

Management of Pathological Sequelae of Supernumerary Teeth: Report of Two Cases

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ABSTRACT

Aim: Supernumerary teeth may remain asymptomatic or may produce certain pathological effects e.g. interference in eruption, rotation and proclination of permanent teeth and cystic involvement etc. The aim of present case report is to make the clinician aware for careful clinical as well as radiographic examination, so that steps can be taken at the earliest to prevent any pathological effects on the permanent teeth.

Summary: A supernumerary tooth is one that is additional to the normal series and can be found in any region of the dental arch. The most common location of supernumerary teeth is at the premaxillary regions. Mesiodens is the most common type of supernumerary tooth found in the premaxilla between the two central incisors. They can be conical, tuberculate or molariform. These teeth may cause pathological conditions such as failure of eruption, displacement and rotation of permanent teeth. Sometimes cyst formation has also been reported. Therefore, these supernumerary teeth should be evaluated at the earliest and treated accordingly.

Keywords: Mesiodens, Orthodontic management, Supernumerary.

INTRODUCTION

Tooth development is a continuous process in which a number of physiologic growth processes and various morphologic stages interplay to achieve the tooth's final form and structure. The physiological processes involved in tooth development are; initiation, proliferation, histo-differentiation, morpho-differentiation, apposition and calcification.¹ Initiation

represents the beginning of formation of the dental lamina and tooth bud from the oral epithelium. Interference with the stage of initiation, a momentary event, may result in single or multiple missing teeth (anodontia, oligodontia or hypodontia) or supernumerary teeth (also called hyperdontia).²

A supernumerary tooth is one that is additional to the normal series,³⁻⁶ and can be found in almost any region of the dental arch.^{3,7-11} They have been described in both primary and permanent dentitions.^{3,7,8} Supernumerary teeth may be single, multiple, unilateral or bilateral, erupted or unerupted and in one or both jaws.^{6,8,10-12} Supernumerary teeth are a relatively frequent disorder of odontogenesis characterised by an excess number of teeth.^{13,14} The etiology of supernumerary teeth remains unclear.⁷⁻⁹ It was originally postulated that mesiodens represented a phylogenetic relic of extinct ancestors who had three central incisors.^{14,15} Anomalous proliferation of the external epithelial layer of the enamel has been proposed as one of the etiological factors.^{13,14} Genetics are also thought to contribute to the development of mesiodens as such teeth have been diagnosed in twins, siblings and sequential generations of a single family.^{14,16} Supernumerary teeth can be formed due to presence of extra tooth bud, hyperactivity of dental lamina or hereditary tendency.^{8,17} There seems to be a racial variation in the prevalence of supernumeraries with a frequency higher than 3% in Mongoloid races.¹⁸ The prevalence of supernumerary teeth ranges from 0-10% to 3.6% in permanent dentition and 0.02% to 1.9% in the primary dentition.¹⁶

The most common location of supernumerary teeth is at the premaxillary region^{2,5,12,19,20} and it may cause pathological conditions such as failure of eruption, displacement and rotation of maxillary incisors.^{2,13,20}

Classification: Supernumerary teeth may be classified according to morphology and location as;¹⁹ *Conical:* Small peg-shaped conical tooth is the most common supernumerary found in the permanent dentition. e.g. mesiodens; *Tuberculate:* Larger in size than conical tooth, possesses more than one cusp or tubercle; *Supplemental:* Refers to duplication of teeth in normal series and is found at the end of a tooth series. Singla and Negi reported a case with bilateral supplemental maxillary lateral incisors;¹⁹ and *Odontoma:* It

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refers to a hamartomatous malformation. Two separate types have been described; the diffuse mass of dental tissue which is totally disorganised is known as a complex composite odontome whereas the malformation which bears some superficial anatomical similarity to a normal tooth is referred to as a compound composite odontome.³

CASE REPORTS

Case 1:

A nine year old boy reported to the Department of Pedodontics and Preventive Dentistry, JCD Dental College, Sirsa, with a chief complaint of absence of upper front tooth on right side (Fig. 1). There was no history of trauma. The parents were aware of the loss of milk tooth in that region 7-8 months earlier. On examination, in the maxillary arch,

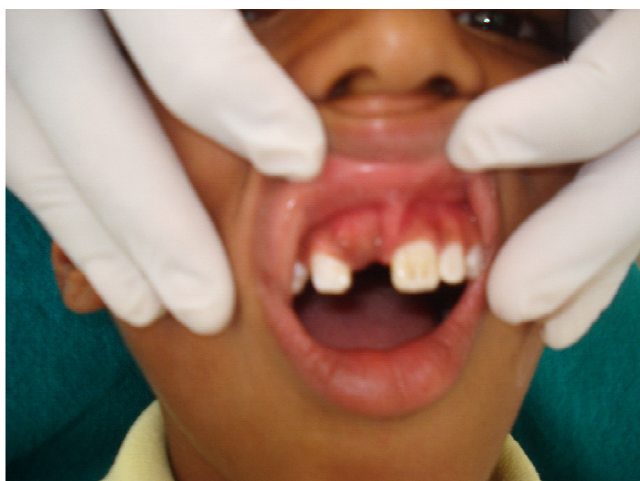


Figure 1: Showing non-eruption of right maxillary permanent central incisor



Figure 2: Preoperative Radiograph

permanent teeth erupted were 16, 26, 12, 21, 22. But 11 had yet not erupted in the oral cavity. The intra-oral periapical radiograph revealed the presence of supernumerary tooth in the concerned area (Fig. 2). The supernumerary tooth was removed under local anaesthesia. After one year the patient reported with non-eruption of the right maxillary permanent central incisor. Then the tooth was surgically exposed and orthodontically moved to the desired location (Fig. 3 and 4). The treatment time was approximately 6-7 months.



Figure 3: Surgical exposure and orthodontic movement of the impacted tooth

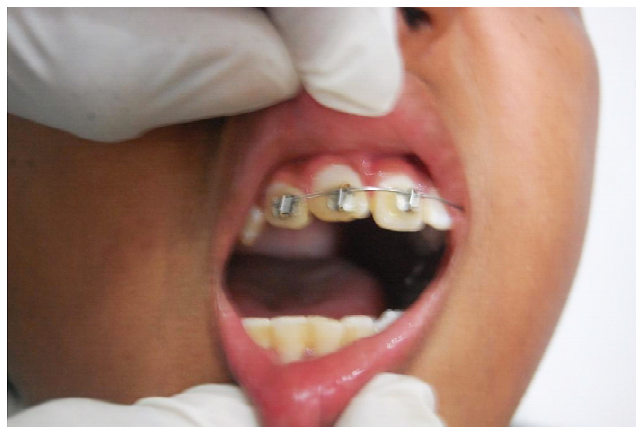


Figure 4: Orthodontically moved impacted tooth

Case 2:

Another boy eight year old reported with a chief complaint of occasional pus discharge from the left upper front teeth region. History revealed that inspite of repeated course of antibiotics the patient was not relieved. Intra-oral examination revealed that the left maxillary central and lateral incisors had not erupted. A panoramic radiograph revealed the presence of two additional teeth (Fig. 5). One on left side lying just apical to permanent maxillary central incisor and the other one, on the right side between the central and lateral incisors. The extra tooth on the left side was similar to incisor in shape



Figure 5: OPG depicting the presence of two additional teeth.

(supplemental), whereas that on right side was conical (supernumerary). The supplemental tooth on the left side was surrounded by an irregular radiolucency. A provisional diagnosis of dentigerous cyst was made.

The cyst along with the supplemental tooth was removed under local anaesthesia (Fig. 6). Routine histopathological examination of the enucleated mass confirmed the diagnosis of a dentigerous cyst involving the supplemental tooth. The histopathology shows a thin connective tissue wall with a thin layer of stratified squamous epithelium lining the lumen (Fig 7). After 6 months of the removal of the cyst the patient remained asymptomatic. There was no pus discharge. As the patient was asymptomatic, the patient and parents were not ready for extraction of the supernumerary tooth on the right side.



Figure 6: Supplemental tooth alongwith cyst.

DISCUSSION

Supernumerary teeth are considered to be one of the most significant dental anomalies affecting the primary and early

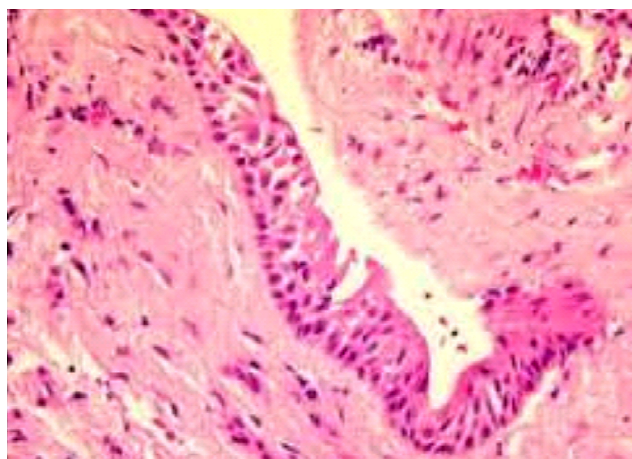


Figure 7: Histopathology of the enucleated mass

mixed dentition.¹⁶ According to Fazliah supernumerary teeth may remain embedded in the alveolar bone or can erupt into the oral cavity.²¹ Effects of supernumerary teeth on the developing dentition vary. There may be no effect with the supernumerary tooth or teeth discovered either as a chance radiographic finding or following their eruption.¹⁰ Crowding may be evident due to an increased number of erupted teeth. The supernumerary or adjacent teeth may be displaced and ectopic eruption of either is also not uncommon.

Supernumerary teeth may also cause diastema, root resorption, malformation such as dilaceration, and loss of vitality of adjacent teeth.²² Srivatsan *et al.*¹⁴ reported a mesiodens with unusual morphology and multiple impacted supernumerary teeth in absence of any syndrome. Maxillary anterior supernumeraries are of great concern due to problems caused by them e.g. delayed eruption, aesthetic problems, interference in occlusion and cystic involvement.¹⁰ Tay *et al.*¹⁸ reported that 74 to 93 percent of the maxillary anterior supernumeraries were accompanied with a disruption of some kind of eruption and occlusion of the permanent incisors. Tsi *et al.*⁴ observed that premaxillary supernumerary teeth may interfere with normal occlusal development in mixed dentition stage and cause some pathological complications later in the permanent dentition stage.²³ Verma *et al.*¹⁰ reported proclination of maxillary central incisor due to presence of mesiodens. Mopager *et al.*²⁴ reported local irregularities in form of rotation of adjacent premolars and labial eruption of canine. Displacement or rotation of permanent teeth were also reported by Hattab *et al.*² and Giacotti *et al.*¹³ Nik-Hussein²⁵ reported a high proportion of patients (37.9 percent) had delayed or failure of eruption of permanent teeth and 24.1 percent had rotation or displacement of permanent teeth. Other effects observed were median diastema and cystic changes around the unerupted supernumerary tooth.

Ersin *et al.*¹⁶ suggested that delayed, ectopic or asymmetric eruption of the central incisors should alert the clinician to

the possibility of a mesiodens. Hattab *et al.*² reported impactions of permanent teeth and diastema formation. Failure of eruption of adjacent permanent teeth, as impaction of tooth 11 was seen in case 1 is the most frequent occurrence and occurs in 30 to 60 per cent of cases.^{2,10,18,22,25-27} Various authors^{2,10,18,22,25-27} have reported disturbances in eruption of permanent teeth caused by supernumerary teeth. Gallas and Garcia²² suggested surgical removal of bone to facilitate the rapid eruption of the permanent incisors. Cangialosi²⁶ used combination of conservative surgical treatment and careful orthodontic management to move the impacted incisor to the desired position. Similarly, in case 1 also careful surgical removal of the bone and orthodontic management was done.

Dentigerous cyst associated with mesiodens was reported by Dinkar *et al.*²⁸ and Grover *et al.*²⁹ Dentigerous cyst is the second most common odontogenic cyst and is characteristically related to the crown of an unerupted tooth.²⁹ Similarly, in the present case 2 the extra tooth was associated with dentigerous cyst. About 95% of dentigerous cysts involve the permanent dentition and only 5% are associated with supernumerary teeth.²⁹ Surgical removal is the treatment of choice for dentigerous cysts as was performed in the presented case. Because of the potential for occurrence of an odontogenic keratocyst or the development of an ameloblastoma or mucoepidermoid carcinoma, histopathological examination is must for all such lesions.³⁰

Hansen and Kjaer²⁷ demonstrated other dental abnormalities within the premaxillary region in conjunction with supernumerary tooth e.g. invaginations on permanent incisors, resorption of roots of incisors, curved roots of incisors, delayed eruption, and delayed formation of roots.

Early removal of these teeth is required so that complications such as delay in eruption of permanent teeth, crowding, diastema, rotations and certain pathologic conditions can be averted.⁷ Supernumerary teeth should be examined very carefully to prevent possible effects on adjacent regular teeth and possible cystic development in children.³⁰

Koch *et al.*²⁰ concluded that supernumerary teeth in the premaxilla may cause pathological conditions. However, each case must be considered individually concerning surgical treatment, and if no retention of permanent teeth or pathological conditions are present, observation with regular radiographic assessment.

According to Nayak *et al.*³¹ not all supernumerary teeth require extraction. If it is asymptomatic, it can be left in situ and kept under observation. Clinical and radiographic identification of all the teeth is very important for a good treatment planning.^{10,14} According to Russell and Folwarczna³² early diagnosis of a mesiodens minimizes the treatment required and prevents development of associated problems. Extraction

of the mesiodens in the early mixed dentition stage may facilitate spontaneous eruption and alignment of incisors, while minimizing intervention, space loss and midline shift.

CONCLUSION

Supernumerary teeth are the teeth found in excess of normal number of teeth. These teeth may be single or multiple, unilateral or bilateral, erupted or unerupted. They may remain asymptomatic or may produce certain pathological effects e.g. interference in eruption of permanent teeth, diastema formation, rotation and proclination of permanent teeth, cystic involvement etc. Supernumerary teeth should be examined carefully both clinically as well as radio-graphically. If asymptomatic, can be left as such and checked periodically, but in case they are causing some pathological effects the extraction is the immediate treatment.

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