

COMPOUND ODONTOMA IN CHILDHOOD POPULATION (CASE REPORT)

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Abstract

Odontomas are odontogenic benign tumors composed of dental tissue. Most of these lesions are asymptomatic and are often detected on routine radiographs. Morphologically odontomas can be classified as complex, when present as irregular masses containing different types of dental tissues, or as compound if there is superficial anatomic similarity to even rudimentary teeth – the denticles. They are considered to be hamartomas rather than neoplasms, and are composed of natural teeth tissues: enamel, dentin, cementum and pulp tissue.

The aim of this study is to show the significance of persistence for these asymptomatic malformations which usually can lead to malocclusion or many different orthodontic irregularities. A 13-year-old girl with mixed dentition attended our Dental Clinic appointment with doubt about the apparent delay in exfoliation of deciduous teeth: 63–64. A panoramic radiograph showed retained left maxillary canine and first premolar. While the presence of undefined lesion formed by many radiopaque small tooth-like structures constituting an obstacle to the respective permanent teeth eruption. Under local anesthesia, access to the lesion was achieved via intra-oral approach and its surgical removal was performed. The histopathologic examination confirmed the diagnosis of compound odontoma. Routine radiographic examination is important for early detection of silent lesions such as odontomas.

Keywords: Odontogenic tumors, Diagnosis, Odontoma, Lesion

Introduction

Odontomas are the most common odontogenic tumors. The term odontoma (or odontome) was originally used by Paul Broca in 1867 to describe all odontogenic tumors. Presently this term is circumscribed to benign lesions of odontogenic origin and a mixed character composed of dental epithelial and mesenchymal cells. Due to their composition and behavior, odontomas can be regarded as hamartomas or malformations rather than true neoplasms [1–3]. These malformations do not develop further once fully calcified but, like teeth, they may erupt into the mouth [4]. This is, however, a rare situation. They are characterized by their slow growth and non-aggressive behavior [5,6]. *Histologically*, odontomas are composed of different dental tissues, including enamel, dentin, cement and, in some cases, pulp tissue [7]. These dental tissues may appear normal but they seem to have a deficient structural arrangement.

Odontomas are mainly intraosseous lesions although location in gingival soft tissue has been reported. There are very few reports of odontomas associated with primary teeth in the literature. In general, odontomas occur more often in the permanent dentition. The lesions tend to be located between the roots of erupted teeth or between the deciduous and permanent teeth. Anterior maxilla, followed by anterior mandible and postero-inferior regions are the most common locations [8].

Epidemiologically, odontomas are the most frequent odontogenic tumors, and according to different sources in the literature, it accounts for 22–67% of all maxillary tumors [7,9]. Males and females are approximately equally affected [3,7–10]. An increased prevalence of these tumors can be found in children and adolescents [9].

The *etiology* of odontomas is unknown, but it could be due to trauma during primary dentition, as well as to inflammatory and infectious processes, hereditary anomalies (Gardner's syndrome, 3 Hermann's syndrome), odontoblastic hyperactivity, or alteration of the genetic components responsible for

controlling dental [9,11]. They are often associated with impacted/retained teeth. The extraneous bud of the dental lamina is considered to be the tissue of origin for odontoma.

According to the 2005 classification of the World Health Organization (WHO), [11] two types of odontomas are acknowledged: (a) compound odontomas that usually are unilocular lesions containing multiple radiopaque, miniature tooth-like structures known as denticles; and (b) complex odontomas that consist of an irregular mass of hard and soft dental tissues. Compound odontomas are approximately twice as common as complex Odontomas [1,5,7,11].

Odontomas are usually asymptomatic, and they may be detected by chance on a routine radiograph (panoramic and/or intra-oral X-rays), or when they are large enough to cause a swelling of the jaw. Clinical signs suggestive of an odontoma include a retained deciduous tooth or an impacted tooth [8,10].

Surgical removal is the treatment of choice [10]. Care should be taken, however, not to harm adjacent teeth and permanent germens in children, while follow-up is essential for evaluation of further development of the permanent dentition at the removal location. Although the diagnosis of odontomas, in most cases, can be provisionally confirmed by radiographic examination, a histological study of the removed lesion must be done to confirm the diagnosis [12].

Case report

A 13-year-old female patient attended our Clinic (Department for oral surgery), referred from orthodontist with doubts about the apparent delay on the exfoliation of the upper left deciduous teeth. The clinical history did not reveal any systemic pathology associated. Intraoral examination revealed the presence of the primary teeth 63–64 and the absence of the corresponding permanent teeth in the same quadrant. A panoramic radiograph (Figure 1) was obtained, which revealed the presence of multiple small radio opaque tooth-like structures in the left maxillary canine region, surrounded by a narrow radiolucent area. These structures have disrupted eruption of the respective permanent teeth, maxillary canine and first premolar. Due to its complexity, the case was managed by a multidisciplinary team including a pediatric dentist, an orthodontist and an oral surgeon. Afterward, a periodontist was also consulted. The surgery was performed by an oral surgeon assisted by a pediatric dentist. The patient was treated under local anesthesia, without any premedication. Surgical approach started with incision, flap raising and initial osteotomy exposing odontoma, removing of bone overlying the odontoma (Figure 2). Lesions were then extracted carefully (Figure 3). The lesion containing six structures like small teeth in different developing stages (Figure 4). The histopatological examination confirmed that the lesions are compound odontomas. Because the impacted permanent teeth showed a fully formed root resulting in little spontaneous eruption potential, it was decided that an orthodontic device would have to be place later on in order to guide the impacted teeth into its position.

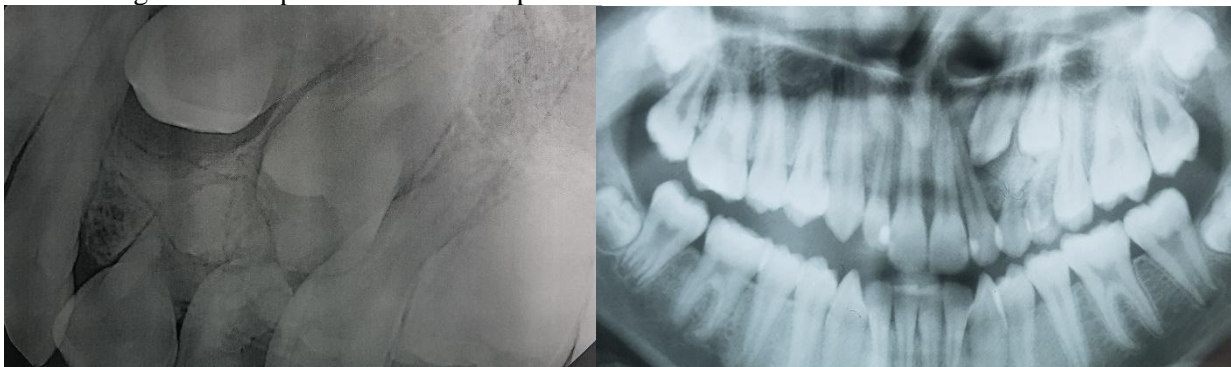


Figure 1: Radiograph view of retained left maxillary canine, first premolar and the presence of undefined lesion constituting an obstacle to the respective permanent teeth eruption.



Figure 2 . Intraoral view - surgical approach during initial osteotomy exposing odontoma, removal of bone overlying the odontoma.



Figure 3. Intraoral view- surgical removal of odontoma along with its fibrous capsule.

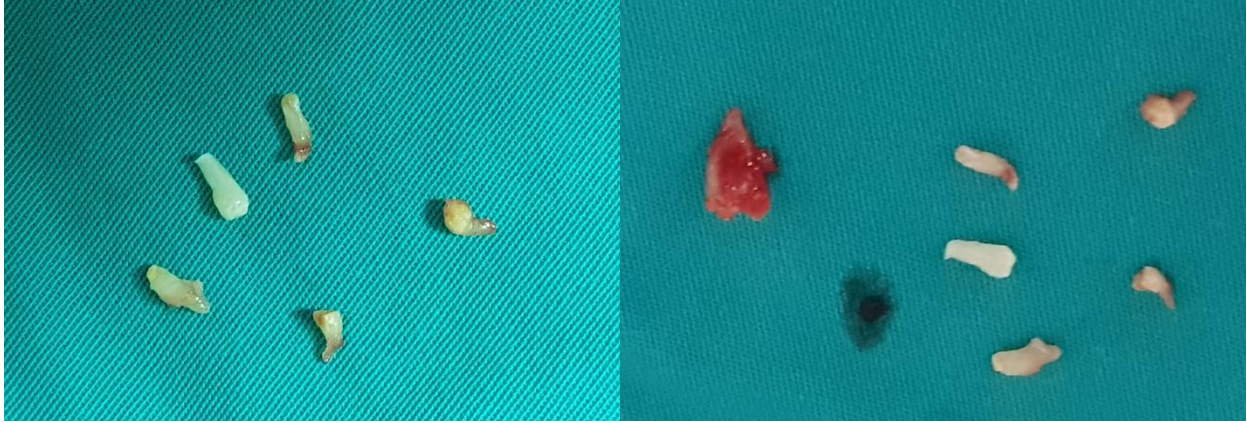


Figure 4. Extracted specimen showing a lot of tooth-like structures.



Figure 5: The surgical site after removal of odontoma and final situation after suturing.

Discussion

Odontomas are slow-growing, asymptomatic neoplasms found in jaws. In about 80% of cases, they are associated with impacted or un-erupted teeth. Although they are commonly asymptomatic, clinical indicators of odontoma may include retention of deciduous teeth, non-eruption of permanent teeth, pain, expansion of the cortical bone, tooth displacement. Discovery often occurs due to radiographic investigation for the cause of a non-erupted permanent or retained primary tooth [8,10]. An impacted tooth is present in more than half of the cases [10]. In the 26 cases of odontomas analyzed by Iatrous et al., [12] 80.7% had the impaction of permanent teeth associated. In our case the lesion was found due to a delay on the exfoliation of teeth 63 and 64. When a panoramic radiograph was taken an irregular radiopaque image with variations in contour and size, composed of multiple radiopacities corresponding to the so-called denticles, could be seen. Several case series have documented that the majority of all odontomas were diagnosed in the first two decades of life [8]. Although they may be discovered at any age, less than 10% are found in patients over 40 years old. Some studies have reported a correlation between patient age and the type of odontoma involved – compound lesions being apparently more frequent in younger patients, [10] which is in agreement with our case. Odontomas represent the most common type of odontogenic benign jaws tumors among patients younger than 20 years of age. In our cases reported, the incidence age of odontoma is consistent with the literature.

Most authors agree that these lesions effectively appear more often in the upper maxilla, though some sources make no distinction between the two maxillas [1,9]. In our case the odontoma was located in the upper jaw, what is in accordance with the first theory. The reported tendency of odontomas to arise in the region of the incisors and canines [9] is also confirmed in our case. Interestingly, both types of odontoma occurred more frequently on the right side of the jaw than on the left [6,13].

Considerable controversy exists over gender distribution. While some studies consider odontomas to be more common in females than in males, [14,15] others consider these lesions to be similarly distributed between both genders [7–10]. On the contrary, Iatrous et al. [12] and Yadav et al. [2] found a male predilection.

Odontomas have been associated with trauma during primary dentition, as well as with inflammatory and infectious processes, hereditary anomalies (Gardner syndrome, Hermann's syndrome), odontoblastic hyperactivity and alteration in the genetic components responsible for controlling dental development [9,12]. In our case no syndromes were evident and no episode of previous trauma was reported by the patient and family. In children, the impacted permanent teeth, depending on the age and on the tooth development, may be left to erupt spontaneously, or they may be guided to occlusion via orthodontic traction [16,17]. In any case, follow-up is essential following odontoma excision [18,19]. In our case due to the apical location and position of teeth 23 and 24, orthodontic therapy was applied after surgical removal of the lesion.

In order to prevent the adverse effects of disturbances in tooth eruption the authors stress upon the importance of routine use of panoramic radiography for early detection of such dental abnormalities. Clinical experience suggests and the dental literature supports that an individualized radiographic examination of any pediatric patient that presents clinical evidence of delayed permanent tooth eruption or temporary tooth displacement with or without a history of previous dental trauma should be performed.

Conclusion

The results achieved indicate that early diagnosis of odontomas in primary dentition is essential in order to prevent later complications, requires less expensive treatment, ensure better prognosis, avoid relapse of the lesion, avoid displacement or devitalisation of adjacent tooth. Our presented a case of a compound odontoma associated with impaction of two permanent teeth – canine and first bicuspid. There is a high association between odontomas and permanent teeth impaction. As was demonstrated by this report, interdisciplinary approach along with early diagnosis of odontomas allows adoption of a less complex and less expensive treatment and ensures better prognosis.

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