Study Questions:

Odontogenic Tumors

* Classifications:
  + Tumors of odontogenic epithelium without ectomesenchyme:
    - Ameloblastomas
    - Calcifying epithelial odontogenic tumors (CEOT)
    - Squamous odontogenic tumors (not covered)
    - Clear cell odontogenic tumors (not covered)
  + Tumors of odontogenic epithelium and ectomesenchyme with or without dental hard tissue formation:
    - Ameloblastic fibroma
    - Ameloblastic fibro-odontoma
    - Adenomatoid odontogenic tumor
    - Complex and Compound odontoma
    - Odontoameloblastoma (not covered)
  + Tumors of ectomesenchyme with or without included odontogenic epithelium
    - Myxoma
    - Cementoblastoma
    - Odontogenic fibroma (not covered)
* Inductive effect: the action of epithelial components to induce the ectomesenchyme to produce **dentin**
* **Ameloblastoma**:
  + These are the 2nd **most common odontogenic tumors** (second to odontomas)
  + They are classified as **benign** and **aggressive** (locally invasive)
  + Types of ameloblastomas:
    - **86%** are **solid/multicystic** (predominant form)
    - **13%** are **unicystic**
    - **1%** are **peripheral/extraosseous**
  + **Multicystic Ameloblastomas** 
    - Histologically, ameloblastomas are **solid tumors** with **islands of epithelium** that resemble the enamel organ set with **fibrous CT**
      * With multicystic ameloblastomas, the most common histological patterns are the **follicular** and **plexiform** patterns
    - Wide age range (**from 3rd to 7th decades**)
      * **Rare** to find MCA’s in patients **<10 years old**
    - MCA’s produce intraosseous **painless expansion of bone; parasthesia** is uncommon
    - **85%** of MCA’s are found in the **ascending ramus** of the **mandible** while **15%** are found in the **posterior maxilla**
    - Radiographically, MCA’s produce a **multilocular radiolucency**
      * Small loculations look like **“soap bubbles”**
      * Large loculations look like **“honeycombs”**
    - MCA’s cause **buccal and lingual cortical bone expansion** and commonly causes **root resorption**
    - The optimal treatment of MCA’s is not yet standardized, but treatment involves **enucleation/curettage** to **en bloc resections**
      * **55-90%** recurrence rate with just **curettage**
      * **15%** recurrence rate with **marginal resection**
        + This is the most common treatment for MCA’s
        + **Resect 1cm past the radiographic margins** of the lesion
  + **Unicystic Ameloblastomas**:
    - **50%** of UCA’s are found in patients within their **2nd decade**, making this an early adulthood tumor
    - **90%** are found in the **posterior mandible**
    - UCA’s appear as well-circumscribed **unilocular radiolucencies** that are **predominantly cystic**
    - There is a **10-20%** chance for recurrence with **curettage**
    - if there are **mural islands/changes** in the fibrous CT walls of the UCA, resection (not curettage) is indicated
  + **Peripheral/extraosseous Ameloblastomas**:
    - PA’s are indolent ameloblastomas
    - Clinically presents as **painless**, non-ulcerated, **sessile or pedunculated posterior gingival/alveolar** lesions found on the mandible more often than the maxilla
* A **malignant ameloblastoma** differs from an **ameloblastic carcinoma** in that a **malignant ameloblastoma** looks exactly the same, histopathologically, as a normal ameloblastoma in a primary tumor, but has the **potential to metastasize**, while an **ameloblastic carcinoma** is an aggressive course primary tumor with **cytologic features of malignancy**
  + Both MA and AC are **rare**
* **Calcifying epithelial odontogenic tumor**:
  + Also known as a “**Pindborg tumor**”
  + CEOT’s are **uncommon** tumors, accounting for <1% of all odontogenic tumors
  + CEOT’s are **benign** and **less aggressive** than ameloblastomas
  + They are **adult** tumors; age range of **30-50 years**
  + Produces a **painless**, slow growing swelling, most often (**75%**) in the **posterior mandible**
  + Radiographically, they present as **multilocular radiolucencies** with **scalloped margins** and **calcified structures**
  + The optimal treatment of CEOT is **conservative local resection**, which has a good prognosis and a **15% recurrence rate**
  + CEOT are **less aggressive** than ameloblastomas
* **Ameloblastic fibroma:**
  + AF’s are **benign, indolent childhood tumors** that is **common** in the **first 2 decades**
  + Causes **painless swelling/expansion** in the **posterior mandible** (**70%**)
  + Radiographically presents as a **unilocular or multilocular radiolucencies**
  + There is a **20% rate of recurrence** and **50%** of the recurrences produces an **ameloblastic fibrosarcoma,** which is **malignant** and **aggressive**
* **Ameloblastic fibro-odontoma**:
  + AFO’s are **benign**, **indolent** tumors of **childhood** (average age of **10 years**)
  + Causes **asymptomatic, painless expansion** of **maxilla** or **mandible** (equal frequency), but they can cause severe deformities
    - occurs most frequently in the **posterior mandible**
  + Radiographically presents as **unilocular** (rarely multilocular) **radiolucency** with **multiple or single radioopacities**, usually associated with an unerupted tooth
  + Conservative curettage is the indicated treatment and it produces minimal recurrences
  + AFO’s can very rarely recur after curettage as a malignant **ameloblastic fibrosarcoma**
* **Adenomatoid odontogenic tumor**:
  + An **uncommon** tumor (**3-7%** of all odontogenic tumors) which usually is **benign** and **indolent**
  + Is usually **asymptomatic** and **painless**
  + Clinically found in an **anterior** location, with a **2:1** predilection for the **maxilla**
    - Most commonly found in the **maxillary canine** area
  + Radiographically presents as a **unilocular radiolucency** involving a crown of an unerupted tooth or extending apically beyond the crown
  + Enucleation of the tumor is usually curative and it **very rarely recurs**
* **Odontoma**:
  + Odontomas are the **most common odontogenic tumor**
  + **Compound** odontomas contain **multiple tooth-like structures** while **complex** odontomas contain a **conglomerate mass of enamel and dentin**
  + Odontomas are **benign** and **indolent**, producing small tumors with **no bone expansion**
  + Usually occurs within the **first 2 decades** of life, with the mean age of **14 years**
  + Is usually **asymptomatic** and is **painless**
  + Locations:
    - Compound odontomas – **anterior maxilla**
    - Complex odontomas – **posterior mandible**
  + Radiographic presentation:
    - Compound odontomas – **radioopaque** tooth like structures/mass with **radiolucent** rim
    - Complex odontomas – calcified **radioopaque** mass with **radiolucent** rim
  + Odontomas do **not** expand bone
  + After curettage, odontomas are **not likely** to recur
* **Myxoma**:
  + Myxomas are **benign, aggressive** tumors of **young adulthood** (average age of **25-30 years**)
  + Produces **painless expansion** of bone
  + Slight predilection for the **mandible** over the maxilla
    - Most often in the **posterior mandible**
  + Radiographically presents as a **unilocular or multilocular radiolucency** with a “**soap bubble**” appearance (much like ameloblastomas)
  + **Resection** is the optimal treatment as **curettage** produces a **25% recurrence rate**
* **Cementoblastoma**:
  + A **benign, aggressive** tumor closely related to osteoblastomas
  + It is a **childhood/young adult** tumor where it clinically appears in patients **<25 years old**
  + Cementoblastomas are one of the few tumors which cause **pain** (in 2/3 of patients) and **swelling**
  + The tumor is **intimately associated** with the tooth apex of, most often, the **mandibular permanent 1st molar** in the posterior jaw
    - Rarely associated with a deciduous tooth
  + Radiographically presents as a **calcified radioopaque** mass with a thin **radiolucent rim**
  + Cementoblastomas are distinctive in that they are **attached** to the affected tooth (thus, pain), which causes the radiographic outline of the root to be obscured by the tumor
  + Optimal treatment involves the **surgical extraction** or **root amputation** of the affected tooth and attached mass; excellent prognosis
* General considerations:
  + Which odontogenic tumors are found in children, teens, young adults, and older adults?
    - Children:
      * **Ameloblastic fibro-odontoma**
    - Teens:
      * **Ameloblastic fibroma**
      * **Adenomatoid odontogenic tumor**
      * **Odontoma (complex and compound)**
    - Young adults:
      * **Ameloblastoma (unicystic)**
      * **Myxoma**
      * **Cementoblastoma**
    - Adults:
      * **Ameloblastoma (multicystic/solid)**
      * **Calcifying epithelial odontogenic tumor**
  + Which tumors are associated with an unerupted tooth?
    - **Ameloblastoma (unicystic and multicystic)**
    - **Ameloblastic fibroma**
    - **Calcifying epithelial odontogenic tumor**
    - **Adenomatoid odontogenic tumor**
    - **Odontoma**
    - **Ameloblastic fibro-odontoma**
    - **Cementoblastoma**
  + Not associated with unerupted teeth:
    - **Myxoma**
  + The most common odontogenic tumor is an **odontoma** and the 2nd most common is an **ameloblastoma**