

Retention of Central Incisors Caused by Four Supernumerary, Molariform Teeth in A Non-Syndromic Patient

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ABSTRACT

The presence of supernumerary teeth is one of the most common factors that can alter the normal eruption pattern. We present here a rare phenomenon of four, molariform mesiodentes in a systemically healthy, non-syndromic patient, with non-contributory family history, causing delayed eruption of permanent, upper, central incisors. Multiple supernumerary teeth can be an important component of distinctive disorders and a valuable clue for their early diagnosis. However, this case highlights the importance of non-hereditary factors in the pathogenesis of multiple supernumerary teeth in a non-syndromic patient.

Keywords: Delayed eruption, hyperdontia, multiple mesiodentes.

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I. INTRODUCTION

Eruption of teeth may be delayed or blocked for different reasons. The presence of supernumerary teeth is one of the most common factors that can alter the normal eruption pattern. Hyperdontia can occur in both the primary and permanent dentitions, and in any region of dental arches. Apart from causing eruption abnormalities, supernumerary teeth might also be associated with displacement or rotation of a permanent tooth, crowding, the presence of diastema, dilaceration, delayed or abnormal root development and cyst formation [1].

Supernumeraries are more prevalent in the maxilla than in the mandible and are especially frequent in the maxillary incisor region. They are usually of normal morphology in the primary dentition, whilst in the permanent they can be conical, multi-lobed, molariform and tuberculate. Solitary supernumeraries are found in approximately 76-80% of cases, double in 12-23% and multiple in less than 1%. Multiple supernumeraries are associated with several syndromes, such as cleft lip and palate, cleidocranial dysostosis and Gardner's syndrome [2].

To date, no clear genotype-phenotype correlations have been established in patients with supernumerary teeth. Autosomal-dominant transmission pattern of non-syndromic multiple supernumerary teeth has been reported. Although genetics plays a significant role in the pathogenesis of these developmental anomalies, with siblings and twins being more often affected, non-genetic factors, such as epigenetic modifications, copy number variations, as well as environmental factors, may also trigger the formation of supernumerary teeth [3].

We present here a rare case of delayed eruption of permanent, upper, central incisors caused by the presence of four, molariform mesiodentes in a systemically healthy, non-syndromic patient.

II. CASE REPORT

A 10-year-old male patient of Caucasian origin presented to our clinic with asymptomatic, delayed eruption of permanent upper central incisors. His primary dentition had developed in the usual chronological fashion and his primary central incisors exfoliated around the age of seven. Permanent

lateral incisors erupted in a timely manner and were of a standard shape and size. The patient was fit and healthy with an unremarkable medical history. His parents and siblings did not report any dental anomalies.

On examination, the patient had a mildly enlarged premaxilla, normal oral mucosae and the permanent central incisors were not palpable. Orthopantomographic and subsequent cone-beam computed tomography (CBCT) investigations revealed four supernumerary teeth in the maxillary alveolar process, positioned between the lateral incisors, and the presence of deeply impacted permanent central incisors at the base of the nasal cavity. All four supernumerary teeth were of tuberculate variety, vertically positioned and located palatally to the impacted central incisors, without associated radiolucencies around them (Fig. 1).

The treatment plan included surgical removal of all four supernumerary teeth and exposure of upper central incisors accompanied with their orthodontic alignment. Intraoperatively, the supernumerary teeth were covered with a thin labial cortical plate and had large, fully developed molariform crowns with up to five cusps. The centrally located supernumeraries were larger and with partially developed roots, whilst the laterally positioned supernumeraries were rootless. The removal of these teeth left large osseous defects in the patient's premaxillary region (Fig. 2).

The remaining bone was removed from the labial aspect of impacted permanent central incisors and orthodontic brackets were bonded on labial side of these teeth. The orthodontic treatment sequence is shown in Fig. 3.



Fig. 1. Frontal CBCT image showing four supernumerary, tuberculate teeth and deeply impacted permanent central incisors.



Fig. 2. Extracted four molariform supernumerary teeth and large alveolar defects after their removal.



Fig. 3. The sequence of the orthodontic treatment.

III. DISCUSSION

Anomalies in the number and shape of teeth are caused by complex interplays between genetic, epigenetic and environmental factors during the lengthy process of dental development. This process is multifactorial, multilevel and progressive over time. Although various theories have been suggested, such as atavism, dichotomy of the tooth germ, and excessive growth of dental lamina, the main aetiological factor of hyperdontia has not been identified. Tooth development and formation involve various complex processes, including epithelial-mesenchymal transitions, that are precisely controlled by molecular signalling pathways at each developmental stage [4]. While singular and conical forms of mesiodens are not rare, tuberculate forms are, and they usually occur in pairs. Multiple supernumerary teeth can be an important component of distinctive disorders and a valuable clue for their early diagnosis. However, this case highlights the importance of non-hereditary factors in the pathogenesis of multiple supernumerary teeth in a non-syndromic patient.

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