ORAL PATHOLOGY

LEC 7
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ADENOMATOID ODONTOGENIC TUMOR

The **adenomatoid odontogenic tumor** represents 3% to 7% of all odontogenic tumors. there is evidence that the tumor cells are derived from enamel organ epithelium or from remnants of dental lamina.

CLINICAL AND RADIOGRAPHIC FEATURES

Two thirds of all cases are diagnosed when patients are 10 to 19 years of age. This tumor is definitely uncommon in a patient older than age 30. It has a striking tendency to occur in the anterior portions of the jaws and is found twice as often in the maxilla as in the mandible. Most adenomatoid odontogenic tumors are relatively small. They seldom exceed 3 cm in greatest diameter.

Asymptomatic and are discovered during the course of a routine radiographic examination or when films are made to determine why a tooth has not erupted.

In about 75% of cases, the tumor appears as a circumscribed, unilocular radiolucency that involves the crown of an unerupted tooth, most often a canine.

HISTOPATHOLOGIC FEATURES

The adenomatoid odontogenic tumor is a well-defined lesion that is usually surrounded by a thick, fibrous capsule.

Microscopically, the tumor is composed of spindle shaped epithelial cells that form sheets, strands, or whorled masses of cells in a scant fibrous stroma. The epithelial cells may form rosette like structures about a central space.

The tubular or duct like structures, which are the characteristic feature of the adenomatoid odontogenic tumor, may be prominent, scanty, or even absent in a given lesion. These consist of a central space surrounded by a layer of columnar or cuboidal epithelial cells. The nuclei of these cells tend to be polarized away from the central space.

TREATMENT

The adenomatoid odontogenic tumor is completely benign; because of its capsule, it enucleates easily from the bone.

CALCIFYING EPITHELIAL ODONTOGENIC TUMOR (PINDBORG TUMOR)

The **calcifying epithelial odontogenic tumor**, also widely known as the **Pindborg tumor**, is an uncommon lesion that accounts for less than 1% of all odontogenic tumors. Approximately 200 cases have been reported to date.

CLINICAL AND RADIOGRAPHIC FEATURES

most often encountered in patients between 30 and 50 years of age. About two thirds of all reported cases have been found in the mandible, most often in the posterior areas .

A painless, slow growing swelling is the most common presenting sign.

Radiographically, the tumor exhibits either a unilocular or a multilocular radiolucent defect. The tumor is frequently associated with an impacted tooth, most often a mandibular molar.

HISTOPATHOLOGIC FEATURES

The calcifying epithelial odontogenic tumor has discrete islands, strands, or sheets of polyhedral epithelial cells in a fibrous stroma. The cellular outlines of the epithelial cells are distinct, and intercellular bridges may be noted.

Calcifications, which are a distinctive feature of the tumor, develop within the amyloid-like material and form concentric rings (**Lies gang ring calcifications**). These tend to fuse and form large, complex masses.

TREATMENT

Conservative local resection to include a narrow rim of surrounding bone appears to be the treatment of choice.

Mixed Odontogenic Tumors

The group of mixed odontogenic tumors, composed of proliferating odontogenic epithelium in a cellular ectomesenchyme resembling the dental papilla, poses problems in classification. Some of these lesions show varying degrees of inductive effect by the epithelium on the mesenchyme, leading to the formation of varying amounts of enamel and dentin. Some of these lesions (the common odontomas) are clearly nonneoplastic developmental anomalies; others appear to be true neoplasms.

AMELOBLASTIC FIBROMA

The **ameloblastic fibroma** is considered to be a true mixed tumor in which the epithelial and mesenchymal tissues are both neoplastic.

CLINICAL AND RADIOGRAPHIC FEATURES

Ameloblastic fibromas tend to occur in younger patients; most lesions are diagnosed in the first two decades of life. The tumor is slightly more common in males than in females. Small ameloblastic fibromas are asymptomatic; larger tumors are associated with swelling of the jaws. The posterior mandible is the most common site; about 70% of all cases are located in this area.

Radiographically, either a unilocular or multilocular radiolucent lesion is seen, with the smaller lesions tending to be unilocular. The radiographic margins tend to be well defined, and they may be sclerotic. An unerupted tooth is associated with the lesion in about 75% of cases.

HISTOPATHOLOGIC FEATURES

Microscopically, the tumor is composed of a cell-rich mesenchymal tissue resembling the primitive dental papilla admixed with proliferating odontogenic epithelium. The latter may have one of two patterns, both of which are usually present in any given case. The most common epithelial pattern consists of long, narrow cords of odontogenic epithelium, often in an anastomosing arrangement. These cords are usually only two cells in thickness and are composed of cuboidal or columnar cells .

In the other pattern, the epithelial cells form small, discrete islands that resemble the follicular stage of the developing enamel organ. These show peripheral columnar cells, which surround a mass of loosely arranged epithelial cells that resemble stellate reticulum.

TREATMENT

simple local excision or curettage, subsequent reports seemed to indicate a substantial risk of recurrence.

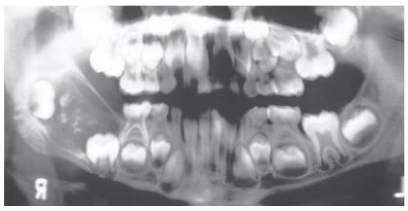
AMELOBLASTIC FIBRO-ODONTOMA

The **ameloblastic fibro-odontoma** is defined as a tumor with the general features of an ameloblastic fibroma but that also contains enamel and dentin.

CLINICAL AND RADIOGRAPHIC FEATURES

The ameloblastic fibro-odontoma is usually encountered in children with an average age of 10 years. It is rarely encountered in adults. Like the **ameloblastic fibroma**, ameloblastic fibro-odontomas occur more frequently in the posterior regions of the jaws. The lesion is commonly asymptomatic and is discovered when radiographs are taken to determine the reason for failure of a tooth to erupt.

Radiographically, the tumor shows a well-circumscribed unilocular or, rarely, multilocular radiolucent defect that contains a variable amount of calcified material with the radiodensity of tooth structure. The calcified material within the lesion may appear as multiple, small radiopacities.



HISTOPATHOLOGIC FEATURES

The soft tissue component of the ameloblastic fibro odontoma is microscopically identical to the **ameloblastic fibroma**

TREATMENT

Treated by conservative curettage, and the lesion usually separates easily from its bony bed.

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ODONTOMA

Odontomas are the most common types of odontogenic tumors. Their prevalence exceeds that of all other odontogenic tumors combined. Odontomas are considered to be developmental anomalies **(hamartomas)**, rather than true neoplasms. When fully developed, odontomas consist chiefly of enamel and dentin, with variable amounts of pulp and cementum.

Odontomas are further subdivided into compound and complex types. The **compound odontoma** is composed of multiple, small toothlike structures. The **complex odontoma** consists of a conglomerate mass of enamel and dentin, which bears no anatomic resemblance to a tooth.

CLINICAL AND RADIOGRAPHIC FEATURES

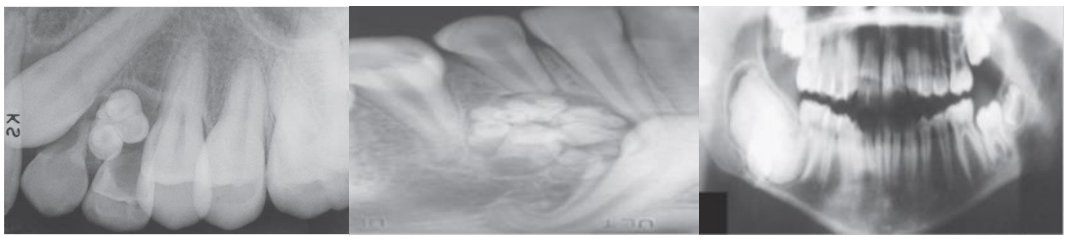
Most odontomas are detected during the first two decades of life, and the mean age at the time of diagnosis is 14 years. The majority of these lesions are completely asymptomatic, being discovered on a routine radiographic examination or when films are taken to determine the reason for failure of a tooth to erupt. Odontomas are typically relatively small and seldom exceed the size of a tooth in the area where they are located. Odontomas occur somewhat more frequently in the maxilla than in the mandible. Although compound and complex odontomas may be found in any site, the compound type is more often seen in the anterior maxilla; complex odontomas occur more often in the molar regions of either jaw. Occasionally, an odontoma will develop completely within the gingival soft tissues.

Radiographically, the **compound odontoma** appears as a collection of toothlike structures of varying size and shape surrounded by a narrow radiolucent zone .

The **complex odontoma** appears as a calcified mass with the radiodensity of tooth structure, which is also surrounded by a narrow radiolucent rim.

An unerupted tooth is frequently associated with the odontoma, and the odontoma prevents eruption of the tooth.

The radiographic findings are usually diagnostic.



HISTOPATHOLOGIC FEATURES

The compound odontoma consists of multiple structures resembling small, single-rooted teeth, contained in a loose fibrous matrix . Complex odontomas consist largely of mature tubular dentin. The spaces may contain small amounts of enamel matrix or immature

enamel . Small islands of eosinophilic- staining epithelial ghost cells are present in about 20% of complex odontomas. These may represent remnants of odontogenic epithelium that have undergone keratinization and cell death from the local anoxia. A thin layer of cementum is often present about the periphery of the mass.

TREATMENT

Odontomas are treated by simple local excision, and the prognosis is excellent.

Tumors of Odontogenic Ectomesenchyme

CENTRAL ODONTOGENIC FIBROMA

The **central odontogenic fibroma** is an uncommon . Approximately 70 examples have been reported.

CLINICAL AND RADIOGRAPHIC FEATURES

Odontogenic fibromas have been reported in patients whose ages ranged from 4 to 80 years (mean age, 40 years). Of those cases reported indicating a strong female predilection. About 45% of reported cases have occurred in the maxilla; most maxillary lesions are located anterior to the first molar tooth . In the mandible, however, about half of the tumors are located posterior to the first molar. One third of odontogenic fibromas are associated with an unerupted tooth. Smaller odontogenic fibromas are usually completely asymptomatic; larger lesions may be associated with localized bony expansion or loosening of teeth.

Radiographically, smaller odontogenic fibromas tend to be well-defined, unilocular, radiolucent lesions often associated with the periradicular area of erupted teeth . Larger lesions tend to be multilocular radiolucencies. Many lesions have a sclerotic border.

HISTOPATHOLOGIC FEATURES

Lesions reported as central odontogenic fibroma have shown considerable histopathologic diversity; this has led some authors to describe two separate types, although this concept has been questioned. The so called **simple odontogenic fibroma** is composed of stellate fibroblasts, often arranged in a whorled pattern with fine collagen fibrils and considerable ground substance .

The **central odontogenic fibroma, World Health Organization** (**WHO) type,** has a more complex pattern, which often consists of a fairly cellular fibrous connective tissue with collagen fibers arranged in interlacing bundles.

TREATMENT

Odontogenic fibromas are usually treated by enucleation and vigorous curettage.

PERIPHERAL ODONTOGENIC FIBROMA

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The relatively uncommon **peripheral odontogenic fibroma** is considered to represent the soft tissue counterpart of the **central (intraosseous) odontogenic fibroma**.

CLINICAL AND RADIOGRAPHIC FEATURES

The peripheral odontogenic fibroma appears as a firm, slow-growing, and usually sessile gingival mass covered by normal-appearing mucosa . Clinically, the peripheral odontogenic fibroma cannot be distinguished from the much more common fibrous gingival lesions . The lesion is most often encountered on the facial gingiva of the mandible. Most lesions are between 0.5 and 1.5 cm in diameter, and they infrequently cause displacement of the teeth.

Radiographic studies demonstrate a soft tissue mass, which in some cases has shown areas of calcification.

HISTOPATHOLOGIC FEATURES

The peripheral odontogenic fibroma shows similar histopathologic features to the central odontogenic fibroma (WHO type).

TREATMENT

local surgical excision, and the prognosis is excellent.

GRANULAR CELL ODONTOGENIC TUMOR (GRANULAR CELL ODONTOGENIC FIBROMA)

Approximately 30 cases of this unusual tumor have been reported.

CLINICAL AND RADIOGRAPHIC FEATURES

Patients with granular cell odontogenic tumors have all been adults at the time of diagnosis, with more than half being older than 40 years of age. More than 70% of the cases have developed in women. The tumor occurs primarily in the mandible and most often in the premolar and molar region. Some lesions are completely asymptomatic; others present as a painless, localized expansion of the affected area. A few cases of granular cell odontogenic tumor have been described in the gingival soft tissues as well.

Radiographically, the lesion appears as a well demarcated radiolucency, which may be unilocular or multilocular and occasionally shows small calcifications.

HISTOPATHOLOGIC FEATURES

The granular cell odontogenic tumor is composed of large eosinophilic granular cells, which closely resemble the granular cells seen in the soft tissue granular cell tumor or the granular cells seen in the granular cell variant of the ameloblastoma . Narrow cords or small islands of odontogenic epithelium are scattered among the granular cells. Small cementum-like or dystrophic calcifications associated with the granular cells have been seen in some lesions.

TREATMENT

majority of instances and responds well to curettage.

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ODONTOGENIC MYXOMA

Myxomas of the jaws are believed to arise from odontogenic ectomesenchyme. They bear a close microscopic resemblance to the mesenchymal portion of a developing tooth. Formerly, some investigators made a distinction between **odontogenic myxomas** (derived from odontogenic mesenchyme) and **osteogenic**

CLINICAL AND RADIOGRAPHIC FEATURES

Myxomas are predominantly found in young adults. The average age for patients with myxomas is 25 to 30 years. The tumor may be found in almost any area of the jaws, and the mandible is involved more commonly than the maxilla. Smaller lesions may be asymptomatic and are discovered only during a radiographic examination. Larger lesions are often associated with a painless expansion of the involved bone.

Radiographically, the myxoma appears as a unilocular or multilocular radiolucency that may displace or cause resorption of teeth in the area of the tumor. The margins of the radiolucency are often irregular or scalloped. The radiolucent defect may contain thin, wispy trabeculae of residual bone, which are often arranged at right angles to one another. Large myxomas of the mandible may show a “soap bubble” radiolucent pattern, which is indistinguishable from that seen in ameloblastomas.

HISTOPATHOLOGIC FEATURES

Microscopically, the tumor is composed of haphazardly arranged stellate, spindle shaped, and round cells in an abundant, loose myxoid stroma that contains only a few collagen fibrils.

TREATMENT

Small myxomas are generally treated by curettage, but careful periodic reevaluation is necessary for at least 5 years. For larger lesions, more extensive resection may be required because myxomas are not encapsulated and tend to infiltrate the surrounding bone.