

What is that: a tooth with a supernumerary cusp?

Commonly, the maxillary molar has four cusps. Look at yours with each other, and you can get it. Supporting that there are more than four cusps in maxillary molar, how to diagnose it? Why did it happen? What can we do for it? Recently, we found a rare case of supernumerary cusp on the bucca of left maxillary second molar, which was diagnosed by Cone Beam Computed Tomography (CBCT), a kind of imaging examination that can provide three-dimensional images. Moreover, many other dental abnormalities such as fused tooth, geminated tooth, and concrescence tooth were differentiated from it.

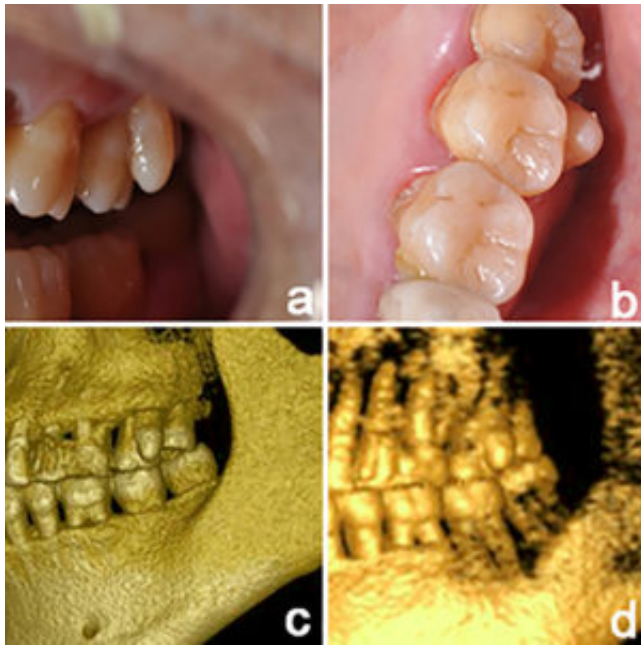


Fig. 1 Intraoral photograph and the 3D images of CBCT. a. On buccal view of the tooth, the projection extend nearly, but not reach its occlusal surface. b. On occlusal view of the tooth, four cusps with normal shape and size are observed. c. The 3D reconstruction image shows that the projection on the distal bucca of cervix extending coronally. d. Image obtained by digital subtraction technique reveals that the base of projection is connected with the distal buccal root.

A 36-year-old male patient is reported who attended clinic of dentist's. The intraoral presentation revealed that left maxillary second molar was abnormal, and there was a projection like cusp on the distal bucca of cervix (Fig. 1a). However, the shape and size of the tooth are all normal regardless of the projection (Fig. 1b). Common x-ray of the second molar revealed three roots that were generally normal in shape and size, but the image of crown was not so clear because of overlapping, and the patient hence underwent CBCT scan later on. The image obtained by modern 3D reconstruction technique revealed the projection from any direction (Fig. 1c, Fig. 1d), for that, it

was observed that the base of projection was connected with the distal buccal root (Fig. 2a₁₋₆). The projection was integrated with tooth, and there was a pulp horn stretching into the projection (Fig. 2b₁₋₆).

The dental abnormality was not so easy to diagnose due to complex structure. There are several dental abnormalities need to differentiate with each other. Fused tooth is the union of two or more developing contiguous dental germs resulting in union of teeth, as a result, the dental abnormality will appear to be oversize crown or root. Geminated tooth is defined as a single tooth bud to divide, and it is a deformity with a large bifid crown and a single root. Concrescence tooth is an anomaly defined as the union of root surfaces from two or more adjacent teeth. Therefore, these diagnoses were all denied. The case was thereafter diagnosed to supernumerary cusp based on above files. The mechanism of the phenomena might be related to the number of developmental lobe, local hyperplasia of enamel organ, and other external factors. The treatment plans were given to the tooth that let it alone temporarily, and root canal treatment and crown restoration should be applied when it occurs such as pulp exposure, pulp infection, and discomfort by the cusp.

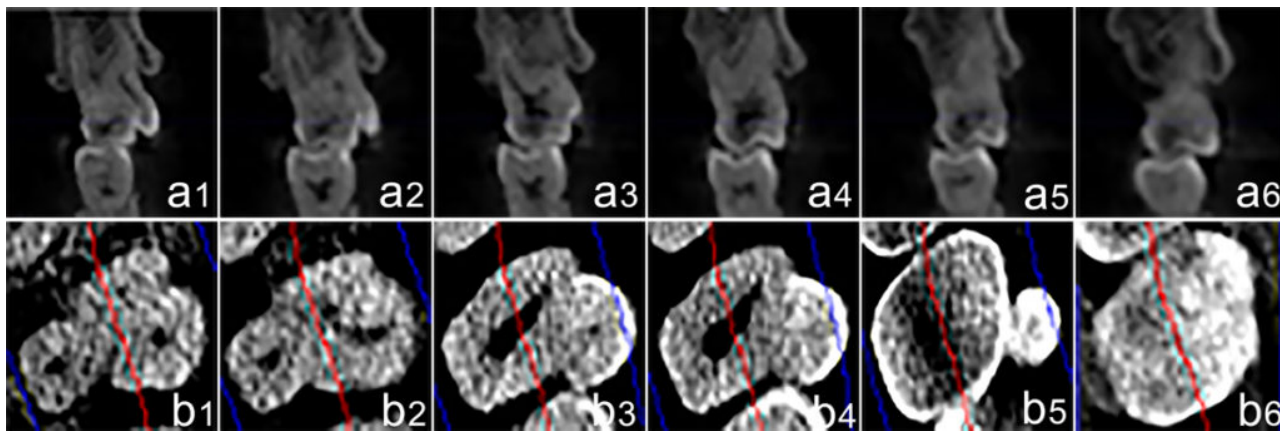


Fig. 2 The saggital planes and transverse planes of left maxillary second molar from mesial surface to diatal surface. From a1 to a6 show that dentin of the projection is integrated with that of cervix and a pulp horn stretch into the projection. b1 is the images of three canals. b2 is the junction of two buccal canal orifices. b3 shows that three canals all import pulp chamber and the projection appear with enamel integrated with that of tooth. b4 shows that the pulp horn of the projection disappear. b5 indicates that the enamel of projection separate from that of tooth. b6 means that the projection disappears.

In conclusion, the diagnosis of supernumerary cusp on the bucca of left maxillary second molar was confirmed by CBCT. At present CBCT has been widely applied to many aspects in dentistry. Hence, there is no doubt that CBCT is being an important approach to the diagnosis and antidiastole in oral clinic.

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[Precision diagnosis and antidiastole on supernumerary cusp of tooth by CBCT.](#)

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