International Journal of Dental Sciences
www.dentaljournal.in
E-ISSN: 2663-4708, P-ISSN: 2663-4694
Received: 19-06-2025; Accepted: 20-07-2025; Published: 04-08-2025
Volume 7, Issue 3, 2025, Page No. 39-42

Silent Sculptor uncovering the hidden complexity of a complex odontome through the radiographic shadows

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Abstract
The most prevalent odontogenic tumors are odontomas and and are generally regarded as hamartomas rather than true neoplasms. They are composed of various dental tissues. Odontomas are typically asymptomatic, slow-growing, and are often associated with unerupted or impacted teeth. In many cases, they are discovered incidentally during routine radiographic examinations, although they may cause bony expansion.
Odontomas are classified into two types: compound and complex. Compound odontomas are composed of multiple small, well-organized, tooth-like structures. In contrast, complex odontomas consist of a disorganized conglomerate of dental tissues that bear no anatomical resemblance to a tooth.
Here, case report a of a complex odontoma in the posterior left mandibular region in a sixteen-year-old female child.

Keywords: Complex odontoma, hamartoma, odontogenic tumors

Introduction

Paul Broca first used the word "odontoma" in 1867 to talk about tumors that form when dental tissues grow too much or stay the same for too long. Odontomas are mostly made up of enamel and dentin, but they can also have cementum and pulp tissue in them. This happens because odontogenic cells don't differentiate properly. These growths come from the epithelial and mesenchymal parts of the teeth, which can make all of the tissues listed above. Most of the time, complex odontomas are found in the back of the mandible, close to the molars. Most of the time, they are found in kids and young adults, usually under 30. They often don't show any signs and are only found
Various etiological factors could contribute for formation of odontoma such as trauma, genetic cause like mutation, etc.
Radiographic Appearance: When you look at a complex odontoma on an X-ray, it usually looks like a solid mass with a thin border that lets light through. This border is probably a fibrous capsule or dental follicle that surrounds the mass. The lesion is clearly defined and does not have separate tooth-like structures, which makes it different from a compound odontoma.
Histological Features: Under a microscope, the lesion looks like a jumbled mess of dental hard tissues, mostly dentin and enamel, with some areas of pulp tissue and cementum thrown in for good measure. These parts are set against a fibrous connective tissue background, which shows that the growth is hamartomatous.

Case Report

A 16-year-old girl went to the Department of Oral Medicine and Radiology with the main complaint of swelling in the lower left back of her jaw that had been going on for three months.
Clinical Examination: When looking at the outside of the mouth, there was a single, dome-shaped swelling. The swelling hurt when I touched it, and the skin on top looked normal, with no signs of discoloration or ulceration. Intraoral Findings: There were several oval-shaped swellings along the line of demarcation in the mouth. These were linked to an impacted mandibular left second molar (tooth 37). Figure 01 shows these results.

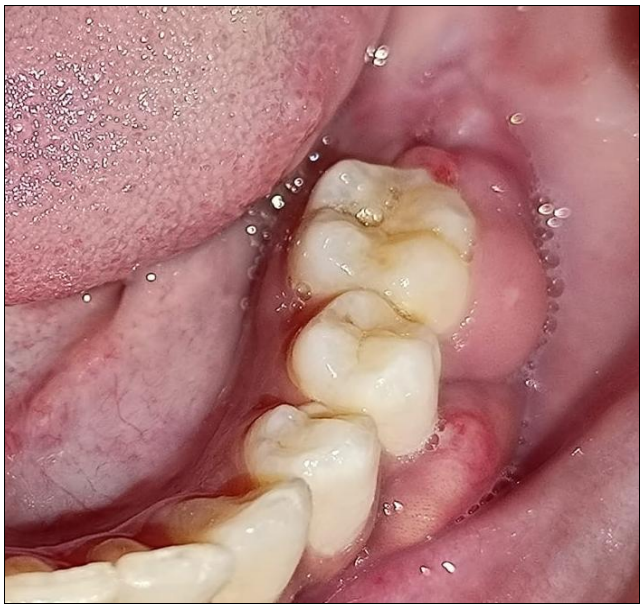

Fig 1: Showing swelling in lower left back region of jaw

Radiographic Findings: A single radiopaque lesion was visible on an orthopantomograph (OPG) in the lower left posterior region of the jaw. The lesion stretched superoinferiorly from the alveolar crest to the mandibular canal level and anteroposteriorly from tooth 36's distal

aspect to the anterior border of the ramus. The lesion measured about 2 × 2 cm.

The lesion showed up as a distinct radiopaque mass with a thin halo of radiolucency surrounding it, suggesting a fibrous capsule. A distinct, tooth-like radiopaque structure was visible inside the mass.

Radiographic Diagnosis: A complex odontoma was suggested by the results. (See Figure 02)

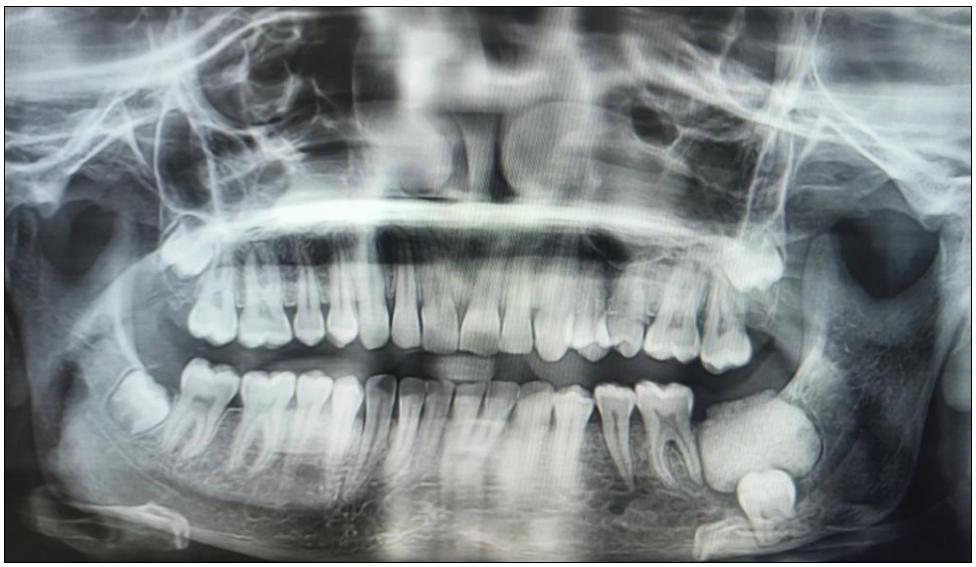

Fig 2: Orthopantomograph showing Composite complex odontoma

A single, distinct radiopaque lesion was seen on CBCT evaluation (Figure 03), with dimensions of roughly 21.5 mm mesiodistally, 19.6 mm superoinferiorly, and 12 mm buccopalatally. A radiolucent halo encircled the lesion, which had corticated borders. The buccolingual cortical plates were clearly enlarged.

A tentative diagnosis of complex odontoma was made in light of the radiographic and clinical data. The specimen was sent for histopathological analysis after the lesion was surgically removed and tooth #37 was extracted.

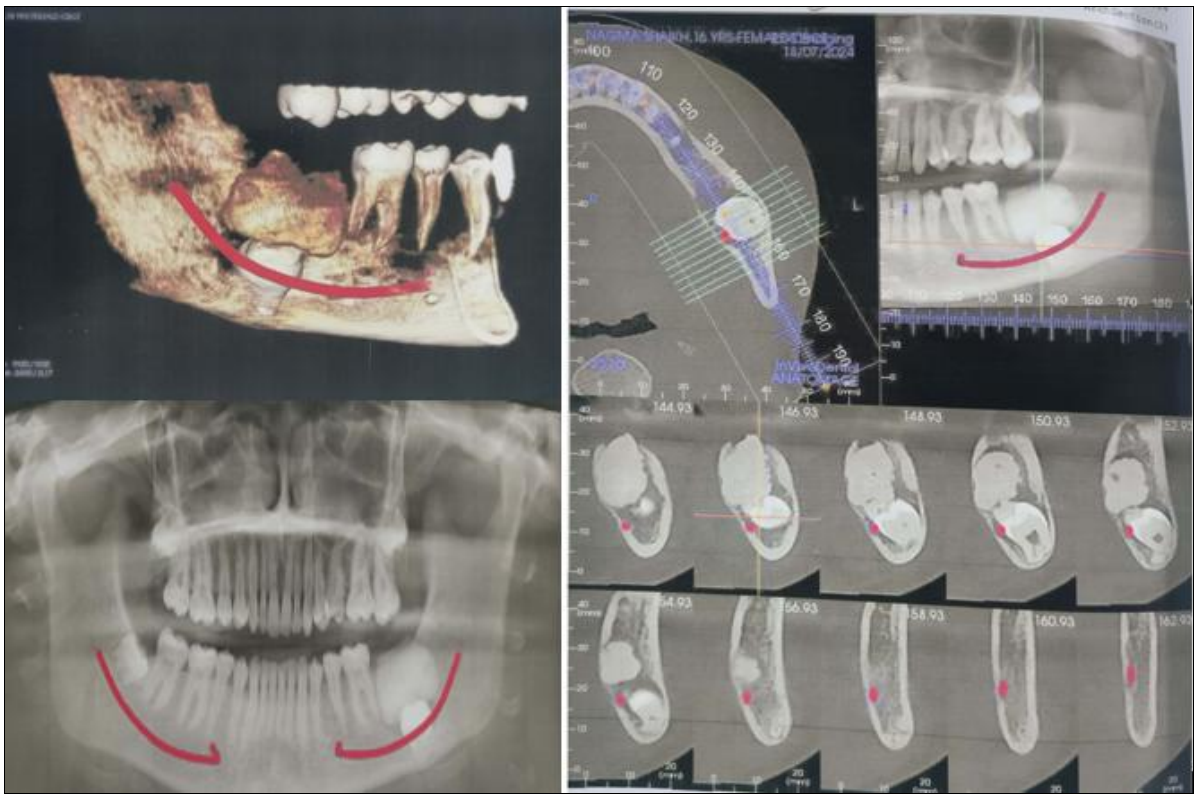

Fig 3: CBCT showing Composite complex odontome

Histopathological Findings: Within the hard tissue mass, dentinoid tissue enclosing varying amounts of pulp-like tissue was visible in the Hematoxylin and Eosin (H&E) stained section. There were noticeable dental tubules scattered throughout the dentinoid matrix.

A decalcified enamel space was suggested by the

observation of a focal clear zone surrounding the dentinoid. Fibrous connective tissue was loosely distributed throughout the surrounding stroma.

The final diagnosis of Complex Composite Odontoma was made in light of the histopathological characteristics. (See Figure 04)

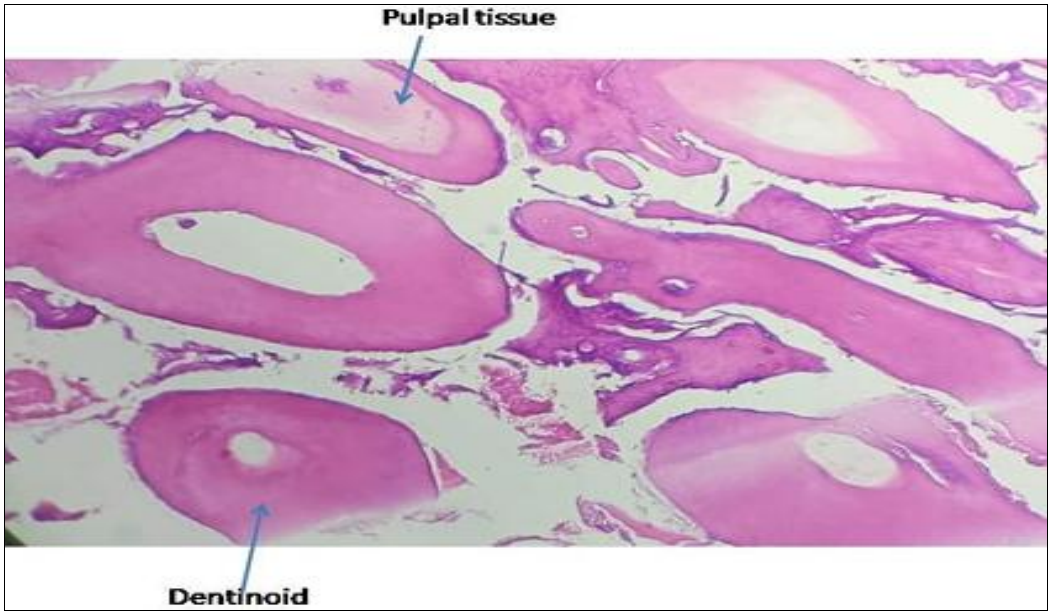

Fig 4: Histopathological section showing Composite complex odontoma

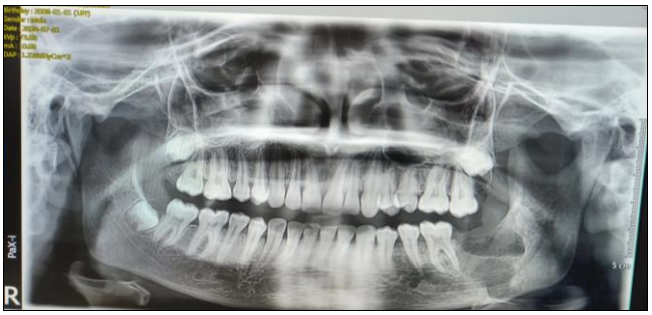

Fig 5: Follow up after 1 month

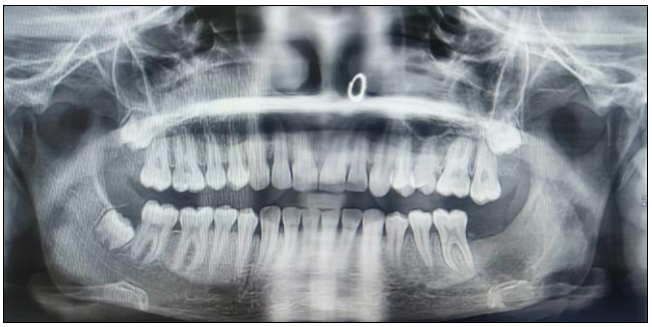

Fig 6: Follow up after 3month

Discussion

About 22% of all odontogenic tumors related to the jaw are complex odontomas, making them one of the most common odontogenic tumors. Compound odontomas are more frequently found in the anterior region of the jaws (61%), whereas complex odontomas are more frequently found in the posterior regions (34%). Although a number of contributing factors, such as inflammation, local trauma, developmental abnormalities, and connections to other pathological conditions, have been suggested, the precise etiology of odontomas remains unknown.

The majority of odontomas are asymptomatic and frequently found by chance during standard radiography exams. They might, however, occasionally exhibit clinical symptoms like retained deciduous teeth, unerupted or impacted teeth, localized swelling, or infection-related symptoms. Furthermore, their presence may result in neighboring teeth shifting or becoming misaligned, and devitalization of adjacent teeth.

All of the dental tissues—pulp, cementum, dentin, and enamel—are present in a complex odontoma, a developmental malformation, but they are arranged haphazardly or in an unorganized manner. It is regarded as a hamartomatous odontogenic tumor, which forms calcified dental tissues in an irregular pattern due to a failure in morphodifferentiation.

Panoramic imaging or standard intraoral radiographs are frequently used to diagnose complex odontomas. However, a Cone Beam Computed Tomography (CBCT) scan is especially useful because of its radiographic similarity to other lesions like cementoid tumors or different fibro-osseous and bone pathologies. The extent of the lesion and its spatial relationship to nearby impacted teeth can be accurately assessed thanks to the detailed three-dimensional imaging provided by CBCT. Usually, treatment entails surgically excising the lesions. So, the CBCT scan is useful to visualize the precise relationship between the lesion & impacted teeth. The treatment of the odontoma is surgical removal, and there is no expectancy of recurrence.

References

1. Sprawson E. Odontomes. Br Dent J,1937:62:177-201.
2. da Rocha Leódido G, de Jesus Tavarez RR, Maciel FJ, Maciel AB. Complex odontoma. A clinical case reports. Scientific Journal of Dentistry,2015:2:31-5.
3. Bhaskar, SN. Odontogenic tumors of jaws. In Synopsis of oral pathology. 7th ed. US. Elsevier Mosby Year Book,1986:292:303.
4. Shafer, GW, Hine, MK Levy BM. A textbook of oral pathology. In Rajendran R, editor. 4th ed. US, Philadelphia WB Saunders, 1983, 308-311.

5. Smith RM, Tuner JE, Ribbins ML. Atlas of oral pathology. St Louis, CV Mosby, 1981, 54-56.
6. Stafne EC, Giblisco, JA. Oral roentgenographic diagnosis. 4th Ed. Philadelphia. WB Sunders, 1975, 78-80.
7. Papagerakis P, Peuchmaur M, Hotton D, Ferkdadji L, Delmas P, Sasaki S, *et al*. Aberrant gene expression in epithelial cells of mixed odontogenic tumors. J Dent Res,1999:78:20–30. doi:10.1177/00220345990780010201.
8. Hidalgo-Sánchez O, Leco-Berrocal MI, Martínez-González JM. Metaanalysis of the epidemiology clinical manifestations of odontomas. Med Oral Patol Oral Cir Bucal,2008:13:730–4.
9. Robinson HB. Proceedings of the 5th Annual Meeting of the American Academy of Oral Pathology. Oral Surg,1952:5:177.
10. Shekar SE, Roopa SR, Gunasheela B, Supriya N. Erupted compound odontoma. J Oral Maxillofac Pathol,2009:13:47–50. doi: 10.4103/0973-029X.48758.
11. Kramer IR, Pindborg JJ, Shear M. International Histological Classification of Tumors. 2nd ed. Berlin: Springer. Histological Typing of Odontogenic Tumor. WHO, 1992, 16–21.
12. Pindborg JJ, Kramer IR, Torloni H. International Histological Classification of Tumors. Geneva: World Health Organization. Histological typing of odontogenic tumors, jaw cysts allied lesions,1970:5:29–30.
13. Singh S, Singh M, Singh I, Khandelwal D. Compound composite odontomaassociated with an unerupted deciduous incisor – A rarity. J Indian Soc Pedod Prev Dent,2005:23:146–50. doi: 10.4103/0970-4388.16889.
14. Vengal M, Arora H, Ghosh S, Pai KM. Large erupting complex odontoma. A case reports. J Can Dent Assoc,2007:73:169–73.
15. Thoma KM, Goldmn HM. Oral Pathology. 5th ed. St. Louis. The CV Mosby Companym, 1960, 1221–2.
16. Miki Y, Oda Y, Iwaya N, Hirota M, Yamada N, Aisaki K, *et al*. Clinicopathological studies of odontoma in 47 patients. J Oral Sci,1999:41:173–6. doi: 10.2334/josnusd.41.173.
17. Owens BM, Schuman NJ, Mincer HH, Turner JE, Oliver FM. Dental odontomas. A retrospective study of 104 cases. J Clin Pediatr Dent,1997:21:261–4.
18. Cawson RA, Binnie WH, Eveson JW. Hong Kong. Mosby-Wolfe. Color Atlas of Oral Disease Clinical Pathological Correlations, 1993, 6–19.
19. Tomizawa M, Otsuka Y, Noda T. Clinical observations of odontomas in Japanese children. 39 cases including one recurrent case. Int J Paediatr Dent,2005:15:37–43. doi: 10.1111/j.1365-263X.2005. 00607.x