



Giant compound odontoma of the mandible in an adolescent

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ABSTRACT

Odontomas are one type of benign odontogenic hamartoma that includes the compound and complex odontoma. They are generally reported not to exceed 3 cm in diameter. Odontomas with a diameter exceeding 3 cm are considered giant odontomas. An accurate diagnosis of odontomas cannot be made during the clinical examination. The majority of compound odontoma is diagnosed most commonly during radiographic screening. It should be done in coordination with a histological examination after surgical treatment. We report a case of giant compound odontoma of the mandible in a young boy. The tumor is treated by surgical excision under general anesthesia.

1. Introduction

The term odontoma is first coined by Broca in 1866 [1]. It is defined as a tumor formed by an overgrowth of complete dental tissues. Odontomas are categorized into odontogenic tumors composed of epithelium and odontogenic ectomesenchyme, however, some authors consider it is more probably a hamartoma. The prevalence of odontogenic tumors ranges from 1 to 32% [2]. Odontoma is a benign, not very aggressive tumor that has been reported as the most prevalent lesion of odontogenic tumors, approximately 22% [3]. Odontomas are classified into compound and complex odontoma. In a review of 160 cases of odontomas by Tekkesin et al. [4], 99 of those are complex, 57 of those are compound, and only four are mixed odontomas. The etiology of these tumors is still unclear. Odontoma can occur at any age but a high prevalence peak is in the second decade of life, and there is no significant difference between gender [5]. We present a rare case of large compound odontoma of the mandible in a boy with typical radiologic features.

2. Case report

A 13-year-old boy was taken to the department of Stomatology for a general dental check-up. His parents presented that the right molar teeth had not grown properly and sometimes a dull pain occurred in the right lower cheek region. He also stated that he felt a bit entangled when chewing and he could not remember the onset. There was no complaint of other facial issues, no history of trauma, and all other health conditions were well-adjusted. On clinical examination, there was slight swelling over the right chin area on palpation, but the mass effect was not clear. There was no existence of decayed teeth nor dentitions and all teeth of the mandible were a mild degree of malocclusion.

He was then assigned to have a dental panoramic radiograph. A radiograph showed a clear boundary lesion in the right mandible in which had multiple radio-opaque tooth-like structures. There was also the presence of an impacted tooth beneath the lesion (Fig. 1). All those above descriptions suspected diagnosis of odontoma, so a dental computed tomography (CT) scan was assigned for confirmation and further assessment. CT images showed a well-defined solitary mass with many tooth-like structures inside causing bulging the anterior margin of the

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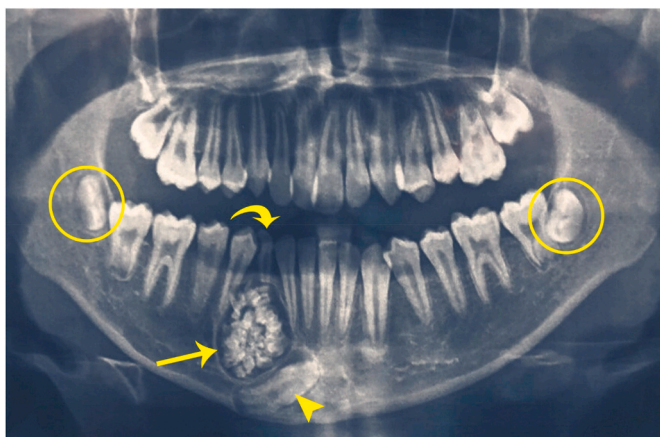


Fig. 1. Panoramic radiograph of a 13-year-old male patient with compound odontoma in the right mandible which shows multiple radio-opaque tooth-like structures (arrow) near the root of canine milk tooth (curved arrow). Presence of the 4.3 impacted tooth is retained and displaced which is a canine permanent tooth (arrowhead). Note that the lower wisdom teeth are deflected (circles).

mandible. This lesion reaches $3.1 \times 2.6 \times 2.2$ cm in measure and covers a small part of the adjacent tooth. This tooth was smaller than others and slightly misaligned, it was a canine milk tooth that had not fallen. There was also an underground tooth below the tumor. It was a permanent canine (4.3) that was impacted in the bone and retained (Figs. 2 and 3).

A patient consultation was held between pediatricians, radiologists, and orthodontic specialists, resulting in the definitive diagnosis of compound odontoma. The patient then took a preoperative laboratory test showing normal ranges and then underwent surgery with general anesthesia. The surgery lasted 1 h, removing more than a hundred tiny teeth with full components of the crown, pulp, and root from the tumor. The milk tooth and the underground tooth next to the tumor were also taken out (Fig. 4). Histopathology subsequently confirmed the diagnosis as a compound odontoma. The patient was discharged from the hospital after ten days after surgery. He was followed up for six months af-

ter which the results were completely normal. The patient received an orthodontic consultation after the mandible is fully developed.

3. Discussion

Compound odontoma is comparatively well-organized malformed teeth or tooth-like structures or denticles of varying size and shape surrounded by a narrow radiolucent zone. They comprise a mixture of odontogenic tissues with many internal teeth that vary in size and morphology. However, these teeth still maintain the morphology of the teeth almost normal that are formed of enamel and dentin, also have variable amounts of cementum and pulpal tissue [1,3,5].

Complex odontoma is an irregular mixture mass of calcified material surrounded by a narrow radiolucent band with a smooth outer periphery. They consist of haphazard conglomerates of dentin, enamel, enamel matrix, cementum, and pulp tissue. Therefore, its internal material has no morphology of the tooth [1–5]. Although odontoma can occur anywhere in the jaws, compound odontoma is reported more frequently than complex odontoma in the canine and incisor region of the maxillary arch whereas complex odontoma most commonly appears in the posterior mandibular region [3,6].

In general, odontomas frequently demonstrate as small size lesions that are usually asymptomatic, over half the cases are discovered as radiographic findings. The majority of the odontomas are reported to measure around 1–2 cm in diameter, a case larger than 3 cm is so-called giant odontomas. Giant odontomas can cause cortical bone expansion with swelling and facial asymmetry, limited mouth opening, pain, teeth displacement [4–7].

In scientific literature, three clinical presentations of odontoma have been described: intraosseous, extra-osseous and erupted, some authors are of the view that the odontoma is associated with an unerupted tooth [2,4,8]. The present case is a case of intraosseous odontoma that occurs inside the lower right canine region of the mandible leading to the expansion of the bone. On a panoramic dental radiograph, the right deciduous mandibular canine tooth is retained whereas all remaining deciduous teeth are replaced by permanent counterparts. The right permanent mandibular canine tooth does not erupt and causes malocclusion owing to the mass compression.

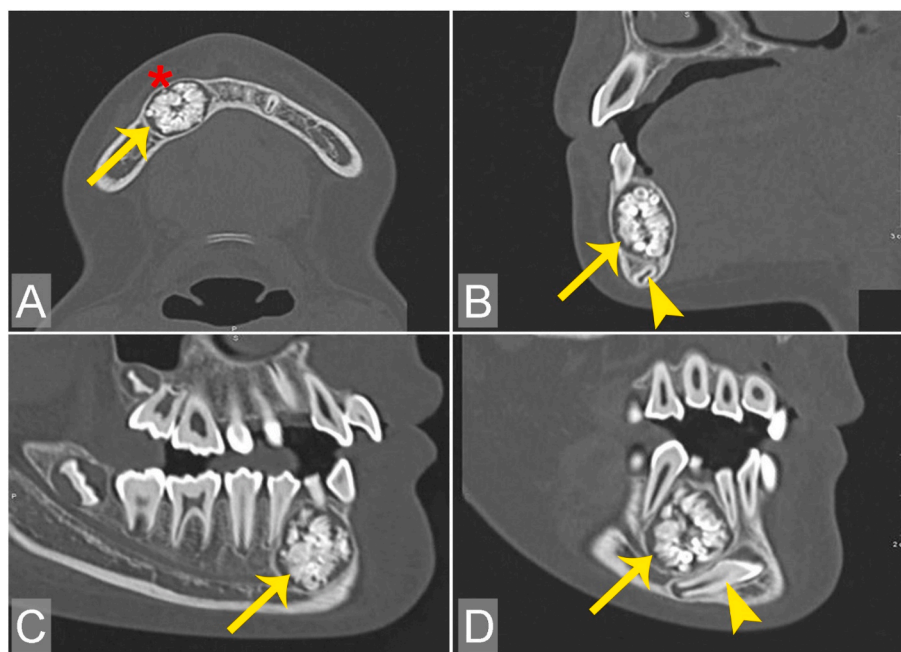


Fig. 2. Compound odontoma of the mandible on the axial (A), sagittal (B), and oblique (C, D) CT images show mass with thin and clear bone margins. It causes bulging and thinning of the bony cortex but does not damage the bone structure (asterisk). Inside the lesion shows hyperdense structures tooth-like with a quite clear demarcation (arrows). Similar to the radiograph, the inferiority of the lesion presenting the 4.3 impacted tooth is retained and displaced (arrowheads).

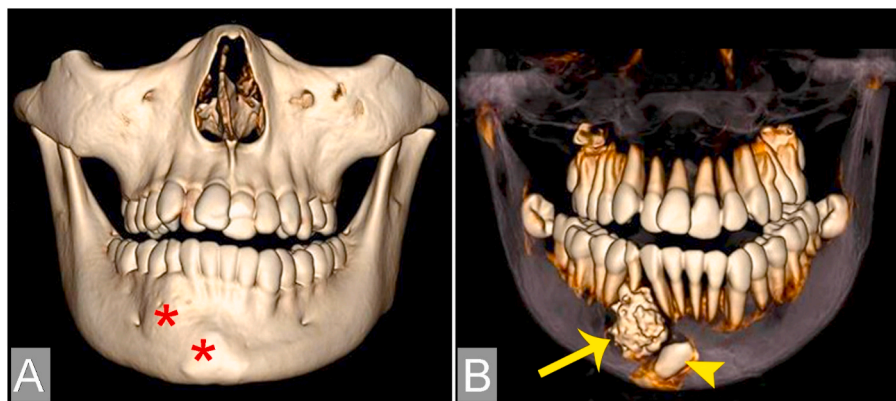


Fig. 3. (A) On the 3D-reconstruction CT image, the position affected by lesions of the mandible is bulging (asterisks). (B) CT 3D-reconstruction image after bone-removal shows more clearly the 3D structure of the lesion with the mass of odontoma (arrow) and the 4.3 impacted tooth is retained and displaced (arrowhead).

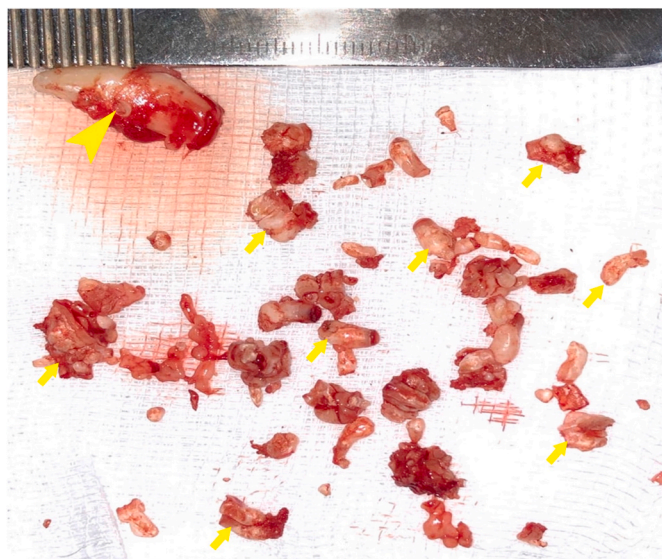


Fig. 4. Photograph of the specimen after surgical showing multiple denticles of odontoma (arrows) and an underground displaced canine tooth (arrowhead).

Radiographically, compound odontoma can appear as radiopaque masses with irregular margins surrounded by a radiolucent zone which includes multiple, small, calcified structures that resemble normal teeth. The Dentascan gives a 3D overview of the radiopaque mass thereby a precise surgical intervention [5–9].

Commonly, the treatment of odontomas consists of surgical excision with a minimum complication rate, but the treatment of giant odontomas presents higher rates of complication due to its size and relation to adjacent structures such as arteries and nerves. Macroscopic image is postoperative of this case constituted by multiple denticles (>100 denticles and 1 mature canine). Amado-Cuesta et al. [10] conduct a literature review in which they reviewed 38 cases of compound odontoma. In that review denticle numbers varied from 4 to 28. In other cases reported by Sharma et al. [11] and Rayeni et al. [12], the compound odontoma with 37–62 denticles is extracted, the size of the denticle varied from 4 mm to 12.5 mm. In 2019, the group of oral surgeons in Saveetha Dental College and Hospital of India has reported a compound odontoma case with 526 denticles, this is the most ever counted in literature. However, it has only been reported in a few magazines, we have not seen it reported in a scientific journal.

Depending on the location of the tumor, a number of differential diagnoses should be established [3,8,13]. Sometimes, the complex or compound odontomas are located at uncommon locations such as the maxillary sinus, nasal cavity, or floor of the orbit or these tumors coex-

ist with other odontogenic tumors such as ameloblastoma, ameloblastic fibro-odontoma, adenomatoid odontogenic tumor, or dentigerous cyst. The histopathological study is recommended in all cases for an accurate diagnosis [6,14,15].

4. Conclusion

Compound odontoma is a benign odontogenic tumor that often has typical features in radiology. Surgical excision of the lesion is the treatment of choice followed by the histopathological study to confirm the diagnosis.

Author contributions

All authors contributed equally to this manuscript.

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Ethics approval

Institution of authors does not require ethical approval for reporting individual cases or case series.

Patient consent

Informed consent was obtained for this paper.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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