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ABSTRACT

Odontomas are the most common odontogenic tumours. They are benign, slow growing, nonaggressive, hamartomatous developmental malformations composed of mature tooth substances. Based on the degree of morphodifferentiation or their resemblance to normal teeth, they are divided into compound and complex odontomas. The compound odontoma is composed of multiple, small tooth-like structures. The complex odontoma consists of a conglomerate mass of enamel and dentin, which bears no anatomic resemblance to a tooth. Odontomas are usually asymptomatic and are often discovered during routine radiography. The eruption and infection of odontomas are uncommon. Fusion of odontoma with permanent tooth is also rare. Here we report an unusual case of a complex odontoma fused to the impacted right mandibular third molar.

KEYWORDS: Complex Odontoma, Mandibular third molar, Fusion

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INTRODUCTION:

The term odontoma was first coined by Broca in 1866, who defined it as a tumor formed by overgrowth of complete dental tissues. They are composed of enamel, dentin, cementum and occasionally pulp tissue.^{1,3,5}

The World Health Organization (WHO), 2005 describes odontomas as two types: Complex Odontomas and Compound Odontomas.^{1, 2, 4, 10, 12}

Complex odontoma, a malformation in which all dental tissues are present, but arranged in a more or less disorderly pattern; and compound odontoma, a malformation in which all of 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 the normal tooth.^{6,10,12}

Odontomas constitute 22% of all odontogenic tumors. They occur in the first and second decade of life.⁴ The exact etiology of odontomas is uncertain, different factors such as local trauma, infection, growth pressure, heredity and developmental influences may be implicated.¹

Compound odontoma is twice as common as compared to complex odontoma. Compound odontoma affects males and females equally while complex odontomas are more common in females (3:2 ratio).¹¹ Compound odontomas are more common in the anterior part of the oral cavity whilst complex odontomas are more common in the

posterior mouth.¹⁰

Odontomas are mostly asymptomatic in nature and are usually found in routine radiographic examinations. Garcia-Consuegra et al. reported pain and inflammation in association with an odontoma in only 4% of Spanish patients.⁸

Compound odontomas are painless, non-aggressive lesions, with limited growth potential as compared to complex odontoma which is often associated with an unerupted permanent tooth.¹¹ Although odontomas tend to be closely associated to adjacent teeth, they are commonly separated by septum of bone; very few case reports of complex odontomas fused to tooth of normal morphology are reported. It seems likely that whatever process leads to fusion of otherwise normal teeth could cause the fusion of odontoma to otherwise normal tooth.¹⁴

Radiographically, compound odontomas manifest as a radiopaque masses of multiple, small, calcified structures with an anatomical similarity to normal teeth usually surrounded by a narrow radiolucent zone. Complex odontoma manifest as a radiopaque solid mass with occasional nodular elements, and surrounded by a fine radiolucent rim. The lesions are unilocular and are separated from the normal bone by a well-defined corticated line. No individual tooth-like structures are seen.⁷

The treatment of choice is surgical removal of the lesion, followed by histopathological study to confirm the diagnosis.¹³

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The histological examination of odontomas often shows the presence of enamel matrix, dentin, pulp tissue, and cementum that can, but need not, exhibit a normal relationship. Compound odontomas are formed by tooth-like structures which resemble pulp tissue in the central portion surrounded by a dentin shell and partially covered by enamel. Complex odontomas are conglomerates without orientation of dentin, enamel, enamel matrix, cementum, and areas of pulp tissue. The capsule of connective tissue that surrounds an odontoma is similar to the follicle that covers a normal tooth.¹¹

We report an interesting and a rare case of fusion of complex odontoma with impacted right mandibular third molar tooth.

CASE REPORT

A 20 years old healthy male patient reported to Oral Medicine & Radiology Department with chief complaint of pain in the right lower back region of mouth since 3 months. Pain was gradual in onset, dull aching, intermittent, radiating to same side of face & relieved by itself after sometime.

His past dental & medical history were noncontributory. Mouth opening was adequate.

Intra oral examination revealed absence of right mandibular third molar. The alveolar mucosa over third molar region was very pale (Fig. 1). It was tender on palpation. There was no apparent expansion of inner & outer cortex of mandible in retromolar & ascending ramus areas. Carious destruction of the crown of right mandibular first molar was seen. It was also tender on percussion.

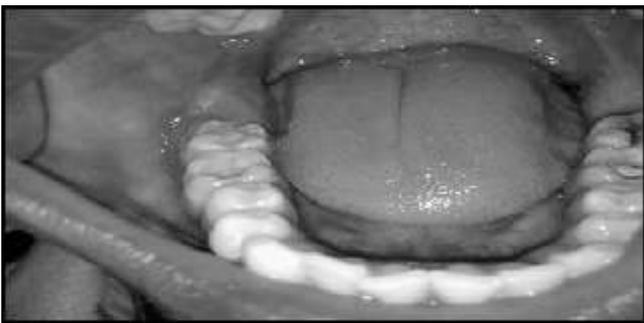


Figure: 1 - Intraoral photograph showing missing third molar and pale mucosa over it

Panoramic radiograph showed a dense radio opaque mass above the crown of impacted right mandibular third molar measuring approximately 1 cm in diameter. The lesion was round in shape & appeared to be fused to the crown portion of the impacted

third molar. Third molar was displaced completely to the inferior border of the mandible. A well-defined radiolucent zone with radio opaque border covered the entire crown of the third molar except at some parts in superior & mesial aspect. Radiodensity of the lesion was comparable to that of adjacent tooth structure (Fig. 2).



Figure: 2 - Showing a dense radio opaque mass above the crown of impacted right mandibular third molar in OPG

Transaxial section of CBCT revealed a 1 x 1 x 1 cm well-defined radiopaque calcified mass in right posterior third molar region with ill-defined radiolucent zone which is present at distal, superior and inferior portion of the tooth region. Tooth was present in the inferior portion of the lesion which was extending to mandibular canal. There was a no bony expansion present (Fig. 3, 4).

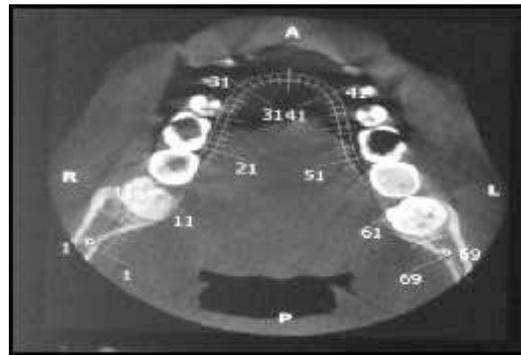


Figure: 3 -Axial section of CBCT showing the extent of the lesion anteroposteriorly.

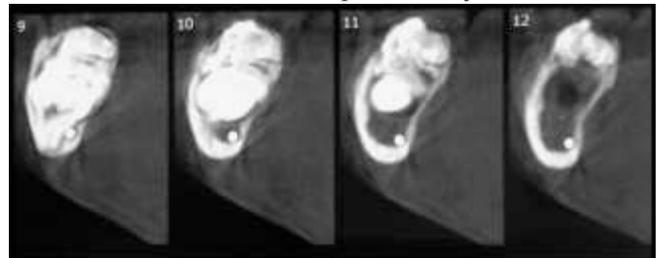


Figure: 4 - Trans Axial section of CBCT showing the extent of the lesion anteroposteriorly.

Based on the clinico-radiographic findings, diagnosis of complex odontoma fused with mandibular right third molar was established and the differential diagnoses of cementoblastoma, osteoid osteoma and cemento-ossifying fibroma were considered.

Access to the lesion was achieved via intraoral approach, under local anaesthesia & on surgical opening the odontoma was found to be fused with impacted right mandibular third molar. It was surgically removed without removal of third molar (Fig. 5).

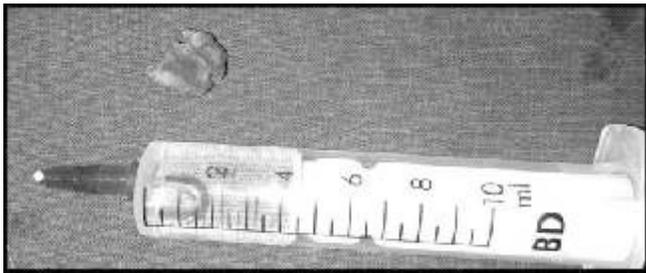


Figure: 5 - Excised specimen.

The specimen was sent for histopathological examination which revealed irregular enamel dentin, cementum, and spaces containing loose fibrous connective tissue, which confirmed the diagnosis of complex odontoma (Fig. 6).



Figure: 6 -H & E stain of excised specimen revealed irregular enamel dentin, cementum, and spaces containing loose fibrous connective tissue

DISCUSSION

Odontomas are considered as hamartomas of aborted tooth formation rather than true neoplasms.¹ Odontoma is a common odontogenic tumour, and it is usually a hard painless mass, which rarely exceeds the diameter of the tooth. Most of these

lesions are discovered accidentally on radiographic examination. The common signs and symptoms include impacted permanent teeth and swelling. Budnick found that 61% of cases are associated with impacted teeth⁴ which is in accordance with present case. There is an additional feature i.e. fusion of odontoma with mandibular 3rd molar.

The complex odontomas are usually located in the posterior mandible, which is similar finding in present case. Complex odontoma are less common in comparison with compound variety in the ratio 1:2. Majority of odontomas are asymptomatic though sometimes, swelling, pain, suppuration, bony expansion, delayed eruption and displacement of teeth are noted.³ However, in the present case pain was the only finding.

H.M. Worth (1937) classified odontomas as: a) Epithelial odontomas-arising from dental epithelium, e.g. dentigerous cyst, adamantinoma. b) Composite odontomas-arising from the dental epithelium and dental mesoblastic tissues, e.g. complex, compound, geminated and dilated, which is in accordance with present case. Thoma and Goldman in 1946, gave another classification: a) Geminated composite odontomas: nearly well-developed fused teeth, which is in accordance with present case. b) Compound composite odontomas: made up rudimentary teeth. c) Complex composite odontomas: calcified structures not resembling normal anatomical arrangement of dental tissues. d) Dilated odontomas: enlarged crown or root portion of tooth. e) Cystic odontomas: odontoma encapsulated by fibrous connective tissue in a cyst or in the wall of a cyst. Odontomas are also classified as intraosseous and extraosseous odontomas. The intraosseous odontomas occur inside the bone and may erupt into the oral cavity (erupted odontome), which is in accordance with present case. The extraosseous or peripheral odontomas are odontomas occurring in the soft tissue covering the tooth-bearing portions of the jaws and having a tendency to exfoliate.⁶ The present case is of a patient with complex odontoma as per Thoma's types.

The odontoma presents as a well-defined radiopacity situated in bone, but with a density that is greater than bone and equal to or greater than that of a tooth. It contains foci of variable density. A radiolucent halo, typically surrounded by a thin

sclerotic line, surrounds the radiopacity. The radiolucent zone is the connective tissue capsule of a normal tooth follicle. The thin sclerotic line resembles the corticated border seen in a normal tooth crypt, which is similar to the finding in present case. The developmental stages can be identified based on radiologic features and the degree of calcification of the lesion at the time of diagnosis. The first stage is characterized by radiolucency due to the absence of dental tissue calcification, the second or intermediate stage shows partial calcification. Third stage shows classically radiopaque stage, exhibits predominant tissue calcification with the surrounding radiolucent halo, which is similar to the finding in present case.⁹

A mature complex odontoma, should be differentiated from cementoblastoma, osteoid osteoma and cemento-ossifying fibroma. A cementoblastoma presents as a well-defined radiopaque mass attached to the tooth root and surrounded by a radiolucent rim. Osteoid osteomas are characterized by a small ovoid or round radiolucent area surrounded by a rim of sclerotic bone; the central radiolucency exhibits some calcification. Cemento-ossifying fibroma presents

as a well-defined radiolucency with increasing flecks of calcification as it matures; it is not surrounded by a radiolucent rim and it is diffuse with normal bone. Also, none of these is associated with an impacted tooth.⁹

The recommended treatment of odontoma is through conservative approach. Since, enucleation and curettage of odontomas are curative, chances of recurrence are less.⁷ In our case surgical removal of odontoma was done without removal of third molar to avoid such complications like trauma to mandibular canal and pathological fracture of mandible.

CONCLUSION

Odontomas are generally asymptomatic but in some cases they can cause orofacial pain. There is always a possibility of causing trauma to the mandibular canal & pathologic fracture occurring during removal, especially when odontoma is fused with the normal tooth & displaces it to the inferior border of mandible. To avoid this complication, CBCT is the best radiographic modality as the exact extension and dimension can be obtained.

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