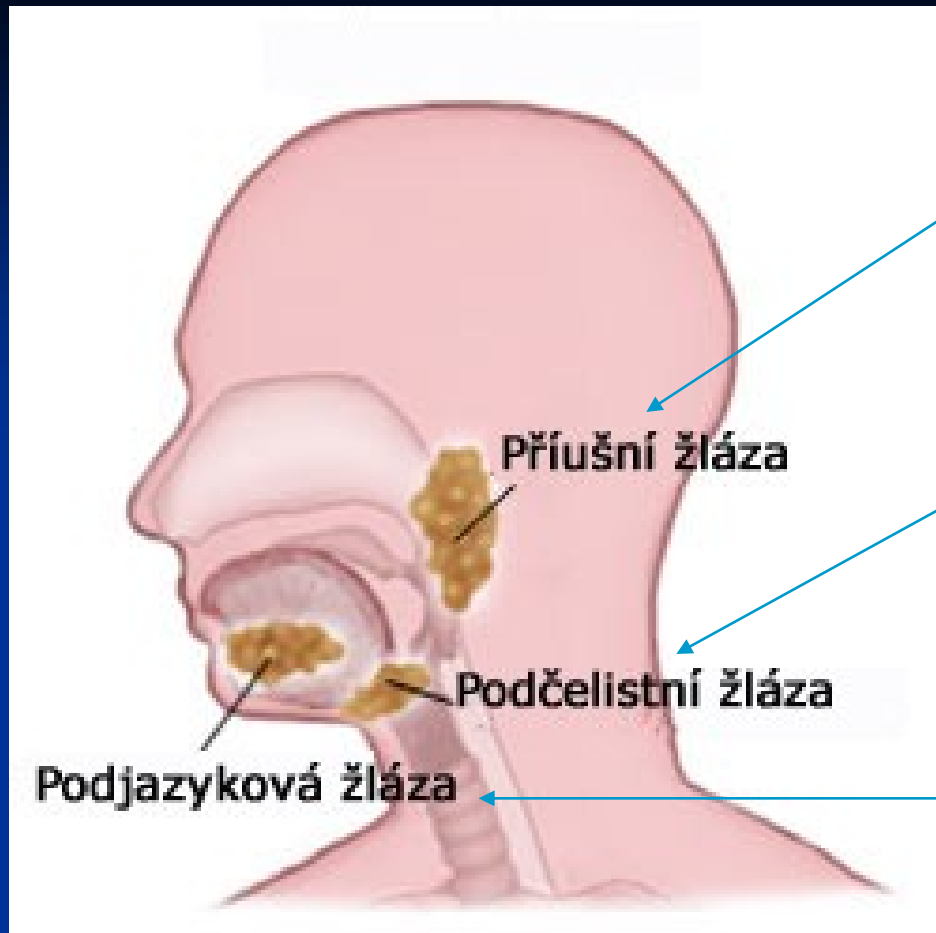


# Salivary gland pathology.

Markéta Hermanová



Parotid gland: serous

Submandibular gland: seromucous

Sublingual gland: mucous

### + Minor salivary glands

(oral mucosa - tongue, lips, the floor of the mouth,...), usually mixed seromucinous

- Developmental anomalies
- Sialoadenitis
- Obstructive and traumatic lesions
- Sjögren syndrome (SS)
- Sialoadenosis
- HIV-associated salivary gland disease
- Salivary gland tumor
- Age changes in salivary glands

# Developmental anomalies

- **Aplasia** (congenital, parotid gland, ass. with other facial abnormalities – mandibulofacial dysostosis, aplasia of the lacrimal glands, hemifacial microsomia)
- **Atresia** of one or more salivary gland ducts
- **Heterotopic salivary tissue** (in the mandible – Stafne's idiopathic bone cavity)

# Sialoadenitis (1)

## ■ Bacterial sialoadenitis

- **acute** (mainly parotid; ascendent infection; Staphylococcus aureus, Streptococcus pyogenes, Haemophilus,...; in patients with SS, xerostomia, immunocompromised patients,..; swelling, pain, fever, malaise, redness of the skin)
- **chronic** (in duct obstruction, calculi, ascending infection) + chronic sclerosing sialoadenitis
- **recurrent** (attacks ascending infection in children and adults; calculi, duct strictures, congenital anomalies of the duct system)

## ■ Viral sialoadenitis

- **Mumps (epidemic parotitis)** – paramyxovirus, parotid, bilateral; occasionally involvement of testes, ovaries, CNS, pancreas
- **Cytomegalic inclusion disease** – CMV , severe disease in immunocompromised and HIV+; disseminated disease (kidney, liver, lungs, brain,....)

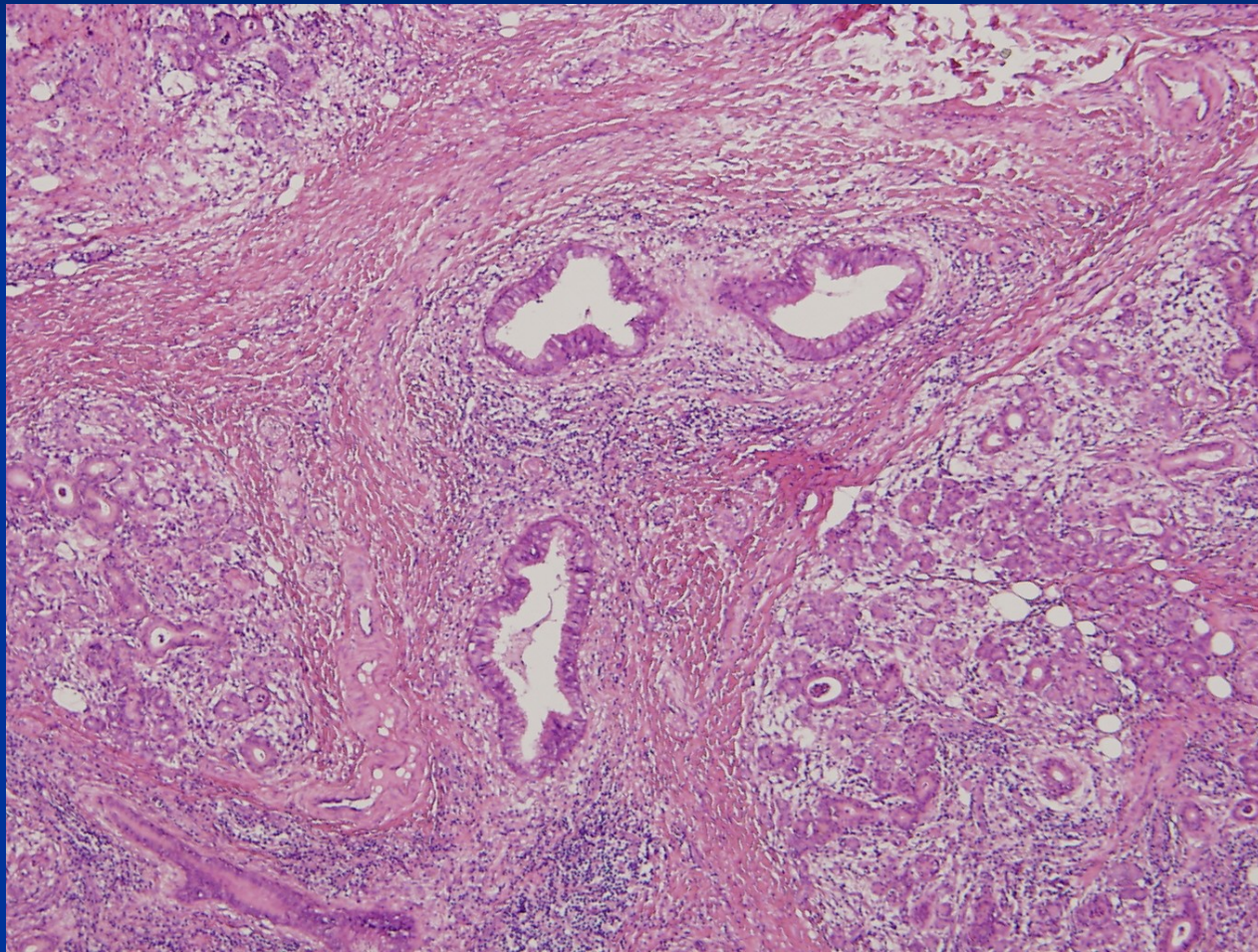
# Chronic sclerosing sialoadenitis

- submandibular > parotid
- acinar atrophy, periductal fibrosis, chronic inflammation, replacement fibrosis
- **lesion associated with IgG4**

# Sclectrosing lesions associated with IgG4

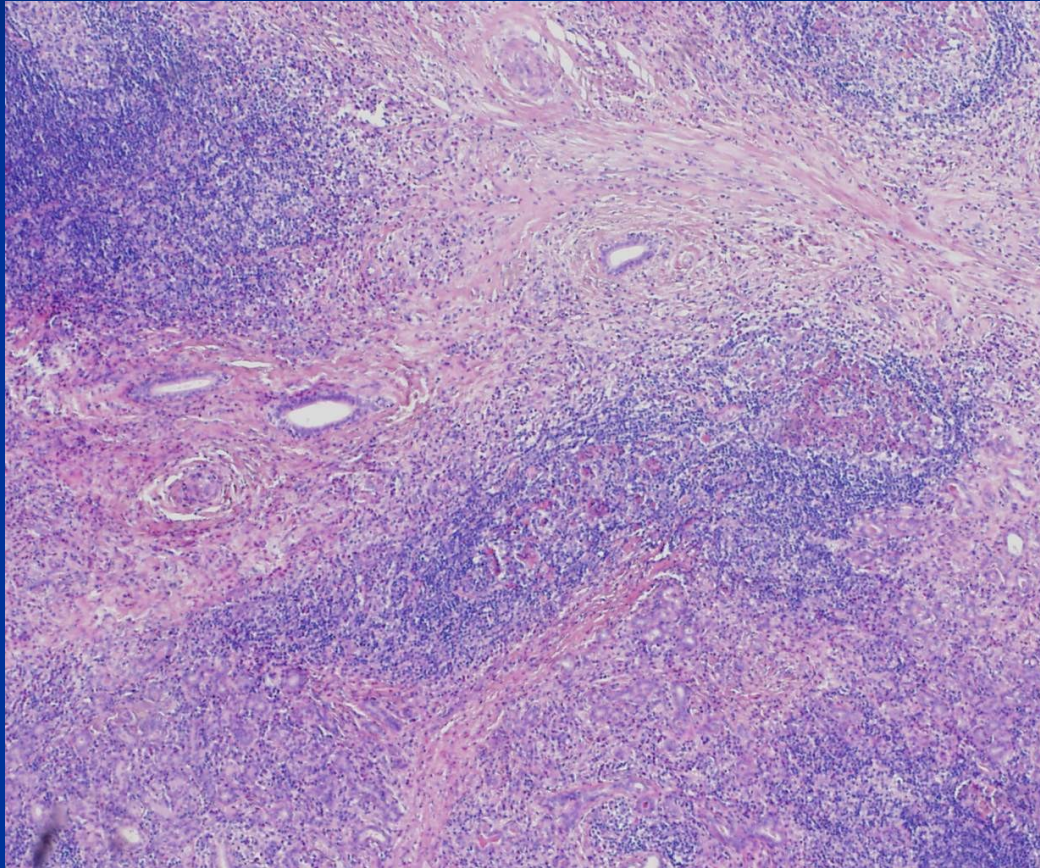
- Autoimmunne pancreatitis
  - Sclerosing cholangitis
  - Lymphoplasmocytic cholecystitis
  - Sclerosing sialoadenitis
  - Idiopathic retroperitoneal fibrosis (M. Ormond)
  - Inflammatory pseudotumor of the liver, lung and hypophysis
  - Tubulointerstitial nephritis ass. with IgG4
  - Interstitial pneumonia ass. with IgG4
  - Sclerosing prostatitis
  - Sclerosing thyreoiditis
- 
- M>F; steroid responsive, lymphadenopathy; pseudoneoplastic lesions
  - Sclerosing lesions with diffuse lymphoplasmocytis infiltration, irregular fibrotisation, sometimes infiltration by eosinophils, obliterative phlebitis, and the presence of IgG4 positive plasmocytes.
  - increased risk of the malignant lymphoma

# Chronic sclerosing sialoadenitis

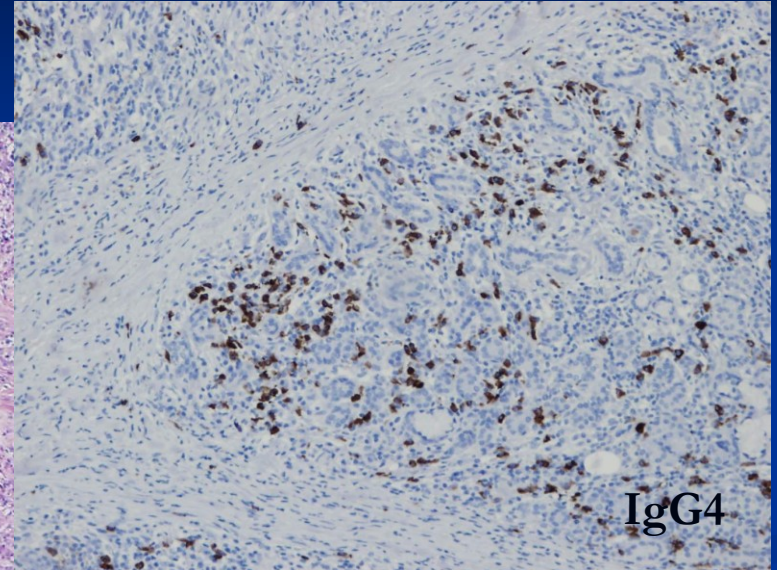




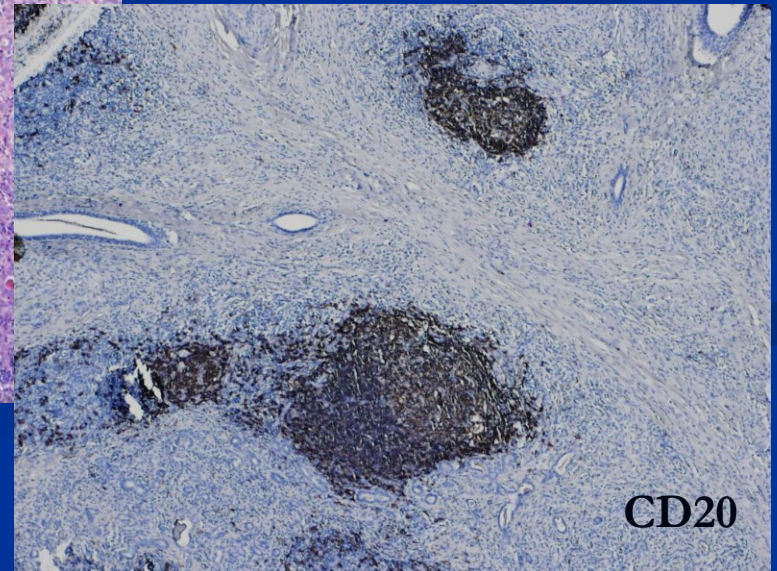
# Chronic sclerosing sialoadenitis



Acinar atrophy, periductal fibrosis, chronic inflammation + IgG4+ plasmacytes



IgG4



CD20

# Sialoadenitis (2)

- **Postirradiation sialoadenitis** (fibrous replacement of acini, squamous metaplasia of ducts)
- **Sarcoidosis** (minor glands, parotid; Heerfordt sy: sarcoidosis of salivary and lacrimal glands)
- **Sialoadenitis of minor gland**
  - in sarcoidosis, in Sjögren syndrome
  - associated with mucous extravasation cysts, with stomatitis nicotina of the palate
  - stomatitis glandularis (multiple involvement, multiple swelling, cystic dilatation of the ducts, chronic suppuration); lips affected

# Obstructive and traumatic lesions

## ■ Salivary calculi (sialoliths)

- the most common cause of obstruction
- 70-90 % in submandibular gland
- usually unilateral; calcium phosphate+carbonates
- pain, recurrent swelling
- predisposes to ascending infection and chronic sialoadenitis

## ■ Necrotizing sialometaplasia

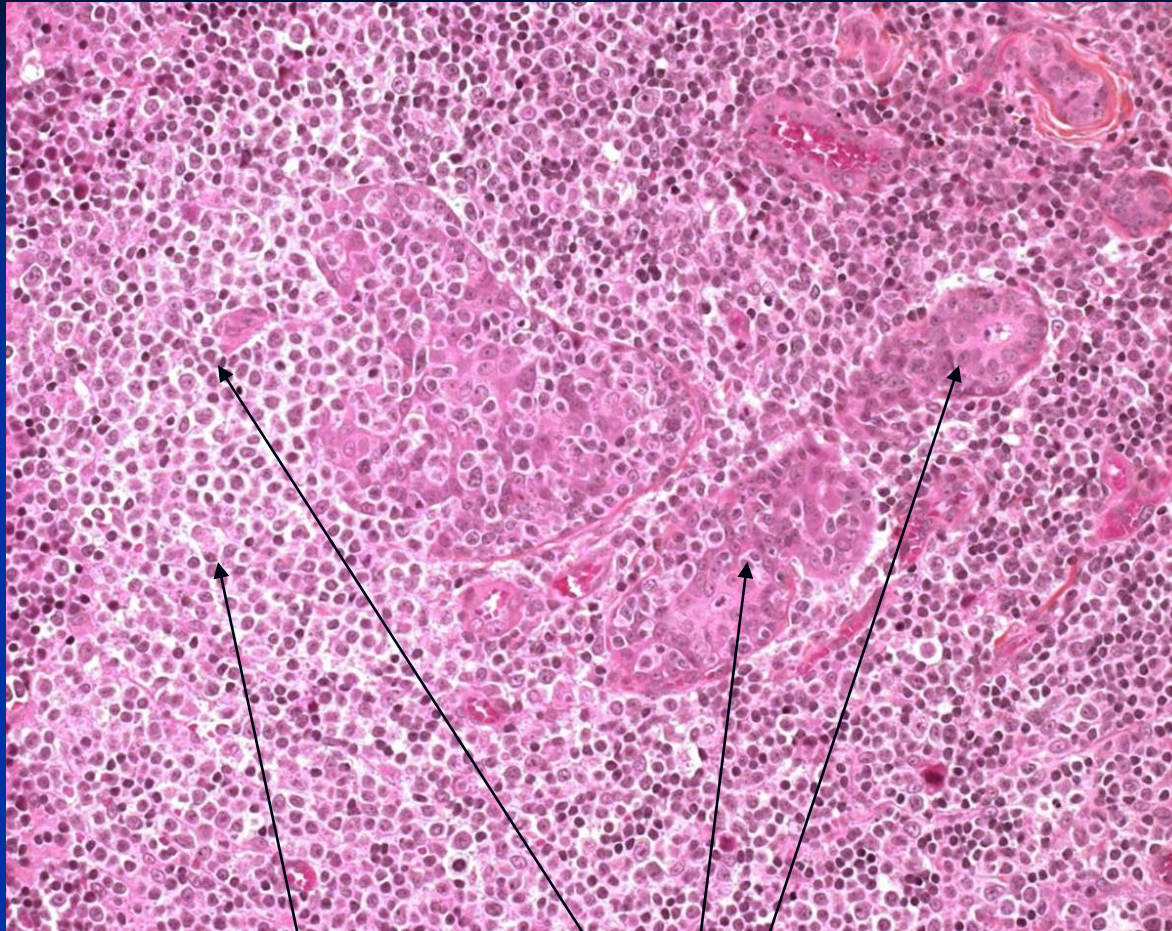
- hard palate in middle aged patients; M>F
- deep crater like ulcer
- lobular necrosis of salivary glands, squamous metaplasia of ducts and acini, mucous extravasation, inflammatory cell infiltration, pseudoepitheliomatous hyperplasia of the overlying palatal mucosa
- etiology unknown; ischaemia and infarction???, previous trauma, surgery

# Sjögren syndrome (SS)

- Chronic autoimmune disease; F>M; ass. with other AI diseases – non-organ specific AI disease – multisystem involvement
  - **Primary** (dry mouth (xerostomia)+dry eyes (xerophthalmia or keratoconjunctivitis sicca)
  - **Secondary** (xerostomia+xerophthalmia+AI connective tissue disease (e.g. rheumatoid arthritis)
- Lymphocytic infiltration and acinar destruction of lacrimal and salivary glands→dry eyes and dry mouth; hyperplasia of ductal epithelium – benign lymphoepithelial lesion
- ass. with particular combination of HLA class II major histocompatibility genes + viruses (EBV)
- Increased risk of B cell malignant lymphoma (MALT)

# European diagnostic criteria of SS

- Ocular symptoms (xerophthalmia)
- Oral symptoms (xerostomia predisposing to candidosis, caries, sialoadenitis, oral dysfunction)
- Salivary gland function (sialography, scintiscanning, salivary flow rates, sialochemical studies)
- Labial salivary gland histology (lymphocytic sialoadenitis)
- Anti-Ro and anti-La autoantibodies (nuclear factors)+ RF, ANA, antithyroid and antigastric parietal autoantibodies



Lymphocytic infiltration, destruction of acinar structures + epithelial and myoepithelial proliferation → epimyoeptithelial islands (benign lymphoepithelial lesion)

# Sialoadenosis (or sialosis)

- non-inflammatory, non-neoplastic, recurrent bilateral swelling of salivary glands
- Hypertrophy of serous acinar glands
- Parotid commonly affected
- Abnormality of neurosecretory control (hormonal disturbances, malnutrition, liver cirrhosis, chronic alcoholism, and following administration of various drugs).

# HIV-associated salivary gland disease

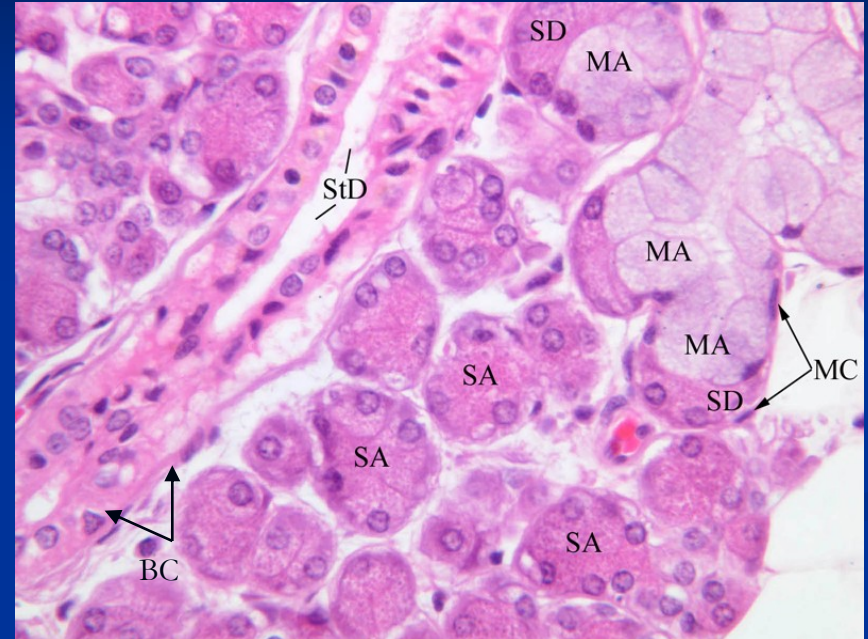
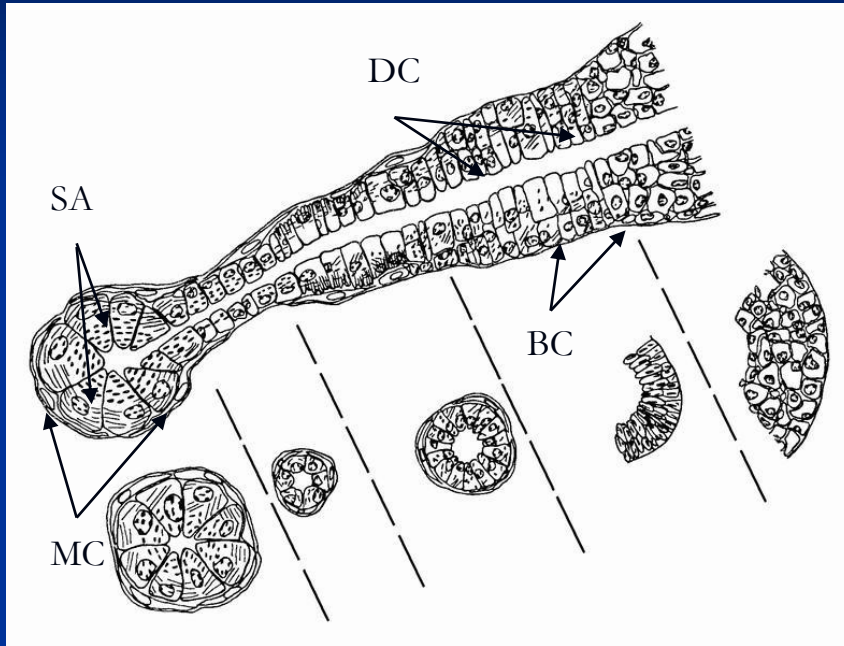
- Sjögren syndrome-like disease associated with a benign lymphoepithelial lesion
- parotid swelling as a part of persistent glandular enlargement
- multiple lymphoepithelial cysts



# Salivary gland tumors

- 85 % in glandula parotis
- 65-80 % of tumors in gl. parotis benign
- in other glands 35-50 % tumors malignant
- surgical treatment (n. facialis!!!), radiotherapy
- late metastases
- non-painful, palpable nodules

# Structure of salivary glands



## Luminal cells:

- acinar serous (SA) and mucinous (MA)
- ductal (DC)

## Abluminal cells:

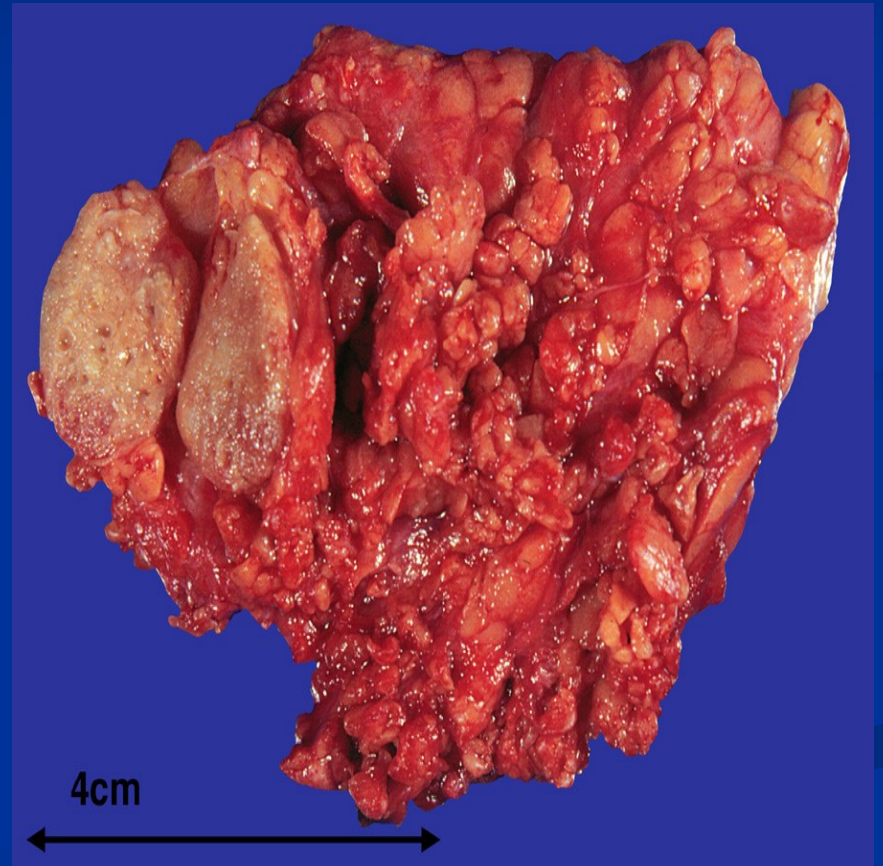
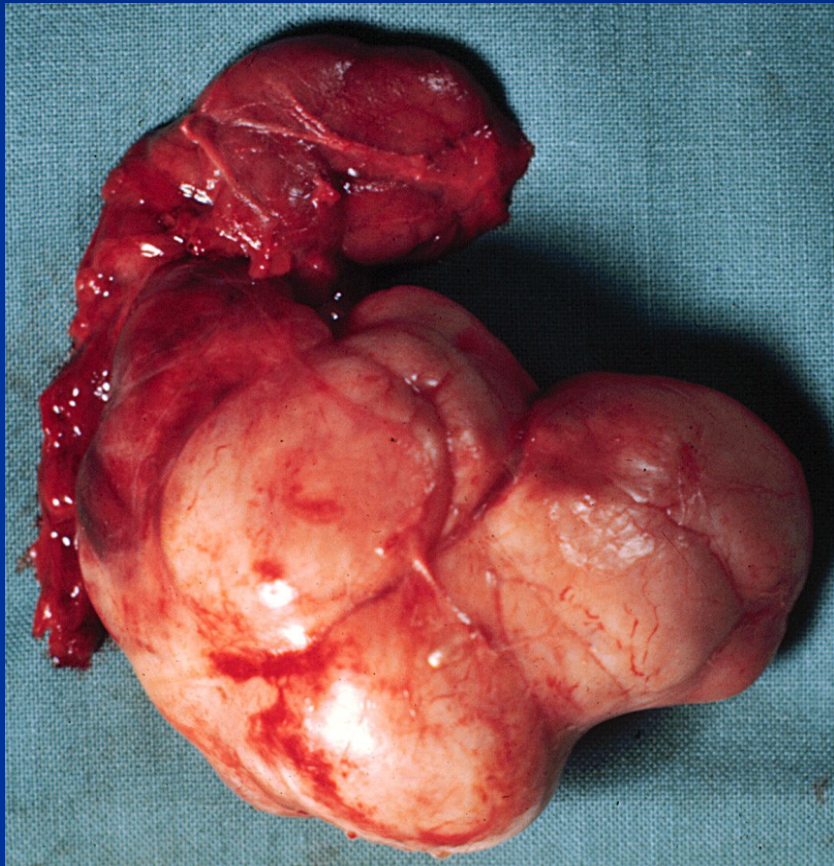
- myoepithelial (MC)
- basal (BC)

Immunophenotype: CEA, EMA, LMW CK, amylase      Immunophenotype: HMW, SMA, S100, GFAP

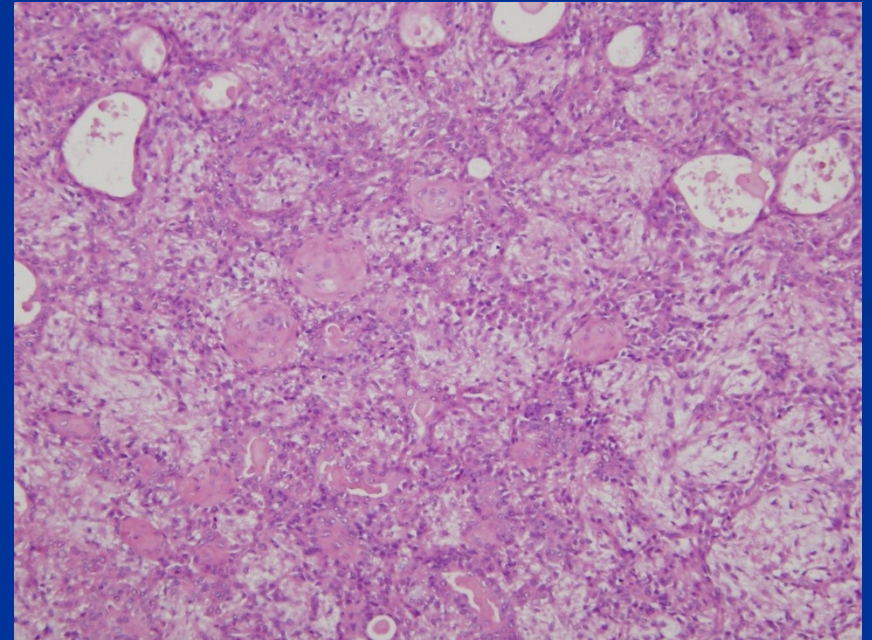
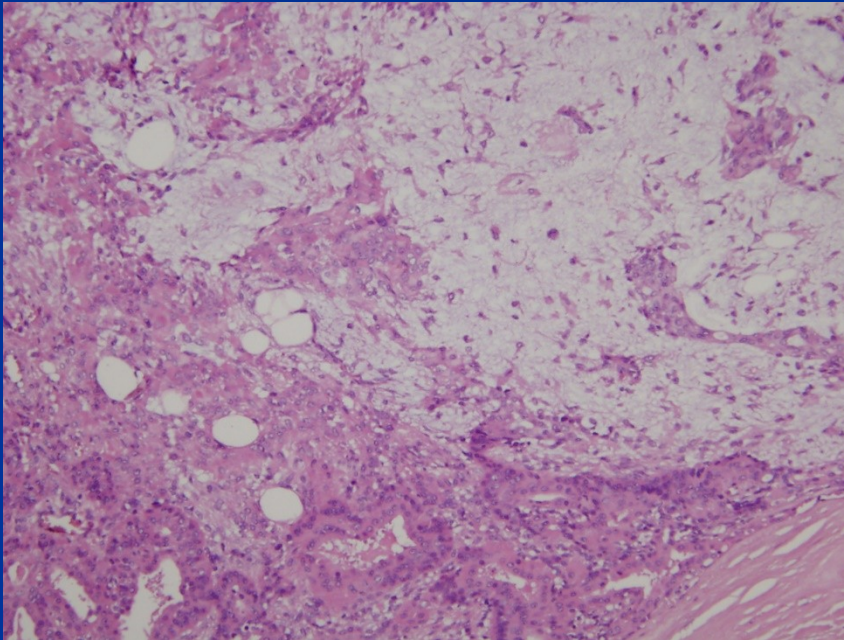
# Benign epithelial salivary gland tumors – WHO classification

- Pleomorphic adenoma – mixed tumor, myxochondroepithelioma (28-74 %)
- Warthin tumor (cystadenolymphoma), (3,5 – 12 %)
- Monomorphic adenoma
  - basal cell adenoma (1,5-2 %)
  - myoepithelial adenoma – myoepithelioma (1-2,9 %)
  - oncocytoma (1-2 %)
  - canalicular adenoma (1 %)
  - cystadenoma (2 %)
  - sebaceous adenoma/lymphadenoma
- Ductal papilloma

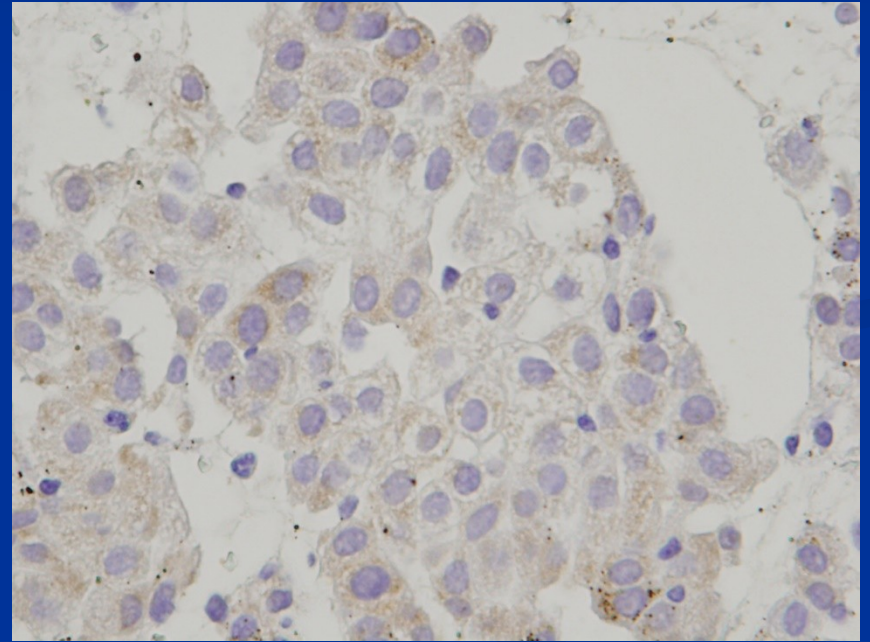
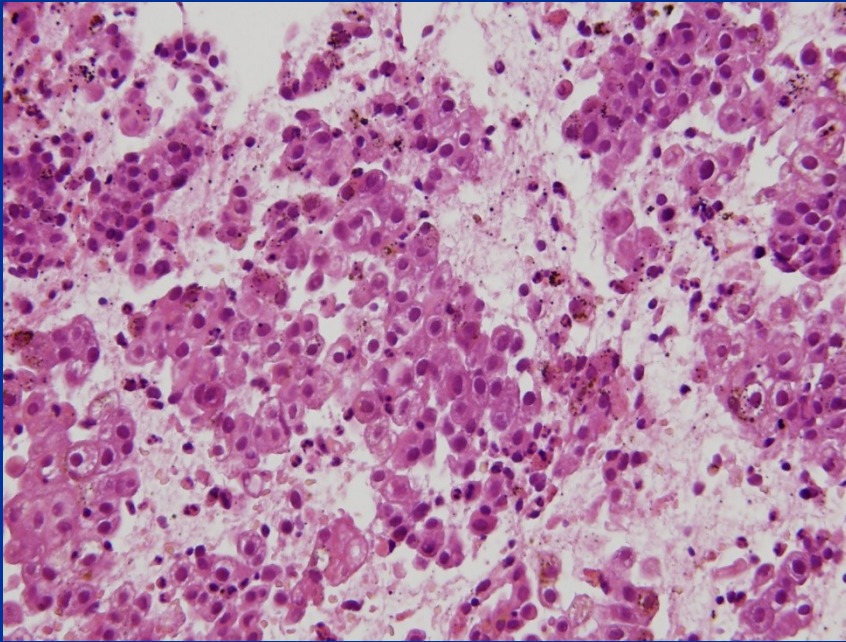
# Pleomorphic adenoma and Warthin tumor



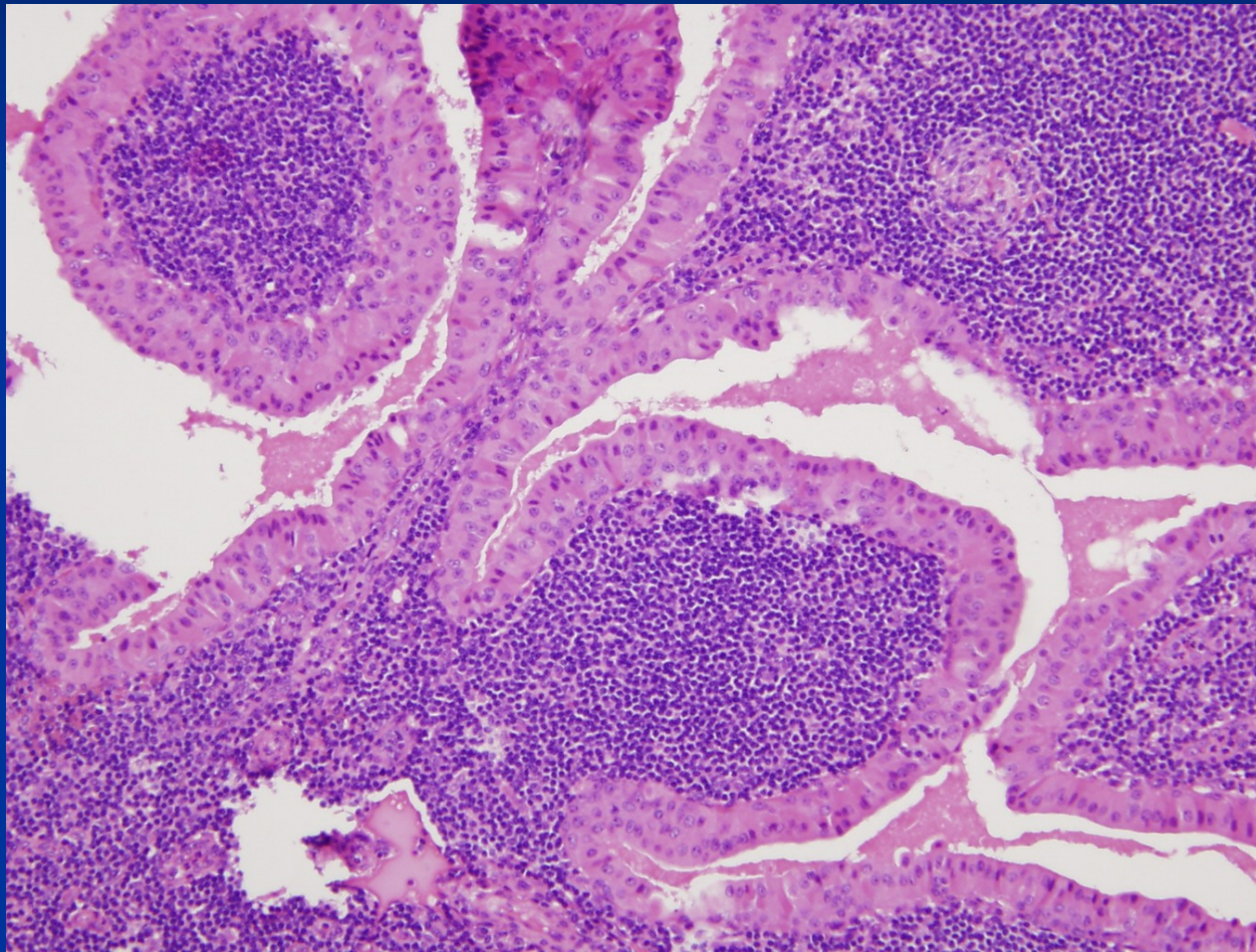
# Pleomorphic adenoma (myxochondroepithelioma, mixed tumor)



# Oncocytoma – oncocytic adenoma



# Cystic adenolymphoma – Warthin tumor



# Malignant epithelial salivary gland tumors – WHO classification

- Mucoepidermoid carcinoma (15,5 %)
- Adenocarcinoma, NOS (9 %)
- Acinic cell carcinoma (6 %)
- Adenoid cystic carcinoma (4 %)
- Polymorphous low-grade adenocarcinoma (7,4 %)
- Malignant mixed tumor (3,6 %)
- Basal cell carcinoma
- Epithelial-myoepithelial carcinoma
- Oncocytic carcinoma
- Squamous cell carcinoma
- Undifferentiated carcinoma (lymphoepithelioma-like, small cell and large cell carcinoma)
- Malignant myoepithelioma
- Salivary ductal carcinoma
- others (e.g. malignant variants of some benign tumors – carcinoma ex pleomorphic adenoma, cystadenoma, sebaceous adenoma and lymphadenoma, .....



# Low grade malignant salivary gland tumors

- Acinic cell carcinoma
- Mucoepidermoid carcinoma (low grade a intermediate grade)
- Polymorphous low-grade adenocarcinoma
- Basal cell carcinoma
- Epithelial-myoepithelial carcinoma
- Adenocarcinoma NOS, low grade
- Cystadenocarcinoma
- Malignant mixed tumors, low grade

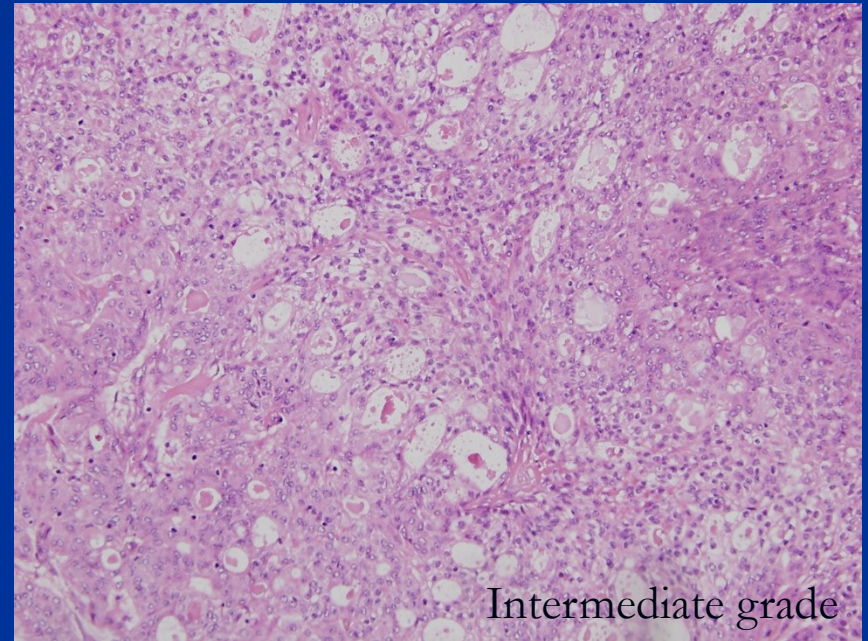
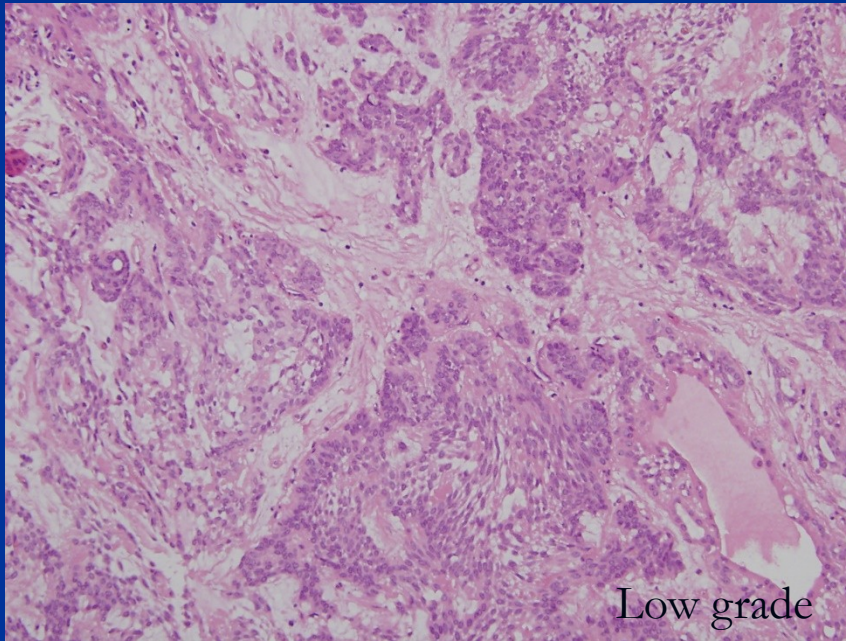
# Intermediate grade malignant salivary gland tumors

- Adenoid cystic carcinoma
- Sebaceous adenocarcinoma
- Malignant myoepithelioma
- Lymphoepithelioma – like carcinoma

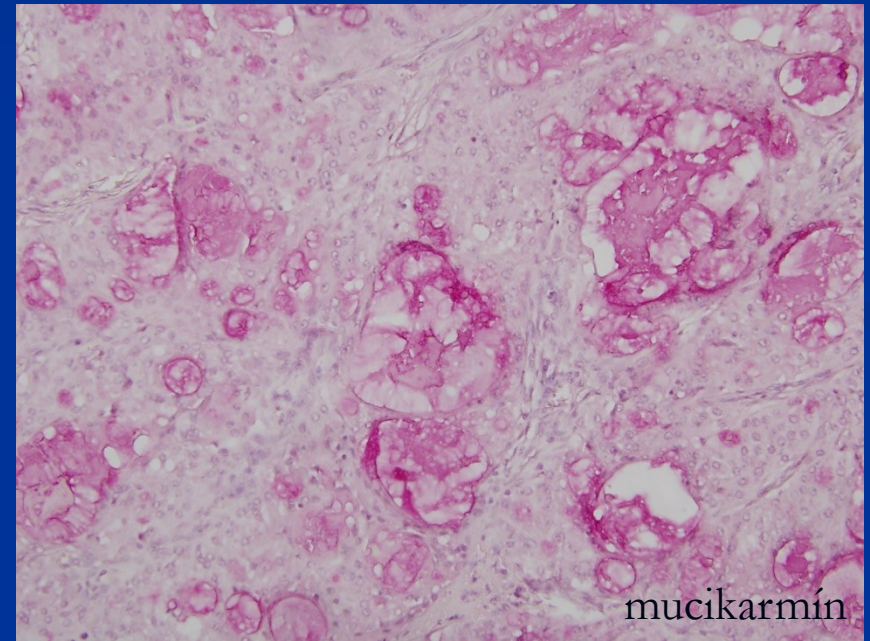
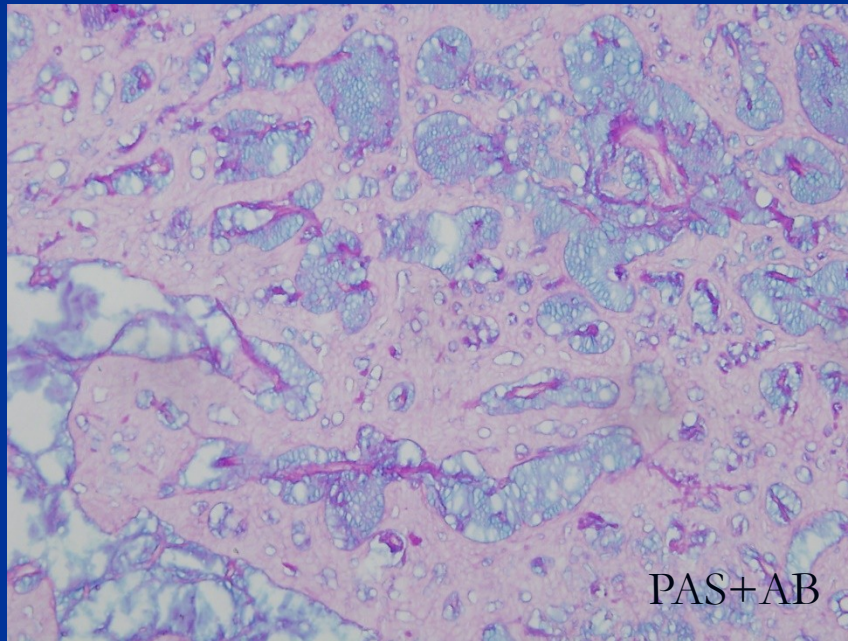
# High grade malignant salivary gland tumors.

- Mucoepidermoid carcinoma, high grade
- Adenocarcinoma NOS, high grade
- Squamous cell carcinoma
- Salivary duct carcinoma
- Malignant mixed tumor, high grade
- Oncocytic carcinoma
- Undifferentiated carcinomas
- Dedifferentiated adenoid cystic carcinomas and acinar cell carcinomas

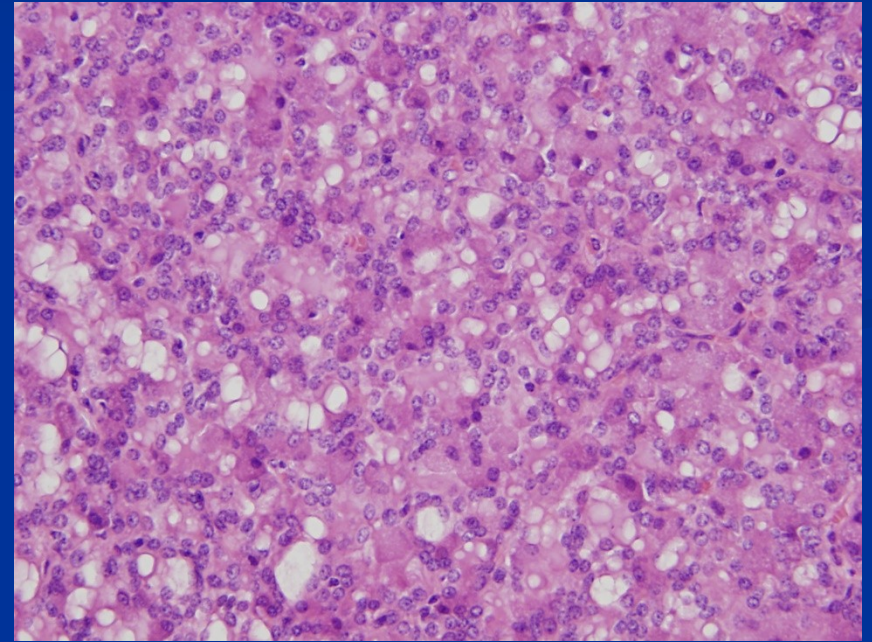
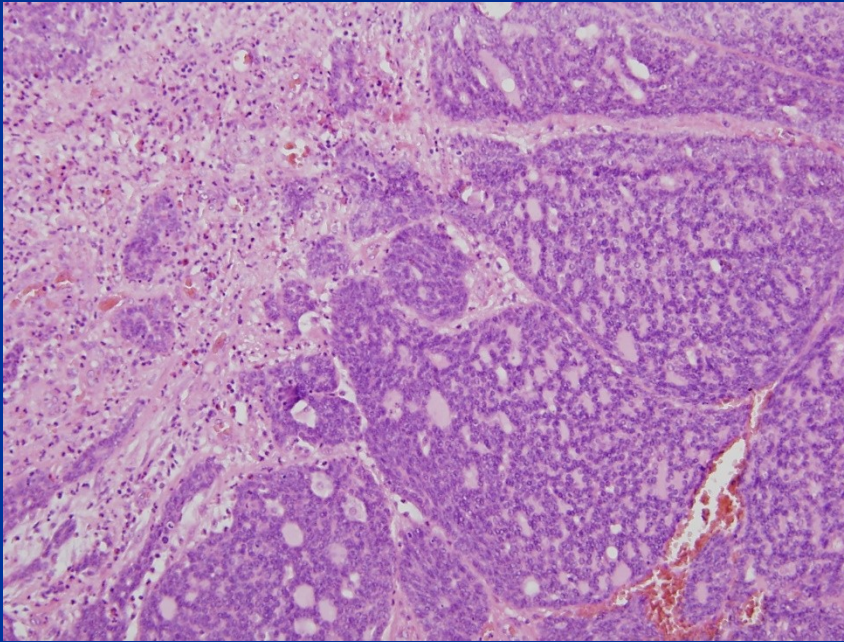
# Mucoepidermoid carcinoma



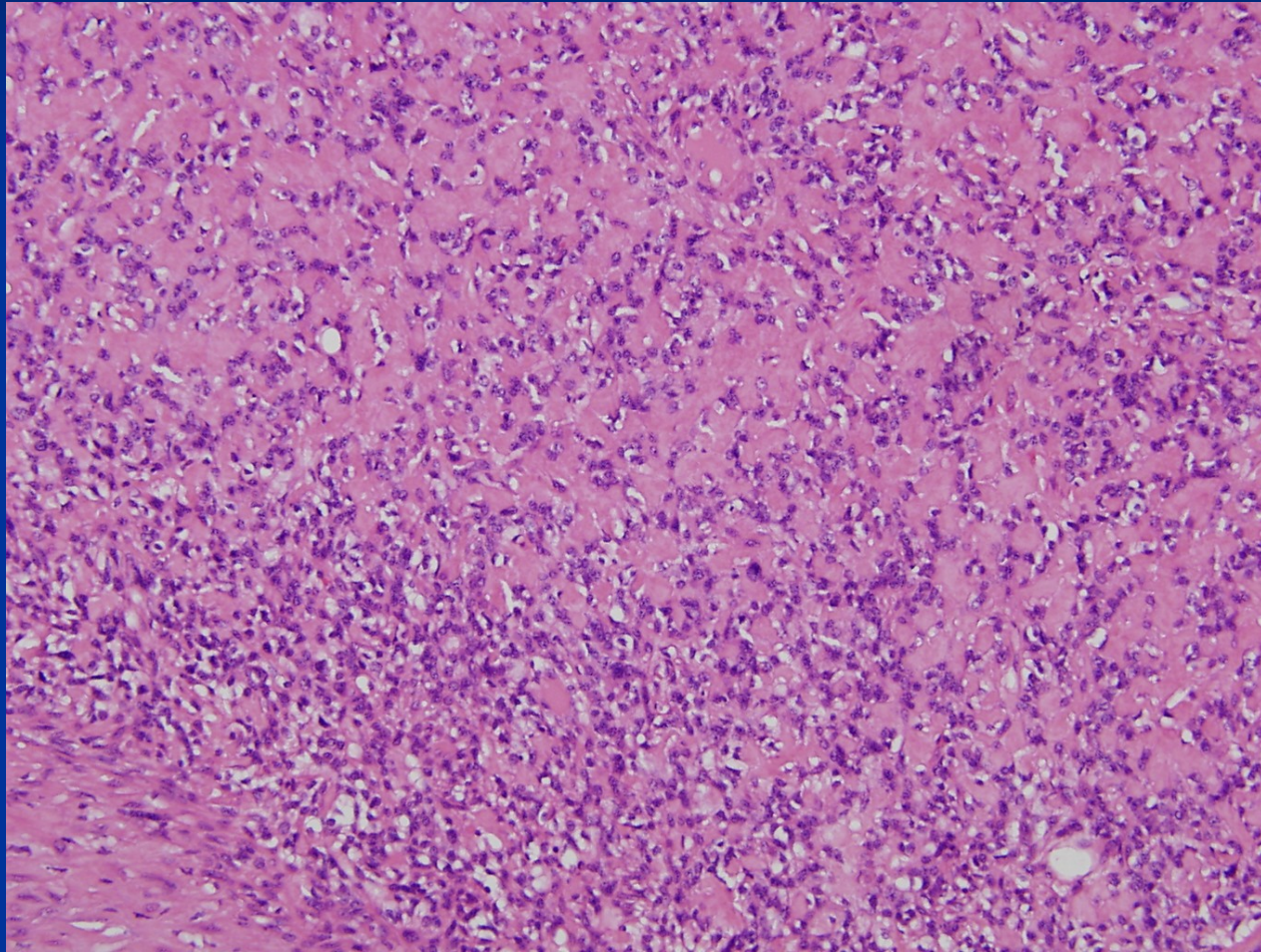
# Production of mucus – mucoepidermoid carcinoma



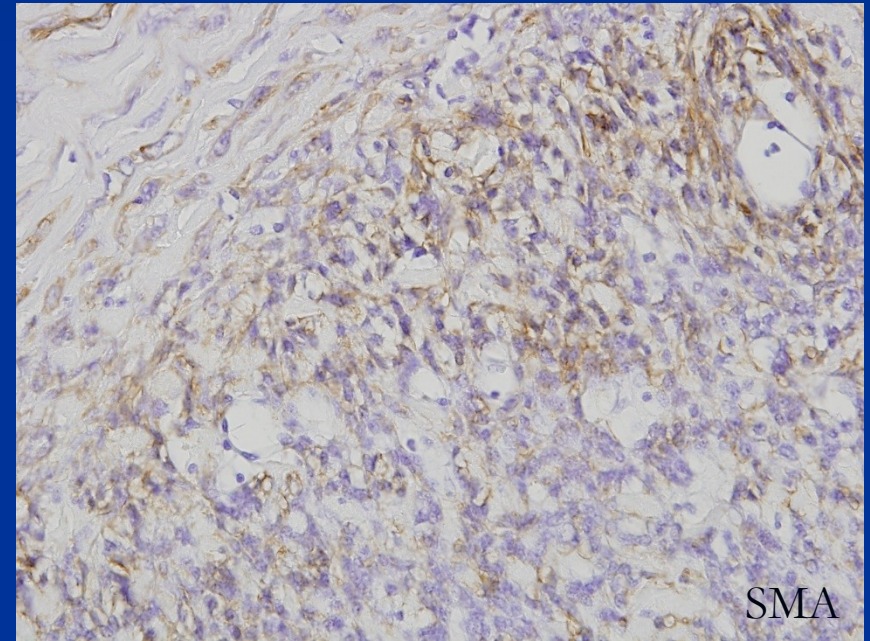
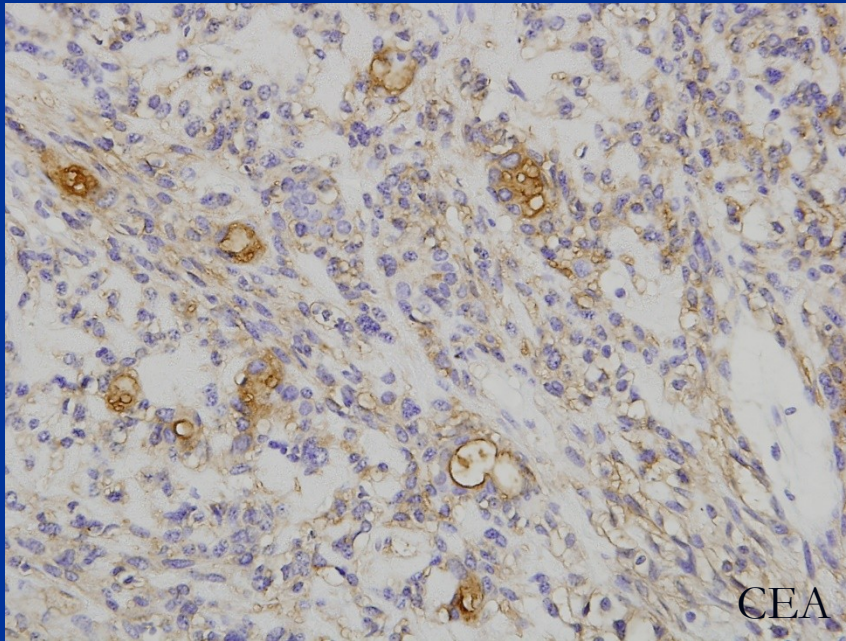
# Polymorphous low-grade adenocarcinoma and acinic cell carcinoma



# Epithelial-myoepithelial carcinoma

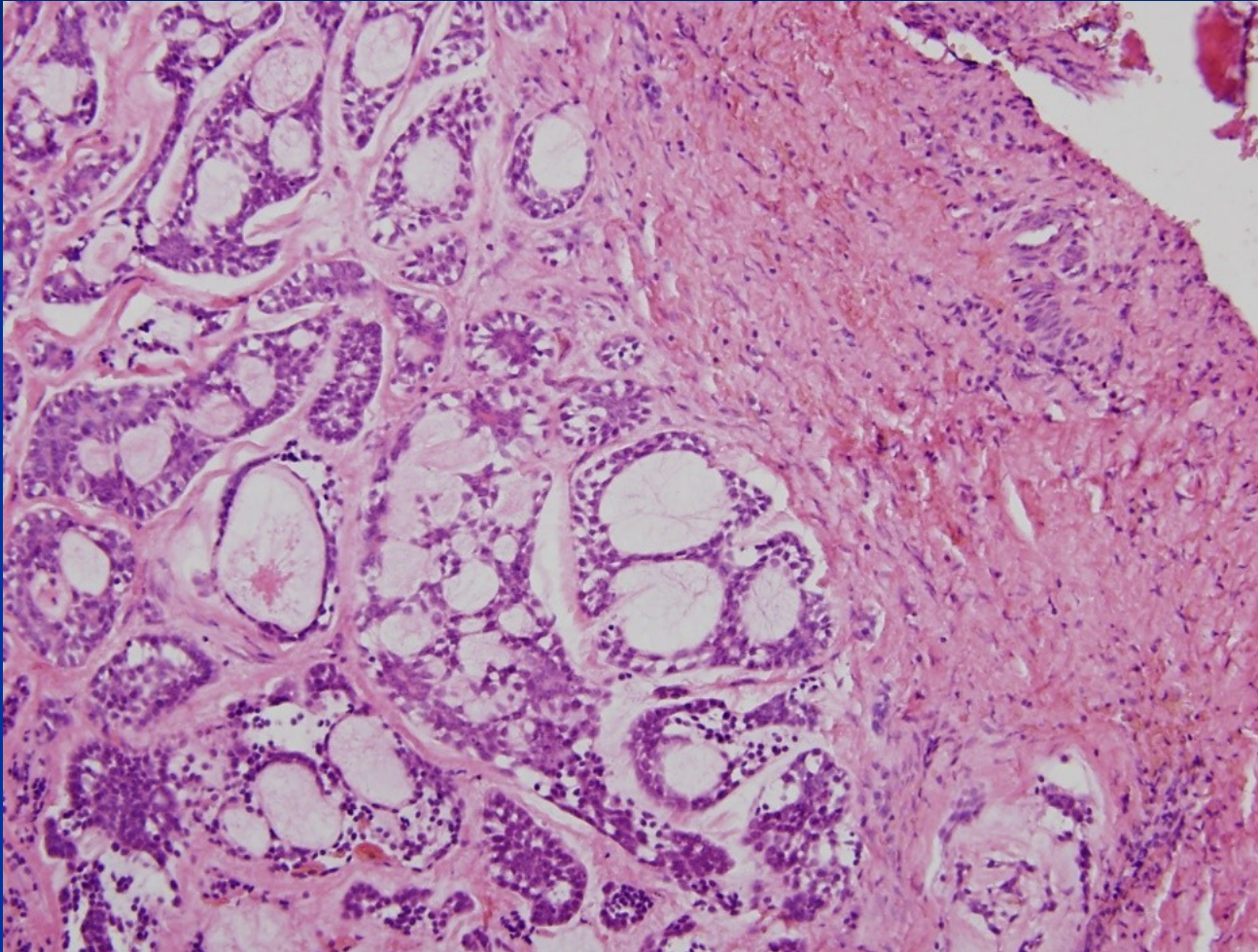


# Luminal and abluminal differentiation





# Adenoid cystic carcinoma



- Perineural invasion!
- Relapsing

