

Case Report

# Congenitally missing lower primary canine, anomalous lower primary first molar and impacted supernumerary premolar in one dental arch

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**Abstract** A rare case is presented in which a congenitally missing primary canine, an abnormally formed primary first molar and an impacted supernumerary premolar were found in the same lower left quadrant. The patient was a Japanese girl aged 2 years and 10 months. After 4 years of observation, when the girl was 6 years 2 months old, the abnormal first primary molar and the impacted supernumerary tooth were extracted to avoid disturbance of the developing lower first premolar. The extracted teeth were examined microscopically. The first primary molar seemed to be a fusion of a normal first primary molar with a small coronal tooth. Thus the supernumerary premolar seemed to be a successor of the coronal tooth. When the patient was 8 years 1 month old, the lower left permanent canine began to erupt; its shape was normal.

**Key words**

Abnormal tooth form,  
Congenitally missing,  
Primary canine,  
Supernumerary premolar

## Introduction

Congenitally missing teeth, supernumerary teeth and fused teeth are dental anomalies frequently observed in primary or permanent dentition. As reported in the Japanese literature<sup>1-6)</sup>, the prevalence of congenitally missing primary teeth ranges from 1.7% to 2.38%. The most commonly missing primary tooth is the lower lateral incisor and upper lateral incisor. The prevalence of missing primary canines is much lower in the primary dentition.

Anomalies of tooth shape in primary dentition (double teeth or paramolar tubercle, etc.) are found in a relatively large number of patients. Double teeth of primary molars are very rare. Almost all primary double teeth are located in the anterior mandibular arch, about 90% of which concern the lateral incisor-canine<sup>7)</sup>. Supernumerary teeth are usually found in the maxilla (90-98%) and rarely in the mandible. Stafne (1932) examined 500 supernumerary teeth and

found 33 cases (6.6%) in the mandibular premolar region<sup>8)</sup>.

Several case reports have described supernumerary mandibular premolars<sup>9-13)</sup>. However, there have been few reports on supernumerary premolars found in the period of the primary dentition.

Although many case reports about these dental abnormalities have appeared, we could not find a case in which three anomalies were found in a single lower left quadrant.

This report describes a rare case of a congenitally missing lower primary canine, an anomalous lower primary first molar and an impacted supernumerary premolar all in one dental arch.

## Case report

A Japanese girl, aged 2 years 10 months, was brought to our clinic because of the absence of a left lower primary canine. Her medical history was uneventful and she had never experienced oral injury. Intra-oral examination revealed that all primary teeth had erupted except the lower left primary canine. The

Received on February 12, 2003

Accepted on May 6, 2003

neighboring primary first molar was composed of a mesial and a distal crowns. The buccal and lingual sulcuses were seen between them. The mesiodistal width of the adjacent lower left primary lateral incisor was the same as that of the contralateral incisor (Fig. 1). Radiographically, an impacted

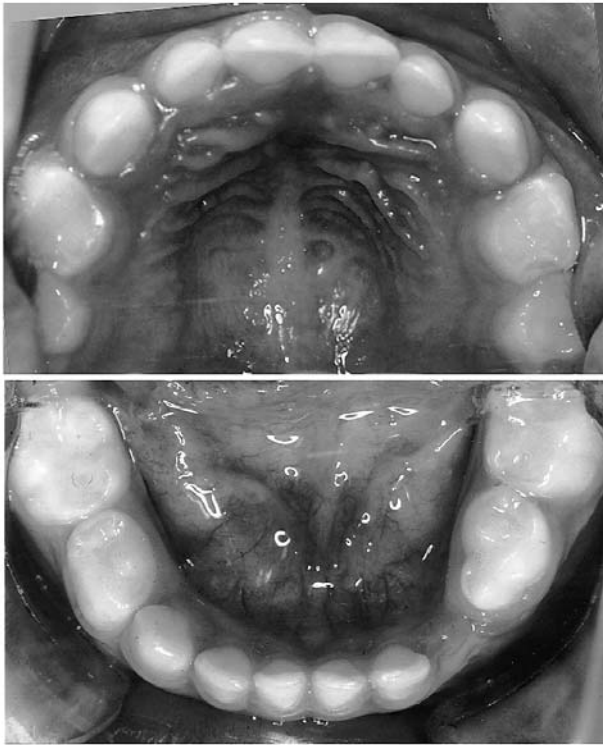


Fig. 1 Oral photographs at the age of 2 years 10 months, the lower left primary canine was absent and the first primary molar had abnormal form.

supernumerary premolar was found under the mesial root of the left primary first molar (Fig. 2). The lower left permanent canine and the first premolar were developing in the mandibular bone.

As the patient was 2 years 10 months old, she was kept under observation. When she was 6 years 2 months old, the lower first primary molar and the impacted supernumerary premolar were removed surgically to avoid disturbances to the eruptions of the permanent lower canine and first premolar (Fig. 3). After the wound healed, a removable space maintainer was applied. When she was 8 years 1 month old, the lower left permanent canine began to erupt and the removable space maintainer was



Fig. 2 Radiograph of lower primary molar region at the age of 2 years 10 months. Supernumerary tooth germ (arrow) was observed under the mesial root of the left primary first molar.

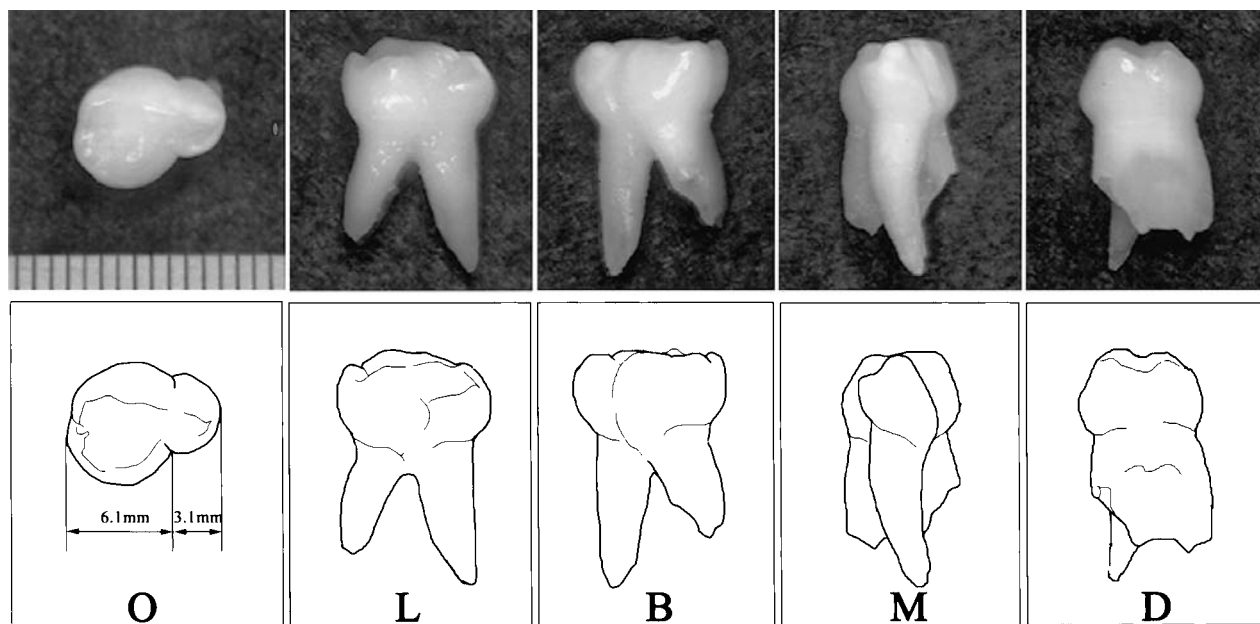


Fig. 3 Panoramic radiograph at the age of 6 years 2 months showing the developed supernumerary premolar (arrow)

replaced by a lingual arch. The lower left permanent canine was normally shaped. She later moved to another city, so we could not follow her prognosis.

The extracted teeth were examined macroscopi-

cally and then dehydrated with a graded ethanol series and embedded into polyester resin. They were sliced in the mesiodistal direction using an automatic cutter, and the slices were ground manually into



(O: occlusal side, L: lingual side, B: buccal side, M: medial side, D: distal side)

Fig. 4 Extracted mandibular left primary molar

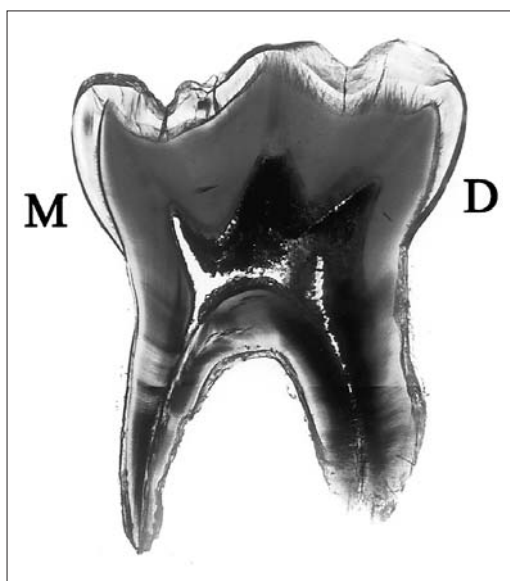


Fig. 5 Ground section of the extracted mandibular left primary molar

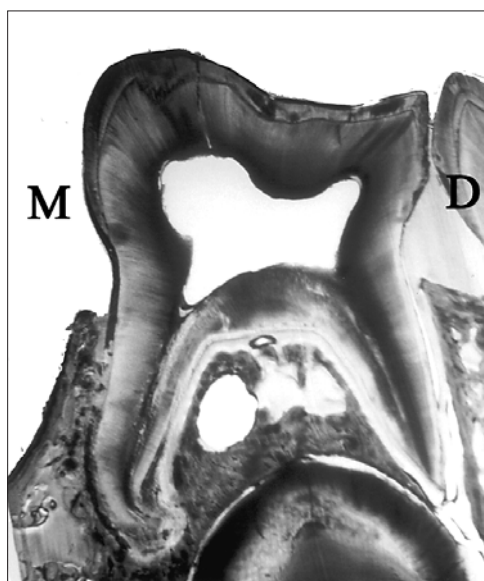


Fig. 6 Mesiodistal ground section of the normal lower first primary molar

(Tomizawa, M.: Observations of the pulp chamber in deciduous molar teeth—Studies on deciduous molar teeth of the Indian children's dry skulls—. *Niigata Dent J* 13: 79-99, 1983.)

particles about 80 $\mu$ m, which were examined under a light microscope.

Figure 4 shows the extracted lower left first primary molar. The mesiodistal width of the crown is 9.2 mm (the contralateral lower primary first molar was 7.9 mm). The crown consisted of two parts: the mesial part looked like a small crown and the distal part was like a lower first primary molar. Both parts had a buccal and a lingual cusps. The mesiodistal width of the mesial crown was 3.1 mm, and that of the distal part was 6.1 mm.

The lower left first primary molar had two mesial and distal roots. The distal root was wider than the mesial root from the distal view, and the horizontal section had a flat compressed form. The mesial root had a conical shape and connected with the mesial crown and one-third of the distal crown.

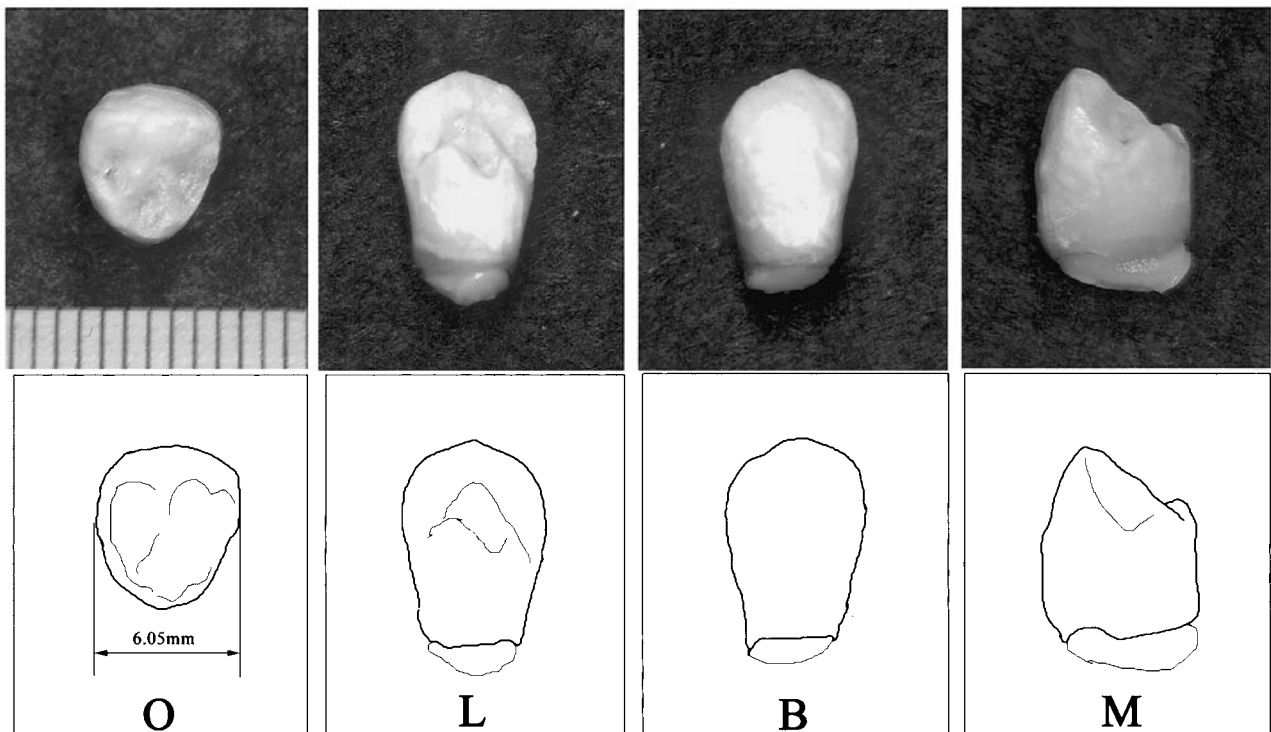
Figure 5 shows the mesiodistal ground section of the lower left primary first molar. No abnormality was observed through an enamel prism with regard to the thickness and appearance of the arrangement. The pulp chamber had three pulp horns under each cusp. In contrast, usually a mesiodistal ground section of a lower first primary molar has only two pulp horns, as shown in Fig. 6<sup>14)</sup>. So the mesial pulp horn

in Fig. 5 was coincidental with the mesial tooth crown.

Figure 7 shows the extracted supernumerary tooth. The shape of the crown was an inaccurate triangle. There were two cusps; the shorter one was two-thirds the height of the larger. The shape of the supernumerary tooth resembled a permanent first premolar. The root of the tooth was not developed.

### Discussion

In our clinical pediatric dentistry work, we often encounter abnormalities in the number of teeth, whether supernumerary teeth or an absence of teeth. Table 1 shows the prevalence of congenitally missing primary teeth and primary canines as reported in the literature. The prevalence of congenitally missing primary teeth ranges from 0.4 to 2.38%<sup>1-3,6,15,16)</sup>. Almost all missing teeth are those of the anterior region (lower lateral or central incisors and upper lateral incisors). However, the frequency of absent lower primary canines is lower than that of other missing anterior teeth. Congenitally missing primary canines are reported in three studies, with the following incidences: three primary canines in



(O: occlusal side, L: lingual side, B: buccal side, M: medial side)

Fig. 7 Extracted supernumerary premolar

1,795 children<sup>15)</sup>, one lower primary canine in 1,173 children<sup>16)</sup> and three primary canines in each maxilla and mandible in 2,733 children<sup>6)</sup>.

There are various kinds of tooth-shape anomalies, such as fused teeth, peg-shaped teeth, supernumerary cusps and paramolar tubercles. Fused teeth are most likely to be seen in the primary dentition. The most common fusions are those between lower primary central incisors and lateral incisors or lower primary lateral incisors and canines. Double primary molars are very rare, and a few double primary molars have been reported in syndromes<sup>17-19)</sup>.

In the present case, the lower left primary first molar showed enlarged mesiodistal width as compared with the right primary first molar. It looked like a fusion of the lower first primary molar and mesial small tooth. The patient's lower primary canine was congenitally missing, but the mesial crown of the lower left primary molar had two cuspids and differed in shape from the canine. So it is thought that the abnormal tooth shape is not that of a paramolar tubercle but that of a double primary tooth. In addition to considering the shape of the mesial part, it is hard to think the fusion between the primary canine and the primary first molar. This double tooth may be a fusion between the supernumerary primary tooth and primary first molar. It may be that the supernumerary premolar was a succedaneous tooth of the supernumerary primary tooth, because it is located just under the mesial root of the first primary molar and because both had two cuspids.

The reported prevalence of supernumeraries in the permanent dentition was 0.1 to 3.8% in the general Caucasian population and higher than 3% in Mongoloid racial groups, according to Rajab's<sup>20)</sup> review of the literature. The majority of supernumeraries are found in the maxilla (90-98%), with

90% of these being located in the premaxilla region. The next most common site is the molar or premolar region, with a slight difference between them according to the authors<sup>9)</sup>. Non-syndromatic multiple supernumerary teeth occurred predominantly in the mandibular premolar region. Rajab *et al.*<sup>20)</sup> surveyed 202 supernumerary teeth in 152 children, and found eight teeth (4%) in the mandibular premolar region and one case having four supernumerary teeth. Stafne<sup>8)</sup> reported a 0.059% prevalence of supernumerary mandibular premolars among all patients (general population), and a 6.6% prevalence among all supernumerary teeth<sup>8)</sup>. In Japanese adults, the prevalence of erupted supernumerary mandibular premolars has been reported between 0.003% and 0.069%<sup>21)</sup>. Supernumerary premolars are usually found in the mixed or permanent dentition and sometimes have been reported as late-developing supernumerary premolars<sup>9)</sup> (at the ages of 14 and 12 years).

In our case, the impacted supernumerary premolar was detected in early childhood, and the patient showed several tooth anomalies in the same lower quadrant.

When impacted premolars are found, the decision about whether to remove or monitor them must be made. After a period of observation, we extracted the first primary molar and the supernumerary premolar. The first premolar showed normal development.

### Conclusion

We presented a case in which the lower left primary canine was missing and the crown of the lower left primary first molar had a supernumerary mesial crown. It seemed to be a supernumerary tooth that was fused with the primary first molar. An impacted supernumerary premolar had developed right under

Table 1 The prevalence of congenital missing of primary canine

Author (s)	Country	Year	Size of material	Age range	prevalence of congenital missing	
					primary dentition (%)	primary canine
Clayton <sup>15)</sup>	U.S.A	1956	1,795	3-5	4.57 (82/1,795)	3/1,795
Grahnén <sup>16)</sup>	Sweden	1961	1,173	3-5	0.4 (5/1,173)	1/1,173
Mayanagi <sup>1)</sup>	Japan	1985	1,509	3	1.8 (27/1,509)	0
Hamada <sup>2)</sup>	Japan	1985	1,024	—	1.8 (18/1,024)	0
Ishida <sup>3)</sup>	Japan	1990	976	—	1.7 (17/976)	0
Yonezu <sup>6)</sup>	Japan	1996	2,733	2-3	2.38 (65/2,733)	3/2,733

this supernumerary crown. Thus we suggest that the supernumerary premolar might be related to this supernumerary crown.

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