ERUPTING COMPLEX ODONTOMA OF MAXILLA: A CASE REPORT

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Complex odontomas are benign odontogenic tumours composed of enamel, dentin, cementum and pulp tissue. These are usually asymptomatic, but often associated with tooth eruption disturbances. In exceptionally rare cases odontomas spontaneously erupt into the oral cavity. Herewith, a case of complex odontoma in right maxilla is described which partially erupted into the oral cavity. The panoramic radiograph revealed complete radiopaque mass with impacted tooth placed deeper to it. In the present case there was no contributory history of trauma or injury and corresponding tooth was missing. So it might have been developed from the corresponding dental lamina.

Key-Words: Cusp-like projection, erupting Odontoma, embedded tooth, Maxillary sinus.

The Odontoma is an hamartomatous malformation of odontogenic cells both epithelial and mesenchymal, which exhibit complete functional differentiation1 as a result enamel, dentin and cementum is formed[1]. According to the latest classification of WHO two types of odontomas can be explained: complex and compound odontomas, the latter being twice as common as the former[3].

Odontomas occur most frequently in maxilla 67% than mandible 33%, and constitute about 22% of all the odontogenic tumors[1]. However, it may at times be present in unusual locations such as maxillary sinus, ramus of the mandible, inferior border of the mandible or subcondylar region[4]. Compound odontomas are usually located in the anterior maxilla, however complex odontomas are found in the posterior mandible and these are usually observed with impacted teeth. Odontomas are mostly found in children and adolescents, with equal sex predilection[2] with an average age of 14 years[5].

Odontomas are generally asymptomatic, and are diagnosed on routine radiographic exanination[2]. However very few cases are reported in the literature indicating spontaneous eruption of odontoma, which are mostly associated with swelling, pain and tendency for infection[3].

The first case of an erupted odontoma was described in 1980 by Rumel et al and since then only 21 cases have been documented in the literature[3]. We present an additional case of large complex odontoma in the maxilla erupting into the oral cavity.

Case Report

A 15-year male reported with the complaint of slow progressive asymptomatic swelling on right side of upper jaw since four months. Past medical history and general examination were non-contributory. Local extraoral examination showed a hard swelling on the right cheek caused by the bulging of right maxillary bone. The skin overlying the swelling was normal. Intraoral examination revealed absence of all the three maxillary molars on the right side, except a cusp like projection in the first molar region. The buccal and palatal cortices were unevenly expanded and the overlying mucosa was appearing normal (Fig.I). Radiograph showed a large irregular radiopaque mass encroaching upon the floor of the right maxillary sinus. The tooth was displaced by the mass to posteriosuperior wall of the maxillary sinus near the orbital floor (Fig.II). From the clinical and radiological examination, probable diagnosis of complex odontoma was made.

The patient was operated under local anesthesia with sedation. A standard Caldwell-Luc approach was

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taken to the right maxillary sinus. Once the access was attained, the entire sinus appeared normal, including the mucosa overlying the protruding mass. The tumor was removed intact along with the displaced tooth. Mass was approximately 3 cm in diameter (Fig.III). The rough bony edges were smoothened. The sinus was irrigated with normal saline solution and the wound was closed primarily. Post operative edema was minimal and the recovery was smooth. He was discharged on the day of surgery and followed as an outpatient.

The decalcified histopathologic section showed the presence of dental tissues namely dentine, enamel, enamel matrix, cementum and pulp-like connective tissue arranged in disorderly fashion (Fig.IV). The bulk of the tumor was observed to be of chiefly dentine, which was quite well-formed with regularly arranged dentinal tubules. In association with dentin connective tissue similar to pulp tissue was observed in moderate quantity. Few empty spaces were observed suggesting enamel spaces of which few showed tissue resembling enamel matrix (faintly heamatoxyphilic). The section also showed the presence of cellular cementum in moderate quantity. The lesion was surrounded by a fibrous capsule.

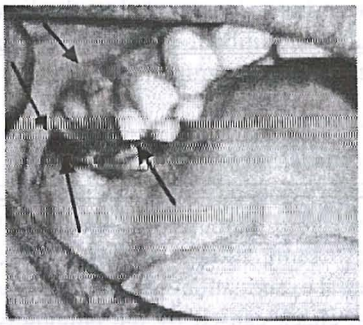


Fig 1: Showing cusp like projection in maxillary right first molar region with irregular buccal swelling.

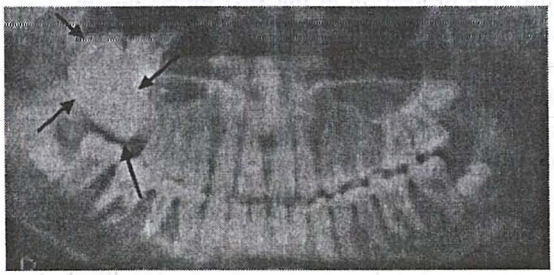


Fig 2: Panoramic radiograph showing radiopaque mass and the impacted tooth at its deeper surface.

Discussion

Odontomas are tumoral or pseudotumoral lesions and are considered by several authors as hamartomatous malformations. They are composed

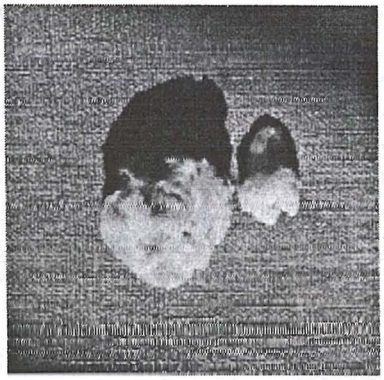


Fig 3: Excised specimen showing irregular large mass and partially formed unerupted tooth.

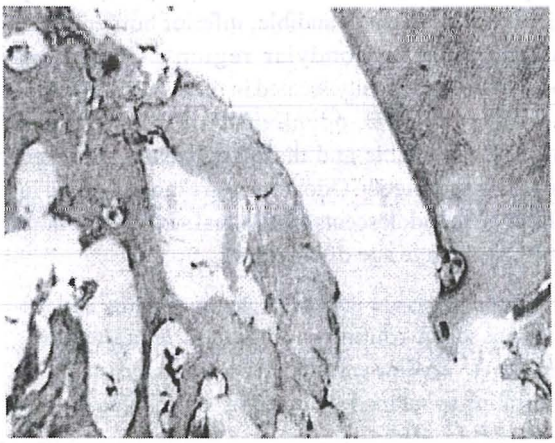


Fig 4: Photomicrograph of complex odontoma showing admixture of dental tissues i.e., dentine, enamel matrix and pulp tissue along with enamel spaces (H & E stain X40).

of different dental tissues in different stages of evolution[6]. The etiology of odontoma remains unknown and several factors have been related to them such as infection, trauma, systemic disease or genetic mutations[1,2,3].

It has been suggested by Hitchin that they are either inherited or are due to mutant gene or interference, possibly postnatal with the genetic control of tooth development[1,2]. On the other hand Andreason (1984) and Basstony (1990) agreed that local trauma producing a luxation and intrusion or ex-articulation of the deciduous tooth in the early developmental stages of the enamel organ, resulting into either a dilaceration of the root of corresponding permanent one or an odontoma, depending on the stage of the development of tooth germ[6]. In the present case there was no contributory history such as trauma or injury and also the corresponding tooth was missing, therefore it can be suggested to have developed from the corresponding dental lamina.

Odontomas are diagnosed commonly in the second or third decade of life. They might be very small and remain dormant in the jaws for years without any symptom[1,7], and are associated with alterations in permanent or temporary tooth eruption. All the odontomas generally located coronal to the affected tooth. Impaction and/or altered eruption occur because the odontoma obstructs the eruptive trajectory of the teeth[2]. In exceptional cases odontomas spontaneously erupt into the oral cavity[3].

The mechanism of erupting odontomas into oral cavity is not certain as some erupt at young age while others very late[3]. However the mechanism of odontoma eruption appears to be different from normal tooth eruption, because of 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 overlying bone and therefore occlusal movement or eruption. An increase in the size of the odontoma over time produces a force sufficient to cause bone resorption[8].

Another reason for odontoma eruption could be the bony remodeling of the jaws. Although for this to occur dental follicle (DF) is required, which indirectly provides both the conductance and chemo-attraction for the osteoclasts necessary for tooth eruption. Immunocytochemical investigations have indicated that the pattern of cellular activity involving both reduced dental epithelium (RDE) and the follicles is associated with tooth eruption. The RDE initiates a cascade of intercellular signals by expressing epidermal growth factor (EGF) ß and transforming growth factor (TGF). These factors stimulate the follicular cells to produce colony stimulating factor which recruits osteoclasts to the follicle. The RDE also secrete proteases which assist in the breakdown of the follicle to produce a path of least resistance. The epithelial signaling could explain the remarkable consistency of eruption times, as it is likely that the dental epithelium is programmed as part of its functional life cycle[9].

The present case showed extraoral as well as intraoral swelling with absence of right maxillary molars, except cusplike projection seen in the first molar region. The intraoral periapical radiograph revealed partial radio-opaque image, however panoramic radiograph served as a diagnostic radiograph since whole lesion was viewed in this view. The Water's view and True lateral projection helped in specifically localizing the tumor.

An unerupted or impacted tooth either normal or supernumerary, is often found associated with the tumor.mass, so the teeth are clinically missing or showing delayed eruption, it is imperative that every attempt be made to discover the reason[10]. This may include previous history of extraction or more extensive use of dental radiographs[11]. Pain and infection are rarely encountered[10,12]. When radio-opacities without embedded tooth are seen within the maxillary sinus, antroliths and foreign bodies should be considered in the differential diagnosis. Majority of the odontomas involving the maxillary sinus, histopathologically confirmed as being complex odontomas[11,12]. Ameloblastic fibro-odontoma and ameloblastic odontoma should also

be considered in the differential diagnosis and biopsy should be done as a routine procedure as suggested by many authors to eliminate the possibility of presence of ameloblastic tissue, which would make the prognosis worse[1].

The treatment consists of local removal because of its limited growth. Since, they are separated from the surrounding bone by a zone of connective tissue, they are easily enucleated and do not recur. But special care should be taken to remove it totally in order to avoid a relapse, which is specifically critical in immature odontomas[6]. It has been reported that a developing complex odontoma not only prevents eruption of permanent teeth but also may cause apparent failure of development of permanent tooth germ[13]. If not removed they may also show cystic changes which would prevent the eruption of permanent teeth and cause considerable destruction of bone[1,13,14].

Conclusion

Odontomas are considered as Hamartomatous malformation rather than true neoplasm. These are usually associated with impacted normal or supernumerary teeth. They can obstruct the eruptive trajectory of the teeth. Moreover erupting odontomas also leads to development of swelling, pain and infection. Therefore once the diagnosis of odontoma is confirmed, it should be excised surgically at the earliest.

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