Complex Odontoma: Report of a Five-year Follow-up Case

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ABSTRACT

Odontomas are odontogenic tumors that usually present as benign lesions. They are easily diagnosed and affect individuals in their first and second decades of life. In most cases, odontomas are asymptomatic and the presence could be suspected due to the delay in tooth eruption or via routine radiographic examinations. Treatment of choice has been surgical removal of the lesion, and prognosis is usually favorable because of its benign characteristics and rare recurrence. The purpose of this study is to report the case of a complex odontoma in a child impacting a permanent molar and preventing its eruption. The lesion was surgically removed, and the eruption of the permanent mandibular left second molar tooth occurred after 5 months. Clinical, radiographic, and histopathological characteristics were studied in this case.
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KEYWORDS: ODONTOMA, ODONTOGENIC TUMOR, ORAL SURGERY

Odontomas are slow-growing benign tumors formed by epithelial and mesenchymal cells and represent approximately 22% of all odontogenic tumors.[1,2] They can be classified into 2 types by the different degrees of lesioning: compound; and complex. Compound odontomas are formed by several calcified denticles and are typically presented in the anterior maxilla. Complex odontomas are composed of an amorphous mass of dental tissue and are often located in the posterior part of the mandible.[3]

Odontomas are usually asymptomatic and diagnosed during the first 2 decades of life by routine radiographic examination.[3] In children, the odontomas are usually associated with delayed tooth eruption.[4-6] The etiology is still unknown, although history of trauma, infection, and genetic factors have been suggested to be play a role in its pathogenesis.[7-9]

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The treatment of choice for odontomas is surgical removal. In children, early removal of the odontoma associated with dental impaction may allow for the eruption of the impacted tooth.[8] The purpose of this paper was to report the case of a surgically removed complex odontoma in a child with a 5-year follow-up.

CASE REPORT

A 7-year-old white female, was referred to the oral and maxillofacial surgery department in Hospital das Clínicas de São Paulo, São Paulo, Brazil to evaluate an unerupted permanent mandibular left second molar tooth with swelling of the mandibular left molar region. The external physical examination revealed a facial asymmetry represented by a slight bulge on the left mandibular angle. The intraoral examination showed swelling of the alveolar process with firm consistency and erasure of the vestibular sulcus. The mucosa presented normal color. The patient did not report painful symptoms (Figures 1a-b).

On the radiographic examination, we observed the presence of an irregular calcified mass, limited by a radiolucent halo with well-defined contours, located in the left mandibular angle region. The permanent mandibular second molar tooth was impacted by the lesion (Figure 2).

Computed tomography (CT) scans were performed to help clarify the intraosseous lesion diagnosis and to allow

a 3-dimensional visualization of the lesion and the anatomical structures involved. CT scan images showed hyperattenuated bone lesion bounded into the left mandibular angle, causing cortical bone expansion with absence of fenestration (Figures 3a-b).

Differential diagnoses include: ameloblastic odontoma; calcifying epithelial odontogenic tumor; adenomatoid odontogenic tumor; and benign osteoblastoma. Based on the clinical and radiographic findings, we hypothesized a diagnosis of complex odontoma associated with an impacted teeth.

Under general anesthesia, an incision was made along the mandibular left arm up until the permanent mandibular left first molar. Later, the mucoperiosteum was displaced with the bone structure exposure. Osteotomy was performed with lesion exposure and removal (Figures 4a-b, respectively). Macroscopically, the lesion was characterized by a calcified mass with no elements of dental anatomical characteristics. It was fixed with 10% formol solution and sent for histopathological examination. The area was sutured, and the patient stayed in the hospital overnight for postoperative care. The suture was removed after 10 days.

Histologically, dental tissue, enamel matrix, cementum, and dentin tubular cells arranged in an irregular pattern were found (Figures 5a-b). A diagnosis of complex odontoma was confirmed.

The patient has been followed for 5 years without recurrence. In the radiographic monitoring, new bone formation and a complete eruption of the permanent mandibular left second molar tooth was observed (Figure 6).

DISCUSSION

The odontomas are tumors of odontogenic origin of benign nature and slow growth, formed by enamel, dentin, cementum, and pulp.[1] It is usually asymptomatic, but it can cause impaction and/or dental malpositioning and an increase of the volume in the area. Odontomas are usually diagnosed during the second and third decades of life.[10]

Diagnoses of odontomas are usually done after routine radiographic examinations. Radiographic images of complex odontomas often show the presence of an irregular and disorganized mass with well-defined limits.[1,10] Three tumor development stages and degrees of calcification can be distinguished based on the radiographic images. The first stage is characterized by the presence of a radiolucent lesion in dental tissues with no calcification. In the intermediate stage, a partial calcification can be observed with diffuse images. In the third stage, radiopaque images are seen with predominant tissue calcification. The third stage is more commonly seen in patients who are at least 6-years-old.[7,9] In the current case, we found a disorganized radiopaque mass in the third stage of development and calcification, similar to other lesions, as indicated by the CT scans.

CT scans help in the diagnosis and treatment planning by providing a 3-dimensional view of adjacent tissues and anatomical structures.[11] The CT images showed an amorphous mass, hyperdense in the permanent mandibular left second molar tooth, surrounded by a hypodense halo with cortical bone expansion. A compound odontoma can cause a slight bone expansion, differently from a complex odontoma which causes a more significant bone expansion.[12] The permanent mandibular left second molar tooth was retained by the lesion, showing the relationship between odontoma and dental retention or impaction.

It is often possible to establish the clinical and radiographic diagnoses. Due to the number of possible differential diagnoses, however, a histopathological examination is recommended. Radiographic aspects such as location, well-defined limits, age of occurrence, and radiolucent zone around the lesion should be used to differentiate other radiopaque lesions in the mandible from the complex odontoma.[13] Ameloblastic odontoma, calcifying epithelial odontogenic tumor, adenomatoid odontogenic tumor, and benign osteoblastoma are among the radiographic differential diagnoses.

Histopathologic characteristics of the complex odontoma include the presence of primary or immature dentin and enamel and they may appear either in a very calcified area close to the central zone or in a hypocalcified area

Figure 1. (A) Facial asymmetry represented by a slight bulge on the left mandibular angle. (B) Swelling of the alveolar process and erasure of the vestibular sulcus.

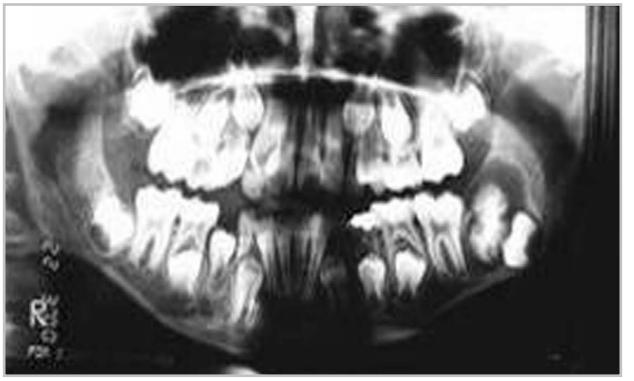

Figure 2. The radiography exams showing a radiopaque lesion surrounded by radiolucent image, affecting the permanent mandibular left second molar tooth.

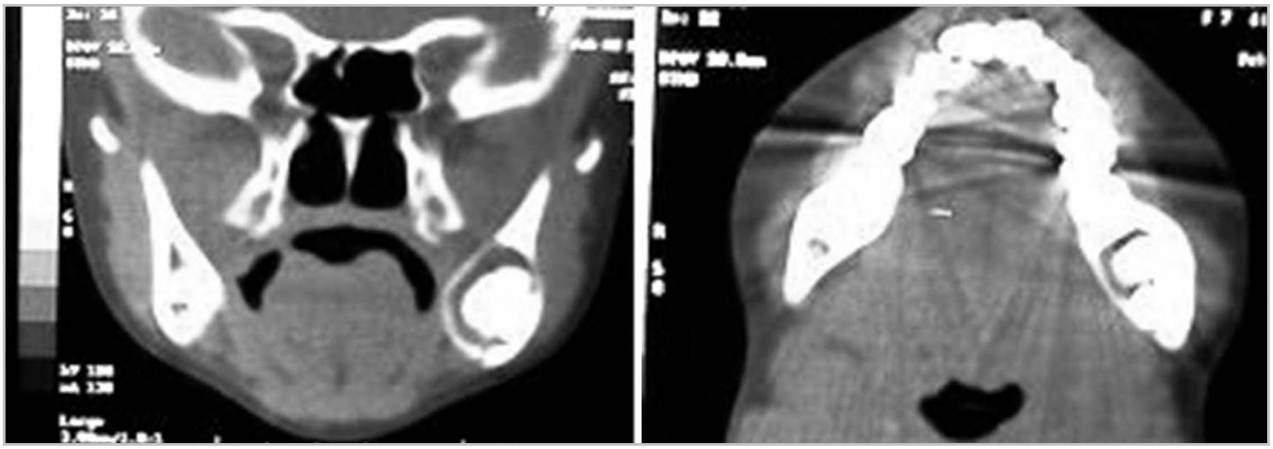

Figure 3. Computed tomography images (coronal and axial slices) showing hyperattenuating bone lesion bounded into the left mandibular angle.

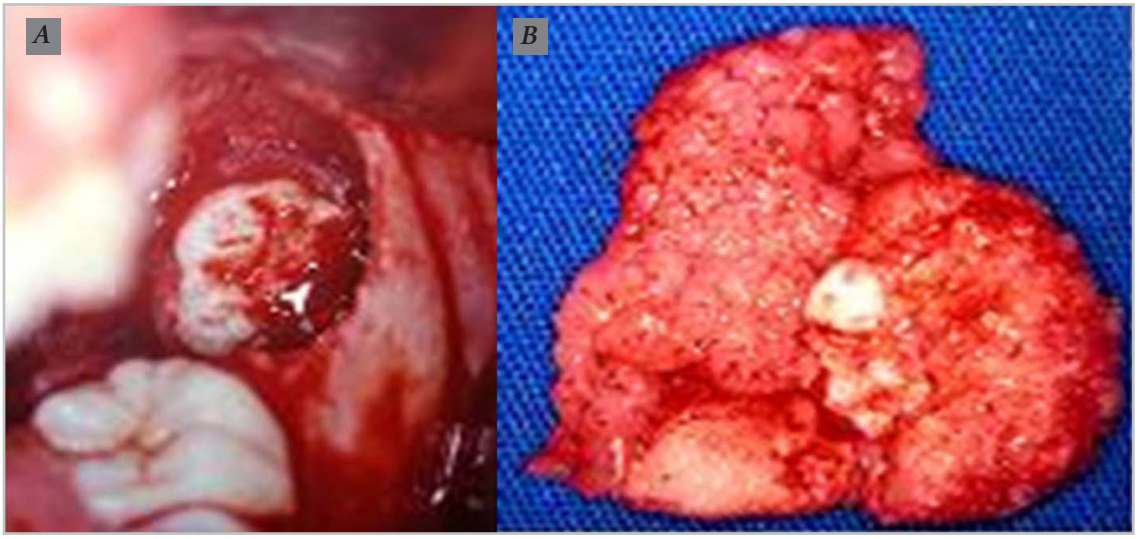

Figure 4. (A) Osteotomy and exposure of the lesion. (B) Macroscopic view of the lesion.

with immature enamel.[14] The reported histological sections of this case showed the presence of dental tissues, enamel matrix next to the central zone, cellular cementum, and tubular dentin with an irregular arrangement.

The odontoma has relatively limited potential for growth. The recommended treatment has been surgical enucleation of the lesion and the surgical extraction of the compromised tooth. Studies, however, have reported the possibility of maintaining the tooth in the arch via orthodontic treatment.[15,16] It has been suggested that the involved tooth tends to erupt independently of the root formation degree, although infraversion could happen.[8]

In our case, the odontoma was surgically removed and the impacted tooth was maintained. The patient's molar was deeply impacted with roots in formation and was located below the odontoma. The surgical removal of the tooth along with the odontoma should only be considered an option when the impacted tooth is located ectopically, is morphologically deformed, or presents cysts of degeneration.[17]

The recurrence after the lesion enucleation is uncommon and may occur when there is residual noncalcified tissue of the lesion.[1] The prognosis is favorable, because the injury does not show potential for malignancy. The radiographic examination is important to ensure the success of the treatment. For the prognosis, Tomizawa et al[4] reported that 25 in 33 cases of odontoma associated with impacted teeth burst forth after the lesion removal. Eight of them occurred spontaneously, 6 were surgically exposed, 2 occurred because of orthodontic treatment, and 9 occurred because of the association of surgical exposure and orthodontic treatment. It has been observed that the earlier the surgical treatment, the lower the chances of complications. Besides the remaining dental elements, radicular dilacerations may happen due to the odontoma's growth pressure during tooth formation.[18]

The patient has been followed clinically and radiographically for 5 years without any signs of recurrence, and new bone formation was observed. The tooth movement was evident during the first year of observation, and the eruption of the permanent mandibular left second molar tooth occurred after 5 months. Neither surgical nor orthodontic intervention was needed.

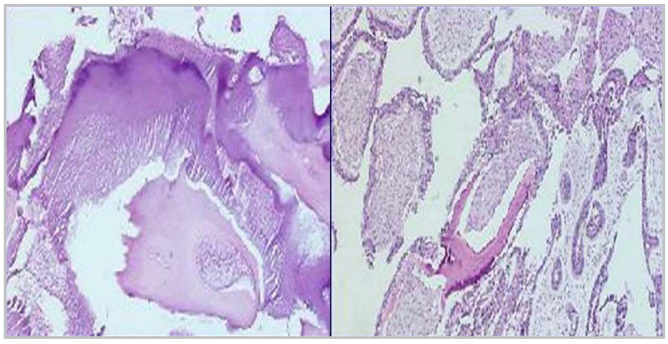

Figure 5. Histopathological view of the complex odontoma. Observe the presence of dental tissues, enamel matrix, cementum, and dentin tubular cell arranged in an irregular manner (A: x200; B: x100; Hematoxylin–Eosin stain).

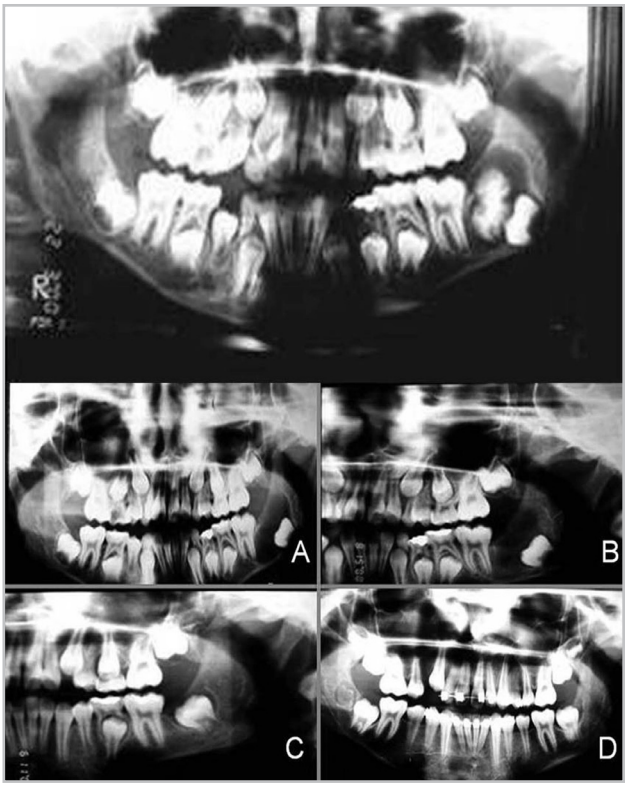

Figure 6. The preoperative radiological appearance and the sequences of postoperative appearance (A–D). Note the eruption of the permanent mandibular left second molar.

This case demonstrated the importance of maintaining the impacted tooth after surgically removing the odontoma. In addition, impacted teeth always should be evaluated to identify odontomas at earlier stages and avoid further complications such as radicular dilacerations and malocclusion.

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