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Erupting maxillary anterior odontoma: Report of an unusual case

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Abstract
Odontomas are passive hamartomatous tumours made of cementum, dentin, and enamel. It is the most common odontogenic tumour. Since they often exhibit no symptoms, they are accidently detected on standard radiologic examinations. They are of two types- complex and compound. It is quite unusual for odontomas to erupt into the oral cavity and be clinically exposed. There have been limited number of cases reporting an erupting odontoma. Complex odontomas are typically found in the posterior region of the mandible, while compound odontomas are more frequently observed in the anterior region of the maxilla. In this case report, we report an atypical case of an erupting complex odontoma in the anterior region of the maxilla in a 30-year-old male.

Keywords: Erupting odontoma, odontogenic tumor, complex odontome

Introduction
The most prevalent odontogenic tumours of the oral cavity are odontomas, which are passive hamartomatous tumours made of cementum, dentin, and enamel. Because they include several types of tissue, they are known as composites. Since they often exhibit no symptoms, they are accidently detected on standard radiologic examinations. The term "odontoma" was coined by Paul Broca in 1867 [1]. The World Health Organization categorizes odontomas into two groups: complex odontomas, characterized by irregular and disorganized arrangements of all dental tissues, and compound odontomas, which exhibit a more symmetrical and tooth-like pattern of dental tissue components [2]. Compared to complex odontomas, compound odontomas are more common and frequently reported [3]. The odontomas that have erupted are those that lie in association with an emerging or impacted tooth or lie superficially in bone [4]. It is quite unusual for odontomas to erupt into the oral cavity and be clinically exposed. The first documented case of an odontoma erupting into the oral cavity was reported by Rumel *et al*. in 1980 [1]. There have been limited number of cases reporting an erupting odontoma. Complex odontomas are typically found in the posterior region of the mandible, while compound odontomas are more frequently observed in the anterior region of the maxilla.[5] In this case report, we report an atypical case of an erupting complex odontoma in the anterior region of the maxilla.

Case Report
A 30-year-old male presented in the dental OPD with the chief complaint of a painful palatal swelling in the upper front region. (Fig 1a) Patient had no significant medical history. Extra-orally, there was no facial asymmetry present. On intra-oral examination, a firm and hard swelling extending from 12 to 21 region with a small whitish tooth like structure in its center was seen. There was no pus discharge present. The right maxillary permanent maxillary incisor was found to be missing. The patient was wearing a fixed partial denture extending from 12 to 21. The radiographic examination showed a well-defined radio-opaque mass in the maxillary anterior alveolar region coronal to an impacted right central incisor. Except for the superior region, where it was exposed into the oral cavity, the radiopaque mass was encircled by a consistent, well-defined radiolucent halo.

(Fig 1b) Based on the clinical and radiological findings, a provisional diagnosis of an erupting complex odontoma was made. Other possible differential diagnoses considered included cementoblastoma, osteoid osteoma, ameloblastic fibro-odontoma, adenomatoid odontogenic tumor, calcifying epithelial odontogenic tumor, and odonto-ameloblastomas. Ameloblastic fibro-odontomas and odonto-ameloblastomas, in particular, exhibit radiographic similarities to typical odontomas [3]. Hence, it is highly recommended that all the excised specimens be sent for a histopathological examination so that a definitive diagnosis can be established.

This odontogenic mass was surgically removed under local anesthesia and the cavity was thoroughly curetted. (Fig 1c) A histopathological examination of the specimen was conducted in order to confirm the diagnosis. (Fig 2a) Postoperatively, there was no complication. After healing, the patient was advised to undergo orthodontic treatment.

The microscopic features of the hematoxylin and eosin (H&E) stained sections revealed areas of dystrophic calcifications, dysplastic bone, cementicles, and abnormally arranged dentin along with dentinal interface that showed few tall columnar cells suggestive of ameloblasts. (Fig 2b, 2c)

Fig 1a: Intra-oral pre-operative clinical picture

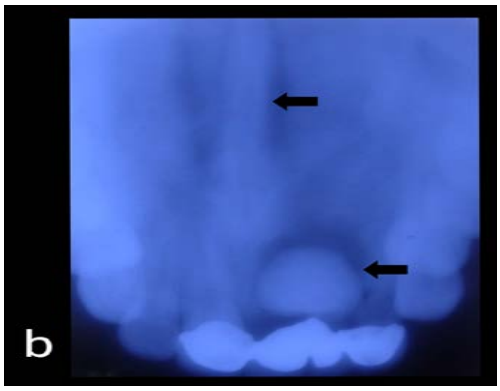

Fig 1b: Intra-oral periapical radiograph depicting erupting odontome

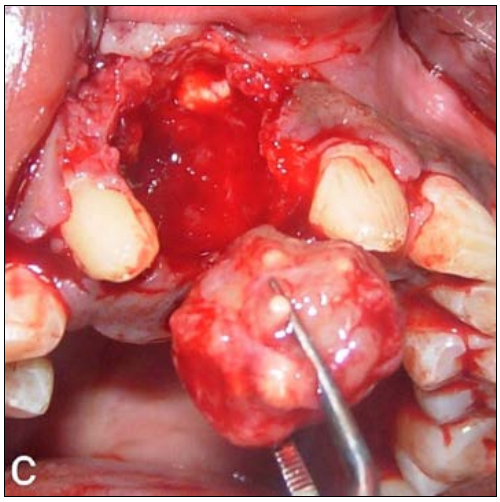

Fig 1c: Lesion excised in toto

Fig 2a: Excised mass

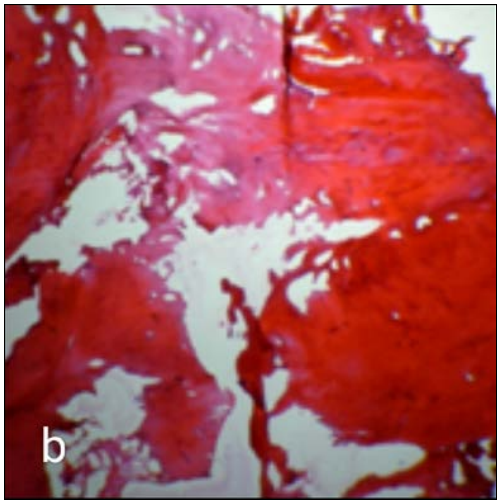

Fig 2b: Histologic section revealing areas of dystrophic calcifications, dysplastic bone, cementicles

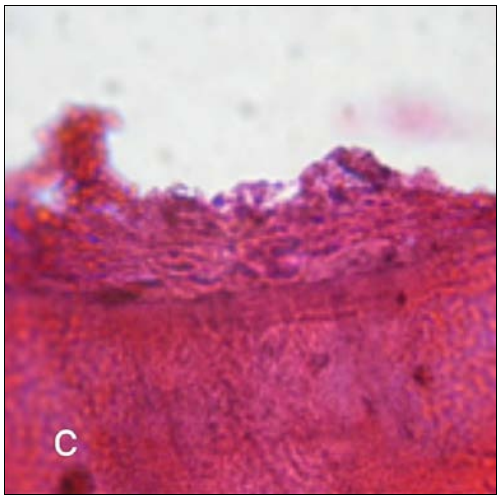

Fig 2c: Histologic section revealing abnormally arranged dentin along with dentinal interface that showed few tall columnar cells suggestive of ameloblasts.

Discussion

Odontoma, considered to be a developmental anomaly, is the most common odontogenic tumour [6]. Odontomas can be encountered at any age, albeit they are mostly diagnosed in the second and third decades of life [3]. Though odontomas are usually asymptomatic, they may present with certain clinical signs in some cases. These manifestations include tooth

displacement, discomfort, cortical bone enlargement, persistence of deciduous teeth, and noeruption of corresponding permanent dentition. The most typical signs of erupting odontomas are pain and swelling, followed by malocclusion. Odontomas range in size from a few millimetres to several centimetres. The most massive odontome reported in a person measured 0.3 kg by weight [7]. Odontomas are frequently observed to be in conjunction with impacted teeth [3, 8]. The most often affected teeth in this regard are the maxillary and mandibular canines, maxillary central incisors as well as third molars of both jaws [6].

According to Hitchin, odontomas are passed down by a mutated gene, potentially after birth, with genetic regulation of tooth development [5]. The lamina between tooth germs in humans has a propensity to break down into cell clusters. The development of both the types of odontomas, can be attributed to the presence of remnants of the dental lamina. Odontomas have been linked to injuries sustained during the primary dentition, genetic anomalies including Gardner syndrome, basal cell nevus syndrome, Tangier syndrome, Hermann syndrome and odontoma dysphagia syndrome, inflammatory events, hyperactive odontoblasts, infectious processes, and alterations in the genes that regulate dental development [4, 8]. Although the exact reasons behind odontomas emerging out in the oral cavity are still unknown, it is widely accepted that the impact of underlying impacted teeth push them forward.[9] When there is no associated tooth, the odontoma may be exposed through remodelling of the surrounding bone, sequestration of the overlying bone, resorption of the alveolar ridge, or a reactionary growth of the cavity capsule encompassing the odontoma [9]. Although odontoma does not develop roots, its growing size may cause the overlying bone to be sequestered, which may ultimately result in occlusal movement or eruption. A force strong enough to cause bone resorption is created over time as the odontoma's size increases [10].

The odontoma appears as a distinct radiopacity in the bone yet has a higher density than the bone and that of a tooth. It consists of foci with varying densities. The radiopaque mass is enveloped by a radiolucent halo, which is often bordered by a thin sclerotic ring. The connective tissue casing of a typical dental follicle makes up the radiolucent zone and the sclerotic border mimics the corticated perimeter of a normal tooth crypt [11]. Histopathological analysis of odontomas frequently reveals the existence of enamel matrix, dentin with varying amounts of pulpal tissue and cementum having no proper orientation. Compound odontomas may have somewhat tooth-like arrangement with pulp tissue in its central core whereas complex odontomas are mere amorphous conglomerates [3].

The preferred course of therapy is to remove the lesion and curettage the surrounding soft tissue to avert cystic degeneration. When there is an impacted tooth and a complex odontoma, surgical odontoma removal is recommended along with the orthodontic eruption of the affected tooth. The likelihood of recurrence is extremely low in cases of odontomas.

Conclusion

Odontomas make up a significant number of jaw tumours, hence it is crucial to possess a comprehensive understanding of odontomas' characteristics. The presence of odontomas can hinder the normal eruption of permanent teeth, leading to disturbances in arch-forms and occlusion. Therefore, it is important to diagnose and manage odontomas promptly to ensure appropriate treatment and prevent any complications leading to a favourable prognosis. The eruption of a complex odontoma is a rare event. Generally, complex odontomas are identified in the posterior region of the mandible and in proximity to premolars. However, our case report describes the atypical occurrence of a complex odontoma that had erupted in the anterior maxilla, highlighting its unusual location.

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