Case Report

DILATED ODONTOMA: A REPORT OF TWO CASES

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ABSTRACT

Dilated odontoma is an extremely rare developmental anomaly that represents the extreme and most severe type III dens invaginatus. In this work, we present two cases of dilated odontoma of the maxilla that were detected randomly by radiography. In the first case, the dental element presented difficulties in eruption. In the second case, the tooth appeared microdontic.

KEYWORDS: *dilated odontoma, Dens in dente, dens invaginatus*

INTRODUCTION

Dilated odontoma (DO) is a developmental tooth anomaly that results from the infolding of the enamel organ into the dental papilla before the calcification of the dental tissues. DO currently does not feature in the most recent classifications of odontogenic tumors as an independent entity (1). The term dilated odontoma describes the most severe variant of Dens in dente, or Dens invaginatus (Type III), characterized by crown and/or root dilation of the affected tooth (2).

The most commonly used classification is that proposed by Oehlers (2), who described *Dens in dente* according to invagination degree in three forms:
Type I: which is a minor form, the enamel-lined invagination is contained within the crown of the tooth, not rising above the cemento-enamel junction;
Type II: the enamel-lined invagination extends apically beyond the cemento-enamel junction but remains within the root;
Type III: the enamel-lined invagination advances apically beyond the cementoenamel junction and riddles apically to create an apical or periodontal foramen. In this type, also called dilated odontoma, the tooth has an oval or circular shape with a radiolucent interior. It shows a single structure, usually with a main soft tissue mass (3).

The prevalence of DO ranges from 0.25% to 7.74%, even though it occurs in deciduous and permanent dentitions (4). It often involves the permanent maxillary lateral incisors, the maxillary central incisors, premolars, canines, and rarely the posterior teeth. It is infrequent in the mandible, mainly in the molars (5). Its etiology is controversial and remains unclear. Several authors have proposed various theories, are abnormal pressure from surrounding tissue, apical proliferation of ameloblast or local growth retardation, invagination of the crown before calcification, and genetic factors (5, 6)

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In this work, we present two cases of dilated odontoma in the superior maxillary detected by chance on the radiograph in the unerupted tooth.

CASE REPORT I

An 8-year-old female patient expressed pain in the right maxillary region. She reported a history of painful symptoms and frequent abscesses in this area. Her medical history was uneventful, and no hereditary factor was found. The panoramic radiograph revealed the presence of type III *Dens invaginatus* with a single root associated with the agenesis of the lateral incisor (Fig. 1).

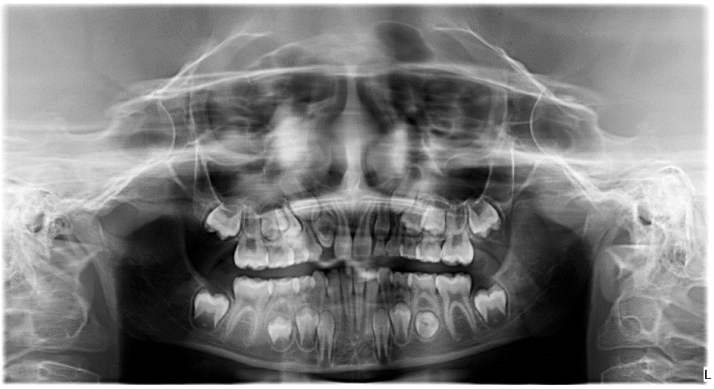

Fig. 1. *Case report I: representative OPT images of maxillary lateral incisor with dilated odontoma.*

Computerized 3D imaging provides images of sufficient quality to evaluate the morphology of an invagination in situ fully. The tooth was extracted after antibiotic therapy (Fig. 2), and primary closure was achieved easily.

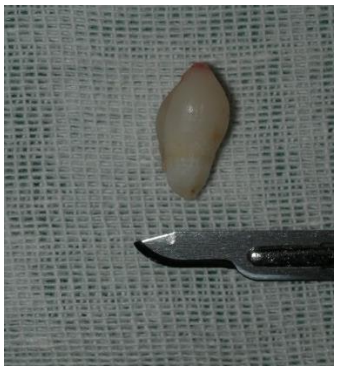

Fig. 2. *Case report I: lateral view of the extirpated dilated odontoma.*

CASE REPORT II

A 10-year-old female patient reported a history of recurrent abscesses and pain in the right maxillary region. The patient was in good general health, and no family members had dental abnormalities. Extra-oral examination revealed no significant results. Intra-oral examination showed dental anomalies of the maxillary right lateral incisor (Fig. 3).

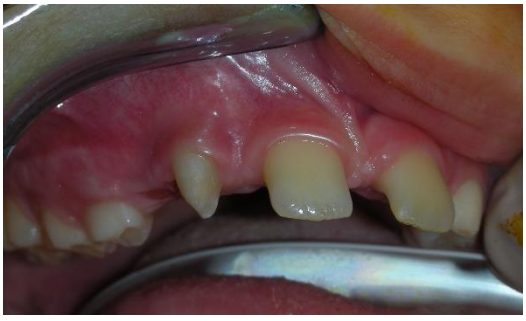

Fig. 3. *Case report II: clinical photograph of erupted dilated odontoma.*

The OPT radiograph showed a random finding of agenesis of 12 and dilated odontoma concerning the unerupted maxillary right lateral incisor (Fig. 4).

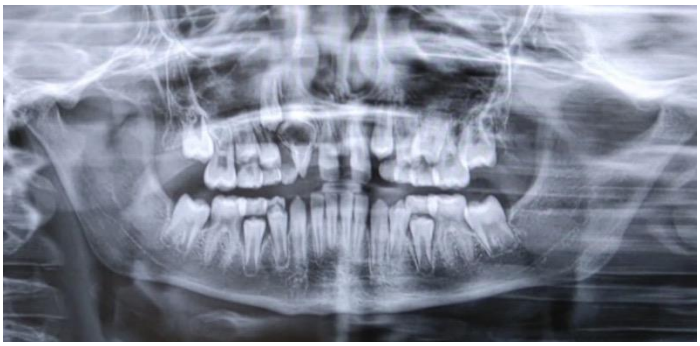

Fig. 4. C*ase report II: representative OPT images of maxillary lateral incisor with dilated odontoma.*

After local anesthesia, a mucoperiosteal flap was raised, and the cortical bone was removed, exposing the dental anomalies. It was easily shelled out, and the surgical flap was repositioned and sutured. Healing was uneventful.

DISCUSSION

Dilated odontoma morphologically shows a completely inverted structure of hard tissue due to the severe invagination of the enamel organ into the developing dental papilla, presenting radiographically as a shell-like structure with an outer radiopacity and a central core of radiolucency (1). The lesion is spherical mainly in appearance; hence the term "dilated". Dilated odontoma represents the extreme and most severe type III *Dens invaginatus* (6-8), whereas odontoma is a common benign odontogenic tumor containing all the various component tissues of teeth. They seemed to result from the budding of extra odontogenic epithelial cells from the dental lamina. This clump of cells creates a mass of tooth tissue that may be deposited in a weird configuration and consists of normal enamel, dentin, cementum, and pulp. The lesion is a complex odontoma when tooth components are well recognized and tooth-like structures are formed. Complex odontomas exhibit an amorphous conglomeration of enamel and dentin, and the most ordinary site is the posterior mandible, showing a well-defined radiopacity encircled by a radiolucent rim. Compound odontomas exhibit multiple rudimentary tooth-like structures and are more typical in the anterior maxilla. Both are frequently associated with an unerupted tooth (8-10).

Based on what has been said so far, considering dilated odontoma a form of odontoma is incorrect. The current WHO classification of odontogenic tumors does not establish dilated odontoma as a specific entity in the general spectrum of odontogenic tumors and within the context of the odontomas. It might be helpful and less misleading to change the terminology of dilated odontoma, as suggested by several authors (6).

Different authors have suggested various theories to explain the development of dilated odontoma. Even though the role of a pathogenic noxa (traumatic, viral, mechanical) on the morpho-differentiation phase of dental development is now established, the exact etiology and pathogenesis are still unclear (4-6). Genetic factors have also been evaluated (11). Dens invaginatus, like many other dental abnormalities (12, 13), are present in various syndromes (5). The most frequent are Williams, Nance-Horan, and Ekman-Westborg-Julin syndrome, based on genetic disorders (14-17).

In conclusion, the present work describes two cases of maxillary incisor teeth, severe type III *Dens invaginatus* or dilated odontoma incidentally detected in an 8-year-old female and a 10-year-old male. Even though the etiology and pathogenesis of this lesion remain to be defined, several studies try to investigate the mechanical properties and the histomorpho-structure of *Dens invaginatus* by using microradiography, micro-hardness tester, light microscopy, CLSM (18-20), and a morphometric software analysis (4, 21, 22) to achieve more pieces of information about this entity. Further investigation is needed to understand its origin fully.

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