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Odontoma Mimicking Flowerhorn - A Rare Entity

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Abstract:

Odontomas are the most prevalent odontogenic tumors that are frequently diagnosed during routine radiography and are typically asymptomatic. These are mostly detected in the mandibular posterior region. It is uncommon for an odontome to erupt into the mouth cavity. The current case of composite compound odontoma, located in the maxillary posterior region is particularly noteworthy since it is exposed in the oral cavity, is associated with an impacted third molar and second molar agenesis, and is entirely asymptomatic.

Keywords: Odontoma, complex, compound, surgical removal, impaction

Introduction:

The term "odontome" was first used in dentistry to refer to any tumor, tumor-like lesion, or neoplastic cyst originating from cells of odontogenic tissues[1]. They are typically thought to be

tissue from hamartomas that resulted from aborted tooth development. Odontome is thought to be the most prevalent benign odontogenic tumor, accounting for 22% of all odontogenic tumors[2,3].

Odontomes are classified as either compound or complex. Complex odontomes are detected in the posterior jaws as conglomerate masses, whereas compound odontomes are typically seen between teeth. Both types of odontomes are made of dental pulp encircled by a dental follicle or cyst, as well as enamel matrix, dentin, and cementum4. Most of the odontoma cases are detected in the second decade of life, during the formation of the dentition, which is the active growth phase of the condition. The most common location is the mandibular posterior area followed by the anterior maxilla[5]. Its etiology is unknown, however it has been linked to a number of pathological conditions, including dental lamina remnants (cell remnants of Serres), inflammatory and/or infectious processes, mature ameloblasts, and hereditary anomalies (Gardner's syndrome, Hermann's syndrome), odontoblastic hyperactivitiy, and changes in the genetic component that regulates dental development[6].

Clinically, it appears as a slowly growing, enlarging lesion; most of them are asymptomatic and are frequently discovered by chance on radiographs or identified by the inability of the neighboring permanent teeth to erupt[7]. From a radiographic perspective, the lesion begins as a distinct radiolucency with increasing deposition of radio-opaque material in a nodular form. The adjacent teeth rarely undergo resorption. It is usually associated with an impacted tooth[8].

When decalcification occurs, mature enamel is lost during the process and is not readily visible in H and E staining. As a result, the odontome histologically displays dentin, cementum, and pulp but may or may not show enamel. The complex form has a random distribution of odontogenic tissue, whereas the compound type resembles the typical structural framework of teeth. Sometimes the connective tissue around the odontome may be fibrous in structure with a cystic lining suggestive of a dentigerous cyst, or it may appear loose, myxoid, with odontogenic epithelial resting suggesting typical dental follicular tissue[4].

The exposure of the odontome into the oral cavity is quite a rare occurrence and tumor through the oral mucosa is an exception; that may be accompanied by pain, infection associated with suppuration or inflammation of the adjacent soft tissues. This article presents a clinical case diagnosed with large compound composite odontoma in relation to right posterior maxilla which mimics like humpy head of a flowerhorn fish.

Case Report:

A 32 year old healthy female reported to the dental OPD for a routine dental check-up. The extraoral examination did not reveal any abnormalities. On intra-oral examination, revealed a solitary, yellowish tooth-like mass measuring around 3.5 cm at the level of alveolar ridge distal to the right maxillary first molar. (Figure 1). On palpation, it was noted that the mass was hard and calcified, with irregular surface, non-tender, and was non-mobile. No infection or ulceration was observed in the surrounding mucosa.

Initially, a provisional diagnosis of odontoma was made. An OPG was advised which revealed a missing 17 and an ill-defined radio-opaque mass surrounding the crown of impacted 18 (Figure 2). In view of these findings, the calcified mass was diagnosed as compound odontome. After careful review, surgical removal of the odontoma along with impacted tooth was planned under local anesthesia.

Informed consent was obtained from the patient and she was placed in semi-supine position. The site was aseptically prepared with betadine solution. Local anesthesia with 1:80,000 adrenaline was given as posterior superior alveolar and greater palatine nerve block. Crevicular incision was given in relation to 18 followed by mesial and distal releasing incisions. A full thickness mucoperiosteal flap was raised to expose the odontome. Bone guttering was done with 702 bur attached to a surgical handpiece. The odontome was removed using a Cryer elevator following which the impacted tooth was exposed and removed (Figure 3 and Figure 4).

Copious amount of irrigation was done with saline and betadine solution. The exposed flap was then repositioned and sutured with 3-0 Silk (Figure 5). The gross appearance of the excised specimen mimicked the humpy head of a flowerhorn fish. The specimen upon retrieval was sent to Department of Oral Pathology for histopathological examination (Figure 6). The histopathological report revealed multiple minute tooth like structures consisting of enamel and dentin attached to each other similar to a tooth structure (Figure 7) suggestive of multiple compound composite odontoma arranged in clusters. The postoperative healing was uneventful, with no signs of clinical and radiological recurrence in the follow-up period.

Figure 1: Preoperative Clinical Presentation

Presence of calcified mass in relation to distal aspect of 16

Figure 2: Preoperative Orthopantomogram

OPG reveals ill-defined radio-opaque mass surrounding the crown of impacted 18 with missing 17

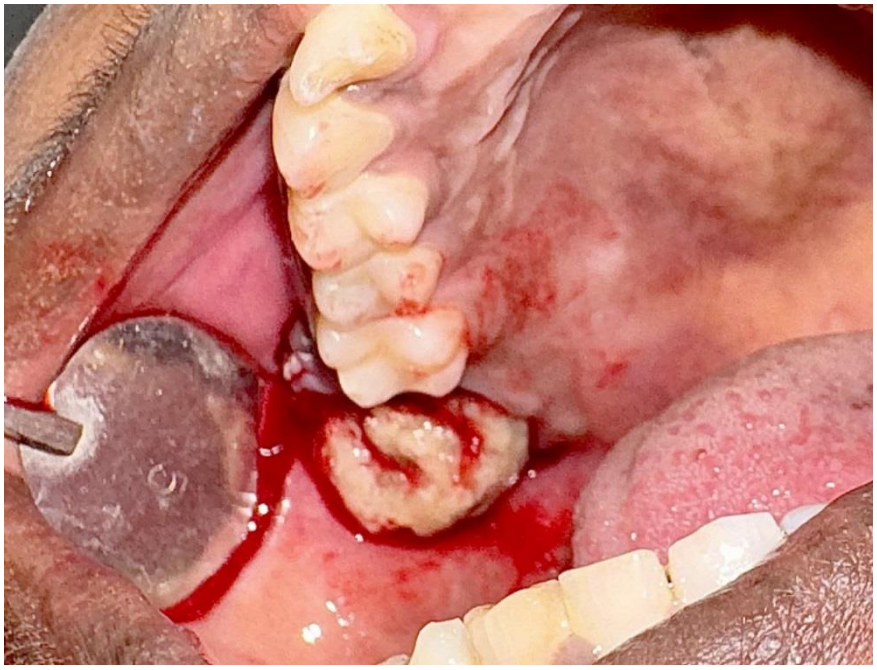

Figure 3: Intraoperative Surgical Exposure of the Odontome

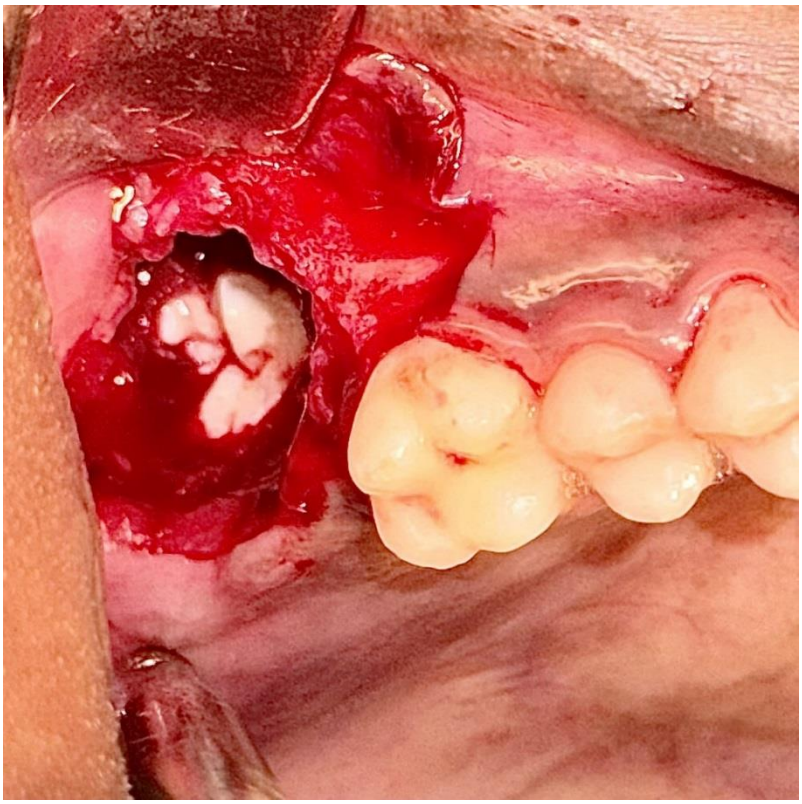

Figure 4: Exposure of Impacted 18 following Odontome Excision

Figure 5: Surgical Site following Closure

Figure 6: Excised Specimen

The excised specimen mimics hump of the most popular flowerhorn fish

Image Courtesy of the Fish: iStock by Getty Images

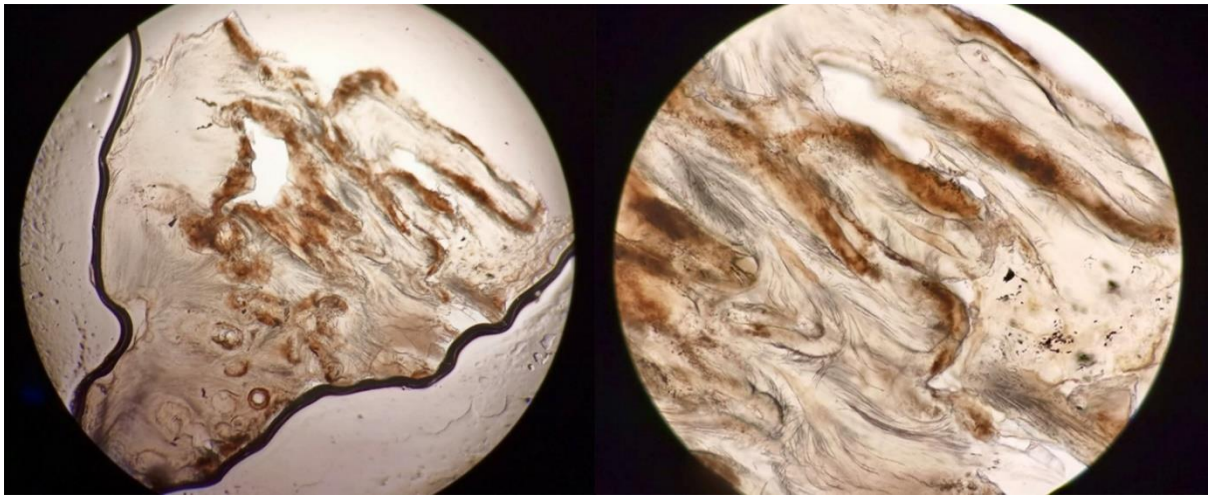

Figure 7: Histopathological Findings

Multiple minute tooth like structures consisting of enamel and dentin attached to each other.

Discussion:

A case of compound composite odontome was diagnosed in the current patient. A search of the literature turned up relatively few occurrences[4,9], indicating how unusual this condition is. While compound odontomas are more common in the anterior maxilla, complex odontomas have a site preference to the posterior region of both the maxillary and mandibular jaws[10]. Furthermore, it is said that 61% of compound odontomas were found in the anterior maxilla, whereas complex odontomas exhibited a 59% preference in the posterior jaws and a 34% predilection in the anterior maxilla[11]. The present case that exhibited features of both complex as well as compound odontoma was seen in the posterior maxilla. Odontomas are usually discovered in the second and third decade of life and are more common among females and frequent on the right side of the jaw[6] which corroborates with our case report.

There are very few cases of erupting odontomas; the first one was reported in 1980[12]. The eruption is attributed to the forces of the teeth that appear to be impacted. On the other hand, the phenomena of missing teeth may be attributed to alveolar bone remodeling, sequestration of the surrounding bone, or reactive expansion of the capsule around an odontoma[7,13]. The hypothesized causes of the odontoma eruption do seem to make sense considering the current situation. Furthermore, the lack of a periodontal ligament and root in an odontoma causes the eruption mechanism to be different from that of a typical tooth eruption. Consequently, unlike in the case of teeth, the force needed to move the odontoma is independent of the fibroblasts' contractility[14].

Compared to complex odontomas, compound odontomas have a more restricted development potential and, in terms of clinical presentation, a painless, non-aggressive lesion. However, they can result in impaction, the retention of primary teeth, or a delayed eruption of permanent teeth. Around 70% odontomas are associated with devitalization, aplasia and malformations in the missing teeth[15]. A similar scenario was seen in the current case with the odontoma being associated with an impacted third molar. The exposure of the odontome into the oral cavity is quite a rare occurrence and may be accompanied with pain, infection associated with suppuration or inflammation of the adjacent soft tissues. No such findings were present in this case, and the patient was asymptomatic.

Upon palpation, the enlargement was bony firm and nonfluctuant. Odontomas should be distinguished from other benign jaw swellings such as osteoid osteoma, cemento-ossifying fibroma, and cementoblastoma, which are fibro-osseous lesions[16]. Therefore, a histopathological examination is required to determine a final diagnosis. In this instance, the confirmed diagnosis of the compound odontome was only made following a thorough clinical, radiographic, and histological evaluation. For most difficult odontoma situations, conservative surgical enucleation is seen to be the best course of action. Since these are frequently linked to impacted teeth, it is crucial to consider the potential for the impacted tooth to erupt following the surgical removal of a suspected obstructive odontoma. But in this instance, the tumor and related impacted tooth were removed together because the tooth was severely misaligned and had no chance of erupting.

Given the great diagnostic accuracy of radiographs and the restricted potential of odontomas, prompt surgical intervention is not always required in cases where an impacted tooth is not involved.

Conclusion:

Correlation of clinical and radiographic features is essential to aid in the early diagnosis of odontome. Since odontomas account for a sizable fraction of jaw tumors, establishing an accurate diagnosis and course of treatment requires a thorough understanding of their characteristics. Even though their growth potential is strictly limited, the tumor should be surgically excised to avoid any potential impediment to teeth erupting or infection. Routine dental checkups should be prioritized more in order to identify these defects early and reduce the need for post-enucleation therapies.

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First Author (Ashik A Ahamed) prepared the manuscript. Second author (Lokesh Bhanumurthy) contributed with ideas in preparing the manuscript. Third author (Jedidiah Abisheg Fredrick) critically reviewed the manuscript. All the authors have discussed and revised the final manuscript.

Conflict of Interest:

The authors declare no conflict of interest, financial or otherwise.

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