Odontomes & odontogenic tumours

Odontomes:

- Developmental malformations (hamartomas)
- Not neoplasms
- **Types:**

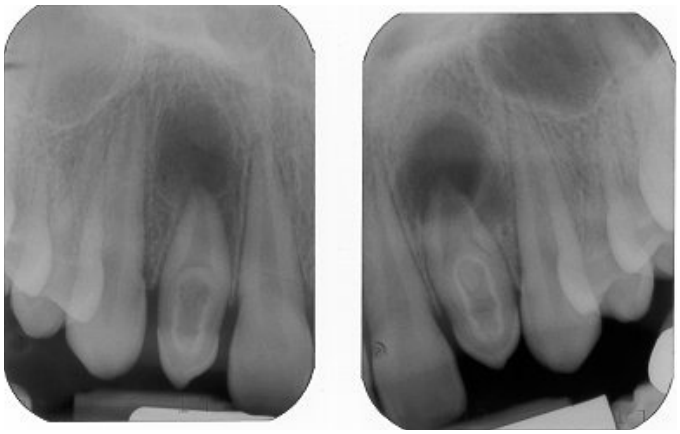
❶ Invaginated odontomes:-

Coronal IO:

Clinically:

- Dens invaginatus
- ULI, often bilateral
- Degree variable
- Dilated (conical)

Dx:



Rx:

- Invagination lined by E continuous w surface
- **"Tooth within a tooth" → "dens in dente"**

Hist:

- Defective, hypomineralized E & D lining
- Absent at base
- Containing CT before eruption

▫ **Pathogenesis:**

➢ Unknown

➢ Cingulum pit

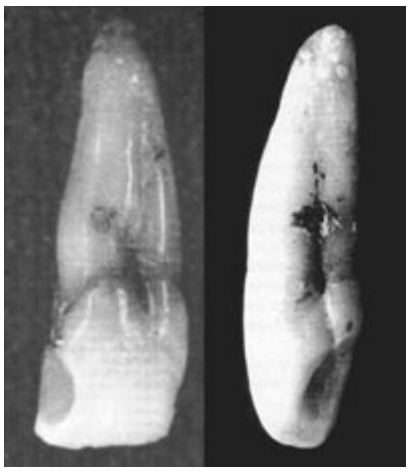
➢ Active proliferation

¤ **Radicular IO:**

➢ Rare

➢ Axial infolding

➢ Saccular invagination



❷ **Evaginated odontomes:**

➢ **Dens evaginatus**

➢ Premolars

➢ Mongoloid

➢ Globe-shaped projection

➢ Pulpitis

❸ **Enamel pearl (enameloma):**

➢ Small droplet of E

➢ Bifurcation

➢ Asymptomatic

➢ **Hist:** E, E & D, E & D & P

➢ **Pathogenesis:** budding of ERSH

❹ **Compound & Complex Os:**

➢ Reach fix size

➢ 1st & 2nd decade, permanent dentition

➢ **Two types:**

- **Compound:**
  - Several tooth-like structures
  - Intercanine area esp. max

- **Complex:**
  - A mass of haphazardly arranged E, D & C
  - Premolar & molar/mandible

➢ **Dx:**

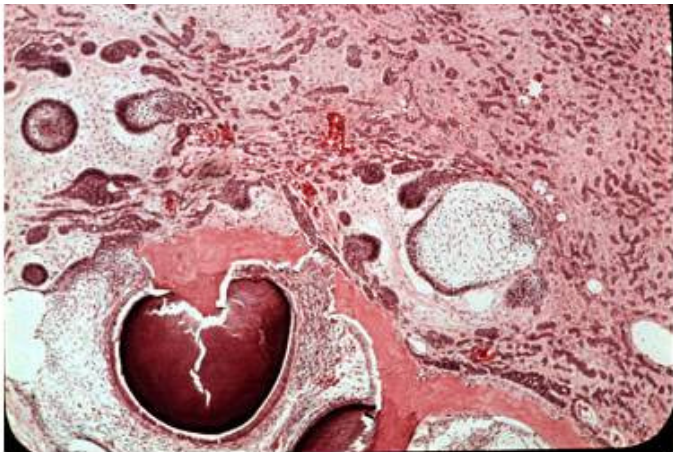
- Rx
- Bone expansion
- Eruption

➢ **Rx:**

- Associated w crown
- Replacing missing tooth
- **Initially**: radiolucent w deposited radiopaque material
- **Fully formed:**
  - ⇨ **Compound:** unilocular radcy containing multiple small denticles
  - ⇨ **Complex:** solid radiopaque mass w a radiolucent zone

➢ **Hist:**

- **Complex:** disorganized but well-formed mass of E, D, C, P
- **Compound:** denticles separated by fibrous tissue



Odontogenic tumours

Benign

- **Epithelial lesions**

1. **Without odontogenic mesenchyme**

⇨ Ameloblastoma

⇨ Squamous odontogenic tumour

⇨ Calcifying epithelial odontogenic tumour

⇨ Adenomatoid odontogenic tumour

2. **With odontogenic mesenchyme**

⇨ Ameloblastic fibroma

⇨ Ameloblastic fibro-dentinoma & fibro-odontoma

⇨ Odontoameloblastoma

⇨ Calcifying cystic odontogenic tumour

⇨ Complex & compound odontomes

⌦ Malignant tumours:

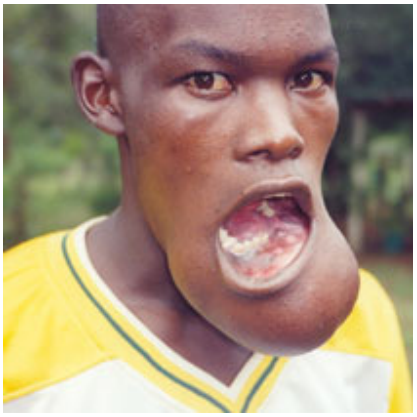
- **Odontogenic carcinomas:**
  - ⇨ Malignant ameloblastoma
  - ⇨ Primary intraosseous squamous cell carcinoma
  - ⇨ Malignant variant of other epithelial tumours
  - ⇨ Clear-cell odontogenic carcinoma
  - ⇨ Malignant change in odontogenic cysts
- **Odontogenic sarcomas:**
  - ⇨ Ameloblastic Fibrosarcoma
  - ⇨ Ameloblastic fibro-odontosarcoma

⌦ Tumours of debatable origin

- ⇨ Melanotic neuroectodermal tumour of infancy
- ⇨ Congenital gingival granular cell tumour (congenital epulis)

⌑ Ameloblastoma:

- Most common
- Benign but locally aggressive
- **Clinically:**
  - ⇨ Age & gender
  - ⇨ Site
  - ⇨ Slow growing
  - ⇨ May perforate bone
  - ⇨ Teeth
- **Rx:**
  - ⇨ Multilocular “soap bubble”
  - ⇨ Root resorption
  - ⇨ Impacted tooth



⇨ Unilocular

- **Hist:**

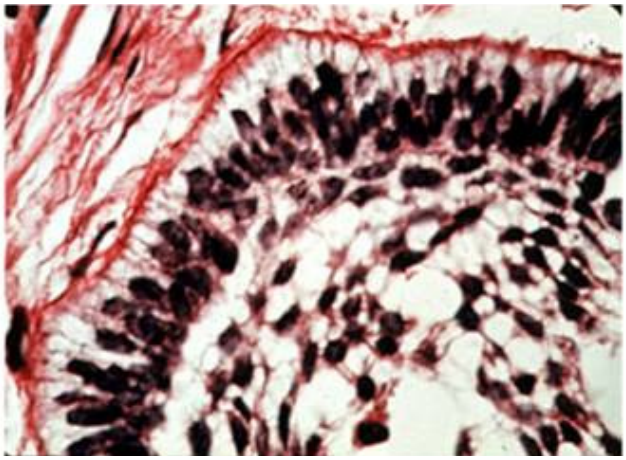
⇨ **Many patterns**

▫ **Follicular pattern:**

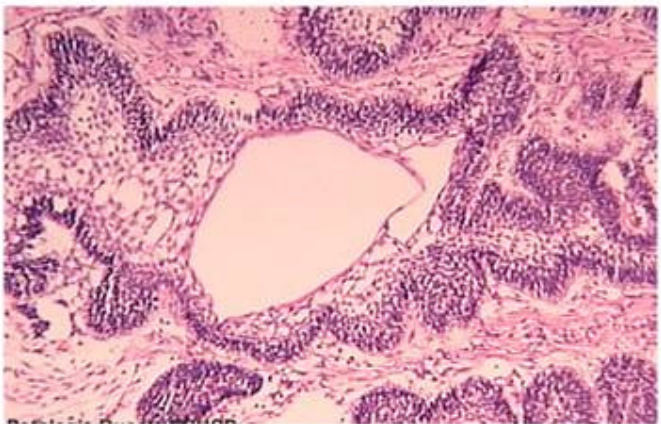
♦ Islands, follicles against FCT stroma

♦ Central angular Cs & peripheral columnar, cuboidal Cs

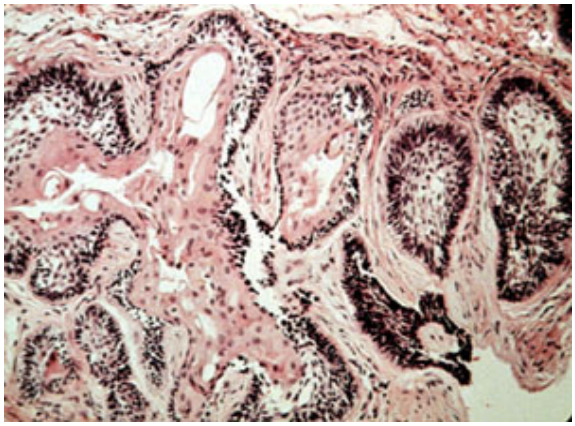
♦ Reversed polarity



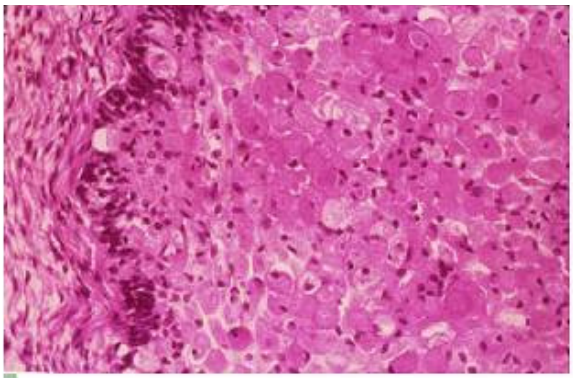
♦ Cystic changes



⇨ **Acanthomatous pattern**

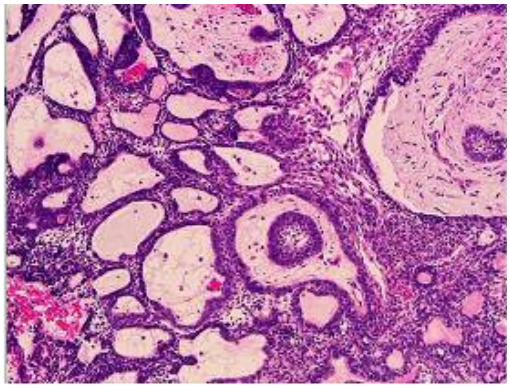


⇨ **Granular cell variant**

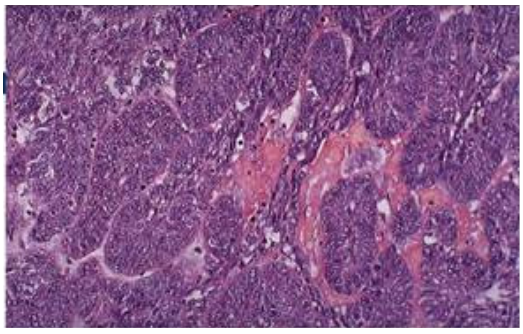


⇨ **Plexiform pattern:**

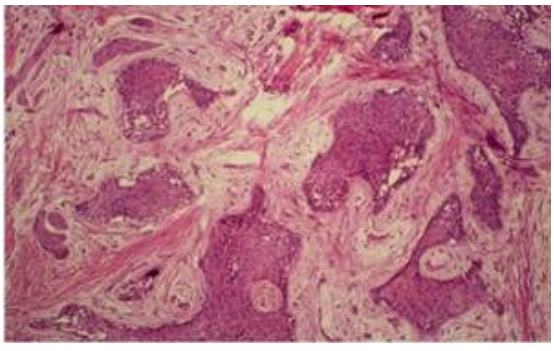
- **"Fishnet"** arrangement
- Same cell layers
- Cystic changes



⇨ **Basal cell variant**



⇨ **Desmoplastic variant**



- **Pathogenesis:**

✓ Resemble E organ

✓ Preameloblast

✓ Dental lamina

- **Behavior:**

✓ Locally invasive

✓ Acanthomatous pattern

✓ Pulmonary metastasis

✓ Malignant ameloblastoma

¤ **Unicystic ameloblastoma:**

- **Clinically:**

✓ Younger

✓ Site

- **Rx:**

✓ Unilocular

- **Hist:**

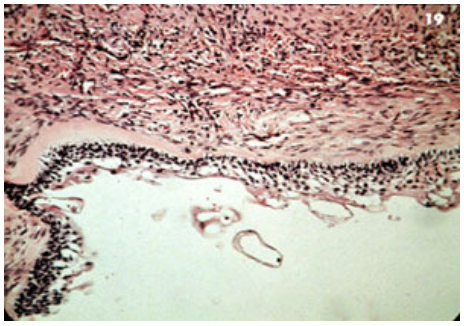
✓ Dense FCT capsule surrounding a solitary, fluid-filled lumen

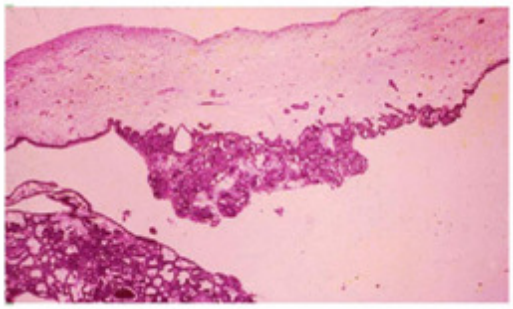
✓ **Epithelial lining:**

➢ **Basal layer:** columnar

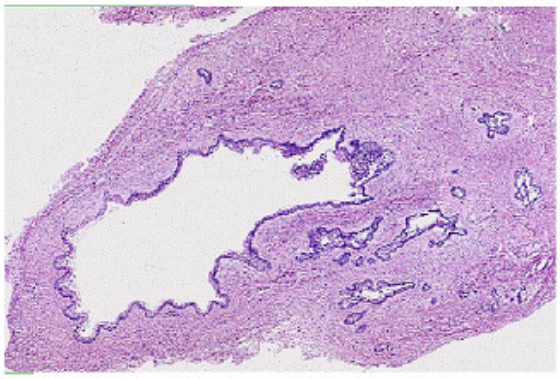
➢ **Other layers:** stellate reticulum

✓ **Intraluminal** unicystic ameloblastoma



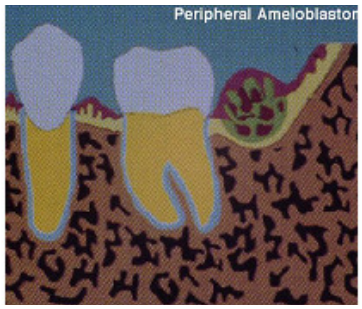


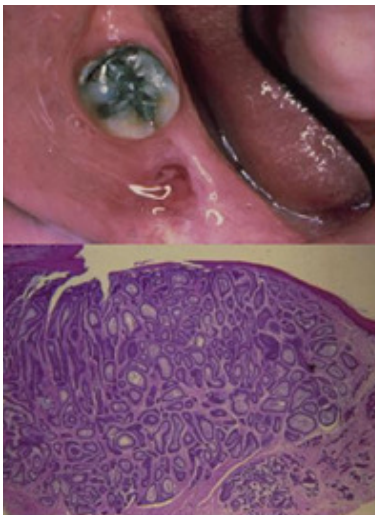
✓ **Mural** unicystic ameloblastoma



¤ **Peripheral ameloblastoma:**

- **Clinically:**
  - ➢ Gingiva
  - ➢ Firm sessile nodule
- **Origin:** Basal OE, Dental Lamina
- **Hist:** = intraosseous
- **Rx:** ± saucerization
- **Prognosis:** less aggressive





¤ **Squamous Odontogenic tumour:**

- **Clinically:**
  - ➢ Young adults
  - ➢ Anterior to molars
  - ➢ Painless swelling

➢ ± Tenderness & loosening of teeth

♦ **Origin:** RC of Malassez

♦ **Rx:** unilocular/semilunar/∇-shaped radiolucency

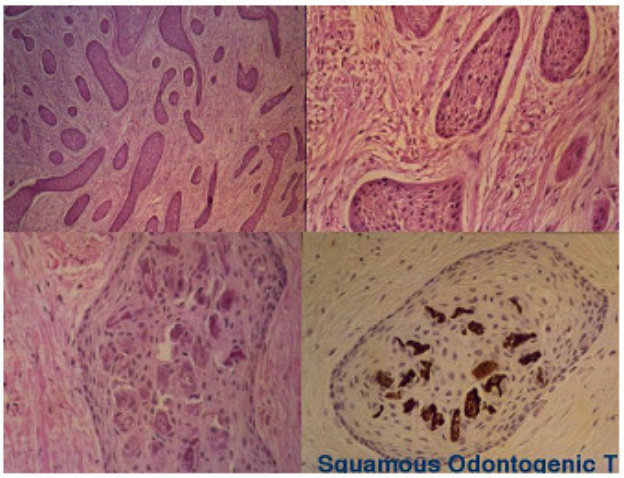
♦ **Hist:**

➢ Rounded & elongated islands

➢ Normal-appearing ssqe

➢ Fibrous CT stroma

➢ Keratin, microcysts, calcified structures



¤ Calcifying epithelial odontogenic tumour (Pindborg tumour):

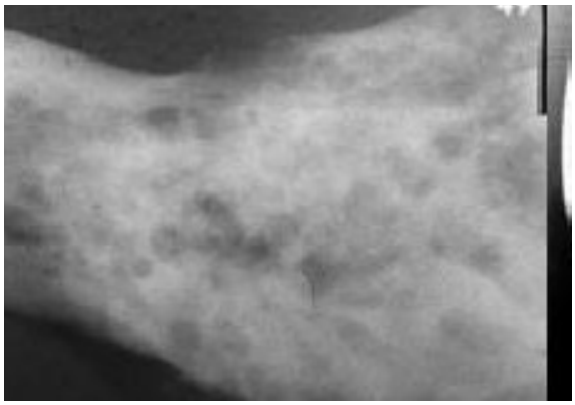
♦ **Clinically:**

➢ Adults

➢ Slowly enlarging painless mass

➢ 2/3 Mand, molar & premolar

➢ Peripheral CEOT

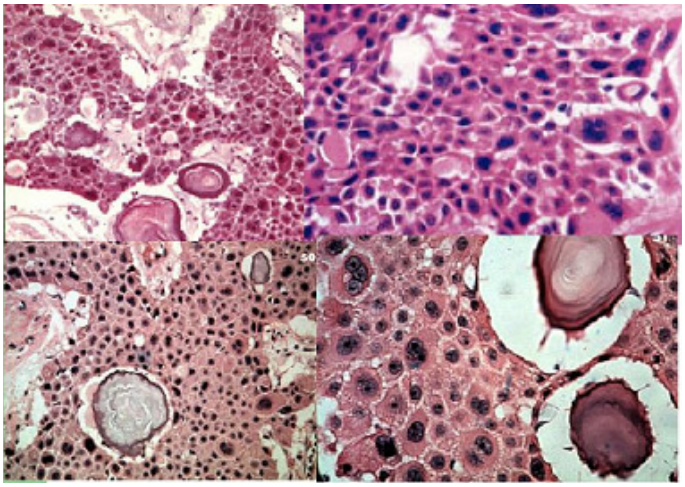


♦ **Rx:**

➢ Irregular radiolucent area

➢ Radio-opaque bodies

➢ Unerupted teeth



♦ **Prognosis:** ≈ ameloblastoma

♦ **Hist:**

➢ Sheets of polyhedral epithelial

Cs w abundant eosinophilic cytoplasm

➢ Prominent intercellular bridges

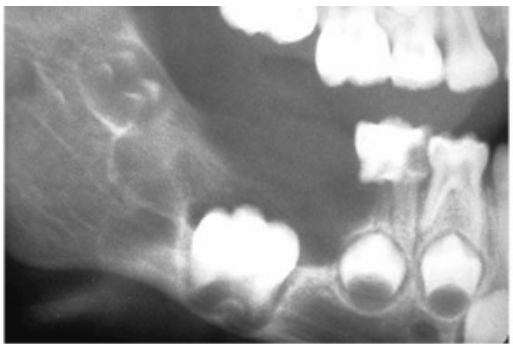
➢ Pleomorphism, multinucleation, hyperchromatism

➢ Amyloid-like material

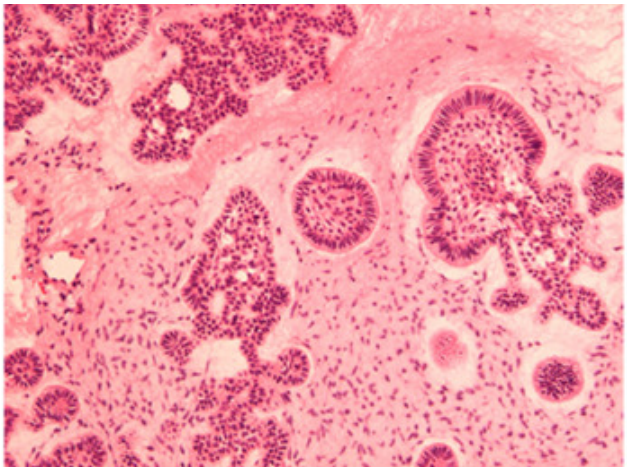
➢ Spherical calcifications

⌑ Ameloblastic fibroma/fibrodentinoma/fibro-odontoma:

- **Both components are neoplastic**
- **Clinically:**
  - Young pts (14ys)
  - Slow growing, painless
  - Mand molar region



- **Rx:** w-d, uni/multilocular, unerupted teeth
- **Hist:**
  - Thin strands & cords of odontogenic epith
  - Peripheral layer of cuboidal or columnar Cs enclosing StR
  - Loose but cellular fibromyxoid CT ≈ Dental papilla
  - StR less abundant
- Poorly formed dentine**:** **A. Fibrodentinoma**
- Formation of E**:** **A. Fibro-odontoma**
- **Prognosis:** not invasive

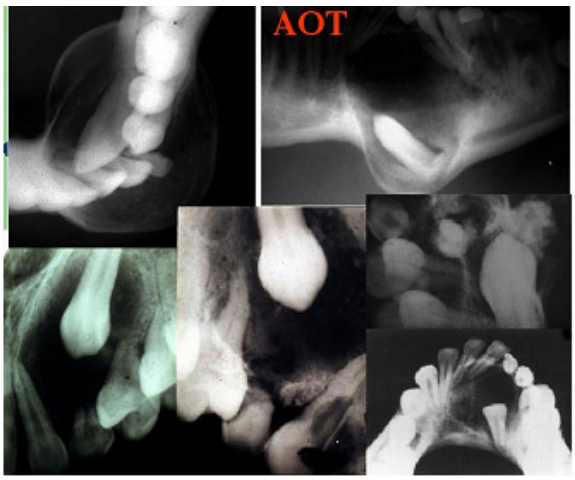


⌑ Odontoameloblastoma:

- Ameloblastoma + E & D
- **Behavior** = Ameloblastoma

¤ Adenomatoid odontogenic tumour:

♦ **Clinically:**



➢ 2nd decade

➢ Swelling over unerupted tooth (Canine)

➢ Rarely extraosseous

♦ **Rx:**

➢ W-C Unilocular radiolcy containing a tooth

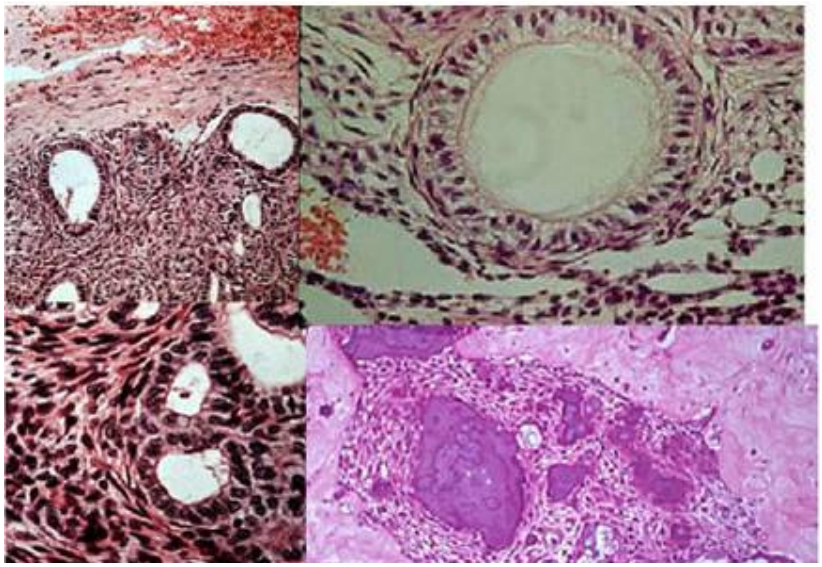
➢ ± Faint flecks of radio-opacities

➢ **DDx:**

♦ **Hist:**

- ➢ FCT capsule
- ➢ Solid or cystic
- ➢ Whorls & strands w central spaces
- ➢ Homogenous eosinophilic material
- ➢ Spherical calcifications

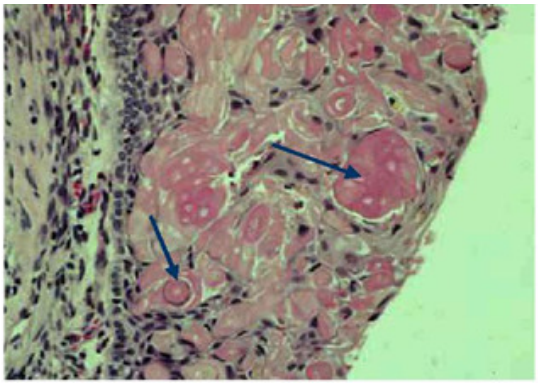
♦ **Prognosis:**



¤ Calcifying cystic odontogenic tumour:

- Solid: **Dentinogenic Ghost cell tumour**
- **Clinically:**
  - Usually < 40
  - Anterior to 6
  - Slowly enlarging painless swelling
  - 25% extraosseous

- **Rx:**
  - W-d uni/multilocular radcy containing radiop flecks
  - ± Unerupted tooth
- **Hist:**
  - Cystic cavity
  - Lined by basal ameloblast-like Cs & StR
  - **"Ghost"** Cs
  - ± D-like matrix
  - **Rare: + odontome** (younger & ant max)



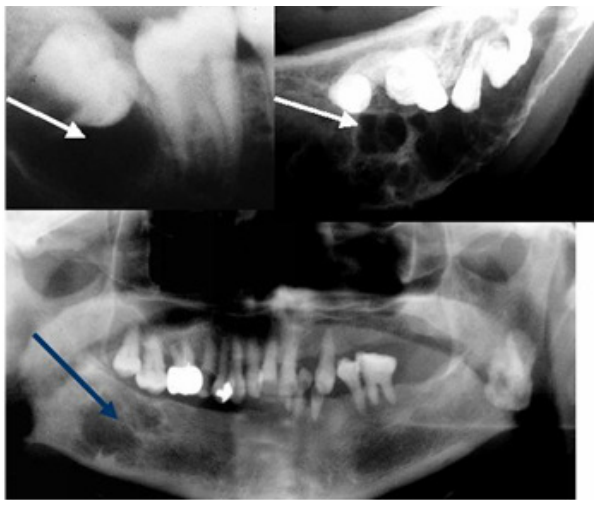
- **Prognosis:** solid more aggressive

¤ Odontogenic fibroma & myxoma:

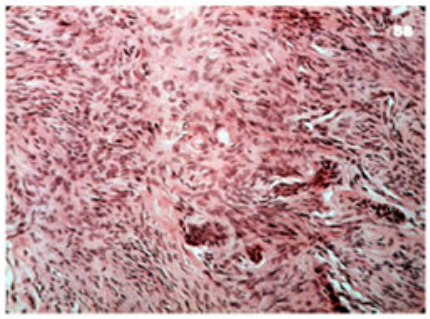
- **Origin:** PL, DF, DP

Odontogenic fibroma:

- **Clinically:**
  - Slowly enlarging, painless
  - Mand
  - Extraosseous
- **Rx:** w-d radcy



- **Hist:**
  - ➢ Mature collagen & spindle-shaped fibroblasts
  - ➢ Strands of odontogenic epith
  - ➢ ± Foci of C & D-like matrix



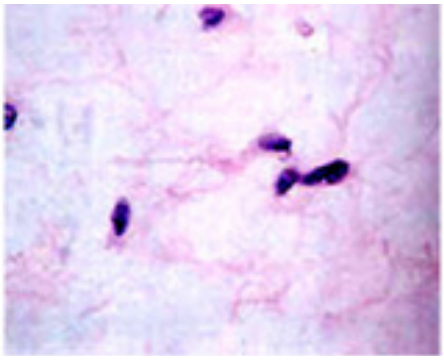
Odontogenic myxoma:

- **Clinically:**
  - ➢ More common
  - ➢ Mand = Max
  - ➢ Slowly enlarging, painless
  - ➢ ± Tooth displacement

- **Rx:**
  - ➢ W-d "soap bubble" radcy
  - ➢ ± Root resorption

- **Hist:**
  - ➢ No capsule & infiltrative
  - ➢ Widely separated angular Cs

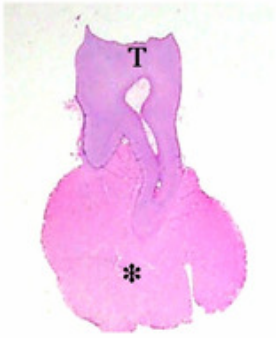
    w long anastomosing processes
  - ➢ Mucoid ground substance
  - ➢ ± Islands of odontogenic epith
  - ➢ ± Focal calcifications
  - ➢ **Fibromyxoma & myxofibroma**
- **Prognosis:** benign but locally invasive, ↑ LRR



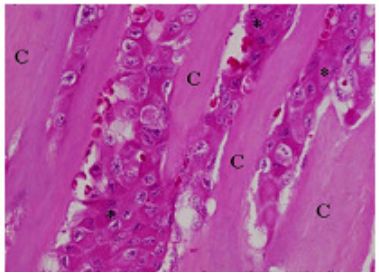
⌑ Benign Cementoblastoma:

- Only true neoplasm of cementum

- **Clinically:**
  - ➢ < 25, M
  - ➢ Mand molar (6) & premolar
  - ➢ Slowly enlarging
  - ➢ Sometimes gives rise to **pain**
  - ➢ Tooth vital



- **Rx:**
  - ➢ W-d mottled or radio-opaque mass
  - ➢ Thin radiolucent margin
  - ➢ Attached to the roots of a tooth
  - ➢ Resorption of related roots



- **Hist:**
  - ➢ Capsule
  - ➢ Cementum w many reversal lines
  - ➢ Scattered Cs lying in lacunae
  - ➢ Peripheral zone of un-mineralized tissue containing cementoblasts

⏭ Malignant odontogenic tumours:

⌑ Malignant ameloblastoma:

- Typical histology
- Pulmonary metastasis
- Aspiration

⌑ Ameloblastic Ca:

- Ameloblastoma → loss of differentiation
- Spreads to LNs

⌑ **Primary intraosseous squamous cell Ca:**

- Odontogenic epith
- Signs of malignancy

⌑ **Clear Cell Odontogenic Carcinoma:**

♦ **Hist:** poorly circumscribed sheets of Cs w clear, glycogen-rich cytoplasm

♦ **DDx:**

⌑ **Malignant change in odontogenic cysts:**

- Clinically & Rxly Cyst
- **Hist:** Ca
- **Pathogenesis:**
  - ➢ Ca change in a cyst
  - ➢ Cystic degeneration in a Ca
  - ➢ Ca invading the cyst

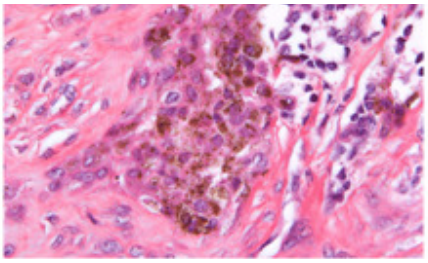
⌑ **Odontogenic Sarcomas:**

- Fibrosarcomas +
- Non-neoplastic odontogenic epith
- ± dental hard tissue
- E.g: Ameloblastic Fibrosarcoma

⏭ Tumours of debatable origin:

⌑ **Melanotic neuroectodermal tumour of infancy**

- **Origin:** neural crest
- **Clinically:**
  - ➢ < 6 months
  - ➢ Brown or black pigmented swelling
  - ➢ Ant Max
  - ➢ Extra-oral sites
- **Rx:** radcy w tooth buds displacement



- **Hist:**
  - ➢ Two cell types & dense FCT stroma
  - ➢ Large w open nucleus & melanin granules in cytoplasm
  - ➢ Small w dark dense nucleus & scant cytoplasm

¤ **Congenital gingival granular cell tumour (Congenital epulis):**

- **Origin: ?**
- **Clinically:**
  - ➢ Newborn
  - ➢ Ant Max
  - ➢ 10 F: 1 M
  - ➢ Pedunculated swelling from crest of alveolar ridge
  - ➢ Up to several cms
- **Hist:**
  - ➢ GCT
  - ➢ Atrophy of overlying epith