A case of combined dental development abnormalities: importance of a thorough examination


Abstract – This report describes a case of combined dental development abnormalities. A patient with a previous ectopically erupted supernumerary maxillary canine presented a new ectopically erupted supernumerary premaxillary tooth with dens invaginatus (Oehlers’ type 2) and an aberrant coronal morphology, including a pit in the distal portion of the palatal surface. This tooth would have been diagnosed earlier if a panoramic radiograph had been taken at the first visit 5 months before. This case represents a good example of combined dental development abnormalities, i.e., a numerical anomaly (the supernumerary tooth), an alteration of dental position (the ectopic eruption), an alteration of dental morphology (the aberrant coronal shape), and the invagination. This case highlights the importance of a thorough examination, including complementary radiography, of patients with a dental anomaly.

Supernumerary teeth develop as a consequence of the proliferation of epithelial cells from the dental lamina and are relatively common in the maxillary incisor and molar areas. However, bilateral ectopic, fully erupted supernumerary teeth are relatively rare (2).

Dens invaginatus is a developmental anomaly resulting from an invagination of the surface of a tooth crown before calcification has occurred (3). The aetiology of this dental anomaly is most probably a deep folding of the foramen caecum during tooth development, which in some cases may even result in a second apical foramen. It may be caused by increased localized external pressure, focal growth retardation or focal growth stimulation in certain areas of the tooth bud (4). Traumatic events at an early age may also lead to developmental dental anomalies associated with ectopic tooth eruption (5). Dens invaginatus has been reported in the maxillary central and lateral incisors, canines, and bicuspids, and the mandibular incisors and bicuspids (6). The maxillary lateral incisors are the teeth most frequently involved in dens invaginatus, sometimes symmetrically, and the concomittance of dens invaginatus in supernumerary premaxillary teeth is also frequent (4, 7).

The purpose of this report is to describe a case of combined dental development abnormalities. A patient, with a previous ectopically erupted supernumerary canine, presented a new ectopically erupted supernumerary premaxillary tooth with dens invaginatus which could have been diagnosed earlier if a panoramic radiograph had been taken. The radiographic examination of dens invaginatus affecting the ectopically erupted supernumerary premaxillary tooth is reported.
Case report

A 15-year-old white man sought treatment for the ectopic eruption of a maxillary tooth. Clinical exploration showed a supernumerary canine partially erupted on the left side of the hard palate. A panoramic radiograph was not taken. The tooth was extracted, and clinical and radiographic examination did not show any dental anomaly (Fig. 1). Five months later the patient returned with another ectopically erupting tooth in the contralateral side of the palate. A new supernumerary tooth was initiating its eruption in the right palatal region between the central and the lateral incisors. Radiographic examination revealed a tooth with incomplete root formation and an invagination of enamel evident distal to the pulp space (Fig. 2). A clinical diagnosis was established of a supernumerary maxillary tooth with an Oehlers' type 2 dens invaginatus (8). The tooth was extracted and the visual examination showed aberrant coronal morphology including a pit evident in the distal portion of the palatal surface (Fig. 3).

To study the invagination better, radiographs of the extracted tooth were taken and then projected onto a screen to determine the dimensions of the invagination. In the bucco-palatal projection (Fig. 4) the inva-
Combined dental abnormalities

Fig. 4. Bucco-palatal radiograph of the right supernumerary pre-maxillary tooth with dens invaginatus.

Fig. 5. Mesio-distal radiograph of the right supernumerary pre-maxillary tooth with dens invaginatus.

gination was located on the distal side and seemed to extend 1 mm apically beyond the cementoenamel junction but remained confined within the root as a blind sac. The invagination was 6.3 mm long and 2.1 mm wide (external measurements). In agreement with the intraoral radiograph no communication with the pulp was evident. In the mesio-distal projection (Fig. 5) the invagination appeared not to extend apically beyond the cementoenamel junction and also appeared to remain confined within the root as a blind sac without communication with the pulp. On this radiograph the invagination was 6.4 mm long and 2.1 mm wide (external measurements).

Discussion

The case reported here represents a good example of combined dental development abnormalities. Four anomalies of dental development are associated, i.e., a numerical anomaly (the supernumerary tooth), an alteration of dental position (the ectopic eruption), an alteration of dental morphology (the aberrant coronal shape), and the invagination.

The combination of these abnormalities probably indicates that common factors were involved in their aetiology. Traumatic injuries at an early age may lead to developmental dental anomalies and ectopic tooth eruption (5, 9, 10); nevertheless, in our case no evidence of a previous traumatic injury could be demonstrated.

In Oehlers' classification (8) of dens invaginatus, all the crown invaginations in which the invagination does not extend beyond the cementoenamel junction are termed type 1. The invagination presented in this case exceeded the level of the cementoenamel junction and did not communicate with the pulp. According to Oehlers' classification the dens invaginatus reported here belongs to type 2. In this type of dens invaginatus “the invagination extends apically beyond the cementoenamel junction but remains confined within the root as a blind sac” (8). Although it seemed that the invagination did not communicate with the pulp in this case, communication usually exists be-
Jiménez-Rubio et al.

tween the root canal and the invagination (7, 11). A radiographic examination will usually disclose this condition since the invaginated enamel is recognizable because of its greater radiopacity (12).

The association of a tooth with combined dental development abnormalities and the previous ectopically erupted supernumerary canine demonstrates the importance of a thorough examination of patients who present with a dental anomaly (6). In our case, the second supernumerary premaxillary tooth would have been diagnosed earlier if, at the first visit 5 months before, a panoramic radiograph had been taken. Thus when a patient presents with a simple dental abnormality, a complete radiographic examination should be performed to eliminate the possibility of additional dental anomalies.

References