

# Surgical management of a supplemental permanent maxillary tooth with mesiodens in a non-syndromic patient: a case report

## Abstract

Supernumerary teeth or hyperdontia are terms describing an excess in tooth number. It is an anomaly of developing dentition and has got multiple aetiologies. Mesiodens is the most common supernumerary tooth occurring in the palatal midline region. Supernumerary teeth, which duplicate the anatomy of normal dentition, are called supplemental teeth. This paper reports a rare non-syndromic case of a mesiodens associated with a unilateral, supplemental maxillary tooth and emphasizes the importance of thorough oral and radiographic examination and diagnosis of supernumerary teeth.

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Vivek Mehta,<sup>1</sup> Syed Ansar Ahmad<sup>2</sup>

<sup>1</sup>Department of Pediatric and Preventive Dentistry, Assistant Professor, Jamia Millia Islamia, India

<sup>2</sup>Department of Oral and Maxillofacial Surgery, Jamia Millia Islamia, India

**Correspondence:** Vivek Mehta, Department of Pediatric and Preventive Dentistry, Assistant Professor, Jamia Millia Islamia, India, Tel 91 9212024943, Email drvivekmehta1@gmail.com

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## Background

Supernumerary teeth are teeth present in addition to the normal sequence of primary or permanent teeth. It can occur in both the primary and permanent dentitions but is more commonly seen in permanent dentition. The incidence of supernumerary teeth is 1-3% and approximately 90-98% of supernumerary teeth occur in the maxilla. Males are affected twice as frequently as females.<sup>1</sup> Mesiodens is the most frequently occurring supernumerary tooth located palatal to the central incisors and conical morphology was found to be most common.<sup>2</sup> Quite a few theories have been proposed to explain the occurrence of supernumerary teeth, including the phylogenetic theory,<sup>3</sup> dichotomy theory,<sup>4,5</sup> hyperactivity theory<sup>6</sup> and a combination of genetic and environmental factors. Supernumerary teeth are morphologically classified as supplemental or rudimentary.<sup>1</sup> Supplemental or eumorphic supernumerary teeth duplicate the typical anatomy of posterior and anterior teeth, whereas rudimentary supernumerary teeth are dysmorphic and can presume conical forms, tuberculate form, molariform or odontome. They can also be classified as single or multiple. The aim of this report is to present a non-syndromic case of a 10 year old boy with a mesiodens associated with a unilateral supplemental permanent maxillary tooth and to emphasize the importance of early detection and diagnosis of multiple supernumerary teeth.

## Case presentation

A 10-year-old boy reported to the outpatient Department of Paediatric and Preventive Dentistry, with the chief complaint of an extra tooth in the upper left front tooth region. The family history of the child patient was non-contributory. Thorough intraoral examination revealed the presence of mixed dentition in both maxillary and mandibular arches and an extra tooth in the maxillary anterior region, palatal to left central incisor (Figure 1). Occlusal

radiograph revealed the presence of two extra teeth with fully formed crowns and root, lying palatal to maxillary central incisors (Figure 2). The patient himself was uninformed of the presence of this extra tooth. Orthopantomogram confirmed complete root configuration of two extra maxillary teeth (Figure 3). The erupted extra tooth elicited positive response to thermal and electrical pulp testing. The parents of the child patient gave no history of trauma. A systematic general body examination was carried out to rule out the presence of any signs and symptoms of an associated syndrome. Routine blood investigations were also done. A clinical and radiographic examination of both the extra teeth was done. It was noted that extra erupted tooth had roughly the same root measurements as that of a normal maxillary lateral incisor and crown morphology duplicating the maxillary canine. It was finally concluded that the tooth positioned palatal to the right maxillary central incisor was a conical supernumerary and tooth positioned palatal to left maxillary central incisor was a supernumerary of supplemental type. Based on the shape of supernumerary teeth, a final diagnosis of a case of mesiodens along with a non-syndromic unilateral supplemental permanent maxillary tooth was made.



Figure 1 A clinical image showing supplemental tooth.



**Figure 2** Maxillary occlusal radiograph showing supplemental maxillary tooth and mesiodens.



**Figure 3** Orthopantomogram showing supplemental maxillary tooth and mesiodens.

### Treatment

The supplemental tooth and the mesiodens were surgically extracted (Figure 4–6) under local anaesthesia uneventfully after obtaining parents' consent. Sutures were given; antibiotics, analgesics and anti-inflammatory drugs were prescribed and the child patient was discharged without any complications.



**Figure 4** A clinical image after extraction of supplemental tooth.



**Figure 5** Surgical flap raised to expose mesiodens.



**Figure 6** Extracted supplemental maxillary tooth and mesiodens.

### Outcome and follow-up

The patient was recalled after 5 days to remove the sutures and to see the healing status. The sutures were removed and the healing was uneventful. The patient was advised for a follow-up visit after 3 months.

### Discussion

Supernumerary teeth are tooth or tooth like structures in excess of the usual configuration of the normal number of deciduous or permanent teeth.<sup>7</sup> Although a lot of theories have been proposed to explain the development of supernumerary teeth, yet the exact aetiology remains obscure. The most accepted theory is the hyperactivity theory which proposes that supernumerary teeth are formed as a result of localized and independent hyperactivity of dental lamina.<sup>6</sup> Supernumerary teeth may be found in any region of the dental arch. In a study carried out by Rajab et al, it was demonstrated that supernumerary teeth were most frequently located in the maxillary incisor region with mesiodens accounting for 32.4% of such cases.<sup>8</sup> In most of the cases, the diagnosis of supplemental tooth is overlooked, because of its normal morphology. Moreover, most supplemental teeth remain unerupted, but in the present case it was erupted and not associated with any kind of complication. The occurrence of a unilateral supplemental tooth of normal morphology in maxillary arch is a rare finding and its presence along with a mesiodens is even rarer. The supplemental tooth duplicated the anatomy of anterior maxillary tooth. The anatomy of crown was roughly same as that of maxillary canine whereas the root duplicated the anatomy of maxillary lateral incisor as confirmed from the extracted tooth (Figure 6). Therefore, it can either be a supplemental maxillary lateral incisor or a supplemental maxillary canine. The presence of supernumerary teeth can cause both aesthetic as well as pathologic problems. Supernumerary teeth are related to complications such as diastema, loss of vitality and root resorption of adjacent tooth.<sup>7</sup> It can also cause delayed eruption of permanent teeth, dentigerous cyst formation and pericoronal space ossification.<sup>2</sup> Treatment of supernumerary teeth depends upon a lot of factors, i.e. type, location, possible complications, effect on adjacent soft and hard tissues and cooperation of the child patient. In the present case, surgery was planned as both the supernumeraries were located in the upper anterior zone and the child patient was 10 years old, as recommended by Rajab et al.<sup>8</sup> Supplemental tooth was extracted as its presence was causing aesthetic and functional interference along with oral hygiene maintenance. Moreover, it has been suggested that the tooth that is prominently displaced from the line of the arch can be extracted.<sup>9–11</sup> The non-erupted mesiodens was extracted as the incisor root development was complete. Furthermore, it had the potential of causing complications like development of odontogenic cyst or tumour, adenomatoid odontogenic tumor and odontogenic keratocyst. A detailed history and thorough clinical evaluation is essential to detect the presence and type of supernumerary teeth. Most of the supernumerary teeth are asymptomatic and are detected during

routine radiographic examinations. Hence it becomes imperative to have a radiographic examination of all paediatric patients done. Early diagnosis is of utmost importance as there is tendency for the presence of two supernumerary teeth in 23.1% of cases.<sup>12</sup> The presence of multiple supernumerary teeth may not be associated with any syndrome.<sup>13,14</sup> Bilateral supplemental permanent maxillary lateral incisors in the absence of any syndrome have also been reported.<sup>15</sup> Occlusal and periapical radiographs aid in localizing the supernumerary teeth in the incisor region, where they appear most commonly as suggested by Rajab et al and Mahboob et al.<sup>8,16</sup> Use of recent diagnostic aids such as cone-beam computed tomography (CBCT) with 3D imaging provides clear and three dimensional images and assist in exact location and successful management of supernumerary tooth as reported by Das et al.<sup>17,18</sup> Measurement on CBCT images should be considered as important by clinicians during the treatment planning to decrease the risk of complications.<sup>19</sup> Piezosurgery technique can be advocated to remove deeply impacted supernumerary tooth in the anterior maxillary region instead of conventional labial or palatal surgical approach. It limits the extent of surgical invasion and can be practiced as a minimally invasive and a safe surgical procedure.<sup>20</sup> In the present case the patient was explained about the newer diagnostic aids and surgical technique, but it could not be used as the patient was unable to afford them.

### Learning points

- Supernumerary/supplemental teeth are extra teeth found in primary/permanent dentition and may pose several aesthetic/functional/pathological problems.
- Exact aetiology of supernumerary/supplemental teeth formation still remains unknown.
- Supernumerary/supplemental teeth are most commonly located in maxillary anterior region and diagnosed during routine radiographic examination.
- As compared to conventional radiography, Cone-beamed computed tomography (CBCT) is more helpful and has greater potential for diagnosis and localization of dental elements because of its three dimensional images thereby reducing the failures in surgical procedures.
- Piezo surgery is a new and safe surgical procedure for treating suitably selected cases with a deeply impacted supernumerary tooth as it limits the extent of surgical invasion.

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### Conflicts of interest

The authors declare that there is no conflict of interest.

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