

Compound odontoma – 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.

40-year-old women attended our Dental Medicine appointment with swelling: 11, 21. A panoramic radiograph showed the presence of a 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.

Introduction

The term odontoma was first described by Broca [1] as a benign odontogenic tumor of epithelial and mesenchymal origin characterized by slow growth and dental contents (enamel, dentin, cementum, and pulp) [2]. It is considered a tumor - like malformation (hamartoma), not a true neoplasm, in which all of the dental tissues are represented [3, 4].

Although odontomas are usually asymptomatic, there are some clinical indicators such as retention of deciduous teeth, no eruption of permanent teeth, expansion of cortical bone, and displacement of teeth. Other symptoms include numbness in the lower lip and

swelling in the affected area [5]. Odontomas are usually small in size [3, 4, 6, 7].

The age at diagnosis is commonly in the second decade of life without gender predilection, occurring more often in the posterior region of the mandible [8]. Based on radiographic and microscopic characteristics, odontomas are subdivided into compound and complex types. The compound type is characterized by tooth-like structures arranged in an orderly fashion and the complex type is characterized by dental tissues in a disorderly pattern without any anatomic resemblance to a tooth [3, 9–14]. Odontomas are the most common benign Tumors of odontogenic origin. They are normally diagnosed on routine radiographs, mainly due to the absence of symptoms [7]. Histopathologic evaluation confirms the diagnosis especially [15]

in cases of complex odontoma, which may be confused with an osteoma or another highly calcified bone lesion on radiographs [6, 7]. The diagnosis could be established by radiography (panoramic radiography and/or intraoral radiographs) but cone beam computed tomography (CBCT) has played an important role in the diagnosis and identification of lesions [16, 17], thereby helping in treatment planning [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 hyper activity, or alteration of

the genetic components responsible for controlling dental development. [9,11]

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 tee 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 40-year-old women was referred to the Department of Maxillofacial and Oral Surgery, with the chief complaint of mild swelling and pain in the region of the anterior right maxilla. Clinical examination revealed a swelling in the region of the upper anteriors shrouded hard mass, which resembled dentin, and a secretion-draining tract. Panoramic radiographs reconstructed of CBCT showed an irregular radiopaque mass surrounded by a distinct

radiolucent rim associated with the upper right third molar, which was dislocated into the maxillary sinus.

The first diagnostic hypothesis was a complex odontoma, but osteoma and other calcified bone lesions were not ruled. In anticipation of surgical excision of the lesion, CBCT images were obtained. The CBCT images revealed a $3.2 \times 2.3 \times 2.2$ cm hyperdense mass interspersed with areas of hypodensity.

Hyperdense areas resembling teeth were observed in the lesion. Thickening of the soft tissues with obstruction of the drainage pathways of the maxillary sinus was also observed. Coronal images demonstrated the extent of the internal epithelium of the maxillary sinus swelling suggesting sinusitis.

Under local anesthesia, the lesion was surgically excised using a modified Neumann approach (Figure 3). The specimen was sent for histopathological and micro-CT evaluation. Histologic sections revealed a mixture of radiopaque material composed mainly of dental tissues, consisting of immature dentin, enamel, enamel matrix, cementum, and pulp tissue. Histopathologic examination confirmed the diagnosis of complex odontoma (Figure 3) [24].

The definitive diagnosis was complex odontoma. In addition to the visual evaluation of the micro-CT images, we evaluated the density, volume, and surface.



Fig 1: surgical removal under la



Fig 2: clinical diagnosis



Fig 3: compounded odontomas after surgical removal

Discussion

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.

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]

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. Most authors agree that these lesions effectively appear more often in the upper maxilla, though some sources make no distinction between the two maxillae. [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 canines⁹ 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. 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.

Ameloblastic odontoma and ameloblastic fibro odontoma bear great resemblance to the common odontoma, particularly on a radiograph, and thus it is suggested that all Odontomas should be sent to an oral pathologist for microscopic examination and definitive diagnosis. [1,2,12]

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. In any case, follow-up is essential following odontoma excision.^{16,17} In our

case due to the apical location and position of teeth 13 and 14.

Conclusion

We present a case of a compound odontoma. There is a high association between odontomas and permanent teeth impaction. 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.

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