ABSTRACT

The most common odontogenic tumor is odontoma comprising 22% of all the cases. They show no gender predilection, are most often diagnosed in the second decade of life. They are preferentially located in the upper maxilla, particularly in the anterior sector. These are of two types complex and compound. Complex odontoma is a less prevalent than compound (1:2). Their apparent eruption in the oral cavity is rare. We hereby report a rare case of complex odontoma (intraosseous type) associated with impacted lower permanent second molar. These lesions are mostly asymptomatic and constitute casual finding on X-ray indicated for other reasons. The most common clinical manifestation is absence of impacted tooth and the presence of tumor. Treatment consists of surgical removal of tumor with impacted tooth. The prognosis is very good with least tendency toward relapse.

Keywords: Cemento-ossifying Odontoma, Odontogenic tumor.

INTRODUCTION

Odontomas are hamartomas composed of various dental tissues, i.e. enamel, dentin, cementum and sometimes pulp. They are slow-growing, benign tumors showing nonaggressive behavior. They are classified as complex and compound, if there is superficial anatomic similarity to even rudimentary teeth. Complex odontomas are less common than the compound variety in the ratio 1:23. Eruption of an odontoma in the oral cavity is rare. We present a case of complex odontoma, in which apparent eruption has occurred in the area of the right second molar.

CASE REPORT

A 16 years old female presented to our hospital in ENT department with painless swelling right side lower jaw for last 6 weeks. Other medical history was unremarkable. There was no history of trauma. Clinically, there was mild facial asymmetry with diffuse smooth swelling in the region of angle of mandible on right side. Mouth opening was adequate. Intraoral examination of the region revealed the apparent absence of the right mandibular second and third molar tooth (Fig. 1). On palpation, swelling was hard, nontender and a breach in the corresponding alveolar mucosa through which pus extruded. The buccal and lingual cortices were expanded and hard. There was no evidence of any abnormality in other teeth in the right mandibular region. It measured about 3 cm in its mesio-distal dimension and 2 cm buccolingually. Panoramic radiograph showed a uniform, well-defined radiolucent halo surrounding a radiopaque shadow (Fig. 2). Halo was deficient in the superior area where it erupted into the oral cavity. The right mandibular canal was displaced inferiorly. There was no evidence of any root absorption in the right mandibular second molar. Computed tomography (CT) scan of face showed radiopaque shadow enclosed between inner and outer table of mandible on right side (Fig. 3).

Differential diagnosis included pericoronal abscess, infected dentigerous cyst and odontogenic tumor. Patient was posted for surgical excision of tumor under general anesthesia. Access to the mass was achieved via an

Fig. 1: Odontoma erupting in the oral cavity and impaction of the second molar
intraoral approach. Mucoperiosteal flap was elevated and bony tumor excised in toto along with the tooth (Fig. 4). Histopathologic examination of the excised mass confirmed the diagnosis of complex odontoma (Figs 5 and 6). Postoperative period was uneventful.

**DISCUSSION**

Odontoma is the most common type of odontogenic tumor, though some authors prefer to refer to it as hamartoma, not a true tumor.\(^3\) It was first described by Paul Broca in 1867. Odontomas was classified as either complex or compound by the World Health Organization (WHO) in 1992.\(^4,5\) Complex odontomas are twice as less common than the compound.\(^5\) Compound odontoma is a malformation in which all the dental tissues are arranged in a more orderly pattern than in complex odontoma, so that the lesion consists of many tooth-like structures.\(^7\) In this case, it seemed that the patient had a lot of tooth-like structures with an impacted central incisor because of trauma. Odontomas are discovered by routine radiography, but sometimes may cause difficulty in identification due to lack of calcification.
Radiographically, compound odontomas typically manifest as a dense radiopaque lesion surrounded by a thin radiotransparent halo. Three developmental stages (radiotransparency, intermediate and radiopaque stage) can be identified, based on the radiological features and degree of calcification of the lesion at the time of diagnosis. At the first stage, dental tissue calcification is absent. The second or intermediate stage presents partial calcification. The third or classically radiopaque stage exhibits predominant tissue calcification with the previously mentioned surrounding radiotransparent halo.\(^3,7\)

The etiology of these lesions is still exactly unknown but local trauma, infection, inheritance and/or genetic mutation factors have been suggested.\(^3,5,8\)

The mechanism of odontoma eruption appears to be different from tooth eruption because of the lack of periodontal ligament in odontoma. Therefore, the force required to move the odontoma is not linked to the contractility of fibroblasts, as is the case for teeth. Although there is no root formation in odontoma, its increasing size may lead to the sequestration of the overlying bone and, hence, occlusal movement or eruption. The increase in the size of the odontoma over time produces a force sufficient to cause bone resorption.

Another reason for odontoma eruption could be the bony remodeling of the jaws. However, for this to occur dental follicle is required, although indirectly, as it provides both the conductance and chemoattraction for the osteoclasts necessary for tooth eruption. Immunocytochemical investigations have indicated that a pattern of cellular activity involving both reduced dental epithelium and the follicles is associated with tooth eruption. The reduced dental epithelium initiates a cascade of intercellular signals by expressing epidermal growth factor \(\beta\) and transforming growth factor. These factors, in turn, stimulate the follicular cells to produce colony-stimulating factor, which recruits osteoclasts to the follicle. The reduced dental epithelium also secretes proteases, which assist in the breakdown of the follicle to produce a path of least resistance.\(^10\) Erupted odontomas are most often seen in older people. This, it is likely that resorption of the edentulous part of the alveolar process plays a role, but it is also possible that reactive growth of the capsule contributes to this phenomenon.\(^11\) Eruption at a young age is possible through bone remodeling that might have resulted from the presence of dental follicles.

Odontomas have been associated with trauma during primary dentition, as well as with inflammatory and infectious processes, hereditary anomalies (Gardner syndrome, Hermann’s syndrome), odontoblastic hyperactivity and alterations in the genetic components responsible for controlling dental development.

Hitchin\(^12\) suggested that odontomas are inherited through a mutant gene or interference, possibly postnatal, with genetic control of tooth development. In this case, the reason for odontoma is believed to be the childhood trauma. The etiological factors of dental retention are possible ectopic tooth development, ectopic tooth eruption, premature apical closure, unfavorable tooth rotation, altered eruption sequence, premature loss of deciduous tooth, supernumerary tooth, presence of tumor as odontomas, presence of cyst, inadequate space in the dental arch and sequela of oral trauma.\(^8\) Compound odontomas are usually more common in the anterior maxilla (61%), in male patients and usually found in the second decade of life.\(^17\) Clinically, odontomas are either complex or compound, and are classified as:

- **Intraosseous**—these odontomas occur inside the bone and may erupt (erupted odontoma) into the oral cavity. To date, 12 cases of the erupted variety have been described in the literature.\(^9\)
- **Extraosseous or peripheral**—odontomas occurring in the soft tissue covering the tooth-bearing portions of the jaws.

In our case study, we present a mature complex odontoma, which should be differentiated from cementoblastoma, osteoid osteoma and fibro-osseous lesions, such as cemento-ossifying fibroma. A cementoblastoma presents as a well-defined radiopaque mass attached to the tooth root and surrounded by a radiolucent rim.\(^3,7\) Osteoid osteomas are characterized by a small ovoid or round radiolucent area surrounded by a rim of sclerotic bone; the central radiolucency exhibits some calcification. Cemento-ossifying fibroma presents as a well-defined radiolucency with increasing flecks of calcification as it matures; it is not surrounded by a radiolucent rim and it is diffuse with normal bone. Also, none of these is associated with an impacted tooth. Surgical removal of odontomas is indicated in the absence of any contraindications. Clinical and radiographic follow-up is prudent where surgical treatment is deferred.

**CONCLUSION**

An erupting complex odontoma in the mandibular second molar region is reported. Such cases may confuse diagnosis during clinical examination. Radiographically, such odontomas may be mistaken for various other lesions. This case is also unusual in that eruption took place over a relatively short time (6 weeks). A possible explanation for such a phenomenon could be bone remodeling and increased force from the expanding odontoma.

**REFERENCES**

Complex Odontoma (Intraosseous type) Associated with Mandibular Impacted Permanent Second Molar