

# Compound odontoma associated with an unerupted rotated and dilacerated maxillary central incisor

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## Abstract

Odontomas are benign tumors containing various component tissues of teeth. They usually remain asymptomatic and are diagnosed on routine radiographs. Clinically, they are often associated with delayed eruption or impaction of permanent teeth and retained primary teeth. A case of compound odontoma in association with an unerupted, rotated and dilacerated maxillary permanent right central incisor in a 12-year-old boy is reported. Such combination is rare, making it an interesting case for reporting. We have also discussed the clinical features, diagnosis and treatment of such a condition.

**Keywords:** Central incisor, compound odontoma, dilacerated, impacted, space maintainer, surgical removal

## Introduction

Odontomas are the most common odontogenic tumors of the jaws and characterized by their slow growth and nonaggressive behavior. They are mixed benign tumors composed of both epithelial and ectomesenchymal tissues (enamel, dentine, cementum and pulp tissue) in variable proportions and with different degrees of development.<sup>[1]</sup> Due to the presence of more than one type of tissues, these are regarded as composite odontomas.<sup>[2]</sup>

It was in 1867 that Paul Broca first used the term "Odontoma." Broca defined the term as "tumors formed by the overgrowth of transitory or complete dental tissues".<sup>[3]</sup> Most authors today accept that the odontoma represents a hamartomatous developmental malformation rather than a neoplasm.<sup>[2]</sup> The etiology of odontoma is unknown, though different factors such as trauma, local infection, genetic mutations, or even hereditary have been suggested.<sup>[1-3]</sup>

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The World Health Organization (WHO) has classified odontomas according to the histopathological findings<sup>[4]</sup> as follows.

- Complex odontomas, in which the dental tissues are well formed but exhibit an amorphous and more or less disorderly arrangement.
- Compound odontomas, in which the dental tissues are normal, arranged in an orderly pattern, but their size and conformation are altered, giving rise to multiple small teeth like elements called odontoids or denticles.<sup>[1,5]</sup>

In general, odontomas are diagnosed in the second or third decades of life with no sex predilection.<sup>[1,3]</sup> The complex odontomas are usually located in the premolar and molar region of both jaws, while compound odontomas commonly occur in the incisor canine region of the maxilla.<sup>[5]</sup> Reports vary as to the frequency of odontoma in different population groups. In general, they constitute 22% of all odontogenic tumors of the jaws.<sup>[3]</sup>

Odontomas are generally asymptomatic, often associated with delayed eruption or impaction of permanent teeth and retained primary teeth. In some occasional cases, pain, infection, regional adenopathies, alveolar bone expansion and tooth displacement may be present.<sup>[1,3]</sup> Management usually consists of conservative surgical removal and the prognosis after treatment is favorable, with a very little possibility of recurrence.<sup>[1]</sup>

The term dilaceration was first used by Tomes in 1848, and defined as deviation or bend in the linear relationship of a crown of a tooth to its root (Latin: *dilacero* = tear up).<sup>[6]</sup> Most authorities agreed that there are two possible causes of dilaceration. The most widely accepted cause is trauma to the primary predecessors whose apices lie close to the permanent tooth germ. The new portion of the tooth is formed at an angle to the portion formed before the injury. The second possible cause in cases that have no clear evidence of traumatic injury is an idiopathic developmental

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	DOI: 10.4103/0976-237X.86466

disturbance. Other possible contributing factors that have been reported are the presence of an adjacent cyst, tumor, odontoma, supernumerary tooth and mechanical interference with eruption.<sup>[5,6]</sup>

This paper describes the clinical features, diagnosis and treatment of a case of compound odontoma, associated with an unerupted, rotated maxillary permanent right central incisor, showing dilaceration in the apical region.

## Case Report

A 12-year-old boy reported seeking treatment for his unerupted maxillary permanent right central incisor. His medical and family history was non-contributory. Intraoral examination revealed the clinical absence of maxillary right central incisor, while the contralateral tooth had already erupted and was normally positioned in the arch [Figure 1]. The radiographic examination revealed the presence of impacted maxillary right central incisor, which was rotated and showed root dilaceration in the apical region. There were multiple small teeth like radio-opaque structures adjacent to and partially overlapping the coronal portion of unerupted incisor [Figure 2]. They were surrounded by a thin radiolucent zone and measuring approximately 1.5 × 1.0 cm. Depending on the clinical and radiographic examination, provisional diagnosis of compound odontoma was made. Treatment consisted of conservative surgical removal of the lesion and clinical and radiographic follow-up.

After achieving local anesthesia, a mucoperiosteal flap was reflected from maxillary right lateral incisor to the left lateral incisor, on the labial surface. A layer of bone overlying the tumor and unerupted incisor was removed using a round surgical bur under constant irrigation with saline as a coolant [Figure 3]. The calcified teeth like structures were removed [Figure 4] along with the fibrous capsule [Figures 5 and 6], without disturbing the unerupted permanent incisor. The surgical site was curetted and irrigated with povidone iodine--saline solution. After hemostasis was achieved, the flap was approximated and closed primarily with 3--0 silk sutures. The specimen was placed in 10% formalin and sent for histopathological examination, which confirmed the provisional diagnosis of compound odontoma. One week later the sutures were removed, with normal healing being observed. After complete healing, a functional removable space maintainer was constructed and delivered. Along with space maintenance, it resolved the esthetic problem of the patient to a certain extent. The patient was advised for routine clinical and radiographic follow-up once in 3 months, to assess the eruption of unerupted tooth and to examine for the recurrence of odontoma.

## Discussion

Impaction has been defined as the prevention of the eruption (often by a physical barrier) of a tooth to the expected times in to a normal functional position.<sup>[7]</sup> 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, other odontogenic tumors, cysts, or scar tissue due to early loss of primary tooth.<sup>[5,7]</sup> In the presented case compound odontoma was associated with unerupted maxillary right central incisor and obvious causative factor for impeding its eruption.

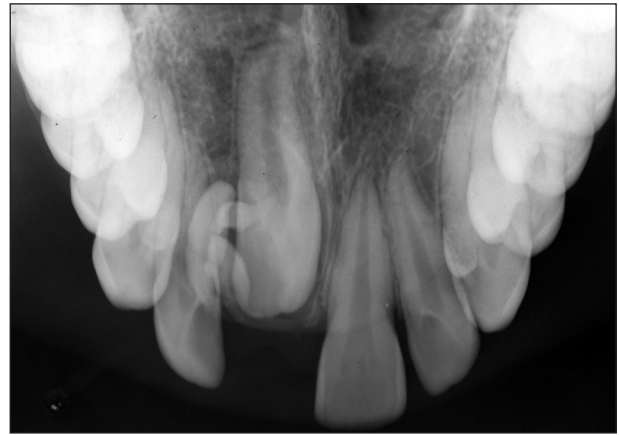
Odontomas can also manifest as part of syndromes, such as Gardner syndrome, basal cell nevus syndrome, familial colonic adenomatosis, Tangier disease or Hermann syndrome.<sup>[1]</sup> Such association was not seen in the presented case.

Dilaceration refers to an angulation or a sharp bend or curve, in the root or crown portion of the formed tooth.<sup>[5]</sup> In the presented case, the patient had unerupted permanent central incisor showing minimal dilaceration of the root in the apical region, without any previous history of dental trauma. The physical presence of odontoma, causing the mechanical interference to the eruption of central incisor, might have influenced the direction of root development, leading to the dilaceration in the apical region. Along with dilaceration, the incisor was rotated and associated with compound odontoma, a rare combination. Yeung *et al.*<sup>[5]</sup> reported a similar case in primary dentition. Another similar case was reported by Amailuk *et al.*,<sup>[8]</sup> associated with the maxillary lateral incisor.

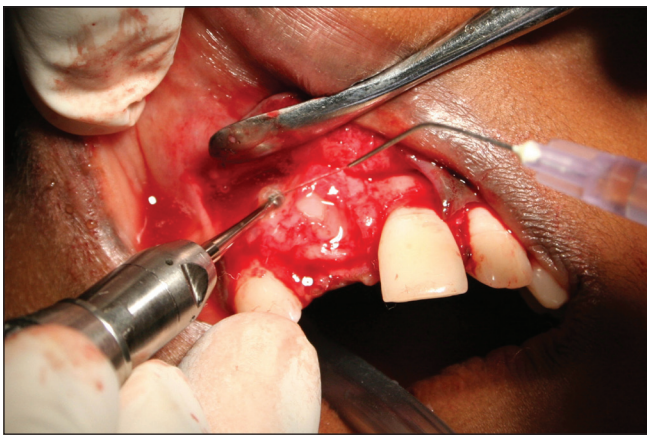
Odontomas are circumscribed, encapsulated tumors that can be removed successfully by conservative surgery. Spontaneous eruption of the impacted tooth after removal of the obstruction like odontoma has been reported by many authors.<sup>[1,9]</sup> A less conservative approach is advocated by others with 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.<sup>[3]</sup> This approach, however, may result in poor gingival margin, inadequate gingival tissue attachment and a discrepancy of gingival level between the exposed tooth and its neighboring teeth.<sup>[10]</sup> Hence, in the present case, we advocated a more conservative approach of removal of odontoma and its fibrous capsule. Along with that, we removed bone overlying the unerupted incisor, replaced the flap back in position and allowed the incisor to erupt naturally. As the dilaceration was minimal in the apical region, we expect spontaneous eruption of the maxillary right central incisor.



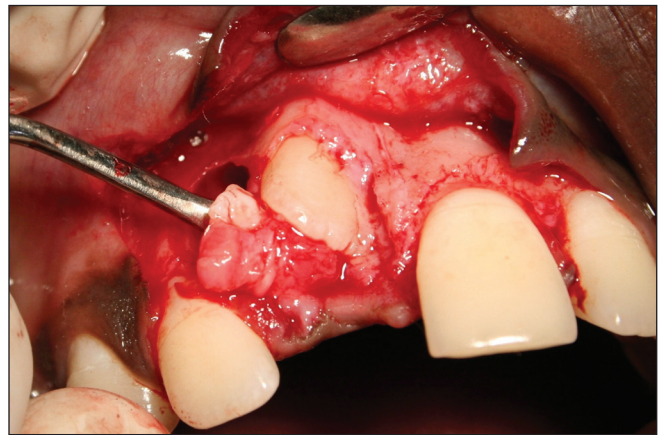
**Figure 1:** Intraoral view showing unerupted maxillary right central incisor.



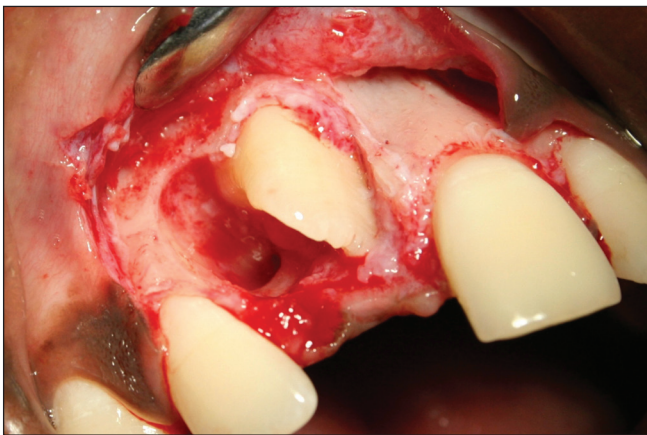
**Figure 2:** Preoperative maxillary occlusal radiograph.



**Figure 3:** Removal of bone overlying the tumor and unerupted incisor.



**Figure 4:** Surgical removal of odontoma along with its fibrous capsule.



**Figure 5:** The surgical site after removal of odontoma.

## Conclusion

The presence of odontoma in association with the impacted incisor which is rotated and shows dilaceration, as presented in our case is a rare combination. We treated the patient with conservative surgical removal of odontoma and kept under observation for spontaneous eruption of the unerupted



**Figure 6:** Calcified teeth like structures (compound odontoma) and the fibrous capsule.

central incisor. To preserve the space for incisor in the dental arch, we constructed a functional space maintainer. It improved esthetics of the patient.

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**How to cite this article:** Kulkarni VK, Vanka A, Shashikiran ND. Compound odontoma associated with an unerupted rotated and dilacerated maxillary central incisor. *Contemp Clin Dent* 2011;2:218-21.

**Source of Support:** Nil. **Conflict of Interest:** None declared.