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Case Report

# **Odontome and its management**

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#### **INTRODUCTION**

Odontomas were first described by Paul Brocain in 1867. He used the term odontoma for all odontogenic tumours; however, currently, the usage of the term has become much more restricted<sup>1</sup>.Odontomas are now considered as hamartomatous odontogenic lesions as they comprise of both epithelial and ectomesenchymal components, having morphologically normal cells with defective structural organisation<sup>2</sup>.

Odontomas are included in the WHO classification of head and neck tumours as a group of lesions affecting the odontogenic epithelium with odontogenic ectomesenchyme, with or without hard tissue formation. These hamartomas have been described as either complex type or compound type. In complex odontoma, the enamel, dentin, and cementum are present in a disorganised manner, whereas in compound odontoma, varied numbers of tooth-like elements are present<sup>3</sup>.

Odontomas are characterised by slow and painless growth and maybe associated with retention of primary tooth or delay in the eruption of primary and permanent teeth<sup>4</sup>. Maxilla has more predilection for the occurrence of odontoma than mandible (3:1). The compound odontoma has a predilection for the anterior maxilla (61 %) and in general, complex odontomas has a predilection for the posterior jaws (59%) and lastly the premolar area (7%). Interestingly, both types of odontomas occurred more frequently on the right side of the jaw than on the left (compound, 62%; complex, 68%). The odontoma usually remains small, the diameter of the mass occasionally exceeds that of a tooth.

Several factors have been associated with the pathogenesis of odontomas. These are trauma in the primary dentition period, hereditary anomalies like Gardner's syndrome, hyperactivity of odontoblasts or changes in the genetic components responsible for dental development<sup>5</sup>.

During the development of the tumour, enamel and dentin can be deposited in such a way that the resulting structures show an anatomic similarity to normal teeth, in which case the lesion is classified as a compound odontoma. However, when the dental tissues form a simple irregular mass occurring in a disorderly pattern, it is described as a complex odontoma. Compound odontomas appear more frequently than complex odontomas.

Odontomas may be diagnosed at any age but they are usually detected during the first two decades of life<sup>6</sup>. Odontomas are treated by conservative surgical removal and there is little probability of recurrence<sup>6</sup>.

### CASE REPORT

A 9-year-old female presented to the paediatric dental clinic with a chief complaint of missing tooth in the upper left front tooth region of mouth. According to the history, there was a previous history of trauma Radiographic examination (intra-oral periapical radiograph) shown in figure 1, revealed the presence of radio-opaque mass in the upper left central incisor region close to the floor of the nasal cavity. Further investigations were carried out (Occlusal radiograph shown in figure 2, orthopantomograph and cone beam computed tomography shown in figure 3). The radiopaque mass had a density greater than that of bone and equivalent to that of teeth. On the basis of radiological and clinical examination, the case was provisionally diagnosed as an odontoma. Surgical excision was performed to remove the structure, showing a tooth-like appearance.

The patient was treated under general anesthesia, Sevoflurane and thiopental sodium were used as induction agents, along with N2O sedation, and the reversal drug used was Myo-pyrolate with premedication and the patient's behavior during the procedure was classified as definitely positive, according to Frankl Behavior Rating Scale.

Crevicular incision was made in relation to labial aspect of bony mass, followed by two diagonal relieving incisions placed on distal side of right lateral incisor and mesial side of left lateral incisor to facilitate proper access to the site. Full thickness muco-periosteal flap was elevated towards the lateral aspect of maxilla. Bone trephining was done using HP 06 round bur around the lesion as shown in figure 4. Lesion was surgically excised in toto as shown in



figure 5 and figure 6 and after thorough irrigation of the enucleated site, the flap was repositioned and sutured with 3-0 Vicryl suture material. The specimen shown in figure 7 was sent for histopathological examination. Bone grafting was not done since the patient was young and growing, healing will be much faster. After the surgery, patient was shifted to intensive care unit and was kept under observation, vital signs were monitored in every 15 minutes and analgesics and antibiotics were administered intravenously. The patient was discharged after 24 hours and was prescribed on oral medication for next 7 days. Postoperative instructions specifically related to the maintenance of an appropriate oral hygiene, ingestion of cold and soft meals, refraining from physical exercise during 48 hours, and management of pain were given to the patient's mother. Patient was recalled after 10 days and follow-up was done. The area of surgery had no pain, and the sutures were resorbed.

Histopathological reports reveal tissue fragments exhibiting proliferation of spindle cells focally lined by cuboidal epithelium. Also seen are areas of dystrophic calcification, bony tissue and psammomatous calcifications. Section was negative for granulomas or malignancy.



Figure 3: CBCT showing presence of odontome in the left maxillary central incisor region





# Figure 4: Bone trephination using HP 06 round bur Figure 5: Excision of odontome in toto

Figure 6: After irrigating sutures were placed Figure 7: Specimen which was obtained after excision



## DISCUSSION

The term 'odontoma', by definition alone, refers to any tumour of odontogenic origin. Through usage, however, it has come to mean a growth in which both the epithelial and the mesenchymal cells exhibit complete differentiation, with the result that functional ameloblasts and odontoblasts form enamel and dentin. This enamel and dentin are usually laid down in an abnormal pattern because the organization of the odontogenic cells fails to reach a normal state of morpho-differentiation.

WHO defines a compound odontoma as a malformation in which all the dental tissues are represented in a more orderly pattern so that the lesion consists of many tooth-like structures. Most of the structures do not morphologically resemble the teeth of the normal dentition but, in each one enamel, dentin, cementum, and pulp, are arranged as in the normal tooth<sup>7</sup>.

This lesion is composed of more than one type of tissue, and therefore has been called a composite odontoma. In some composite odontomas the enamel and dentin are laid down in such a fashion that the structures bear considerable anatomic resemblance to normal teeth, except that they are often smaller than typical teeth. They have been termed *compound* composite odontomas. On the other hand, when the calcified dental tissues are simply an irregular mass bearing no morphologic similarity even to rudimentary teeth, the term *complex* composite odontoma is used. The complex form of odontoma is less common than the compound type<sup>4</sup>.

The odontoma may be discovered at any age in any location of the maxillary or mandibular dental arch. The mean age of detection is around 14.8 years, with the most prevalent age for diagnosis and treatment being the second decade of life. A slight predilection for occurrence in males (59%) compared with females (41 %) was also seen<sup>4</sup>.

Studies have shown that compound odontomas are seen more frequently in the anterior maxilla<sup>7, 8</sup>. In the present case, it was seen in the same area. Clinically, three types of odontomas have been recognized in the literature: central (intra osseous) odontoma, peripheral (extra osseous or soft tissue) odontoma and erupted odontoma. Intraosseous (central) odontomas are most commonly located inside the bone and are discovered accidentally or due to aplasia or impaction of a permanent or deciduous tooth. Peripheral odontomas are the rarest clinical variants with only 6 cases

reported till date. Rarely intra osseous odontomas are located coronally to an erupting or impacted tooth or superficially facilitating their eruption into the oral cavity<sup>7,9</sup>.

Surgical exposure followed by enucleation of the odontoma is the accepted choice of treatment in order to allow the eruption of the permanent tooth. Small-sized odontomas do not pose any difficulty while removal; however, the proximity to nearby structures must be kept in mind to prevent unnecessary injury to them<sup>10</sup>. Hence in the present case surgical excision of odontome was done followed by curettage of the area.

Figure 8 - Histological appearance of odontome



#### CONCLUSION

The present case report is of a compound odontoma in anterior maxilla associated with missing upper anterior tooth. This was diagnosed in a routine dental check-up for a healthy child with caries-free dentition. In order to prevent adverse effects of odontomas, the author suggests that greater emphasis should be given on routine dental check-ups for children so that these anomalies can be detected earlier, thereby, minimising the interventions needed after-enucleation.

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Since both the ameloblastic odontoma and the ameloblastic fibro-odontoma bear great resemblance to the common odontoma, particularly on the radiograph, it is suggested that all odontomas be sent for microscopic examination. Histopathological reports tissue fragments exhibiting proliferation of spindle cells focally lined by cuboidal epithelium. Also seen are areas of dystrophic calcification, bony tissue and psammomatous calcifications. Final picture was unremarkable bony tissue which is negative for granuloma or malignancy.



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