# COMPOUND ODONTOMA – A RARE CASE REPORT IN A 17 MONTH OLD CHILD

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#### **ABSTRACT:**

**Introduction:** Odontomas are Hamartomatous lesions of odontogenic origin. They comprise of two varieties complex and compound. Aetiology of odontoma is multifactorial. Usually odontomas are asymptomatic clinically and diagnosed only on routine radiographic imaging in children and young adolescents without any gender predominance. Mostly they may be associated with missing or impacted teeth or delayed eruption of a tooth.

**Case report:** The present case delineate an unusual presentation of the odontoma in a 17 months old male in lower anterior which was removed completely along with the capsule. Patient had reported no complications in a duration of 10 month follow-up.

Conclusion: To ensure better prognosis, early diagnosis of odontomas and complete removal is necessary.

### Key words: odontoma, compound odontoma, unerupted teeth

### **INTRODUCTION:**

The term "odontoma" was coined first by Paul Broca in 1866, who defined odontoma as tumor formed by the overgrowth of transitory/complex dental tissue. Odontomas are developmental anomalies which results from growth of completely differentiated epithelial and mesenchymal cells which give rise to functional ameloblast and odontoblast<sup>1</sup>

Odontomas are non aggressive lesions which are more likely Hamartomatous in nature than neoplastic. Despite its designation as hamartoma, it is considered to be most common odontogenic tumors. It is also associated with odontogenic cyst and tumors . Odontomas are the most common maxillary tumors, and according to different sources in the literature account for 22–67% of all odontogenic maxillary neoplasms.<sup>2</sup> Most of the odontomas are found in young adults .A compound odontoma is most commonly seen in anterior maxilla where as complex odontoma is seen in posterior mandible.<sup>3</sup>Several factors have been associated with the pathogenesis of odontomas. It could be because of trauma in the primary dentition in childrens, hyperactivity of odontoblasts or changes in the genetic components responsible for dental development <sup>4</sup> This case report presents an unusual case of compound odontoma in the anterior mandible of a seventeen months old child.

#### CASE REPORT

A 17 month old male child reported to department of pedodontics with chief complaint of swelling in mandibular left anterior region. Patients medical and family history were inconclusive. Intraoral examination revealed unerupted deciduous teeth in lower left anterior region with mild swelling. The radiographic examination revealed intraoral periapical radiograph taken showing compound odontome in association with 72, 73. There were multiple small teeth like radioopaque structures at the coronal portion of mandibular left primary second incisor and canine.



Figure 1

Provisional diagnosis of compound odontoma was made based on clinical and radiographic assessment. After gaining adequate anaethesia, mucoperiosteal flap was elevated from distal surface of primary incisor 71 and mesial surface of primary molar 74. Surgical excision of the lesion by curettage, removing calcified tooth like strutures were removed without disturbing the unerupted 72,73. The surgical area was curetted and finally irrigation done with povidone iodine-saline solution. After hemostasis was achieved, the flap was approximated and closed primarily with 3.0 silk sutures and post operative radiograph were taken immediately. (Figure 2).



Figure 2

Figure 3

Sutures were removed one week postoperatively. The specimen containing multiple bits of soft and hard (tooth specimens, small miniature than normal) tissue specimen, each measuring approx. 1.2 x 1.4 x 2 cm in diameter, pinkish white in color, soft in consistency with irregular border and surfaces. All the bits of tissues sent for processing. Histopathological examination confirmed the provisional diagnosis of compound odontoma, showingencapsulated mass of multiple denticles, embedded in a fibrous connective tissue stroma. Each one of the denticles shows, presence of enamel (empty spaces), dentin, pulp and calcified cementum, which are arranged in a similar fashion as seen in normal tooth. At places presence of odontogenic epithelium showing tall columnar cells resembling ameloblasts like and presence of Ghost cells appreciated at places. (Figure 6,7)



Figure 4 Figure 5

Two months postoperatively intraoral periapical radiograph was taken to check the eruption for 72 and 73.( Figure 3). In intraoral periapical radiograph, position of unerupted 72 was measured which was 4.3 mm thickness from soft tissue to crown of 73 in intraoral periapical radiograph taken immediately after surgery and 2.3 mm after 2 months follow up shows erupting 72, 73.In 4 month post operative radiograph, completely erupted 72 and erupting 73 is seen with minimal thickness of softissue in radiograph (Figure 4) and completely erupted 72 and 73 seen in 10 month follow up radiograph. (Figure 5).

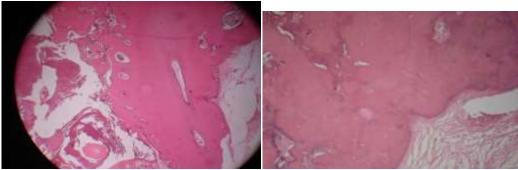


Figure 6 Figure 7

#### **DISCUSSION:**

Odontoma by definition refers to" **Tumor of Odontogenic origin**" as it arises from the growth of completely differentiated epithelial and mesenchymal cells that give rise to ameloblasts and odontoblasts. Odontomas are more common, asymptomatic odontogenic hamartomatous malformations because it's a developmental malformation which manifest later ,presenting with self limited growth an also Not a true neoplasm, but a true neoplasm may develop in a hamartoma<sup>5</sup>. In a broad sense, it means a growth with both the epithelial and mesenchymal components exhibiting complete differentiation resulting in functional ameloblasts and odontoblasts. The most diagnostic clinical presentation for an odontoma is its association with impacted or unerupted primary teeth. The mean age of detection on an average is 14.8 years, with the prevalent age being the second decade of life. There is some predilection for the occurrence in males (59%) when compared with females (41%).

#### **Classification:**

According to the World Health Organization (WHO) classification 2005, odontomes can be divided into three groups:<sup>7</sup>

- 1. Complex odontome: calcified dental tissues, simply arranged in an irregular mass bearing no morphologic similarity to rudimentary teeth.
- 2. Compound odontome: consist of all odontogenic tissues in an orderly pattern, which result in many teeth-like structures, but without resemblance to normal teeth morphologically.
- 3. Ameloblastic fibro-odontome: consists of varying amounts of calcified dental tissue and dental papilla-like tissue, resembling an ameloblastic fibroma. The ameloblastic fibro-odontome is considered as an immature precursor of odontoma of complex type.

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Recent WHO classification 4<sup>th</sup> edition 2017 <sup>8</sup>, complex and compound odontomas remains under benign mixed epithelial and mesenchymal odontogenic tumorswhere asameloblasticfibroodontoma has been removed as it is thought to represent part of spectrum of histological changes seen in developing odontoma.

- Etiology:9-13
  - Trauma
  - Inflammatory process and infection
  - Familial predisposition
  - Hermann's and Gardner's syndrome
  - Odontoblast hyperactivity
  - Genetic alterations causing aberrations in signalingpathways which is responsible for tooth development.

#### **Molecular pathogenesis:**

Recent studies have delineated multiple molecules aiding in the signaling and transcription of tooth morphogenesis These factors are vital for tooth morphogenesis and are spatiotemporally expressed in the tooth germs during development. Odontoma is similar to a developing tooth germ whose differentiation is not complete either during the pre-ameloblasticor ameloblastic period, causing mineralization of aberrant enamel organ. According to Crivelini*et al.* dysregulation in tooth morphogenesis and mineralization results in halts, the progression of normal tooth development culminating in the formation of odontoma <sup>14</sup>AFD revealed strong expression of CK19, E-cadherin, syndecan-1 in the island, and strands of odontogenic epithelium <sup>15</sup>Together with transforming growth factor- $\beta$ ,  $\beta$ -catenins induce morphogenetic changes in epithelial cells.  $\beta$ -catenins act as a signal transducing agent intracellularly in the Wntsignaling pathway. Wntsignaling, inhibits  $\beta$ -catenins degradation in return. Thus, mutant  $\beta$ -catenin through Shh and Bmp 4 pathway causes increased mesenchymal condensation which leads to excessive ectopic dental hard tissue formation. This could be one of the hypotheses for odontoma formation. <sup>16</sup>

#### Frequency:17

- Anterior maxilla –61% compound odontoma
  - \_34% complex odontoma
- Posterior jaw -59% complex odontoma, premolar area
- Right side jaw \_compound 62%,complex 68%

## Radiographic feature:18

**Location.:**compound type (62%) occur in the anterior maxilla in association with the crown of an unerupted canine. 70% of complex odontomas are seen in the first and second molar area in mandible.

**Periphery.** The borders are well defined and may be smooth or irregular. These lesions have a well defined cortical border, and immediately inside and adjacent to the cortical border is a soft tissue capsule present.

*Internal Structure.* Compound odontomas have a multiple number of toothlike structures or denticles that resemble a deformed teeth .Complex odontomas contain an irregular mass of calcified tissue . The degree of radiopacity is exceeds that of next tooth structure and may vary in the degree of radiopacity from one region to another. A dilated odontoma has a single calcified structure with a more radiolucent portion in the centervwhich has donut shape.

*Effects on Surrounding Structures.* Odontomas can also interupt with the normal eruption of teeth. Most odontomas (70%) are associated with abnormalities such as impaction, malpositioning, diastema, aplasia, malformation, and devitalization of adjacent teeth. complex odontomas which are larger in size may cause expansion of the jaw with maintenance of the cortical boundary.

### Differential diagnosis: 18,19

- A toothlike structures appear radiopaque within a welldefined lesion leads to easy recognition of a compound odontoma.
- cemento-ossifying fibromas resemble complex odonoma by their tendency to associate with unerupted molar teeth and because they usually are more radiopaque than cemento-ossifying fibromas. Odontomas mostly develop in much younger patients compared to cementoossifying fibromas.
- complex odontoma resemble Periapical cemental dysplasia but lesions are usually multiple and centered on the periapical region of teeth. cemental dysplastic lesion is solitary and located in an edentulous region of the jaws and has uneven sclerotic border.

#### **Treatment:**

An odontoma has a limited growth potential, but it should be removed because it contains various tooth formulations that can predispose to cystic change. <sup>20</sup>Kaban states that odontomas are enucleated easily, and adjacent teeth is being displaced by the lesion are not always traumatized during surgical excision because they

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are usually separated by a septum of bone. Because of the very low recurrence, the treatment is surgical removal of the lesion, Removal of calcified tissue is a simple surgical procedure but special care should be taken to remove it completely as it is encapsulated in order to avoid a relapse which is dangerous in immature complex odontomas.

#### **Conclusion:**

The present case report describes compound odontoma in anterior mandible, along with a retained primary tooth. The higher chances of a retained deciduous tooth and its unerupted successor associated with odontoma is highlighted. This was diagnosed in childs routine dental visit with caries-free dentition. Adverse effects of odontomas, the author suggests that it should be given on routine dental check-ups for children so that these anomalies can be detected earlier, thereby, minimising the interventions needed after enucleation.

#### **Conflict of interest:**

The authors declare that there is no conflict of interests regarding the publication of this paper.

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