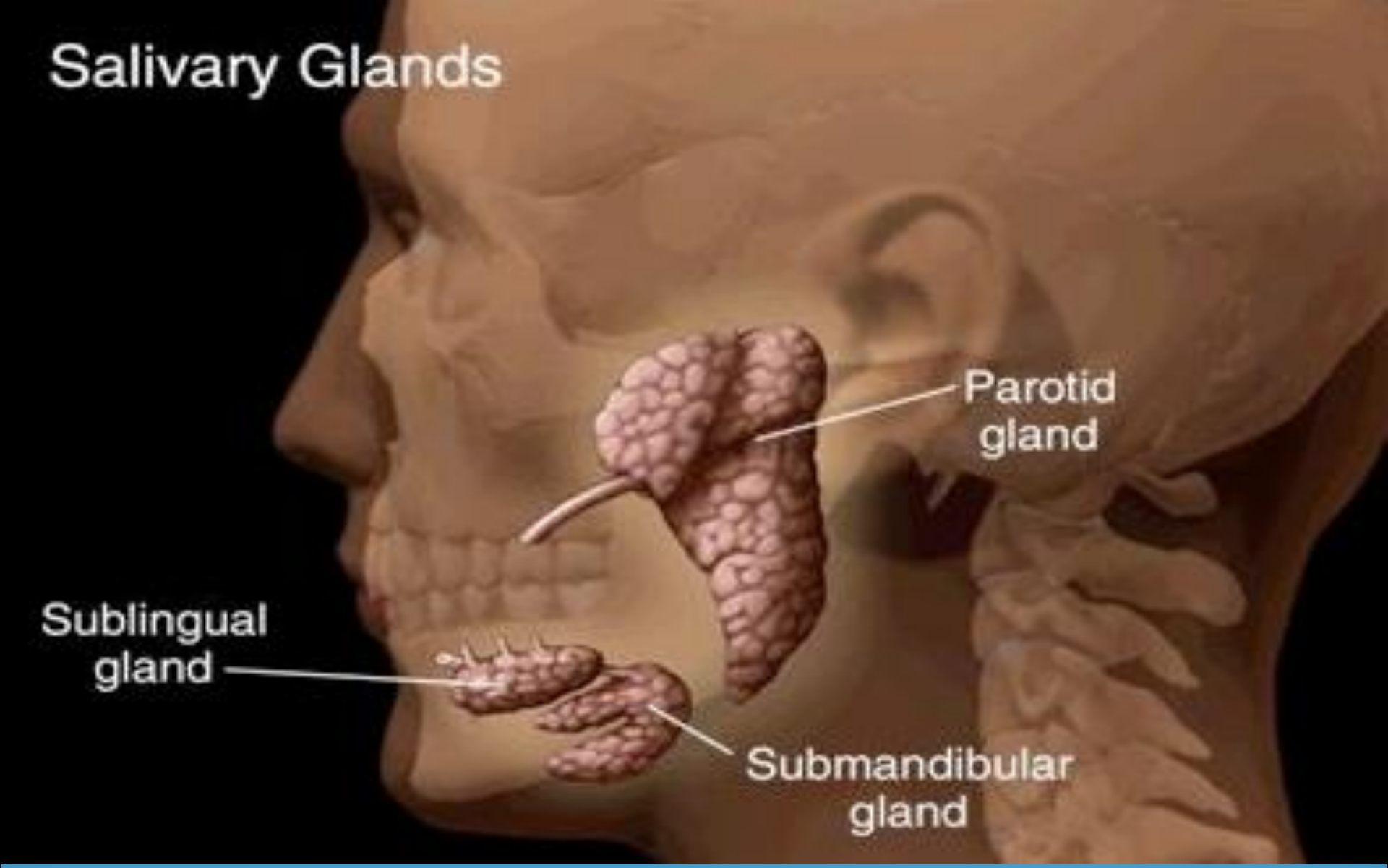


Salivary glands pathology.

Salivary glands pathology.

Microspecimens:

№ OP32. Mucocele of the salivary gland. *(H-E. stain).* **Indications:**
1. Mucinous material with macrophages.
2. Fibrous capsule.

Microscopically, in the chorion of the oral mucosa or in the submucosa, a basophilic, mucinous material is observed, in which macrophages with foamy cytoplasm float and which is surrounded by granulation tissue, which over time turns into a fibrous capsule. Because it is not bounded by an epithelium, the mucocele is not a true cyst.

Macroscopically, it appears as a well-defined, fluctuating node, which protrudes to the surface, with dimensions between 1 millimeter to a few centimeters, the surface smooth, transparent, bluish.

Mucocele occurs in the minor salivary glands, being located most frequently in the lower lip, but can also occur in the jugal mucosa, ventral part of the tongue, as in the sublingual region, practically wherever there are minor salivary glands. It occurs mainly in children and young adults. It is due to the interruption of the continuity of a salivary duct, most frequently following a trauma, resulting in the elimination of the secretion product in the surrounding stroma.

№ OP35. Sjögren syndrome. *(H-E. stain).* **Indications:**

1. Lymphoid infiltrate.
2. Interstitial fibrosis.
3. Atrophied salivary acini.

Microscopically, a diffuse inflammatory lymphocytic infiltrate is observed, which causes the destruction of salivary acini. However, the duct epithelium persists in the form of islands surrounded by myoepithelial cells, these islands being called epimioepithelial islands. Biopsy of the minor salivary glands in the lower lip is an important element in the diagnosis of Sjögren's syndrome, as it can highlight an abundant lymph-plasma inflammatory infiltrate and thus avoid biopsy of the major salivary gland affected.

Sjögren's syndrome is a systemic, chronic autoimmune condition that mainly affects the salivary and lacrimal glands, so it is associated with xerostomia and xerophthalmia. It occurs especially in adult women (the first symptoms appear around the age of 50) and more frequently affects the parotid gland. Clinically, patients have swelling that is bilateral and symmetrical, due to xerostomia (caused by decreased salivary secretion) multiple caries, periodontal lesions, as well as Candida infections of the oral cavity. Due to xerophthalmia (caused by decreased tear secretion) kerato-conjunctivitis occurs.
In patients with Sjögren's syndrome, the risk of developing lymphoma of the salivary gland is increased.

№ 202. Adenolymphoma (Warthin tumor) of the parotid gland. *(H-E. stain).* **Indications:**

1.Papillary structures lined by columnar epithelium.
2.Stroma with dense lymphocytic infiltrate.
3.Cystic spaces.

Microscopically, the tumor has a capsule at the periphery and is made up of cystic spaces delimited by a bilayered epithelium, in some places with papillary growths. There is lymphoid tissue in the surrounding stroma. The epithelium is represented, in the luminal portion, by columnar, oncocytic cells, with palisade of ovoid nuclei, located centrally or at the apical pole. The cell cytoplasm is intensely eosinophilic, finely granular, with distinct cell margins. The granular appearance is due to the high content in the mitochondria. The lumen of the cysts contains a characteristic secretion, with cellular detritus and luminal corpuscles similar to amylaceous bodies. Below and between the columnar cells there are basaloid cells, less obvious and smaller, cubic or triangular in size, with a vesicular nucleus. The epithelium forms papillae of various sizes and shapes, oriented towards the cyst lumen. The fibro-vascular connective tissue forms the stroma of the papillae and contains an abundant lymphoid tissue, composed of small, uniform lymphocyte cells. The proportion between the epithelial and lymphoid elements varies from one tumor to another or even in the same tumor.

Macroscopically, the tumor has a spherical or ovoid shape, well circumscribed by a thick capsule, if not inflamed, with dimensions of 2-4 centimeters or larger. Numerous cysts with a brown, clear or mucoid fluid content appear on the section surface.

№ 196. Pleomorphic adenoma of salivary gland. *(H-E. stain).* **Indications:**

1. Epithelial structures (ducts, clusters of cells).
2. The chondroid component of the tumor.

Microscopically, it can have very varied aspects, with the presence of both epithelial structures and mesenchymal structures. The ratio between the two components is variable. Epithelial cells can be cuboidal, squamous, basaloid and oncocytic, while myoepithelial cells can have a fusiform and platelet appearance. The cells are uniform, with small or absent nucleoli. Tumor cells have a very varied architectural arrangement, from one tumor to another, but also within the same tumors. Thus, ductal or tubular structures may appear, associated with the presence of anastamotic trabeculae, solid bands or microcystic structures. The mesenchymal component is arranged among the epithelial elements, being formed by connective tissue, hyaline, mixoid, chondroid or bone.

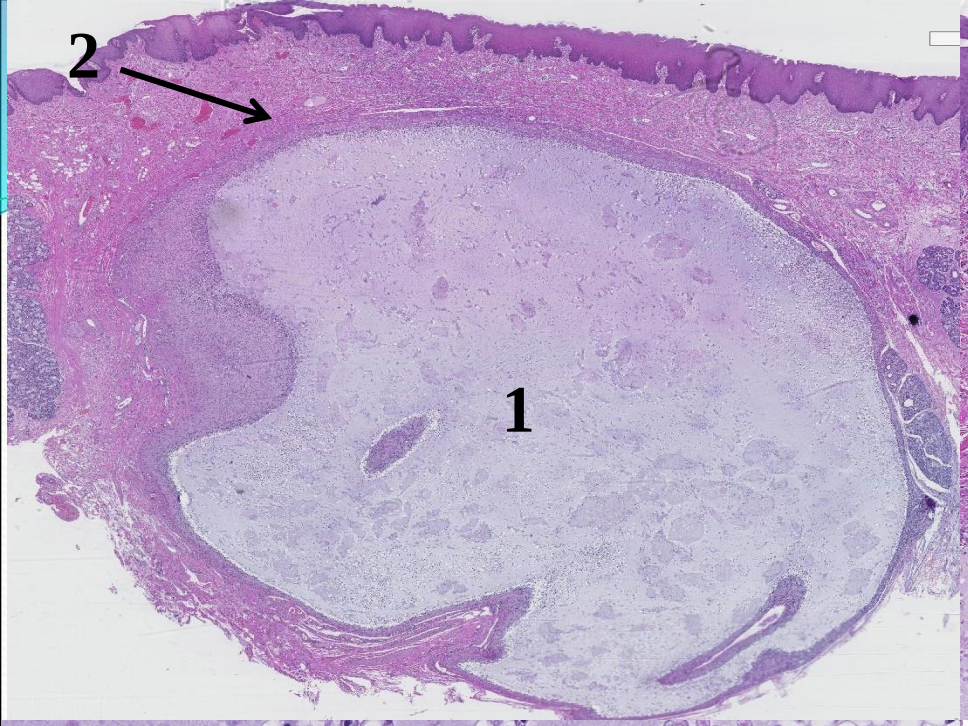
Macroscopically, the tumor appears as a round or oval formation, sometimes with an irregular surface, but always well delimited. In the major salivary glands, the tumor is delimited by a fibrous capsule, sometimes incomplete and of variable thickness, while in the minor glands, the tumor is not encapsulated. On the section surface, the tumor is homogeneous, gray or white, with translucent areas, where cartilaginous tissue appears. Sometimes outbreaks of bleeding or heart attack may occur, especially after a biopsy, puncture, or previous surgery.

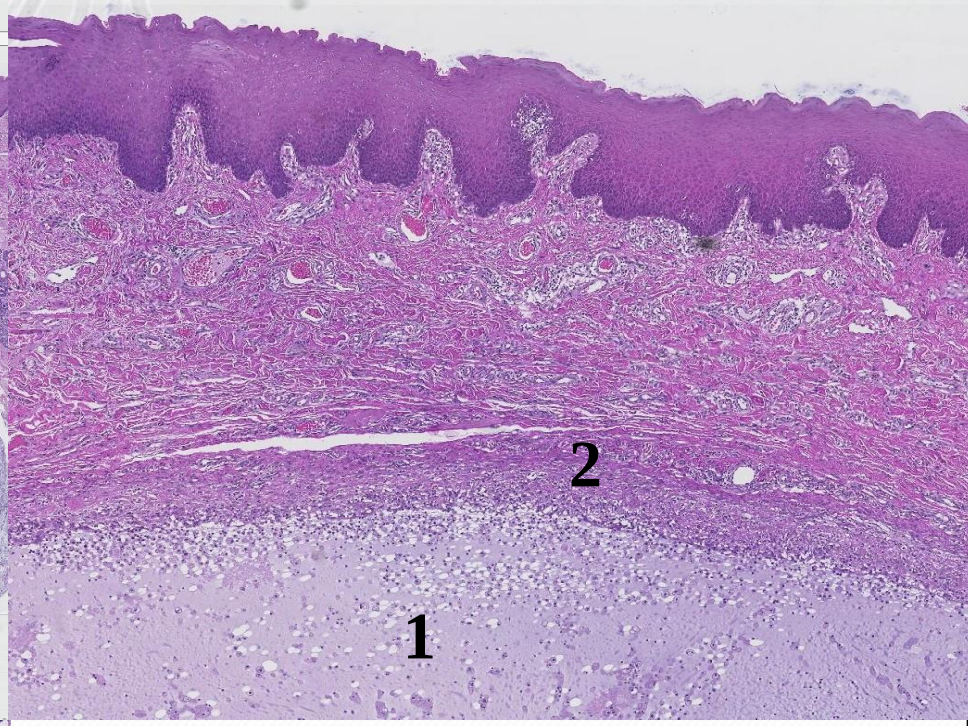
№ OP39. Mucoepidermoid carcinoma of the salivary gland. *(H-E. stain).* **Indications:**

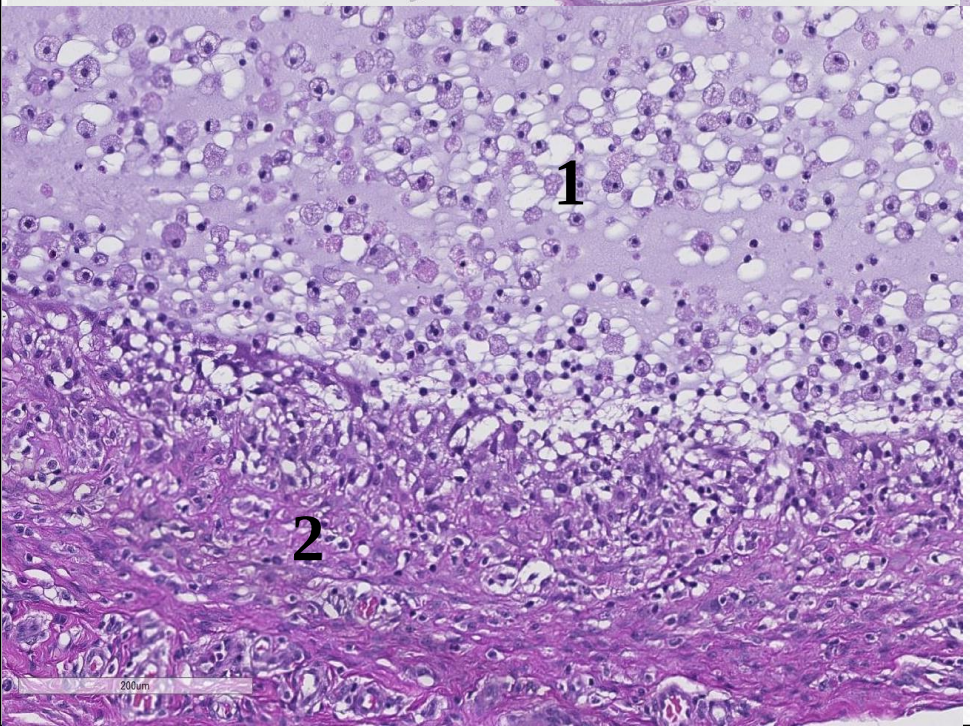
1. Tumor node:
   a. atypical tumor cells;
   b. cystic cavities;
   c. connective tissue stroma.
2. Unchanged glandular tissue.

Microscopically, mucoepidermoid carcinoma is actually a mixed, squamous cell carcinoma (squamous) and mucosecretory. Mucous cells are neoplastic cells, which vary in size, with abundant foamy cytoplasm, which contains mucin. Often mucin is evident only with special colors (blue-alcian or mucicarmine Mayer). The epidermoid cells are polygonal, with eosinophilic cytoplasm and round, vesicular nuclei. These cells do not form keratin beads. Between the two types of cells there is also the third type of intermediate cells, considered precursor cells of mucosal and epidermoid cells. The three types of cells can be arranged in the form of cystic plaques or cavities. Mucoepidermoid carcinoma is graded according to the proportion of cystic structures, cell atypia, the presence of perineural invasion, necrosis and the number of mitoses. According to these parameters, three degrees of malignancy are obtained: mucoepidermoid carcinoma with a low degree of malignancy (with a high number of cysts, minimal cell atypia and a large number of mucous cells), with a high degree of malignancy (predominantly consisting of solid areas, with rare mucous cells, with pleomorphism and numerous mitotic figures), and with an intermediate degree of malignancy (with features characteristic of both low- and high-grade tumors).

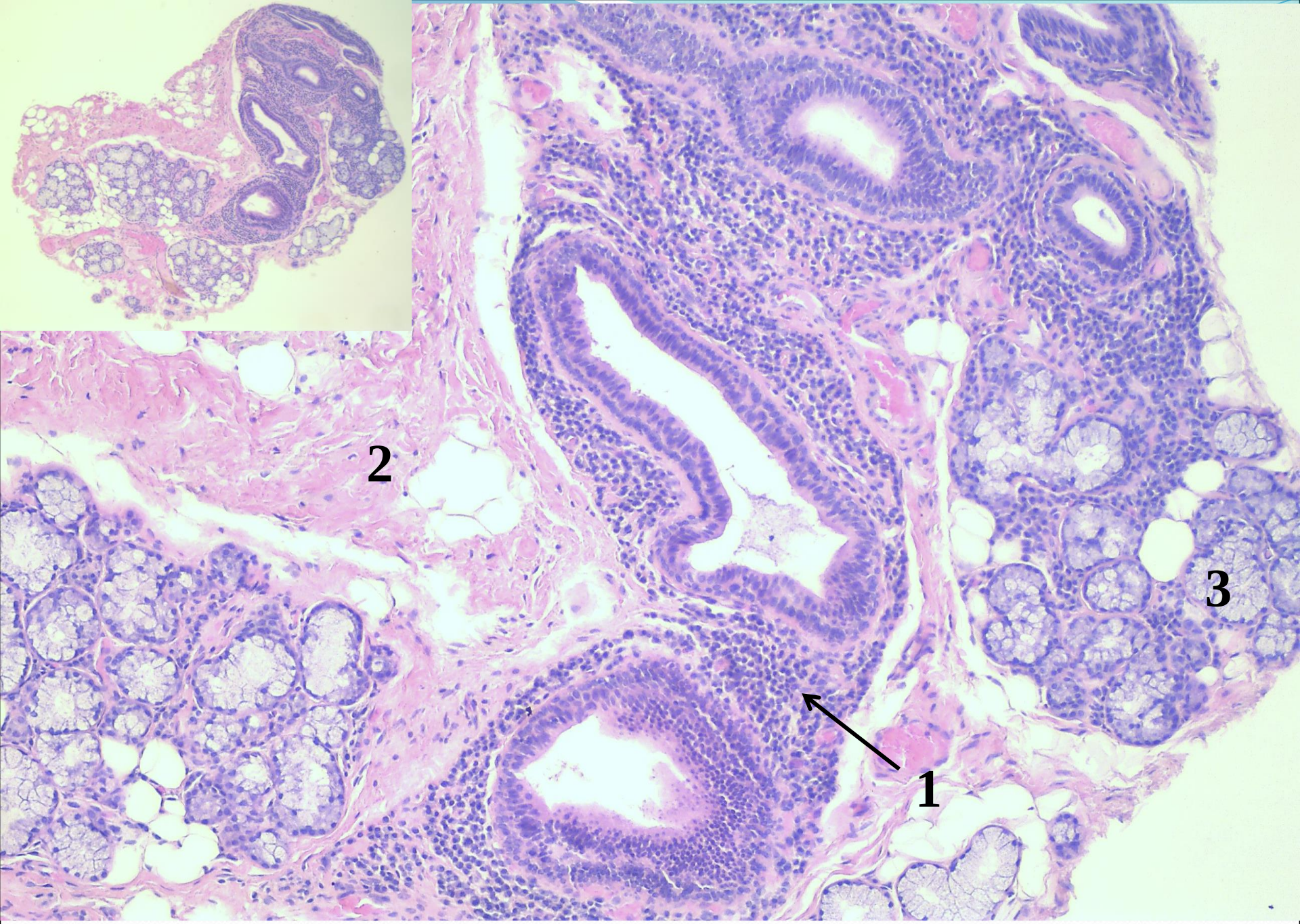
Macroscopically, mucoepidermoid carcinomas are sometimes circumscribed and only partially encapsulated, except for tumors with a high degree of malignancy. On the section surface are yellowish, firm gray tumors. Cysts, with various shapes and sizes, with a viscous or hemorrhagic content, are frequently observed. The diameter of the tumor varies between 1 and 12 centimeters.



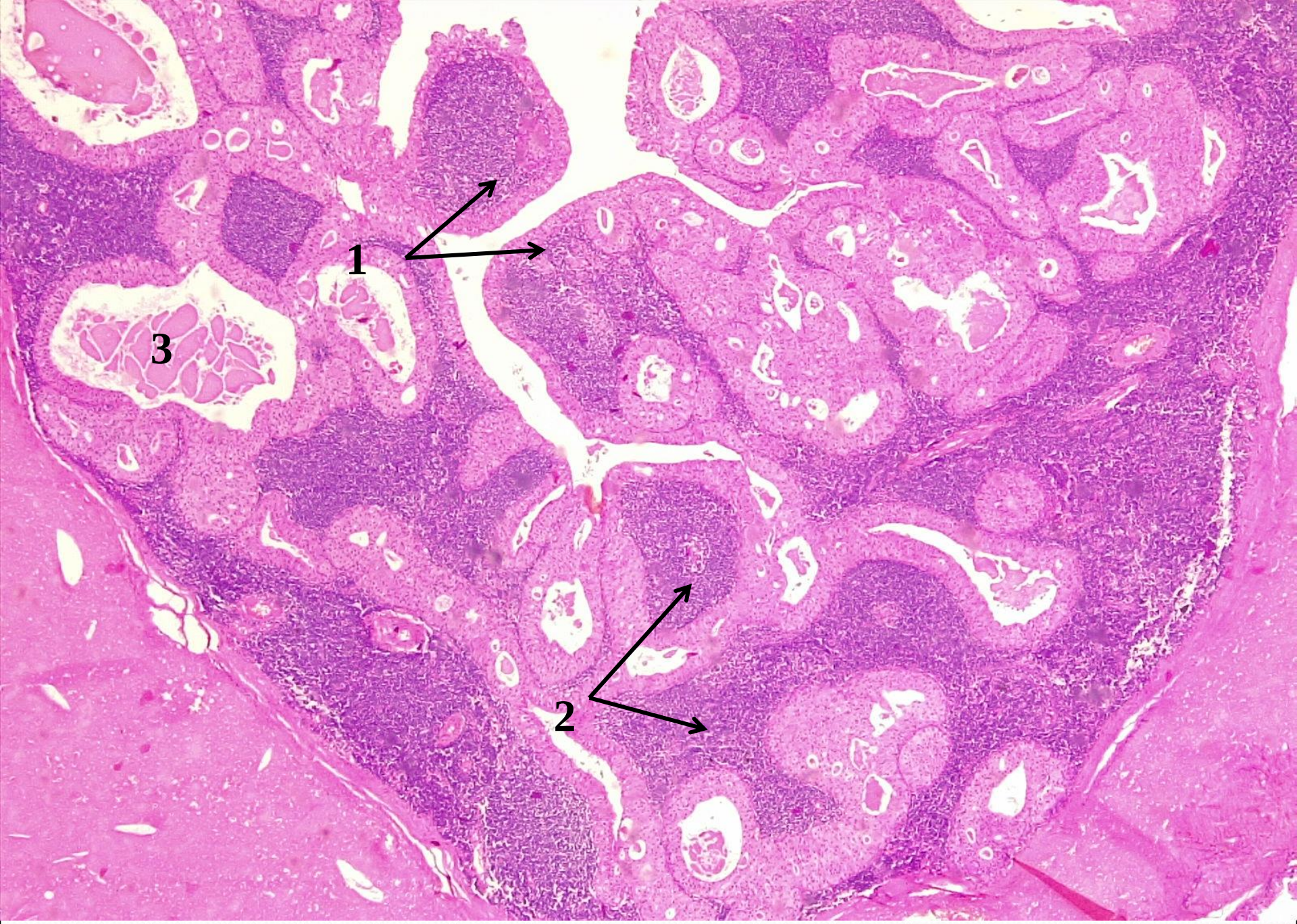




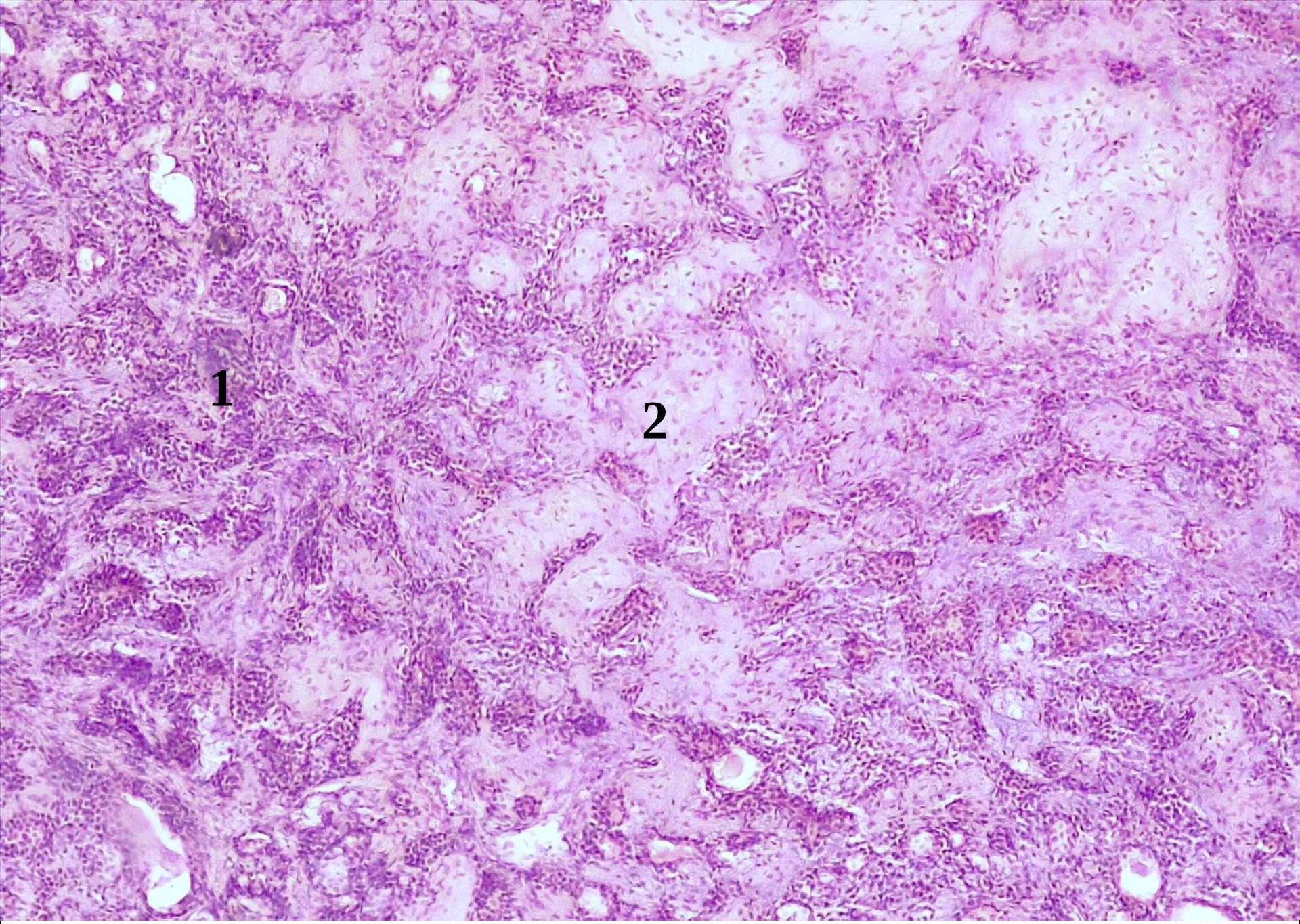
№ OP32. Mucocele of the salivary gland.
(H-E. stain).



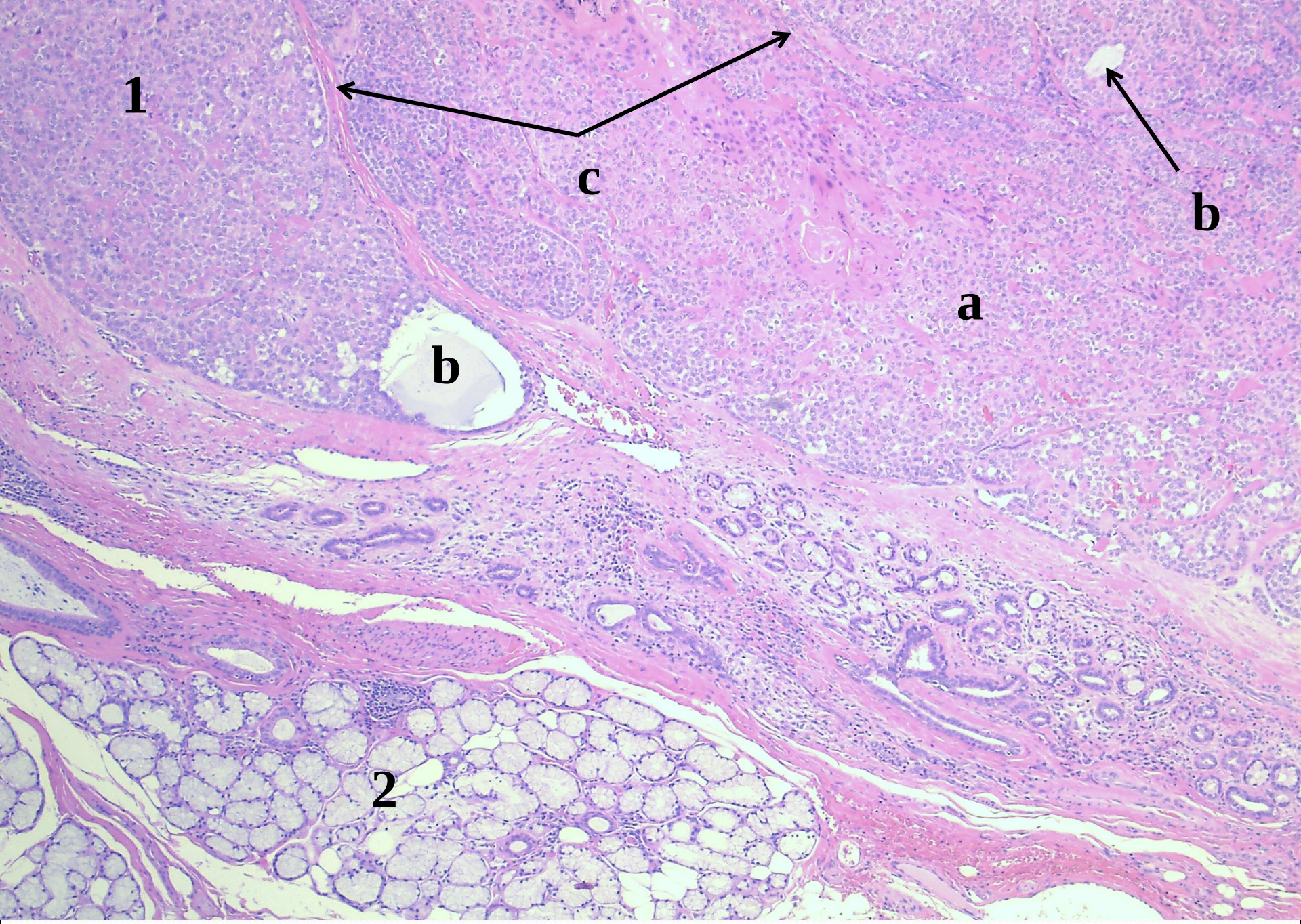
№ OP35. Sjögren syndrome. *(H-E. stain).*



№ 202. Adenolymphoma (Warthin tumor) of the parotid gland. *(H-E. stain).*



№ 196. Pleomorphic adenoma of salivary gland. *(H-E. stain).*



№ OP39. Mucoepidermoid carcinoma of the salivary gland. *(H-E. stain).*

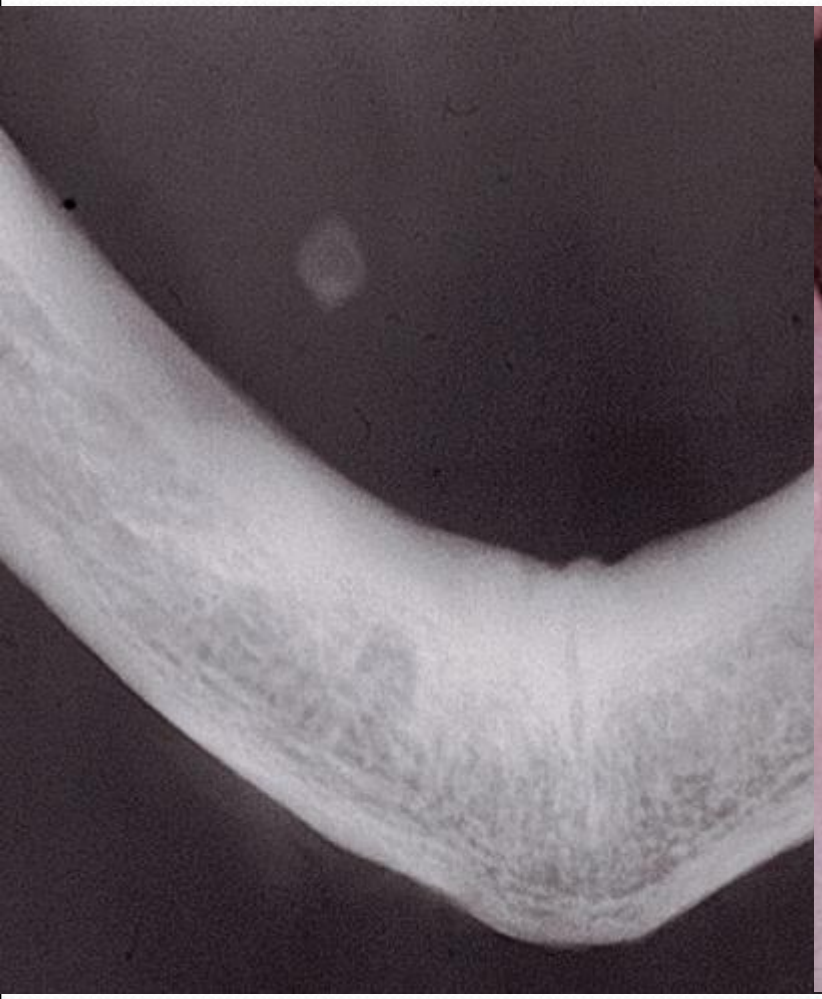
Salivary Gland Lesions

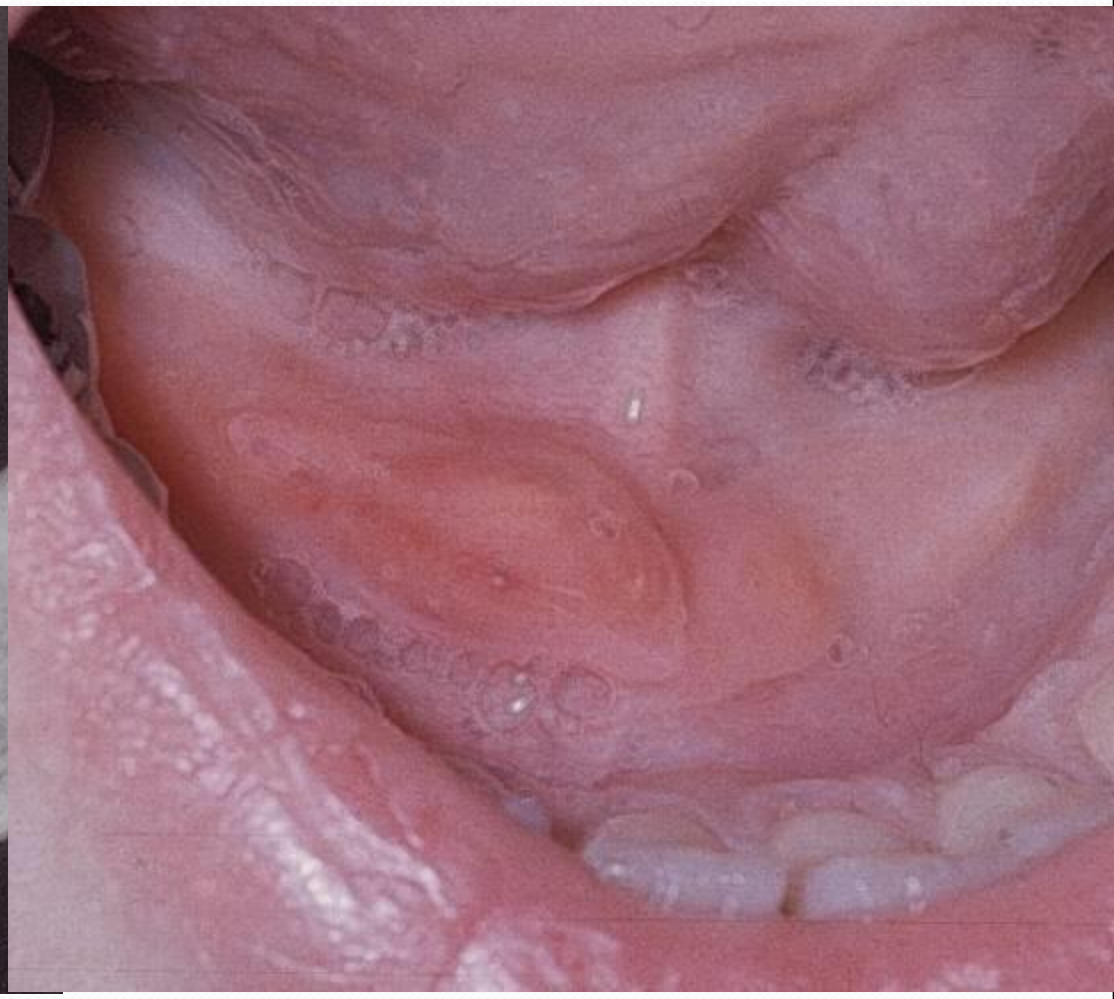
- Obstructive – retention
  - Sialolithiasis
  - The phenomenon of extravasation of mucus
    - Mucocele
    - Retention mucosal cyst
- Infectious
  - Viral
  - Bacterial
- Immunological
  - sarcoidosis
  - Sjögren's syndrome
- Tumor
  - benign
  - malignant

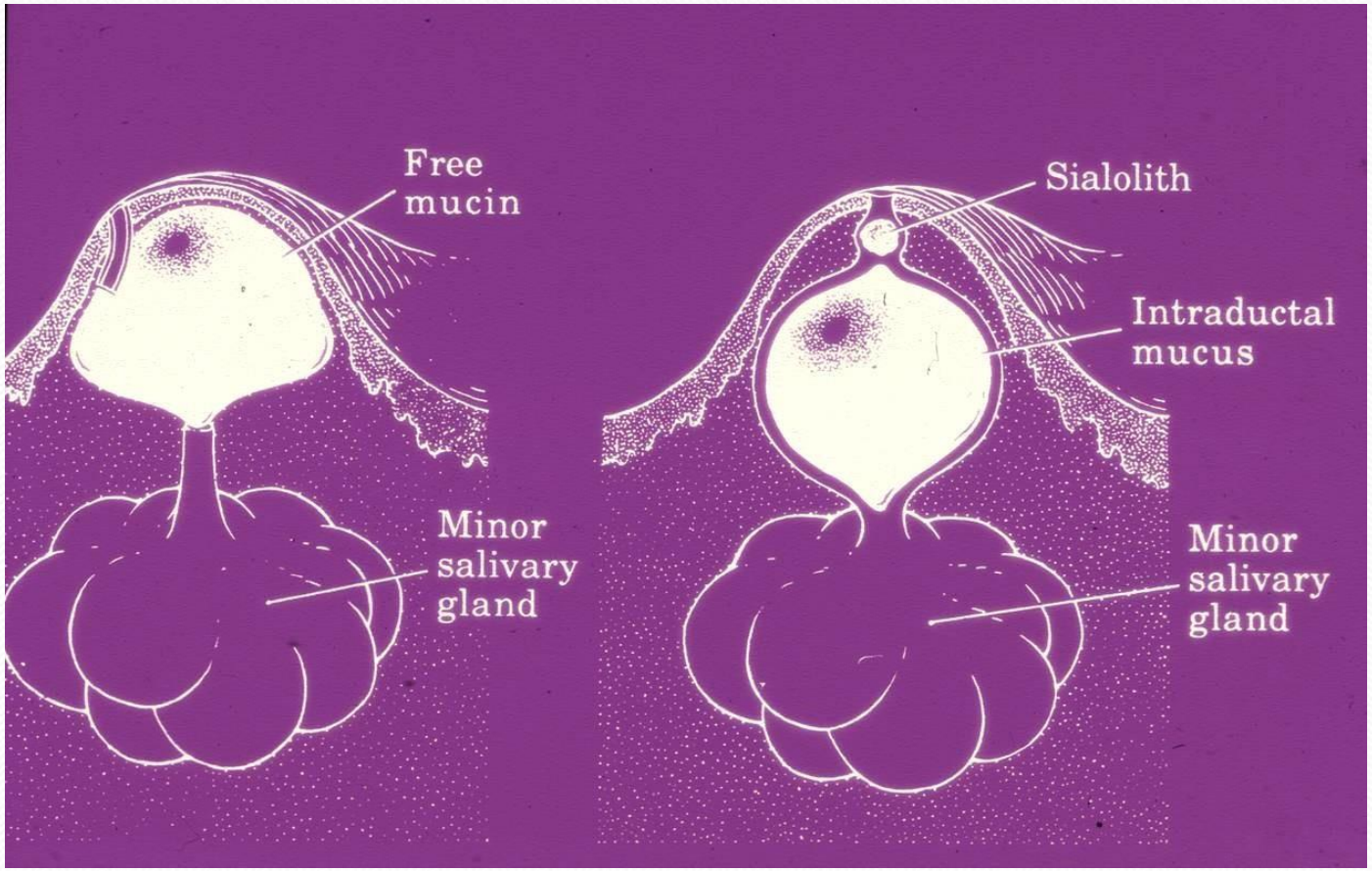
Sialolithiasis

- Formation in the gland, more often in its ducts of concrements
- Among the local causes in the formation of concrements:
- hypoplasia, saliva stagnation, alkalization, inflammation of the ducts.
- Stagnation of saliva contributes to the formation of stones by the deposition of superconcentrated salts on an organic basis - the matrix (desquamated cells, microbes).

Sialolite in the anterior region of the buccal floor



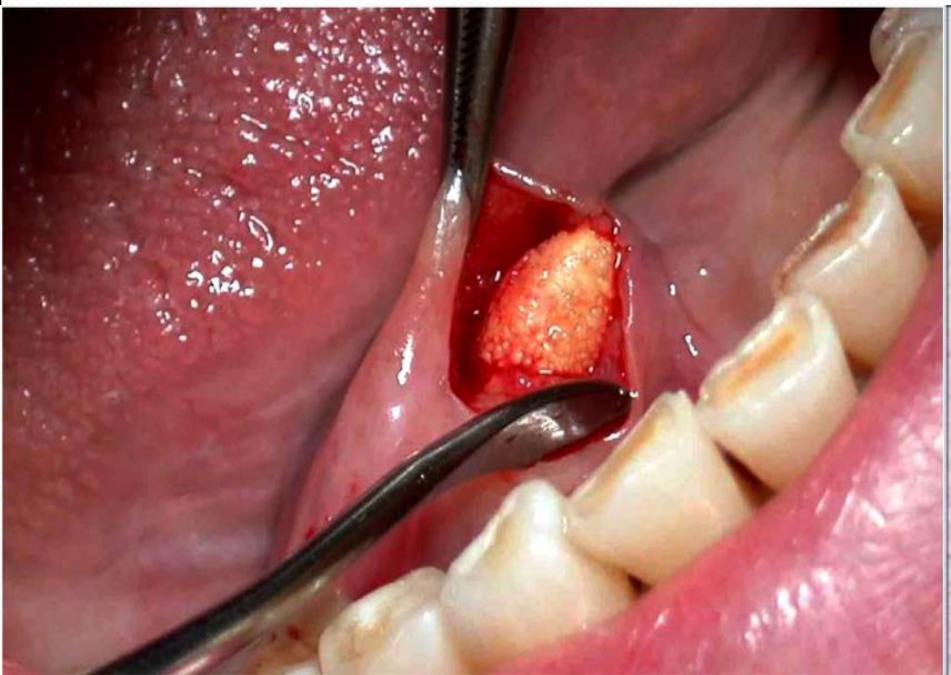


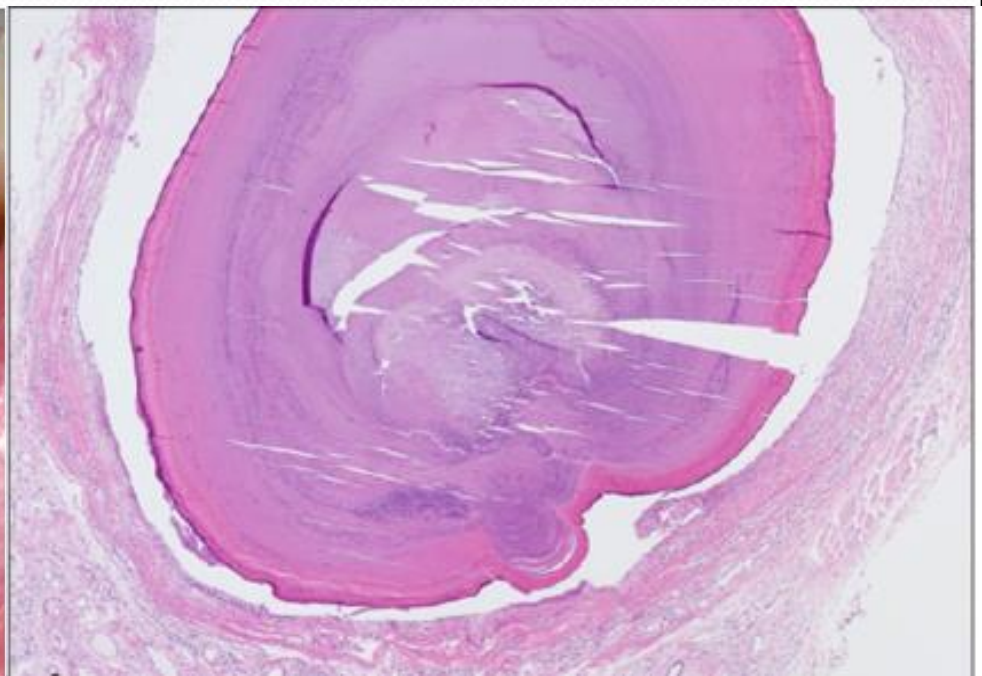

Free
mucin
Minor
salivary
gland
Sialolith
Intraductal
mucus
Minor
salivary
gland

Sialolithiasis

- Salivary concrements are more common in the external excretory duct of the submandibular glands (83%) and less common in the stensen canal (10%) or in the sublingual glands (7%).

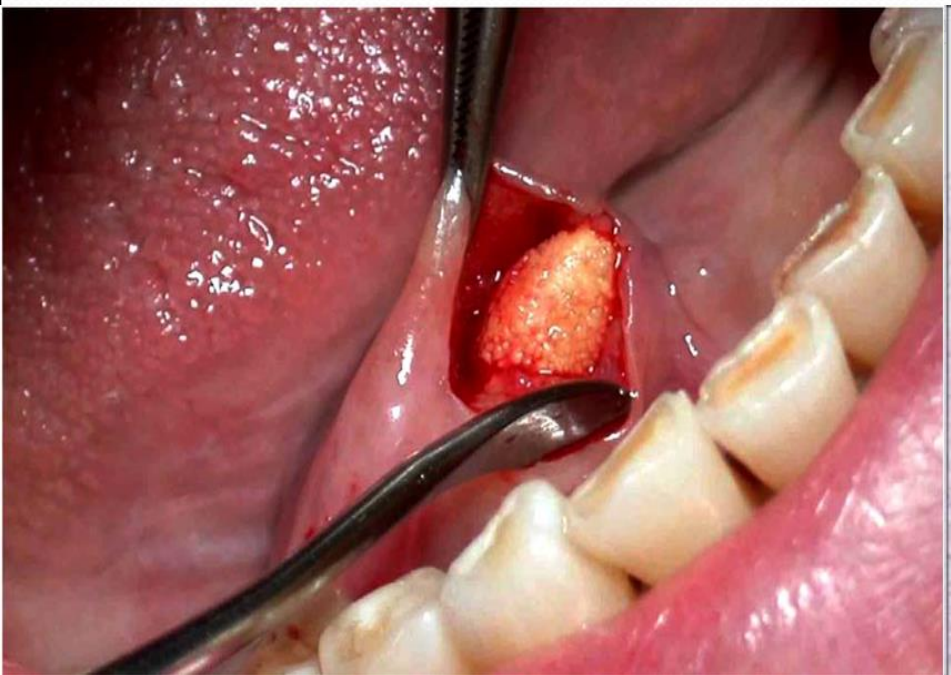
- They are usually small, up to 1-2 cm in diameter, oval or round, with a smooth or rough surface, whitish-gray, yellow or red.

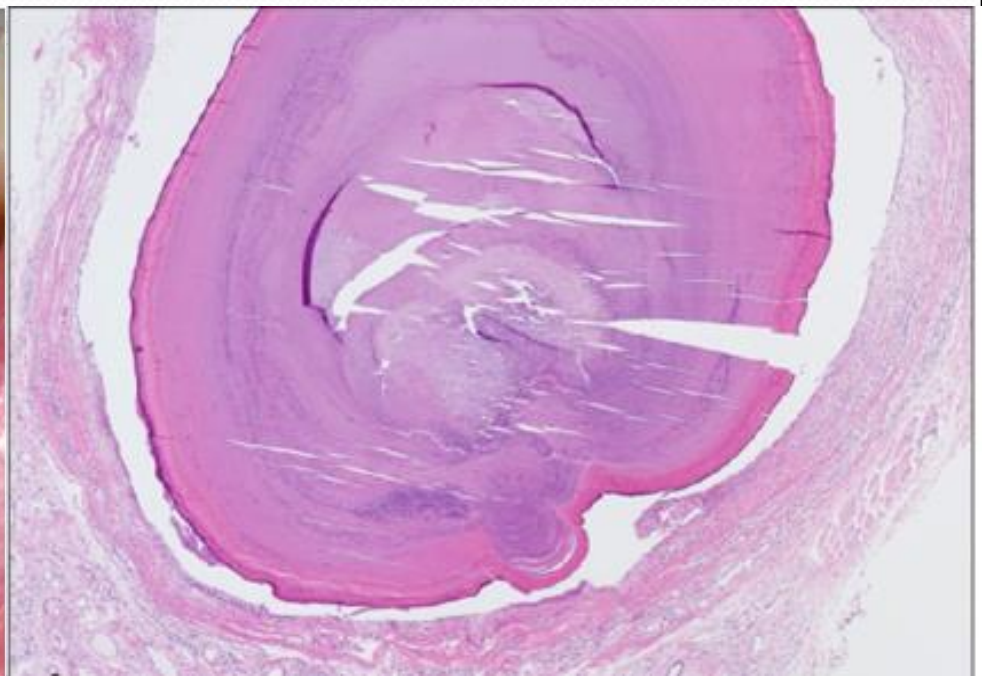




Sialolithiasis

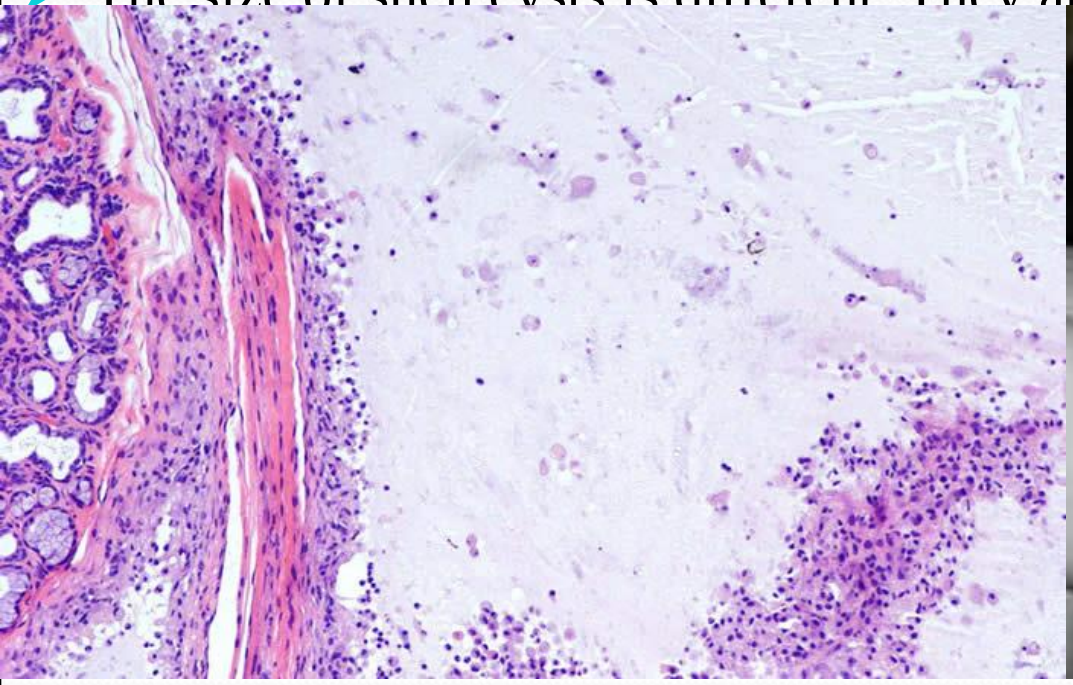
- Concrements consist of mineral salts, calcium phosphate (60-70%), calcium carbonate (5-10%) and organic substances (mucopolysaccharides, cholesterol, uric acid, epithelial cells, bacteria).
- It causes the expansion of the ducts with squamous metaplasia of their epithelium.
- Diffuse and peripheral fibrosis, atrophy of the secretory acini is observed in the gland tissue.

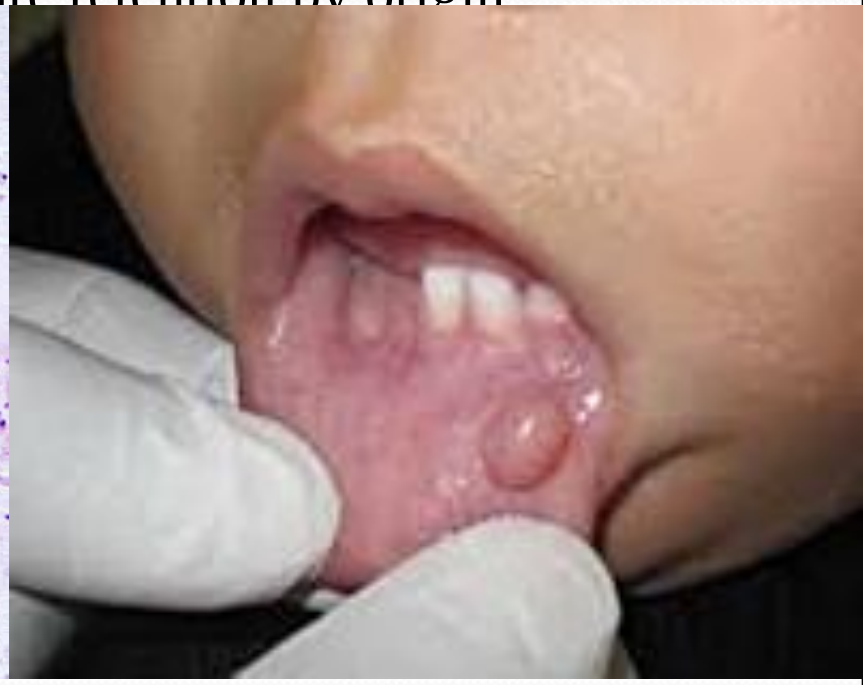




Mucocele

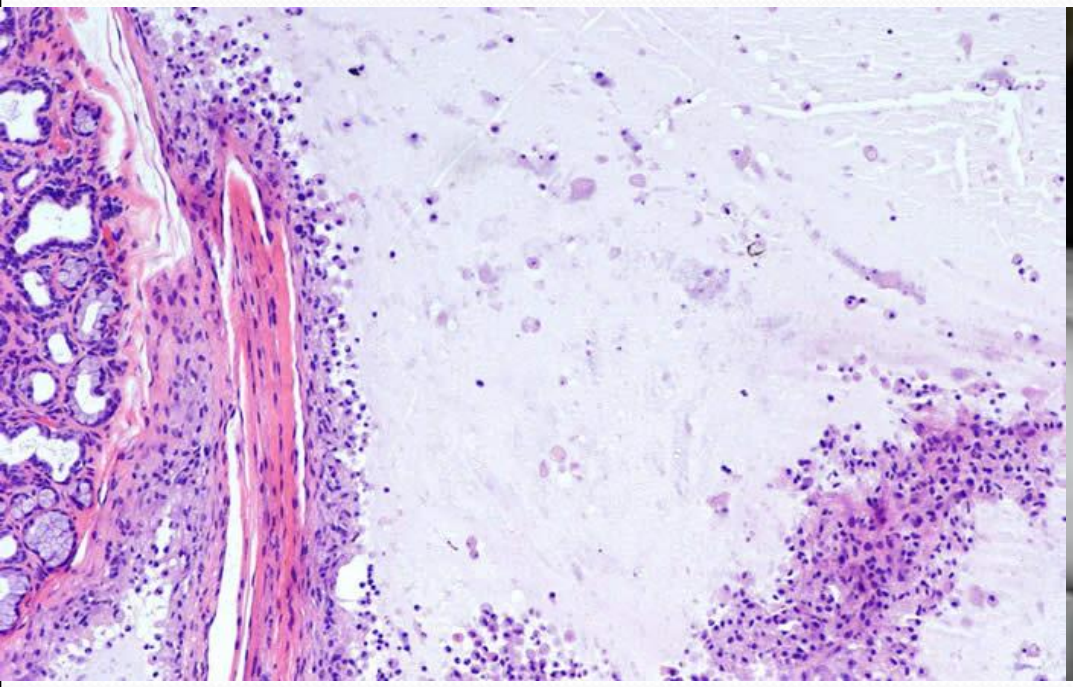
- It develops from the excretory ducts of the small glands, less often from the large ones.
- Cysts form after the external excretory canal is blocked by the inflammatory process or after trauma.
- The size of such cysts is different. They are retention by origin

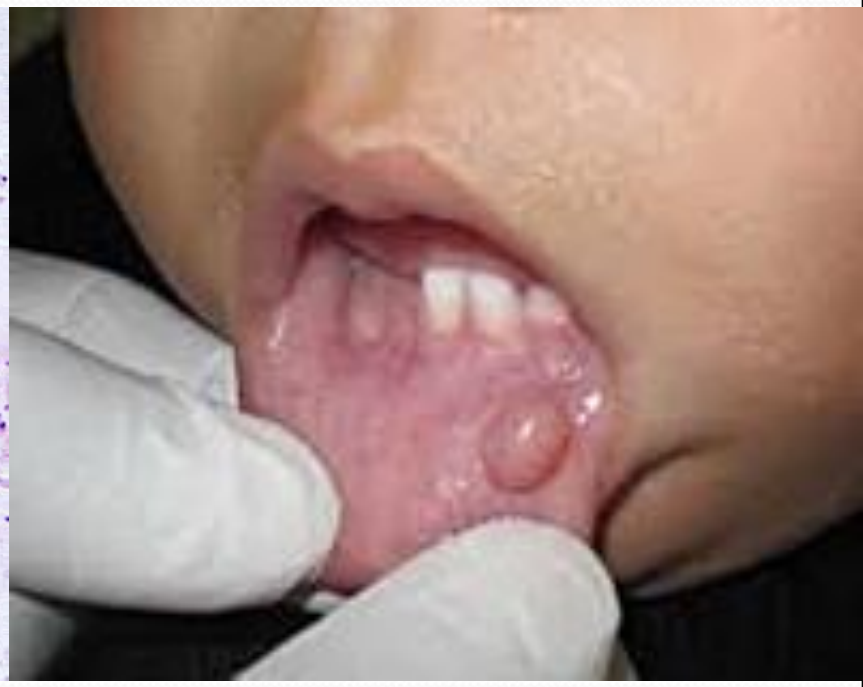




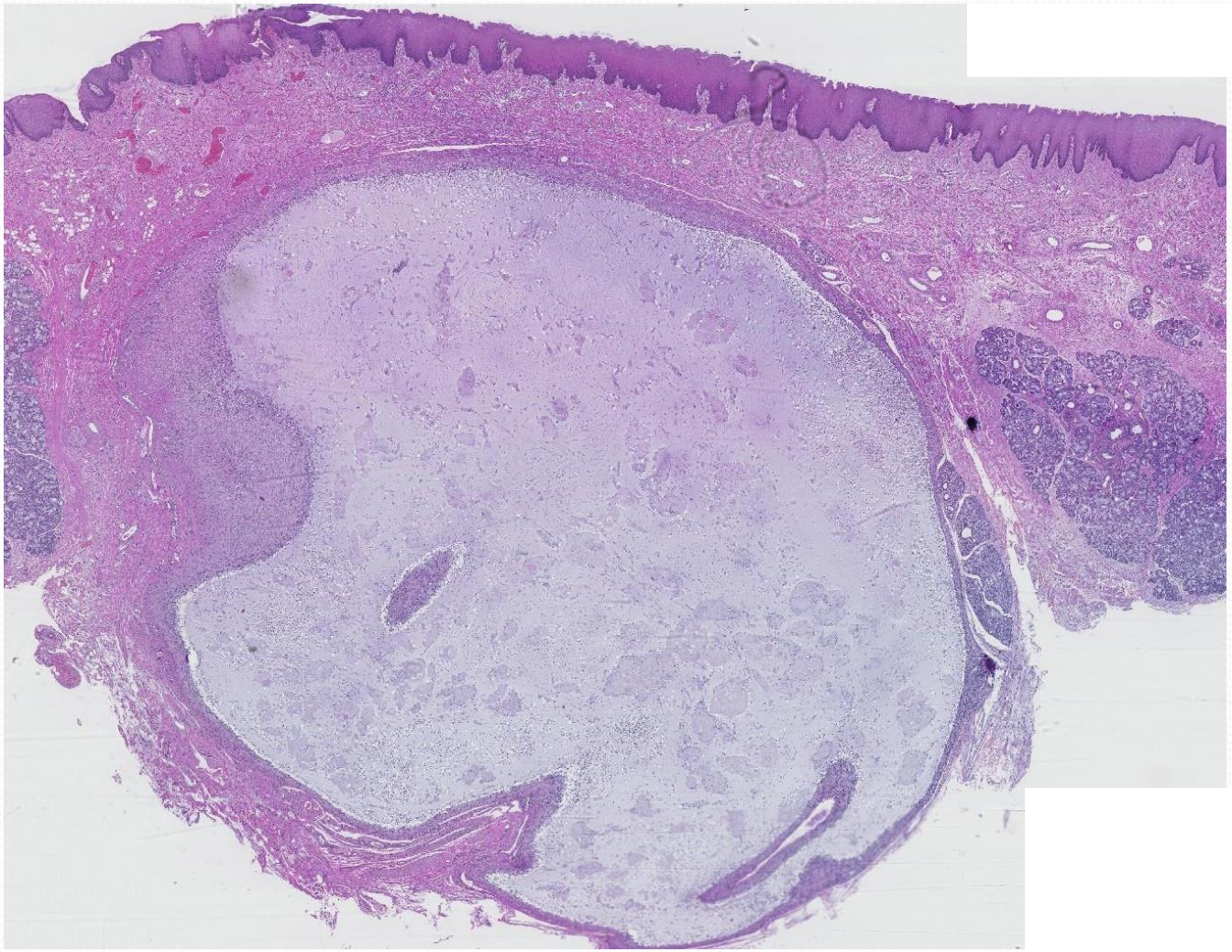
Mucocele

- The mucocele is often located on the lower lip in the form of a spherical node that protrudes above the surface.
- Microscopically, the inner surface of its wall is lined with cylindrical epithelium.

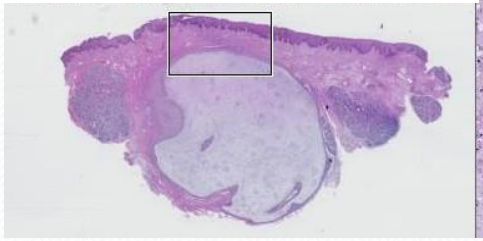


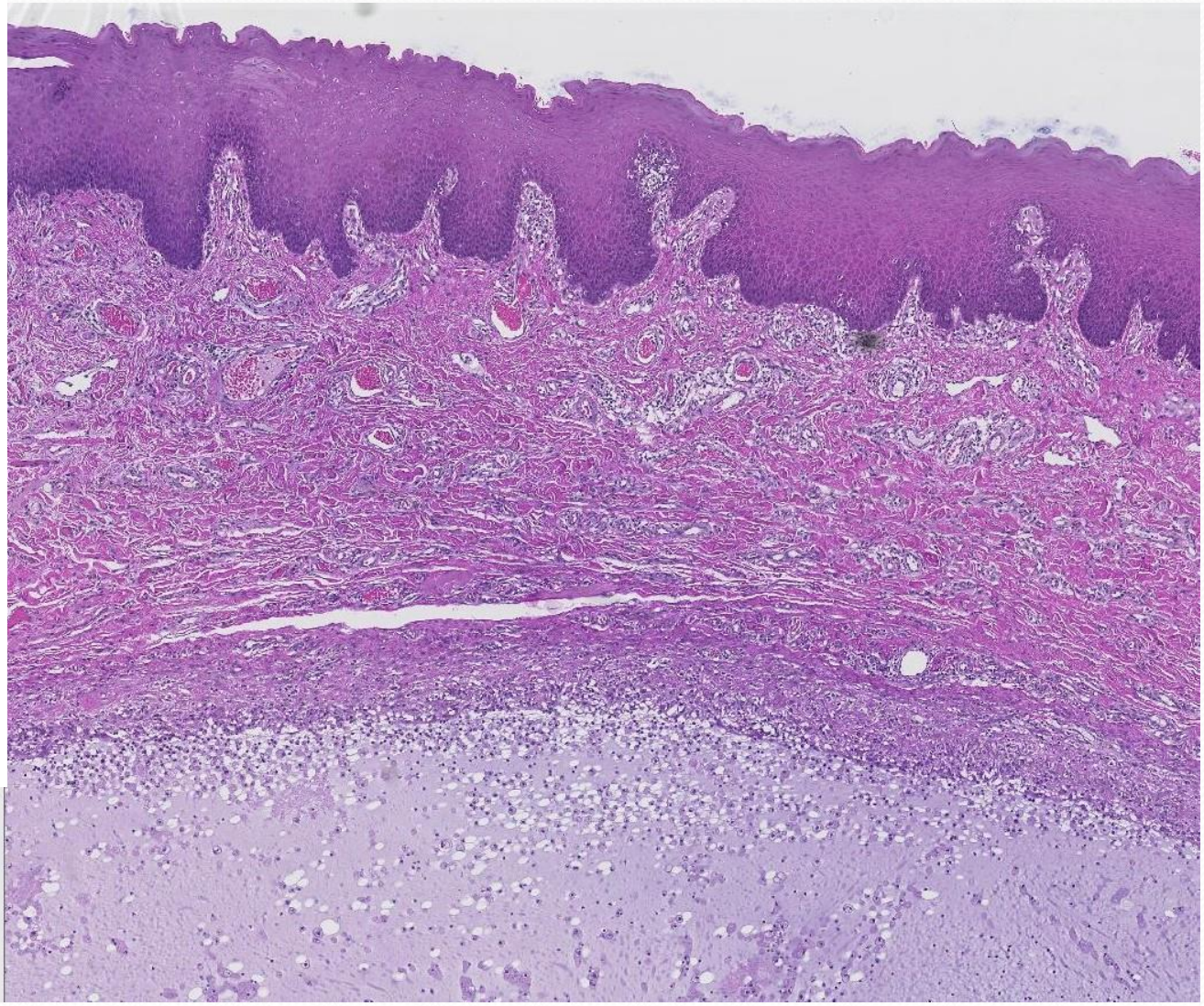


Microscopic image of mucocele

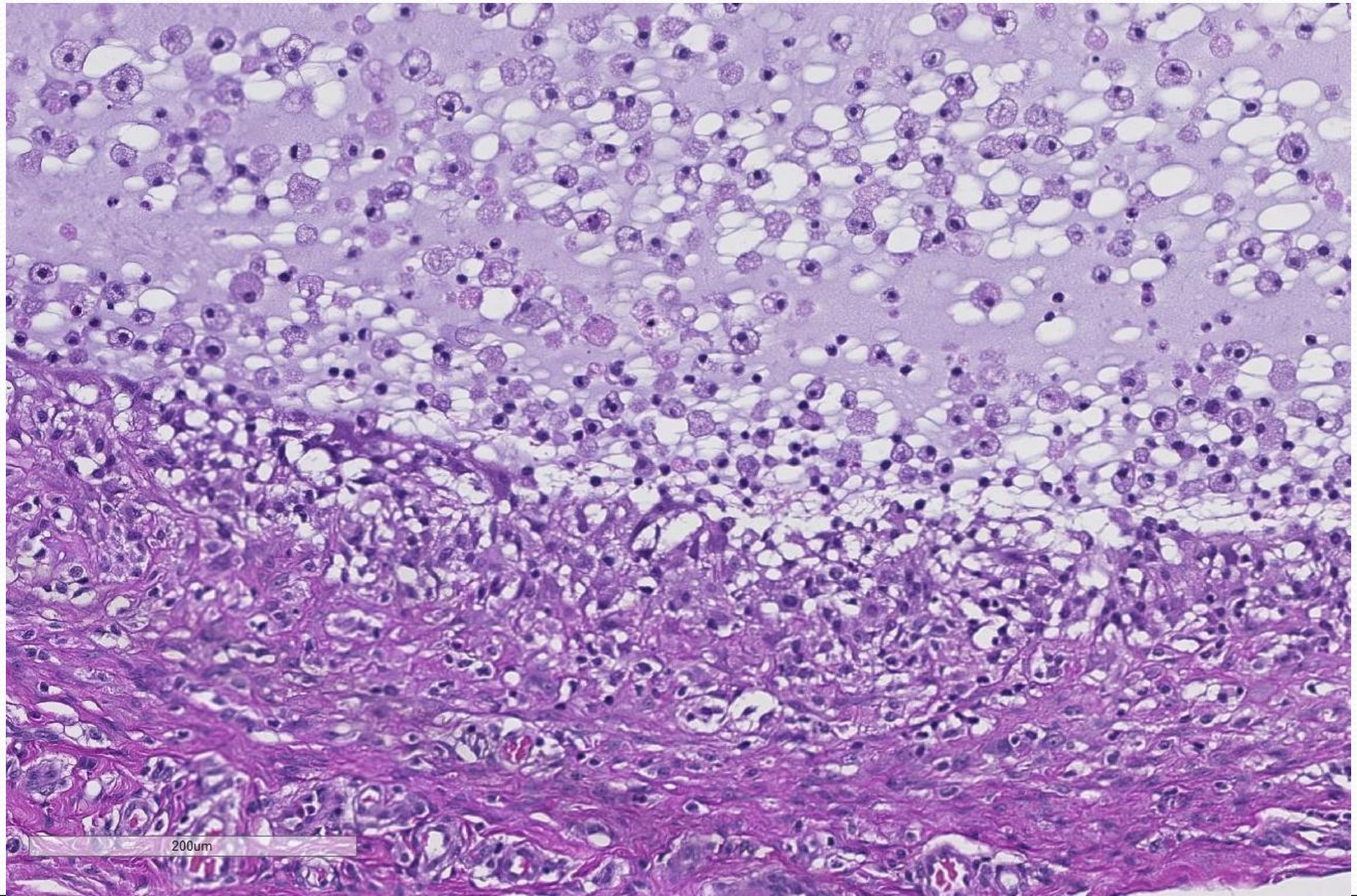


Microscopic image of mucocele





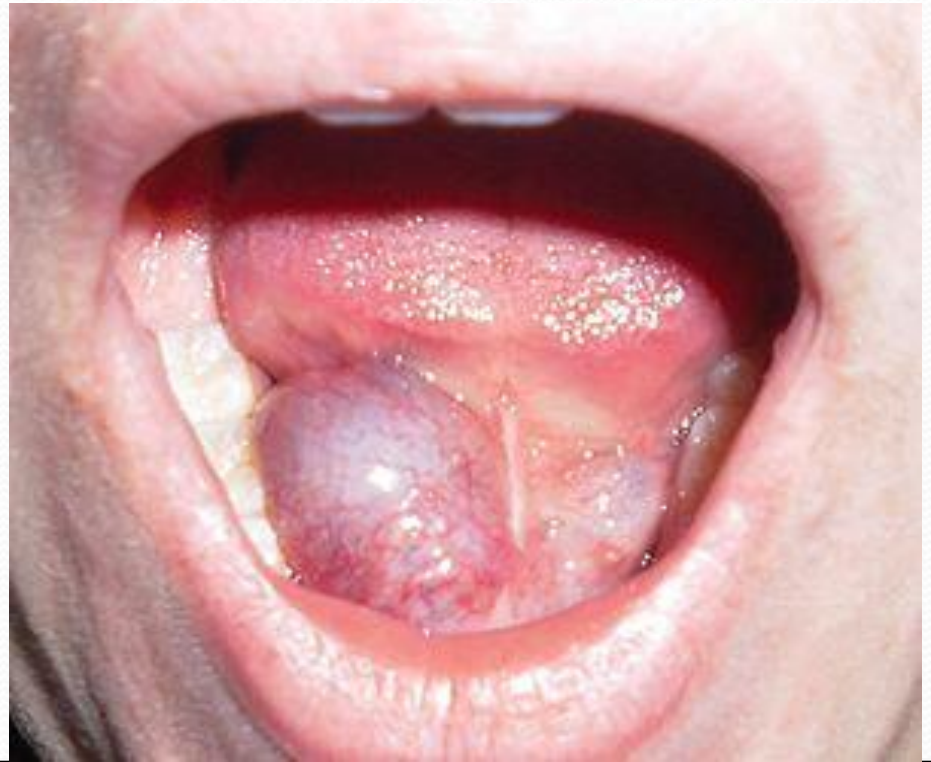
Microscopic image of mucocele

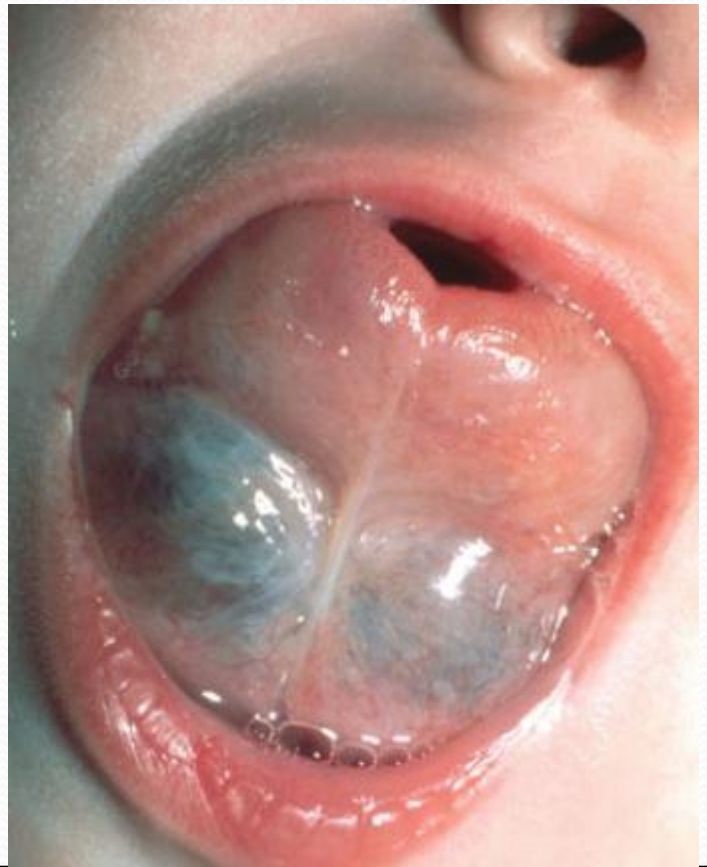


- *Ranula (retention cyst)* of the sublingual salivary gland. Sometimes, the groove extends under the buccal diaphragm muscle - submandibular shape.

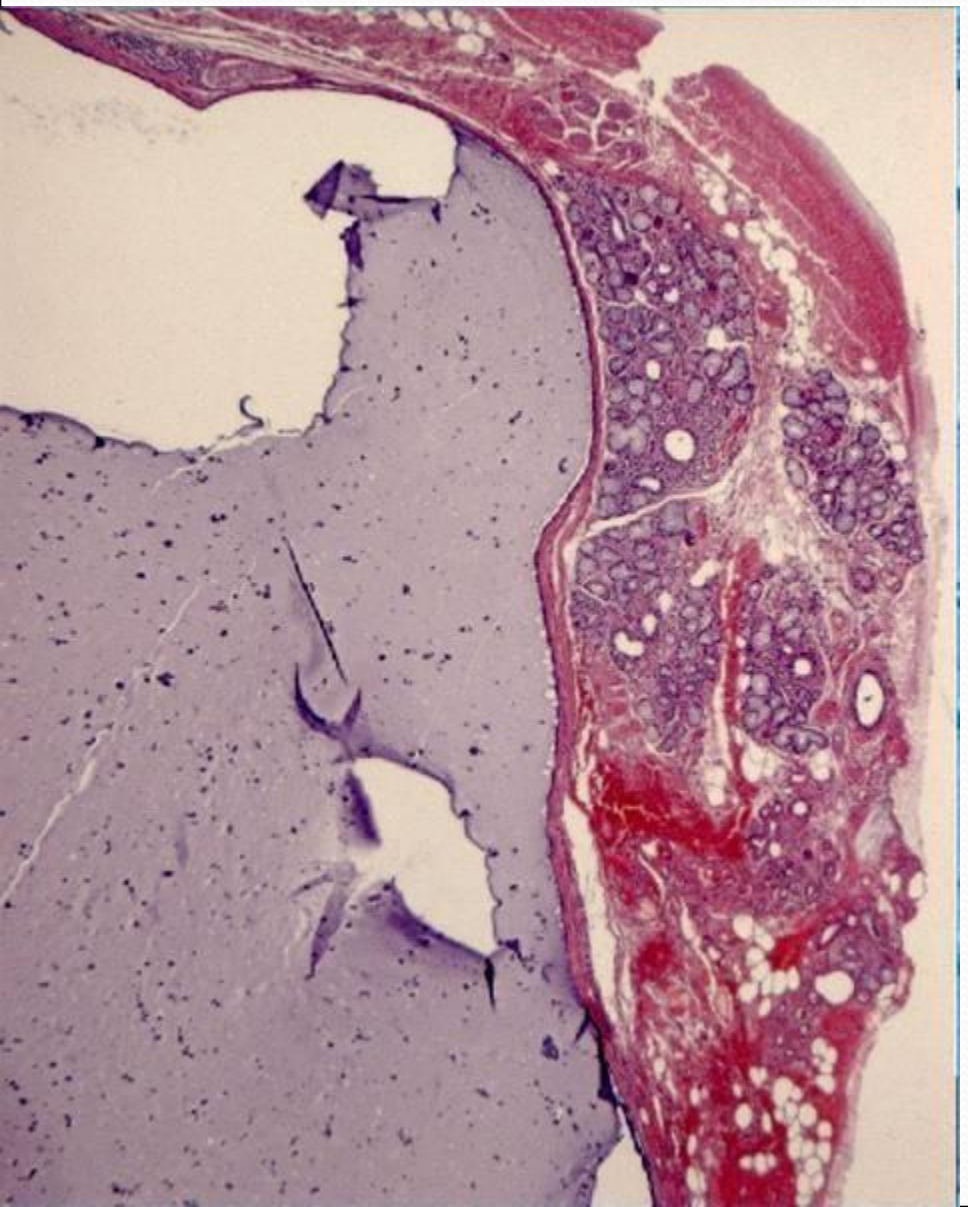
- Macroscopically, it is a cystic cavity with a thin, bluish wall, associated with the salivary gland, it contains mucus. The cyst raises the tongue, making it difficult to move.

- Microscopically, the inferior surface of the wall is represented by a layered squamous epithelium.

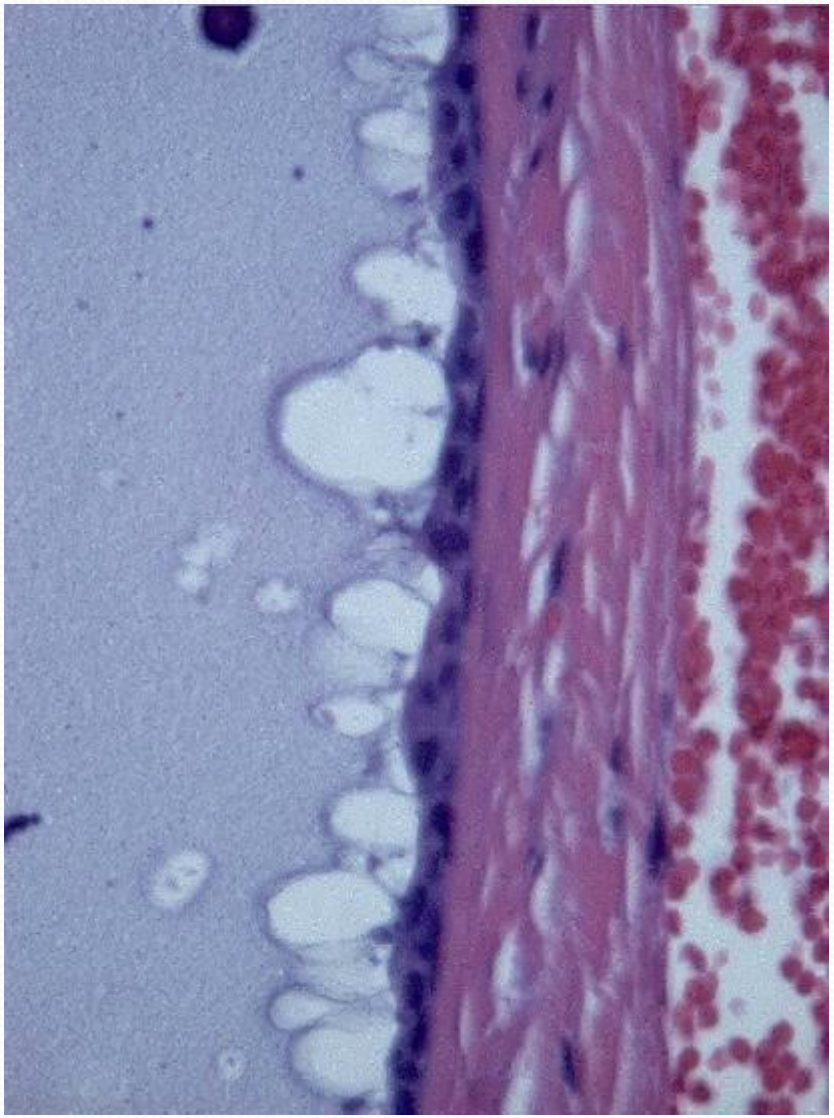




Retention mucosal cyst



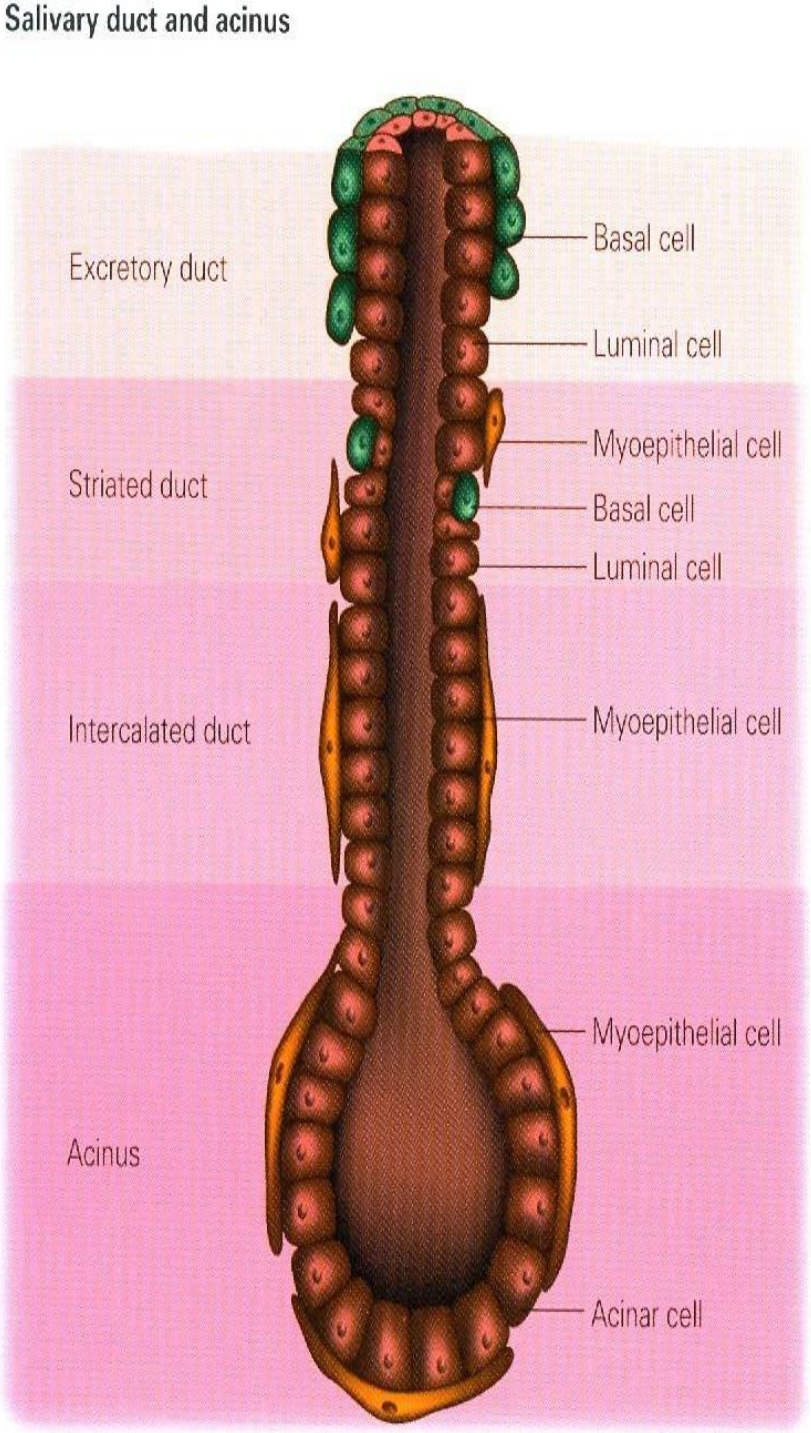
40x



Salivary glands tumors

BENIGNE

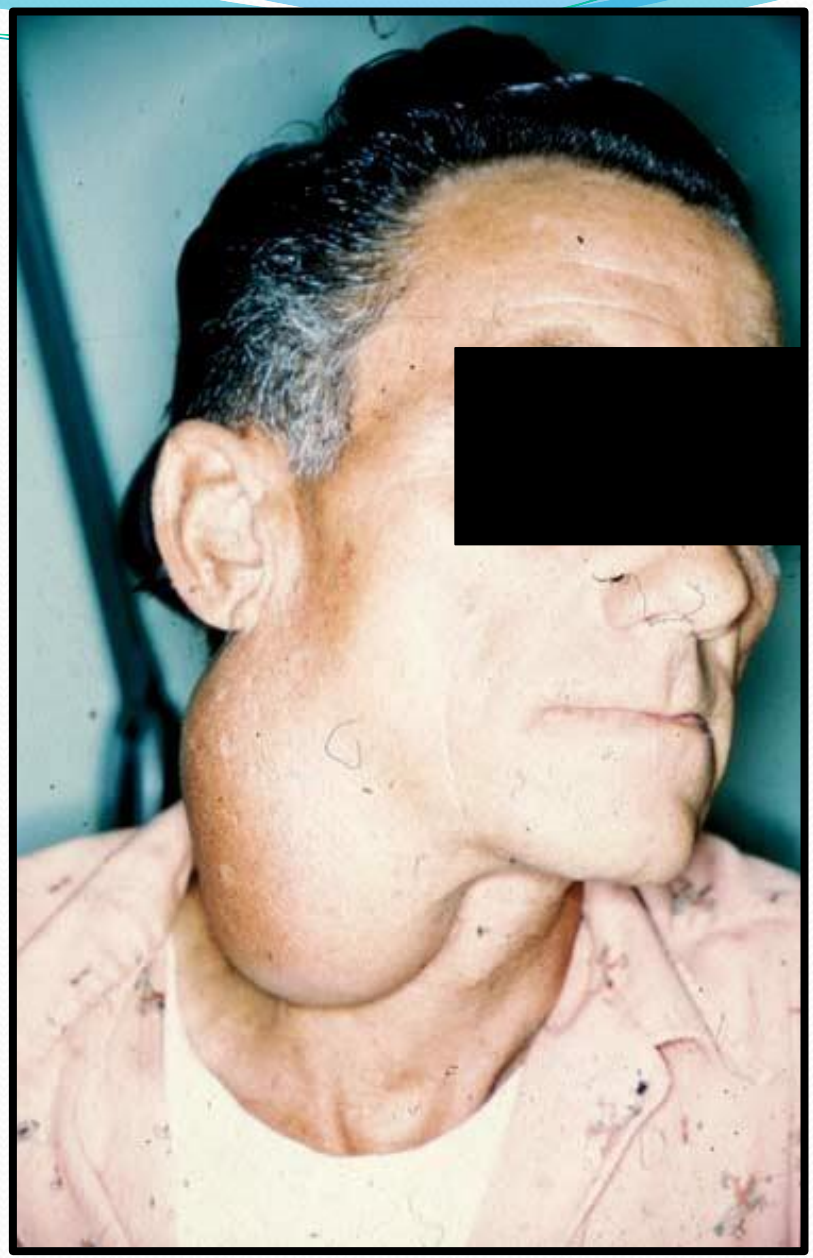
- Pleomorphic adenoma
- Monomorphic adenoma
- Myoepithelioma
- Basal cell adenoma
- Oncocytoma
- Warthin tomor (adenolymphoma)
- Sebaceous adenoma
- Canalicular adenoma
-



Glandă salivară

Pleomorphic adenoma

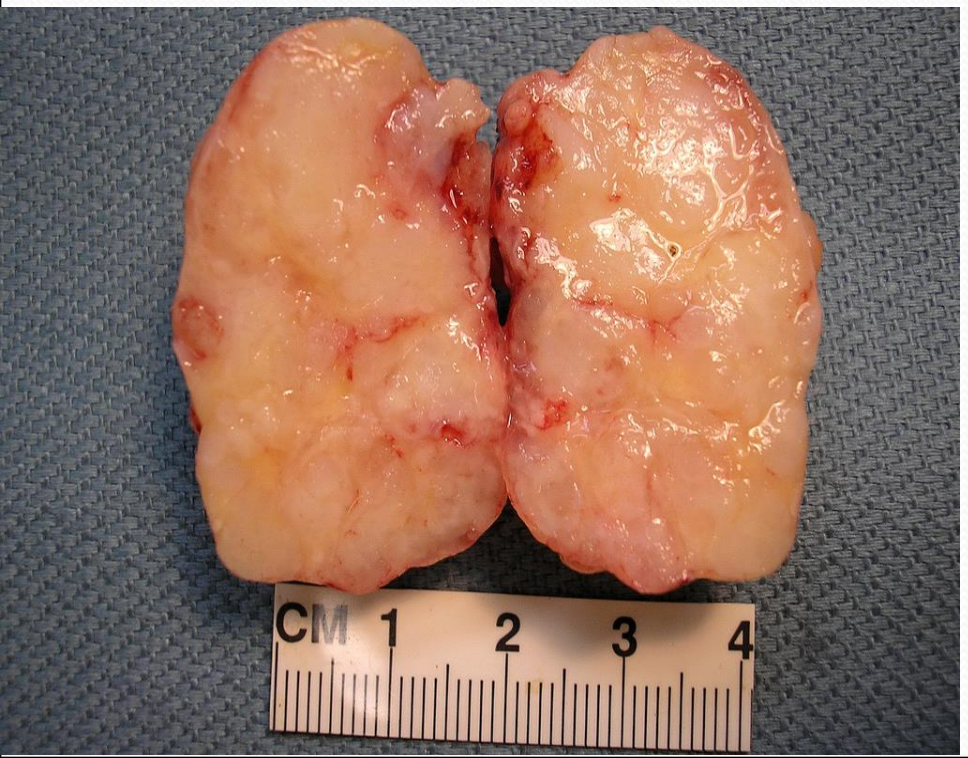
- The most common type
- Average age 46 years
- Most commonly in the parotid gland
- Encapsulated with islands of tumor cells in the capsule
- From the ductal epithelium and myoepithelial cells

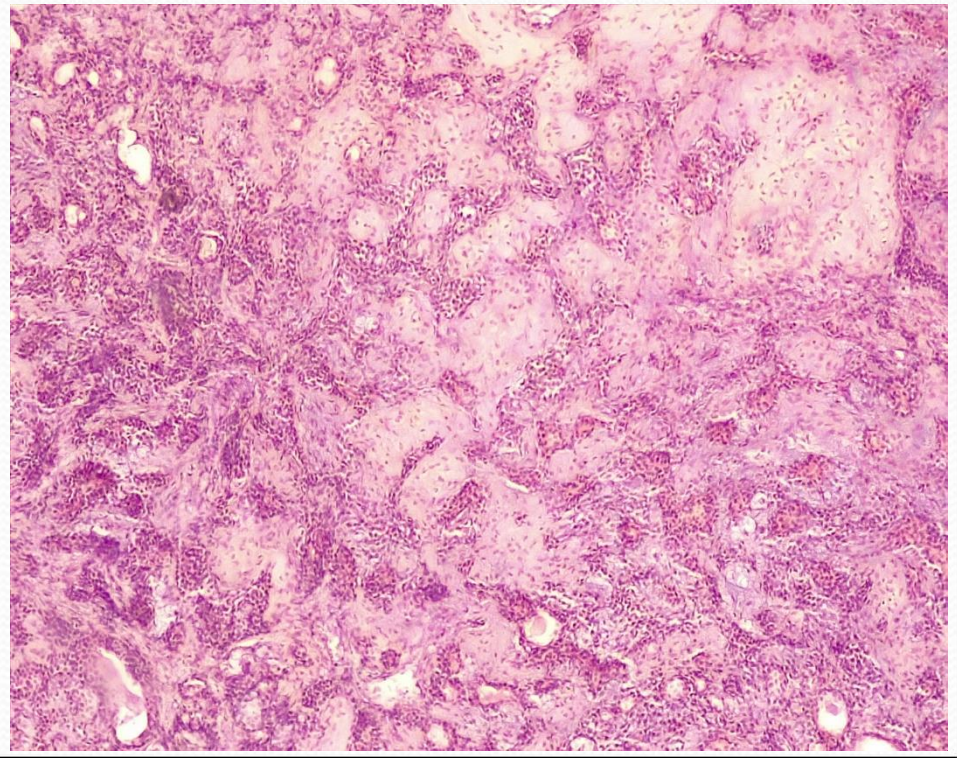


Pleomorphic adenoma

- On the section, the tumor tissue is whitish, with yellowish spots and hemorrhages, often with small mucous cysts.

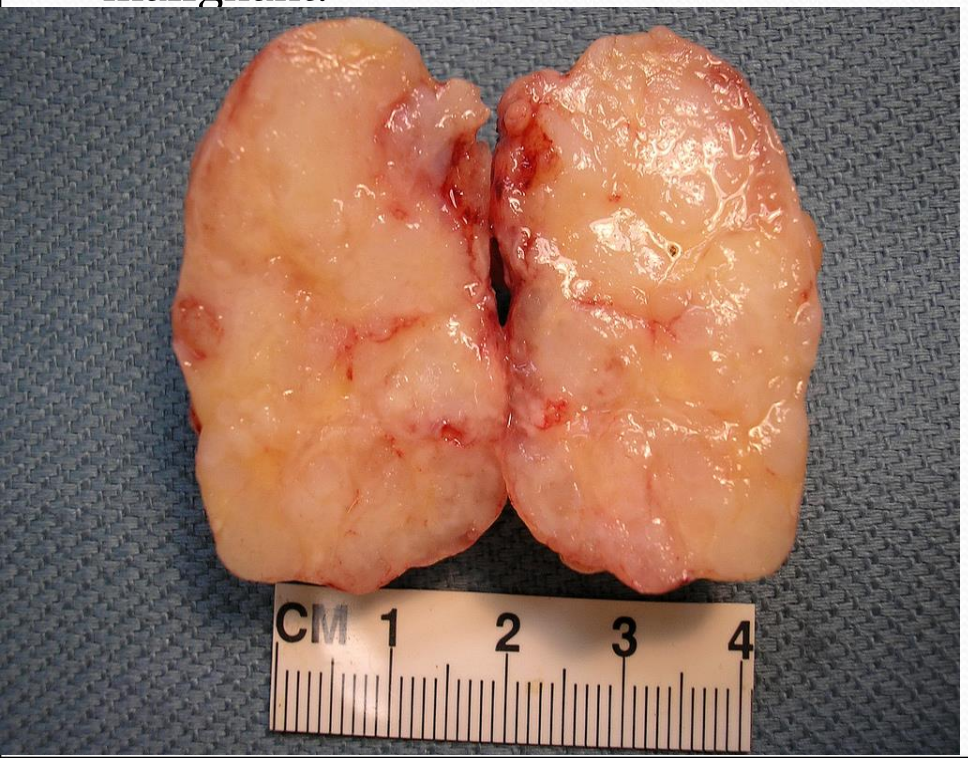
- Histologically, the tumor is represented by the epithelial and mesenchymal component.

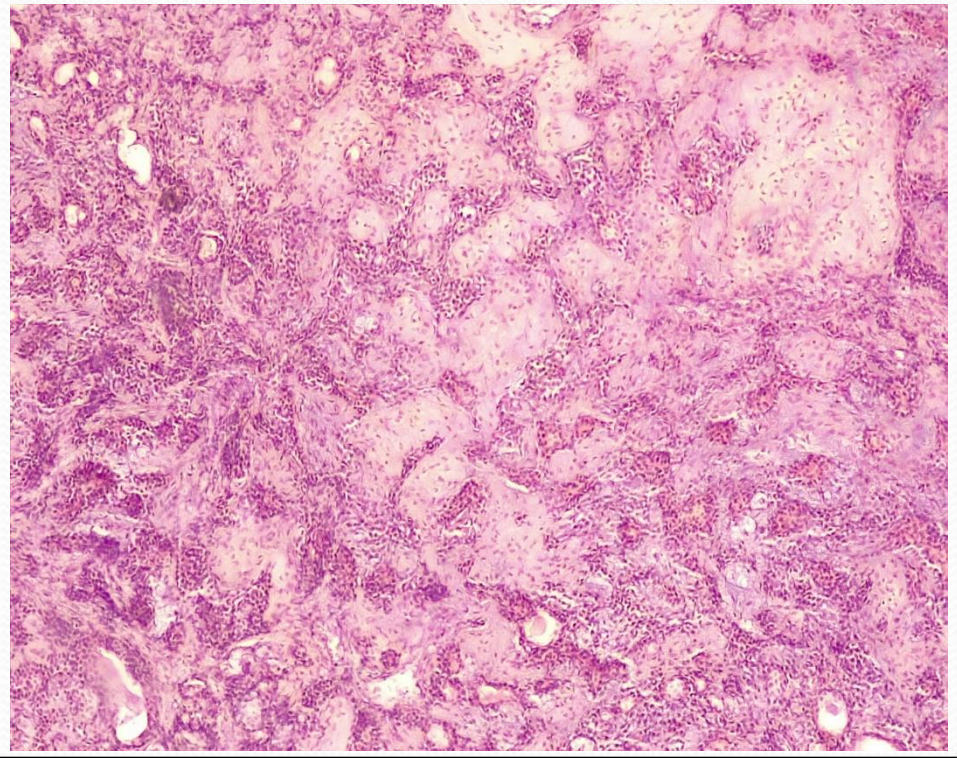




Pleomorphic adenoma

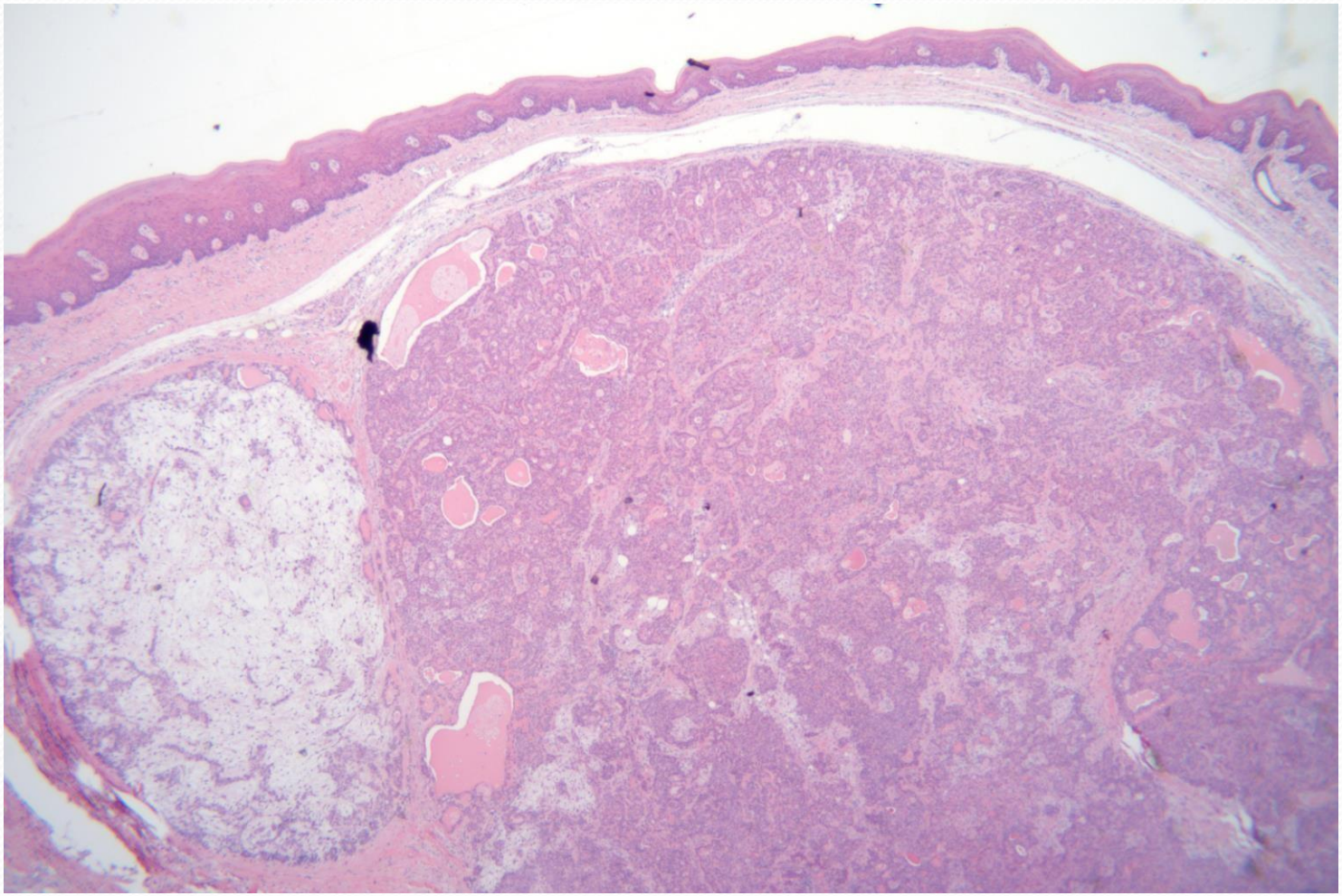
- Epithelial tomour have a ducts structure with solid area. At the periphery, is the presence of foci and fields of mucoid, myxoid, chondroid and bone tissue.
- Outbreaks of stromal hyalinosis may be present in the tumor, keratinization in the epithelial areas.
- The neoplasm is benign, with a local destructive growth, relapses, can become malignant.



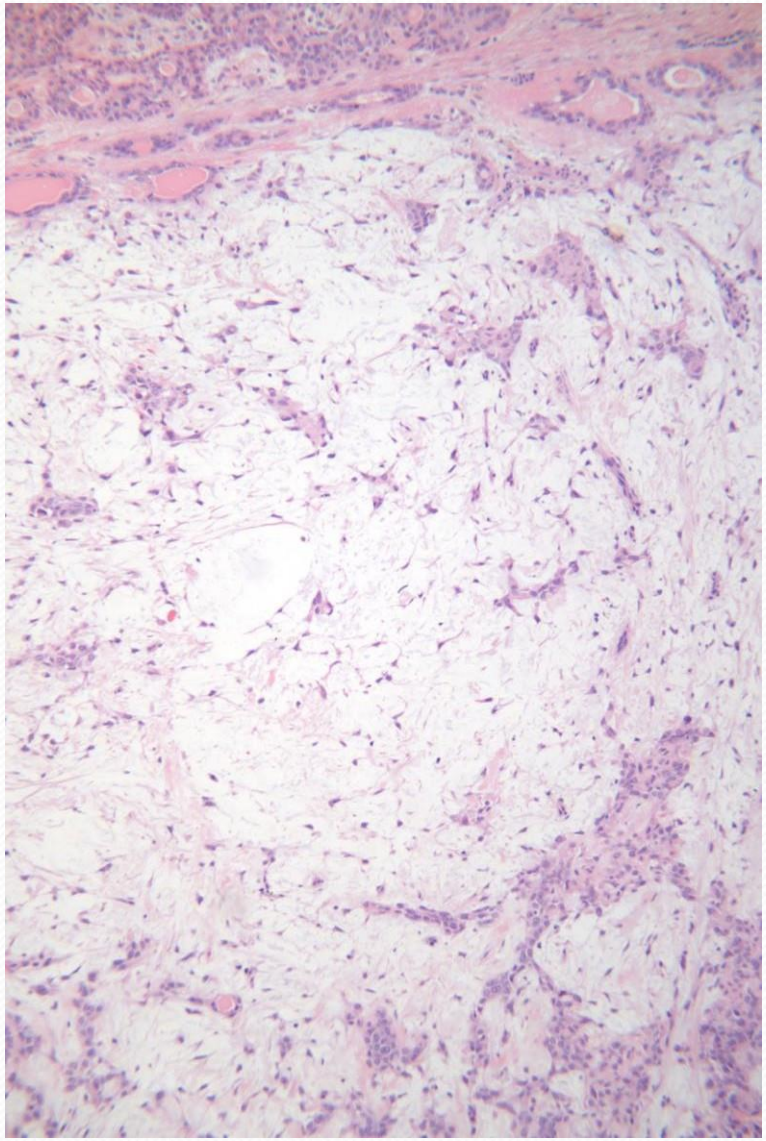


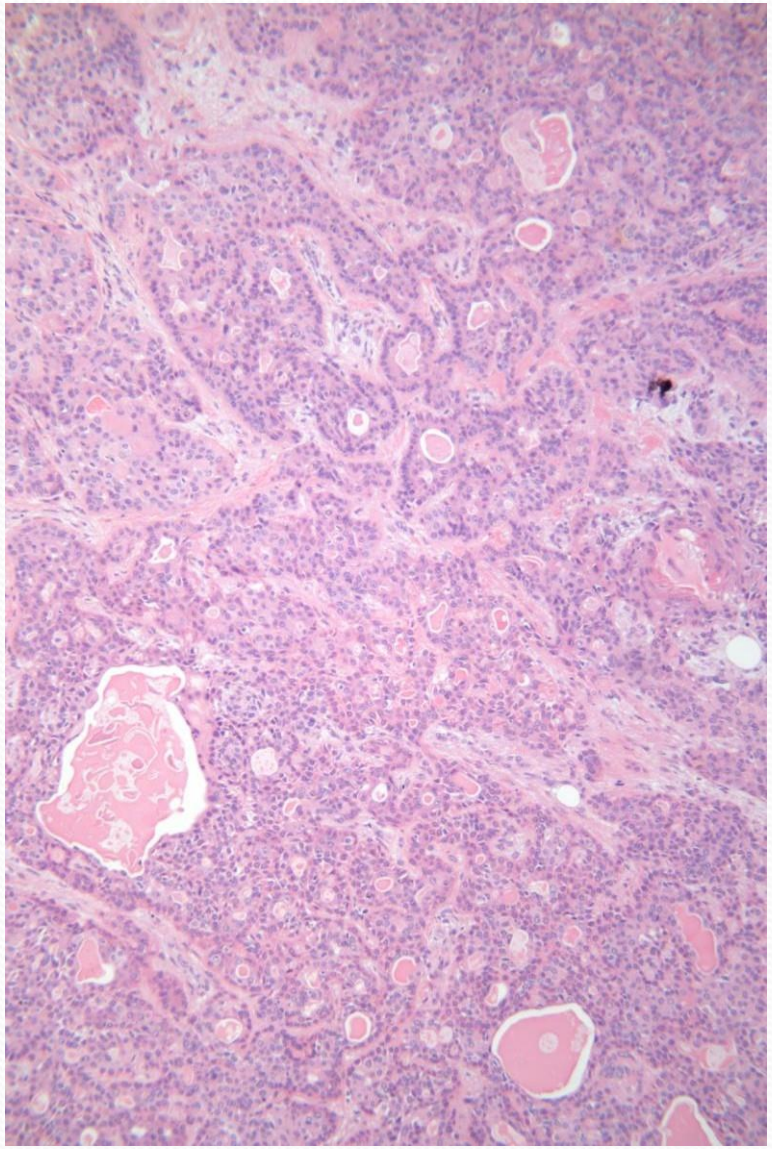
Pleomorphic adenoma

Encapsulated with islands tumor cell in capsule
Epithelial component and mesenchymal component



Variable picture with epithelial tubules and myxomatous stroma





Myoepithelioma

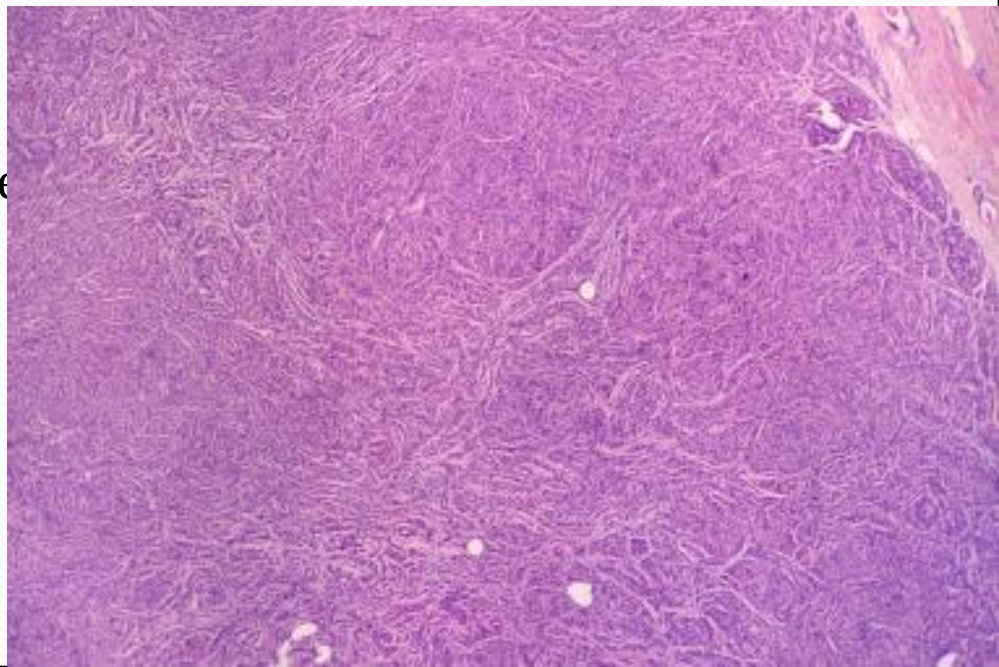
-Myoepithelial differentiation

-It can have different morphological aspects (fusiform, plasmacytoid, epithelioid)

-Mumps - 40%

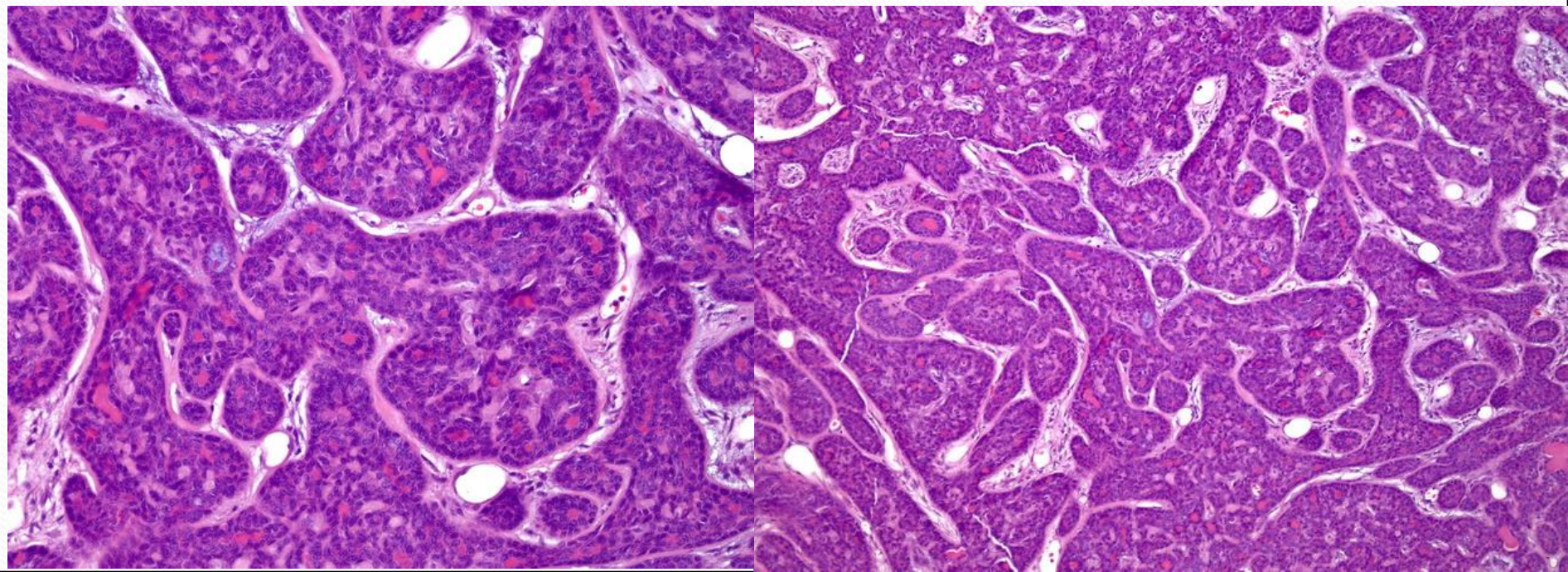
-It develops in adults

-The tendency to relapse is lowe



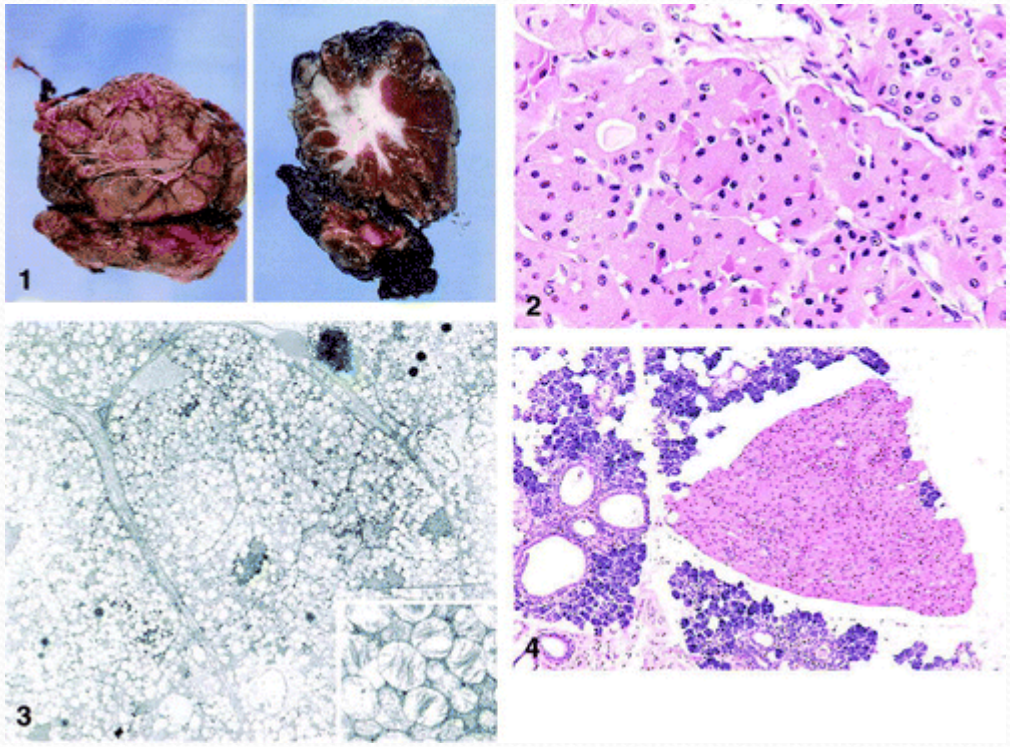
Basal cell adenoma

- Basal cell differentiation (anastamosing nests basaloid cell)
- Adults, average age 58 years
- Parotid
- 4% malignant transformation
- Rare recurrence



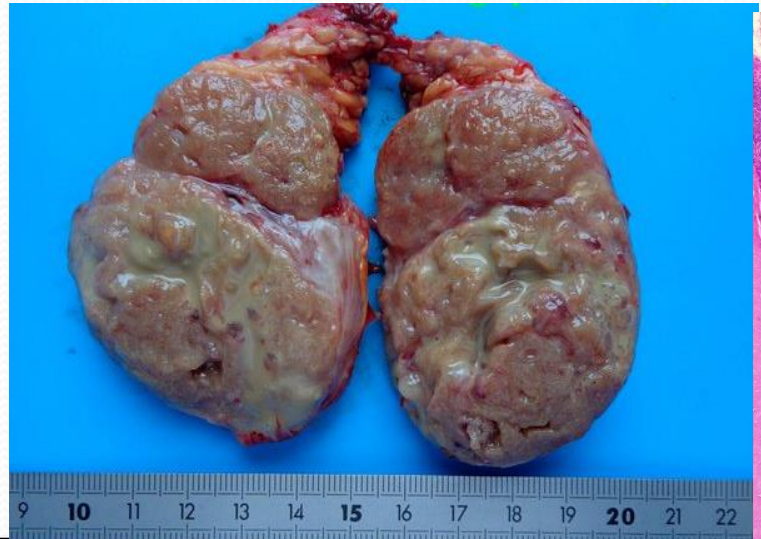
Oncocytoma

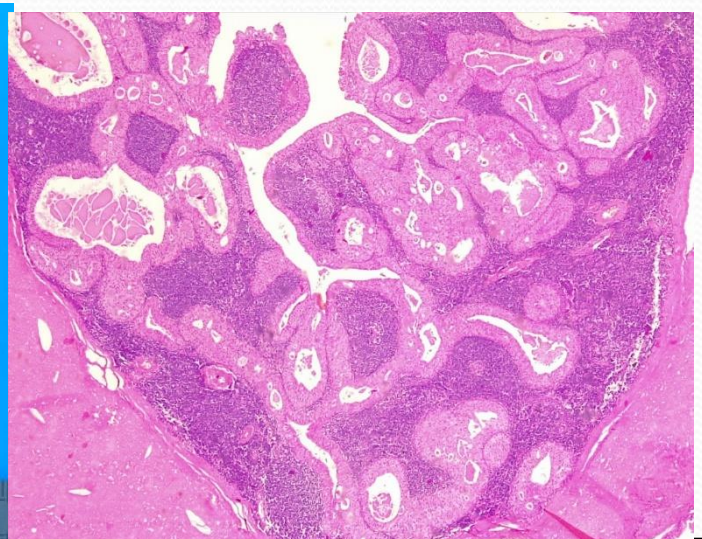
- Adults, average 60 years old
- 20% associated with radiation therapy or radiation exposure
- Usually the mass in the parotid gland
- Well circumscribed with a fibrous capsule, solid, lobed, often small, may have cystic spaces
- Excellent prognosis, but maybe had late recurrence



Warthin tomor (adenolymphoma)

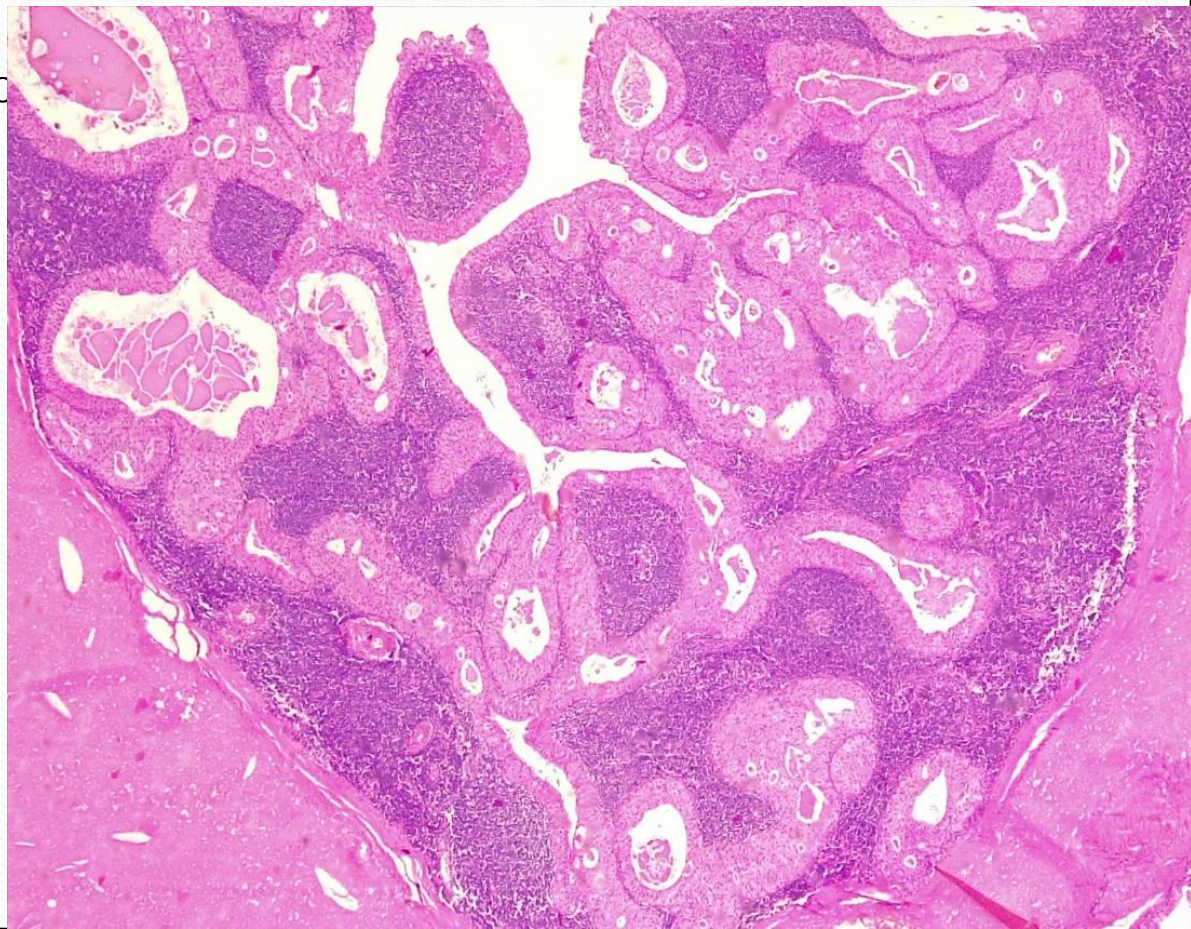
- Smoking men, 40+
- Occurs by incorporation of lymphoid tissue into the parotid gland or by induction of cystic and oncocytic changes by the inflammatory infiltrate
- Almost always in the parotid
- Encapsulated, lobed, pale gray, multicystic with mucosal / serous secretion, 10-15% multifocal / bilateral
- Malignant transformation - 1%
- Recurrence - 2%





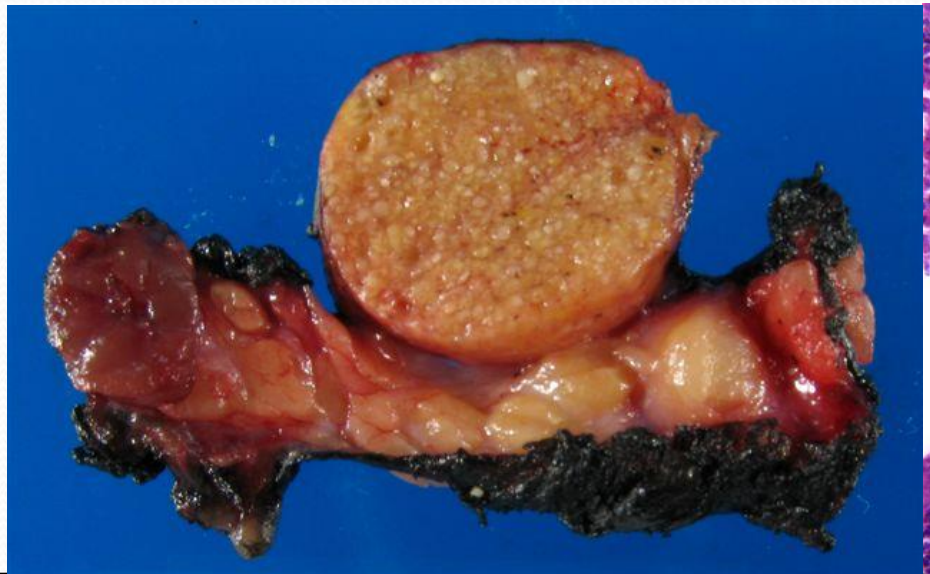
Warthin tomor (adenolymphoma)

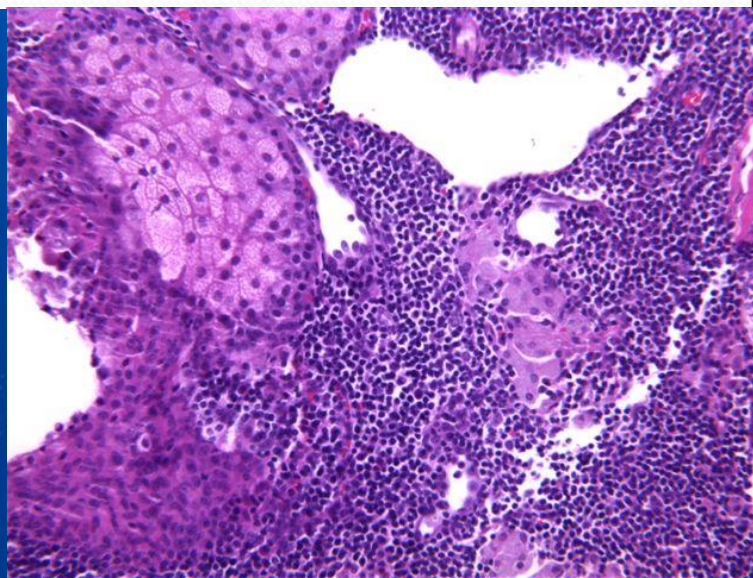
- - Double layer of epithelial cells attached to a dense lymphoid stroma with variable germinal centers
- - Cystic spaces narrowed by the polypoid protrusions of the lymphoepithelial elements
- - Palisade epithelial surface c
  layer of basal cells



Sebaceous adenoma

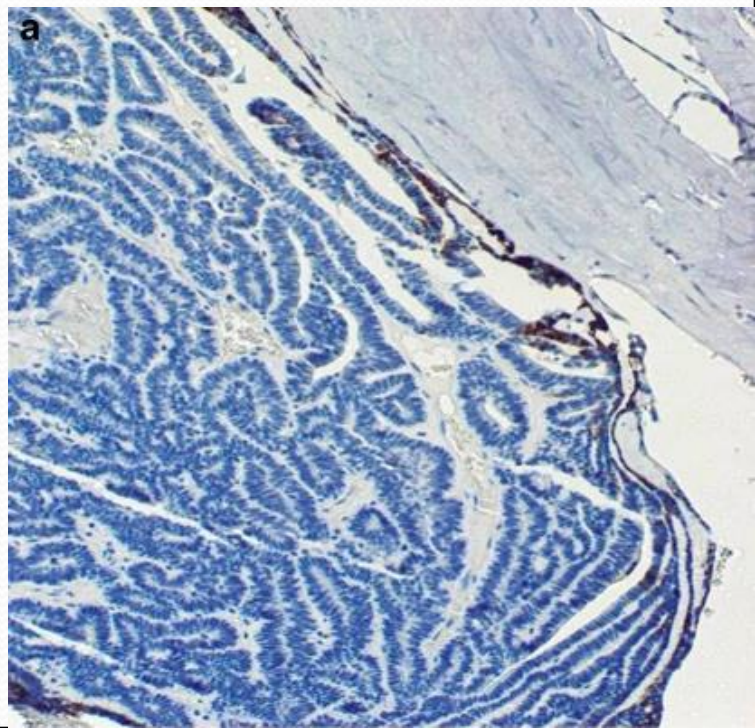
- Rare benign tumor with epithelial islands composed of sebaceous elements and lymphoid stroma
- Called sebaceous lymphadenoma if the lymphoid stroma is prominent
- Over 90% occur in or near the parotid gland
- Solid or cystic mass, well circumscribed, yellow-brown, up to 3 cm, with variable encapsulation
- Rare malignant transformation
- Rare recurrence





Canalicular adenoma

- Monomorphic adenoma with bilayered columnar cells of luminal ductal epithelial differentiation and a poor, well-vascularized stroma
- It usually occurs in the minor salivary glands of the upper lip or palate
- 50+
- Often encapsulated, 22% multifocal
- Rare malignant transformation
- Rare recurrence



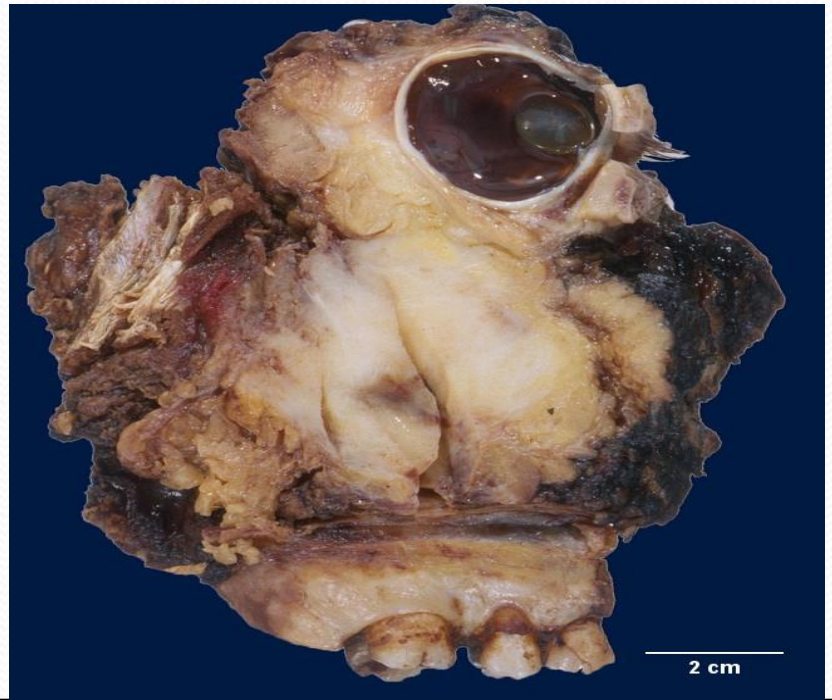
WHO classification of tumours of salivary glands

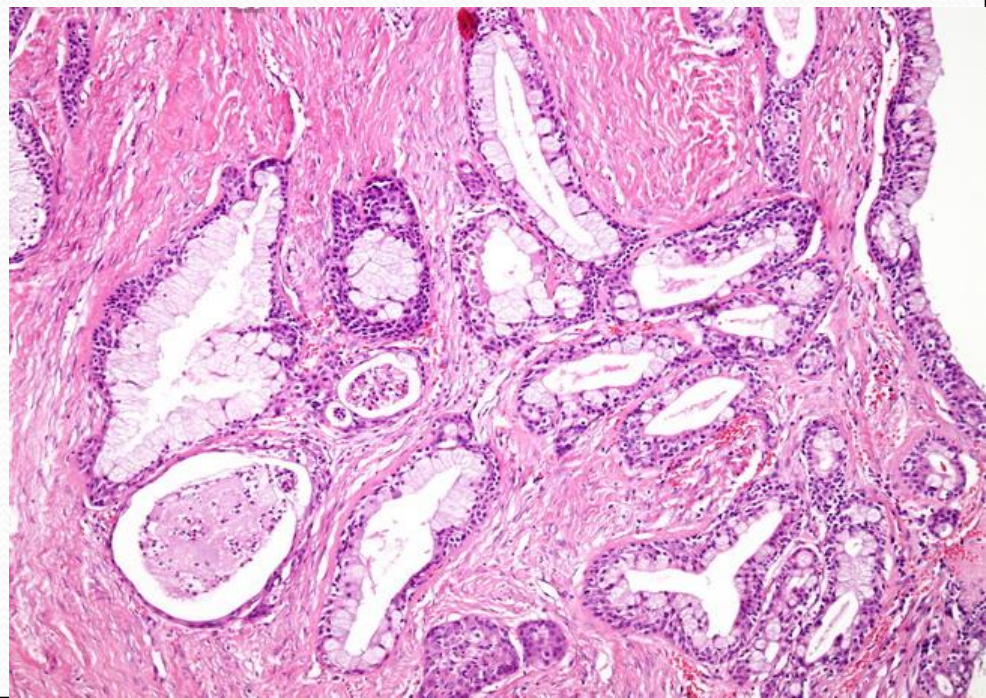
Malignant tumours	
Mucoepidermoid carcinoma	8430/3
Adenoid cystic carcinoma	8200/3
Acinic cell carcinoma	8550/3
Polymorphous adenocarcinoma	8525/3
Clear cell carcinoma	8310/3
Basal cell adenocarcinoma	8147/3
Intraductal carcinoma	8500/2
Adenocarcinoma, NOS	8140/3
Salivary duct carcinoma	8500/3
Myoepithelial carcinoma	8982/3
Epithelial–myoepithelial carcinoma	8562/3
Carcinoma ex pleomorphic adenoma	8941/3
Secretory carcinoma	8502/3*
Sebaceous adenocarcinoma	8410/3
Carcinosarcoma	8980/3
Poorly differentiated carcinoma	
Undifferentiated carcinoma	8020/3
Large cell neuroendocrine carcinoma	8013/3
Small cell neuroendocrine carcinoma	8041/3
Lymphoepithelial carcinoma	8082/3
Squamous cell carcinoma	8070/3
Oncocytic carcinoma	8290/3
Uncertain malignant potential	
Sialoblastoma	8974/1
Benign tumours	
Pleomorphic adenoma	8940/0
Myoepithelioma	8982/0
Basal cell adenoma	8147/0
Warthin tumour	8561/0
Oncocytoma	8290/0
Lymphadenoma	8563/0*
Cystadenoma	8440/0
Sialadenoma papilliferum	8406/0
Ductal papillomas	8503/0
Sebaceous adenoma	8410/0
Canalicular adenoma and other ductal adenomas	8149/0
Non-neoplastic epithelial lesions	
Sclerosing polycystic adenosis	
Nodular oncocytic hyperplasia	
Lymphoepithelial sialadenitis	
Intercalated duct hyperplasia	
Benign soft tissue lesions	
Haemangioma	9120/0
Lipoma/sialolipoma	8850/0
Nodular fasciitis	8828/0
Haematolymphoid tumours	
Extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue (MALT lymphoma)	9699/3

The morphology codes are from the International Classification of Diseases for Oncology (ICD-O) [776A]. Behaviour is coded /0 for benign tumours; /1 for unspecified, borderline, or uncertain behaviour; /2 for carcinoma in situ and grade III intraepithelial neoplasia; and /3 for malignant tumours. The classification is modified from the previous WHO classification, taking into account changes in our understanding of these lesions.
*These new codes were approved by the IARC/WHO Committee for ICD-O.

Mucoepidermoid carcinoma

- Children and young adults (second decade)
- May develop secondary to radiation or chemotherapy during childhood, with an average latency of 8 years
- Most commonly in the parotid
- It can mimic a mucocele
- Circumscribed or infiltrative mass, soft or firm, often with cystic component





Mucoepidermoid carcinoma

- It is characterized by the proliferation of 3 types of cells: squamous, mucosecreting and intermediate type

- Cystic and solid growth pattern

- G1 = cystic, well circumscribed, rich in mucous cells

- G2 = more solid, less circumscribed and has a diversified appearance including extravasation of mucin

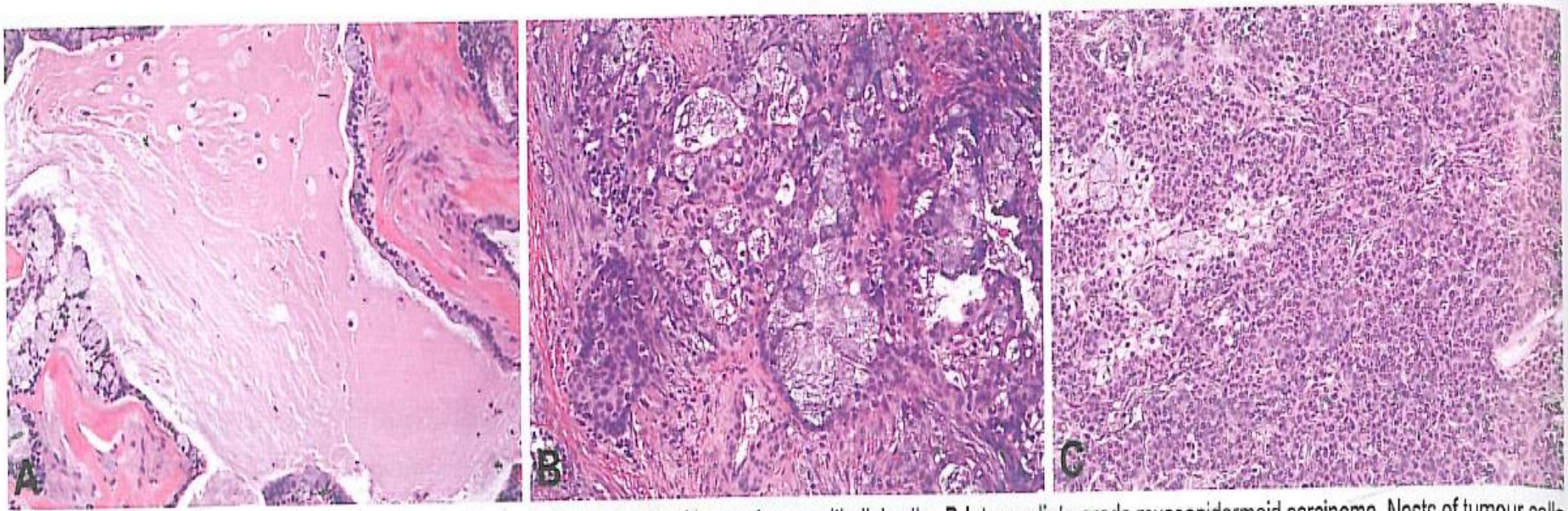


Fig. 7.02 A Low-grade mucoepidermoid carcinoma. Cystic ductal spaces lined by mucinous epithelial cells. B Intermediate-grade mucoepidermoid carcinoma. Nests of tumour cells with mucinous, clear and squamoid features with minimal cystic formation. C High-grade mucoepidermoid carcinoma. Poorly differentiated tumour with focal mucin-producing cells.

Mucoepidermoid carcinoma

- G3 = includes one or more of the following characteristics:
  - nuclear anaplasia
  - tumor necrosis
  - increased mitotic rate
  - perineural, lymphovascular or bone invasion
- Diagnosis of CME G3 - requires at least the focal positivity of the intracellular mucin

Prognosis - Overall 10-year survival rate:

G1- 90%

G2- 70%

G3-25%

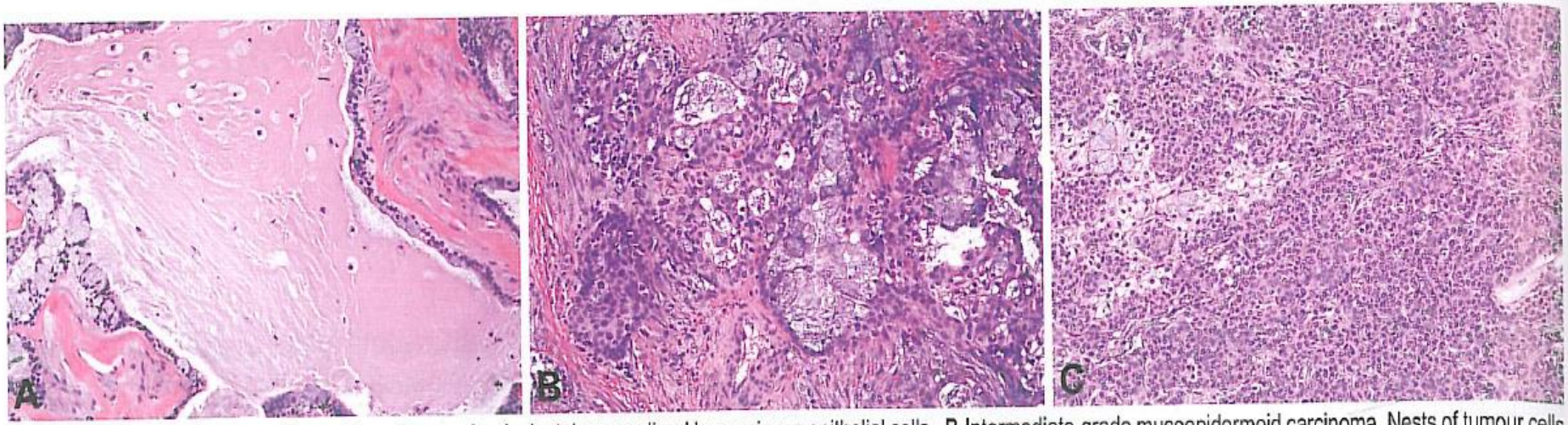
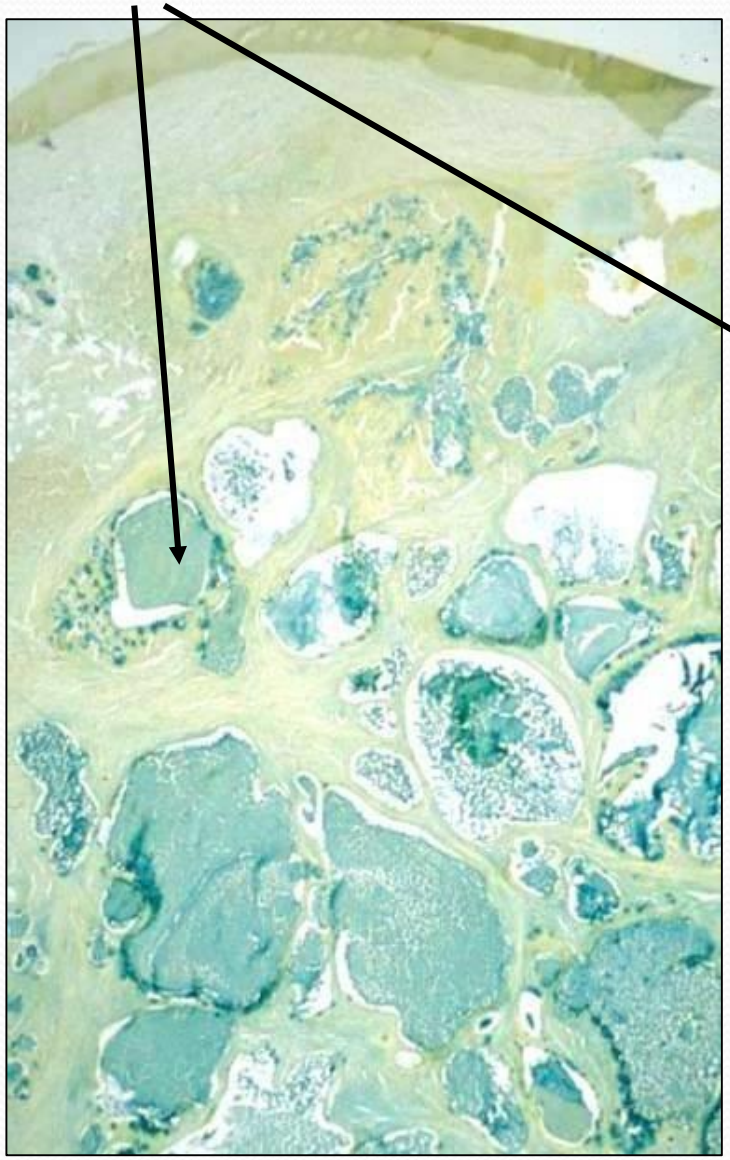
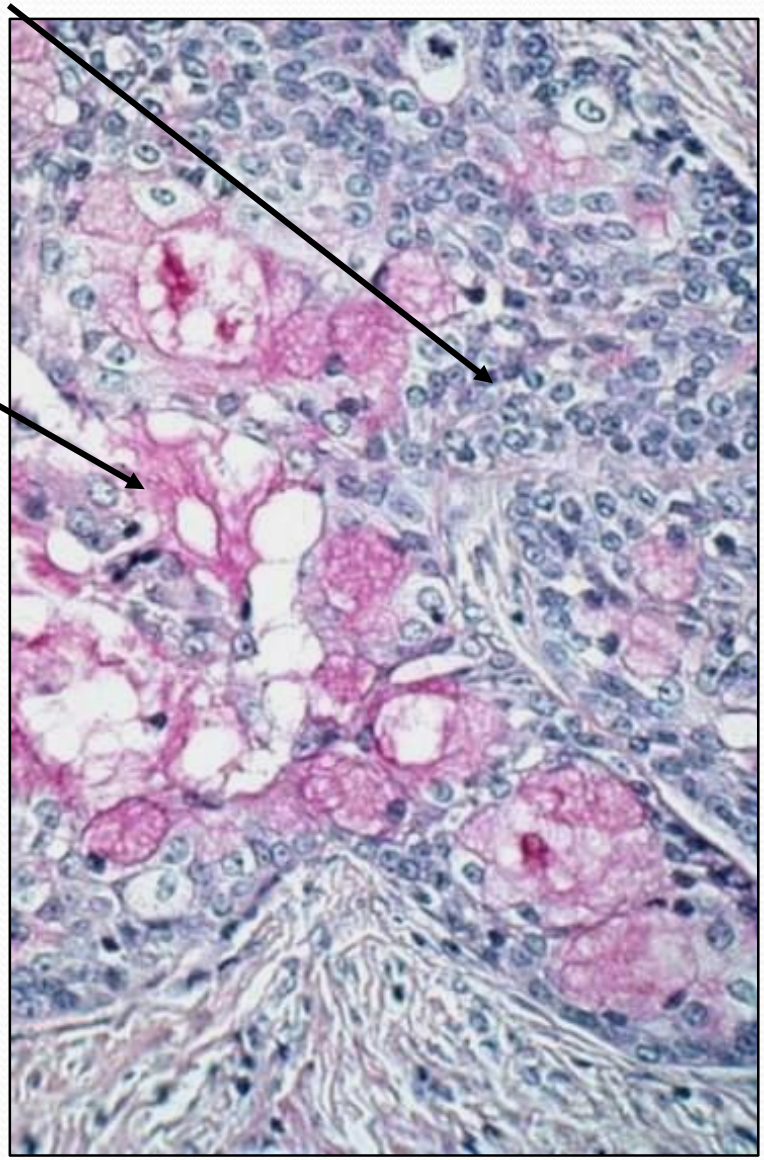


Fig. 7.02 **A** Low-grade mucoepidermoid carcinoma. Cystic ductal spaces lined by mucinous epithelial cells. **B** Intermediate-grade mucoepidermoid carcinoma. Nests of tumour cells with mucinous, clear and squamoid features with minimal cystic formation. **C** High-grade mucoepidermoid carcinoma. Poorly differentiated tumour with focal mucin-producing cells.

Mucoepidermoid carcinoma

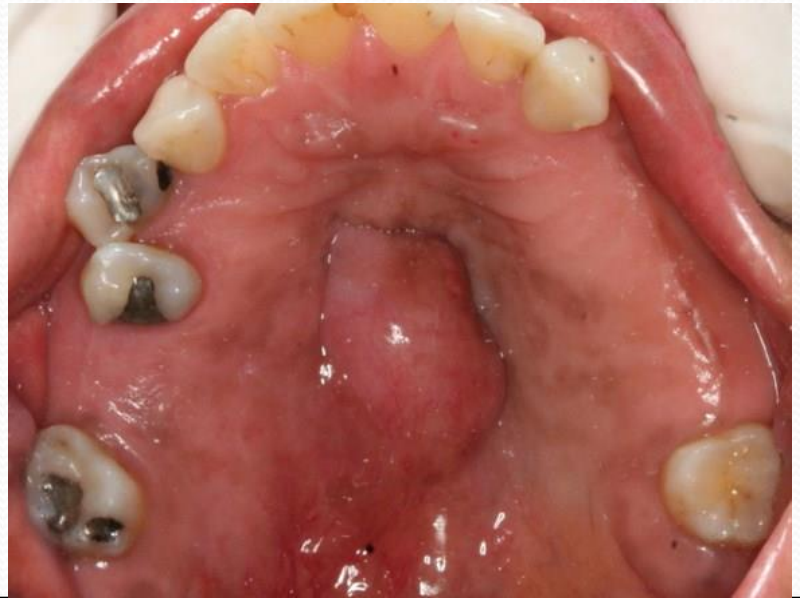
Mucus secreting cells and squamous cells

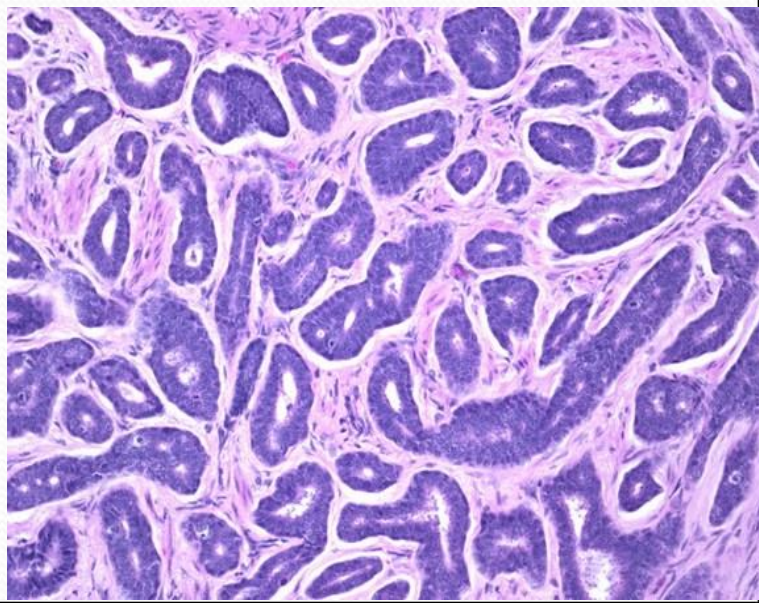




Adenoid cystic carcinoma

- Average age 57 years
- Typically it is represented by a whitish gray mass, not infiltrated encapsulated of variable size
- Major salivary glands
- Ductal and myoepithelial cells
- Tubular, cribriform and solid pattern





Adenoid cystic carcinoma

- Prognosis - Overall 10-year survival rate: 50-70%, variable recurrence rate
- Lymph node involvement is not uncharacteristic, but is more common in the solid version
- Remote metastases are reported in 50% of cases
- Mt in the lungs followed by bones, liver and brain
- In general, tumors with a tubular and cribriform pattern are less aggressive than those with a solid component that constitutes a 1/3.

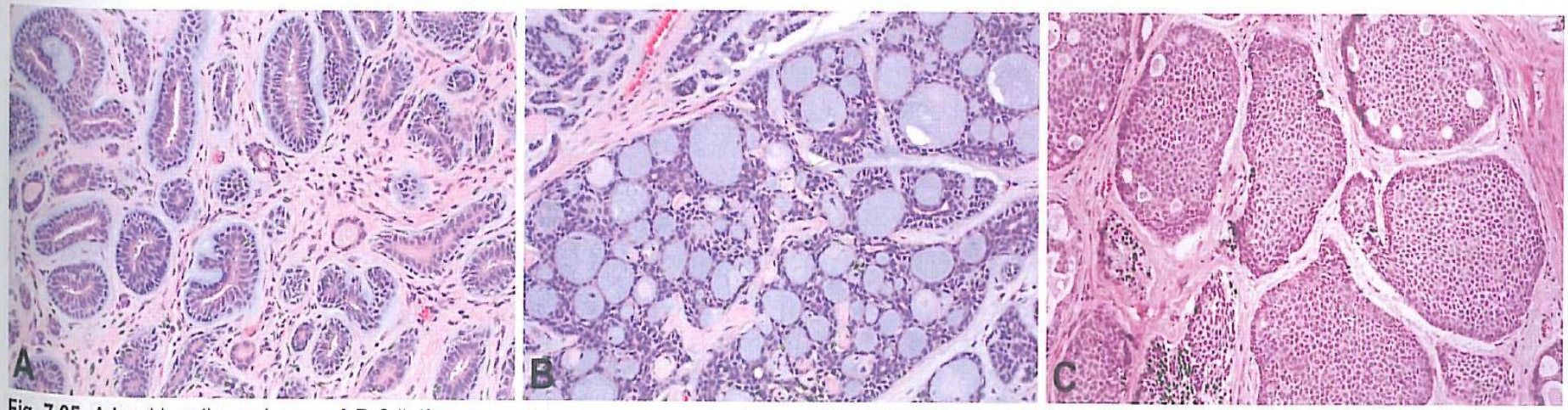
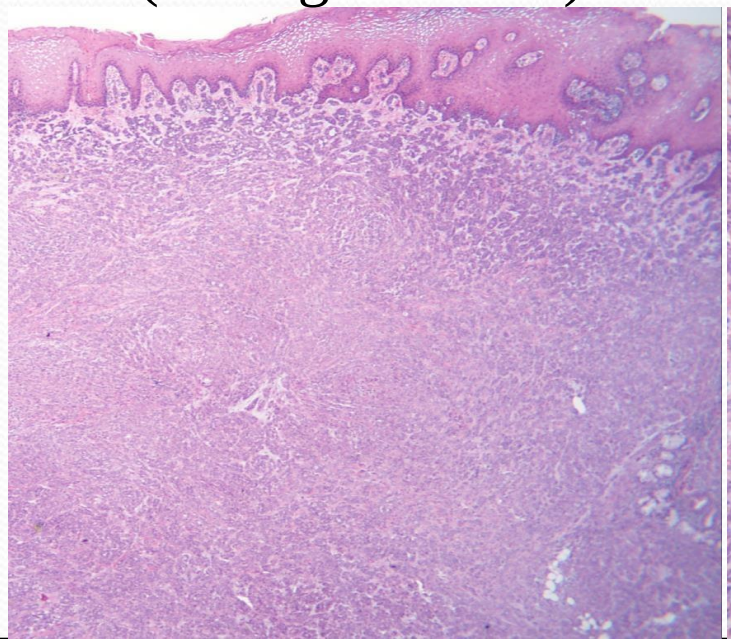
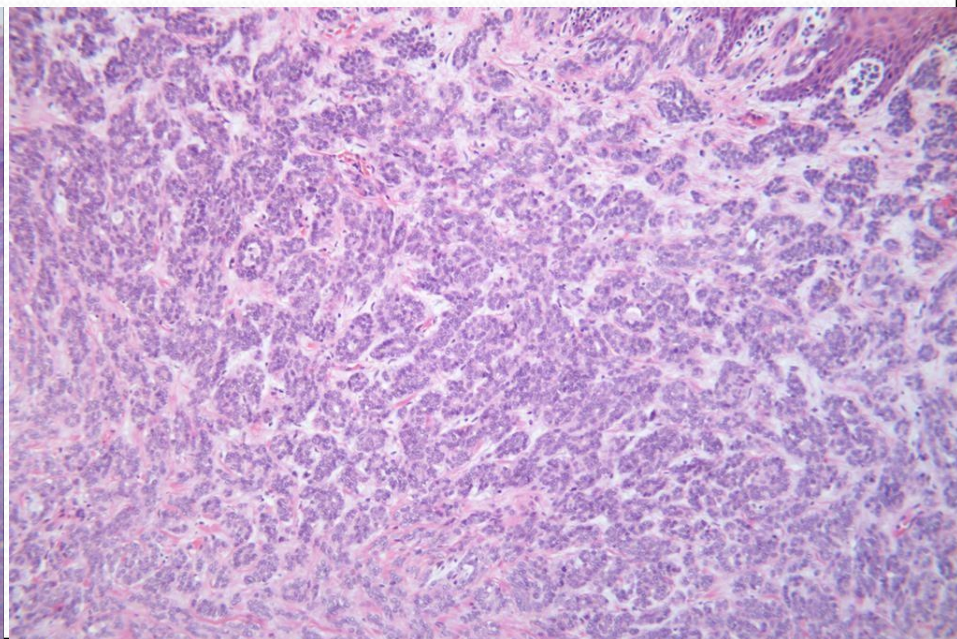


Fig. 7.05 Adenoid cystic carcinoma. A,B Cribriform type with sharply defined round spaces filled with lightly basophilic myxoid ground substance. C Cellular nodules formed of homogeneous cellular proliferation with occasional ductal formation.

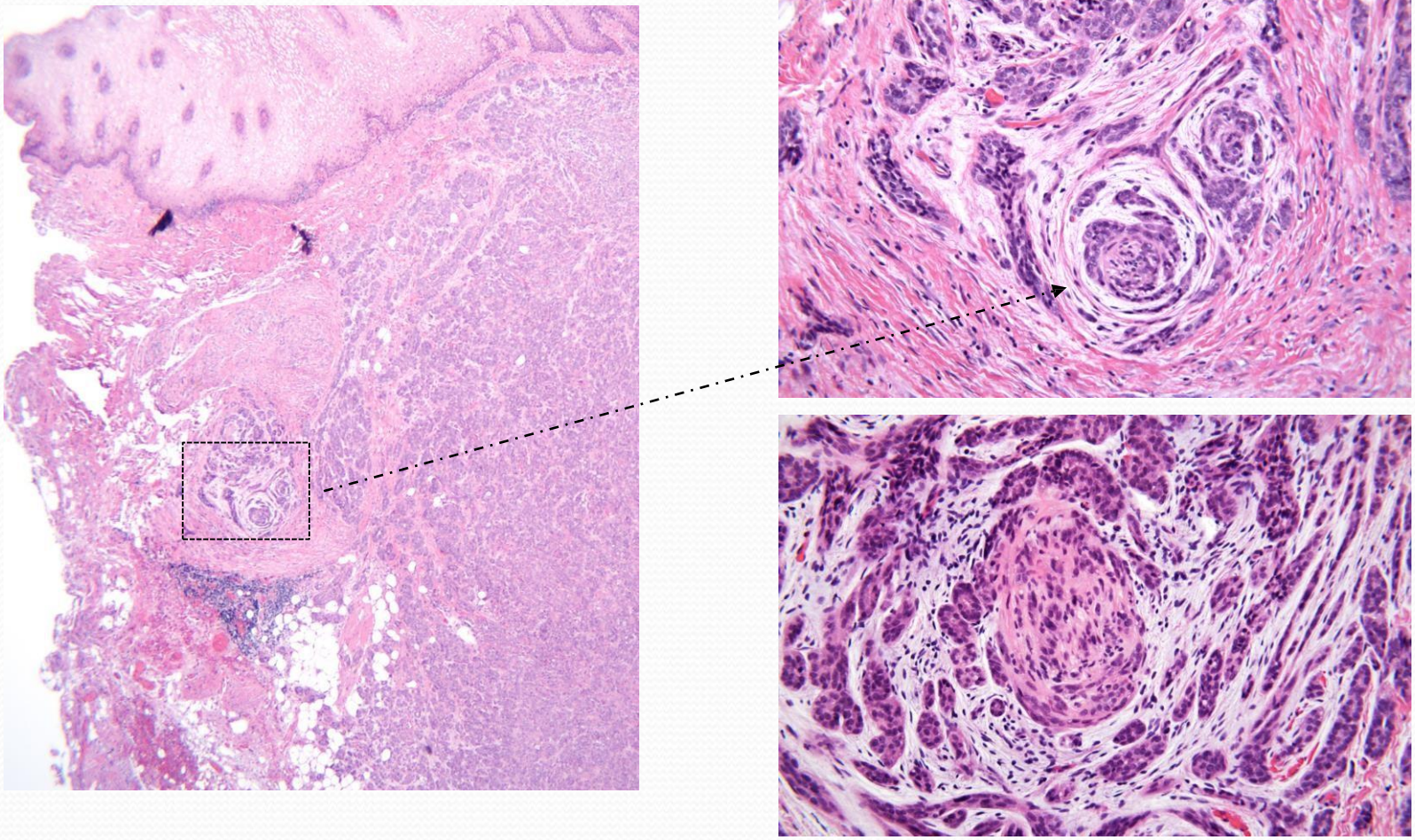
Pleomorph adenocarcinoma

- Variable cytoarchitectural pattern, infiltrative growth, low metastasis potential
- It develops from the terminal ducts
- The second malignant neoplasm of G.S. achieving 26%
- 19-94 years, average age 59
- 60% of tumors develop in the palate
- Unencapsulated circumscribed mass, yellowish-brown of variable dimensions (average 2.1 cm.)





Polymorphic adenocarcinoma - perineural invasion
Pattern variable- lobular, microchistic, cribriform, trabecular, solid.

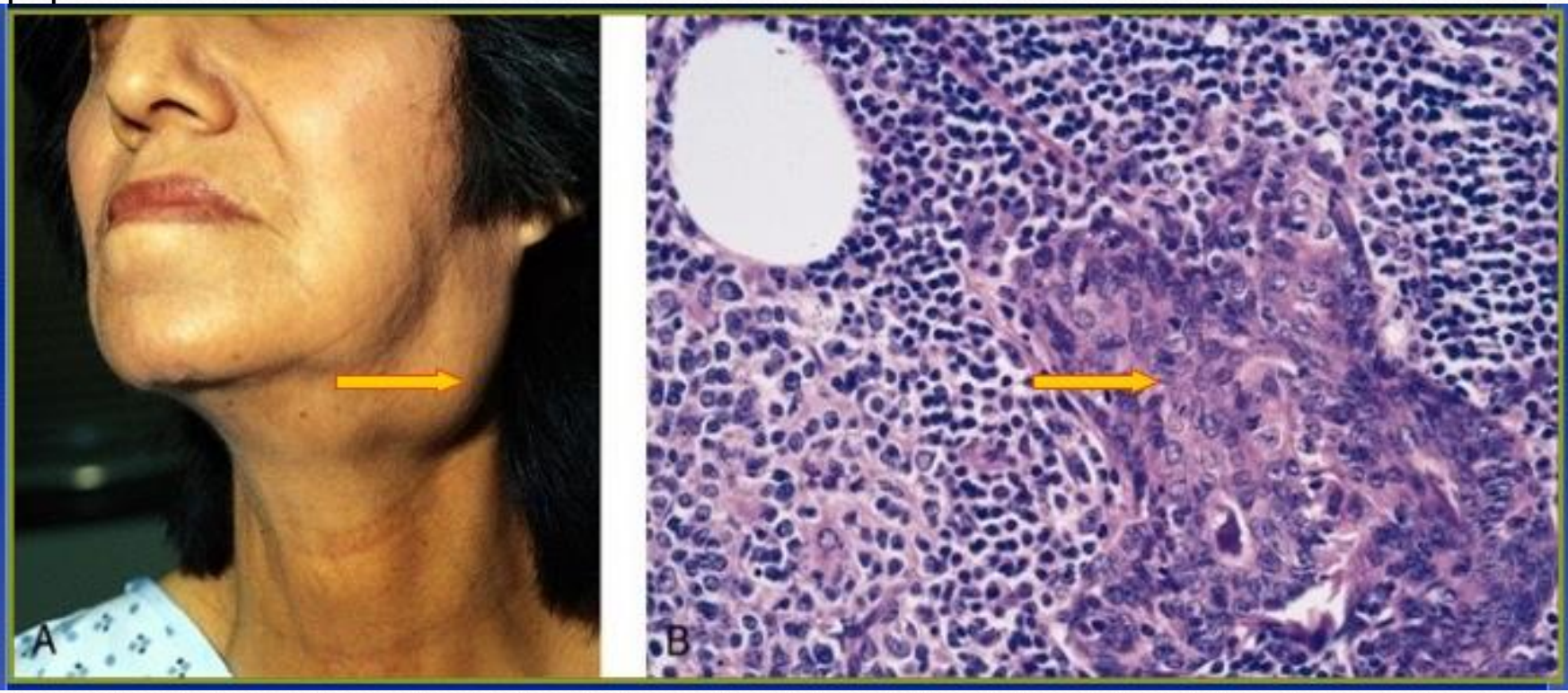


Sjögren Syndrome

- Sjögren's syndrome is the third most common rheumatic disease, after rheumatoid arthritis and systemic lupus erythematosus.

- Systemic autoimmune disease usually with xerostomia, keratoconjunctivitis, rheumatoid arthritis and hypergamaglobulinemia

- The incidence is 3-6 per 100,000 per year; estimated prevalence of up to 3% of the population

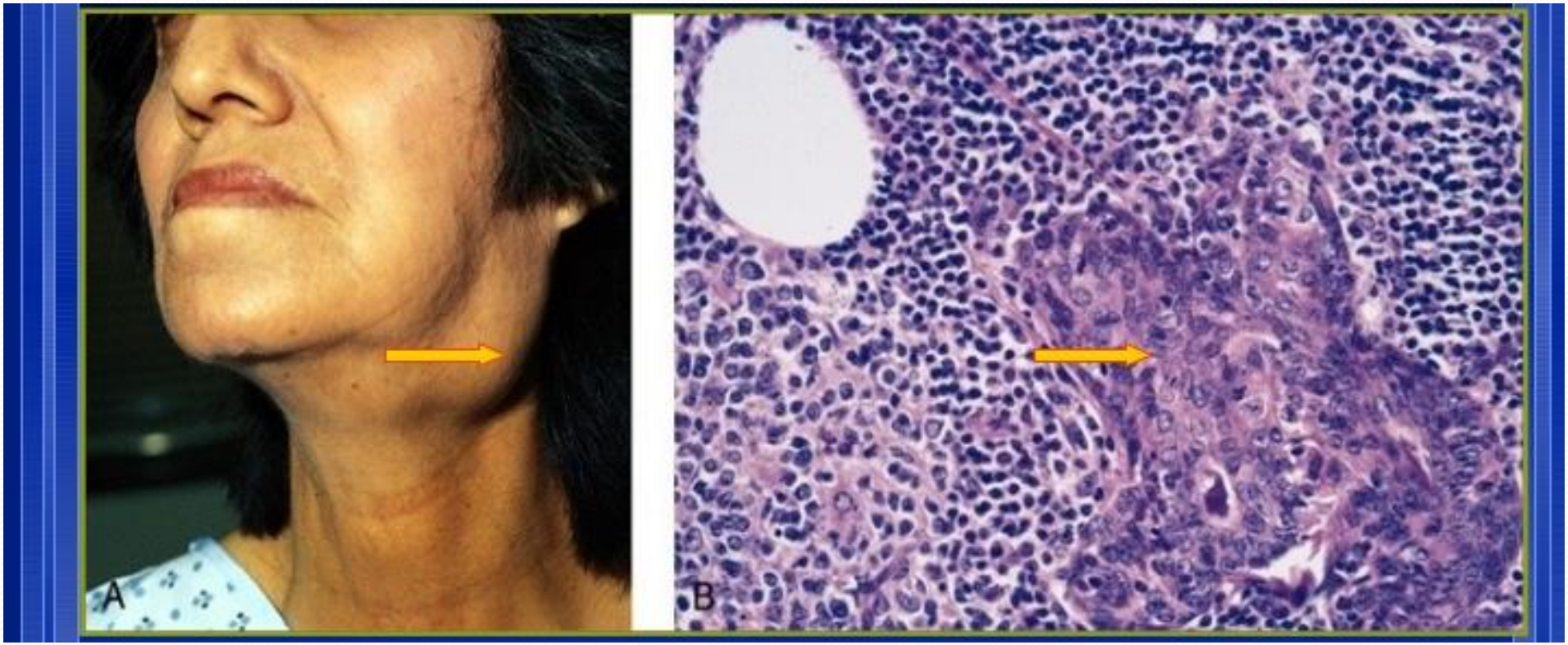


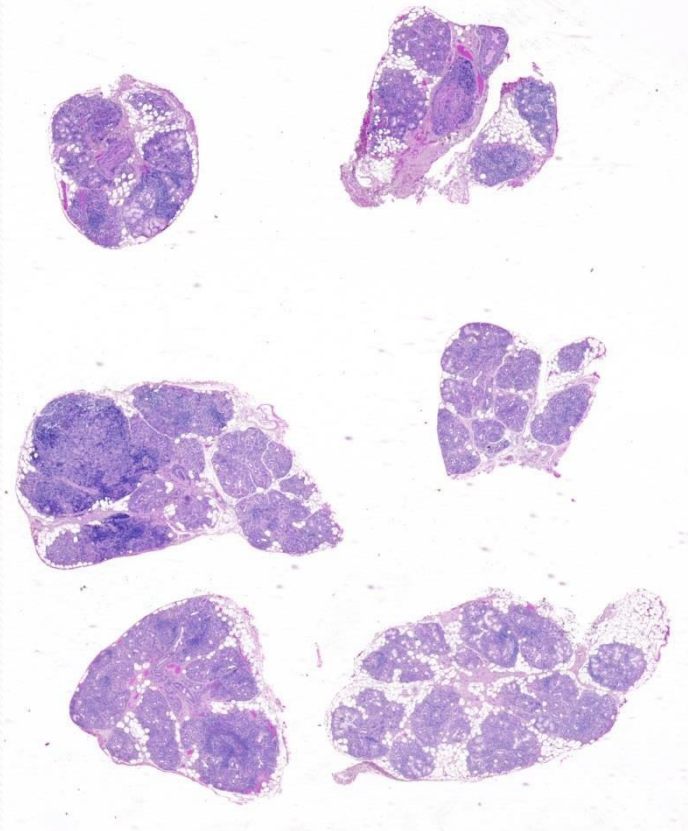
Sjögren Syndrome

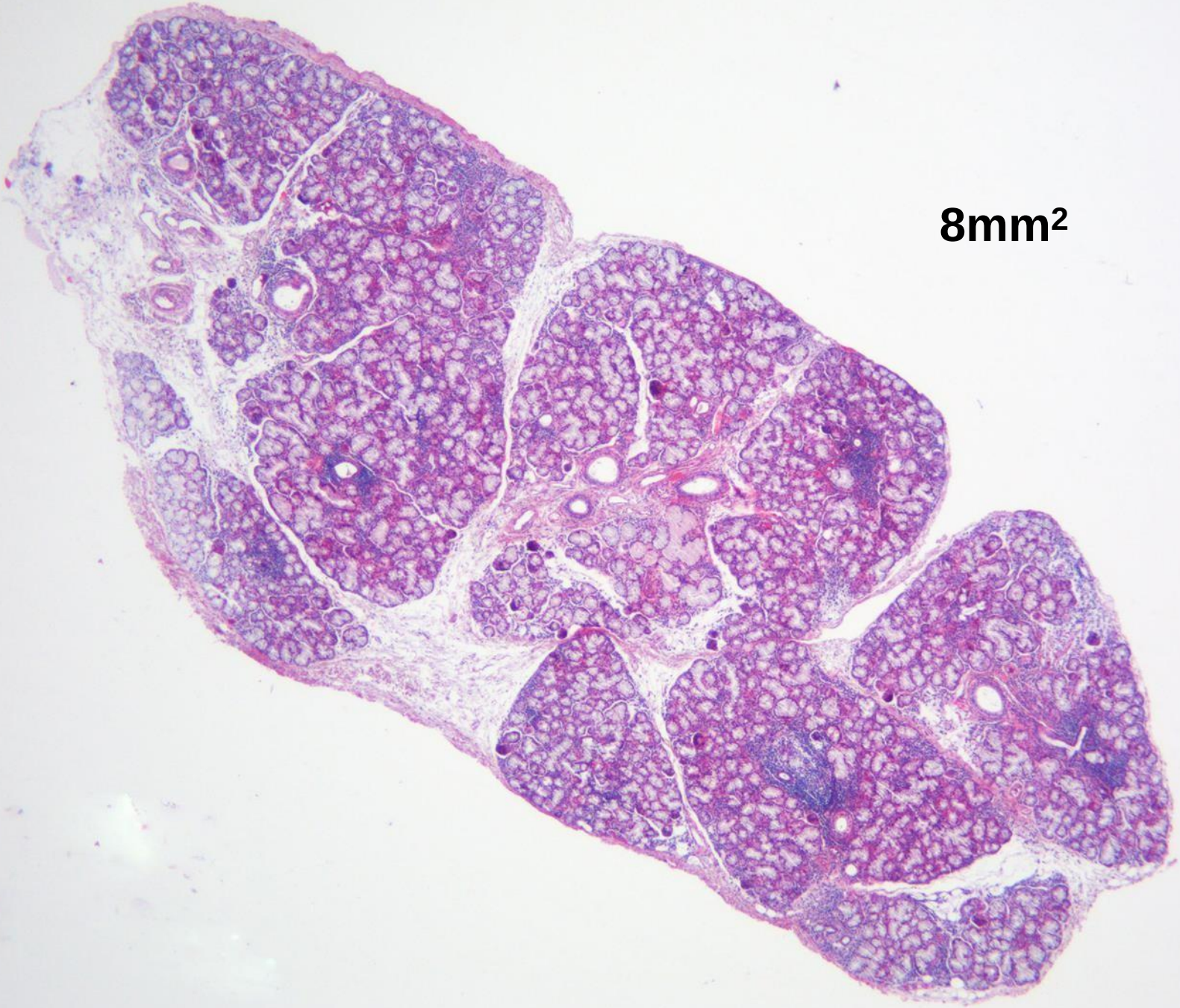
- The diagnosis requires the presence of a number of clinical and pathological features

- Proposed diagnostic criteria: adequate biopsy of the minor salivary glands (5 or more glands) with a focus score> 1/4 mm2

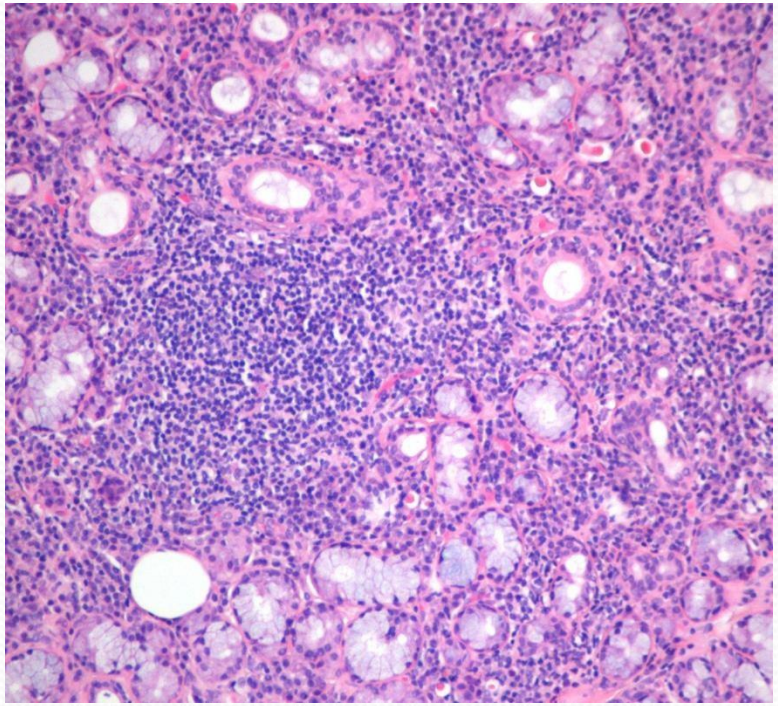
- Extended lymphoid infiltrate with germinal centers, frequent interstitial fibrosis and acinar atrophy

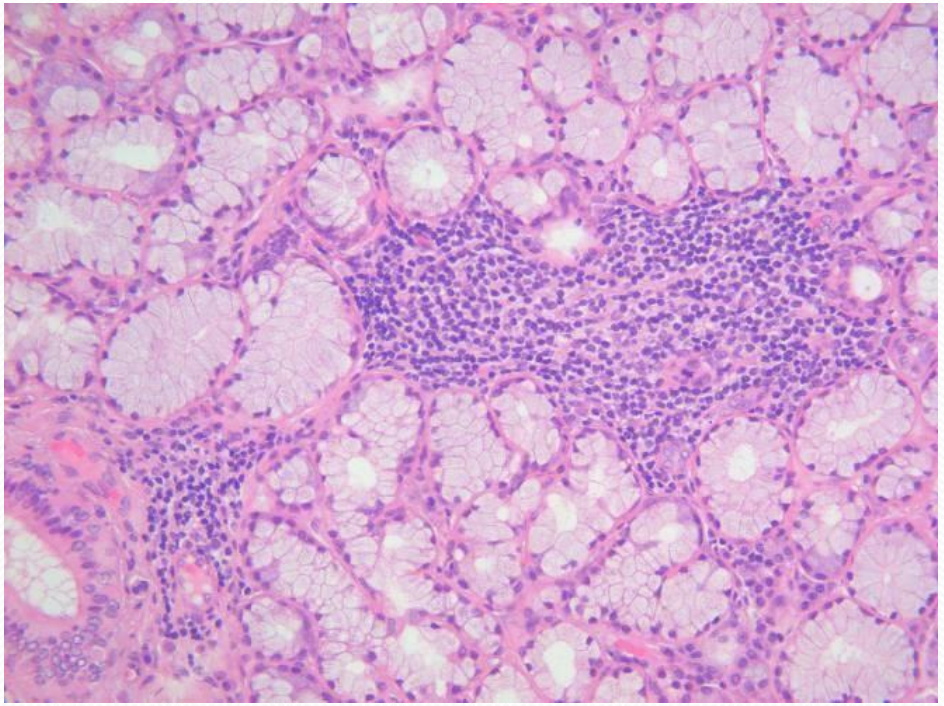





8mm2

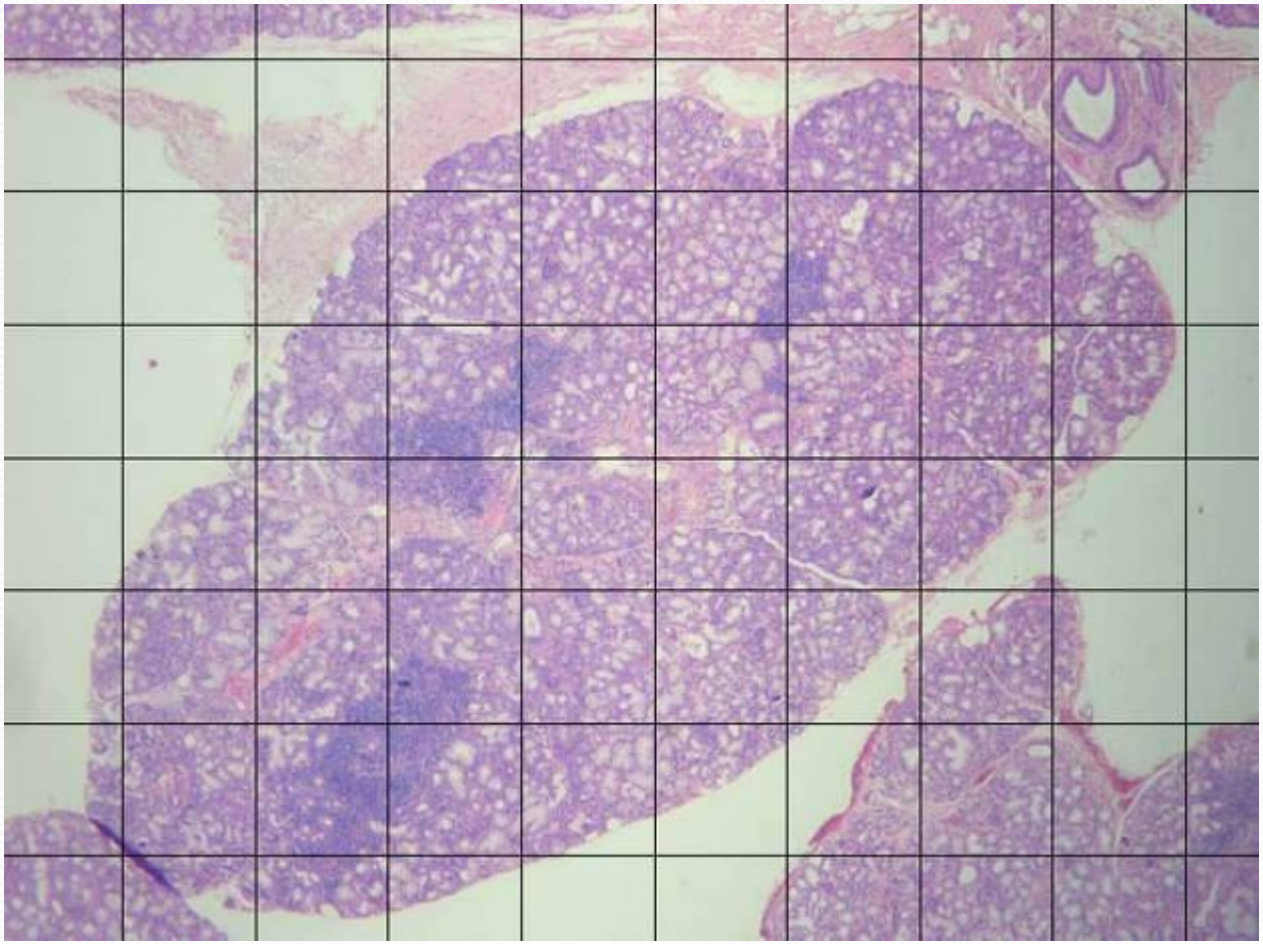
Lymphoid focal infiltrate





Focal infiltrate with preservation of glandular tissue

Biopsy evaluation



Calculate the focus score: a focus = with an agglomeration of at least 50 lymphocytes. The foci are counted per 4 mm^2 area and finally an average of the focus scores is calculated by examining at least 4 lobules. Positive result: focus score ≥ 1.