Supernumerary deciduous teeth with multiple maxillary impacted mesiodens: A case report

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Abstract
Maxillary impacted mesiodens are frequently encountered in pediatric dentistry. Much research has been conducted concerning their incidence, position, and form. Supernumerary teeth erupting in the primary dentition with maxillary impacted mesiodens are very rare. In January 2011, a nine-year-old boy presented for dental treatment and was found to have supernumerary deciduous teeth. Upon panoramic radiography, multiple impacted mesiodens were found; therefore, computed tomography (CT) was performed for further examination. One month later, the boy was referred to our department for extraction of the deciduous supernumeraries and impacted mesiodens. We suspected that these supernumeraries, mesiodens, and remaining primary teeth would lead to problems with the eruption of the permanent teeth. Therefore, by ascertaining the exact position of the mesiodens and the successional permanent teeth using CT, extraction was performed under general anesthesia in March 2011 without any error. Six months postoperatively, panoramic radiographs showed no superfluous structure that appeared to be a tooth. We suggest that when multiple maxillary impacted mesiodens are found, their exact positions can be located using CT before extraction.

Key words
Computed tomography, Multiple maxillary impacted mesiodens, Supernumerary deciduous teeth

Case Report

In January 2011, a nine-year-old Japanese boy with a chief complaint of mobility of the primary central incisors was referred to the pediatric dental department of our college hospital for dental treatment.
He presented with an eruption of supernumerary deciduous teeth in the primary dentition (Figs. 1a, b). Intra-oral and panoramic radiographs revealed multiple maxillary impacted mesiodens (Fig. 1c); hence computed tomography (CT) was performed for further examination. A pedodontist suspected that problems would arise with the eruption of his permanent teeth. The patient was referred to our department for extraction of the supernumerary teeth in February 2011. He had no significant medical history and his general condition was good. Family history included extraction of maxillary impacted mesiodens in his sister, but no supernumerary primary teeth were present in her. The patient was of medium build and his nutritional state was good. There were no significant extraoral findings. Intraoral examination revealed that the following teeth were present: (16, 55, 54, 53, 52, 51, 61, 62, 63, 64, 65, 26; 31, 32, 73, 74, 75, 36; 41, 42, 83, 84, 85, 46)  

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In the maxilla, there was bilateral eruption of supernumerary primary teeth between the primary central and lateral incisors. The right primary central and lateral incisors and the left primary central incisor showed grade 2 mobility. A torus near the frenulum of the upper lip was evident on touch that we suspected to be a maxillary impacted mesiodens. We did not find any torus or inflammation on the palatine mucosa.
CT revealed few high-density tooth-like structures (Figs. 1d, e). Three tooth-like high-density structures were visible on the palatal side of the crowns of the upper central incisors on the CT image. The middle one of the three was invertedly and impacted. Another high-density tooth-like structure was visible between the primary dentition and the floor of the nasal cavity. This structure was also invertedly and impacted. Two maxillary impacted mesiodens were in contact with the incisive foramen. We suspected that one of the maxillary impacted mesiodens, seen between the crowns of the left upper central and lateral incisors, was touching the two incisors. Another maxillary impacted mesiodens on the labial side did not appear to be in contact with the nasal cavity.

Our diagnosis was late-stage remaining bilateral upper central and lateral incisors, supernumerary deciduous maxillary teeth, and multiple maxillary impacted mesiodens, and we decided to extract them under general anesthesia (Fig. 2). At six months postoperatively, radiography showed no superfluous
structure that appeared to be a tooth (Figs. 3a–c).

**Discussion**

In humans, the number of each type of a tooth is pre-determined but can be occasionally more than usual. In such rare cases, the extra teeth are described as supernumerary teeth. Supernumerary teeth are generally found less often in the primary dentition compared to the mixed or permanent dentitions. Even when supernumerary teeth are found in the deciduous dentition, they are almost always mesiodens. Bolk stated that when distinguishing supernumerary permanent teeth from supernumerary primaries, firstly, in almost all cases, the form of the primary supernumeraries is normal, and, secondly, they appear in the primary dentition. However, supernumerary teeth can be difficult to distinguish on this basis alone. All related factors, such as position, and timing of eruption, tooth form, condition of the pulp cavity, tooth color, progress of caries, occlusal wear, formation and absorption of the root, degree of calcification, and age of the patient must be taken into consideration. In our case, the form, color, and root formation of the right upper supernumerary primary teeth were similar to those of the left upper primary lateral incisor, and the form and color of the left upper supernumerary primary teeth were similar to those of the right upper primary lateral incisor. The left upper supernumerary primary teeth were longer than the right upper primary lateral incisor, but the root forms were similar. Further, since both of the upper supernumeraries had erupted at the same time as both primary lateral incisors in the primary dentition, we diagnosed them as supernumerary primary teeth.

The incidence of supernumerary primary teeth is very low. Miyoshi et al. studied the difference in incidence between Japanese and non-Japanese patients using epidemiology reports of supernumerary primary teeth. They reported that while the incidence of supernumerary teeth in Japan is 0.01% to 0.11%, in other countries it is 0.23% to 0.64%; thus, the reported incidence is lower in Japan than in other countries. Further, they reported significant differences between Japanese and Caucasians, and between Japanese and Chinese. Since it is difficult to distinguish between supernumerary primary and permanent mesiodens in the primary dentition, they excluded mesiodens from their study. There are many
Supernumerary primary teeth almost always appear as maxillary incisors between the primary central and lateral incisors or between the lateral incisor and canine. They tend to appear more often on the right side than on the left. In our case, the patient had supernumerary primary upper lateral incisors bilaterally present between the primary lateral incisors and canines. In addition, we found maxillary impacted mesiodens and used CT to establish their exact positions. When there are only one or two maxillary impacted mesiodens, it is possible to ascertain their approximate position using occlusal radiography, but in cases with multiple maxillary impacted mesiodens and tooth buds, their exact positions need to be established using CT. Further, since the colors of erupted teeth in the primary dentition and maxillary impacted mesiodens are similar, using CT to locate their exact positions should help to avoid erroneous extractions.

Grahnen reported the existence of tooth buds of the permanent successors of supernumerary primary teeth, also present in our case, in 30% of cases. They were also present in our case.

There are numerous reports describing the effects of supernumerary teeth on the dentition. These effects include malocclusion, median diastema, rotation or displacement of incisors, delay in eruption, and cyst formation. In particular, it is well known that supernumerary teeth cause diastema; however, this was not observed in the present case. It is also well known that the presence of supernumerary teeth can cause difficulties with brushing and cleansing, leading to caries, but there were no such difficulties in this case. There is much variation in reports concerning the timing of extraction of supernumerary teeth. Sanders and Vermeeren suggested waiting until after permanent root formation. We believe that if supernumerary teeth do not lead to rotation or displacement of permanent incisors and delay in eruption of permanent teeth, it is not necessary to extract them. In our case, we were concerned that the remaining primary teeth, supernumerary teeth, and multiple impacted mesiodens would lead to problems with the eruption of permanent teeth and therefore decided to extract them. In addition, using this method, we were able to avoid damage to the tooth buds of the permanent successors during extraction.

**Conclusion**

We suspected that the remaining primary teeth and mesiodens would lead to difficulties in the eruption of permanent teeth and decided to extract them. By ascertaining the exact position of the mesiodens and the successional permanent teeth using CT, we were able to extract without error. We suggest that when multiple maxillary impacted mesiodens are found, their exact positions can be located using CT before extraction.

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**References**