Odontomes and Odontogenic tumours

Odontomes

- **Developmental hamartoma**

Hamartoma: normal tissue in abnormal location
Any cells to be neoplastic it must be able to replicate, which is not seen in hamartoma

- **Not neoplastic**

There are some lesion that has been considered as cystes. But nowadays they found this is wrong, since the cells in the wall of these cysts are capable to replicate.this is was profed by tagging certain genes. And so these lesions are considerd as neoplasm.
When a cell is capable to replicate this is a neoplasm, otherwise we either talking about hamartoma or cystic lesions.

- **Types:**

There are simple types and more complicated ones.

Simple types:

1- **Invaginated odontomes**

✓ <u>Coronal invaginated odontomes:</u>

Invagination that is continuous with the surface and that invagination is lined by enamel.
We know it clinically as **dens in dente.**
Most often in insicors usually in maxillary ones

- Normal layers of a tooth:

Enamel (most opaque)→ dentine (grayish) → pulp (almost black)

- Layers of dens in dente:

Enamel (most opaque) → dentine opacity → enamel lined layer (very opaque)
As if it's "A tooth within a tooth"

- Manifestation continuous with the surface:

We are worry about the pulp since there's a communication with the outside, and bacteria can easily reach the pulp. It's a hare entity to do root canal treatment for such teeth because there is enamel which need high speed so you can go through it and the enamel goes all the way in
and we have variable features:
Type I → small
Type II → even more
Type III → all the way

Pulp horn morphology is quite different also. All these make the endodontic treatment very challenging.

The smartest way to avoid all these problems is prevention, we follow up these patient very closely, make fissure sealant etc..
And if all this didn't work we try endodontic treatment. If it was so difficult then we will extract the tooth.

Histology:

1- Defective, hypomineralized enamel and dentine lining
2- Absent at base
3- Containing CT before eruption

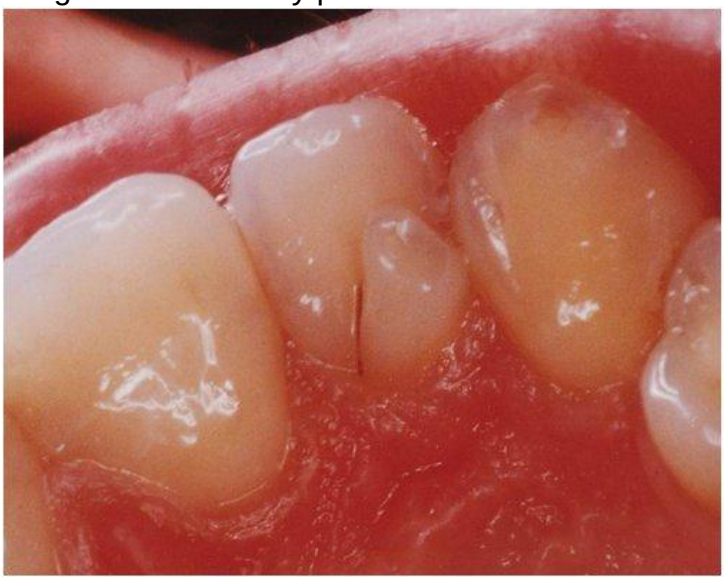
All this occurred during development of that tooth and the enamel organ trapped inside and creates enamel there.
(enamel organ resposible about enamel production)

- ✓ <u>Radicular odontome.</u>

Rare
Axial folding in the root
Lined by cementem or enamel.
Much much harder to deal with clinically

2- Evaginated odontomes

One of its' varians is "talon cusp"
Talon cusp:extra small cusp, most common in lateral incisors, and the cengulum will be very pronounced.



When this evaginated odontome present in incisor we call it talon cusp
But in other teeth we'll call it evaginated odontome.

- ✓ Manifestations:

Cause problem in occlusion
Enamel is not thick in these evaginations. They might fracture which may affect the pulp
Easier than invagination. We can do prophylactic endodontic treatment

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3- Enamel pearl

Enamel in bifurcation or trifurcation
Asymptomatic
We diagnose it by radiograph

It has no complications except when the patient is suffering from periodontal disease later on in life. Regeneration is more difficult because no fibrous attachment with enamel.

4- Compound and complex odontome

They become larger by age until reaching a fixed size
Seen in young people

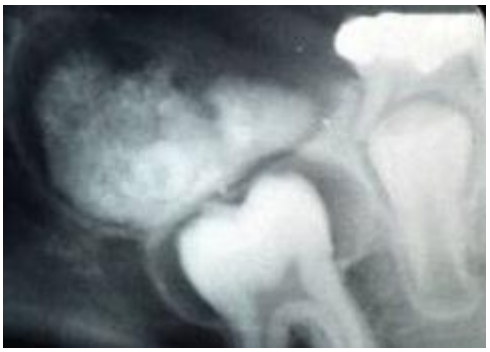
Types:

1. Compound:

This is a lateral canine projection of the left side. We have some sort of mixed density lesion. Radiopacity is similar to that of the tooth. They are small denticle type lesions.
When the shape of these small lesions is somehow look like a certain feature of normal tooth like cusp or crown we call this lesion compound

2. complex

When the shape is not similar to anything and haphazardly arrangement of enamel, dentine and cementum then we call it complex.



Clinically we can palpate then and look for expansion
Sometimes they present instead of an unerupted tooth

- **Histology:**

Compound

Enamel is not seen because it will be lost in decalcified sections. We just see dentine and pulp.

Complex

Haphazard arrangement

Odontogenic tumours

Bengin tumours

Locally aggressive. and we want to remove surgically we need to remove with a safety area. It's not enough to remove only the tumour cells.

We can classify it due to embryology

- 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 (keep in mind those are hamartomas)

- Mesenchymal:

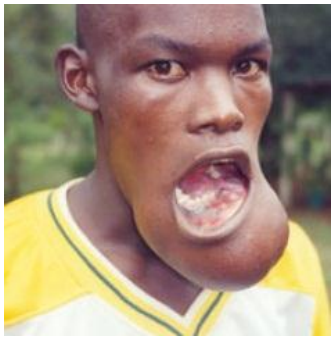
1. Fibroma
2. Myxoma
3. Cementoblastoma

Ameloblastoma

Most important
Most common benign odontogenic lesions

- **Clinically:**

1- Locally aggressive
2- Male>female
3- More in posterior mandible regions
4- Age range is slightly wide but commonly 40 years old
5- Slow growing
6- May perforate bone, affect teeth



This person won't walk around,

Radiographically:
Multilocular appearance (multiple compartments) "soap bubble appearance"
Sometimes come with impacted teeth

- **Histopathology:**

Many patterns

1- <u>Follicular pattern</u>

Multiple follicles (follicle = solid nest)
Peripheral cuboidal or columnar cells, central angular cells.

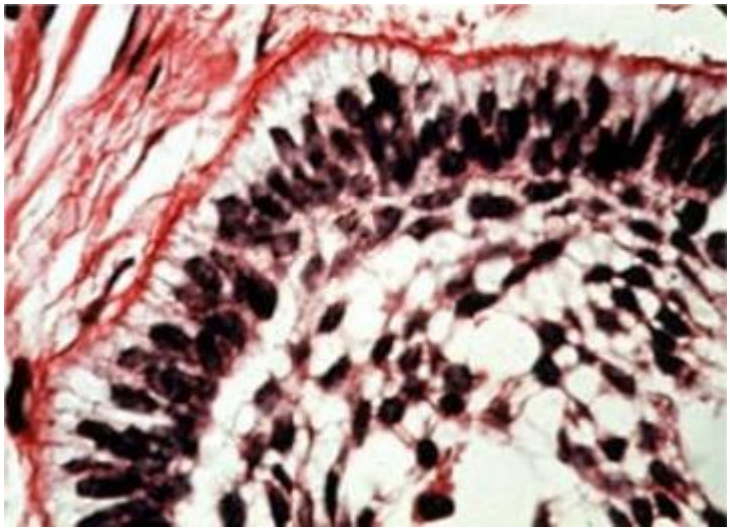
Embryologic origin of ameloblastoma:
Tooth bud (enamel organ)
It looks like a developing follicle but in incorrect time.

Dental epithelium (columnar, and has a very interesting feature: reverse polarity; all basal cells their nuclei are basally located except for dental epithelium, the nuclei are located apically)

In the middle there is Stellate like cells

Mutilocular feature result from cystic changes inside a regular ameloblastoma

Epithelial cells with reverse polarity → stellate like cells → cystic changes



If the Spaces in between are filled with squamous cells we'll call it acanthomatous cells
And if filled with granular cells this is called granular cell variant

2- <u>Plexiform pattern</u>

- Fishnet arrangement.
- Same cell layer as in follicular pattern
- Cystic changes here are bigger

Two variants:

1- Desmoplastic variant (filled with collagen)
2- Basal cell variant (filled with basal cells)

- **Behavior:**

1- Locally aggressive

2- Pulmonary metastasis

There are different theories about this. Some says that during removing this lesion, some cells had been inhaled and reach the lung causing ameloblastoma in the lung
Others say there is a malignant counterpart of ameloblastoma which cause this metastasis.
And both theories are very good working theories.

Unicystic ameloblastoma

- In young people
- In posterior mandible
- Unilocular
- Much less aggressive
- Come with impacted or developing teeth

Tooth → unilocular cystic space (filled with fluid) → capsule

We still see reverse polarity and stellate reticular cells but here they are on the wall not filling the spaces

- **Types:**

1- Intraluminal (neoplastic cells are pushed toward the cystic spaces)
2- Mural (neoplastic cells are filling the wall)

Curettage for intraluminal in enough for a management
While mural we treated as we treat the solid ameloblastoma

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