Supernumerary Premolars Associated with Dens Evaginatus: Report of 2 Cases

(Prémolaires surnuméraires et dents évaginées : rapport de 2 cas)

• **Shiu-yin Cho,** BDS, MDS •

Sommaire

La dent évaginée est une anomalie dentaire qu'on trouve principalement chez les personnes d'origine mongole. Les dentistes qui exercent dans les pays occidentaux doivent aussi être au courant de l'existence de cette maladie, étant donné la migration croissante des gens venus d'Asie. Les prémolaires surnuméraires sont plutôt rares, mais on peut les constater accessoirement pendant l'examen radiographique des dents évaginées. Le présent article rapporte 2 cas d'apparition concomitante de prémolaires surnuméraires et de dents évaginées. La présence d'une prémolaire surnuméraire dans un quadrant est une indication pour l'examen radiographique de toutes les autres régions prémolaires.

Mots clés MeSH : *bicuspid/anomalies; tooth abnormalities/diagnosis; tooth, supernumerary/diagnosis*

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Cet article a été révisé par des pairs.

Supernumerary teeth are teeth in excess of the number found in the normal series.[1] The prevalence of supernumerary teeth in the permanent dentition of the white population is about 2% to 3%, and about 90% of all supernumerary teeth occur in the premaxilla.[2–5] Supernumerary premolars have been reported to represent 3% to 9% of all supernumerary teeth, and their prevalence ranges from 0.29% to 0.64%.[4–7]

Dens evaginatus is a developmental anomaly that manifests as a tubercle emerging from the surface of the affected tooth; it occurs most frequently in the premolars.[8] The occurrence of dens evaginatus shows great racial differences, with a higher prevalence among people of Mongoloid origin. This anomaly has been found in 3% to 4.8% of Chinese and Eskimo populations, but is rare in white populations.[9–11]

Both supernumerary premolars and dens evaginatus occur most frequently in the mandible.[8,12] The exact mechanisms for the formation of these anomalies are not known. Dens evaginatus is thought to form from the evagination of an area of the inner enamel epithelium and its subjacent odontogenic mesenchyme into the dental organ during the morphodifferentiation stage of tooth development.[13] Supernumerary teeth are believed to be caused by locally conditioned hyperactivity of the dental lamina, which results in initiation and proliferation of additional tooth buds.[1,7] The higher prevalence of these anomalies among first-degree relatives of affected individuals than in the general population suggests a significant genetic component in their development.[1,14] Environmental factors, however, may also play a part. The association of supernumerary premolars with dens evaginatus has been reported only infrequently.[10] This article reports 2 cases of concomitant occurrence of supernumerary premolars and dens evaginatus.

Case Reports

Case 1

A 12-year-old Chinese girl attended the author's clinic for a regular checkup. Her medical history was unremarkable, and there was no family history of supernumerary teeth or dens evaginatus. She had been a regular participant in the School Dental Care Service in Hong Kong since the age of 6 years. At the time of initial examination, the patient had full permanent dentition (except third molars). A fractured dens evaginatus with exposed dentin was seen on the occlusal surface of tooth 35. The tooth was asymptomatic and in tight occlusion with the opposing teeth, and there was a positive response to an ethyl chloride test. The patient's records indicated that tooth 44 had also had a fractured tubercle, which had been restored by composite resin 18 months previously. A periapical radiograph of tooth 35 showed the presence of a supernumerary premolar (**Fig. 1**). An orthopantomogram was obtained, which showed another supernumerary premolar in quadrant 4 (**Fig. 2**). The crowns of both supernumerary teeth were about one-half

Case 1

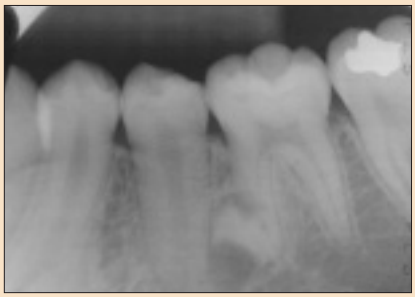


Figure 1: *Periapical radiograph of tooth 35 shows the presence of a supernumerary premolar.*

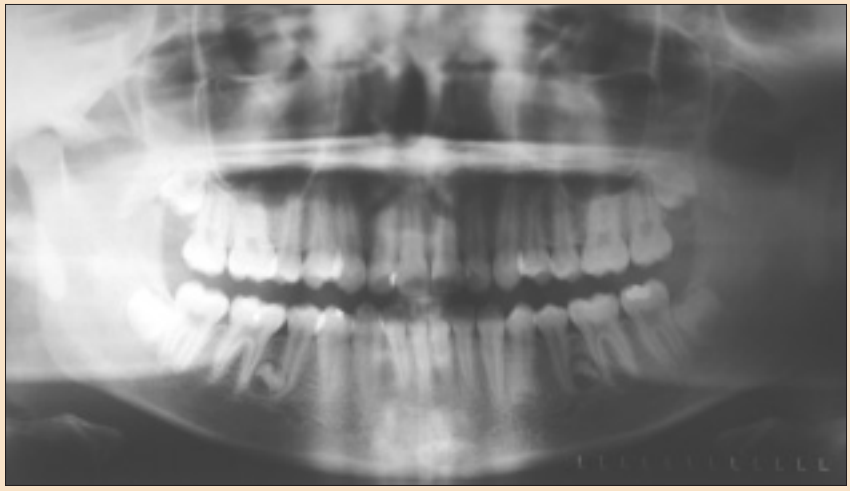


Figure 2: *Orthopantomogram shows supernumerary premolars in quadrants 3 and 4.*

to three-quarters completed, which resembled a dental age of 5 to 6 years in normal tooth development. A conservative cavity was created at the site of the fractured tubercle of tooth 35; the cavity was then restored with composite resin. The patient was seen for follow-up after 6 and 12 months; tooth 35 remained asymptomatic 1 year after treatment. Radiography showed no pathological change in either tooth 35 or the supernumerary premolars at the 1-year follow-up.

Case 2

A 12-year-old Chinese boy attended the author's clinic for a checkup. His medical history was unremarkable, and there was no family history of supernumerary teeth or dens evaginatus. He had been a regular participant in the School Dental Care Service in Hong Kong since the age of 6 years. At the time of initial examination, the patient had full permanent dentition (except third molars). A buccal abscess was seen in association with tooth 35, which had a fractured dens evaginatus with exposed dentin on the occlusal surface. A small intact tubercle was also seen on the occlusal surface of tooth 45. In occlusion, the tubercle of tooth 45 was not in contact with the opposing teeth, whereas that of tooth 35 was in tight occlusion. The tubercle of tooth 45 was reinforced with composite resin. A periapical radiograph of tooth 35 revealed a periapical lesion and a circumscribed radiolucency between tooth 35 and tooth 36 (**Fig. 3**). Tooth 35 was treated endodontically with calcium hydroxide paste. Calcification at the radiolucent area distal to tooth 35 was seen during the course of apexification (**Fig. 4**). An orthopantomogram obtained on the day of root filling showed the presence of supernumerary premolars in quadrants 2, 3 and 4 (**Fig. 5**). The stage of development of these supernumerary teeth was between initial calcification and nearly full crown formation, resembling a dental age of 3 to 7 years in normal tooth development. The patient was seen for follow-up after 6 and 12 months; teeth 35 and 45 remained asymptomatic 1 year after treatment. Radiography showed no pathological change in these teeth or the 3 supernumerary premolars at the 1-year follow-up.

Discussion

A few concurrent dental anomalies such as dens invaginatus and dental fusion have been reported in patients with dens evaginatus,[8,10,13] but only 1 case of supernumerary premolar was reported in these studies. The rarity of supernumerary premolars may be due to the small number of cases involved. In addition, the formation of supernumerary premolars is often delayed, and these teeth generally develop on the lingual side of the normal premolars.[12] As a result, developing crypts in young patients may be masked by the roots of the normal premolars, which makes early detection on routine radiographs difficult.

As in the cases reported here, supernumerary premolars often occur in more than 1 quadrant in the same patient.[12] The detection of one such tooth is a clear indication for radiographic examination of the remaining premolar regions. Multiple supernumerary teeth may be a feature of certain syndromes such as cleidocranial dysostosis and Gardner's syndrome.[7] However, the patients described here did not have systemic features suggestive of any syndrome. Most problems associated with supernumerary premolars are related to their potential to interfere with normal occlusal development or

Case 2

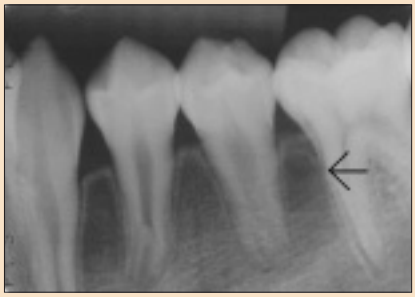


Figure 3: *Periapical radiograph of tooth 35 shows a circumscribed radiolucency between tooth 35 and tooth 36 (arrow).*

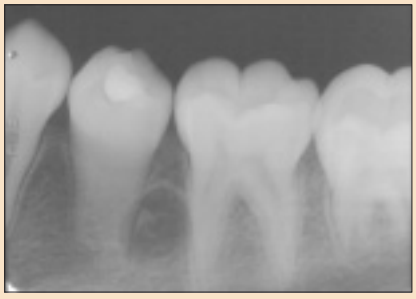


Figure 4: *Periapical radiograph of tooth 35, obtained 8 months after initiation of apexification, shows a calcifying supernumerary premolar.*

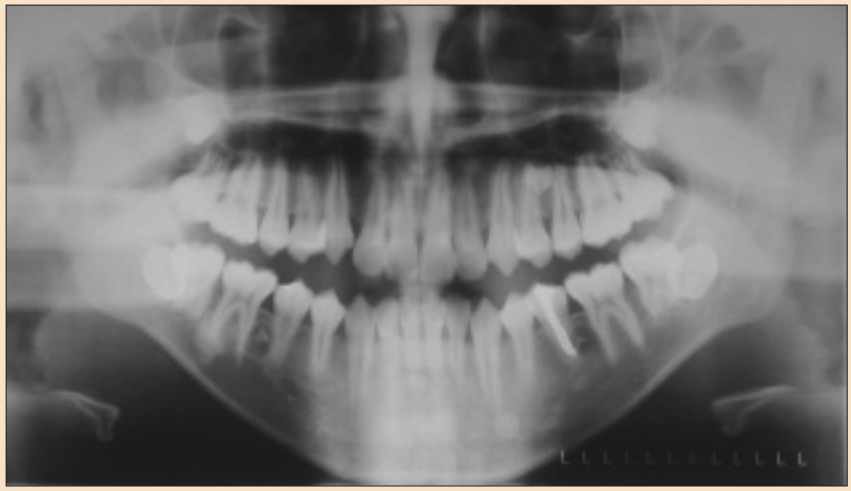


Figure 5: *Orthopantomogram shows supernumerary premolars in quadrant 2, 3 and 4.*

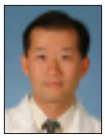
with orthodontic mechanics.[12] Pathological changes associated with these supernumerary teeth are possible but not common. Surgical removal of supernumerary premolars is appropriate if complications are found or anticipated; however, unerupted supernumerary teeth that are asymptomatic may be kept under observation, provided the following criteria are met:[7,12,15]

- Satisfactory eruption of related teeth has occurred.
- No active orthodontic treatment is envisaged.
- There are no associated pathological problems.

In young patients, the latter approach also allows an observation period to see if other late-forming supernumerary teeth develop.

Dens evaginatus is clinically important, as fracture or wear of the tubercle could lead to pulp necrosis before root formation is complete.[8] Various prophylactic treatments have been proposed, including selective grinding of the tubercles,[16] application of resin to reinforce the tubercles,[17] placement of restorations[18,19] and even partial pulpotomy.[20] Oehlers and others[16] evaluated the effectiveness of selective grinding of the tubercle and concluded that this was an unreliable treatment. Yong[18] successfully treated 39 asymptomatic, vital teeth by removing the tubercles and placing either a direct or an indirect pulp cap followed by amalgam restoration. Sim[19] compared treatment of dens evaginatus with either amalgam or resin restorations and found a higher success rate with the latter treatment. Reinforcing the tubercle by placing composite resin around it is another option, but its use would be limited to small tubercles, where occlusal interference would not be induced after the build-up stage. Extraction of the teeth with dens evaginatus should be considered in cases where orthodontic extractions are needed.

Both of the patients described in this report were ethnic Chinese. It is well known that dens evaginatus is found predominantly in patients of Mongoloid origin. Nevertheless, dentists practising in Western countries should also be aware of this anomaly because of the increasing migration of people from Asia.[21] In sum, concomitant occurrence of dens evaginatus and supernumerary premolars is not common. However, supernumerary premolars may be found incidentally during radiographic examination of premolars with dens evaginatus. As supernumerary premolars often occur in more than one quadrant, the detection of a supernumerary premolar in one region is an indication for radiographic examination of the remaining premolar regions.



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