CASE REPORT
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Nonsyndromic impacted triple supernumerary teeth in the maxilla, including single dens in dente malformation: a case report with a two-year follow-up

Tri prekobrojna zuba u gornjoj vilici i razvojna anomalija „zub u zubu" kod pacijenta bez sindroma

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Abstract

Introduction. Mesiodens is a midline supernumerary tooth, mostly located in the maxillary arch. We presented a rare case of a patient with nonsyndromic impacted triple supernumerary teeth precluding the eruption of central maxillary incisors. **Case report.** In addition to providing a detailed 3D picture of the patient's dentition, cone-beam computed tomography (CBCT) scan analysis revealed dens in dente malformation of one of the supernumeraries. Following surgical removal of all supernumerary teeth, the maxillary central incisors erupted spontaneously after a two-year period. **Conclusion.** To the best of our knowledge, no similar case report has been published in scientific literature. This case report highlights the importance of CBCT for proper diagnosis of supernumerary teeth as well as additional anomalies.

Key words:
cone-beam computed tomography; congenital abnormalities; dens in dente; oral surgical procedures; tooth, supernumerary.

Apstrakt

Uvod. Meziodens je prekobrojni zub koji se najčešće javlja u središnjoj liniji gornje vilice. Prikazan je redak slučaj pacijenta bez sindroma kod koga je izostalo nicanje centralnih sekutića gornje vilice kao posledica prisustva tri prekobrojna zuba. **Prikaz bolesnika.** Analizom snimka kompjuterizovane tomografije konusnog zraka (KTKZ) je pored trodimenzionalnog prikaza prekobrojnih zuba, na jednom od tri prekobrojna zuba dijagnostikovana i udružena razvojna anomalija tipa „zub u zubu". Dve godine nakon hirurškog vađenja prekobrojnih zuba došlo je do spontanog nicanja centralnih sekutića gornje vilice. **Zaključak.** Prema našim saznanjima ovakav ili sličan slučaj do sada nije objavljen u literaturi. Istaknut je značaj KTKZ za pravilnu dijagnozu prekobrojnih zuba kao i drugih anomalija.

Ključne reči:
kompjuterizovana tomografija konusnog zraka; anomalije; zub u zubu; hirurgija, oralna, procedure; zub, prekobrojni.

Introduction

Developmental dental anomaly manifesting as supernumerary teeth is diagnosed if the number of deciduous and permanent teeth exceeds 20 and 32, respectively [1]. Most supernumerary teeth are isolated cases, although some may be hereditary or be associated with certain syndromes [2]. Although supernumerary teeth are relatively common in patients with certain syndromes, they are much rarer in the healthy population, where they typically present in the frontal maxillary region. Supernumerary tooth interposed between central maxillary incisors is known as mesiodens and may occur as single, multiple, unilateral, or bilateral. Mesiodens is classified into four main types, namely conical, tuberculate, supplemental, and odontoma [3]. Mesiodens can also assume the vertical, slanted, horizontal, or inverted position. The aforementioned characteristics determine the likelihood of complications associated with mesiodens, as the presence of supernumerary teeth can be asymptomatic. The most frequent mesiodens-induced complication is the disturbance of central incisor eruption.

Although mesiodens etiology is presently unknown, several theories have emerged to explain its occurrence. According to the tooth dichotomy theory, supernumerary teeth are a result of the dichotomy of the (either primary or permanent) tooth bud. Hyper-proliferation of the dental lamina

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or unresolved dental lamina fragments are other possible causes of supernumerary tooth formation [4]. Dens in dente is a dental malformation characterized by enamel enfolding into the dentine, usually involving the crown and occasionally invading the root. The invagination most frequently involves the maxillary lateral incisors, followed by supernumerary teeth [5]. It is not uncommon to find the contemporaneous presence of mesiodens with the dens in dente tooth malformation [6, 7].

We presented a normally developing boy presenting with three impacted supernumerary teeth in the maxillary incisive region. One of the supernumerary teeth additionally displayed dens in dente malformation.

Case report

In April 2018, a 9-year-old boy presented at the Department of Oral Surgery, University Clinic for Dentistry of Vojvodina, Novi Sad, Serbia, showing delayed eruption of permanent central incisors as the chief complaint. Clinical assessment revealed the presence of deciduous central incisors along with the normal eruption of permanent lateral incisors. Panoramic radiograph (Figure 1) and cone-beam computed tomography (CBCT) scans (Figure 2) were obtained, revealing three tuberculate supernumerary teeth in the incisive maxillary region. Pretreatment tridimensional reconstruction obtained from the CBCT showed retained primary central incisors and



Fig. 1 – Panoramic radiograph showing impacted permanent central incisors and presence of supernumerary teeth.



Fig. 2 – Axial cone-beam computed tomography (CBCT) scan showing impacted mesiodentes positioned palatally (indicated by arrows) and mesiodens involving dens in dente malformation (marked by arrowhead).

impaction of permanent maxillary central incisors, with adequate space for permanent upper central incisors to erupt (Figure 3). The sagittal scans further revealed the presence of the dens in dente malformation in one of the supernumerary teeth (Figure 4). Permanent central incisors assumed a vertical position, with incomplete root formation.

The treatment involved extraction of two primary central incisors as well as all three supernumerary teeth under local infiltration anesthesia. At the 18-month postoperative follow-up, spontaneous eruption of maxillary right permanent central incisors was noted (Figure 5). At the two-year postoperative follow-up, both maxillary permanent central incisors had erupted spontaneously (Figure 6), without evidence of additional supernumerary teeth on the repeated panoramic radiograph (Figure 7).



Fig. 3 – Pre-treatment tridimensional reconstruction obtained from cone-beam computed tomography (CBCT) showing retained primary central incisors and impaction of permanent maxillary central incisors.

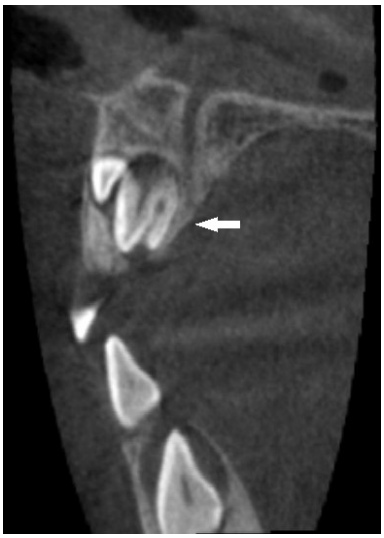


Fig. 4 – Sagittal cone-beam computed tomography (CBCT) scan revealing that one of the supernumerary teeth is associated with dens in dente tooth malformation (indicated by arrow).



Fig. 5 – Intraoral frontal view 18 months postoperatively.



Fig. 6 – Intraoral frontal view 24 months postoperatively.



Fig. 7 – Panoramic radiograph taken at two-year follow-up showing spontaneous eruption of permanent central incisors.

Discussion

Mesiodens should be suspected whenever patients present with a delayed central permanent incisor eruption. Clinical practice shows that parents tend to seek orthodontic treatment for children in whom incisors have failed to erupt much sooner than for any other orthodontic anomaly [8]. Timely mesiodens diagnosis is crucial for determining the most optimal course of treatment and for prevention of complications, such as failed central incisor eruption, delayed eruption, ectopic eruption, midline diastema, resorption of adjacent teeth, and the emergence of a follicular cyst around the supernumerary tooth [9]. In the patient who was the subject of this report, failed central incisor eruption was the primary reason for suspecting mesiodens.

Mesiodens is the most common form of supernumerary dentition [10] and tends to present as a solitary tooth, while the incidence rapidly decreases with the number of additional teeth [11]. Impacted mesiodens is typically diagnosed through a periapical, panoramic, or axial radiograph. Diagnosis may also involve analysis of CBCT scans, which provide a 3D representation of the mesiodens and the surrounding dentition. This is particularly important in patients affected by multiple supernumerary teeth, which are difficult to differentiate in 2D images due to superimposition, thus failing to provide sufficient information for determining the best therapy mode. Empirical evidence indicates that when CBCT scans are analyzed, a higher prevalence of mesiodens is reported, especially in cases involving three or more supernumerary teeth [11]. Among the various mesiodens forms, conical is the most common, while tuberculate is the least frequent [12]. According to some authors, tuberculate mesiodens usually remains impacted and thus interferes with the eruption of permanent central incisors [13]. In the case presented here, all three supernumeraries were tuberculate.

Concurrent presence of supernumerary teeth with other developmental dental anomalies is rare, with a few reported cases of singular or double mesiodens accompanied by dens invaginatus [7, 14]. In the case discussed here, only one of the three supernumerary teeth in the midline exhibited this dental malformation.

During a surgical extraction, placing an orthodontic element is advised by some authors, while others recommend leaving permanent incisors to erupt spontaneously. In most cases, central incisors erupt within 6−36 months following the obstruction removal [15]. Available space in the dental arch and the patient's age are the main factors determining the likelihood of spontaneous incisor eruption. In the case presented in this report, the permanent central incisor roots were still developing, which, along with adequate space, typically results in spontaneous eruption upon obstruction removal [16]. Following surgical removal of supernumerary teeth in this patient, both maxillary central incisors erupted spontaneously after two years. In such cases, follow-up evaluation is essential, given several reported cases of emergence of new supernumerary teeth subsequent to surgical intervention [17].

Conclusion

In this specific case, CBCT scan analysis was instrumental in determining the number of supernumerary teeth, as well as their position and shape. As a result, the most optimal therapeutic approach could be initiated in a timely manner, ultimately leading to spontaneous eruption of the central incisors. Although the presence of dens in dente malformation in one of the three impacted supernumerary teeth is not pertinent to the therapeutic result achieved here, it is a phenomenon that, to the best of the authors' knowledge, has not been previously described in the literature in the numerical ratio reported here.

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