Compound Composite Odontome Associated with Impacted Maxillary Permanent Lateral Incisor: A Case Report

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Abstract

The most prevalent odontogenic tumors, odontomas, are typically asymptomatic and found during routine radiography screenings. It frequently has the potential to obstruct tooth emergence. Compound odontomas constitute around 10% of all odontogenic tumors of the jaws and the anterior maxilla (67%) are more frequently affected by odontomas. Compound odontome occurrence ranges from 9% to 37%.

Keywords: Classification of odontoma, Compound odontoma, Impacted lateral incisor, Surgically removed compound odontoma.

Introduction

The term odontoma (or odontome) was originally used as general description for any tumor (in its broadest sense) of the dental tissues. It has, in the course of time, come to be employed in a much more restricted sense. The etiology is unknown, but trauma, infection, and hereditary causes can be its pathogenesis. It now denotes lesions that contain all the dental tissues. Hitchin had suggested that odontomes might be inherited, caused by a mutagene, or interfere with the genetic regulation of tooth growth.[1] It is mainly of two types – complex and compound odontoma. Compound odontomas resemble tiny tooth structures, whereas complex forms appear as undifferentiated conglomerate of dental tissues. Complex odontomas involve posterior region of jaws and compound is often seen in anterior jaw regions (67%).[2,3]

The WHO defines compound odontoma lesion as follows: "A malformation in which all the dental tissues are represented in a more orderly pattern than in the complex odontoma, so that there are several tooth-like features within the lesion." The enamel, dentine, cementum, and pulp are all positioned like regular teeth even though the majority of these structures do not physically resemble teeth in the normal dentition.[4] This odontogenic lesion is the most prevalent among odontogenic lesions/malformations, with a relative frequency of compound odontomas among odontogenic tumors ranging from 9% to 37%.[5] The majority of cases (74.3%) appear before the age of 20 years, with a clear peak in the second decade of life, making the compound odontoma a lesion of childhood/adolescence. According to the literature, the incidence is more in male as compared to female.[6] An odontome is essentially a benign lesion, but often causes disturbances in the eruption of its associated tooth. Most odontomes are asymptomatic and infrequently result in swelling, discomfort, suppuration, bone expansion, or tooth displacement.[7]

This paper discusses a case of an unerupted left maxillary permanent lateral incisor due to the presence of compound odontome in a young patient with clinical presentation, radiographic features, histopathological features, and surgical removal of odontome.

Case Report

A 13-year-old male patient reported with a complaint of missing tooth in the upper front region of the jaw. Past family and medical histories were not relevant. His general medical

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history was non-contributory. A mixed dentition with an unerupted left maxillary permanent lateral incisor was found during an intraoral examination. A swelling was seen after closer investigation on the labial side of the unerupted tooth, as shown in Figure 1a. In the same location, a hard nodule with a diameter of around 2 cm was felt. Intraoral periapical radiographs of 21, 22, and 63 revealed that mixed radiopaque and radiolucent structures were present at the tip of unerupted tooth and obstructing the eruption of the left maxillary permanent lateral incisor, as shown in Figure 1b. On the basis of clinical and radiographic findings, case was provisionally diagnosed as compound composite odontome. Treatment consisted of surgical removal of the odontoma.

Under local anesthesia, the odontome was surgically removed. Full-thickness mucoperiosteal flap was reflected from the labial surface of the left maxillary permanent central incisor to the left maxillary deciduous canine. After raising flap, the calcified masses were exposed. The nine calcified masses (Figure 2) were removed without disturbing the underlying tooth and sent for histopathological examination. After performing the curettage, the region was irrigated with povidone-iodine solution and normal saline (0.9%). Unerupted left maxillary permanent lateral incisor was located, flap was repositioned and sutured (Figure 3). Overall clinicopathological correlation was suggestive of compound composite odontome.

An immediate post-operative IOPA radiograph showed that there were no mixed radiopaque and radiolucent masses, indicating that the odontomes that were preventing the eruption of the left maxillary permanent lateral incisor had been successfully removed. The patient is recalled at regular follow-up at 1 week, 1 month, 3 months, and 6 months. At 6-month follow-up, clinically maxillary lateral incisor erupting was erupting which is shown in Figure 4.

Discussion

Odontomas are relatively common, asymptomatic odontogenic hamartomatous malformations. The association with impacted or retained primary teeth is the most frequent clinical manifestation for an odontoma.[8]

According to the World Health Organization (WHO) classification, odontomes can be divided into three groups:[9]

1. Complex odontome: when the calcified dental tissues are simply arranged in an irregular mass bearing no morphologic similarity to rudimentary teeth.
2. Compound odontome: Compound odontomes are made up of all odontogenic tissues arranged in an organized sequence, producing numerous structures resembling teeth but devoid of the morphology of natural teeth.
3. Ameloblastic fibro-odontome: this structure resembles an ameloblastic fibroma and is made up of various amounts of calcified dental tissue and dental papilla-like tissue. The ameloblastic fibro-odontome is considered as an immature precursor of complex odontoma.

Figure 1: (a) Front view showing hard swelling and clinically missing teeth in the region w.r.t. 22, (b) Intraoral periapical radiograph showing multilocular radiopacity enveloping the unerupted incisor with incomplete root formation

Figure 2: Post-operative font view showing surgical removal of odontoma followed by suturing

Figure 3: Calcified tooth like structures

Figure 4: Erupting maxillary left lateral incisor at 6-month follow-up

Compound odontomas show a high degree of morphodifferentiation, resulting in a lesion consisting of many tooth-like structures generally enclosed in a fibrous capsule.[10]

Differential diagnosis must be established with ameloblastic fibroma and ameloblastic fibro-odontoma. Odontoma can also manifest as a part of some syndromes such as Gardner syndrome, Hermann syndrome, and basal cell nevus syndrome.[11] Odontomas are easily enucleated,[12] so conservative surgical excision should be done, and hence, the recurrence rate is very low.[6]

According to their stage of development and level of mineralization, odontomas present different radiographic results. The absence of calcification causes the first stage to be radiolucent. In the middle stage, partial calcification is seen, and in the third stage, the lesion typically manifests as radiopaque masses surrounded by radiolucent regions that histologically correlate to connective tissue.[13]

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