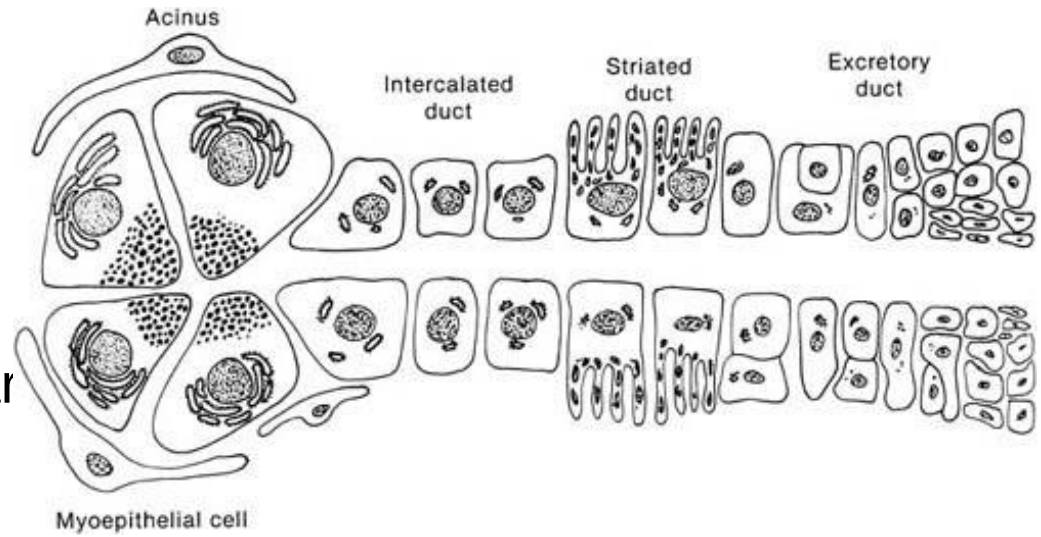
Salivary Gland Pathology

Structural elements of the salivary gland unit.

- pleomorphic adenomas originate from the intercalated duct cells and myoepithelial cells
- oncocytic tumors originate from the striated duct cells
- acinous cell tumors originate from the acinar cells,
- Mucoepidermoid tumors and squamous cell carcinomas develop in the excretory duct cells.

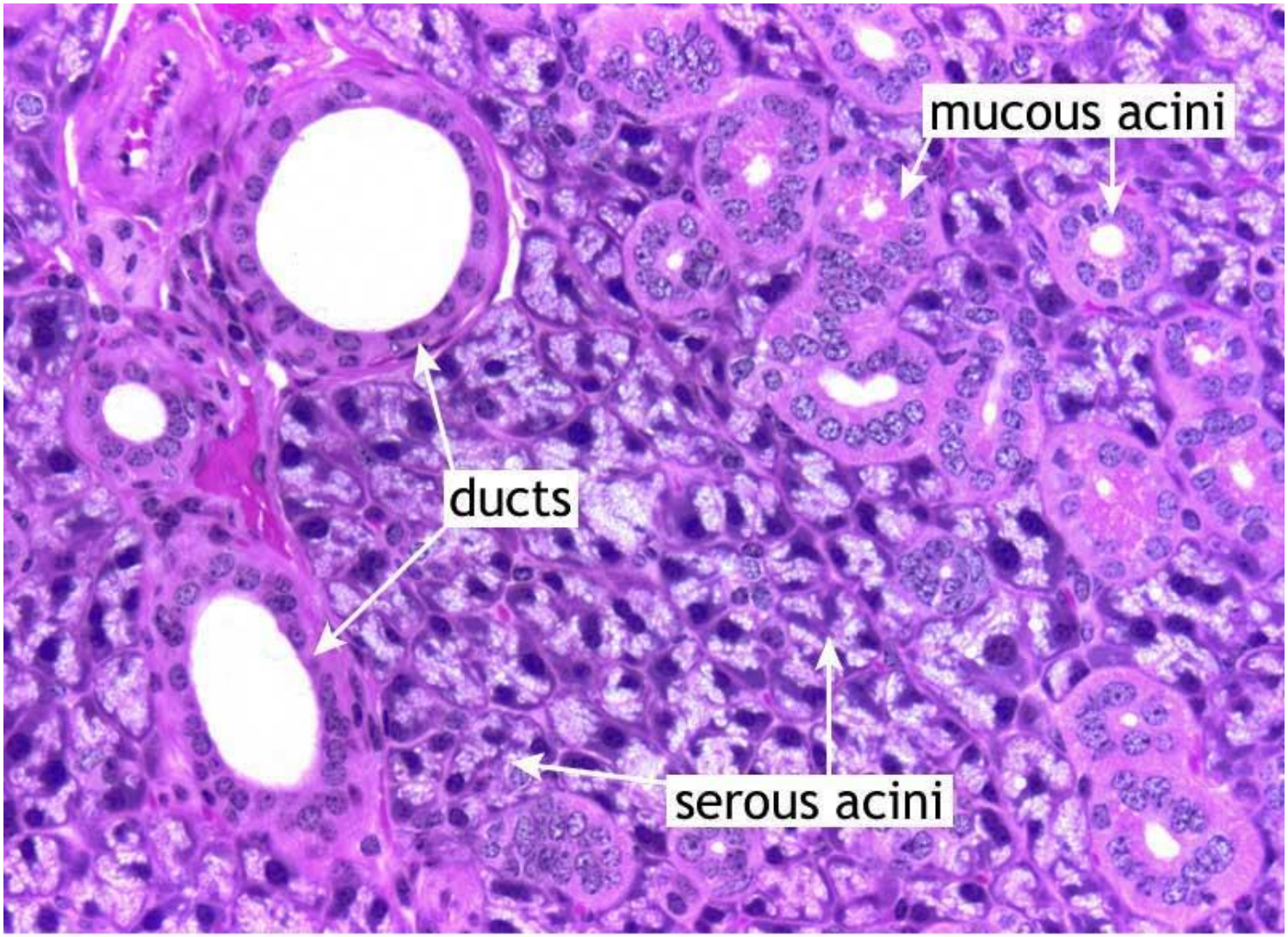


Staging system for major salivary gland cancer

- **Tx** Primary tumor cannot be assessed
- **T0** No evidence of primary tumor
- **T1** Tumor < 2cm in greatest dimension
- **T2** Tumor 2-4 cm in greatest dimension
- **T3** Tumor 4-6 cm in greatest dimension
- **T4** Tumor > 6 cm in greatest dimension

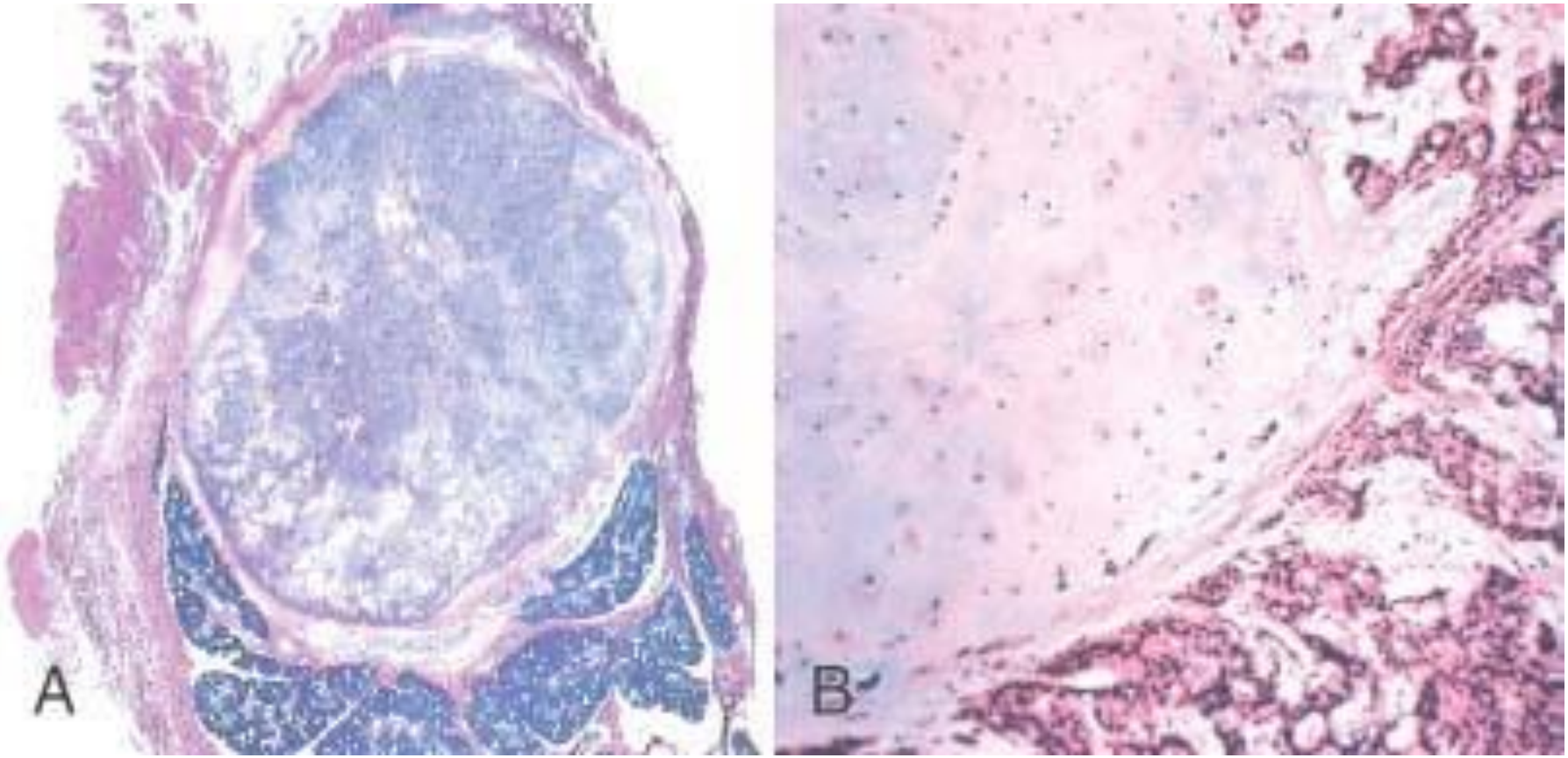
- All categories are subdivided: (a) no local extension; (b) local extension.
- Local extension is clinical or macroscopic invasion of skin, soft tissue, bone, or nerve.
- Microscopic evidence alone is not a local extension for classification purposes.
- The American Joint Commission on Cancer .see also handouts.

Normal Histology



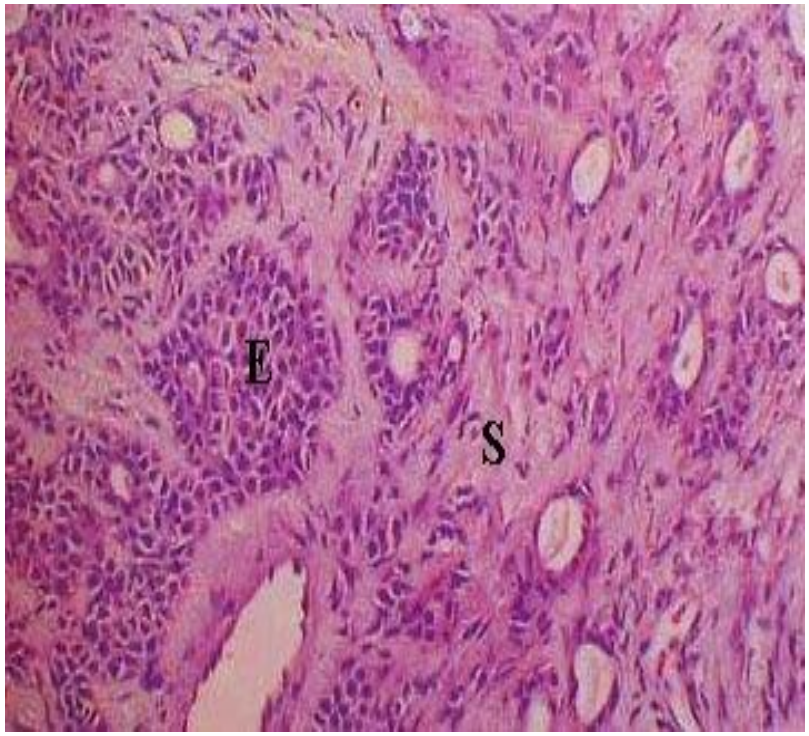
Pleomorphic Adenoma

Pleomorphic Adenoma



Pleomorphic Adenoma

- pleomorphic adenoma contains both epithelial (E) and stromal (S) components.

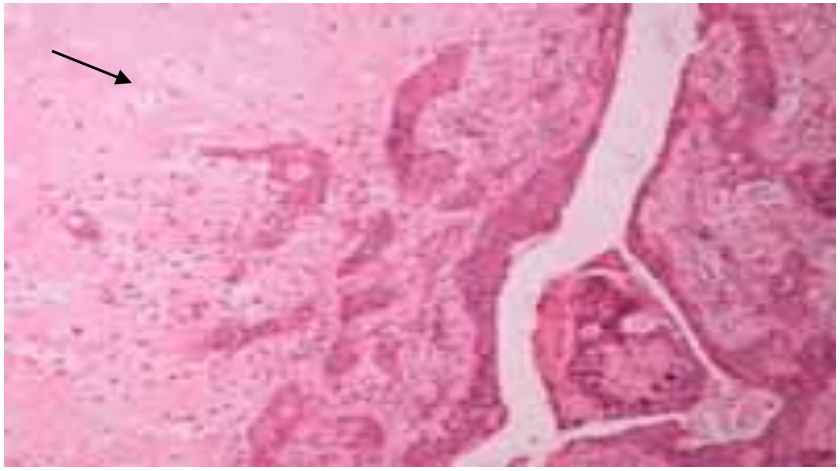


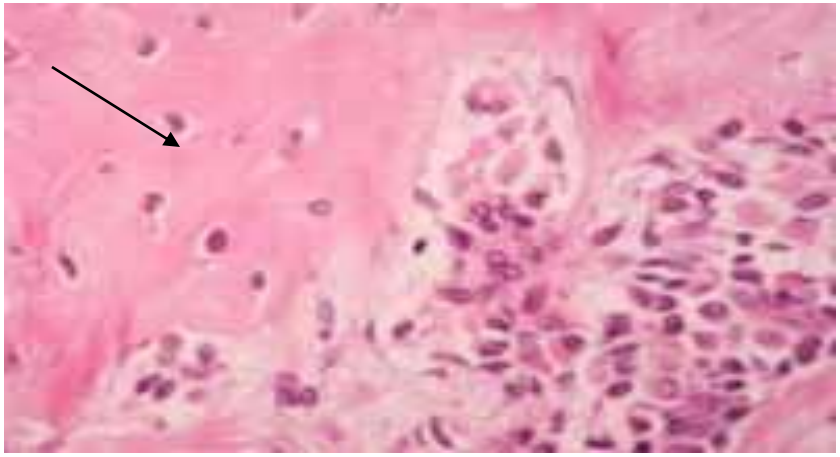
Pleomorphic Adenoma

- Epithelial Components
  - Tubular and cord-like arrangements
  - Cells contain a moderate amount of cytoplasm
  - Mitoses are rare
- Stromal or “mesenchymal” Components
  - Can be quite variable
  - Attributable to the myoepithelial cells
  - Most tumors show chondroid (cartilaginous) differentiation
  - Osseous metaplasia not uncommon
  - Relatively hypocellular and composed of pale blue to slightly eosinophilic tissue.

Pleomorphic Adenoma

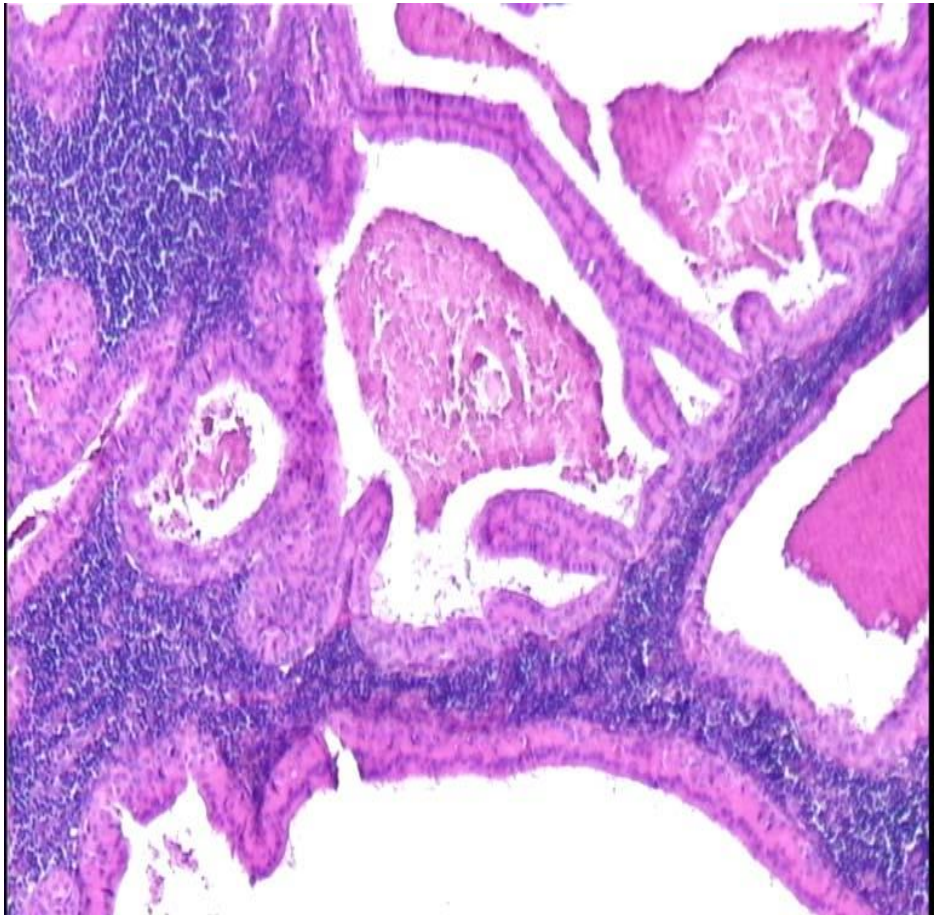
- The diverse microscopic pattern of this lesion is one of its most characteristic features.
- Islands of cuboidal cells arranged in ductlike structures is a common finding.
- Loose chondromyxoid stroma, hyalinized connective tissue, cartilage(arrows) and even osseous tissue are observed.
- This neoplasm is typically encapsulated, although tumor islands may be found within the fibrous capsule.





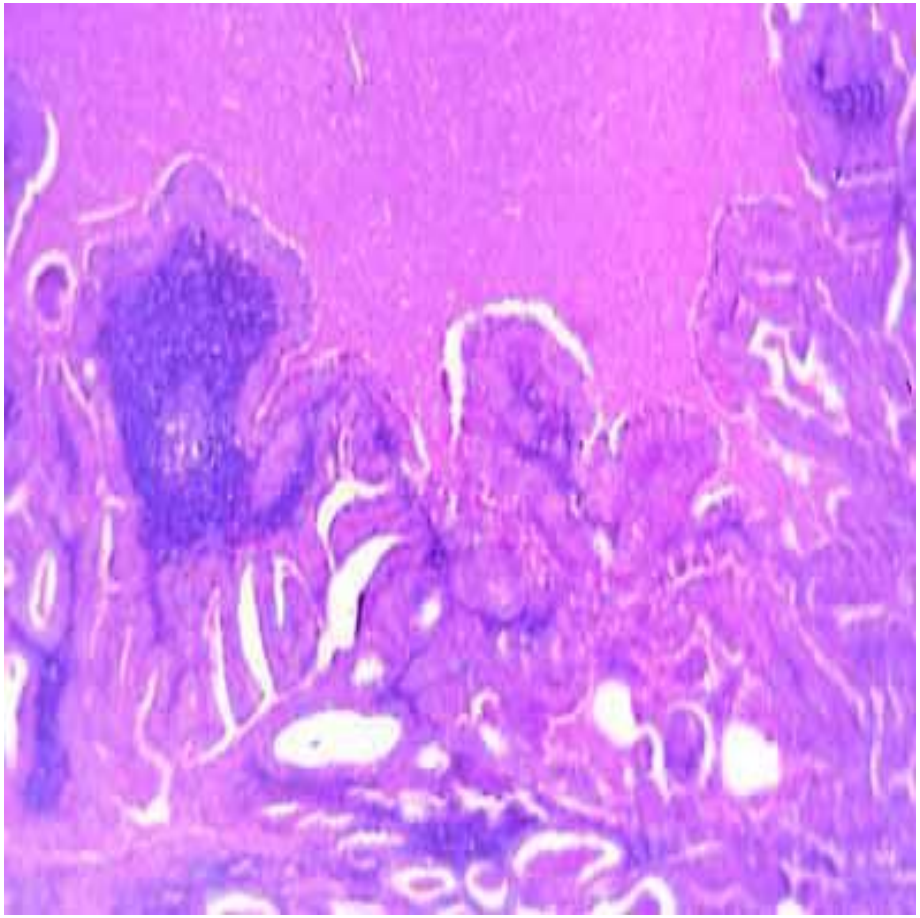
Warthin's Tumor

- Warthin's tumor (benign papillary cystadenoma lymphomatosum)
- the second most common benign tumor of the parotid gland
- It accounts for 2-10% of all parotid gland tumors
- Bilateral in 10% of the cases
- may contain mucoid brown fluid in FNA



Warthin's Tumor

- **Mid Power**
- Thought to arise from salivary gland inclusions within lymph nodes.



Warthin's Tumor

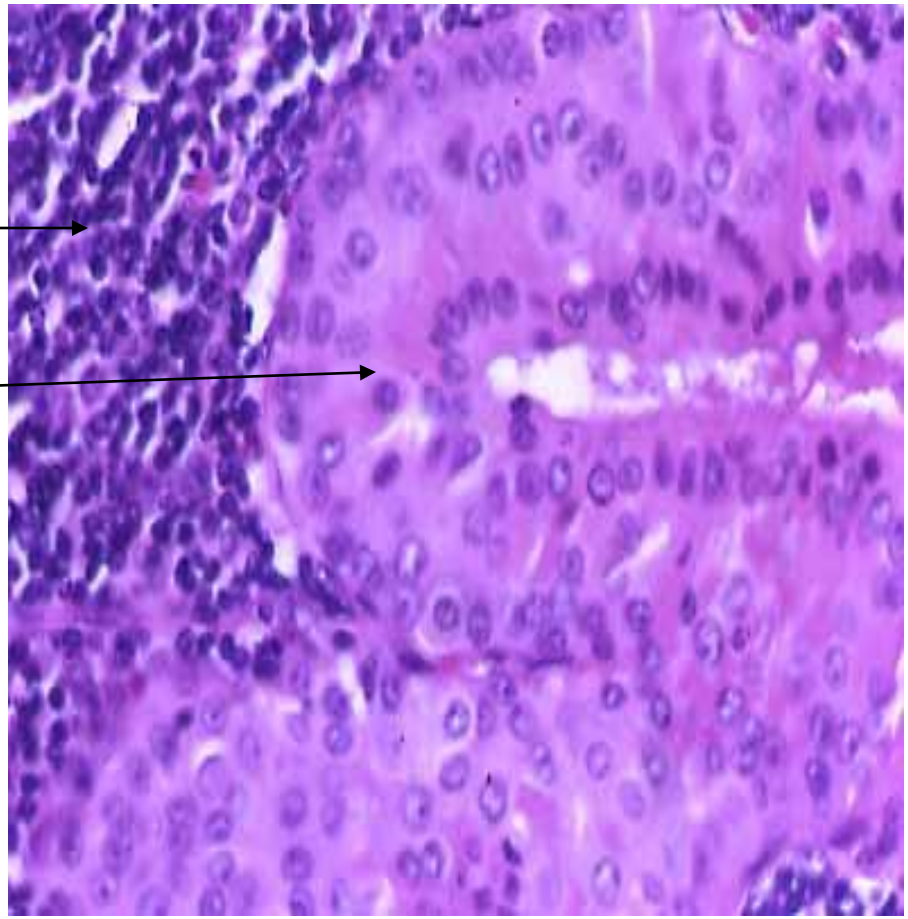
- **Epithelial Component**
  - Consists of papillary fronds which demonstrate 2 layers of oncocytic epitheilal cells
  - Cytoplasm stains deep pink and shows granularity b/c of an abundance of mitochondria
  - Occasionally undergoes squamous metaplasia (may mistakenly diagnose SCCa on FNA)

Warthin's Tumor

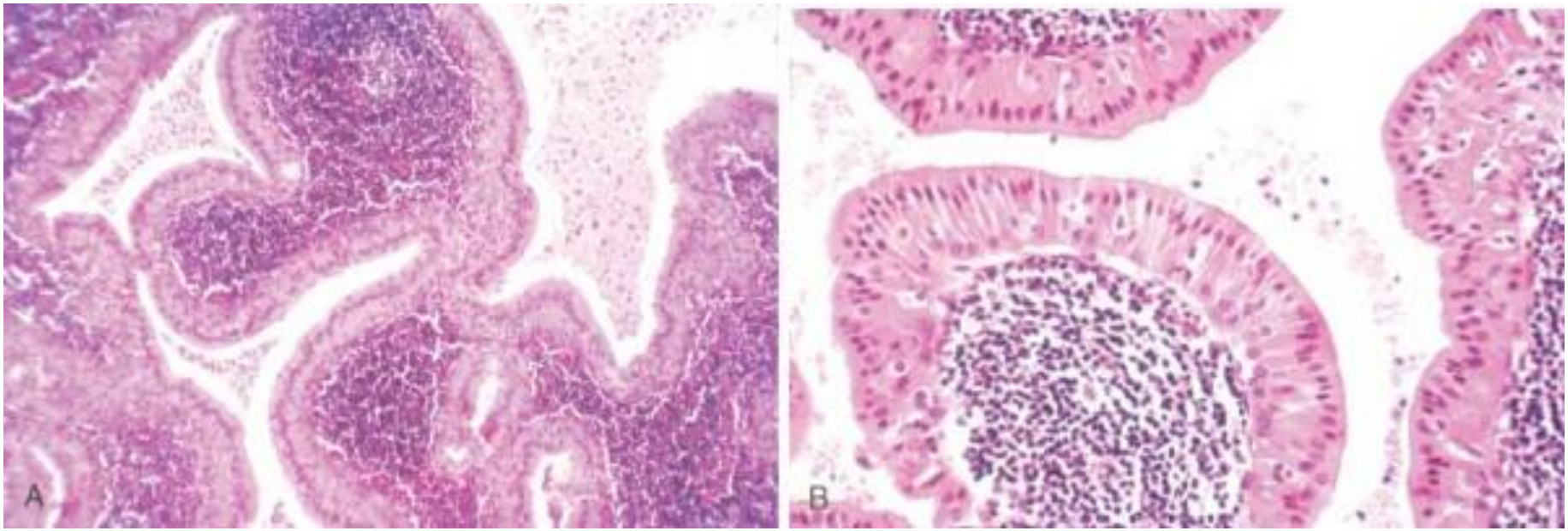
- **Lymphoid Component**
  - An abundance of this is present
  - Occasional germinal centres will be seen
  - Lymphoid tissue forms the core or papillary structures
- Both **lymphoid** and **oncocytic epithelial** elements must be present to diagnose Warthin's

Warthin's Tumor

- **High Power**
- Lymphocytc infilterates.
- Bilayer of epithilium.

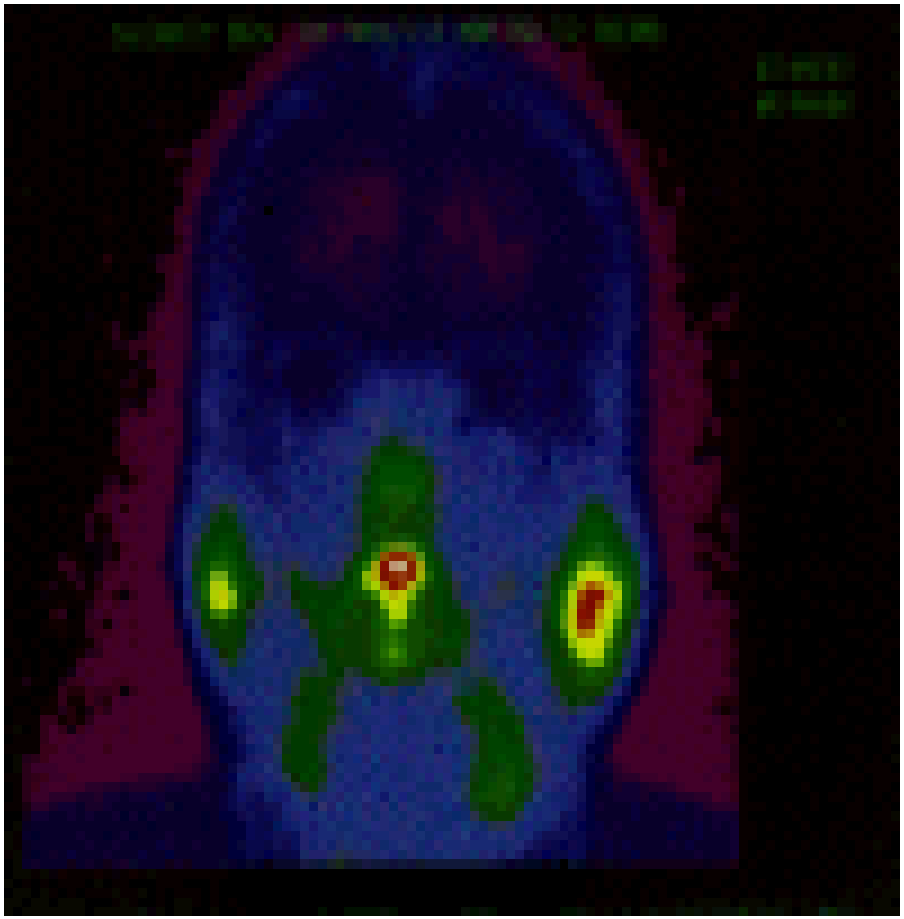


Warthin's Tumor



Warthin's Tumor

- Electron microscopy shows a tremendous number of mitochondria in the epithelial cells, which are responsible for its granular eosinophilic appearance.
- Mitochondria-rich oncocytes are found in Warthin's tumors .
- Oncocytes selectively incorporate technetium Tc 99m and appear as hot spots on a radionucleotide scan.



Monomorphic Adenoma

- Similar to Pleomorphic Adenoma except no mesenchymal stromal component
  - Predominantly an epithelial component
- More common in minor salivary glands (upper lip)
- 12% bilateral
- Rare malignant potential
- Types:
  - Basal Cell Adenoma
  - Canicular Adenoma
  - Myoepithelioma Adenoma
  - Clear Cell Adenoma
  - Membranous Adenoma
  - Glycogen-Rich Adenoma

Basal Cell Adenoma

- A monomorphic adenoma
- It is composed of uniform **basaloid epithelial cells** with a monomorphous pattern.
- The arrangement of tumor cells may be trabecular, tubular or solid.
- Histologically, these tumors are distinguished from pleomorphic adenomas by their absence of chondromyxoid stroma and the presence of a uniform epithelial pattern.

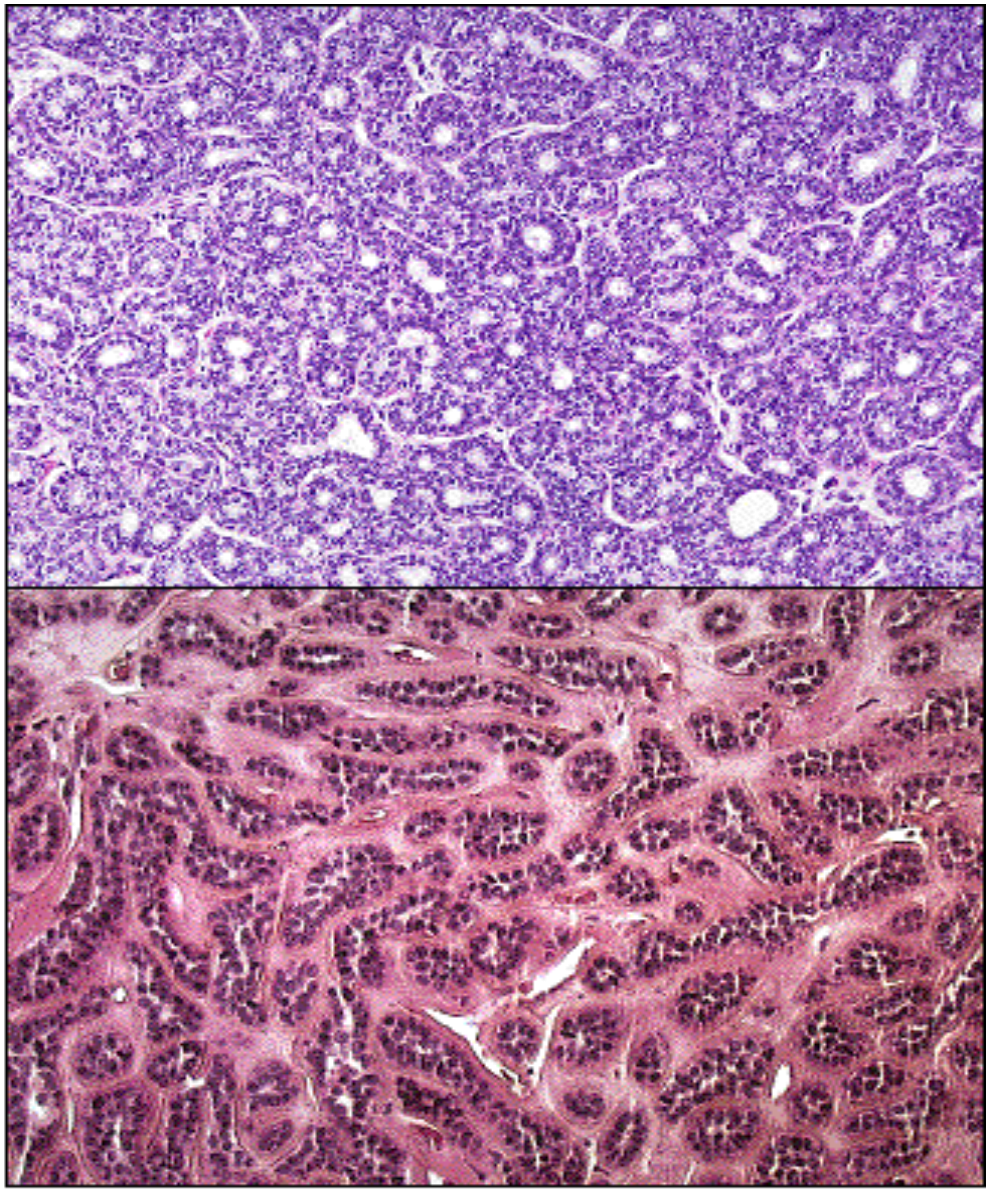


Figure 20
Basal Cell Adenoma: Tubular

Malignant Salivary Gland Tumors

Mucoepidermoid Carcinoma

- MECs contain two major elements:
- mucin-producing cells and epithelial cells of the epidermoid variety
- (Epidermoid and Mucinous components).
- MEC is divided into low-grade (well differentiated).
- High-grade (poorly differentiated).

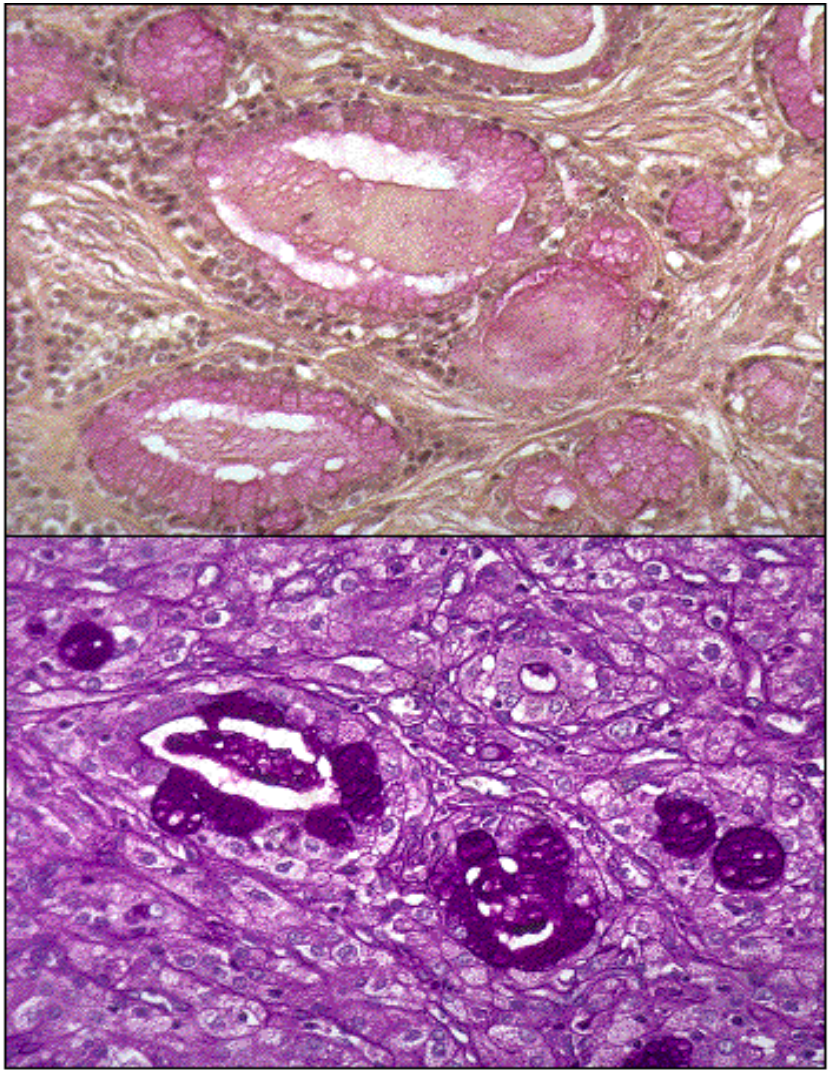
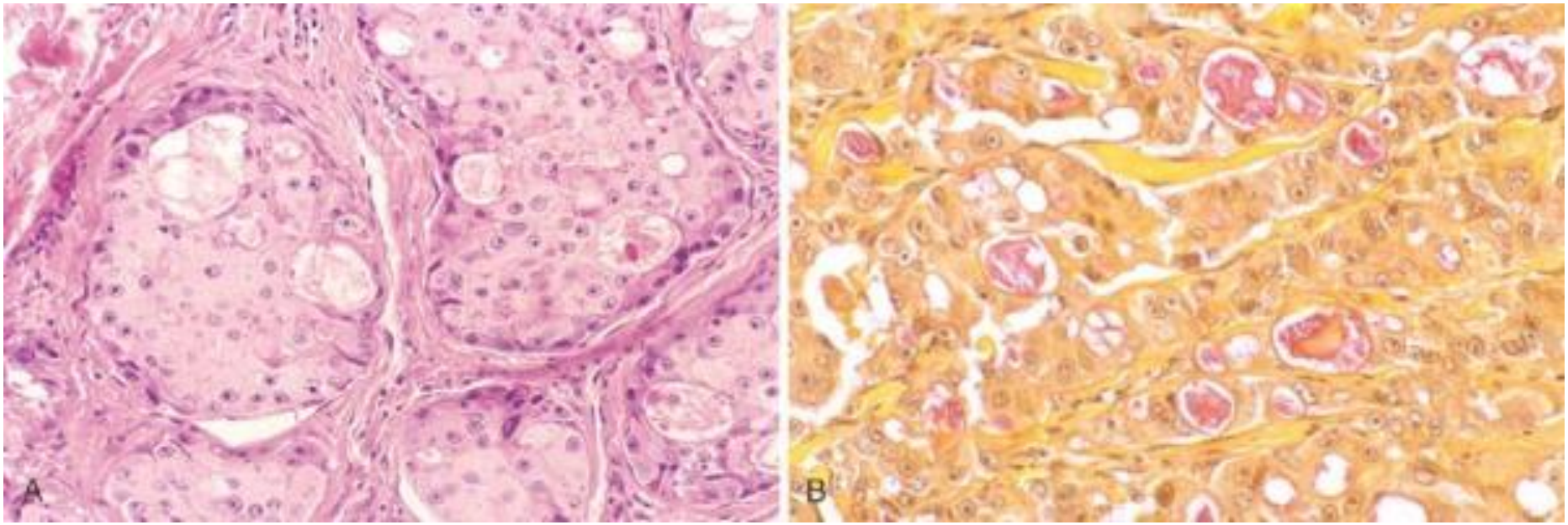


Figure 27. Mucoepidermoid Carcinoma
A: Musicarmine Stain
B: PAS Stain

Mucoepidermoid Carcinoma

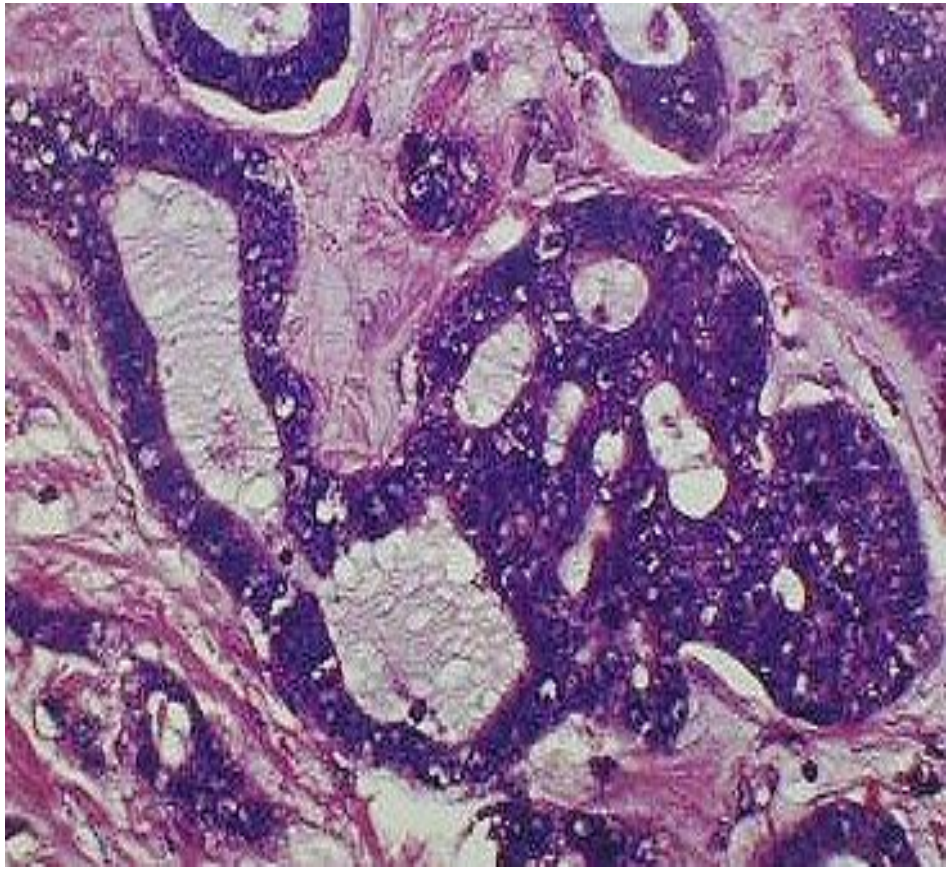


Mucoepidermoid Carcinoma

- Mucoepidermoid carcinoma (MEC) is the most common malignant tumor of the parotid gland and the second-most common malignancy (adenoid cystic carcinoma is more common) of the submandibular and minor salivary glands.
- Stained +ve by musicarmine.
- MECs constitute approximately 35% of salivary gland malignancy, and 80% to 90% of MECs occur in the parotid gland.

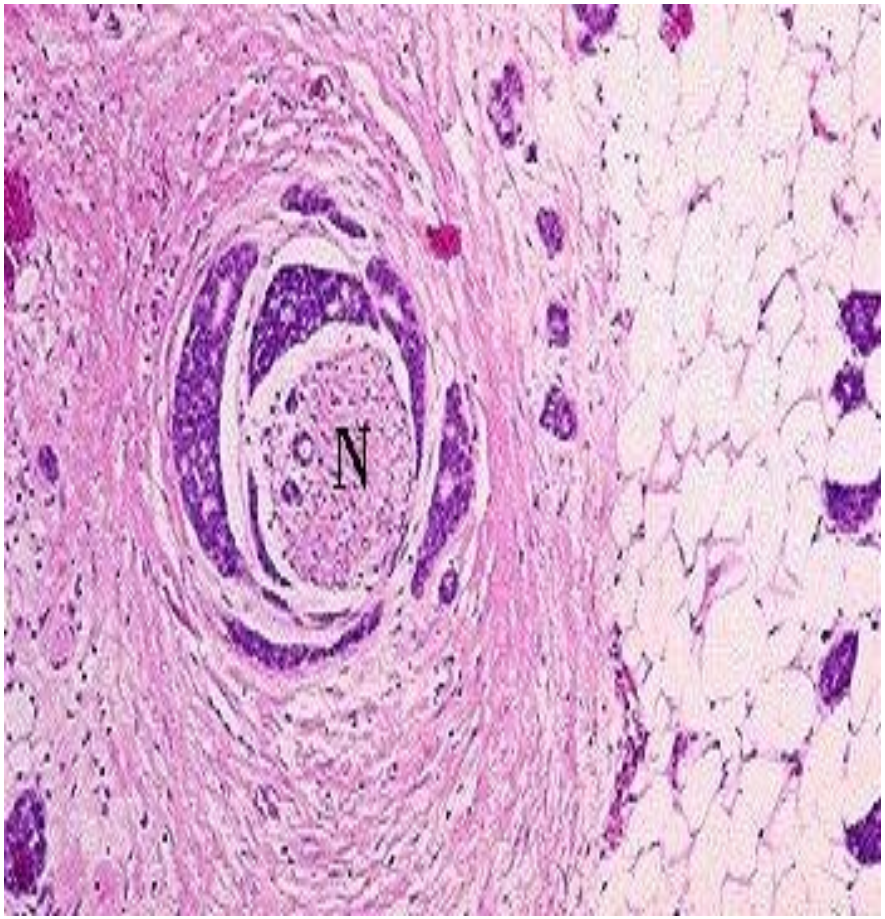
Adenoid Cystic Carcinoma

- Adenoid cystic carcinoma with **Swiss cheese pattern**.
- It is the second-most common malignant tumor of the salivary glands.
- ACC is the most common malignant tumor found in the submandibular, sublingual, and minor salivary glands.

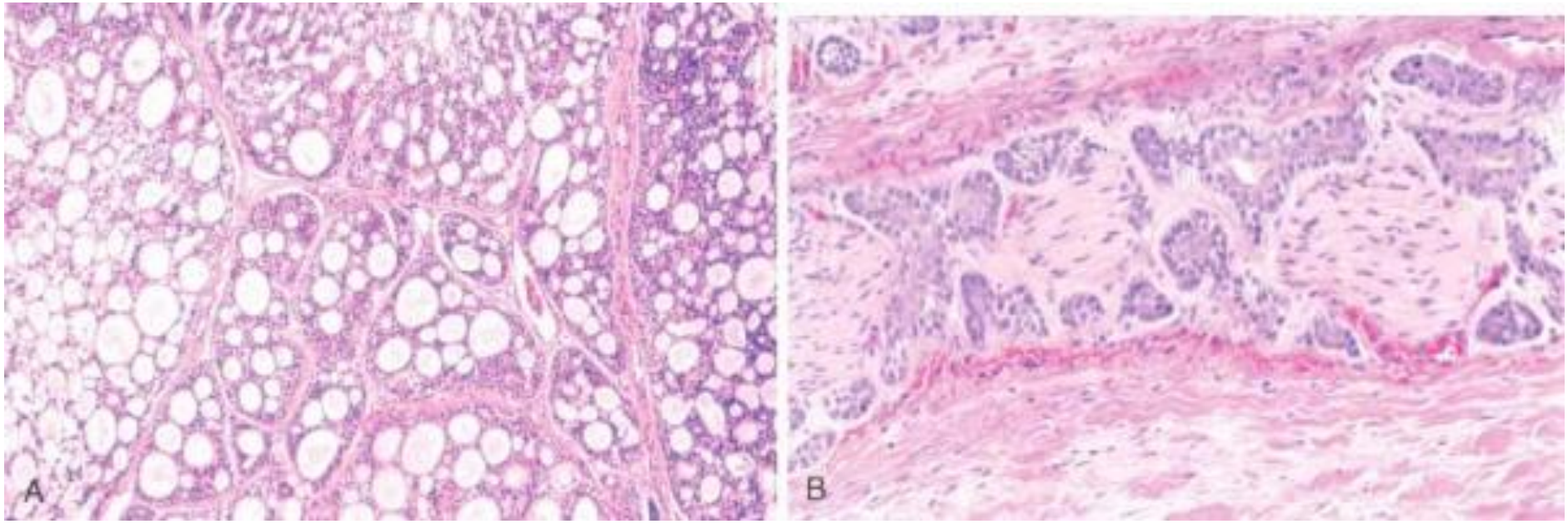


Adenoid Cystic Carcinoma

- Nerve (N) invaded by adenoid cystic carcinoma (the blue area surrounding the nerve).
- Spread may occur by emboli along the nerve lymphatics



Adenoid Cystic Carcinoma



Acinic Cell Carcinoma

- **The acinic cell adenocarcinoma occurs mainly in the parotid gland, also known as blue dot tumor.**
- **Classic multicystic pattern.**
- **Stained by PAS.**
- **Cells heavily stained.**

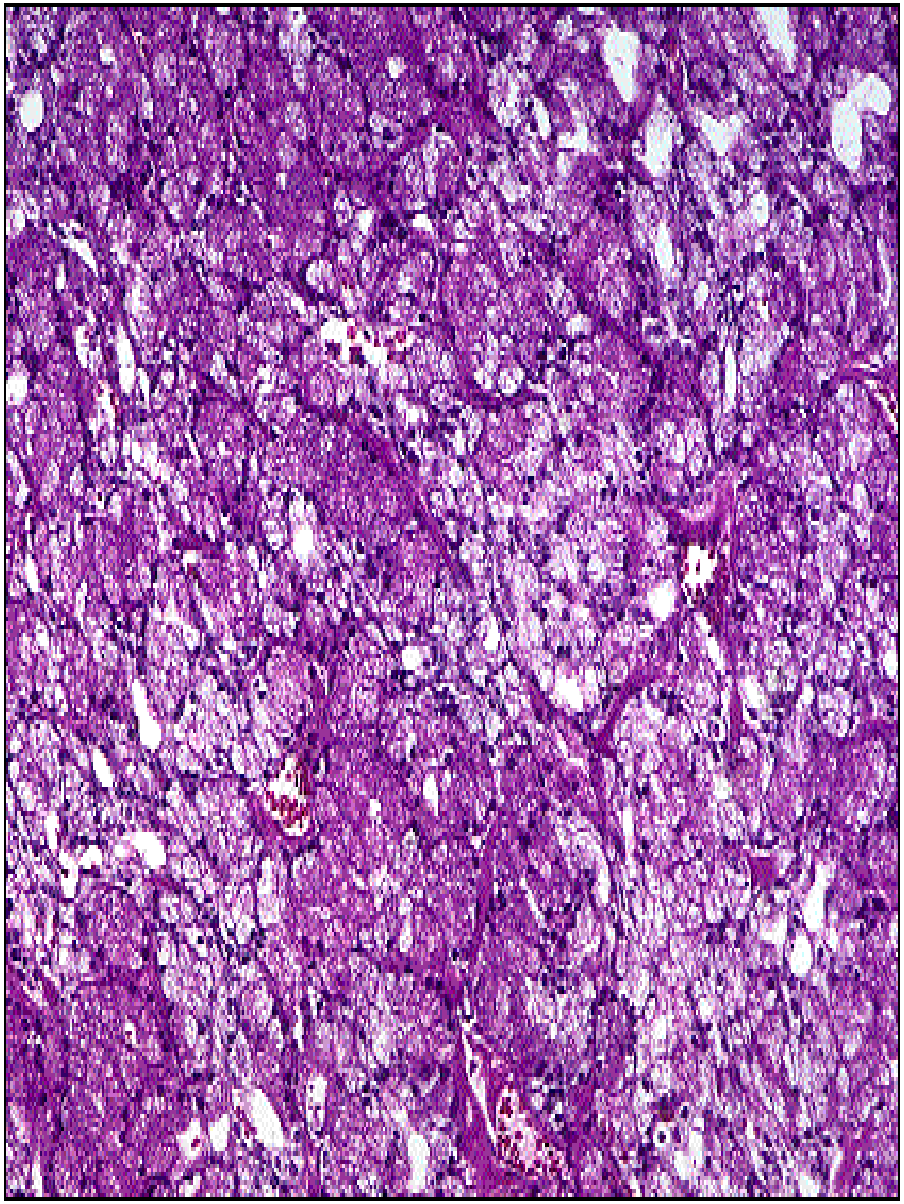


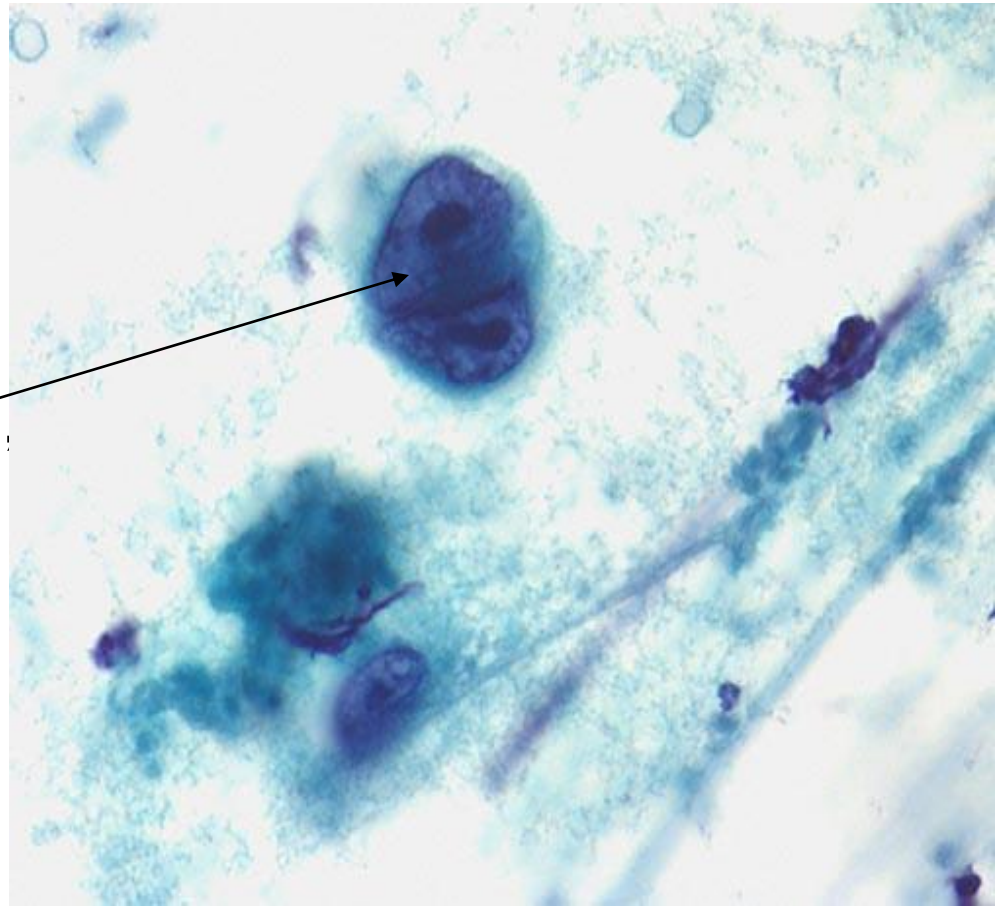
Figure 29. Acinic Cell Adenocarcinoma

Acinic Cell Carcinoma

- This lesion is characterized by a benign histomorphologic picture but by occasional malignant behavior.
- These lesions are treated by surgical excision
- Bilateral involvement occurs in 3% of patients, making acinic cell carcinoma the second-most common neoplasm, after Warthin’s tumor, to exhibit bilateral presentation.

Hodgkin's Lymphoma

- Hodgkin's disease involving the parotid gland.
- Note the Reed-Sternberg cell. (Fine needle aspiration, Pap, 630x)



Salivary Gland Tumors