

**Odontoma (Complex)**

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The most frequent benign odontogenic tumors are odontomas. Odontomas occur when abnormal cell growth in the enamel organ propagates the mesenchyme and odontogenic epithelium to produce enamel and dentin (DentalCare.com, 2018). They are often non-aggressive, slow-growing, and identified during regular radiological exams in the first and second decade of life. Odontomas come in two varieties: compound and complex (D'Cruz et al., 2013). A complex odontoma is characterized by irregularly shaped masses of enamel, which have no anatomical relation to teeth, as opposed to a compound tumor, which displays many toothlike structures (DentalCare.com, 2018). Compound odontomas affect the canine and incisor region, are more common in the maxilla than the mandible, and on average affect patients during their second decade of life. On the other hand, complex odontomas affect the posterior mandibular region, and on average affect patients during their third decade of life (DentalCare.com, 2018).

The etiology of odontomas is still unknown. Numerous explanations have been put forth, and a variety of causes have been suggested, including trauma, infection, family history, and genetic mutation. According to some researchers, the ameloblastic fibroma and ameloblastic fibro-odontoma both develop, and histo-morphologically represent the beginning stages of odontoma formation. The majority of odontomas are asymptomatic, and the majority of radiographic features are diagnostic (Yadav et al., 2012). Moreover, clinical signs of odontomas may include tooth displacement, discomfort, cortical bone enlargement, retention of primary teeth, and failure of permanent teeth to erupt. Numbness in the lower lip, frontal headaches, and swelling in the affected areas are some other symptoms that could exist. Additionally, pain is a rare symptom that is typically brought on by an infection from oral microbes getting between the bone and the odontoma. Due to the absence of the periodontal ligament and insufficient adhesion

between them, the infection is likely to develop (D'Cruz et al., 2013). Complex odontomas' developmental stage and degree of mineralization both affect how they appear radiographically. Due to the absence of dental tissue calcification, the first stage is characterized by radiolucency, while the second stage is characterized by the partial calcification of odontogenic tissue. The lesion typically looks radiopaque in the third stage, surrounded by thin radiolucent zones that histologically correlate to the connective capsule and amorphous masses of dental hard tissue (D'Cruz et al., 2013). Furthermore, complex odontomas exhibit sheets of immature tubular dentin with encapsulated hollow tooth-like features on a histological level. Additionally, in complex odontomas, ghost cells can be recognized (Reddy et al., 2014). Ghost cells are epithelial cells that have expanded or grown larger and lack a nucleus but have eosinophilic cytoplasm. These cells have a darkish appearance when stained with H and E. As a result, these cells are also known as transparent or shadow cells. These cells can develop in both odontogenic and nonodontogenic lesions, and their appearance varies from lesion to lesion (Rajesh et al., 2015). In addition, complex odontomas frequently have a spherical shape and are predominantly made up of an atypical combination of odontogenic components. Dentinoid structures are frequently blended with cement or compounds that resemble cement. The calcified mineralized masses of dentin of various grades may contain small gaps containing pulp tissue, enamel matrix, and epithelial remains (D'Cruz et al., 2013).

All odontomas are advised to be sent to an oral pathologist for microscopic inspection and a final diagnosis because ameloblastic odontoma and ameloblastic fibro-odontoma both resemble the common odontoma very closely, especially on the radiograph. Pathologic changes in the neighboring teeth, such as devitalization, malformation, aplasia, malposition, and remaining embedded, are seen in the majority of odontomas. The majority of odontomas are

found by mistake, further demonstrating how important radiography is as a tool in normal dental clinical assessment (Yadav et al., 2012). Furthermore, rarely does an odontoma coexist with a dentigerous cyst. The odontoameloblastoma, or ameloblastic odontoma, is another uncommon diagnosis. The neoplastic tumor has a clinically aggressive development pattern despite being comparable to the odontoma in age range and clinical location (DentalCare.com, 2018).

The preferred course of treatment is typically surgical removal of the odontoma followed by histological examination (D'Cruz et al., 2013). However, odontomas do not need to be treated until they prevent tooth eruption, with the exception of uncommon, massive, complex lesions. Enucleation of the surrounding epithelial tissue, including a mucoperiosteal flap to expose the tumor, curettage, and if necessary, the removal of overlying bone with a high-speed handpiece are all steps in surgical removal. Additionally, the tumor needs to be evaluated histopathologically. Large lesions would need to be filled in with bone (DentalCare.com, 2018).

References:

- D'Cruz, A. M., Hegde, S., & Shetty, U. A. (2013, May). *Large complex odontoma: A report of a rare entity*. Sultan Qaboos University medical journal. Retrieved November 25, 2022, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3706134/>
- DentalCare.com. (2018, December 1). *Case #4 diagnoses: Complex odontoma - radiographic interpretations*. Dentalcare. Retrieved November 25, 2022, from <https://www.dentalcare.com/en-us/ce-courses/ce513/case-study-4-odontoma>
- Rajesh, E., Jimson, S., Masthan, K. M. K., & Balachander, N. (2015, April). Ghost cell lesions. *Journal of pharmacy & bioallied sciences*. Retrieved November 25, 2022, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4439654/>
- Reddy, G. S. P., Reddy, G. V., Sidhartha, B., Sriharsha, K., Koshy, J., & Sultana, R. (2014, April 10). *Large complex odontoma of mandible in a young boy: A rare and unusual case report*. *Case Reports in Dentistry*. Retrieved November 25, 2022, from <https://www.hindawi.com/journals/crid/2014/854986/>
- Yadav, M., Godge, P., Meghana, S. M., & Kulkarni, S. R. (2012, April). *Compound odontoma*. *Contemporary clinical dentistry*. Retrieved November 25, 2022, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3354782/>