Odontogenic tumors

Odontogenic

Any tumor from the dental formative tissues or it's remnants

Its origin of cells from dental formative tissue like

What's the origin of odontogenic tumors؟

1. Enamel organ
2. Remnants of enamel organ (epithelium rests of Molasses and serres)
3. Wall of odontogenic cyst
4. Oral mucosa (rarely)

There type of cysts may make tumors like dentigerous cyst

Tumor

Purposeless over growth of tissue (Abnormal cell division)

Classification

Benign	Growth slowly don't affect the surrounding tissue and don't make metastasis
Malignant	Growth quickly, affect the surrounding tissue and make metastasis
Locally invasive	Features between benign and malignant

Note

Metastasis → distance spread it's also called secondary tumors

(Meta = change) + (Stasis = site)

Classification

A- Tumors of odontogenic epithelium without odontogenic ectomesenchyme

- (**Mesenchymal in odontogenic**) called **ectomesnchyme not mesenchymal** **because** mesnchymal need ectoderm to induction and function

B- Tumors of odontogenic epithelium with odontogenic ectomesenchyme

C- Tumors of odontogenic ectomesenchyme with or without included odontogenic epithelium

- Here we find epithelium but it's not a part of tumor it's just remnants of cells with the tumor
- But which make tumor its ectomesenchymal يعني هي شوية خلايا بس بشوفها معاه مش جزء منه

Tumors of odontogenic epithelium without odontogenic ectomesenchyme

اللى هناخدهم

1. Ameloblastoma.
2. Calcifying epithelial odontogenic tumor → CEOT or (Pindborg tumor)

الاسامى بس

3. Squamous odontogenic tumor.
4. Clear cell odontogenic tumor.

Ameloblastoma

Definition

Locally invasive epithelial odontogenic tumor, it is the most common, clinically significant odontogenic tumor.

Origin

It may arise from

1- Cell rests of the enamel organ.
2- From developing enamel organ.
3- Epithelial lining of odontogenic cyst.
4- Basal cells of the oral mucosa.

Types

We can classify according to the shape or behavior

Behavior mean tumor growth quickly or slowly or affecting the surrounding tissue or not or the recurrence rate

According to behavior there's two types

Intraosseous

Conventional solid or multicystic 86%

Conventional solid mean entirely tumor have cells there's no spaces

- multicystic mean tumor have spaces full by cystic fluid and between them cells
- conventional solid and multicystic have different shape but have same behavior
- Poor prognosis (زفت و طين)
- Low recurrence

Unicystic13% → Good prognosis

بشيلها على قد ال Tumor بتاعها لان ال Recurrence rate قليلة

Recurrence rate 10%-20%

Extraosseous

Peripheral Ameloblastoma 1%

Peripheral in pathology mean out of bone not in mandible or maxilla it's in soft tissue like gingiva or lip

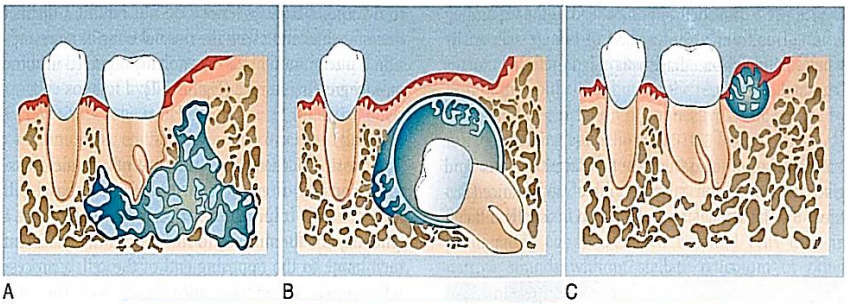
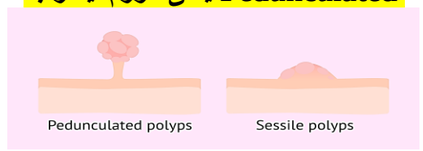


FIGURE 5-4
Ameloblastoma. Three clinical subtypes. **A,** Common (polycystic). **B,** Unicystic. **C,** Peripheral (extraosseous).

	Conventional solid or multicystic intraosseous ameloblastoma	Unicystic ameloblastoma	Peripheral ameloblastoma
Age	33 years	23 years	33 years
Sex	**Male = Female**		
Site	**Mandible (85%) > maxilla (15%)** Mandible → Molar and ascending ramus (Posterior region) Maxilla → Posterior region	1- May arise in the wall of an dentigerous cyst 2- May be not related to a cyst	1- Posterior gingival or alveolar mucosa. 2- Buccal mucosa (Rare , not into bone) (Mandible > Maxilla).
Signs and symptoms	1- Painless swelling or expansion of the jaw. (Slowly growing) (Tumor is growing faster than bone) 2- Tooth movement or malocclusion may be seen. 3- Egg-shell crackling may occur in late stages. موضع سؤال **يعني ال cortex فضل يرفع لغاية ما يبقى زي قشر البيض اجي اضغط على ال swelling هلاقيها بتطلع صوت طرقعه لان ال bone اتكسر**		1- Painless. 2- non-ulcerated. 3- Sessile or pedunculated gingival or alveolar mucosal lesion. **These symptoms are non-specific**
X-ray	**Solid type** → unilocular radiolucency with irregular scalloping margins. **Multicystic type** → multilocular radiolucency which is described as : 1. Soap bubble رغاوى صابون if the loculi are large. 2. Honey combed خلايا النحل if the loculi are small. ❖ Resorption of the roots of the involved teeth. ❖ May be associated with an impacted tooth (usually 3rd molar). 	❖ Circumscribed radiolucency that may surround the crown of an unerupted 3rd molar. ❖ Well defined radiolucent area	**يعنى الورم مالوش رقبة (زعراء) لكن Sessile** **يعنى الورم لية رقبة Pedunculated** 
Treatment and prognosis	❖ Treatment ranges from simple enucleation يعني هشيل على قد الورم and curettage بقشر العظم to en bloc resection بشيل العظم كله ❖ It tend to infiltrate between intact cancellous bone trabeculae at the periphery of the lesion before bone resorption becomes evident in x-ray. ❖ So treatment by curettage leave small islands of the tumor which → high recurrence rate (55 – 90%). ❖ Marginal resection is the most widely used treatment, it is done 1.0 cm past the radiographic limits of the tumor. ❖ It is persistent infiltrative tumor that may kill the patient by progressive spread to involve vital structures.	❖ Enucleation, long term follow up. ❖ Recurrence rate 10-20%.	❖ Local surgical excision. ❖ Recurrence rate 20-25%.

Microscopic picture (according to the shape) موضع سؤال

Has two major types

1- Follicular.
2- Plexiform.

Microscopical subtypes

يعني الست انواع اللي تحت ممكن اي نوع من اللي فوق ال follicular او ال plexiform تبقى فيها اي نوع من الستة اللي تحت

1- Acanthomatous.
2- Granular cell. 3- Basaloid. 4- Desmoplastic. 5- Hemangio ameloblastoma. 6- Cystic.

يتبقى نوع عادي من ال cyst لكن هلاقي ال ameloblastoma تحت في ال Connective tissue وسط ال fibroblast and collagen fibers

ده اخطر نوع فيهم هيجي سؤال mcq لان لو شيلت الاتنين اللي قبلها بالجراحة هشيل كل ال tumor لكن هنا هشيل و هسيب حتة في ال Connective tissue فال follicles هترجع تعملي recurrence تاني

➔ The fibrous wall of the cyst is infletrated with typical follicular or plexiform ameloblastoma.

Luminal ameloblastoma

One follicle اكنها cyst ال يعني كل

❖ The tumor is confined to the luminal surface of the cyst

Intraluminal ameloblastoma

كأنها cyst عادي لكن هلاقيه عامل كولكيعه جوه ال follicular ممكن الاقي جواه nodule او cavity او ال plexiform ameloblastoma

❖ One or more nodule of ameloblastoma project from the cyst linning into the lumen.

Mural ameloblastoma

1- Islands of ameloblastic epithelium in the lumina propria under the epithelium
2- Have the same variants as intraosseous ameloblastoma.
3- There may be connection of the tumor cells with the basal layer of the surface epithelium.

H/P of conventional solid or multicystic ameloblastoma

Two main types

Follicular type	**Composed of islands of tumor cells similar to enamel organ.** **شكل الكور ال follicle دي بتبقى شكل ال enamel organ** a. Outer layer of columnar cells similar to ameloblasts with reversed polarity. **خاصية مش موجوده في حاجة تانية في ال pathology ان ال nucleus بتاعتها ليها reversed polarity ال nucleus ناحية ال apex مش ناحية ال base** **تحت في ال basal layer of cell بيبقى فيه vaculation زي فراغات ورغاوي** b. Central loosely arranged stellate cells similar to stellate reticulum. c. C.T. (fibroblasts – collagen fibers – blood vessels).
Plexiform type	**Strands of od. epithelium forming network** **يعني خيوط متشابكة مع بعضها زي الضفاير** a. Outer columnar cells with reversed polarity. b. Central stellate cells which are loosely arranged. c. C.T.

Subtypes

Acanthomatous	**May be confused with squamous cell carcinoma or squamous odontogenic tumor** **لونها احمر الخلايا بدل ما هي stellate هتتحول لخلايا بدل ال stratified زي ال squamous epithelium ودي بتكون cells of oral epithelium متكون في وسط الخلايا keratin** **كلمة acanthomatous جاية من كلمة ال acanthosis ال epi of oral يعني زيادة عدد ال squamous لما يتخن بقول عليه acanthosis mucosa cells layers**
Granular cell type	**The central cells show eosinophilic cytoplasmic granules which seem to be lysosomes under E.M.** **خلايا كبيره وجواها نقط حمراء تتحول الى خلايا rounded و oval كبيره وال cytoplasm بيبقى احمر و granular يعني منقط**
Basaloid type	**a. Central cells are rounded** **b. Peripheral cuboidal cells.** **Basal cell carcinoma زى ال**
Desmoplastic	**In the anti-region of the maxilla.** **حصل proliferation في ال fibroblast بتاع ال CT وعددها زاد فبقت تاخد التغذيه كلها ومفيش تغذية لل follicle فحصلها atrophy وبقت compressed بال CT** a. Densely collagenized stroma. b. Small islands and cords of odontogenic epithelium **Desmoplasia → Fibers cell formation**

Hemangio ameloblastoma	**Mean have relation to blood** ❖ Occur in the plexiform type. ❖ Large blood filled spaces in C.T. stroma (may be microcysts or macrocysts)
Cystic	a. In the follicular type → occur in the follicles b. In the plexiform type → occur in the stroma. **ممكن تبقى micro او تبقى macro والـ micro ممكن تقلب macro**
Malignant ameloblastoma and ameloblastic carcinoma	**The malignant behaviour of ameloblastoma is identified when there is → aggressive course and / or metastasis.** **لما يطلب منا اشكال الـ ameloblastoma تحت الميكروسكوب منساش دي بتبقى multiple layer وهلاقي فيها الـ signs of malignant** **Malignant ameloblastoma** Both 1ry jaw tumor and the metastatic deposites are similar histologically to the typical ameloblastoma (benign). **يعني بتقلب بال behavior بس يعني تدي metastasis لكن الخلايا بتاعتها تحت الميكروسكوب هي folicular and plexiform في الحالة دي بتحتفظ بالاسم بتاعها قلت malignant لانها ادت metastasis لكنها تحت الميكروسكوب زي الـ benign** **Ameloblastic carcinoma** The metastatic deposits or the 1ry tumor reveal microscopic features of ameloblastoma + cytologic features of malignancy e.g: 1- ↑ nuclear cytoplasmic ratio. 2- Nuclear hyperchromatism. 3- ↑ and abnormal mitotic figures. **واحد حصلة metastasis وخدنا العينة دي وشوفناها تحت الميكروسكوب لقينا فيها الـ signs of malignancy or dysplasia**

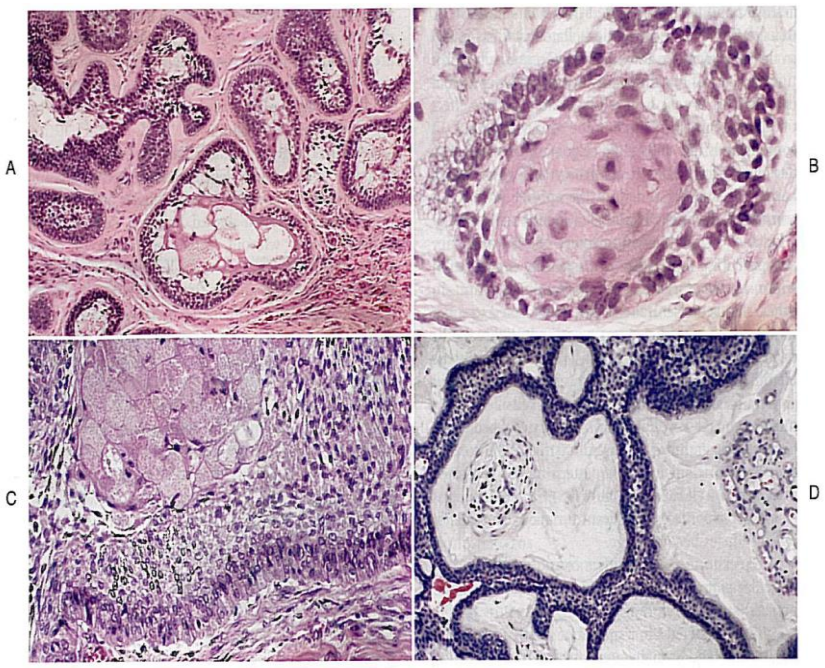


FIGURE 5-9
Ameloblastoma. Microscopic features of various histologic patterns. **A,** Follicular. **B,** Acanthomatous. **C,** Granular cell. **D,** Plexiform.

Calcifying epithelial odontogenic tumor → CEOT or (Pindborg tumor)

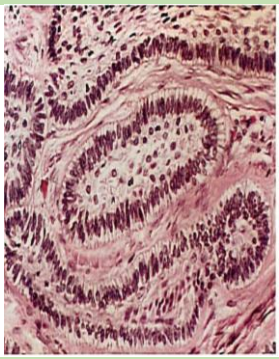
مهم جدا تعرف ال ٣ اسامى موضع سؤال مهم جدا

Age	40 years (Male = Female)
Site	Central → mandible (molar and ramus area). Peripheral → gingiva **يعني بره العظم**
Signs and symptoms	1- Asymptomatic. 2- Only painless swelling. **3-** Usually associated with an unerupted tooth. **dentigerous cyst زي ال**
X-ray	**Well circumscribed unilocular radiolucency** ❖ Radiopaque foci may be found → Driven snow appearance. **هيبان حتت بيضاء في وسط الحتة ال radiolucent بسبب ال calcification يعني بيبان** **حاجة اسمها snow flex يعني زي قشور حتت بيضاء في وسط ال radiolucent**
Differential diagnosis	**ممكن تتلخبط مع ال cystعلشان فيها حتت فيها radiolucent area** **If with radioopacities** 1- AOT. 2- Ossifying fibroma. 3- Ameloblastic fibnroodontoma. **If with no radioopacities** **1- Dentigerous and keratocyst. 2- Ameloblastoma. 3- myxoma.**
Treatment and prognosis	❖ Has invasive potentiality. **في حالات منه invasive و locally invasive زي ال ameloblastoma** ❖ Enucleation **يعني هشيل على القد** ❖ Resection **يعني اشيل ب safety margin ب 0.5 or 1cm**
Histological pathology سؤال مهم جدا	❖ Sheets of polyhedral epithelial cells with pleomorphic nuclei. **الخلايا فيها variation in size وال nucleus نفس الكلام** **يعني الخلايا مختلفة في احجام و اشكال الانوية بينها وبين بعضها** **والخلايا بينها وبين بعضها الdesmosomes ودي ال junction ما بين خلية و خلية** ❖ It may resemble adenocarcinoma. ❖ Intercellular bridges are prominent. ❖ Homogeneous eosinophilic substance is a chch. Feature (amyloid, + ve for congo red). **مادة حمراء ما بين الخلايا وال amyloid يعني نشا ال amyloid بيتصبغ بصبغتين نحفظ** **الكلام ده كويس الصبغة الاولانية اسمها congo red و thioflavin t ودي fluorescent** **fluorescent stain** **فيه خلايا في الصور فيها اكتر من nucleus بيبقى فيها mitosis** ❖ Calcification may occur in the amyloid material and called liesegang rings. (MCQs) **بتبقى حاجة زي الكنافة بتبقى amyloid مترسب فيها Ca فحصل فيها calcification وال** **calcification ده على هيئة concentric layers of calcification اتسمت على اسم اللي** **اكتشفاها ودي من ضمن الحاجات ال characteristic اوي في التشخيص بتاعة** **هو مش malignant هو benign tumor وفي بعض الحالات فيه locally invasive بس هو** **malignant مش benign بيتصنف ان هو**

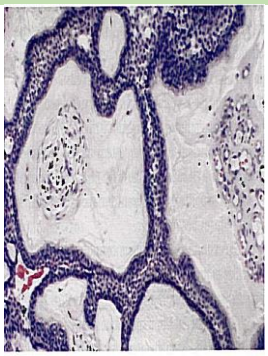
يبقى ال H/P تبقى خلايا Polyhedral ليها اشكال مختلفة واحجام مختلفة والانوية بتاعتها اشكلها واحجامها مختلفة وفيها mitosis لدرجة انها ممكن تتلخبط مع ال malignant tumor وفيها ماده حمراء ما بين الخلايا بتقى homogenous or amorphous يعني structurelessالمادة الحمراء دي amyloid يعني نشا بتتصبغ بصبغتين صبغة عادية اللي هي congo red وضبغه thioflavin T fluorescent stain ممكن يحصل فيها classification على هيئة concentric rings بنسميها liesegang rings

Atlas

Follicular

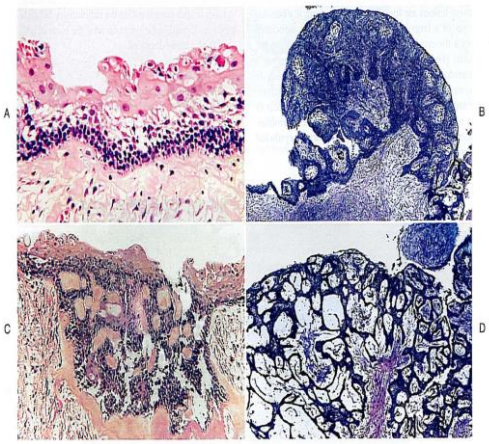


Plexiform

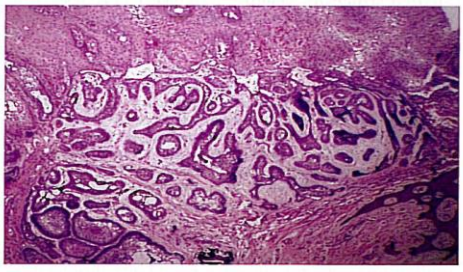


Unicystic ameloblastoma

Unicystic ameloblastoma. Microscopic features of typical lining exhibit features of ameloblastoma **(A)**, intraluminal papillary projection **(B)**, intracapsular mural penetration **(C)**, and the plexiform pattern sometimes found **(D)**.



Peripheral ameloblastoma



(الموبيل سيلنت يا عيال – كلكم كسوفة كدا لية جرى اية يا ولاد)