

# Radiological Evaluation of A Large Complex Odontoma by Computed Tomography

LAKSHMI KAVITHA N, VENKATESWARLU M AND GEETHA P

## ABSTRACT

Complex odontomas are less frequently found as compared to the compound odontomas and they are considered to be hamartomatous malformations rather than true neoplasms. They are generally asymptomatic and are frequently found during a

routine radiological examination. Occasionally, they become infected and cause pain and swelling. Here, we report a case of infected complex odontoma and the importance of CT in terms of its diagnosis and treatment planning.

**Key Words:** Complex odontoma, computed tomography, dense radioopacity

## INTRODUCTION

Odontomas are the most common of the odontogenic tumours of the jaws and are characterized by their slow growth and non aggressive behaviour. They are mixed tumours, consisting of both epithelial and mesenchymal cells, that present a complete dental tissue differentiation (enamel, dentin, cementum and pulp). [1-2] The lesions are invariably asymptomatic and are usually discovered on routine radiographical examinations during the second and third decades of life. [2-3] The CT imaging characteristics of complex odontomas have been reported in only a few cases and to our knowledge, in only 2 reported cases in the literature. [1-2] We present here, the contribution of CT in diagnosing a large painful complex odontoma.

## CASE REPORT

A 27 year old male presented with a complaint of pain and swelling in the lower left jaw posterior region since 5 days. The clinical examination revealed a well defined, hard, painful intra oral swelling in the left retro molar region. The swelling seemed to extend from the mesial surface of the left second molar to the retro molar region on the left side. The surface of the swelling was slightly ulcerated due to the pressure which was exerted by the maxillary teeth on occlusion. The lower left third molar (38) was found to be missing. Bicortical expansion was present.

OPG revealed a huge, well defined, uniformly dense, rounded radio opacity (about 4X4 cm) which was distal to the mandibular left second molar and overlying the coronal portion of the mandibular left third molar, which was displaced disto-inferiorly. A uniform, well-defined, radiolucent halo surrounded the radiopacity. The radiopacity seemed to superimpose on the roots of the left second molar. The mandibular canal was displaced inferiorly. There was no evidence of any root resorption in the left mandibular second molar. [Table/ Fig 1]

Computerized tomography scan images were obtained in the axial, coronal, sagittal and panoramic views, with 3-D reconstruction. The axial section revealed a well defined, homogenously hyper dense lesion with 1800 Hounsfield units, within the left medullary cavity of the posterior aspect of the mandible, extending up to the level

of the ramus. The lesion was displacing an impacted 3rd molar inferiorly [Table/Fig 2]

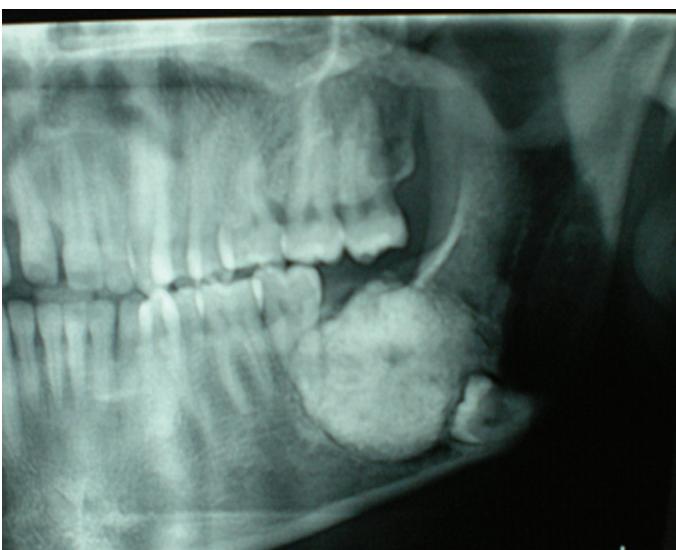
. A thin, well defined, hypo dense area surrounded the hyper dense lesion, which was suggestive of a soft tissue capsule. There was an evidence of the buccolingual expansion of the cortex, with no break. There was no evidence of soft tissue extension. The coronal, sagittal and reconstructed panoramic CT views showed the size and extent of the lesions in all the three dimensions, which was essential for the surgical planning [Table/Fig 3,4 and 5].

Surgical excision was carried out under general anaesthesia and the histological analysis confirmed a *complex odontoma*.

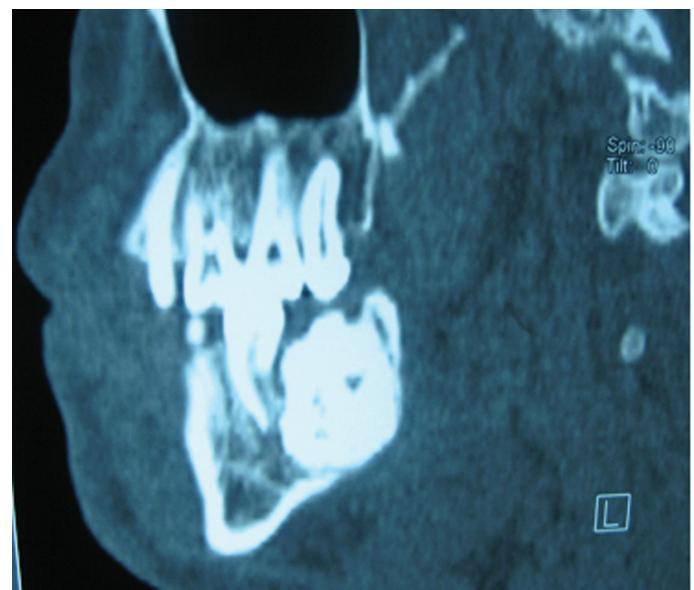
## DISCUSSION

The term 'odontoma' (or odontome) which was firstly described by Paul Broca in 1867, was originally used as a general descriptive for any tumour (in its broadest sense) of odontogenic origin.[4] Broca defined the term as 'tumours which were formed by the overgrowth or the transitory of the complete dental tissue'. [5] The aetiology of odontomas has been attributed to various pathological conditions like local trauma, inflammatory and/ or infectious processes and hereditary anomalies (Gardener's syndrome, Hermann's syndrome). Odontoblastic hyperactivity and alterations in the genetic component is responsible for controlling the dental development [6-8].

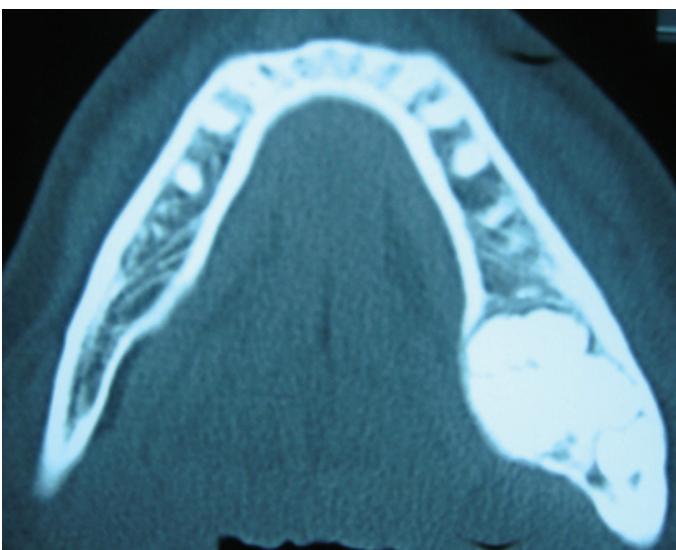
Odontomas are benign tumours which contain various component tissues of the teeth and they are the most common odontogenic tumours which constitute 22% of all the odontogenic tumours of the jaws [9]. There are two types of odontomas: complex odontomas and compound odontomas – the latter being twice as frequent as the former. Compound odontomas show a predilection in the anterior section of the upper maxilla, while complex odontomas are typically found in the posterior mandibular region [10]. They may be discovered at any age, although less than 10% of them are found in patients over 40 years of age. Although they are commonly asymptomatic, the clinical indicators of odontoma may include the retention of the deciduous teeth, the non-eruption of the permanent teeth, pain, expansion of the cortical bone and tooth displacement. Other symptoms include anaesthesia in the lower lip and swelling in the affected area [2,7]. In the present case,



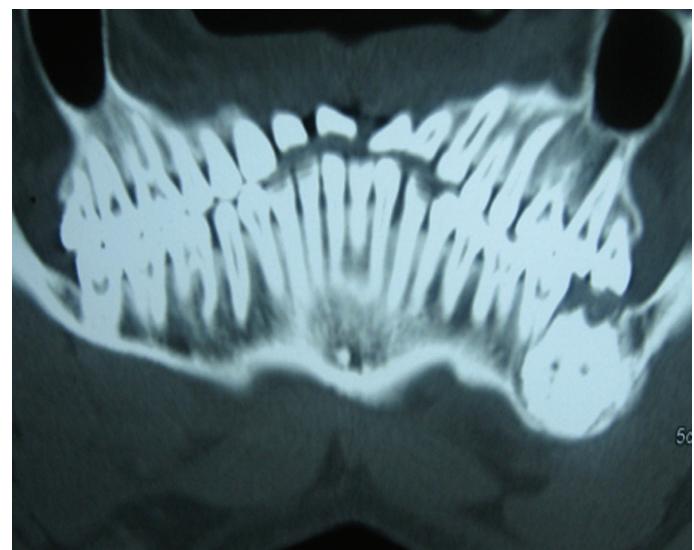
**[Table/Fig-1]:** Cropped image of orthopantomograph showing a large dense uniformly radio opaque lesion , surrounded by a thin radiolucent halo, overlying an impacted third molar.



**[Table/Fig-4]:** Sagittal section showing the relationship of the impacted third molar to the large odontoma.



**[Table/Fig-2]:** Axial section showing a uniformly hyperdense lesion surrounded by a thin hypodense line on left posterior aspect of mandible with displaced impacted tooth



**[Table/Fig-5]:** Panoramic Reconstruction Showing uniformly hyperdense lesion with 1800 Hounsfield units throughout the lesion.



**[Table/Fig-3]:** Coronal section showing extension of the hyperdense lesion on left posterior aspect of mandible.

pain was the first symptom, probably due to secondary infection, which can occur because of the replacement of bone by a large amount of avascular hard tissue.

The radiological appearance of complex odontomas depends on their stage of development and the degree of mineralization. The first stage is characterized by radiolucency due to lack of calcification. Partial calcification is observed in the intermediate stage, while in the third stage, the lesion usually appears radio opaque, with amorphous masses of dental hard tissue which are surrounded by a thin radiolucent zone which corresponds to the connective tissue capsule histologically [7].

Our case showed a well defined, homogenously dense, radio opaque internal structure which was surrounded by a radiolucent halo which was surrounded by a thin sclerotic line around an impacted left third molar. Additional radiographical evaluation with CT was necessary to determine the extension, expansion, thinning and perforation of the lesion, which can be readily assessed by using bone windows. The precise relationship of the unerupted third molar to the large complex odontoma in the sagittal plane was

easily visualised by CT, thus aiding in the surgical management.

The degree of opacity, the location, the well defined border and the zone of lucency differentiate complex odontomas from other opaque lesions within the jaw. The lesions that may share radiographical features with complex odontomas include cementoblastomas, osteoid osteomas, cementossifying fibromas and focal cementosseous dysplasias [3].

The surgical treatment consists of complete enucleation and curettage of the lesion and the surrounding area. The recurrence is occasional, but uncommon. A careful histological and radiographical examination of these tumours is necessary, because these lesions may resemble a much more aggressive neoplasm, the odontoameloblastoma [2].

In conclusion, the use of CT, in addition to OPG, was valuable in the visualization of the relationship of the unerupted third molar and a complex odontoma in the sagittal plane, thus aiding in the surgical management.

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