A typical odontome causing an atypical impaction – A case report

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Abstract

Odontome is a developmental anomaly where dental tissues are disorganized and laid down in an abnormal pattern. Though several theories have been put forward, the etiology is still unknown. Occasionally an odontome may be associated with an impacted tooth interfering with the latter’s eruption into the oral cavity. This is a case report in which a complex odontome lying superior to an impacted third molar not only prevents it from erupting but also pushes it inferiorly towards the lower border of the mandible resulting in a visible bulge affecting patient’s esthetics. To make things worse, the close proximity of the inferior alveolar nerve along with a dilaceration of the impacted third molar made treatment planning a difficult task.

Key words: Complex odontome, impacted third molar, inferior alveolar nerve

Clinical presentation: A 17 year old female patient reported to the Oral medicine and radiology OPD with the complaint of swelling in the right lower jaw region. The patient noticed the swelling appear spontaneously in 2 weeks. It remained the same size and she experienced difficulty in opening her mouth, also complained of numbness of the lower lip and lower teeth on the right side since then. She did not have any other difficulties or symptoms. She was apparently normal with no relevant medical, dental or personal history.

On extra-oral examination, there was a well-defined, solitary, round swelling of size approximately 2 cm x 2 cm on the inferior border of the angle of the mandible with normal overlying mucosa and surrounding skin (Figure 1). The swelling was non-tender, stony hard, smooth surfaced, fixed to underlying structures, non-fluctuant, non-reducible, non-compressible, and non-pulsatile. Intraorally, there was obliteration of the mucobuccal fold in relation to the right mandibular posterior region with expansion of the buccolingual cortical plates more to the buccal side (Figure 2).

A provisional diagnosis of buccally erupting third molar was given and patient was advised an orthopantomogram (OPG). OPG revealed an ill-defined radiopaque mass of size approximately 1.5 cm x 1.5 cm, displacing and impairing the eruption of the right mandibular third molar.

Figure 1: Well defined, solitary, round swelling in the inferior border of angle of mandible

Figure 2: Buccal expansion of the buccolingual cortical plates

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Figure 2: Obliterated mucobuccal fold and buccolingual expansion in mandibular right third molar region

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cm x 1 cm with radio density similar to that of enamel and dentin situated pericoronal to the impacted third molar. The dilacerated roots of the third molar had pushed the inferior border of mandible downwards and crown lied at an oblique angle below the level of apical one-third of mandibular right second molar (Figure 3). To evaluate the relationship of the inferior alveolar nerve to the impacted mass, a cone beam computed tomography (CBCT) was taken which showed the impacted third molar compressing the inferior alveolar nerve lingually. (Figure 4)

Figure 3: Panoramic image showing an ill-defined radiopaque mass of size approximately 1.5 cm x 1 cm with radio density similar to that of enamel and dentin situated pericoronal to the impacted third molar

Differential diagnosis: A pericoronal radiopaque mass in the mandibular posterior region in a young patient brings to mind a number of lesions that could be included in the possible differential diagnosis. The most common lesions with these presentations are, complex odontome, ameloblastic fibro-odontoma, calcifying odontogenic cyst and rarely adenomatoid odontogenic tumour.

The patient’s age, asymptomatic nature of the lesion and presentation as a conglomerate mass of enamel and dentin which bears no resemblance to the tooth, favours a diagnosis of complex odontome. Radiographically, it appears as a calcified mass with radio density similar to tooth structure surrounded by a narrow radiolucent rim. Large odontome can cause expansion of the jaws and if it is associated with an unerupted tooth, it can prevent eruption, as was seen in this case.

Ameloblastic fibro-odontoma occurs in young patients in the mandibular posterior region which is usually asymptomatic. Radiographically seen as a well-circumscribed unilocular or rarely, multilocular radiolucent defect that contains variable amount of calcified material with radio density of tooth structure.

Figure 4: Coronal, axial and sagittal sections of CBCT showing close proximity of inferior alveolar nerve to the impacted third molar. Slight compression of the nerve can be seen in coronal section.

A calcifying odontogenic cyst can also cause odontome, which usually occurs in younger patients. But the most common location is premolar or canine area.

Figure 5: Surgically removed pieces of calcified mass

A less common lesion that can be considered is adenomatoid odontogenic tumour which commonly occurs in the maxillary canine area.
and radiographically appears as a corticated, circumscribed, unilocular radiolucency surrounding the impacted tooth with internal radiopaque foci.

The etiology of odontome is unclear, with infection, trauma and syndromes being considered as etiological factors.

Odontomes show a female predilection in their occurrence and are seen to occur in 5 – 30% of the population. They usually occur during the 3rd decade of life, seen more commonly in the 2nd decade and with less than 10% found in patients over 40 years of age.

The odontomes are broadly classified by WHO as complex and compound odontomes. The compound odontomes resemble structures involved in tooth formation while the complex odontomes on the other hand bear little or no resemblance to the teeth.

Compound odontomas are found to occur more often in the anterior region of the jaw (61%) and complex odontomas are found in the posterior segment (59%), with higher occurrence in the right than in the left side.

Odontomes rarely erupt in the oral cavity. Due to the lack of periodontal ligament, their eruption varies from the eruption of a normal tooth. Odontomes have no roots and hence, when the size of the odontome increases, it exerts pressure on the overlying bone. This in turn leads the bone to undergo sequestration. The occlusal movements then causes it to erupt.

The odontome is usually detected accidentally on a routine radiograph. The common signs and symptoms include impacted permanent teeth and swelling. Budnick found that 61% of cases of odontome are associated with impacted teeth.

Radiographically, complex odontomas appear as an ill-defined radiopacity surrounded by a radiolucency which may or may not be associated with any bony expansion. Radiographical appearance also depends on the stage of the calcification. In the first stage, no calcification occurs and hence only radiolucency is seen. In the second stage, calcification occurs partly, so radio opacity is seen. In the third stage, calcification is complete and hence, it appears as radio opacity surrounded by a radiolucent rim.

The odontome appears to be in the final stage in our case.
which is a radio opacity surrounded by a radiolucent rim.

Varied amounts of enamel, pulp tissue, enamel organ and cementum are in histological sections. The connective tissue capsule is found to be similar to that of a dental follicle. Ghost cells are often seen along with spherical dystrophic calcification, enamel concretions and sheets of dysplastic dentin. 

In our case, histopathological examination showed disordered mixture of calcified masses suggestive of enamel, dentin and cementum haphazardly. Enamel showing a disorganized arrangement, dentin with dentinal tubules, interglobular dentin, and cementum with cementocytes were seen. Once the diagnosis was established based on the clinical and radiographic findings, the treatment plan was decided. Surgical removal of the impacted tooth along with removal of the odontome was done under GA as the odontome was big. The removal of odontome was essential as there was a possibility of cystic transformation of the follicle associated with the unerupted tooth when its eruption was impeded by the odontome.

However, in our case, it was decided to defer removal of the impacted third molar due to the two reasons. Firstly, there was only about a millimeter of bone thickness in the inferior border of the mandible which could lead to a pathologic fracture, if removal of the impacted third molar with dilacerated roots was attempted (Figure 7). Secondly, the impacted tooth was in close proximity to the inferior alveolar nerve, removal of which would have jeopardized the nerve. A ‘wait and watch’ approach was thought to be the best treatment option both risk wise and from an esthetic point of view, since the patient was young. The patient was advised to follow up once in six months when review radiographs would be taken and further management would be decided as deemed necessary.

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References