

# DOUBLE MESIODENS: A CASE REPORT

## ДВОЕН МЕЗИОДЕНС: ПРИКАЗ НА СЛУЧАЈ

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### Abstract

**Introduction:** Mesiodens are the most common of all supernumerary teeth. Recently, the presentation of double mesiodens cases has increased, which may be due to the availability of sophisticated and accurate diagnostic methods. **Aim:** To present a rare case of double mesiodens in the anterior maxilla. **Material and method:** A 9-year-old male patient was diagnosed with double mesiodens in the anterior maxilla by CBCT. The patient is non-syndromic and has no other supernumerary teeth in the mixed dentition. **Results:** Using cone beam computed tomography (CBCT), we assessed the position, structure and shape of the supernumerary teeth and also made an appropriate plan for surgical extraction of them. **Conclusion:** This article shows the importance of early diagnosis and treatment of mesiodens, in order to prevent or limit inflammatory, carious, periodontal and occlusal complications that can occur in supernumerary teeth conditions in jaws. **Key words:** Mesiodens, supernumerary teeth, CBCT, surgical extraction.

### Апстракт

**Вовед:** Мезиодените се најчести меѓу сите прекубројни заби. Од неодамна, презентацијата на случаи со двоен мезиоденс се зголемени, што може да се должи на достапноста на софистицирани и прецизни дијагностички методи. **Цел на трудот:** Да се претстави редок случај на двоен мезиоденс во предната максила. **Материјал и метод:** На 9-годишен пациент од машки пол, со СВСТ е дијагностициран двоен мезиоденс во предната максила. Пациентот е не-синдромичен и нема други прекубројни заби во мешаната дентичија. **Резултати:** Користејќи компјутерска томографија со конусен зрак (СВСТ), ја проценивме позицијата, структурата и обликот на прекубројните заби и воедно направивме соодветен план за хируршка екстракција на истите. **Заклучок:** Трудот ја покажува важноста на раната дијагноза и третман на мезиоденсите, со цел да се превенираат или ограничат воспалителни, кариозни, пародонтални и оклузални компликации кои можат да се јават при состојби на прекубројни заби во вилиците. **Клучни зборови:** мезиоденс, прекубројни заби, конусна компјутерска томографија, хируршка екстракција.

### Introduction

Supernumerary tooth is a dental anomaly defined as an additional tooth beyond the normal number. It can occur in both the maxilla and mandible<sup>1</sup>. The most common type of supernumerary teeth is mesiodens which is an extra tooth located in the premaxilla with a reported prevalence of 0.15%-1.9%<sup>2</sup>.

Many theories have been developed regarding the etiology of mesiodens; however, their origin is unknown to date. These include atavism, dichotomy, and hyperactivity of the dental lamina, with the last being the most logical and acceptable theory<sup>3,4</sup>. Additionally, mesiodens might be associated with multiple genetically inherited syndromes such as cleidocranial dysplasia, cleft lip and palate, Gardner's syndrome, and oral-facial-digital syn-

drome. It has also been reported that there is evidence that can be attributed to environmental factors as well as other factors such as heredity and family tendencies<sup>5,6</sup>.

Mesiodens can give rise to numerous complications related to both the adjacent teeth and other vital structures. The effects on adjacent teeth may range from displacement, rotation, and interference with normal tooth eruption to even more severe complications such as root resorption or abnormal root formation<sup>7</sup>.

Mesiodens may also affect adjacent vital structures, causing perforation of the nasopalatine canal or nasal floor, or the formation of cysts<sup>8,9</sup>.

Supernumerary teeth are detected incidentally during radiographic examination since mesiodens rarely erupt within the permanent dentition (about 25%), so late diagnosis complications are very common<sup>10</sup>. Panoramic, max-

illary occlusal, and periapical radiographs are indicated to aid in the diagnosis of mesiodens. A panoramic radiograph serves as an aid for detection, and provides additional information on associated, missing congenital or supernumerary teeth. However, despite the great utility of panoramic radiography, it only provides two-dimensional information, making cone-beam computed tomography (CBCT) a useful diagnostic tool for identifying the precise location and shape of mesiodens without overlaps<sup>11</sup>.

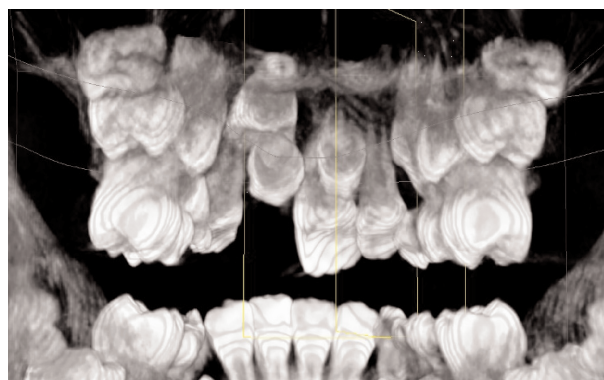
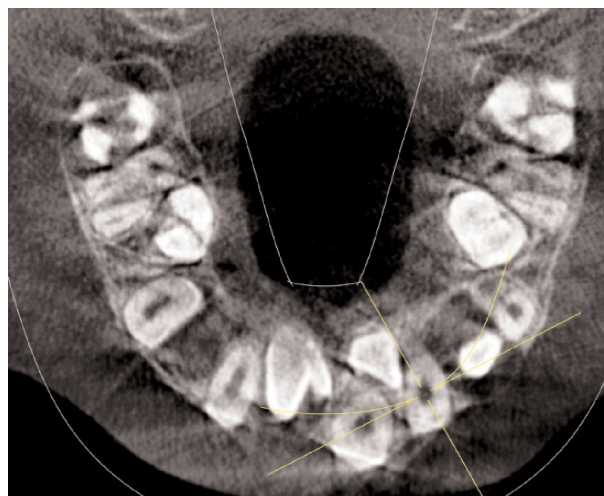
## Case report

In 2022, a 9-year-old male patient was admitted in the Oral Surgery Department in the Faculty of Dentistry, Ss. Cyril and Methodius in Skopje, Macedonia. The reason for the consultation was prolonged eruption of tooth 11. He did not show any syndrome, systemic disease, or medication; He was a shy but cooperative patient who responded favorably to behavioral management techniques. In the intraoral clinical examination, the patient presented mixed dentition with multiple cavitated and non-cavitated, active carious lesions. In the soft tissue, there was an increase in volume in the hard palate between the upper central incisors (11 and 21) of hard consistency, painless, with years of evolution according to the mother's report. A radiographic examination, which was performed by using panoramic radiograph (Figure 1), and for better visualization and planning a cone-beam computed tomography (CBCT), was taken, confirming the presence of two supernumerary teeth in a vertical position in the upper arch. Also, there was not root resorption of the permanent roots of this region and no evidence of associated pathologies (Figure 2). The tuberculate mesiodens was located palatally 11, and conical mesiodens between 21 and 22. Vestibuloversion of teeth 2.1 and 2.2 was observed (Figure 3).

A comprehensive treatment plan was formulated, which included extraction of the mesiodens under local anaesthesia (Figure 4).



**Figure 1.** Panoramic radiograph showing presence of mesiodens



**Figure 2.** CBCT images with the presence of tuberculate and conical mesiodens



**Figure 3.** Intraoral examination



**Figure 4.** The extracted mesiodens

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## Discussion

The etiology of supernumerary teeth is not clearly understood, despite its regular presentation. Atavism (phylogenetic reversion) theory states that mesiodens represented a phylogenetic relic of extinct ancestors who exhibited three central incisors<sup>12</sup>. Dichotomy theory, in which a tooth bud is split into two separate teeth, usually occurs from complete gemination in the anterior maxilla region<sup>12</sup>. Palatal offshoots or hyperreactivity of active dental lamina are induced to develop into an extra tooth bud, which results in a supernumerary tooth developing into another extra supernumerary tooth<sup>12</sup>. Genetics are also thought to play a vital role in the development of mesiodens since such mesiodens have been diagnosed in siblings, twins, and sequential generations of a single family<sup>12</sup>. Autosomal dominant inheritance with sex-linked patterns with incomplete penetration has been proposed in the formation of such mesiodens. In twins, unilateral mesiodens may present as mirror images located in similar regions of the mouth in the same number<sup>12</sup>.

Mesiodens teeth can be classified based on their occurrence in the permanent dentition (rudimentary mesiodens), which are usually smaller and abnormal in shape, or the primary dentition (supplementary mesiodens), which resemble natural teeth in both size and shape<sup>13</sup>. Based on the morphology (conical, tuberculate, or molariform), conical mesiodens usually occur alone. They are generally peg-shaped and usually located palatally between the maxillary central incisors, tending to displace the erupting permanent central incisors<sup>13-15</sup>. Conical mesiodens can often erupt into the oral cavity and have a completely formed root<sup>16</sup>. The crown can be inverted and pointing superiorly, in which case they are less likely to erupt into the oral cavity; inverted conical mesiodens have occasionally erupted into the nasal cavity<sup>2</sup>. Tuberculate mesiodens teeth are barrel-shaped, with several tubercles or cusps, and have incomplete or abnormal root formation. In contrast to conical mesiodens, tuberculate mesiodens teeth rarely erupt themselves but rather develop either unilaterally or bilaterally and delay the eruption of the permanent incisors<sup>15</sup>. Tuberculate mesiodens teeth develop later than conical mesiodens and usually occupy a more palatal position<sup>15</sup>. A third, much rarer type is the molariform mesiodens, which has a crown resembling a premolar tooth and a completely formed root.

The recommended time for mesiodens removal is controversial<sup>17</sup>. Interceptive treatment has been advocated by some clinicians who believe that early removal before root formation of the permanent central incisor increases the chances of spontaneous eruption<sup>18</sup>. Others

have advocated delayed treatment to lower the risk of iatrogenic surgical damage to the permanent central's apical development<sup>19</sup>. In a study of 170 permanent central incisors associated with impacted supernumerary teeth, increased root resorption was reported when the supernumerary was removed after complete closure of the central incisor's apex. Early removal of the supernumerary (ideally at 4–5 years and before 6–7 years) is recommended, due to reduced adjacent permanent incisor complications. It must be noted that surgical removal can cause complications such as root resorption, root dilacerations, arrested root development, loss of the lamina dura, and bone deformities<sup>5</sup>.

## Conclusions

Early diagnosis of the presence of mesiodentes is imperative. A CBCT is essential for properly evaluating its location in a three-dimensional view for its treatment planning. Before surgical removal of symptomatic mesiodens, a labial or palatal approach to mesiodens can be planned after radiographic evaluation by CBCT. Appropriate surgical and/or orthodontic traction is often indicated. Post surgical follow-up in frequent intervals is essential.

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