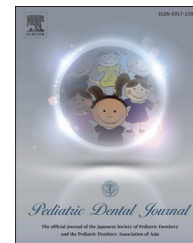


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Pediatric Dental Journal

journal homepage: www.elsevier.com/locate/pdj

Case Report

Management of over retention of permanent incisor impacted by compound odontoma: Clinical, radiological, and microscopic evaluation

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ARTICLE INFO

Article history:

Received 22 August 2017

Received in revised form

13 February 2018

Accepted 5 March 2018

Available online xxx

Keywords:

Odontoma

Children

Mineral tissue

Orthodontics

ABSTRACT

Objective: This case report describes the management of primary tooth over retention and permanent impacted tooth a compound odontoma and the microscopic evaluation.

Case report: At 11-years-old, the child was referred for Pediatric Dentistry due to lack of permanent maxillary left central incisor. Radiographic examination revealed over retention of primary maxillary left central incisor associated to a mixed lesion showing tooth-like structures in region of permanent maxillary central left incisor. The primary overretained tooth and the 6 denticles, characterized as compound odontoma, were surgically removed and impacted central incisor was placed in orthodontic traction over a period of 10 months. Odontoma histological characterization was carried out through Hematoxylin and Eosin coloration, polarized light microscopy, and scanning electron microscopy. Small tooth like structures with well defined enamel and dentin could be seen. **Conclusion:** Orthodontic management was successfully performed for correct alignment of the maxillary left central incisor impacted by compound odontoma reestablishing function, phonation, and esthetic.

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<https://doi.org/10.1016/j.pdj.2018.03.001>

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1. Introduction

Odontomas are mixed epithelial and mesenchymal tumor-like malformations composed of dental hard and soft tissues. They are the most common odontogenic tumor accounting for 30–40% of all such lesions. These lesions are usually found in young patients (first two decades of life) and have no sex predilection. The etiology is unknown but genetic mutation in a tooth germ and traumatic injuries in primary teeth are possible factors [1,2]. Generally are asymptomatic and usually detected on routine radiographs frequently associated with an unerupted permanent tooth [3]. Odontomas are subdivided and are subdivided in frequently associated with an unerupted tooth and are usually detected on routine radiographs [1,2].

Odontomas occur in both maxilla and mandibula. Compound odontomas are most found in the anterior maxilla while complex odontomas occurs most often in the posterior mandibular. Radiographically it presents as a well demarcated radiopacity surround by a radiolucid soft tissue and corticated bone. Compound odontomas show numerous tooth-like structures, whereas complex odontomas are represented by a mass of calcified tissue. Furthermore, radiological features of compound odontomas are frequently diagnostic while complex odontomas can share other calcified bone lesions features. In general, odontomas are microscopically represented hard tooth-like structures including enamel, cement, and dentine in different proportions and with different degrees of development [2,4]. Adjacent fibrous connective tissue with dental follicle is often present.

The treatment of choice is conservative surgery since they have very low growth potential and recurrences are unusual. In this context, traumatic injuries in the primary incisor during the early developmental stages of permanent dentition could result in alterations such as number, growth, shape, calcification or maturation [3,5]. The risk of developmental disturbances in a permanent tooth following traumatic injury of its primary predecessor is high due to the close relationship between the apex of the primary tooth and the developing permanent successor and its prevalence varies from 12 to 69%.

This paper describes the management of compound odontoma in region of permanent maxillary left central incisor that was evaluated clinic, radiographic and microscopically.

2. Case report

An 11-year-old boy was referred to the Pediatric Dentistry Clinic with a chief complaint of lack of permanent maxillary left central and lateral incisors. His mother related that at 2 years and seven months of age, the patient suffered a fall from his own height at home, resulting in a dental trauma in his primary maxillary central incisors. Since the children do not compliment of pain, he doesn't looked for dental attendance neither was referred to dental examination before. His general medical history was noncontributory.

Intraoral examination revealed a mixed dentition period, without dental caries, and presence of permanent maxillary right central incisor with localized enamel hypoplasia and over retention of primary maxillary left central incisors

(Fig. 1). Panoramic (Fig. 2A), occlusal (Fig. 2B) radiographs and tomography (Fig. 3A–D) revealed impaction of permanent maxillary left central incisor and multiples tooth-like malformations present in this region. Fig. 3A shows the sagittal slices demonstrating the denticles, Fig. 3B shows the frontal slices of the denticles and in the Fig. 3C can be observed the relationship between the lateral incisor and the denticles, as well as the Fig. 3D. This radiographic features led to the diagnosis of compound odontoma.

After 3 weeks, the surgical procedure was performed. The lesions were completely removed, showing six small denticles (sizes varying from 0.7 mm to 1.1 mm). (Fig. 4). In the same surgery session, the impacted tooth was surgically exposed and bonded with orthodontic brackets with light-cure orthodontic composite (Transbond™ XT; 3M Unitek/ESPE, Monrovia, USA) for traction. Orthodontic traction was performed (Fig. 5) over a period of ten months until correct alignment was achieved, recovering aesthetics and functionality (Fig. 6). Permanent maxillary right central incisor presented a slight hypoplasia, suggestive of traumatic injury during primary dentition.

2.1. Histological analysis

The denticles and the adjacent soft tissue were evaluated under three different microscopic methods so as both soft and mineralized tissue could be adequately analyzed. Routine H&E stain and light microscope analysis, scanning electron microscopy and polarized light microscopy were performed. For scanning electron microscope (SEM) the teeth were mounted on aluminum stubs, sputter-coated with gold, and were examined at 40× magnification using a scanning electronic microscope (Jeol/EO JSM- 6460, version 1.1, 20 -acceleration voltage-signal SEI, 5 μm (micro marker), Tokyo, Japan) operating at 20 kV and the images were registered (Fig. 4B).

The denticles submitted to polarized light microscopy evaluation were subjected to longitudinal cuts and hand polished to a final thickness of 100 μm. The sections were immersed in water and examined under 10× magnification (Fig. 4C). To H&E routine staining the denticles were decalcified in formic acid 10%. Microscope evaluation revealed well-defined tooth structure, exhibiting an irregular arrangement of enamel matrix, dentin, cementum, and pulp tissue,



Fig. 1 – Clinical image of absence of permanent maxillary left central and lateral incisors and hypoplasia of permanent maxillary right central incisor.

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