

## Odontome of Jaws: A case report

Asish Rajasekharan<sup>1\*</sup>, Sherin Ann Thomas<sup>2</sup>, Twinkle S Prasad<sup>3</sup>, Anita Balan<sup>4</sup>, Sreedevi P U<sup>5</sup>

<sup>1</sup>Associate Professor and Head, <sup>2</sup>Assistant Professor, <sup>3</sup>Associate Professor, <sup>4</sup>Principal, <sup>5</sup>Senior Resident, Dept. of Oral Medicine & Radiology, <sup>1,2,5</sup>Government Dental College, Alappuzha, Kerala, <sup>3</sup>Government Dental College, Kottayam, Kerala, <sup>4</sup>Government Dental College Thiruvananthapuram, Kerala, India

**\*Corresponding Author: Asish Rajasekharan**

Email: asishrajasekharan12@gmail.com

### Abstract

An odontoma, also termed as an odontome is a benign odontogenic tumor of developmental origin. Odontoma is a dental hamartoma. It is composed of normal dental tissue that has grown in an irregular way. The condition is frequently associated with unerupted teeth. It is generally detected through failure of teeth to erupt at the expected time. The management depends upon the early diagnosis, histopathological examination and excision. This article elaborates regarding its development, classification, etiological factors, occurrence, diagnosis and management and correlate with case reports.

**Keywords:** Odontome, Odontoma, Compound, Complex, Impacted tooth.

### Introduction

Odontome the term originally used for any tumor and/or tumor-like lesion, cyst arising from tooth forming tissues.<sup>1-4</sup> Odontomas are one of the most common types of odontogenic tumor and included under the benign calcified odontogenic variety.<sup>1-4</sup> Odontomas are basically classified into two types, complex and compound odontomes.<sup>1-5</sup> Generally odontomes are asymptomatic; various etiological factors were proposed for the occurrence.

The two main types of odontoma are compound and complex.<sup>2-6</sup> A compound odontoma has the three separate dental tissues -enamel, dentin and cementum. It may present a lobulated appearance. There is no definitive demarcation of separate tissues between the individual toothlets. It usually occurs in the anterior maxilla. The complex type is unidentifiable as dental tissues. It is seen as a radiopaque area with varying densities of dental hard tissues. Generally they are noticed in the posterior mandible regions. The dilated odontoma is a rare developmental alteration that occurs in any portion of the dental arches. Dens invaginatus is a developmental anomaly resulting from invagination of a portion of crown forming within the enamel organ.<sup>3-8</sup>

Odontomas are hamartoma and are the most common benign odontogenic tumors of epithelial and mesenchymal origin.<sup>5-9</sup> The term odontome was coined by Paul Broca. Odontomas by definition alone refers to any tumor of odontogenic origin. The odontomas result from the growth of completely differentiated epithelial and mesenchymal cells. These cells give rise to ameloblasts and odontoblasts.<sup>8-12</sup> It means that a growth with both the epithelial and mesenchymal components exhibiting complete differentiation. This resulting in functional ameloblasts and odontoblasts with variable amounts of enamel and dentin and pulpal tissue.<sup>8-13</sup> This enamel and dentin were usually laid down in an abnormal pattern. This is because the organization of odontogenic cells failed to reach the normal state of morphodifferentiation.<sup>8-14</sup> So they odontomes considered as developmental anomalies rather than true neoplasm.

Odontomas constitute about one fifth of all odontogenic tumors of the jaws.<sup>1,2,8-12</sup> Among these most of the compound odontomas types.<sup>1,2,6-11</sup> Odontomas are discovered during the second and third decades of life. The compound odontoma is slightly more frequently observed than the complex odontoma.<sup>1,2,6-12,14</sup> The most of odontomas occur in the anterior segment of the jaws are compound composite whereas the majority in the posterior part of jaws is complex composite type. The compound composite odontome most frequently occurred in incisor cuspid region of the maxillary jaw. The complex odontome were commonly found in molar and premolar region of the mandible. Odontomes commonly occur in permanent dentition. They are rarely reported in association with primary teeth.<sup>1,2,6-12,14</sup>

The etiology of odontomes remains unknown.<sup>1,2,6-15</sup> It has been related to various conditions like local trauma, inflammatory or infectious processes, mature ameloblasts, cell rests of Serres (dental lamina remnants) or due to hereditary anomalies, odontoblastic hyperactivity and alterations in the genetic component.<sup>1,2,6-12,14-16</sup>

Radiographically, the compound odontome appears as a collection of tooth-like structures of varying size and shape surrounded by a narrow radiolucent band. The complex odontome appears as a calcified mass with a radio density of tooth structure, which is also surrounded by narrow radiolucent outline. The treatment of choice is surgical removal of the lesion in all cases, followed by histopathological study to confirm the diagnosis.<sup>11,12,15-17</sup> We are reporting a case of composite compound odontoma.

### Case Report

A 15 year old female patient reported to the Department of Oral Medicine & Radiology for the routine dental checkup. General examination revealed moderately built and nourished female. The rest of the history was noncontributory. Intraoral examination (Fig. 1) reveals normal dentition status for the chronological age. Multiple tooth fillings were noticed. Intraoral periapical radiograph

shows multiple irregular calcified masses surrounded by radiolucent outline in the region of 11, 12 region (Fig. 2). Panoramic radiograph was taken and shows the same appearance (Fig. 3). A provisional diagnosis of compound composite odontome was made. Differential diagnosis of Odontoma, Ameloblastic fibroma, Ameloblastic fibro-odontoma was considered. The routine blood examinations were within normal range. Patient was sent to Oral & maxillofacial surgery for excision of above described lesion. Excision was planned under local anesthesia was done and material sends for histopathologic examination.

The tissue was processed and stained with hematoxylin and eosin stain. The stained section observed mature tubular dentin, enclosing hollow circular structures. The hollow structures contain enamel that was lost during decalcification. A thin layer of cementum was noticed at the periphery of the mass. The final diagnosis was suggestive of Odontoma.



**Fig. 1:** Facial photograph



**Fig. 2:** Intraoral photograph



**Fig. 3:** IOPA radiograph shows multiple radiopacities surrounded by radiolucent out line 11,12 region



**Fig. 4:** Panoramic view

## Discussion

Odontoma are the most common odontogenic tumors of jaws. They are generally asymptomatic and are mostly discovered during routine radiography.<sup>1-7</sup> The World Health Organization classifies odontomas in to two types- complex and compound odontomas.<sup>3-9</sup> They are usually asymptomatic and are often discovered during routine radiography.

Odontoma refers to a tumor of odontogenic origin. In odontoma both epithelial and mesenchymal components exhibiting complete differentiation and result that in the formation of enamel and dentin.<sup>6-12</sup> This enamel and dentin were usually laid down in an abnormal pattern. The organization of odontogenic cells failed to reach the normal state of morphodifferentiation.<sup>8-14</sup>

Most of the odontomes are asymptomatic, although occasionally signs and symptoms relating to their presence do occur. The presence of odontomas may lead to mal positioning or displacement of adjacent teeth, and malformation even devitalization of adjacent teeth.<sup>4,5,8-12,14,15</sup>

The etiology of the odontomes is unknown but the genetic factors and environmental factors like trauma and infection have been proposed. The appearance of odontomes is liable to occur due to growth pressures.<sup>1,2,4-9,12,14-16</sup> This is because of inadequate space which has varying effects on the tooth development. Infection from the deciduous predecessor may be a factor. In case of any infection, the occurrence of odontome may be due to the division of a tooth germ or may interfere with tooth development. Another factor, odontomas is believed to have its origin from mature ameloblasts.<sup>1,2,6-10,12,14,15</sup> The cell rests of serres-dental lamina remnants- of the retained tooth with some epithelial island undergoing proliferation to develop into odontomes. The history of trauma has been implicated in emergence of odontoma, as has interference with the genetic control of tooth development, either inherited or due to mutation or due to extensive damage of the tooth germ.<sup>2,6-12,15-18</sup>

Even in rare instances in which odontomas erupt into the oral cavity and can be examined visually and manually.<sup>12,15-19</sup> The visual examination, palpation and radiographic examination seems to be the most effective method of discrimination between two types of odontomas. The advanced technique like Cone beam Computed

Tomography (CBCT) should be used to confirm the diagnosis.<sup>20</sup>

In case of compound odontoma, radiographic image shows comparatively well-organized malformed teeth or tooth-like structures, usually is a radiolucent cyst like lesion. A complex odontoma shows an irregularly shaped oval radiopacity usually surrounded by a well-defined thin radiolucent zone.<sup>4,5,8,10,12,15-17</sup> All the radiographic features, suggestive of compound odontome were also present in our case.

Odontoma has a limited growth potential and it should be surgically removed as it contains various tooth formulations that can predispose to cystic change.<sup>15-19</sup> It usually interferes with eruption of permanent teeth. It has a very low recurrence rate. A special care should be taken during the surgery, remove it completely along with capsule. Odontomas are easily enucleated. The adjacent teeth that may have been displaced are seldom harmed by surgical excision.

Early diagnosis of odontomas helps us to ensure better prognosis and to avoid relapse of the lesion and displacement or devitalization of adjacent tooth.

### Conclusion

Odontomas are considered to be hamartomatous malformation rather than true neoplasm. Eruption of an odontoma in the oral cavity is rare one. Most often that cases are diagnosed as supplemental or supernumerary tooth and are need to be differentiated. For the correct determination and relationship of rates of development of odontome with that of developing tooth, use of diagnostics methods like Computerized Tomography and Cone beam Computed Tomography (CBCT) should be used. A thorough visual, manual as well as radiographic examination should be performed for all the pediatric patients who present with clinical evidence of delayed eruption, missing tooth with or without history of trauma so this will help in early detection of odontomes and thereby we can manage dental problems timely.

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### References

1. Kharbanda OP, Saimbi CS, Kharbanda R. Odontome: A case report. *J Indian Dent Assoc* 1986;58(6):269–71.
2. Budnick SD. Compound and complex odontomas. *Oral Surg Oral Med Oral Pathol* 1976;42(4):501–6.
3. Sprawson E. Odontomes. *Br Dent J* 1937;62:177–201.
4. Regezi JA, Kerr DA, Courtney RM. Odontogenic tumors: Analysis of 706 cases. *J Oral Surg* 1978;36(10):771–8.
5. Stuart C, White and Michael J. Pharoah, *Oral Radiology: Principles and Interpretation: Second South Asian edition* 2019;421-3.
6. Philipsen HP, Reichart PA, Praetorius F. Mixed odontogenic tumors and odontomas. Considerations on interrelationship. Review of literature and presentation of 134 new cases of odontomas. *Oral Oncol* 1997;33(2):86–7.
7. Pindborg JJ, Hjortiy-Hansen E. Atlas of diseases of the jaws. Copenhagen: Munksgaard 1975;13(1):98–101.
8. Hunsuck EE. A midpalatal compound odontoma in an infant. *Oral Surg Oral Med Oral Pathol* 1970;29(3):353–5.
9. Bellucci RJ, Zizmor J, Goodwin RE. Odontoma of the middle Ear: a case presentation. *Arch Otolaryngol* 1975;101(9):571–3.
10. Brunetto AR, Turley PK, Brunetto AP, Regattieri LR, Nicolau GV. Impaction of a primary maxillary canine by an odontoma: Surgical and orthodontic management. *Pediatr Dent* 1991;13(5):301–2.
11. Malik SA. Odontomatosis (multiple odontomas): A case report. *Br J Oral Surg* 1974;11(3):262–4.
12. Katz RW. An analysis of compound and complex odontomas. *ASDCJ Dent Child* 1989;56(6):445–9.
13. Hitchin AD. The aetiology of the calcified composite odontomes. *Br Dent J* 1971;130(11):475–82.
14. Pindborg JJ., Kramer IR., Torloni H. Histological typing of odontogenic tumors, jaw cysts and allied lesions. In: International Histological Classification of tumors. Geneva: World Health Organization; 1970;29–30.
15. Kramer IR., Pindborg JJ., Shear M. Histological typing of odontogenic tumor. WHO. International histological classification of tumors. 2nd ed. Berlin, Springer; 1992:16–21.
16. Slootweg PJ. An analysis of the interrelationship of the mixed odontogenic tumors: Ameloblastic fibroma, ameloblastic fibro-odontoma and odontomas. *Oral Surg Oral Med Oral Pathol* 1981;51(3):266–76.
17. Bader G. Odontomatosis (multiple odontomas). *Oral Surg Oral Med Oral Pathol* 1967;23(6):770–3.
18. Motokawa W, Braham RL, Morris ME, Tanaka M. Surgical exposure and orthodontic alignment of an unerupted primary maxillary second molar impacted by an odontoma and a dentigerous cyst: A case report. *Quintessence Int* 1990;21(2):159–62.
19. Castro GW, Houston G, Weyrauch C. Peripheral odontoma: Report of case and review of literature. *ASDC J Dent Child* 1994;61(3):209–13.
20. de Oliveira BH, Campos V, Marcal S. Compound odontoma—diagnosis and treatment: Three case reports. *Pediatr Dent* 2001;23(2):151–7.

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