

## A Case Report of Compound Odontoma Associated with an Unerupted Maxillary Central Incisor

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### Abstract

Odontomas generally appear as small, solitary or multiple radio-opaque lesions found on routine radiographic examinations. Traditionally, odontomas are the most common type of odontogenic tumor and they are generally asymptomatic. Occasionally, odontomas may cause disturbances in the eruption of teeth, such as impaction, delay eruption or retention of primary teeth. In general, odontomas occur more often in the permanent dentition. This is a case report of a compound composite odontoma in an 8-year-old boy, which has resulted in failure of eruption of the permanent upper right central incisor while the contra-lateral tooth had erupted.

**Key words:** Compound odontoma, spontaneous eruption, unerupted incisor

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### Introduction

An odontoma is a mixed-tissue benign lesion of odontogenic origin exhibiting complete dental tissue differentiation. Constituting 22% of all odontogenic tumors, they lack proliferation potential. Rather than true neoplasms, odontomas are probably a hamartomatous malformation of functional ameloblasts and odontoblasts consisting of enamel, dentin, cementum, and pulp [1].

Odontomas generally appear as small, solitary or multiple radio-opaque lesions found on routine radiographic examination. Odontomas may cause disturbances in the eruption of teeth, such as impaction, delayed eruption or retention of primary teeth [2]. Most odontomas are associated with the crowns of unerupted teeth and could cause impaction of the involved tooth, thereby preventing its further eruption. This could consequently cause an

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aesthetically unsatisfactory dental appearance, with features of spacing, prolonged retention of the primary tooth, labial or palatal displacement of the permanent tooth as a result of an abnormal path of eruption, and presence of other malocclusion traits in the patients. This could also be associated with functional impairment and emotional disturbance in the individual [3].

#### **Classification By World Health Organization (WHO)**

1. *Complex odontoma*: A malformation in which all the dental tissues are well formed, but occurring in a less orderly pattern [4].
2. *Compound odontoma*: A malformation in which all the dental tissues are arranged in a more orderly pattern than in the complex odontoma so that the lesion consists of many tooth-like structures. These odontogenic tumors may be found anywhere in the dental arches. The majority of odontomas which are located in the anterior region of the maxilla are compound, while the great majority of odontomas located in the posterior areas, especially in the mandible, are complex odontomas [4].

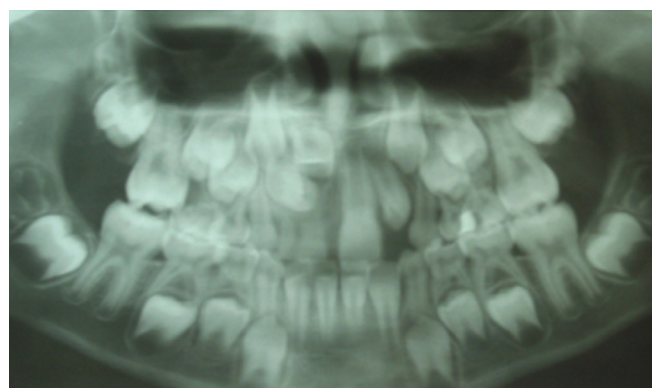
These abnormalities are, in part, tooth-like. The etiology of the odontoma is unknown. It has been suggested that local trauma or infection may lead to the production of such a lesion. Hitchin suggested that odontomas are either inherited or are due to a mutant gene or interference, possibly postnatal, with the genetic control of tooth development. On the other hand, Levy has reported the experimental production of this lesion in rats by traumatic injury. Although the etiology of this malformation is not yet known, there is some evidence to show that there is a genetic basis for both complex and compound composite odontomas. Heredity is a possible factor, and persistent lamina could be the hidden inherited developmental anomaly [5].

The compound odontoma has a predilection toward the anterior maxilla (61%), whereas only 34% of complex odontomas occurred here [6]. There are very few reports of odontomas associated with primary teeth in the literature. In general, odontomas occur more often in the permanent dentition and are very rarely associated with the primary teeth [2,7]. The aim of this case report is to report our experience in the surgical treatment of radiologically and histologically

confirmed compound odontomas obstructing the path of eruption of the central incisor and the spontaneous eruption of the central incisor after surgical treatment in an 8-year-old boy.

#### **Case Report**

An 8-year-old male patient referred to the Pediatric Dentistry Department with a complaint of delayed eruption of the maxillary right permanent central incisor, which had become bothersome since the contralateral left central incisor had erupted a year earlier. Examination revealed a healthy-looking young boy who was in the early mixed dentition stage and had skeletal pattern class I and class I molar relationships. The maxillary right primary central incisor was retained. Periapical radiographic evaluation of the upper anterior segment revealed the presence of multiple irregular masses of calcified tooth-like structures juxtaposed between the root of the maxillary right primary central incisor and the crown of an unerupted permanent maxillary right central incisor [Figure 1]. The initial radiographic



**Figure 1.** Panoramic radiograph revealed a compound odontoma obstructing the path of the central incisor.



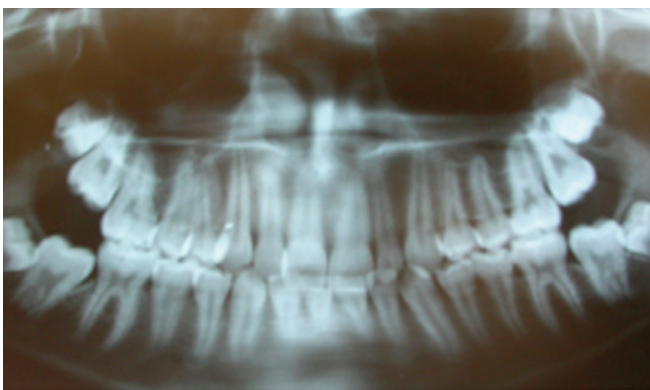
**Figure 2.** Intraoral appearance of the patient at the end of the surgery.



**Figure 3.** The periapical radiograph of the permanent incisor tooth at the end of the 3-month follow-up visit.



**Figure 4.** Intraoral appearance of the patient at the end of the 4-year follow-up visit.



**Figure 5.** Panoramic radiograph of the patient at the end of the 4-year follow-up visit.

diagnosis was a compound odontoma associated with an unerupted permanent maxillary right central incisor and it was also confirmed histopathologically. After that the patient was referred to the Oral and Maxillofacial Surgery Department. The retained maxillary right primary central incisor was extracted under local anesthesia, and the denticles were subsequently completely removed [Figure 2]. The spontaneous eruption of the permanent maxillary stage of development of the tooth was related to the age and dental development of the patient. The tooth showed remarkable descent within the third month of post-operative radiographic evaluation [Figure 3]. At the end of the 4-year follow-up visit, the permanent central incisor tooth was in the dental arch [Figures 4-5].

### Discussion

The possible reasons for failure of eruption may be the lack of space, malformation from early trauma, mechanical obstruction such as a supernumerary tooth, odontoma, and other odontogenic tumors [5,8]. The cause of non-eruption of the permanent maxillary right central incisor in this patient was the physical barrier of the compound odontoma in the eruption path of the tooth.

“Odontoma” has come to mean a growth in which both the epithelial and the mesenchymal cells exhibit complete differentiation, with the result being functional ameloblasts and odontoblasts forming enamel and dentin [9]. During the development of the tumor, enamel and dentin can be deposited in such a way that the resulting structures show an anatomic similarity to normal teeth in which the lesion is classified as a compound odontoma. However, when the dental tissues form a simple irregular mass occurring in a disorderly pattern, it is described as a complex odontoma. Compound odontomas occur more frequently than complex odontomas [10].

Most odontomas are asymptomatic, but their presence could be occasionally revealed by associated signs and symptoms of unerupted or impacted teeth, retained deciduous teeth, swelling, and evidence of infection. Odontomas affect the maxilla slightly more frequently than the mandible, and the impaction of a maxillary central incisor is often associated with odontomas located in the anterior maxilla. The compound odontoma has a higher predilection for the anterior



segment of the jaw than the complex odontoma; this pattern of presentation was observed in this patient, and attention was only drawn to the lesion as a result of investigation of the concern about noneruption of the maxillary permanent right central incisor [3].

Odontomas are circumscribed, encapsulated tumors that can be removed successfully by conservative surgery. Spontaneous eruption of the impacted tooth after removal of the obstruction-like odontoma has been reported by many authors [11,12]. A less conservative approach is advocated by others, with exposure of the unerupted tooth at the time of surgery and placement of bonded attachment and ligature/e-chain for orthodontic traction, to facilitate rapid eruption [13]. This approach, however, may result in a poor gingival margin, inadequate gingival tissue attachment and a discrepancy of the gingival level between the exposed tooth and its neighboring teeth [14]. Hence, in the present case, we advocated a more conservative approach of removal of the odontoma and its fibrous capsule. Along with that, we removed the bone overlying the unerupted incisor, replaced the flap back in position and allowed the incisor to erupt naturally.

Literature suggests that an odontoma once enucleated usually does not recur, but in young children a close monitoring is necessary. Early removal of the cause of eruption disturbances is important in the development of the dental arch. In addition, a careful follow-up review of the case both clinically and radiographically to assess the eruption of the unerupted or impacted teeth is necessary [10]. Sometimes an interdisciplinary approach may be necessary if the root formation of the unerupted tooth completes before eruption as the eruptive power is greatly diminished once root formation is completed. As was demonstrated by this report, early diagnosis and treatment of an odontoma ensures better prognosis [5].

### Conclusion

Odontomas are infrequently observed and are quite amenable to conservative management when detected. The compound odontomas are frequently associated with impaction or delayed eruption of incisors in the anterior maxillary segment and should be suspected in cases of delayed impaction and non-eruption of teeth. The early detection of these will re-

duce the possibility of development of malocclusion and/or pathological changes in the region odontomas are located. In this case the compound odontoma was asymptomatic, and attention was only drawn to the lesion as a result of the investigation of the concern about non-eruption of a maxillary right central incisor. After surgical treatment the maxillary right central incisor was not subjected to orthodontic traction and was left to erupt naturally.

### Conflict of interest statement

The authors have no conflicts of interest to declare.

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