**Listen to the associated podcast episode(s) available at theradiologyreview.com or on your favorite podcast directory.**

*The number of lesions of the mandible and maxilla are extensive. This episode will focus on several of the most common lesions of the mandible and maxilla as these common lesions are also the lesions I believe are most likely to be tested on non-subspecialty radiology board examinations which is beyond the scope of this episode. My advice is to not get lost in the weeds when it comes to lesions of the mandible and maxilla and to first master the most common lesions before you venture into uncommon pathology.*

**What are two of the most common odontogenic tumors?**

The most common odontogenic tumors may be odontomas and ameloblastomas. An odontoma is the most common odontogenic tumor of the mandible followed by ameloblastoma.

**What is a common association with an odontoma?**

Odontomas are associated with an unerupted tooth in approximately 50% of cases. Note also that odontomas have a Gardner syndrome association. As a reminder Gardner syndrome is a familial polyposis syndrome associated with things like osteomas, desmoid tumors, fibromatoses and odontomas.

**What are common imaging features of an odontoma?**

Common imaging features of an odontoma include a lucent lesion of the mandible or maxilla that over time shows calcifications that coalesce to form a dense lesion with a lucent rim. A complex odontoma may show irregular calcifications with no distinct tooth and a compound odontoma may show a lesion with tooth-like components.

**Odontomas and ameloblastomas arise most commonly in which decade of life, respectively?**

Odontomas arise most commonly in the 2$^{nd}$ decade of life and ameloblastomas arise most commonly in the 3$^{rd}$ to 5$^{th}$ decades of life.

**What is the most common location for an ameloblastoma?**

Ameloblastomas most classically arise near the angle of the mandible but can less commonly be seen elsewhere along the mandible or maxilla.

**What are common imaging features of an ameloblastoma?**

The majority of ameloblastomas show a multicystic or “soap-bubble” appearance which appears as expansile cystic lesions with well-defined margins but some ameloblastomas may be unilocular. Ameloblastomas are often locally aggressive so additional features such as tooth resorption and cortical erosion through the bone into adjacent tissues may be seen. Less commonly an ameloblastoma may show a unicystic appearance, appearing similar to other lesions to include a dentigerous cyst. On MRI an ameloblastoma may show solid papillary projections within the lesion that show avid enhancement which can be helpful for diagnosis.

**Listen to the associated podcast episode(s) available at theradiologyreview.com or on your favorite podcast directory.**

Less commonly ameloblastomas may be malignant and show evidence of metastatic disease on imaging. Signs of potential malignant transformation include cortical destruction, extraosseous extension, aggressive growth, and large solid components.

**What is the common imaging appearance of a dentigerous cyst on imaging?**

First of all, a dentigerous cyst is also sometimes termed a follicular cyst. The classic appearance of a dentigerous cyst is a unilocular lucent lesion surrounding the crown of an impacted or non-erupted tooth in the mandible. It is said that imaging showing the crown of a tooth projecting in to the cystic space is pathognomonic of a dentigerous cyst. On CT, fluid within the cyst cavity is often water density. On MRI, dentigerous cysts follow water/CSF signal with low T1 and bright T2 signal with no internal enhancement but possible thin peripheral enhancement.

**What are some basic differences between a periapical cyst and a dentigerous cyst?**

Periapical cysts are more common than dentigerous cysts. Dentigerous cysts are often associated with the crown of an impacted or unerupted tooth and a periapical cyst is associated with the roots of a tooth. A dentigerous cyst is related to fluid accumulation around an unerupted tooth whereas a periapical cyst is often the result of a dental infection and an associated dental cavity may be seen. Both often appear as a unilocular lucent lesion. Unlike a periapical cyst, a dentigerous cyst can become very large. Dentigerous cysts have a low risk of transformation into an ameloblastoma.

**What are typical features of an odontogenic keratocyst?**

Odontogenic keratocysts are classically destructive, multilocular lesions centered about the ramus or body of the mandible. Unlike a dentigerous cyst, an odontogenic keratocyst can erode through the cortex of the mandible and may have daughter cysts within the surrounding bone. If you see multiple odontogenic keratocysts, basal cell nevus syndrome can be considered.

**What are classic features of a juvenile ossifying fibroma?**

This is a lesion most often seen in boys under around 15 years of age and is an aggressive tumor that can be seen in the mandible or paranasal sinuses. A key feature is rapid growth.

**If a patient with multiple myeloma of the mandible, or another mandibular malignancy, presents with numbness of the chin, what is a potential etiology for this symptom?**

Malignant involvement of the inferior alveolar nerve can cause chin numbness in the setting of mandibular malignancy.

**What are some of the most common primary tumors that metastasize to the mandible?**

Common tumors that can metastasize to the mandible include primary breast, lung and renal malignancies. The most common site for metastatic disease of the mandible is the posterior

**Listen to the associated podcast episode(s) available at theradiologyreview.com or on your favorite podcast directory.**

body and angle as these have a robust blood supply. If you see a sclerotic metastases to the mandible in a genetic male consider prostate cancer as well. Also remember that multiple myeloma may show involvement of the mandible.

**What is more common—metastatic disease to the mandible or metastatic disease to the maxilla?**

Metastatic disease to the mandible is much more common than metastatic disease to the maxilla—something like 4x more common.

**Multiple osteomas in the mandible have a classic association with what syndrome?**

Gardner syndrome (familial colonic polyposis syndrome)

**Osteonecrosis of the jaw is associated with what common therapy?**

Bisphosphonate use has a classic association with osteonecrosis of the jaw. This results in osseous destruction of the mandible more commonly than maxilla and may have exposed bone. Other medications may also be associated with this entity to include things like denosumab (RANKL inhibitor), tyrosine kinase, mTOR, and VEGF inhibitors.

**If you see pronounced increased uptake diffusely involving the skull and mandible on a bone scan what entity should you first consider?**

Hyperparathyroidism is most classic for diffuse intense skull and mandibular uptake on a bone scan on board exams although this imaging appearance can also be seen with other metabolic bone disease.

**If you only see diffuse bone scan uptake through the mandible but not the skull, what entity is most likely on board exams?**

Consider the possibility of Paget's disease. Some call this the "black beard sign". If mono-ostotic that could be the only site of uptake. Other classic areas of uptake in polyostotic Paget's disease include the pelvis and femurs.

**If only a portion of the mandible shows uptake on a bone scan what are top differential considerations?**

Fibrous dysplasia of the mandible is one common cause of bone scan uptake involving only a portion of the mandible. Dental disease may also show focal mandibular uptake due to inflammation with active bone remodeling. Metastatic disease may also be considered, particularly if other sites of suspicious uptake are also noted on the bone scan.

***For additional details and great images of dental and mandibular lesions please see this RadioGraphics article: https://pubs.rsna.org/doi/full/10.1148/rg.266055189***