

CASE REPORT

Complex Composite Odontome

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Article Info

Received: July 12, 2010

Review Completed: August 15, 2010

Accepted: September 10, 2010

Available Online: October, 2010

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ABSTRACT:

Complex composite odontoma was described as a distinct entity for the first time by Broca in 1866. This lesion takes place because dental components are laid down in a disorganized manner, due to failure of normal morphodifferentiation. The difference between complex and composite odontomas is arbitrary, being based on the preponderance of well-organized denticles as opposed to a preponderance of disorganized dental tissues rather than on any absolute difference. In complex odontoma individual tissues are mainly well formed but occur in a more or less disorderly pattern. A case of complex composite odontoma in an 18-year-old male patient is being reported here.

Key words: *Complex composite odontoma, Morphodifferentiation failure, Denticles, Disorganized dental tissue, Disorderly pattern.*

INTRODUCTION:

The term 'odontoma' has been used for any tumor of odontogenic origin. However, odontomas have become known as mixed odontogenic tumors because they are composed of both epithelial and ectomesenchymal components.¹ Both the epithelial and the ectomesenchymal tissues and their respective cells may appear normal morphologically, but they seem to have a deficit in structural arrangement. This defect has led to the opinion that odontomas are hamartomatous lesions or malformations rather than true neoplasms.²

CASE HISTORY:

A 30 year old male patient visited the Department of Oral Pathology and Microbiology in M.G.V'S Dental College and Hospital Nashik, with the chief complaint of pain and slight swelling in the lower left back region of the mouth since 3 months. The history revealed that the swelling had started insidiously, not preceded by trauma and has steadily increased in size since its onset. The patient had

experienced dull pain since the onset of the swelling and it was not associated with pus discharge. The swelling and pain reduced slightly following antibiotics and analgesics. Medical, surgical, dental, family, and personal histories were not noteworthy. General physical examination revealed no abnormalities.

Extra oral examination disclosed an ill-defined, diffuse swelling was associated with the lower half of the left cheek. Swelling was ovoid in shape, approximately 2 x 1 c.m in size, extending 3 c.m behind the angle of the mouth to 1 c.m in front of the posterior border of the ramus antero-posteriorly and supero-inferiorly 2 c.m below the line joining the angle of the mouth to the lobe of the ear to the lower border of the mandible, with no secondary changes or local rise of temperature (Figure 1). It was mildly tender and hard on palpation. Overlying skin was smooth and insignificant and no regional lymphadenopathy was evident. Swelling was bony hard and non-reducible, non-compressible and non-mobile on palpation. Overlying mucosa was freely movable and at same temperature as that of the

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surrounding mucosa. Intraoral examination revealed impacted 38 with no evidence of swelling associated with it (Figure 2).

Clinical differential diagnosis included an odontogenic keratocyst, dentigerous cyst, ameloblastoma, odontoma, calcifying epithelial odontogenic cyst, benign cementoblastoma, benign osteoblastoma, and central ossifying fibroma. Routine hematological investigations revealed normal values.

Orthopantomograph showed an ill defined mixed radiopaque radiolucent lesion in 38 region. The mixed radiopaque-radiolucent lesion, measured approximately 2.5 x 1.5 cm in size (Figure 3). The three mixed lesions were separated from each other by a thin radiopaque line. The radiographic differential diagnosis included odontoma, ameloblastic fibro-odontoma, and ameloblastic fibro-dentinoma.

The lesion was completely excised.

The H and E — stained sections showed lesional tissue which was composed of fibrous connective tissue with collagen fibers, fibroblasts, blood vessels and mild chronic inflammatory cells (Figure 4). Ground section showed dentin like areas which contained dentinal tubules, osteodentin, enamel space and cementum in a disordered arrangement (Figure 5). The histopathological impression was that of a complex composite odontoma. No recurrence of the lesion has been observed 6 months after the treatment.

DISCUSSION:

The term “odontome” was first coined by Broca in 1866. It is defined as “growth in which both the epithelial and connective tissue components exhibit complete differentiation, with the result that functional ameloblasts and odontoblasts form enamel and dentin”. This lesion takes place because, dental components are laid down in a disorganized manner, due to failure of normal morphodifferentiation. Odontomas are of two types, the complex and the compound odontoma.³ The distinction between complex and composite odontomas is arbitrary, being based on the preponderance of well-organized denticles as opposed to a preponderance of disorganised dental tissues rather than on any absolute difference.^{4,5}

COMPLEX ODONTOMA: The WHO classification defines this lesion as follows: “A malformation in which all the dental tissues are represented, individual tissues being mainly well formed but occurring in a more or less disorderly pattern.”⁴

Clinical features: The relative frequency of complex odontoma among odontogenic tumors vary between 5% and 30% which means that this lesion is one of the most commonest odontogenic lesion/malformation, only superseded in frequency by the compound odontoma, which is 9% to 37%. The majority of cases (83.9%) occur before the age of 30 with a peak in the 2nd decade of life. The male:female ratio varies between 1.5:1 to 1.6:1.⁵

Site: It is commonly found in the posterior mandible, followed by anterior maxilla. The complex odontoma is a painless, slow-growing and expanding lesion that is usually discovered on routine radiographs of the jaw bones, or the failed eruption of a permanent tooth which may lead to the diagnosis of this lesion.⁶ The size varies considerably from that of a walnut, or even larger, to a size that is only microscopically detectable.

Radiological features: Radiologically, the lesion appears as a more or less amorphous, solitary mass of calcified material. Tooth-like radiopaque structures are usually not detectable. In some cases, the lesion shows a radiating structure.² Resorption of neighboring teeth is rarely seen. Sometimes unerupted teeth are associated with complex odontomas.⁶

Pathogenesis: It is considered a self-limiting developmental anomaly or hamartomatous malformation characterized by nondescript masses of dental tissues. The etiology of complex odontomas is unknown. Several theories have been proposed, including local trauma, infection, family history, and genetic mutation. It has also been suggested that odontomas are inherited from a mutant gene or interference, possibly postnatally with the genetic control of tooth development. Several factors may cause anomalous tissue development in odontomas. These include unsuccessful or an altered ectomesenchymal interaction in the earliest phase of dental germ development and/or alterations in the subsequent phases of the development of these tissues.⁶

Histopathological features: Microscopically, this lesion consists primarily of a well-delineated, roughly spherical mass of a haphazard conglomerate of mature hard dental tissues. Some examples may include better-ordered, tooth-like structures.¹ Thus, the degree of morphodifferentiation varies from lesion to lesion, enclosed in the calcified/mineralized matrix. There is predominantly dentine of an irregular variety, cementum or cementum-like tissue in small amounts and there is an admixture of dentine with round or ovoid spaces containing pulp tissue, enamel epithelium and remnants of enamel matrix.⁴ Clear spaces and clefts that probably contain mature enamel lost in the process of decalcification are often seen. In some sections at the periphery of the mass, islands of pulp tissue in association with cords and buds of odontogenic epithelium can be found. Sixteen percent of complex odontomas contain isolated areas of ghost cells, some of which may demonstrate melanin pigmentation. However, the usual high degree of differentiation of the dental tissues reflects the late stage of morphodifferentiation and maturation of odontogenesis. A thin, fibrous capsule and, in some cases, a cyst wall is seen surrounding the lesion.⁵

Treatment: Conservative surgical enucleation is considered to be the treatment of choice in most

cases of complex odontoma. As odontomas are often associated with impacted teeth, the possibility of eruption of the impacted tooth after a presumed obstructive odontoma has been surgically removed is an important issue.³ In those cases where an impacted tooth is not involved, immediate surgical intervention is not absolutely necessary, considering the high accuracy of the radiographic diagnosis and the very limited growth potential of the odontomas.⁴

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Figure 1-: Extra oral examination disclosed an ill-defined, diffuse swelling was associated with the lower half of the left cheek. Swelling was ovoid in shape, approximately 2 x 1 c.m in size.



Figure 2-: Showing impacted 38 with no evidence of swelling associated with it.



Figure 3-: OPG Showing well defined, irregularly shaped mixed radioopaque radiolucent lesion in the place of 38 region, surrounded by well defined radiolucency.

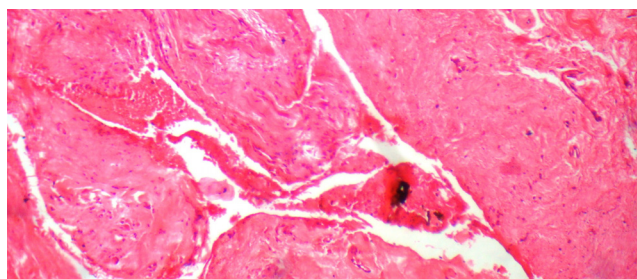


Figure 4-: H&E stained sections showed lesional tissue which was composed of fibrous connective tissue with collagen fibers, fibroblasts, blood vessels and mild chronic inflammatory cells. (100X)



Figure 5-: Ground section shows dentin like areas which contain dentinal tubules and cementum in a disordered arrangement. (100X)