

Compound Odontome Associated with the Unerupted Maxillary Permanent Molars

Nitin Thakur¹ Anand Mangalgi² Kundan Shah^{3*} Nagesh Ingleshwar⁴ Syed Furqhan Uddin⁵ Kapil Pawar⁶

¹Reader, Department of Oral and Maxillofacial Surgery, HKES S.N Institute of Dental Sciences, Gulbarga, Karnataka, India.

²Reader, Department of Oral and Maxillofacial Surgery, HKES S.N Institute of Dental Sciences, Gulbarga, Karnataka, India.

³Post Graduate, Department of Oral and Maxillofacial Surgery, HKES S.N Institute of Dental Sciences, Gulbarga, Karnataka, India.

⁴Senior Lecturer, Department of Prosthodontics, HKES S.N Institute of Dental Sciences, Gulbarga, Karnataka, India.

⁵Post Graduate, Department of Oral and Maxillofacial Surgery, HKES S.N Institute of Dental Sciences, Gulbarga, Karnataka, India.

⁶Post Graduate, Department of Oral Medicine and Radiology, AL Badar Rural And Dental College, Gulbarga, Karnataka, India.

ABSTRACT

Background: Odontomas are considered to be hamartomas rather than a true neoplasm. They consist chiefly of enamel and dentin, with variable amount of pulp and cementum when fully developed. They are generally asymptomatic and are included under the benign calcified odontogenic tumors. They are usually discovered on routine radiographic examination. Odontomes generally cause disturbances in the eruption of the teeth, most commonly delayed eruption or deflection. Eruption of an odontoma in the oral cavity is rare. In this article we are reporting a case of a 22 year old male patient with compound odontoma, with a multiple rudimentary tooth-like structure in the maxillary left second molar region which prevented the eruption of maxillary left 1st and 3rd molar tooth. The odontoma was surgically enucleated.

Keywords: Compound odontome, maxillary posterior, enucleation.

INTRODUCTION

The term odontoma was first coined by Broca, who defined odontoma as a tumor of overgrowth of complete dental tissue. Odontoma belongs to a group of dentigerous tumors developing in jaw bones in stages of odontogenesis. These are known as mixed odontogenic tumors because they are composed of both epithelial and ectomesenchymal components. According to definition of WHO, it is a congenital developmental defect, resulting from growth of completely differentiated epithelial and mesenchymal cells, in which all kinds of dental tissues occur. Similar to teeth, once fully calcified, they do not develop further.

There are two types of odontomas acknowledged Compound odontomas and Complex

odontomas. The first is approximately twice as common as complex odontoma.

CASE REPORT

A 22 year old male patient has come to the department of oral and maxillofacial surgery at our institution with a chief complaint of missing tooth in his upper left jaw region. Patient gives history of intraoral hard bony swelling in the same region. The medical history was non contributory with no history of trauma to the teeth or jaw. Personal history revealed that patient was vegetarian in diet and there was no history of any deleterious habit like smoking, tobacco or betel nut chewing, alcohol etc.

The extra oral examination, was non contributory. On intra oral examination missing

Received: Jan. 6, 2017; Accepted: Mar. 1, 2017

*Correspondence Dr. Kundan Shah.

Department of Oral and Maxillofacial Surgery, HKES S.N Institute of Dental Sciences, Gulbarga, Karnataka, India.

Email: shahkundan14@gmail.com

teeth was present wrt 26, 27, 28 and in place of that small calcified tooth like structure was present (Figure 1) The lesion was asymptomatic, with no signs of infection or ulceration of the surrounding mucosa. On palpation it was firm in consistency,



Fig 1: Intraoral view representing missing 26,27 and 28.



Fig 2: OPG reveals impacted 26 and 28 with ill defined mixed radiopaque – radiolucent lesion in the place of 27 tooth region.

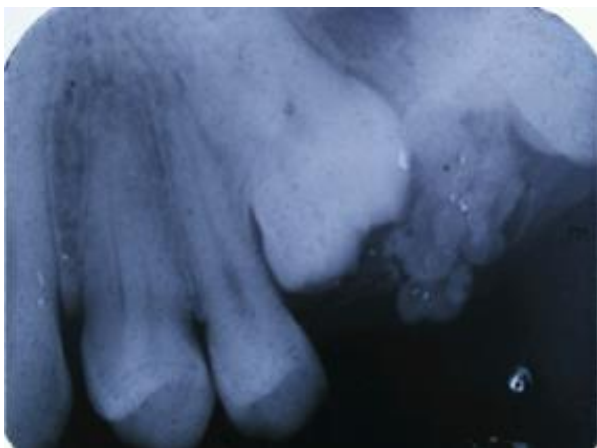


Fig 3: IOPA reveals impacted 26 and 28 with ill defined mixed radiopaque – radiolucent lesion in the place of 27 tooth region.



Fig 4: Placement of incision.



Fig 5: Reflection of the mucoperiosteal flap.



Fig 6: Removal of odontoma.



Fig 7: Excised odontomes.

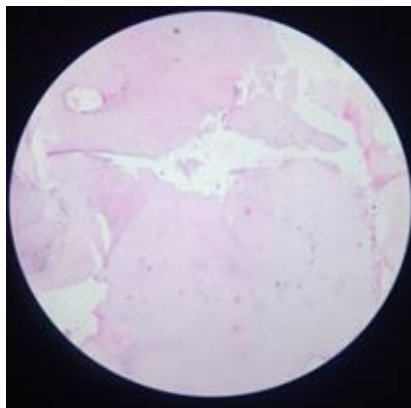


Fig 8: Histopathological examination reveals presence of enamel, dentin and pulp like tissue.



Fig 9: Postoperative iopar representing complete excision of the lesion.

non-tender, non-compressible, non-fluctuant and afebrile to touch. Overlying surface was of same colour as that of surrounding mucosa.

Radiographic examinations were performed IOPAR and OPG reveals impacted 26 and 28 with ill defined mixed radiopaque – radiolucent lesion in the place of 27 tooth region (figure 2 and figure 3). After taking the informed consent of the patient and routine blood investigations were done, complete surgical enucleation of the lesion was done under local anaesthesia (Figure 4,5,6). The specimen was sent to histopathological examination (fig 7) which reveals presence of enamel, dentin and pulp like tissue in their anatomic and histopathological sequence (fig 8). However, even the clinical and radiological represents multiple tiny tooth-like structures, suggestive of compound odontoma.

The patient was recalled after 1 week and postoperative IOPAR was taken which revealed

complete excision of the lesion and clinically the healing was found to be satisfactory (fig 9).

DISCUSSION

Odontomas are the most common tumours which are classified as benign, mixed and calcified odontogenic tumours¹ Paul Broca was the first to coin the term odontoma in 1867.² They are relatively common, asymptomatic odontogenic lesions and are associated with retained deciduous teeth resulting in delayed eruption of permanent tooth³, rarely diagnosed before the second decade of life.⁴ Odontomas may sometimes be associated with pain and swelling, suppuration, bony expansion, and displacement of teeth. In some cases, odontomas may lead to root resorption and paresthesia.⁵

Odontomas are nonaggressive, hamartomatous developmental malformations or lesions of odontogenic origin appearing as small, solitary, or multiple radiopaque lesions found on routine radiographic examinations.⁶ They are the most common odontogenic tumors which constitute 22% of all the odontogenic tumors of the jaws.⁷ The most frequent clinical signs are delayed eruption, persistence of the deciduous tooth, and the presence of a tumor.⁶ Odontomas are accepted as developmental anomalies rather than true neoplasms.⁶ The etiology of odontomas has been attributed to various pathological conditions like local trauma, inflammatory and/or infectious process, hereditary anomalies (Gardner's syndrome, Hermann's syndrome), odontoblastic hyperactivity, and alterations in the genetic component responsible for controlling dental development. The persistence of a portion of lamina may be an important factor in the etiology of a compound or complex odontoma and either of this may occur instead of a tooth.⁸ Since odontomas are seen in hereditary anomalies like Gardner's syndrome and Hermann's syndrome, alteration of the genetic components might be responsible for odontoma formation. Hitchin suggested that the odontomas are inherited through a mutant gene or interference, possibly postnatal, with genetic control of tooth development.⁸

The World Health Organization defines odontomas as being of two types: complex odontomas, a malformation in which all dental

tissues are present, but arranged in a more or less disorderly pattern; and compound odontomas, a malformation in which all the dental tissues are represented in a pattern that is more orderly than that of the complex type. Enamel, dentin cementum, and pulp are arranged as they would be in a normal tooth⁹

Odontomas are classified as intraosseous and extraosseous odontomas. The intraosseous odontomas occur inside the bone and may erupt into the oral cavity (erupted odontoma). The extraosseous or peripheral odontomas are odontomas occurring in the soft tissue covering the tooth bearing portions of the jaws, having a tendency to exfoliate.¹⁰ The incidence of compound odontome ranges between 9% and 37%. The majority of odontomas in the anterior segment of the jaws are compound composite in type (61%), whereas the majority of odontomas in the posterior segment are complex composite in type (34%)^{11,12}. Interestingly, both types of odontomas occurred more frequently on the right side of the jaw than on the left, (compound 62% and complex 68%)^{11,13,14}. The compound composite odontome most frequently occurred in incisor cuspid region of the upper jaw in contrast to the complex odontomes which were commonly found in molar and premolar region of the mandible^{13,14,15}. In contrast to our case, compound odontome located in posterior maxillary region which is quite rare condition. Radiographically, Compound odontoma, appears as a well-organized malformed teeth or toothlike structures, usually is a radiolucent cyst like lesion whereas complex odontoma shows an irregularly shaped oval radiopacity usually surrounded by a well-defined thin radiolucent rim.^{16,17}

Histologically the odontoma is not a diagnostic dilemma. It is composed of dentin, cementum, pulpal tissue and enamel. However, mature enamel is lost during the decalcification processing and will not be seen on conventional hematoxylin and eosin stained slides. The compound odontoma recapitulates the organization of a normal tooth, while the complex odontoma appears as a disorganized mass of hard odontogenic tissues.¹⁸

In the present case, since it was an erupted odontoma attached only to the soft tissue and being mobile on palpation, it was extracted. Since these odontomas are not adherent to the bone they can be easily enucleated and curetted. In cases of larger odontomas where there are multiple components, it is necessary to take intraoperative radiographs to ensure that all the calcified masses have been removed. The healing of these lesions may take 9–12 months in young patients.

Since enucleation and curettage of odontomas are curative, chances of recurrence is less. If any portion of the lesion is left unexcised such residual odontomas may remain unchanged throughout. Very rarely the wound may get infected after an incomplete removal, since the avascular odontoma portion acts like foreign body¹⁹

CONCLUSION

Variations in the normal eruption of teeth is a common finding, but significant deviations from established criteria should alert the clinician to further investigate the patient's health and development. Clinical experience and dental literature suggest that an individualized radiographic examination should be performed for any patient who presents with clinical findings of delayed permanent tooth eruption or temporary tooth displacement or retained deciduous teeth with or without a history of previous dental trauma. Early diagnosis helps the clinician to adopt a simpler and less complex approach of treatment and ensures better prognosis for the condition. In spite of the less frequency of this lesion and the fact that most cases are surgically removed and heal uneventfully, there must be a close follow-up, because there have been reports of association with carcinoma, tumor, and cysts.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Pillai A, Moghe S, Gupta MK, et al. A complex odontoma of the anterior maxilla associated with an erupting canine BMJ Case Rep 2013.1-4

2. John JB, John RR, Punithavathy . Indumathi elango "Compound Odontoma Associated with Maxillary Primary Tooth—A Case Report". *JIADS* 2010;1:49-51
3. Hidalgo-Sanchez O, Leco-Berrocal MI, Martinez-Gonzalez JM. Meta-analysis of the epidemiology and clinical manifestations of odontomas. *Med Oral Patol Oral Cir Bucal* 2008;13: E730-4
4. Sreedharan S, Krishnan IS. Compound odontoma associated with impacted maxillary incisors. *J Indian Soc Pedod Prev Dent* 2012;30:275-8.
5. Khan N, Shrivastava N, Shrivastava TV, Samadi FM. An unusual case of compound odontome associated with maxillary impacted central incisor. *National journal of maxillofacial surgery*. 2014 Jul;5(2):192.
6. Waldron AC. Odontogenic cysts and tumours. In: Neville BW, editor. *Oral and Maxillofacial Pathology*. 2nd ed. Philadelphia: WB Saunders Company; 2002. p. 631-2.
7. S. A. Cuesta, J.G.Albiol, L. B. Ayt'es, and C. G. Escoda, "Review of 61 cases of odontoma. Presentation of an erupted complex odontoma," *Medicina Oral*, vol. 8, no. 5, pp. 366–373, 2003
8. Vengal M, Arora H, Ghosh S, Pai KM. Large erupting complex odontoma: A case report. *J Can Dent Assoc*. 2007;73:169–72.
9. Amailuk P, Grubor D. Erupted compound odontoma: Case report of a 15 year old Sudanese boy with a history of traditional dental mutilation. *Br Dent J*. 2008;204:11–4.
10. Shekar SE, Rao RS, Gunasheela B, Supriya N. Erupted compound odontome. *Journal of Oral and Maxillofacial Pathology*. 2009 Jan 1;13(1):47.
11. W.G. Shafer, M. K. Hine, and B.M. Levy, "Cysts and tumours of the jaws," in *A Textbook of Oral Pathology*, pp. 308–311, WB Saunders, Philadelphia, Pa, USA, 4th edition, 1997
12. 12. M. Vengal, H. Arora, S. Ghosh, and K. M. Pai, "Large erupting complex odontoma: a case report," *Journal of the Canadian Dental Association*, vol. 73, no. 2, pp. 169–172, 2007
13. 13. H. P. Philipsen, P. A. Reichart, and F. Prætorius, "Mixed odontogenic tumours and odontomas. Considerations on interrelationship. Review of the literature and presentation of 134 new cases of odontomas," *European Journal of Cancer Part B: Oral Oncology*, vol. 33, no. 2, pp. 86–99, 1997.
14. J. J. Pindborg and E. Hjortiy-Hansen, *Atlas of Diseases of the Jaws*, Munksgaard, Copenhagen, Denmark, 1974.
15. Z. Z. Stajcic, "Odontoma associated with a primary tooth," *Journal of Pedodontics*, vol. 12, no. 4, pp. 415–420, 1988.
16. E. C. Stafne and J. A. Giblisco, *Oral Roentgenographic Diagnosis*, WB Saunders, Philadelphia, Pa, USA, 4th edition, 1975.
17. P. W. Goaz and S. C. White, *Oral Radiology*, Mosby, St Louis, Mo, USA, 1987.
18. Bordini J, Jr, Contar CM, Sarot JR, Fernandes A, Machado MA. Multiple compound odontomas in the jaw: case report and analysis of the literature. *J Oral Maxillofac Surg*. 2008;66(12):2617–2620. doi: 10.1016/j.joms.2007.08.027.
19. Marx RE, Stern D. Odontogenic tumors (14); Oral and maxillofacial pathology. *Quintessence*. 2003:678–9.