

Pathology sheet #5

Refer to slide #: Diseases of the jaw (no need)

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You will not find this in Robin's, so the lecture is your only reference.

Some of the diseases related to the jaw are related to bone "bony jaw diseases", we will not be talking about it since it's covered by the musculoskeletal system. Here we will be talking about cysts of the jaw and neoplasms affecting the jaw and most of these are related to the teeth

- Cysts in the oral cavity and the jaws are common especially around the teeth
- All these cysts are epithelial cysts; they are lined with epithelial cells.
- Cyst: is a dilated sac with epithelial lining either filled with mucus or cells or just empty space with a fibrous wall covering it so from inside to outside, a content (space, mucus, cells...), then lining (epithelium) and then fibrous wall.
- To determine what type of cysts we are dealing with we need correlation between pathology, radiology and clinical appearance.
- Under the microscope, a lot of cysts look the same so it's not enough to determine what type of cyst it is.
- To determine we need clinical history, the cyst's place we correlate this with histology and a radiological appearance. Most cases you can suggest what type it could be but never exactly.

Epithelial cysts in jaw are of two main types; odontogenic and non-odontogenic epithelium.

Odontogenic cyst originates from odontogenic epithelium.

-non-odontogenic cysts (fissural cysts) arises from the epithelium that's not related to the teeth, from the soft tissues and the tissues surrounding the teeth that is embryologically not from the odontogenic origin.

Why we call it fissural cysts?

Because they come along the embryogenic fissures of the epithelium of the jaw.

Odontogenic cysts are the most common. Non odontogenic are rare. Practically for us, we know need to that they're cysts, benign, and we care about the cause and that we need to remove it. It doesn't matter if it odonotogenic epithelium or not.

These are the most common odontogenic cysts:

- Dentigerous cysts.
- Eruption cysts.
- Gingival cysts (in newborns)
- Keratocysts
- Radicular cysts

Dentigerous cyst

- These cysts surround or are associated with unerupted teeth.
- Young adults. (and so we expect that molars are more affected)
- Arise from enamel epithelium.
- Swelling and pain.



Figure1 : Dentigerous cyst [Clinical appearance]

Cysts are usually present as fluctuating masses (not solid, filled with fluid, u can press it and that helps in the differentiation between it and malignant)

How they look under the microscope:

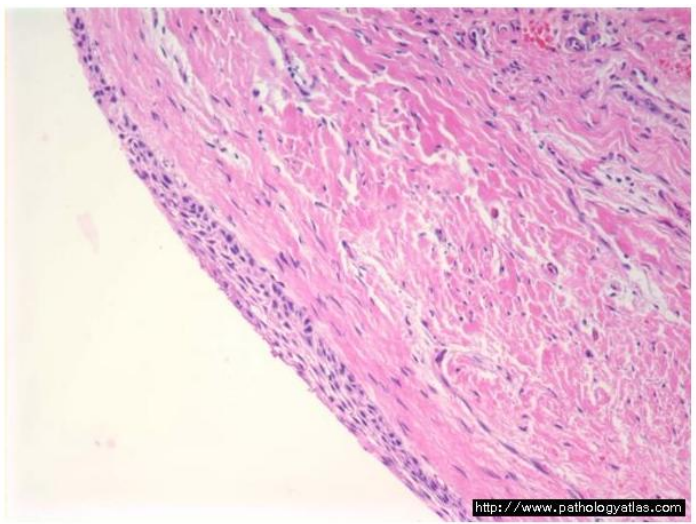


Figure2 : Dentigerous cyst [Microscopical appearance]

A Simple cyst (not complicated)

Lined by keratinized stratified squamous epithelium just like skin surrounded by thin fibrous wall

- *Keratinized: produces keratin*
- *Stratified: more than one layer*

However, it can be complicated by: inflammation (very common) or ulceration. The epithelia itself may have some changes like hyperplasia and metaplasia (change from one kind of epithelia to another ex: from squamous to columnar or cuboidal)

Can undergo calcification and even ossification (the presence of bony particles in it)

Clusters of histiocytes, which is part of the inflammation.

These cysts are very important since they can undergo dysplasia and carcinoma. If you diagnose a patient with a cyst, even if you know it is benign, do not ignore it and send them home, since they can undergo a premalignant condition leading to malignant tissue. Advise them to remove it since it's the only treatment. Tooth with a cyst, fluctuating mass, painful swelling. Recurrence is unusual.

This cyst is the most common and most important cyst seen in the dental field. If cyst is not removed complications happen like inflammation and ulceration and such, or malignance.

Eruption cyst

- A subtype of dentigerous cysts.
- Above erupting primary teeth or rarely above permanent teeth.
- Gingival swelling (so seen in children)
- Inflamed, hemorrhagic cyst wall lined by thin nonkeratinising stratified squamous epithelium.



Figure3 : Eruption cyst [Clinical appearance]

When the tooth starts to erupt (partly erupted tooth) and then a cyst is formed then that's eruption cysts

The difference between eruption cysts and dentigerous cysts is only academic.

Gingival cyst

- In newborn infants.
- Minute cystic formations.
- Seen in most neonates and gradually disappear within weeks.
- very common
- Usually very tiny. May be multiple



Figure4 : Gingival Cyst

Radicular or periapical cysts

- The most common jaw cyst, if a patient comes with a cyst most commonly to be radicular.
- Due to inflammation.
- Occurs more in the third and fourth decades.
- If seen after tooth extraction = residual cysts.

Due to inflammation, the primary event is inflammation. We said the cysts can be complicated by inflammation but here there's inflammation predisposing to cyst formation

Cysts are lined by stratified squamous epithelium. Ulceration is common because the underlying cause is inflammation. And also, they can undergo metaplasia and calcification.



Figure5 : Radicular Cysts

Keratocyst

- 10% of the jaw cysts.
- Solitary in 90% of cases.
- Multiple in 10% of cases; associated with Gorlin's syndrome.
- Most common site: third molar region of the mandible.
- Present as painful swellings.
- High rate of recurrence, unlike all other cysts.



Figure6 : Keratocyst

“You do not need to know the syndrome; it's not coming in the exam. Just know that if a patient comes with multiple cysts, you will remember you read something about a syndrome related to multiple cysts. Then you will go read about it associating it with the patient.”

Practically you need to differentiate a cyst from a malignant tumor. You need to know that the only treatment for cysts is surgical removal. It is not an inflammation treated by antibiotic; it is not something that heals spontaneously, except gingival cysts. Radicular cyst is a result of inflammation, treating the inflammation first may stop the radicular cyst from happening, but once it happens it cannot be treated except by excision.”

Non odontogenic cysts which are rare.

- Nasoalveolar cysts.
- Nasopalatine
- Dermoid cysts
- Palatal cysts

Nasopalatine cyst is the most common nonodontogenic cyst and is lined by squamous or respiratory (columnar) epithelium.



Figure7 : Nasopalatine cyst

If a solid mass is found, you may suspect a solid neoplasm, not necessarily a tumor. Tumors in the jaw are numerous, we have squamous, bony or epithelial tumors but we're concentrating on odontogenic tumors, arising from odontogenic epithelium which are tumors in the jaw differentiating towards tooth structure. Tumors are rare. Can be completely benign, could be borderline or malignant.

Benign odontogenic tumors are many, some are squamous odontogenic tumors and some are adenomatoid (forming glands) odontogenic tumors and many others.

There's only one borderline tumor in the jaw and you must know it, ameloblastoma.

Ameloblastoma

- The most common epithelial odontogenic tumour.
- Third to fifth decades of life.
- 80% in the mandible.
- Radiography: lytic (there are cysts, partly cystic partly solid) expansile lesion.



Figure8 : Radiographic ameloblastoma

Benign Tumor: non filtrative, circumscribed tumor and its effect is mostly local, pressure/disfiguration but no metastasis and does not produce death.

Malignant Tumor: infiltrative and causes death by metastasis and other ways.

Borderline tumor is a tumor with a behavior in between malignant and benign. There's a low chance of metastasis but it produces local extension.

Not a lot of tumors in the human body can be called borderline; in the female genital tract there are a lot of borderlines like leiomyomas and ovarian tumors.

Some tumors have a special histological picture different from benign and malignant tumors and accordingly, behave differently as well.

Example: an odontogenic tumor.

99% of benign odontogenic tumor patient have a 5 year survival of 95% and those who die, don't die because of the tumor.

In malignant odontogenic tumor, the 5 year survival maybe 50% and those who die, die because of the tumor.

In borderline tumor, 5 year survival is 80% but those who die, die because of local extension.

- Several histological patterns and so diagnosis is extremely difficult. This is because first we must make sure that it's not benign, and then we must exclude malignancy.
- Most common patterns are follicular and plexiform.

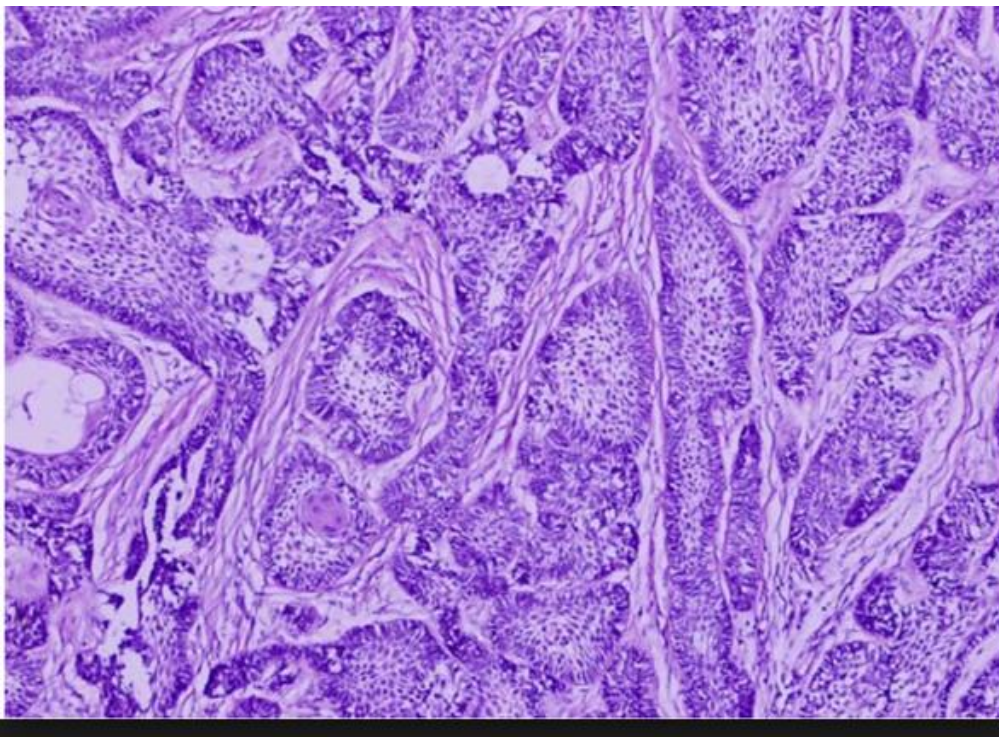


Figure 7a: Follicular Ameloblastoma

Follicular subtype: nests of loose network of cells resembling stellate reticulum, surrounded by an outer palisaded (ordered layers, one by one) layer of tall columnar epithelium. They look like basal cell carcinoma.

Ameloblastomas are not encapsulated.

Plexiform pattern means that the cells are not nested; they are interconnected into each other.

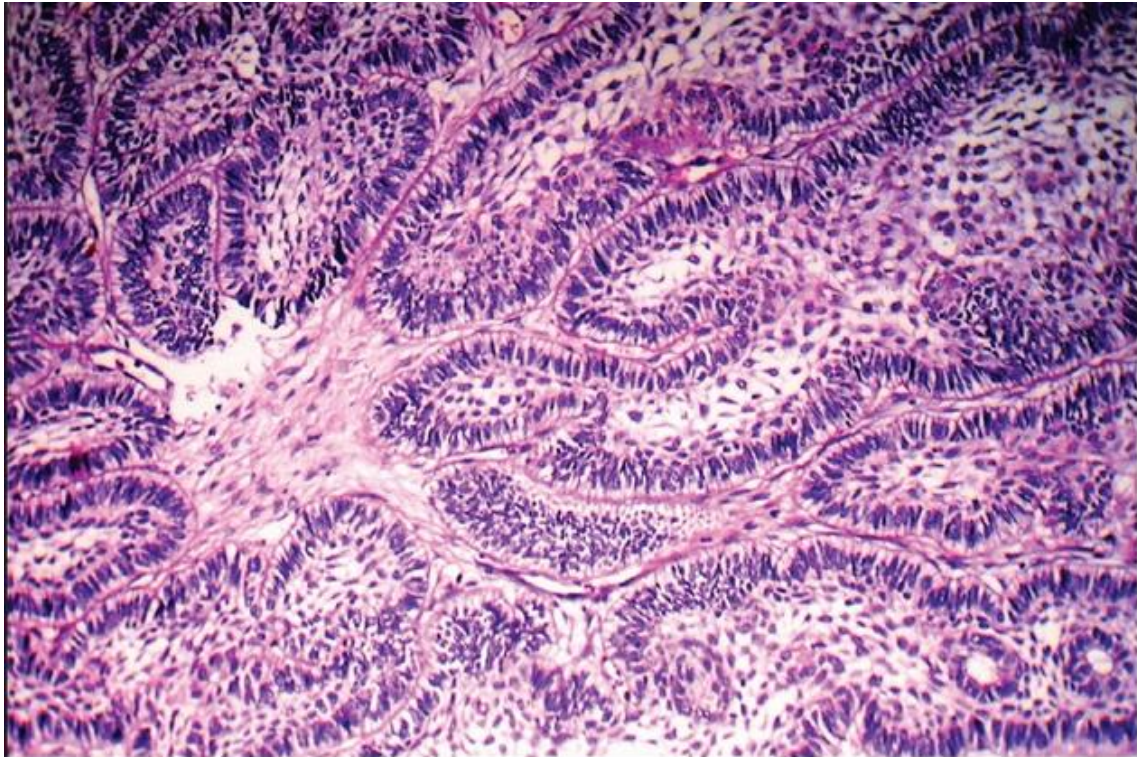


Figure 7b: Plexiform Ameloblastoma

Malignant tumors

- Ameloblastic carcinoma is a tumour that has histological features similar to ameloblastoma but also, shows malignant features such as hyperchromasia, pleomorphism, nuclear atypia (nuclei don't look like each other, different shapes and sizes) and increased mitotic rate.

Since the diagnosis of ameloblastoma is difficult, if we were late to diagnose it and found metastasis, pleomorphism or mitosis we call it ameloblastic carcinoma and its behavior is more aggressive than ameloblastoma.

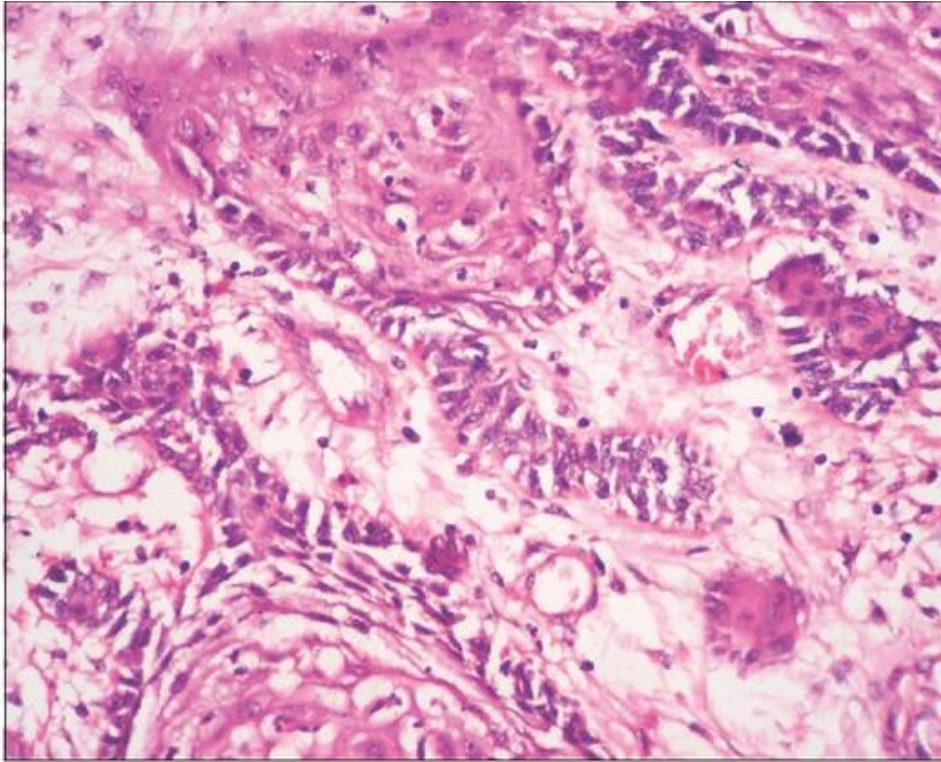


Figure 9: Ameloblastic carcinoma [features include pleomorphism and hyperchromasia]

Ps. these figures are for understanding purposes only, since the doctor was unable to include them.