

## Complex Odontoma: A Case Report and Review of Literature

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### ABSTRACT

**Background:** Odontomas are benign odontogenic tumors composed of mineralized dental tissue of ectomesenchymal origin. Because these lesions are made of more than one type of tissue they are also referred as composite odontoma. There are two types of odontomas, Compound and Complex. The occurrence of compound odontoma is twice common compared to complex odontoma. Complex odontomas usually occur in mandibular posterior region with female predominance characterize by slight or marked bony expansion. Radiographically they appear as radioopaque mass while presence of dental tissues in irregular arrangement with ghost cells are the histological findings of this tumor. The present case of complex odontoma reported in maxillary anterior region with classic radiographic and histological features.

**Keywords:** Odontoma, complex, odontogenic, tumor.

### INTRODUCTION

The term odontoma was first given by Paul Broca in 1866. It was first defined as a tumor formed by an overgrowth of complete dental tissues.<sup>1</sup> Odontomas are considered to be hamartomatous malformations resulting from the growth of completely differentiated epithelial and mesenchymal cells that give rise to amaeloblasts and odontoblasts. These hamartomas are basically formed of enamel and dentin but they can also have variable amounts of cementum and pulp tissue.<sup>2</sup>

Odontomas comprise around 22% of all odontogenic tumors. They occur in the first and second decade of life.<sup>3</sup> By having an etiology of idiopathic origin, it is recommended that genetic and environmental factors such as local trauma and infection could trigger the formation of odontoma. They are usually asymptomatic lesions but in some cases they may associate with alterations in tooth eruption temporarily or permanently. Odontomas usually occur in permanent dentition and are rarely

reported in association with the primary or deciduous dentition.<sup>4</sup>

Based on gross, radiographic, and microscopic features, WHO has classified odontoma into complex odontoma and compound odontoma.<sup>5</sup> Compared to complex odontoma compound odontoma is twice common. 60% of complex odontomas occur in women. Complex odontomas usually occur in mandibular first and second molar region with slight or marked bony expansion. Surgical removal is the treatment of choice for this lesion and diagnosis can be confirmed with radiographic and histopathological investigation.<sup>6</sup> Presently, we report a case of complex odontoma with unusual occurrence in maxillary anterior region in a young boy.

### CASE REPORT

A 14 year old patient reported with a complaint of a missing tooth in the maxillary anterior region on the right side. There were not any remarkable

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obvious changes on extraoral examination. Intraoral examination revealed missing maxillary right central incisor which was further confirmed by radiographic examination. Radiograph also discloses presence of irregular radio-opaque mass surrounded by narrow radiolucent area in this region (Figure 1). On the basis of clinical and radiographic evidence, a provisional diagnosis of odontoma was given while Ameloblastic fibroodontoma and ameloblastic odontoma were considered in differential diagnosis. Entire lesion was carefully excised and specimen sent for histological examination

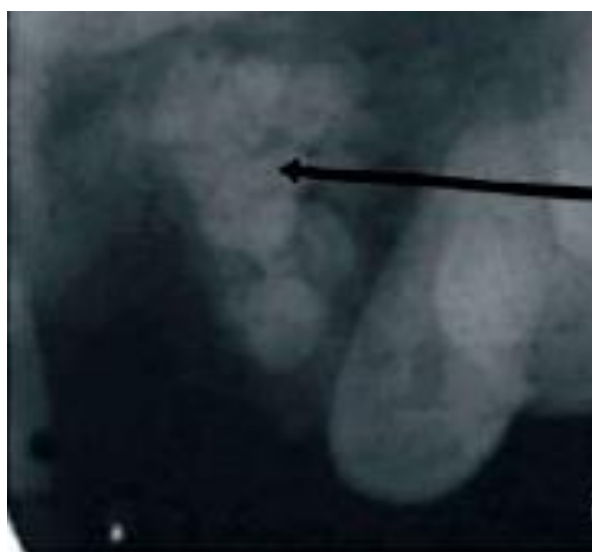


Fig 1: Radiographic image shows irregular radioopaque mass with radiolucency.

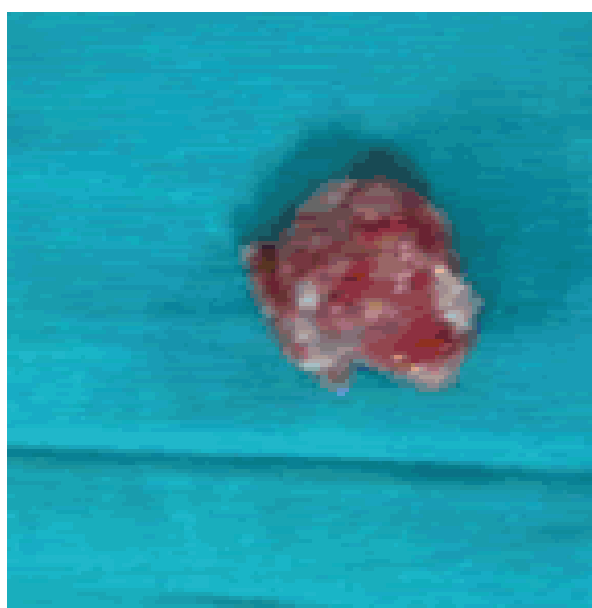


Fig 2: Excised gross specimen.

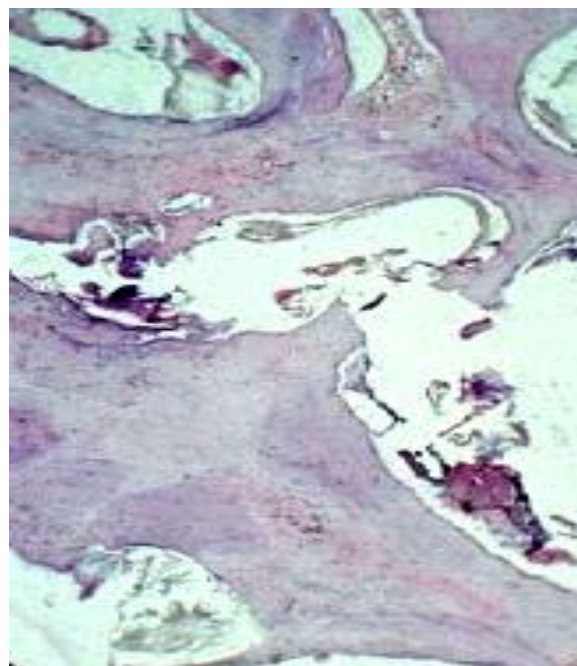


Fig 3: Microscopic image shows predominant dentin tissue enclosed in hollow structures with calcifications

Gross examination of excisional biopsy specimen shows a single bit of tissue measuring about 0.8x0.6 cm in size with irregular surface, reddish white in color, hard in consistency and no obvious change in color on pressing (Figure 2). Histopathological examination of decalcified (5% nitric acid) section shows presence of dental tissues like enamel, dentin and cementum. Dentin was the predominant among all. Dentin was seen enclosed in hollow structures which contain immature enamel matrix. The lesion also shows haematoxylic calcifications suggestive of cementum and presence of eosinophilic ghost cells were also noted (Figure 3). Correlating clinical and radiographic features with histological features diagnosis of complex odontoma was confirmed

## DISCUSSION

Complex odontoma is benign odontogenic tumor of ecto-mesenchymal origin. Because they are composed of more than one type of tissue they have been called as composite odontomas.<sup>7</sup> According to the 2005 classification of the World Health Organization (WHO),<sup>11</sup> two types of odontomas are acknowledged: (a) compound odontomas that usually are unilocular lesions containing multiple radiopaque, miniature tooth-like structures known

as denticles; and (b) complex odontomas that consist of an irregular mass of hard and soft dental tissues.<sup>8</sup> Both the types may get somewhat large (up to 6 cm) but will reach a greatest size and cease growth. Odontomas are either complex or compound and are classified as: (1) intraosseous: odontomas occur inside the bone and may erupt into the oral cavity and (2) extraosseous: odontomas occurring in the soft tissue covering the tooth bearing portion of the jaws.<sup>9</sup>

The odontoma mainly arise from budding of extraodontogenic epithelial cells from the dental lamina. The formation of large mass of tooth tissue in the form of enamel, dentin, pulp and cementum in irregular fashion are from the cluster of these cells.<sup>10</sup> Hitchin suggested that inheritance of odontomas may be due to a mutant gene or interference, possibly postnatal, with genetic control of tooth development. They originate from the odontogenic epithelium, which forms enamel, and odontogenic mesenchyme, which produces dentin via odontoblast differentiation. They represent an attempt to duplicate tooth formation but in an abnormal fashion.<sup>7</sup>

WHO defines complex odontoma as malformation in which all of the dental tissues are represented, and individual tissues mainly are well formed but occur in disorderly pattern.<sup>3</sup> It is usually presented as a hard, painless mass generally discovered accidentally on radiographic examination. Some potential consequences reported with complex odontomas are the displacement and aplasia of neighboring teeth, spacing, anodontia, pain due to exertion of pressure, devitalization and resorption of teeth.<sup>11</sup> The present case reported without any noticeable symptom.

Radiographically, complex odontoma characterize as a radioopaque mass which does not look like tooth structure. Histologically it is characterized by sheets of immature tubular dentin with encased hollow tooth like structures. Ghost cells are especially seen in complex odontoma.<sup>5-7</sup> The present case also showed the irregular radioopaque mass radiographically while histologically predominant dentin tissue enclosed in hollow structures with immature enamel matrix and presence of ghost cells confirmed the diagnosis of complex odontoma.

Recurrence of complex odontomas is very rare, however to prevent the further complications it is suggested to remove surgically once it is detected. The surgical technique for removing odontomas consists, in general, of the observation of the basic principles for surgical extraction of impacted teeth. It is usually adopted the enucleation technique for total tumor removal, followed by curettage, in order to remove the entire lesion.<sup>4</sup>

#### CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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