndrome, and many others.[8-11] In the nonsyndromic form, it occurs as an isolated trait that affects variable numbers of teeth and appears either sporadically or as an inherited condition within a family pedigree.[12, 13]

Congenitally missing teeth has significant clinical implications.[1, 14] Clinical management necessitates the help of several specialties, requires rigorous multidisciplinary planning, and has economic implications.[15] The ideal team must include the following specialists: general dentistry specialists, orthodontists, pedodontists, prosthodontists, oral and maxillofacial surgeons, laboratory technicians, psychologists, clinical geneticists, dermatologists, and speech-language therapists.[8]

CONCLUSION

The presented case illustrates a rare combination of non-syndromic, non-hereditary, bilateral mandibular congenitally missing teeth, clinically manifested in the permanent dentition, as an isolated case, probably determined by a spontaneous, de novo mutation, associated with a maxillary central incisor (1.1) in a vestibular position.

Authors' contributions

All authors contributed equally with the first-author, in the preparing, review and editing of the article. All authors read and approved the final version of the manuscript.

REFERENCES

1. Rakhshan V. Congenitally missing teeth: A review of the literature concerning the etiology, prevalence, risk factors, patterns and treatment. Dent Res J (Isfahan), 2015; 12(1): 1-13. doi: 10.4103/1735-3327.150286. PMID: 25709668; PMCID: PMC4336964.
2. Mărgărit R, Andrei OC, Tănăsescu LA, Farcaşiu C, Bisoc A, Dina MN, Burlibaşa M, Bodnar DC. Non-syndromic familial hypodontia: rare case reports and literature review. Rom J Morphol Embryol, 2019; 60(4): 1355-1360. PMID: 32239117.
3. Ţenţ A, Todor L, Ciavoi G, Popovici-Muţ AM, Domocoş D, Pogan MD, Vaida LL, Porumb A. Non-syndromic hypodontia of permanent dentition associated with other dental anomalies in children and adolescents. Rom J Morphol Embryol, 2018; 59(3): 879-883. PMID: 30534829.
4. Albu ŞD, Pavlovici RC, Imre M, Ion G, Ţâncu AMC, Albu CC. Phenotypic heterogeneity of non-syndromic supernumerary teeth: genetic study. Rom J Morphol Embryol, 2020; 61(3): 853-861. doi:10.47162/RJME.61.3.23. PMID: 33817726; PMCID: PMC8112786.
5. Al-Ani AH, Antoun JS, Thomson WM, Merriman TR, Farella M. Hypodontia: An Update on Its Etiology, Classification, and Clinical Management. Biomed Res Int, 2017; 2017: 9378325. doi:10.1155/2017/9378325. PMID: 28401166; PMCID: PMC5376450.

6. Larmour CJ, Mossey PA, Thind BS, Forgie AH, Stirrups DR. Hypodontia--a retrospective review of prevalence and etiology. Part I. Quintessence Int, 2005; 36(4): 263-70. PMID: 15835422.
7. Albu CC, Imre M, Tancu AMC, Albu SD. Nonsyndromic familial hypodontia: genetic study. Eur J Pharm Med Res, 2021; 8(2): 85-88.
8. AlShahrani I, Togoo RA, AlQarni MA. A Review of Hypodontia: Classification, Prevalence, Etiology, Associated Anomalies, Clinical Implications and Treatment Options. World Journal of Dentistry, 2013; 4(2): 117–125. doi: 10.5005/jp-journals-10015-1216.
9. Klein OD, Oberoi S, Huysseune A, Hovorakova M, Peterka M, Peterkova R. Developmental disorders of the dentition: an update. Am J Med Genet C Semin Med Genet, 2013; 163C(4): 318-332. doi:10.1002/ajmg.c.31382. PMID: 24124058; PMCID: PMC3844689.
10. Chhabra N, Goswami M, Chhabra A. Genetic basis of dental agenesis--molecular genetics patterning clinical dentistry. Med Oral Patol Oral Cir Bucal, 2014; 19(2): e112-9. doi: 10.4317/medoral.19158. PMID: 24121910; PMCID: PMC4015040.
11. Albu C. Genetics and dental anomalies. Sara Book Publication, ISBN 978-93-88672-34-4, 303, Maharana Pratap Complex, Opp.Kapadia Guest House, B/H. V.S.Hospital, Paldi, Ahmedabad-380006, Gujarat, 2019.
12. Cobourne MT. Familial human hypodontia-is it all in the genes? Br Dent J, 2007; 203(4): 203-8. doi: 10.1038/bdj.2007.732. PMID: 17721480.
13. Tan SPK, van Wijk AJ, Prahl-Andersen B. Severe hypodontia: identifying patterns of human tooth agenesis. The European Journal of Orthodontics, 2010; 33(2): 150–154. doi: 10.1093/ejo/cjq046.
14. Ritwik P, Patterson KK. Diagnosis of Tooth Agenesis in Childhood and Risk for Neoplasms in Adulthood. Ochsner J, 2018; 18(4): 345-350. doi: 10.31486/toj.18.0060. PMID: 30559619; PMCID: PMC6292463.
15. Leeftink AG, Bikker IA, Vliegen IMH, Boucherie RJ. Multi-disciplinary planning in health care: a review. Health Systems, 2018; 9(2): 95–118. doi: 10.1080/20476965.2018.1436909.