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INTERDISCIPLINARY FACE OF NON-SYNDROMIC MESIODENS

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ABSTRACT
Mesiodens is a supernumerary tooth located in the premaxilla between the two central incisors that causes a variety of dental problems such as impaired dentofacial aesthetics, malocclusion, dental impaction, and sometimes cyst formation. We are presenting the genetic study performed by the Genetics Department of A.S. Medical Center, in Bucharest, Romania, in the case of a patient presenting a mesiodens in the permanent dentition, an isolated case, non-syndromic and non-hereditary, the result of a de novo mutation. The oral visual examination and the radiological exam of the patient were completed with the oral photographic examination, the family history investigation, the pedigree, and the analysis of the studied family's genealogical tree, after acquiring the signed informed consent of the patient. The genetic investigations of the mesiodens, allow for the identification of their genetic cause, the calculation of the anomaly recurrence risk amongst offspring, the direct monitoring, and the specialized observation of affected families, to limit the potential complications.

KEYWORDS: mesiodens, non-syndromic, genetic study, genealogic tree, dental anomaly.

INTRODUCTION
Supernumerary teeth are a disorder of odontogenesis relatively common in the oral cavity and characterized by an excess number of teeth.[1]

The supernumerary teeth account for almost 3% of the total dental-maxillary anomalies, affecting male individuals twice as much as female individuals.[2,3]

The term 'mesiodens' refers to a supernumerary tooth present in the midline of the maxilla between the two central incisors.[4]

Mesiodens are the most common supernumerary teeth, occurring in 0.15% to 1.9% of the population.[5]

The supernumerary teeth may occur, as isolated events, or within certain genetic syndromes.[6]

MATERIALS AND METHODS
We hereby present the case of a male patient (proband III7 of the genealogical family tree) aged 14, originating within the metropolitan area, with a normal phenotype and without known associated disorders, who came to the A.S. Medical Center, from Bucharest, Romania, for a genetic examination.

The genetic study was conducted by the Genetics Department of our medical center, in accordance with the Declaration of Helsinki - Ethical Principles and Good Clinical Practices and after acquiring the patient's informed consent.

The study consisted of completing the following stages: the anamnesis, the general clinical examination, the extraoral and intraoral medical examinations, the radiologic exam, the photographic examination, the family history investigation, the pedigree, and the analysis of the studied family's genealogical tree.

RESULTS
Upon the oral medical examination, the presence of a supernumerary tooth in the midline of the maxilla between the two central incisors was highlighted in the permanent dentition, without other associated dental anomalies (Fig. 1- Fig. 3).

The radiological exam confirmed the presence of a supernumerary tooth in the midline of the maxilla between the two central incisors, without highlighting other associated dental anomalies.

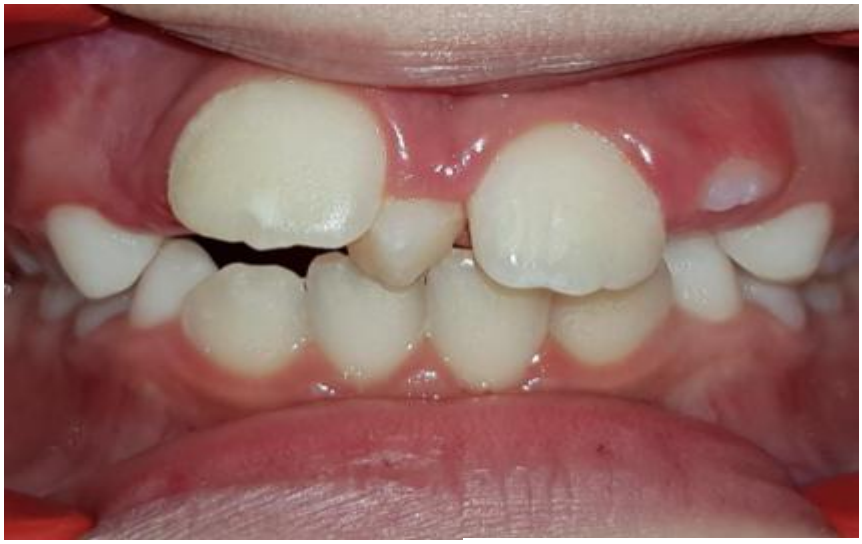

Figure 1: Intraorally frontal view in occlusion highlights a supernumerary tooth in the midline of the maxilla between the two central incisors.

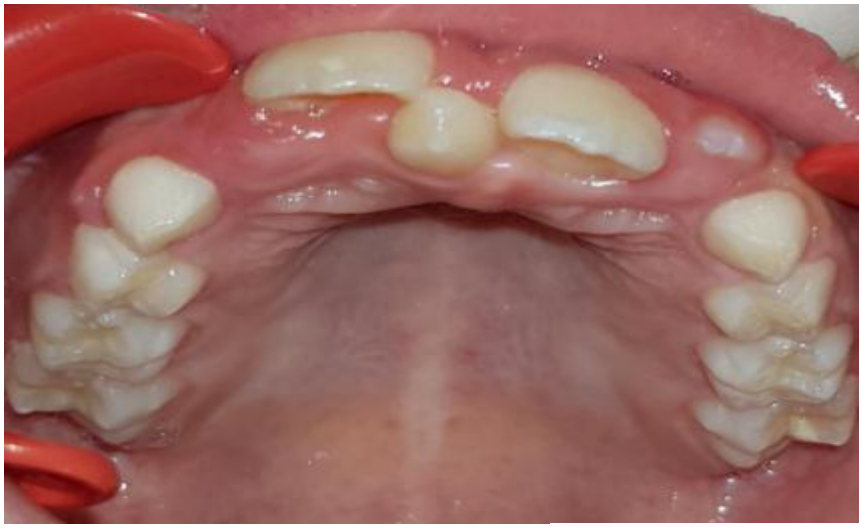

Figure 2: Intraorally occlusal view of the upper arch highlights a supernumerary tooth in the midline of the maxilla between the two central incisors.

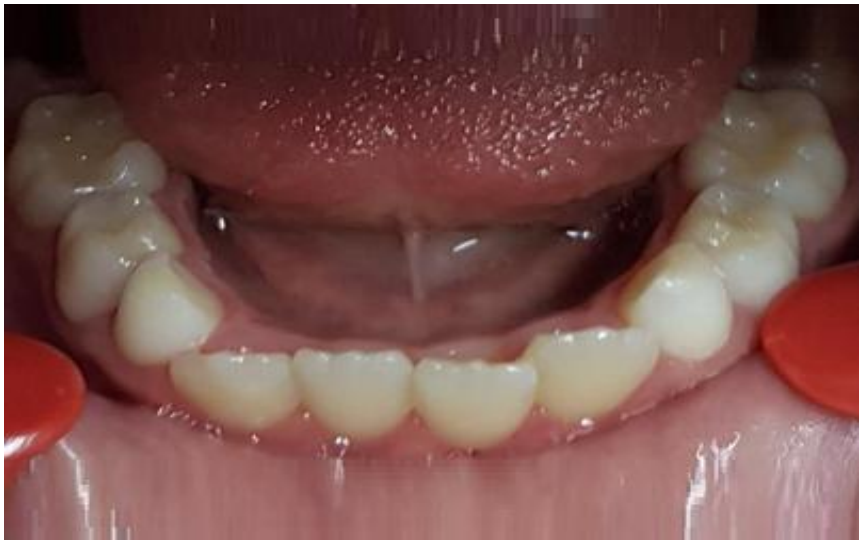

Figure 3: Intraorally occlusal view of the lower arch.

The patient's family investigation was negative in the sense that no supernumerary teeth were highlighted with the rest of the family members.

Based on the collected information we further performed the pedigree of the investigated family (Fig. 4).

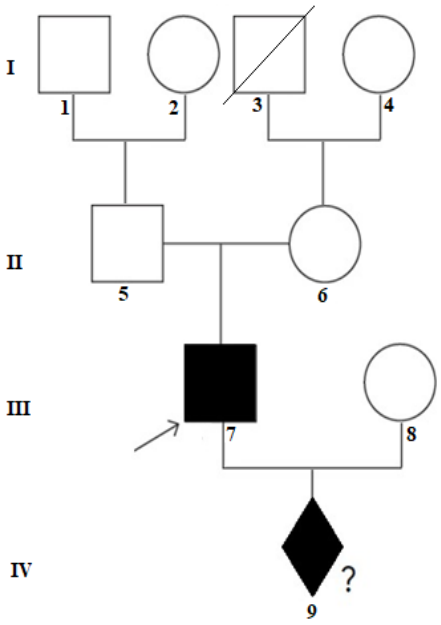

Figure 4: Genealogical family tree.

I = first generation, II = second generation, III = third generation, IV = fourth generation.

Analysis of the genealogical tree shows the existence of a single case of mesiodens in the permanent dentition, an isolated, sporadic case, not hereditary, probably determined by a spontaneous, de novo mutation.

DISCUSSION

Mesiodens is a supernumerary tooth located in the premaxilla between the two central incisors that causes a variety of dental problems such as impaired dentofacial aesthetics, delayed eruption, ectopic eruption, malocclusion, dental impaction, root resorption, pulp necrosis, and sometimes may lead to cyst formation.[7]

Mesiodens can be classified into conical, supplemental, and tuberculate types, according to their morphology, and may occur as single, multiple, unilateral, or bilateral.[8, 9]

The etiology of mesiodens is not known exactly.[10] Genetic predisposition plays an important role in the determinism of mesiodens, and the familial pattern of occurrence of mesiodens in twins strongly supports the genetic influence.[2,11-14]

CONCLUSION

The case report, illustrates a mesiodens present in the permanent dentition, erupted on the dental arch, an isolated and sporadic case, non-hereditary and non-sydromic, possibly the result of a spontaneous, de novo mutation.

The genetic investigations of the mesiodens, allow for the identification of their genetic cause, the calculation of the anomaly recurrence risk amongst offspring, the direct monitoring, and the specialized observation of affected families, to limit the potential complications.

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.

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