

Multiple compound odontomas in various regions of the maxilla: a rare case report

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ABSTRACT

Backgrounds: Odontomas often occur at a young age and are found incidentally in disturbed tooth eruptions, mostly intraosseous lesions. Compound odontomas have been identified as small tooth-like structures known as denticles. An accurate diagnosis of odontoma cannot be made on clinical examination. The majority of odontoma diagnoses have been made by radiographic examination. Odontoma often occurs unilaterally in one area with a single or multiple numbers, in this case, several areas have been found in the maxilla. The purpose of this case report is the radiographic evaluation of compound odontomas using panoramic radiographs and 3D Cone Beam CT.

Case: A 12 years old female patient with her mother came to the orthodontist with the main complaint of crowding teeth and wanted treatment. On examination, an inflammation appeared on the palate behind the left RA lateral incisor. There was no history of trauma to the orofacial area. There was no family history of unerupted teeth or hypodontia and nothing relevant medical history. The orthodontist referred the patient for a panoramic radiograph and CBCT examination.

Conclusion: The results of the panoramic radiograph examination have showed radiopaque images resembling denticles in several regions, was made the case has been interesting to appoint in this case report, and this result was confirmed by the results of the CBCT examination which can show the location, number, and size of denticles in this patient.

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INTRODUCTION :

The World Health Organization (WHO) has taken it out of classification international for lesion tumors and cysts and classified odontomas into the category of an odontogenic tumor¹. Odontomas are defined as something condition malformation or disturbance developments (hamartomas) that occur in epithelial and mesenchymal cells and produce differences complete on the formation of enamel and dentin, including inside it component cementum, follicles, and pulp can found in odontomas².

The term odontoma was introduced by Pierre Paul Broca in 1867, where he explained there is tumor growth tooth excess part or full, this odontoma including in type benign (benign) and undifferentiated tumors into two types compound type and type complex, 22% of whole tumor cavity mouth³. Frequent odontomas happen with age young and are normally found in a manner with No intentional and distracting eruption teeth. Partial odontoma big is a lesion intraosseous, which is rare and found on the network soft, and some big related to tooth permanent, the diagnosis of odontoma was made around or after the eruption of teeth, and calcification was done².

Odontoma etiology to the moment this not yet known for sure, however, a number of writers describe the correlation of trauma to primary teeth, epithelium cell Malasses, conditions inflammation, hyperactivity odontoblasts, and anomalies heir⁴. Other studies also associated with a number of condition pathological, such as local trauma, inflammation/infection, ameloblast maturation, residual cell series, or anomaly hereditary, and even there are studies that shed more light on the etiology strong that appear from lower premolars medium bottom develop from something lowered crown from root tooth decide predecessor produce influence pressure underneath¹. Radiography

conventional No can show morphology for diagnosis. Radiography conventional panoramic help evaluate the position of a manner vertical odontoma lesion. Inspection by offering CBCT pictures in more detail⁵.

CASE REPORT

A 12-year-old female patient with her mother came to orthodontics with the main complaint of crowding teeth and wanted treatment. On examination, a lump appeared on the palate behind the left RA lateral incisor. There was no history of trauma to the orofacial area in the patient. There was no family history of unerupted teeth or hypodontia and no relevant medical history. The orthodontist referred the patient for a panoramic radiograph and CBCT examination. Radiographic examination results showed radiopaque images resembling denticles in several regions which made this case interesting to be appointed in this case report, and these results were confirmed by the results of the CBCT examination which showed the location, number, and size of denticles in these patients.



Figure 1. Looks description of lesion radiopaque similar denticles with various variation sizes and locations Scattered on the maxilla

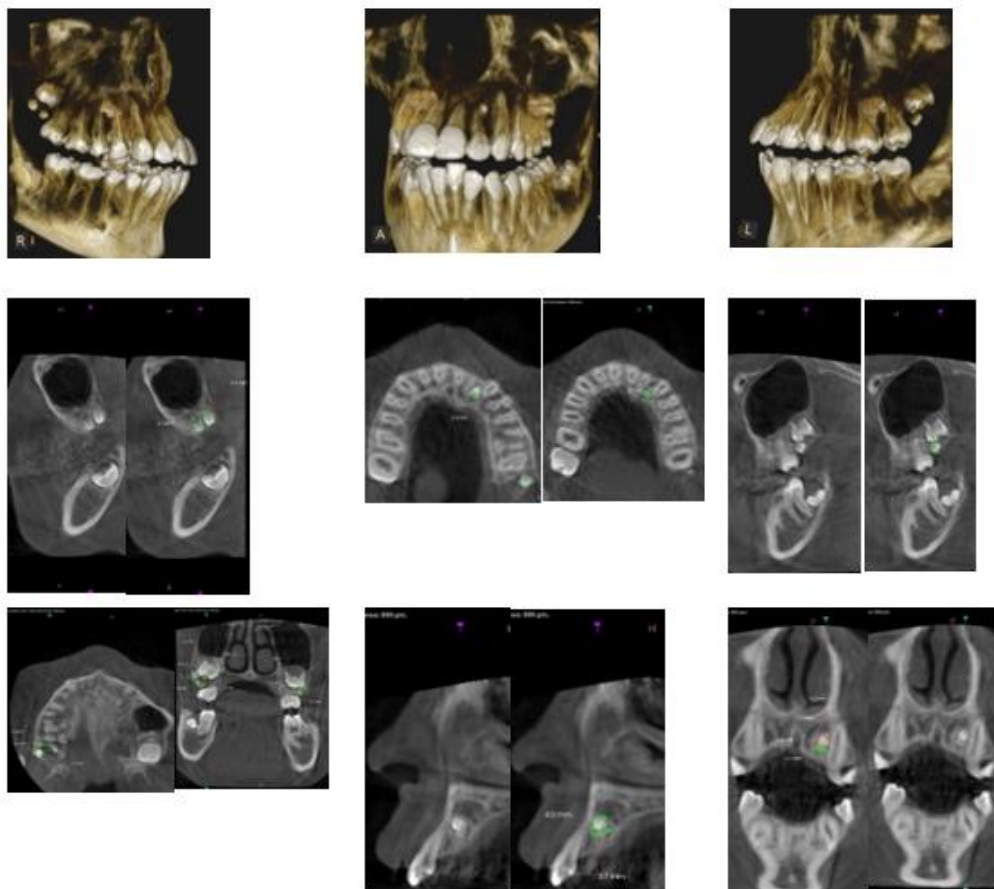


Figure 2. 3D view showing variation denticles, size, and number more clear from radiograph panorama.

DISCUSSION

A study conducted in Turkey in 2015 found 69 cases of patients with odontomas, with a gender predilection being female, in that study, there were 49 cases of compound odontomas with the most locations in the anterior region and 20 cases of complex odontomas located in the posterior region of the mandible^{5,6}. The description of the study shows that the prevalence of compound odontomas is more than complex odontomas, this study is in accordance with the results of a case report in Turkey which aims to look at the prevalence, type, and location of odontoma cases where the results of the study showed that 63.6% were compound odontomas and 36.4% were complex odontomas. The location of compound odontoma lesions is usually located above the crown of an unerupted tooth, or between the roots of an erupted tooth, the lesion is usually radiopaque, such as a miniature tooth structure known as a denticle, whereas in complex odontomas it often appears on the occlusal side of the impacted tooth, and they can reach several centimeters (cm) in size⁷. The majority of reported odontoma sizes range from 1-2 cm in diameter, and cases of odontoma that are larger than 3 cm are referred to as *giant* odontomas. *Giant* odontomas can cause cortical bone expansion, swelling, facial asymmetry, limited mouth opening, pain, and tooth *displacement*³. Compound odontomas identified small tooth-like structures in a *well-organized pattern*. Meanwhile, a complex odontoma is a mass of enamel and dentin arranged irregularly without any anatomical resemblance to the teeth. Odontomas are slow growing, asymptomatic, and are usually discovered incidentally during radiographic examination because they are closely associated with delayed tooth eruption and displacement of adjacent teeth¹.

Radiographically a compound odontoma appears as a *well-defined* radiopaque image of

bone surrounded by a radiolucent halo covered with a thin sclerotic wall, whereas in a complex odontoma, the radiopaque appearance is nonspecific, irregular, irregular and maybe a single or multiple *mass*⁶. Another study also explained the difference between compound and complex odontomas, in complex odontomas the density of the teeth is greater than that of the bone. Meanwhile, in a compound odontoma, there are two different features, namely small groups of masses with irregular densities and no resemblance to teeth with the presence of two or more masses that resemble teeth⁸. It is also said that compound odontomas have heterogeneous variations in size and number as in a case report in Nepal where it was found that 39 denticles with various small sizes had been successfully removed, in this case, the location of the denticles only occurred in one region⁹. Almost the same thing was found in a case report in Japan where compound odontomas were found in two maxillary sinus regions and surgery was successfully performed to remove these odontomas, and the largest number of variations in the number and size of denticles was reported in Iran with a total of 69 denticles. which has been issued¹⁰. Although this compound odontoma is often reported in cases of permanent teeth, compound odontomas with a total of 32 denticles have been found in the roots of primary teeth⁶. Although most occur in the maxillary area, multiple compound odontomas can also occur in the mandible, such as a case report in India which found 11 denticles of odontoma in the anterior region of the mandible¹¹.

The stages of odontoma development can be identified based on the radiological appearance and the degree of calcification of the lesion. The first stage is characterized by radiolucency; a second stage of partial calcification, and a third stage of predominant tissue calcification characterized by a

surrounding radiolucent halo⁵. Compound odontoma classification according to Gravey et al. Occurring as a single or combined mass, the three types are the identical type which consists of two or more separate denticle tissues, has a crown and a root, and hard dental tissue resembling a tooth. The particulate type which consists of two or more separate masses or particles, has no resemblance to teeth, consists of dental hard tissue and finally is the *identical-particulate type* in which in this type, denticles and particles are present together. Generally located in the anterior segment (*incisor-canine*), generally located in the maxillary molar area, whereas complex odontomas consist of only a single mass¹²

An accurate diagnosis of odontoma cannot be made on clinical examination. The majority of odontoma diagnoses are made by radiographic examination³. The diagnosis is usually made by routine radiological examination (panoramic and/or intraoral radiographs), or by evaluating the cause of the delayed eruption¹³. An intraoral periapical radiographic examination was performed showing a variety of denticles of differing shape and size in relation to the roots of the primary incisors along with the impacted teeth⁹. A case report in India reported a patient who was diagnosed with odontoma compound using conventional methods and digital radiography, in which the case used two kinds of examination techniques namely intraoral with periapical, occlusal, and extraoral using panoramic and CBCT¹⁴. Radiologically, an orthopantomogram (OPG) or panoramic radiograph can aid in the evaluation of the vertical position, degree of calcified odontoma, and impacted primary or permanent teeth, and detailed occlusal radiographs can evaluate their relationship to adjacent teeth. Diagnosis on two-dimensional images is not always easy. Consequently, *Cone Beam Computed Tomography* (CBCT) can reveal

more precisely the position, both vertically and horizontally, of odontoma composition, root resorption, and closer relationship to adjacent teeth and cortical boundaries. CBCT is used in oral and maxillofacial surgery because of its low cost, easy accessibility, and low radiation compared to *multi-slice computed tomography*. Therefore, the relevance of CBCT to diagnosis, the value of the classification matrix, and the appropriate surgical planning for complex and multiple odontomas will be discussed in this review².

Conventional radiography cannot always show the different details of the lesion in the tumor due to poor image resolution, neither visual nor radiographic examination shows the morphology required for diagnosis¹⁰. Conventional panoramic radiography helps evaluate the vertical position of the odontoma lesion and occlusal radiography can be used to evaluate the proximity of the odontoma to adjacent teeth. Examination with CBCT offers volumetric images. Recently, CBCT evaluation of odontomas has been associated with several diagnostic benefits and surgical planning. Thanks to CBCT, one can accurately identify cortical localization, thickness, and structures not visible on plane radiographs. Measuring cortical thickness can help the surgeon to plan surgical access especially if the odontoma is localized between the roots or on the crown. As noted in our study, the relationship between the odontoma and the crown/root may require appropriate surgery to avoid damaging the tooth and surrounding vital structures¹⁵.

The diagnosis of odontoma cases is made by panoramic radiography. However, it is difficult to determine the presence of *supernumerary* or impacted permanent teeth because of their superimposition. Diagnosis requires a CBCT scan to achieve a detailed assessment of the odontoma and impacted teeth regarding the position,

measuring the distance to associated teeth and to adjacent cortex and occurrence of root resorption¹⁶. CBCT is more effective than panoramic because there is no superimposed anatomical structure and allows the creation of images in the axial, coronal, sagittal, and oblique planes. In the maxillofacial region, there are situations that cannot be interpreted from 2D images and which would benefit from a multiplanar view. CBCT has a high spatial resolution. Utilization of CBCT can help detect the position of odontomas and teeth, the presence of any supernumerary teeth, and root resorption associated with odontomas¹⁷.

On examination of cases of radiographic findings resembling an odontoma, the differential diagnosis must be established with several lesions depending on their location. If the lesion occurs in an inter-root location, then focal residual osteitis, cementoma, calcifying epithelial odontogenic tumor, adenomatoid odontogenic tumor, supernumerary tooth, or benign osteoblastoma should be included in the differential diagnosis. If the lesion is located at the pericoronal level, then an odontogenic adenomatoid tumor, calcifying epithelial odontogenic tumor or odontoameloblastoma should be included in the differential diagnosis. When the lesion occurs in the maxillary sinus, it can be misdiagnosed as sinusitis, antral mycosis, foreign body, root remnants, peripheral osteoma, benign mesenchymal neoplasm, antral sarcoma, or carcinoma⁷.

CONCLUSION

In this case report the use of panoramic radiographs is used as an initial *assessment* of the condition of the teeth prior to orthodontic treatment, while the appearance of odontomas is an accidental finding and appears to occur in various areas which is a rare incidental finding. The use of panoramic radiographs, in this case, did not provide a clear

description of the number, size, and location of the denticles. The results of the CBCT examination can provide a description to the author about the number, size, and exact location of odontomas compared to using panoramic radiographs.

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