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Fusion or gemination? An unusual mandibular second molar

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ABSTRACT

Fusion and gemination is not an uncommon finding and affected most primary dentition and the permanent maxillary incisors. These changes can develop a series of complication. A 11-year-old male presented radiography finding: an unusual mandibular second molar. A well-documented case brings a challenge for radiologists classify between fusion and gemination. In conclusion, this alteration although common in other regions, there are no case in the literature involving "second and third" molar.

1. Introduction

Variation in number, size and form of teeth is not an uncommon finding. Gemination results of a developmental aberration of ectoderm and the mesoderm [1], the teeth germ divides and results a "two teeth", with two crowns or one large partially separated crown, can be share a pulp chamber and root canal, affected most the permanent maxillary incisors [2].

Fusion is a union of two teeth as a result of some physical force or pressure, can be present with only one pulp chamber and a confluence of enamel and dentine as in gemination, or there may be two separate pulp chambers and union only of the dentine [3], involving permanent dentition are very rare 0–0.8%, with the majority of cases seen in anterior teeth [4], the congenital absence of the adjacent tooth from the dental arch can be differentiated fusion from gemination [3].

That anomalous tooth can develop a series of complication like malocclusion, caries, tooth misalignment, arch asymmetry and functional problems [5]. Occasionally, orthodontists encounter patients with this anomalies and it is extremely difficult to restore the natural look of such a wide tooth [6]. Currently the searching of perfect smile with a white and strait dental, like a celebrities, it takes several people realize an orthodontic treatment without a good planning and indiscriminate use of braces in Brazil.

The purpose of this case report was to describe anomalous and rare tooth in a young adult male in unusual right mandibular second molar, and discuss the possibilities involving the anomaly diagnosis.

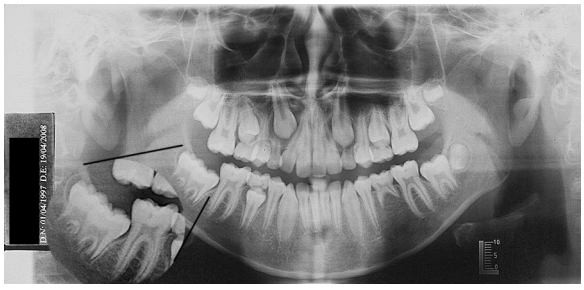

Fig. 1. Panoramic Radiography (PR) for initial orthodontic treatment, showed second premolar agenesis (mandibular left region—35) and a second molar (mandibular right) apparently overlaid on the third molar, see that this tooth has more advanced root development than their congeners.

2. Case report

A 11-year-old male in good health presented on radiology dental service to realize Panoramic Radiography (PR) for initial orthodontic treatment. There was no history of orofacial trauma. Radiographic (Fig. 1) evaluation showed second premolar agenesis (mandibular left region—35) and a second molar (mandibular right) apparently overlaid on the third molar. It is possible to the observer that "supposed third molar" has bigger development compared to their counterparts, 1/3 showing the formation of roots. It is very close to the level of development of the second molar, which had half of root formation. The second radiography (Fig. 2), three years later, showed a second molar (mandibular right) that

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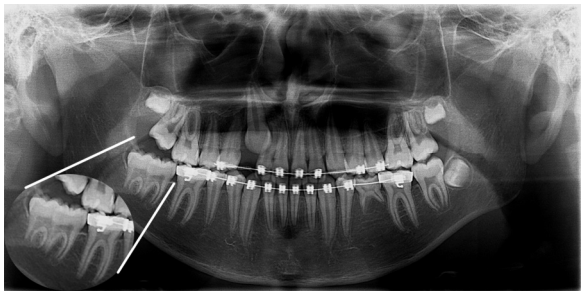

Fig. 2. Second radiography, three years later, showed a second molar (mandibular right) had two separate canals and shared one (second molar mesial root and first molar distal root).

Fig. 3. Intraoral photography. Clinically patient presented separated crowns and the number of teeth does not change.

had two separate canals and shared one (second molar mesial root and first molar distal root). The situation is the same in relation root formation, now the supposed third molar has bigger development compared to their counterparts, 1/2 showing the formation

Fig. 5. Third radiography presented a tooth with three roots, two crowns sharing a pulp chamber and one root canal (the other third molars are with open apex). Presence of superior forth molar.

of roots. The second molar has almost complete root formation. The both dental apex still open is in agreement of patient age, but the supposed third molar was advanced development compared to the others. Initially the crown seems partially separated. Nolla stage 5 was recorded for tooth 38, stage 6 for teeth 18 and 28, stage 7 for "tooth 48" and stage 8 for "tooth 47", the orthodontic treatment has started.

After three years of orthodontic treatment, was removed the braces and contention was placed. The patient was referred for extraction of anomalous tooth that was asymptomatic. Clinically, the tooth presented separated crowns and the number of teeth does not change (Fig. 3). Periapical radiographs of the region (Fig. 4) and the third PR (Fig. 5) presented a tooth with three roots, two crowns sharing a pulp chamber and one root canal. CT scan performed on Cone Beam Computed Tomography—CBCT (OP300-Instrumentarium Dental). In the sagittal view (Fig. 6), first slice (IMG: 24), the tooth in question due overlapping teeth presents enamel layer between the pulp chambers, observe the tooth 46 with central image, which indicates that the anomalous teeth is slightly off the dental arch, also seen in the photographic image. Note the superior forth molar presence. In the next slice (IMG: 25) presents clear union crown, showing a highlighted sulcus dividing the crowns. There caries lesion in the distal sulcus of the mesial crown. Clear presence of a "double teeth" (slice IMG: 26) with one pulp chamber, three root canals, mesial, distal and central. Note the pronounced pulp horn in the mesial which may indicate that it is a gemination. In the axial view (Fig. 7) the sequence showed initially three separate roots (IMG: 23 and 24), the next slice begins "fusion" of the mesial root with the "median" root. Slices IMG: 26 and IMG: 27, the pulp chamber is shared, and finally showed the union, the mesial and median root are covered by dentin and is seen the distal root canal. In panorama view (Fig. 8), shows the same details of panoramic radiography. The 3D reconstruction (Fig. 9) corroborates the clinical vision.

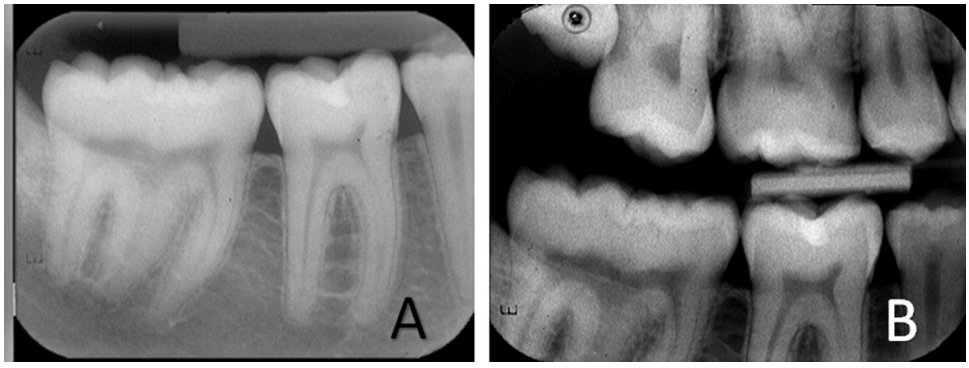

Fig. 4. (A) Periapical radiography; (B) Bite-wing radiography.