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## Case Report

# ***Dens Evaginatus* on Occlusal Surface of Maxillary Second Molar: A Case Report**

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## **Abstract**

*Dens evaginatus* is a rare dental anomaly characterized by the development of a tubercle on the occlusal surface of the tooth and can cause pulpitis, pulp necrosis, and periapical periodontitis due to tubercular fracture or attrition. Unlike with caries, pain caused by *dens evaginatus* may manifest itself in a distant location. Therefore, diagnosing the cause of that pain may prove problematic. *Dens evaginatus* usually occurs in the mandibular premolars. We report a successfully treated case in which *dens evaginatus* was difficult to diagnose due to distant radiation of pulpitis-induced pain. This pain occurred as a result of fracture of a tubercle located on the occlusal surface of the maxillary second molar, which is very rare.

Key words: *Dens evaginatus*—Dental anomaly—Maxillary second molar—Oral diagnosis—Case report

## **Introduction**

*Dens evaginatus* is a rare dental anomaly characterized by the development of a tubercle, usually on the occlusal surface of a molar. In *dens evaginatus*, the dentinal core is covered by enamel and a slender pulp horn may extend into the tubercle itself<sup>1–3,6)</sup>. It occurs almost exclusively among the Mongoloid ethnic group<sup>1–3)</sup>, and the occurrence rate of *dens evaginatus* on the mandibular second premolar is approximately 0.13–3.6% generally<sup>1,3,4)</sup>. Few reports have investigated the frequency of this condition in other ethnic groups. How-

ever, one study on a total of 2,373 Chinese, Malay and Indian patients found that 57 first molars were affected with *dens evaginatus*<sup>5)</sup>. Possible clinical complications due to tubercular fracture and attrition include pulpitis, pulp necrosis, and periapical periodontitis. Unlike with caries, pain caused by *dens evaginatus* may manifest itself in a distant location. Therefore, diagnosing the cause of that pain may prove problematic. Here, we report a case of *dens evaginatus* occurring on the occlusal surface of a maxillary second molar.

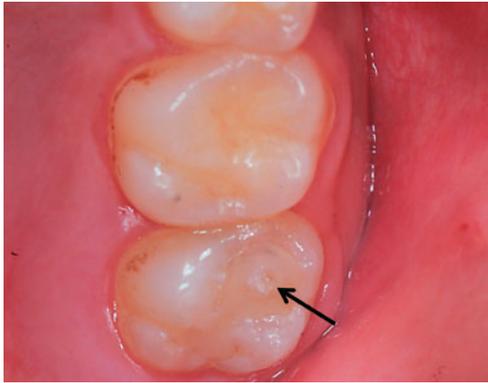


Fig. 1 *Dens evaginatus* occurred on occlusal surface of maxillary second molar

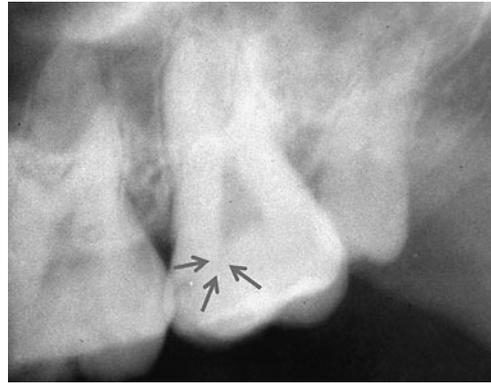


Fig. 2 Pulp horn extends to high level on occlusal surface of maxillary second molar

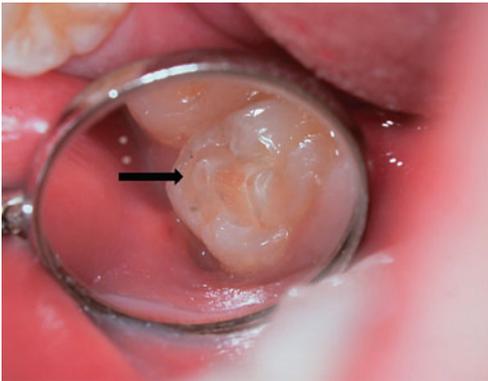


Fig. 3 Access opening except for a tubercle part  
Slender pulp horn extends into the tubercle.



Fig. 4 Radiograph taken immediately after root canal filling

### Case

The patient was a 20-year-old man attending the Tokyo Dental College Chiba Hospital with the chief complaint of radiating spontaneous pain in the mandibular left first molar and middle-to-bottom regions of the left side of the face. The facial pain had been present for some time, and the patient had consulted a number of clinics before coming to us. The cause of the pain, however, had not been identified. Root canal treatment and root canal restoration for periapical periodontitis were given for the mandibular left first premolar, as the chief complaint. On presenting at our hospital, the patient complained that

the pain was worsening and was more intense when bathing. Examination revealed a slight reaction to vertical percussion, although the reaction was independent of level of percussion. Moreover, there was no tooth mobility, swelling, rubor, or tenderness of the periapical gum. Therefore, we were unable to pinpoint the mandibular left first premolar as the cause of the pain. When the upper side of the maxilla was examined, a fractured tubercle on the occlusal surface of the maxillary second molar was identified (Fig. 1), and radiographic examination revealed that the mesial-side pulp horn extended into the tubercle (Fig. 2). The patient complained of sharp pain on palpation with a probe. An attempt

to confirm vital reaction in the pulp chamber by electrodiagnosis had to be abandoned due to sharp pain in response to the instruments. However, we were able to confirm a vital reaction by the application of a cold stimulus. Therefore, we diagnosed the cause of the sharp pain as gangrenous pulpitis due to fracture of the tubercle on the occlusal surface of the maxillary left second molar, and carried out a complete pulpectomy. Opening the pulp chamber revealed invasion of the pulp into the tubercle (Fig. 3), and colliquative necrosis was observed in the crown of the pulp chamber. The root canal was finally filled at 58 days after the first examination (Fig. 4), and progress so far has been good.

### Discussion

Compared with other types of tubercle, in *dens evaginatus* the pulp of the tooth is more likely to extend into the tubercle itself. It has been reported that the frequency of *dens evaginatus* is approximately 0.13–3.6%, and including adults is approximately 1%<sup>1,3,4</sup>. *Dens evaginatus* primarily involves the premolars. It usually occurs in the mandibular second premolars, but is also known to occur in the maxillary second molars, although at low frequency<sup>1-4</sup>. The rate of occurrence in the mandibular molars is 3 or 4 times higher than that in the maxillary molars. Moreover, occurrence is 3 or 4 times higher in the maxillo-mandibular second premolars than first molars. These reports suggest that the occurrence of *dens evaginatus* in the maxillary left second molars is very rare. Furthermore, *dens evaginatus* occurs in the same types of teeth on both sides of the jaw. *Dens evaginatus* can cause pulpitis, pulp necrosis, and periapical periodontitis by tubercular fracture or attrition due to pulp tissue invading the tubercle. In this case, too, fracture of the tubercle appeared to have caused the development of pulpitis.

Various treatments have been performed for this condition. Although allowing restoration of the dentine after excising the tubercle has been advocated, several studies have sug-

gested that this might be unfavorable due to uncertainty with regard to the formation of restorative dentine<sup>1,2</sup>. In response to this, Yong recommended excision of the tubercle and direct pulp capping by calcium hydroxide preparation<sup>6</sup>. However, this approach has yet to produce satisfactory results. Another option is to reinforce the tubercle itself with resin, which allows the natural formation of restorative dentine and tooth root<sup>6</sup>. This method was used for the treatment of 53 teeth, out of which a good clinical outcome was achieved in 52.

### Conclusion

We reported a case of *dens evaginatus* occurring on the occlusal surface of a maxillary second molar, which is very rare. In this case, pulpitis was caused by tubercular fracture in the maxillary second molar. Identifying the cause of the pain was difficult due to the wide area over which pain was present.

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