
Odontogenic tumours
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Odontogenic Tumors - Definition

- Definition:

  Are tumours arising from odontogenic Tissues

- Odontogenic tissues are:

  1. Ectodermal:
     1. Dental lamina and its remnants (Serres pearl).
     2. Enamel organ and its remnants (reduced dental epithelium)
     3. Epithelial root sheath of Hertwig and its remnants (epithelial rests of Malassez).
  2. Mesenchymal:
     1. Dental papilla
     2. Tooth sac.

Odontogenic Tissues

Dental Lamina

Enamel Organ

Epithelial Root Sheath of Hertw

Serres Pearl

Reduced Dental Epithelium

Epithelial Rests of Malassez

Tooth Sac

Periodontal Ligament

Dental Papilla

Dental Pulp

CLASSIFICATION

I . Tumours of odontogenic epithelium

1. Ameloblastoma
   - Malignant ameloblastoma
   - Ameloblastic carcinoma
2. Calcifying epithelial odontogenic tumor
3. Squamous odontogenic tumor
4. Clear cell odontogenic carcinoma
5. Primary intraosseous carcinoma

II . mixed odontogenic tumours

1. Ameloblastic fibroma
2. Ameloblastic fibro-odontoma
3. Ameloblastic fibrosarcoma
4. Odontoameloblastoma
5. Odontoma
   - Compound composite
   - Complex composite
6. Adenomatoid odontogenic tumor

III . Tumours of odontogenic ectomesenchyme

1. Odontogenic fibroma
2. Granular cell odontogenic tumor
3. Odontogenic myxoma
4. Cementoblastoma

WHO histological classification of odontogenic tumours

MALIGNANT TUMOURS	
Odontogenic carcinomas	
Metastasizing (malignant) ameloblastoma[1]	9310/3
Ameloblastic carcinoma – primary type	9270/3
Ameloblastic carcinoma – secondary type (dedifferentiated), intraosseous	9270/3
Ameloblastic carcinoma – secondary type (dedifferentiated), peripheral	9270/3
Primary intraosseous squamous cell carcinoma – solid type	9270/3
Primary intraosseous squamous cell carcinoma derived from keratocystic odontogenic tumour	9270/3
Primary intraosseous squamous cell carcinoma derived from odontogenic cysts	9270/3
Clear cell odontogenic carcinoma	9341/3
Ghost cell odontogenic carcinoma	9302/3
Odontogenic sarcomas	
Ameloblastic fibrosarcoma	9330/3
Ameloblastic fibrodentino–and fibro-odontosarcoma	9290/3
BENIGN TUMOURS	
Odontogenic epithelium with mature, fibrous stroma without odontogenic ectomesenchyme	
Ameloblastoma, solid / multicystic type	9310/0
Ameloblastoma, extraosseous / peripheral type	9310/0
Ameloblastoma, desmoplastic type	9310/0
Ameloblastoma, unicystic type	9310/0
Squamous odontogenic tumour	9312/0
Calcifying epithelial odontogenic tumour	9340/0
Adenomatoid odontogenic tumour	9300/0
Keratocystic odontogenic tumour	9270/0
Odontogenic epithelium with odontogenic ectomesenchyme, with or without hard tissue formation	
Ameloblastic fibroma	9330/0
Ameloblastic fibrodentinoma	9271/0
Ameloblastic fibro-odontoma	9290/0
Odontoma	9280/0
Odontoma, complex type	9282/0
Odontoma, compound type	9281/0
Odontoameloblastoma	9311/0
Calcifying cystic odontogenic tumour	9301/0
Dentinogenic ghost cell tumour	9302/0
Mesenchyme and/or odontogenic ectomesenchyme with or without odontogenic epithelium	
Odontogenic fibroma	9321/0
Odontogenic myxoma / myxofibroma	9320/0
Cementoblastoma	9273/0
Bone-related lesions	
Ossifying fibroma	9262/0
Fibrous dysplasia	
Osseous dysplasias	
Central giant cell lesion (granuloma)	
Cherubism	
Aneurysmal bone cyst	
Simple bone cyst	
OTHER TUMOURS	
Melanotic neuroectodermal tumour of infancy	9363/0

see Chapter 1, pp. 70-73

AMELOBLASTOMA

- *common epithelial odontogenic tumor*
- *Benign, but locally invasive*
- *Asymptomatic and remain undiscoverd until growth produce expantion ,tooth and dental occlusion disturbances, or incidental radiograph reveal the lesion*
- *In some rare cases paresthesia and pain may occur and associated with root resorption and tooth displacement*
- *Most commonly forms in posterior mandible*
- *age at which lesion became clinically evident is third to fifth decade*
- *Inadequate treatment usually followed by aggressive recurrence*

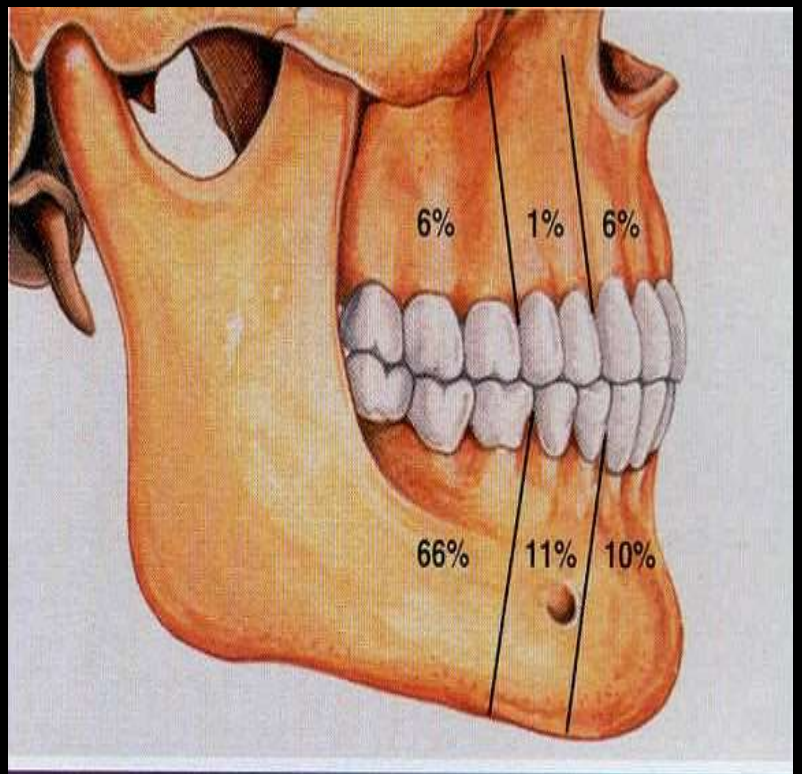
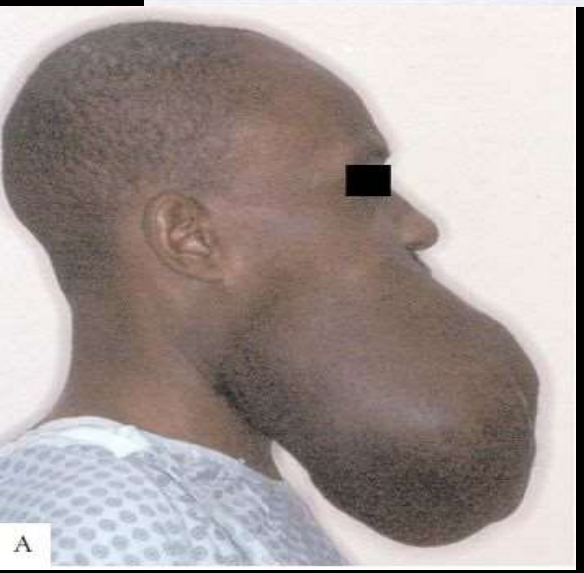


Figure 15-51 • **Ameloblastoma.** Relative distribution of ameloblastomas in the jaws.

CLINICAL PRESENTATION OF AMELOBLASTOMA

Figure 15-52 • **Ameloblastoma.** Large expansile mass of the anterior mandible. (Courtesy of Dr. Michael Tabor.)

Figure 15-54 • **Ameloblastoma.** Massive tumor of the anterior mandible. (Courtesy of Dr. Ronald Baughman.)

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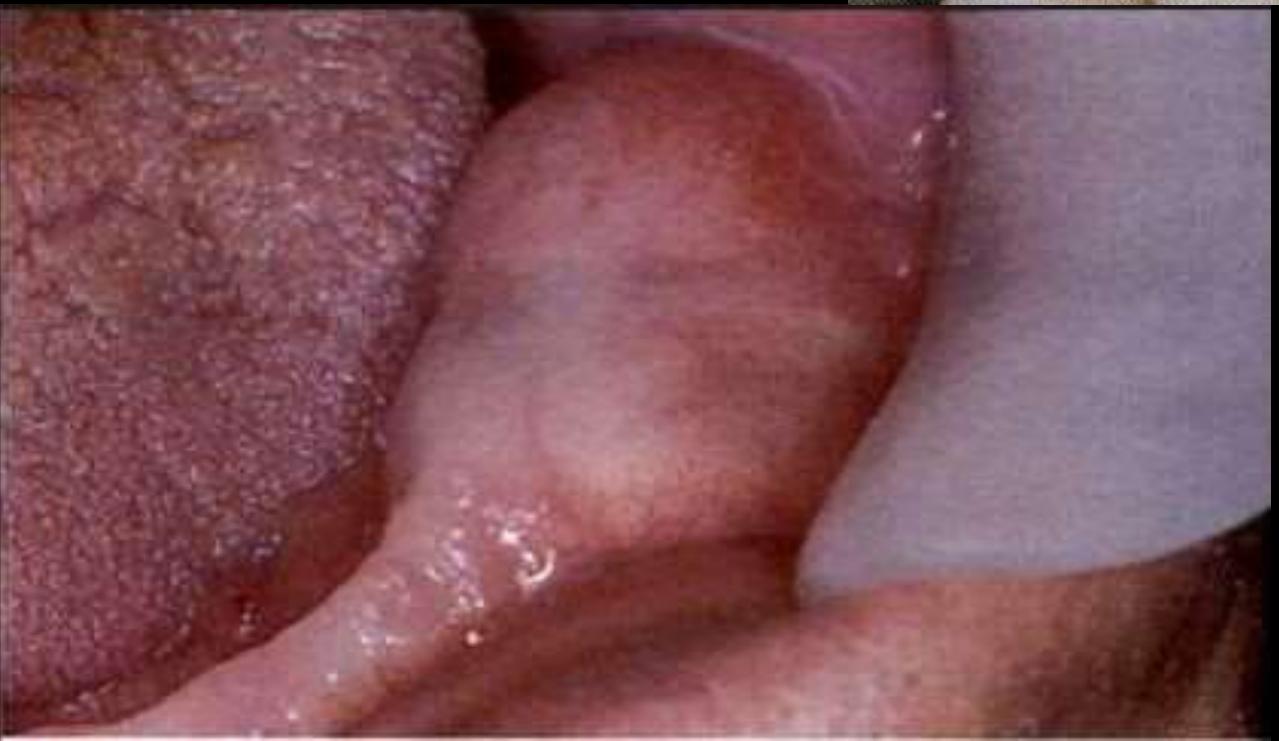


SUBTYPES OF AMELOBLASTOMA

Multicystic (multilocular) and solid (86%)

Unicystic (unilocular) (13%)

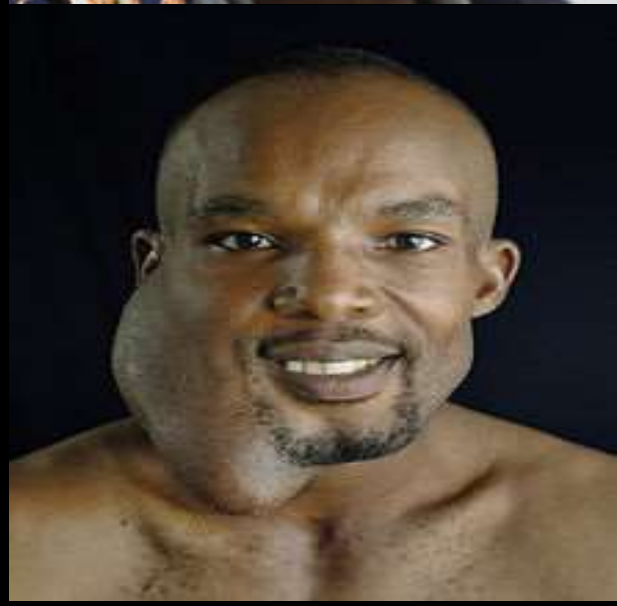
peripheral (extraosseous) (1%)

MULTICYSTIC AMELOBLASTOMA

Clinically

- *is the most common form of this lesion, nearly occur in patients over 25 years of age. With no sex predilection*
- *The lesion may cause extensive deformities of the mand. & max.*
- *It is most commonly located in the mand , with 75% occurring in the molar & ascending ramus area.*
- *The tumor is slowly growing, locally aggressive, allows time for periosteum to produce a thin shell of bone which cracks easily when palpated*

  known as (eggshell cracking).



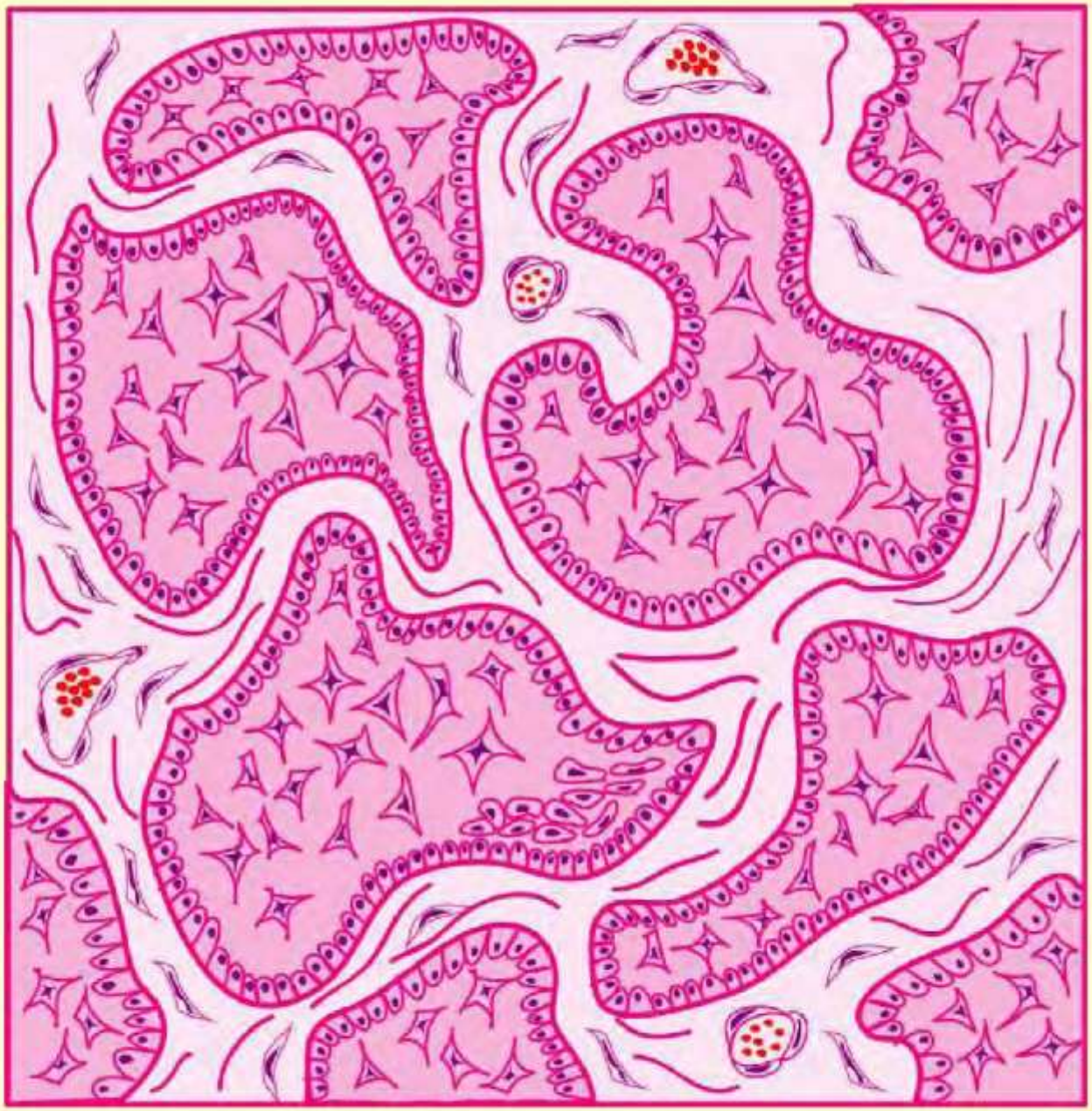
RADIOGARAPHICALLY

- *Classic–multilocular radiolucency o posterior mandible.*
- *Well-circumscribed, soap-bubble appearance*
- *Unilocular – often confused with odontogenic cysts*
- *Root resorption –usually associate with Malignancy*

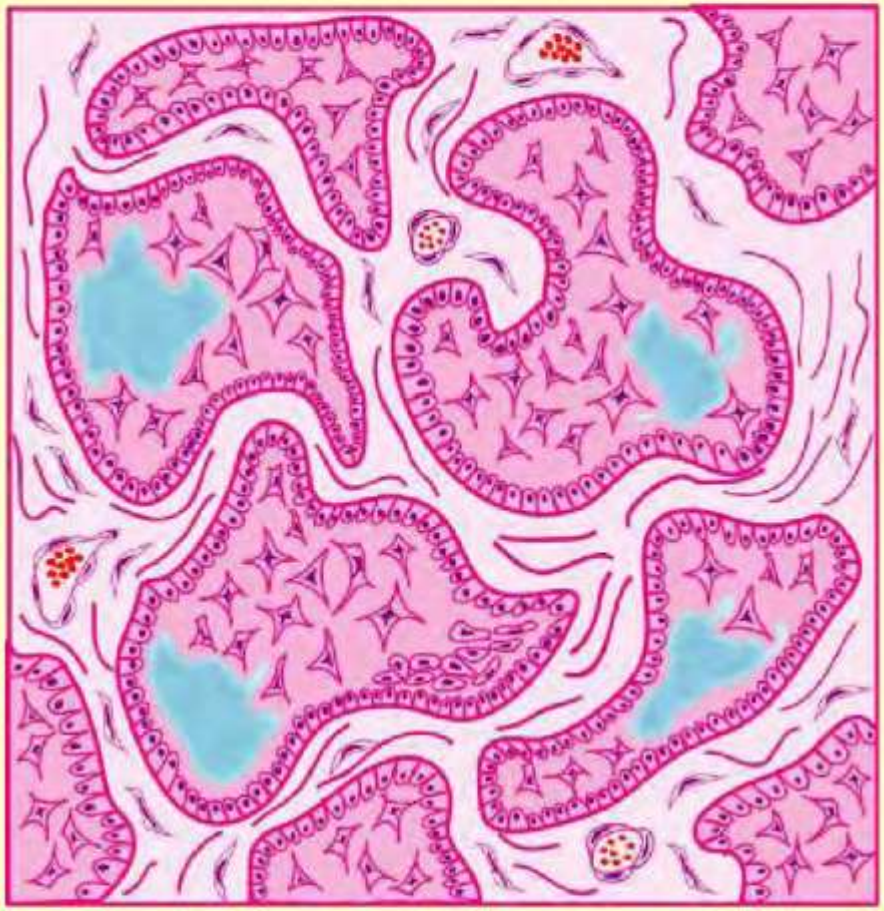
HISTOPATHOLOGY

- *Two main patterns – plexiform and follicular , and other rare types*
  acanthomatous, granular cell,desmoplastic,basal cell
- *Classic – sheets and islands of tumor cells,*
- *outer rim of ameloblasts is polarized away from basement membrane*
- *Center looks like stellate reticulum*
- *Squamous differentiation (1%) – Diagnosed as ameloblastic carcinoma*

Simple Follicular AB



Cystic Follicular AB

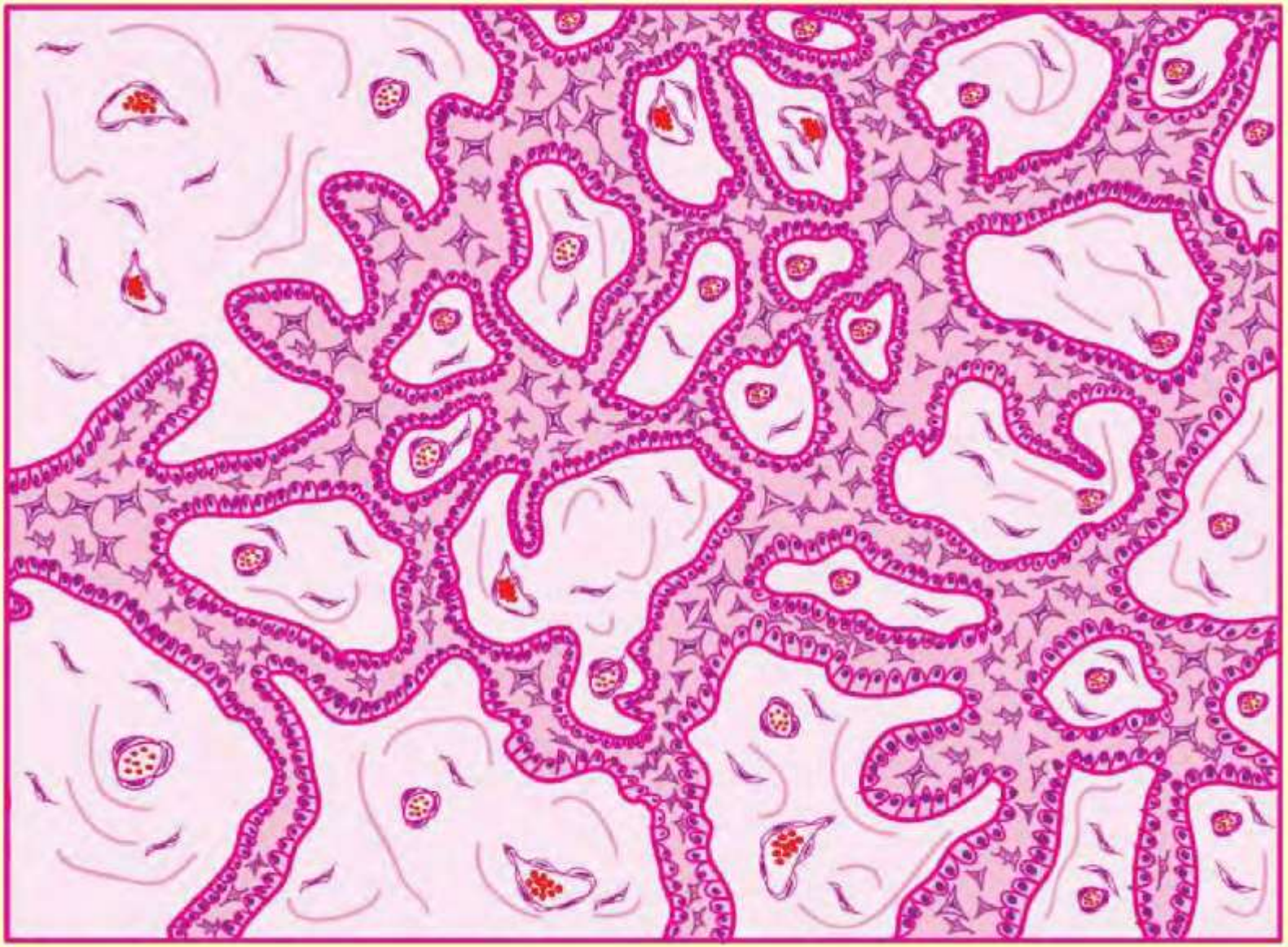


Microcystic AB

Macrocystic AB

Fluid rich in albumin and rarely contains cholesterol

Plexiform AB



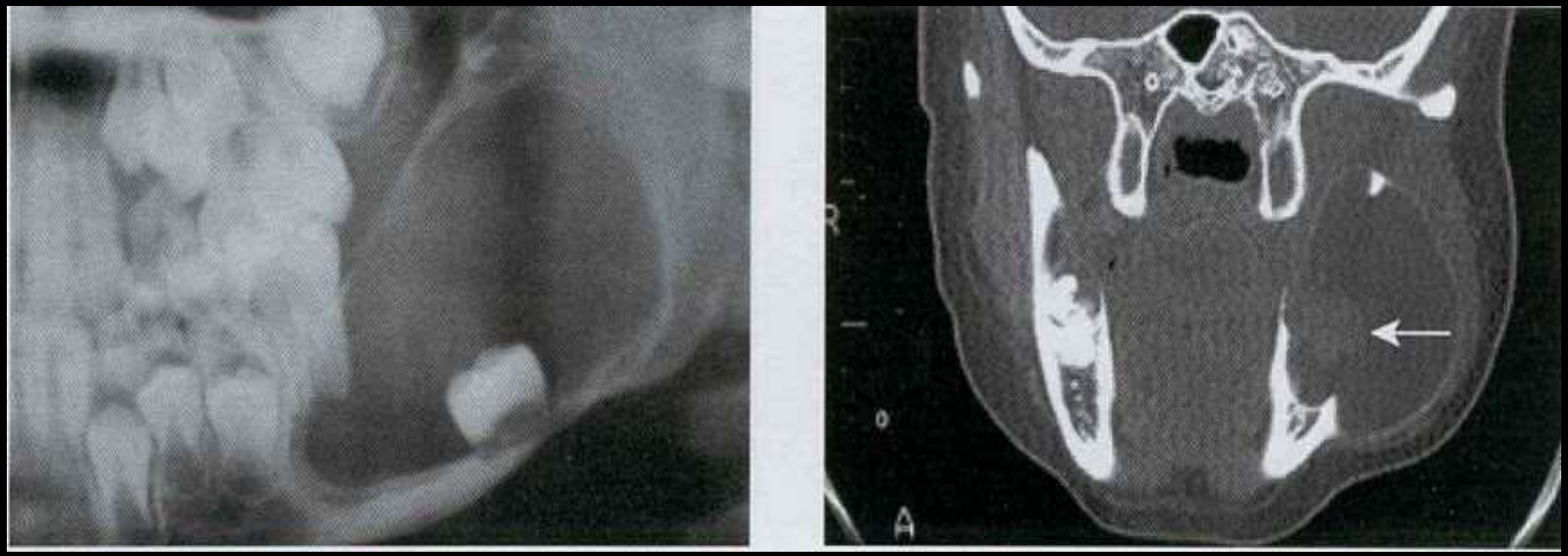
UNICYSTIC AMELOBLASTOMA

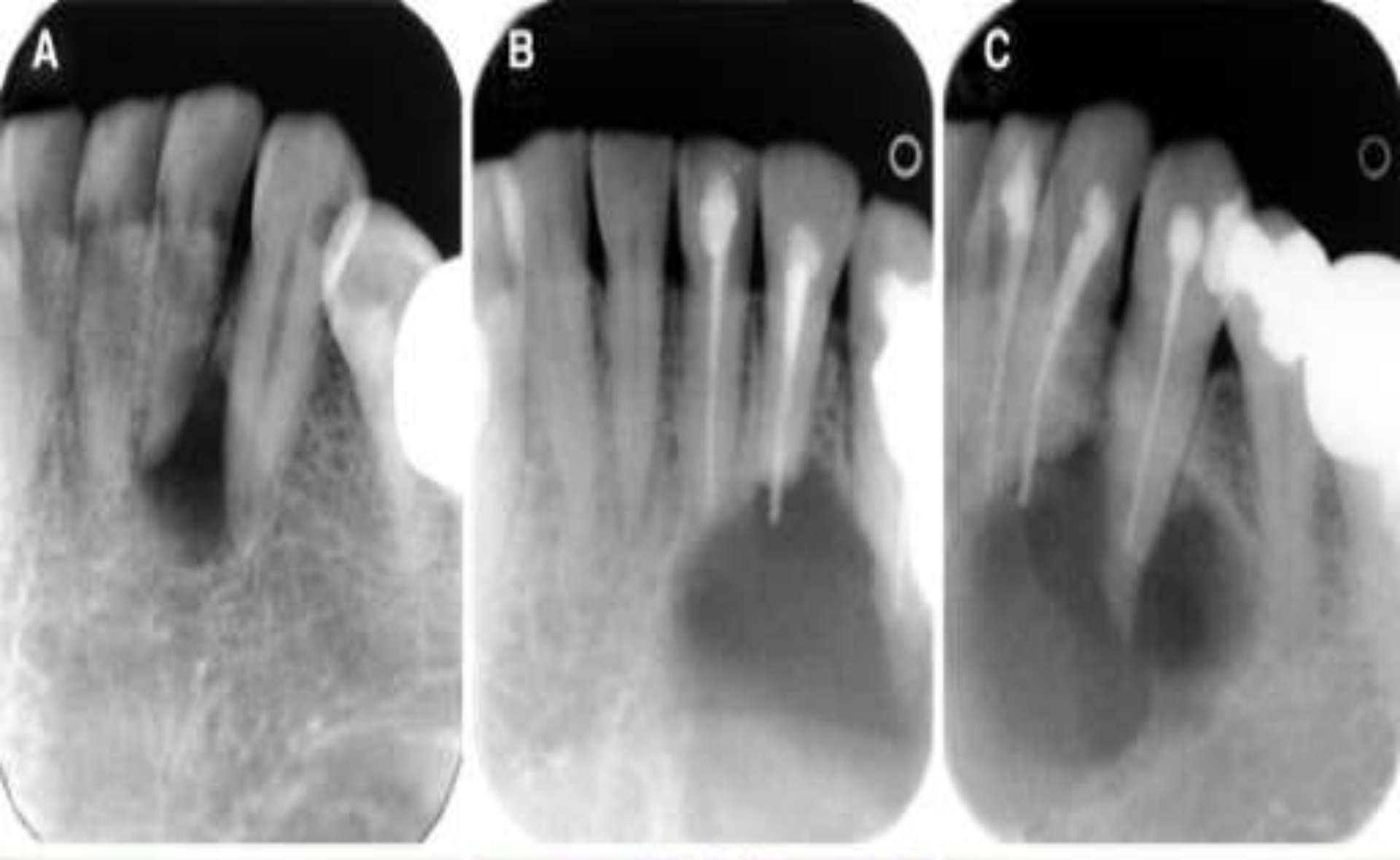
- *Mostly found within the lining of a large unilocular cyst specially the Dentigerous cyst.*
- *commonly associated with the crown of an impacted tooth in a young patient.*
- *Average age 23 years*
- *90% in mandible (usually posterior regions)*
- *Asymptomatic but may cause painless swelling*

RADIOGRAPHICALLY

- *Typically appears as circumscribed Unilocular radiolucency that surrounds the crown of unerupted mandibular third molar.*

  or multilocular (25%) radiolucency .

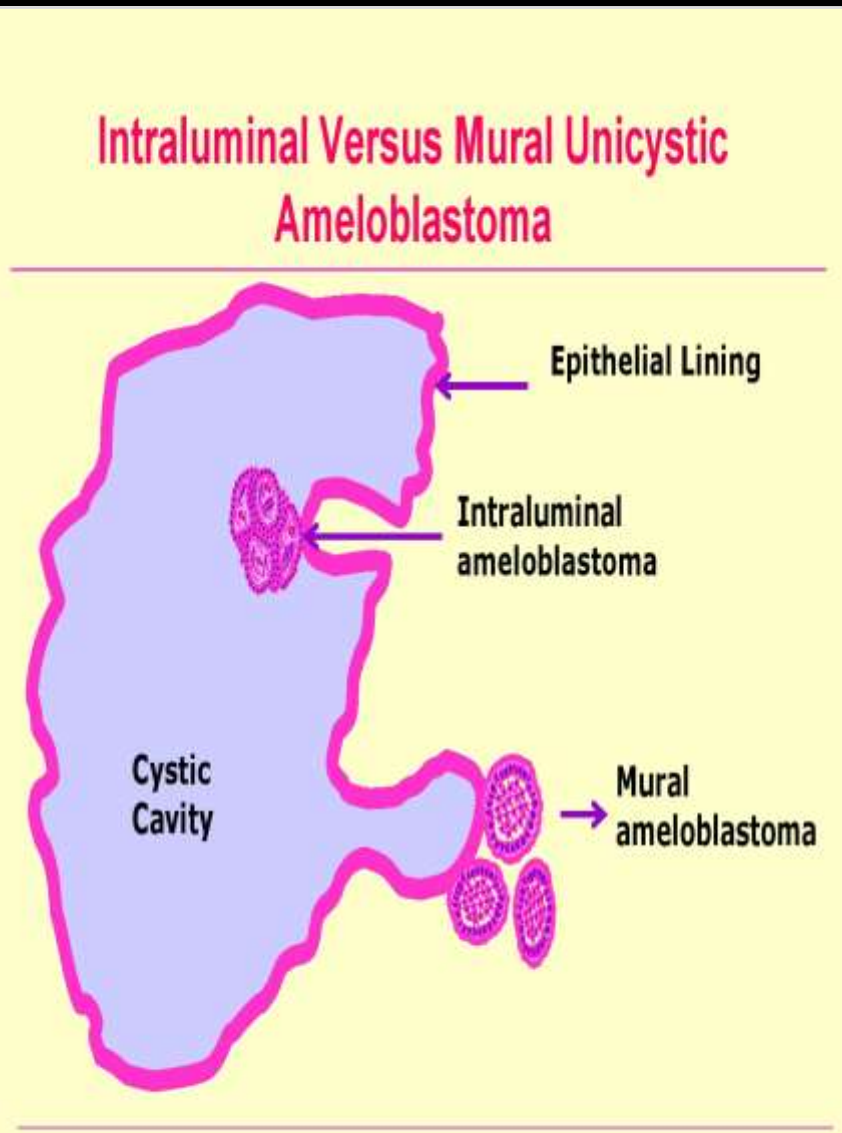



A
B
C


D
E
F

HISTOPATHOLOGY:

- *The lesion composed of island of epith. which may be follicular or plexiform within the epith. lining of the cystic wall.*
- *Some lesions will contain areas in which the epith. Is thickened with papillary projections extending into the lumen, this called "intraluminal unicystic ameloblastoma"*
- *When the thickened lining penetrates the adjacent capsular tissue, it's termed "mural unicystic ameloblastoma.*



PERIPHERAL AMELOBLASTOMA (EXTRAOSSEOUS)

- *very uncommon*
- *histologically similar to the intraosseous common ameloblastoma but is limited to the soft tissues of the gingiva.*

Figure 15-73 • Peripheral ameloblastoma. Sessile gingival mass.

TREATMENT

- *Treatment range from simple enucleation and curretage to block resection.*
- *recurrency reported in 55% to 100% for multicystic lesion and about 18 to 35% for unicystic lesion after curretage or enucleation*
- *curettage can disperse the tumor into uninvolved areas*
- *The best chance for completely removing the lesion is by marginal block resection with 1,5 to 2 cm safe margin for multicystic lesion and 1 to 1,5 cm for unicystic and peripheral lesions.*
- *Because children and adolescents with ameloblastoma are still developing physically and psychologically, Conservative treatment can get good results .*
- *nonresectable ameloblastoma can be treated by Radiotherapy.*
- *Long term followup up to 20 years and even more required.*

MALIGNANT AMELOBLASTOMA

- *It is benign ameloblastoma of jaws but show metastatic growth.*
- *metastasis may occure to the hip ,vertebrae,brain,kidney and even myocardium but The most common sites for metastasis are the lungs*
- *Lung metastases regarded as aspiration phenomena, while the peripheral location of many of these deposits supports hematogenous spread.*
- *metastasis usually associated with multicystic ameloblastomas rather than unicystic tumors.*
- *Hypercalcemia may be a marker of metastatic disease in some instances*

  due to production of parathyroid –related protein (PTHrP) by metastatic ameloblastic cells in lung and bone .

AMELOBLASTIC CARCINOMA

- *An ameloblastoma that has cytological features of malignancy*
- *Although ameloblastic carcinomas have been reported to metastasize to the lungs and distant organs many cases do not metastasize.*
- *rapid growth and pain were common symptoms.*
- *The treatment is similar to that of an intraosseous carcinoma but the prognosis is poor if metastases are present.*

CALCIFYING EPITHELIAL ODONTOGENIC TUMOUR (PINDBORG TUMOR)

- *uncommon epithelial lesion that accounts for < 1% of all odontogenic tumors.*
- *most often in patients between 30 and 50 years of age with no gender predilection*
- *Approximately two-thirds of these neoplasms occur in the mandible*
- *A painless slow-growing mass is the most common presenting sign*
- *Locally invasive but does not metastasis*

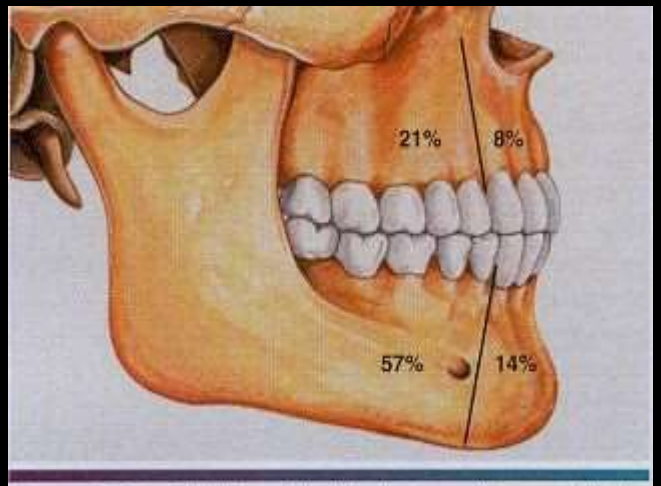


Figure 15-85 • **Calcifying epithelial odontogenic tumor.** Relative distribution of calcifying epithelial odontogenic tumor in the jaws.

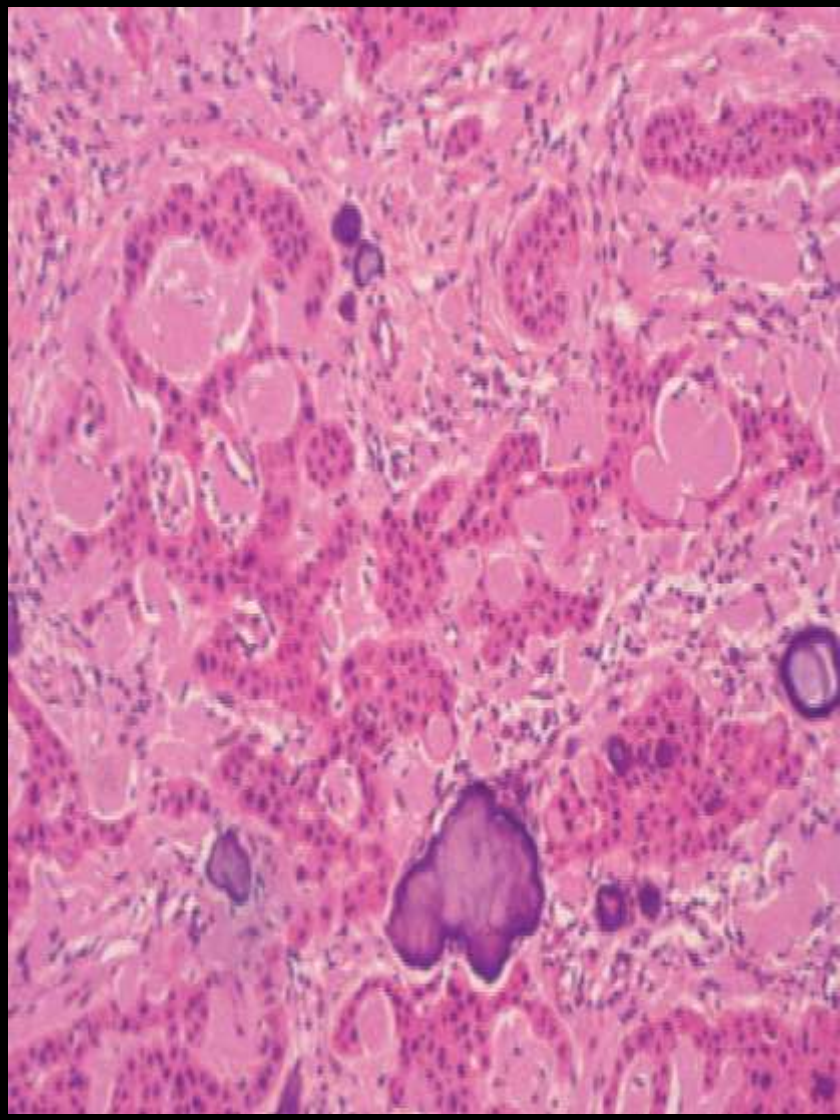
RADIOGRAPHICALLY

- *most common presentation is a mixed radiopaque/radiolucent lesion, frequently associated with an impacted tooth*

HISTOPATHOLOGY

- *the Pindborg tumor is quite unique.*
- *islands, strands, or sheets of epithelial cells in a fibrous stroma .*
- *Large areas of amorphous eosinophilic hyalinized (amyloid-like) material are also present.*
- *Some cases show clear cells ,prominent clear cells associated with increased the aggressiveness of the lesion.*
- *Calcifications, which are a distinctive feature of the tumor, develop within the amyloid-like material and form concentric rings, known as*

Liesegang rings

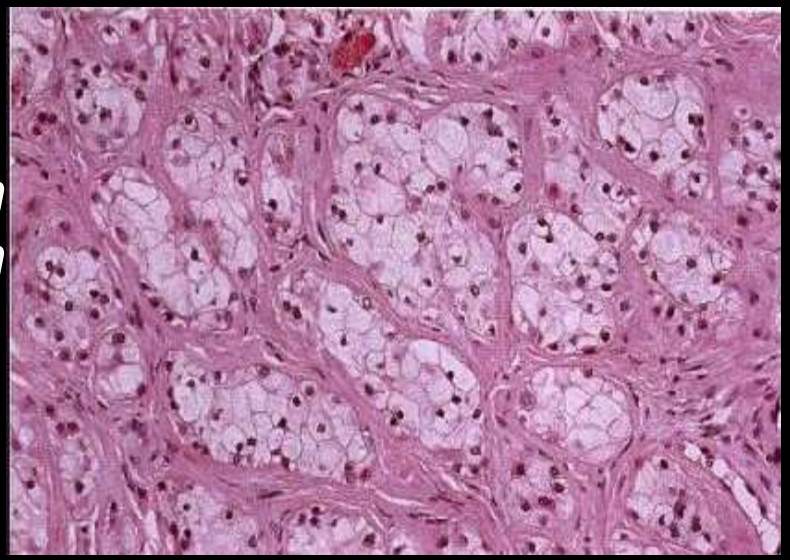


TREATMENT

- *tumor is generally recommended to be treated identically to the ameloblastoma and odontogenic myxoma,*
- *with 1.0 to 1,5 cm bony linear margins and the appropriate attention to soft tissue anatomic barriers .*
- *Small lesions can be treated by enucleation followed by vigorous curettage .*
- *The prognosis of CEOT is good with infrequent recurrence . the recurrence rate about 14 % and recurrent lesion may not be manifested for many years.*
- *Tumors with more amyloid and calcified content tend to have better prognosis in compare to that of clear cell variant .*

CLEAR CELL ODONTOGENIC CARCINOMA

- *a rare epithelial odontogenic tumor associated with aggressive clinical behavior with metastasis and low survival rate.*
- *The classic clinical presentation of CCOC is a painful anterior mandibular swelling in an elderly women.*
- *characterised by sheets and islands of vacuolated and clear cells which not stain in histological preparation because of rich glycogen giving an empty appearance .*



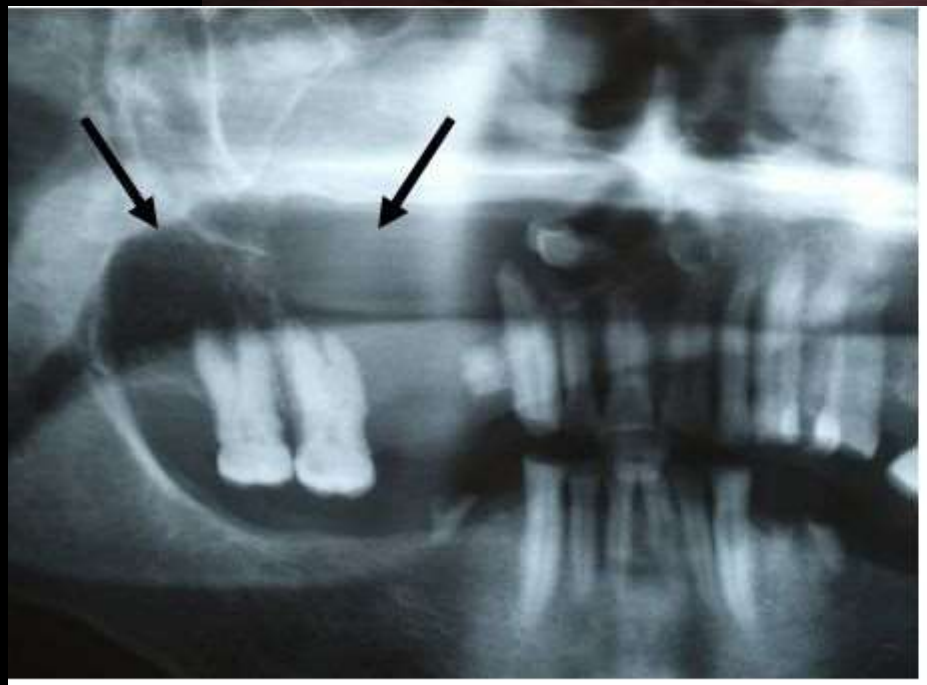
TREATMENT

- *Tumor may be aggressive and are capable of local recurrence, as well as regional and distant metastasis*
- *Such tumors should be treated by wide en-bloc resection with long-term follow-up*
- *In the presence of clinical and/or radiographic evidence of nodal metastases, neck dissection should also be performed .*

PRIMARY INTRAOSSEOUS SQUAMOUS CELL CARCINOMA

- *it is rare epithelial odontogenic tumor*
- *assumed to arise from odontogenic epithelium or linings of odontogenic cysts.*
- *It may be solid or cystogenic*
- *typically occur in the posterior region of mandible of elderly male .*
- *Pain and paresthesia may occur*
- *Radiographically variable depending on the progression of the disease from outlined radiolucencies to diffusely infiltrative lesions*

Fig. 2. Post treatment panoramic radiograph revealing larger ill defined radiolucent lesion in the area of 4.5 and 4.6 with pathological fracture of lower border of mandible.



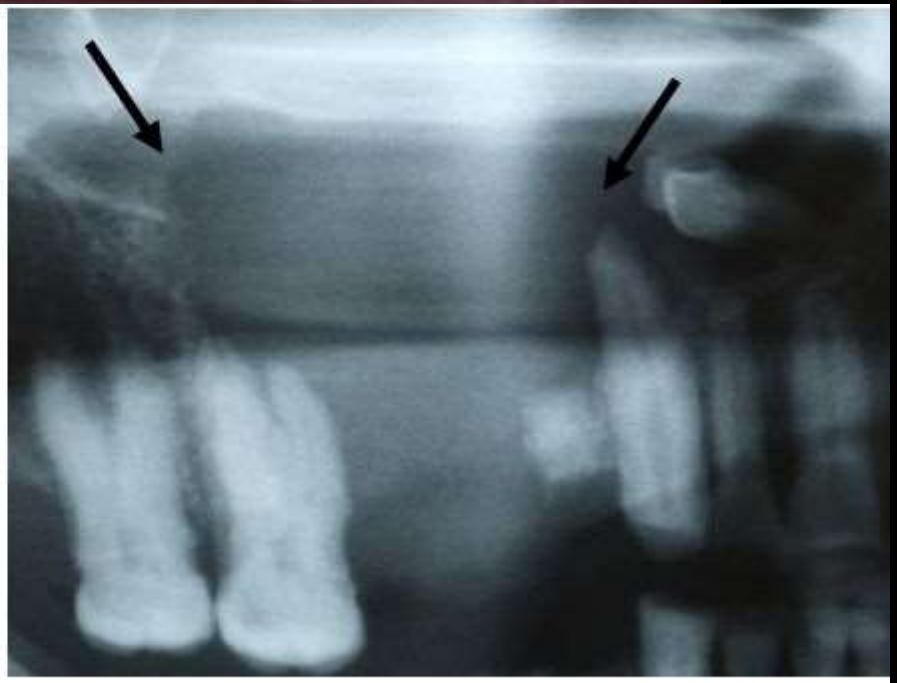


Fig. 2- Panoramic radiograph showing a radiolucent lesion in the right maxilla

TREATMENT

- *The prognosis associated with PIOC of the jaws is poor and suggests the need for aggressive treatment*
- *Treated by resection followed by postoperative radiotherapy .*

ODONTOMA

- *are developmental malformations(hamartomas) of dental tissues.*
- *Odontomas are the most frequently occurring odontogenic tumors, with prevalence exceeding that of all other odontogenic tumors combined.*
- *Usually found between ages 10 and 20 years with no gender predilection*
- *May be compound or complex*
- *Impaction of permanent teeth was the most common complication associated with odontoma*

COMPOUND ODONTOMA

- *many small teeth*
- *Most common sites are anterior maxilla*

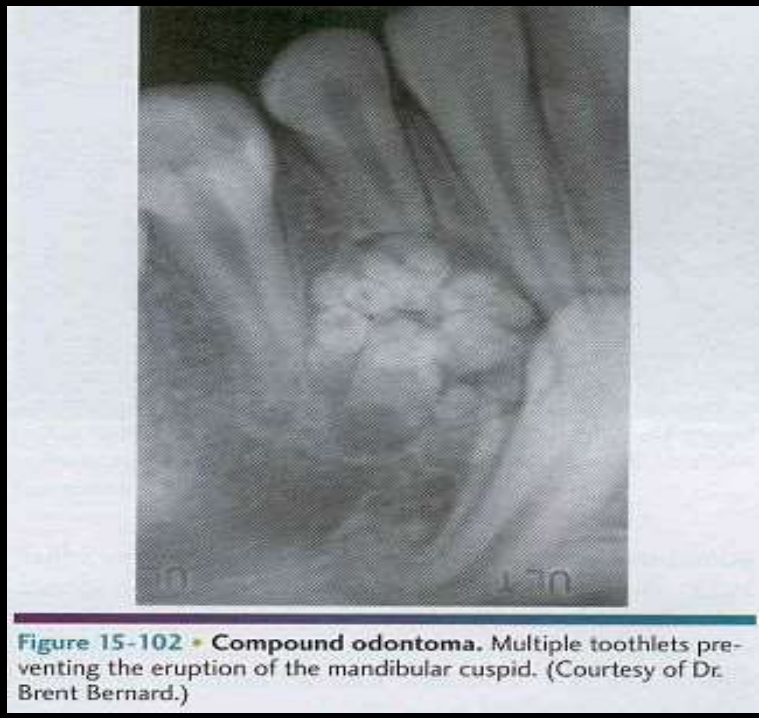


Figure 15-102 • **Compound odontoma.** Multiple toothlets preventing the eruption of the mandibular cuspid. (Courtesy of Dr. Brent Bernard.)

COMPLEX ODONTOMA

- *disordered mass of dental hard tissue*
- *Most common site are posterior mandible or maxilla*

Treatment ;

Odontomas are treated with simple enucleation and curettage .

Not known to recur .

ODONTOGENIC MYXOMA

- *Rare ectomesenchymal Neoplasm*
- *histologically resembles the dental papilla of the developing tooth.*
- *Usually seen in young adults*
- *Radiographically, the odontogenic myxoma appears as a unilocular or multilocular radiolucency that may displace or cause root resorption of teeth in the area of the tumor*
- *In some patients the tumor may have a greater tendency to form collagen fibers; such lesions are designated as fibromyxomas*
- *slow growing with a potential for aggressive behavior and a high recurrence rate after subtherapeutic removal.*

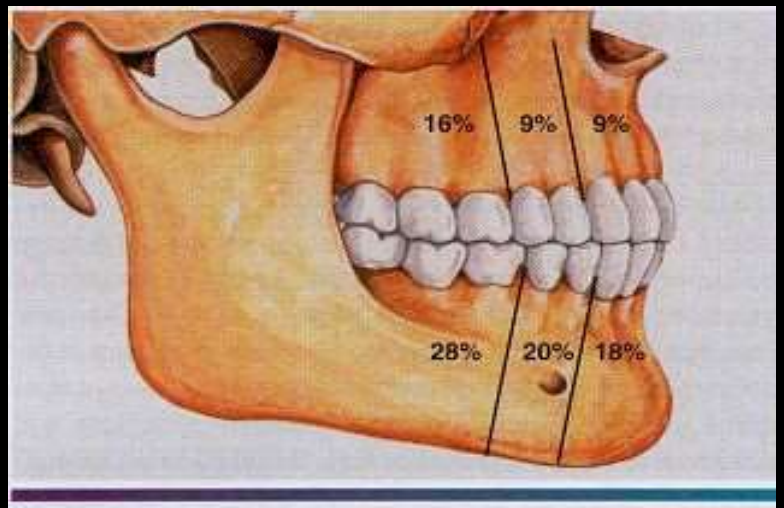
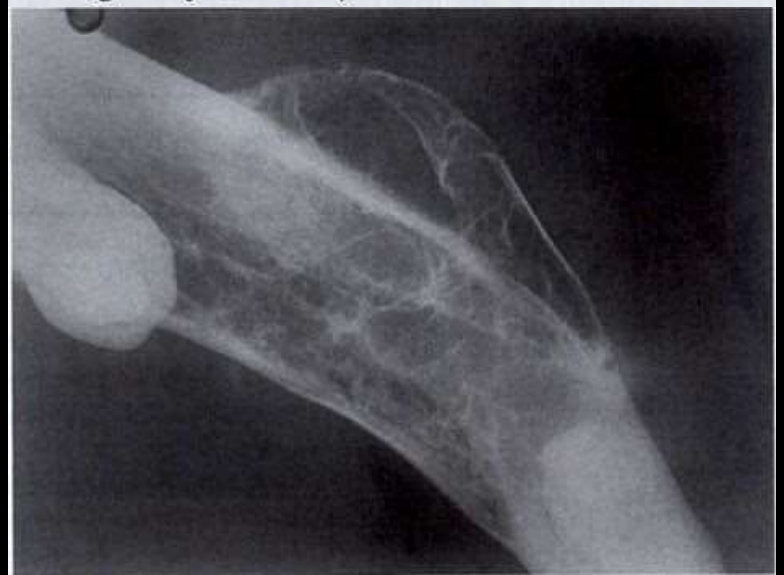


Figure 15-113 • **Odontogenic myxoma.** Relative distribution of odontogenic myxoma in the jaws.

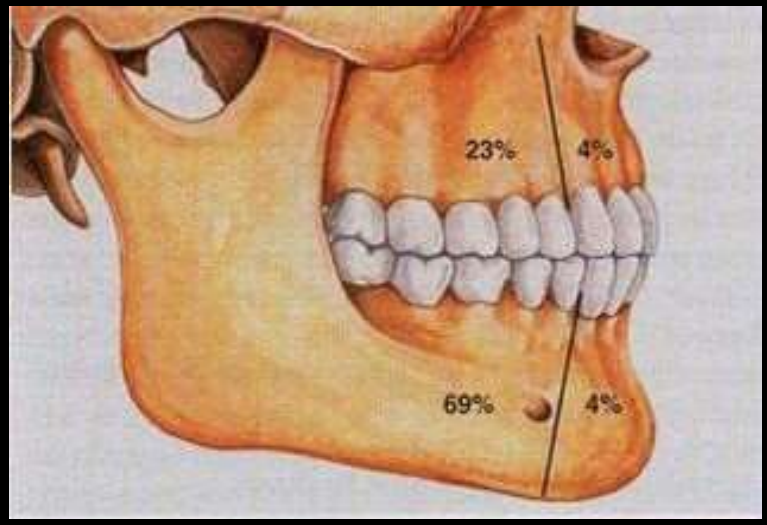


TREATMENT

- *These tumors are not encapsulated and tend to infiltrate the surrounding bone such that complete removal by curettage is nearly impossible.*
- *Odontogenic myxomas should be treated with resection with 1.0 cm bony linear margins as confirmed with a specimen radiograph or frozen section .*
- *Treated by excision with a small margin Can undergo malignant changes*

AMELOBLASTIC FIBROMA

- *Rare mixed odontogenic tumor*
- *Usually seen in children or young adults*
- *the posterior mandible is affected in 70% of cases*
- *Solid lesion but appears as unilocular or multilocular radiolucency*
- *Treated by excision with small margin*
- *Huge lesions especially which appear Multilocular are best treated by resection without continuity*



AMELOBLASTIC SARCOMA (AMELOBLASTIC FIBROSARCOMA)

- *it is rare mixed malignant odontogenic tumor .*
- *It is invasive and destructive but has little tendency to metastasise.*
- *Reports suggest that approximately 50% arise from ameloblastic fibromas.*
- *Radiographically appear as ill-defined destructive radiolucent lesion*
- *Local excision usually followed by rapid recurrence so it is best treated by radical surgical excision*

ODONTO-AMELOBLASTOMA ; (AMELOBLASTIC ODONTOMA)

- *Extremly rare mixed odontogenic tumour*
- *More in mandible of younger patients*
- *pain ,delayed eruption of teeth , expantion of affecting bone may occur*
- *Radiographically show radiolucency with calcified structures*
- *Treated similar to ameloblastoma because local excision usually followed by multiple recurrence*

ADENOMATOID ODONTOGENIC TUMOR

ADENOAMELOBLASTOMA,GLANDULAR AMELOBLASTOMA,ADENOMATOID AMELOBLASTOMA

- *Some consider it as a hamartoma*
- *uncommon , accounting for 3 to 7% of all odontogenic tumors.*
- *limited to young ,extremely uncommon in patients > 30 years.*
- *Maxilla > mandible*
- *Anterior region > posterior region*
- *Female > male*
- *rarely exceeding 3 cm in diameter*
- *lesion appears as a well-circumscribed unilocular radiolucency that involves the crown of an erupted tooth, frequently a canine.radiolucency extend beyond the cemento-enamel junction*

TREATMENT

- *Histologically, the adenomatoid odontogenic tumor is a well-defined lesion that is usually surrounded by a thick fibrous capsule*

- *Owing to this lesion being encapsulated, it separates easily from the surrounding bone.As such, an enucleation and curettage surgery is curative*

ODONTOGENIC FIBROMA

- *rare ectomesenchymal odontogenic tumour*
- *Clinically, It forms a slow-growing asymptomatic mass which may eventually expand the jaw.*
- *radiographically , it appears as a sharply defined, radiolucent area in a tooth-bearing region.*
- *Calcifications composed of cementum-like material or dentinoid are present in some cases*
- *Odor*
  shell

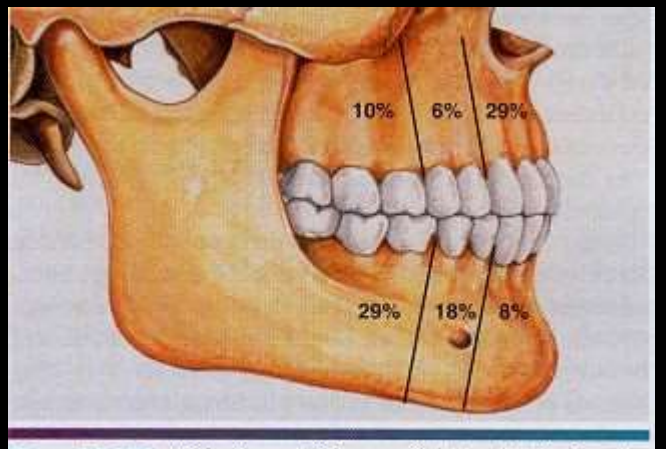
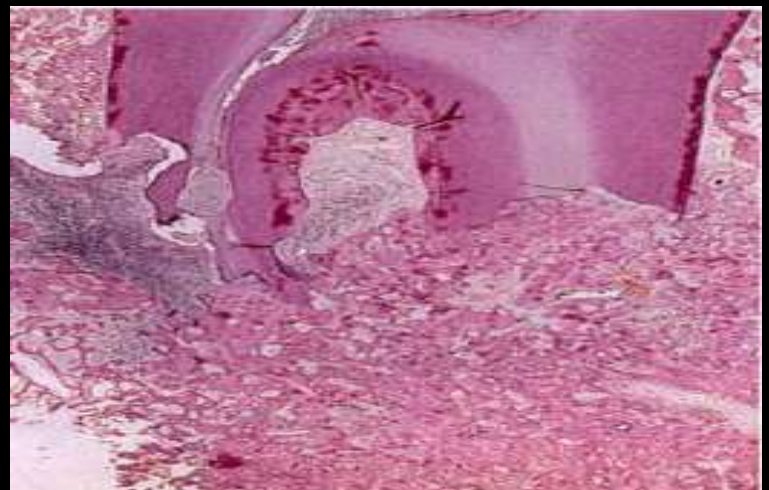


Figure 15-106 • **Odontogenic fibroma.** Relative distribution of odontogenic fibroma in the jaws.

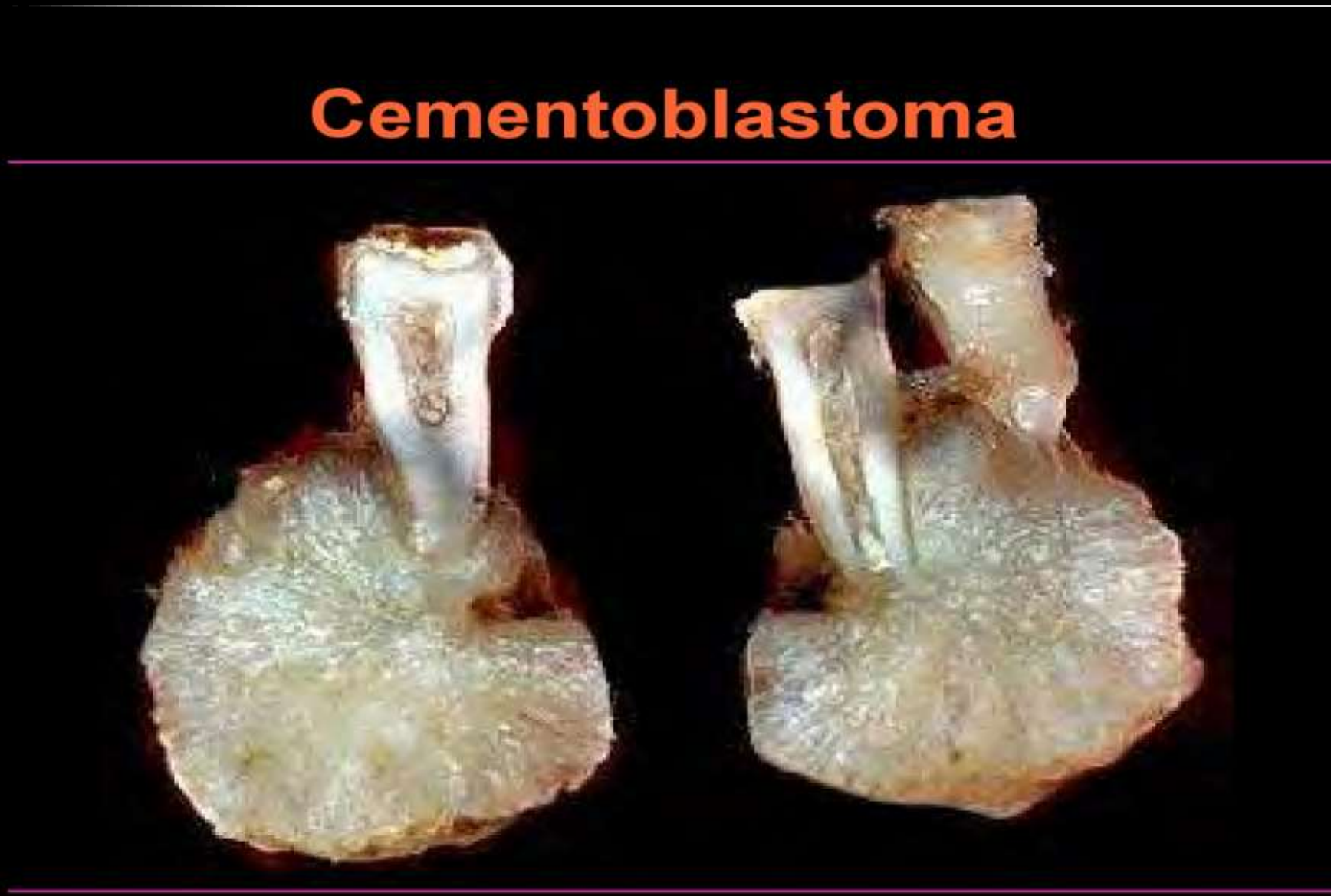
Figure 15-110 • **Peripheral odontogenic fibroma.** This sessile gingival mass cannot be clinically distinguished from the common peripheral ossifying fibroma. (Courtesy of Dr. Jerry Stovall.)

CEMENTOBLASTOMA

- *benign ectomesenchymal neoplasm of cementum and forms a mass of cementum-like tissue as an irregular or rounded mass attached to the root of a tooth, usually a mandibular first molar.*
- *mainly affect young adults, particularly males.*
- *They are slow-growing and the jaw is not usually expanded. And may rarely causes gross bony swelling and pain*
- *Radiographically, there is typically a radiopaque mass with thin radiolucent margin, attached to the roots of a tooth.*
- *Resorption of related roots is common, but*



Treatment ; by enucleation



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