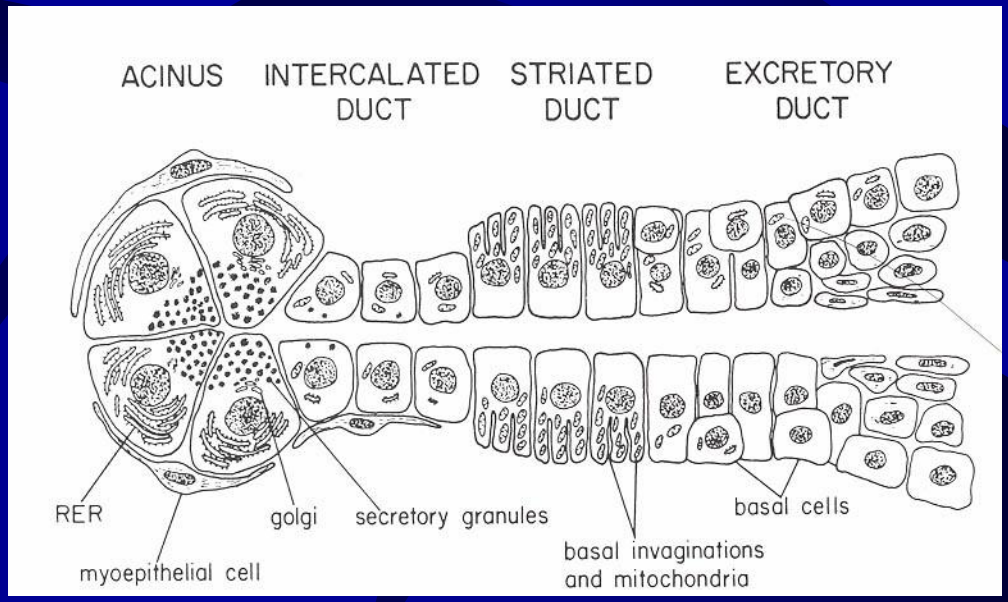
Salivary Gland Neoplasms

Salivary Gland Neoplasms

- Relatively uncommon
  - 2% of head and neck neoplasms
- Distribution
  - Parotid: 80% overall; 80% benign
  - Submandibular: 15% overall; 50% benign
  - Sublingual/Minor: 5% overall; 40% benign

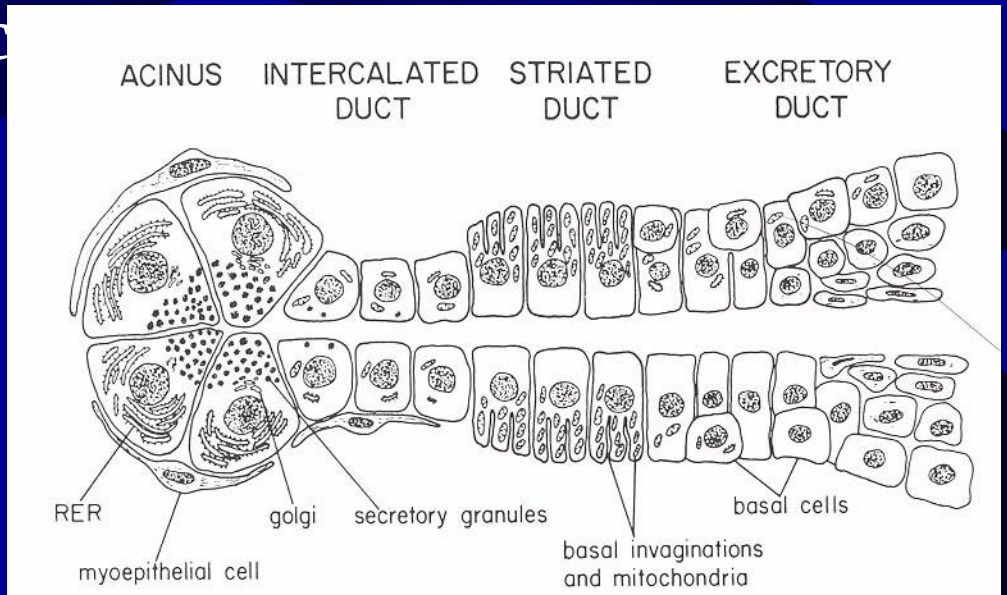
Bicellular Theory

- Intercalated Ducts
  - Pleomorphic adenoma
  - Warthin's tumor
  - Oncocytoma
  - Acinic cell
  - Adenoid cystic
- Excretory Ducts
  - Squamous cell
  - Mucoepidermoid



Multicellular Theory

- Acinar cells—acinic cell carcinoma
- Intercalated duct and myoepithelial cells—pleomorphic tumors
- Striated duct—oncocytic tumors
- Excretory Duct—squamous cell and mucoepidermoid carc



- SGN are classified by the WHO as primary or secondary, benign or malignant, and by tissue of origin. This system defines five broad categories:

1-malignant epithelial tumors (e.g. acinic cell carcinoma, mucoepidermoid carcinoma and adenoid cystic carcinoma, salivary duct carcinoma)

2-benign epithelial tumors (e.g. pleomorphic adenoma, myoepithelioma and Warthin tumour,)

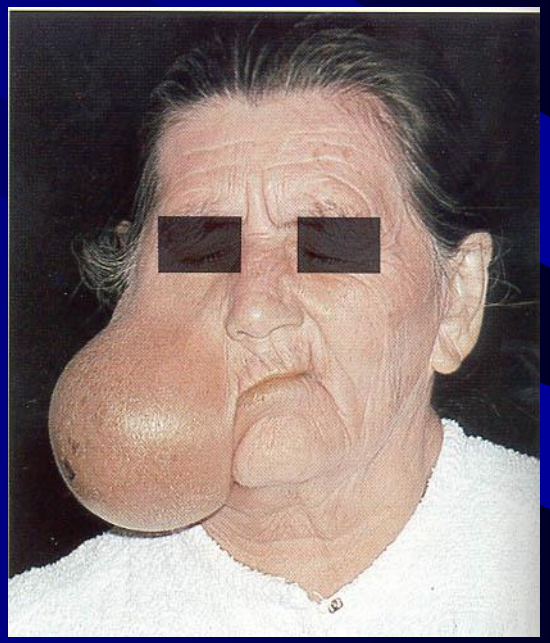
3-soft tissue tumors (Hemangioma)

4-hematolymphoid tumors (e.g. Hodgkin lymphoma)

5-secondary tumors.

Pleomorphic Adenoma

- Most common of all salivary gland neoplasms
- Parotid: most tumors arise within the superficial lobe,
- Most in tail of gland(50%).
- Or the anterior portion (25%).
- Deep lobe (25%)
- 4th decade
- F > M



Pleomorphic Adenoma

- Gross pathology
  - Rubbery, resilient

  Mass with a bosselated Surface.

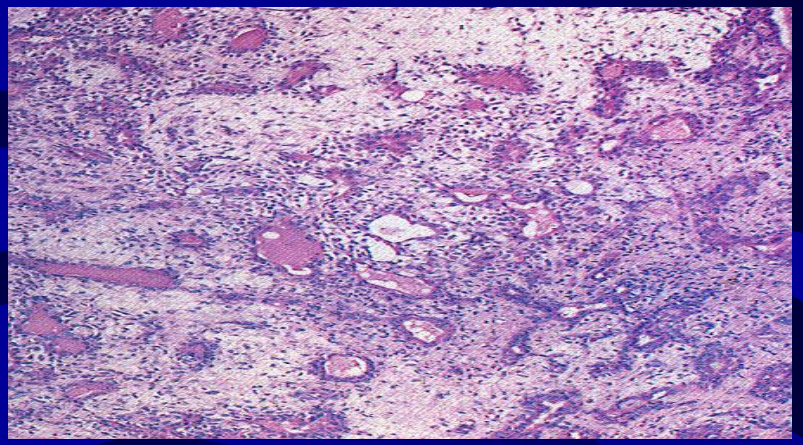
  -well circumscribed with

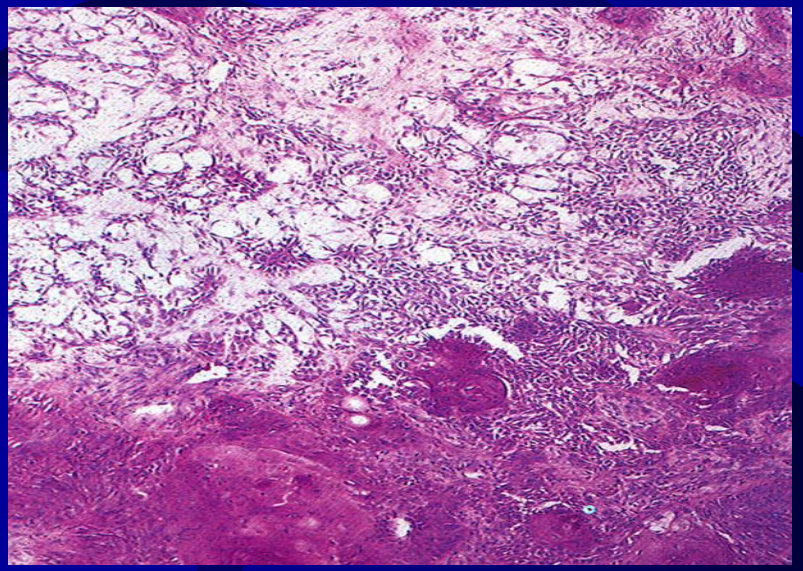
  Small extension to near by tissues

Pleomorphic Adenoma

*Microscopically:

- Mixture of epithelial, and stromal components
- Epithelial cells: glandular nature but foci of squamous metaplasia are common.
- Stroma: fibromyxoid, chrondroid, osteoid.





Warthin's Tumor

- papillary cystadenoma lymphomatosum
- Almost exclusively in parotid.
- More common in males
- 10%-15% bilateral or multicentric.

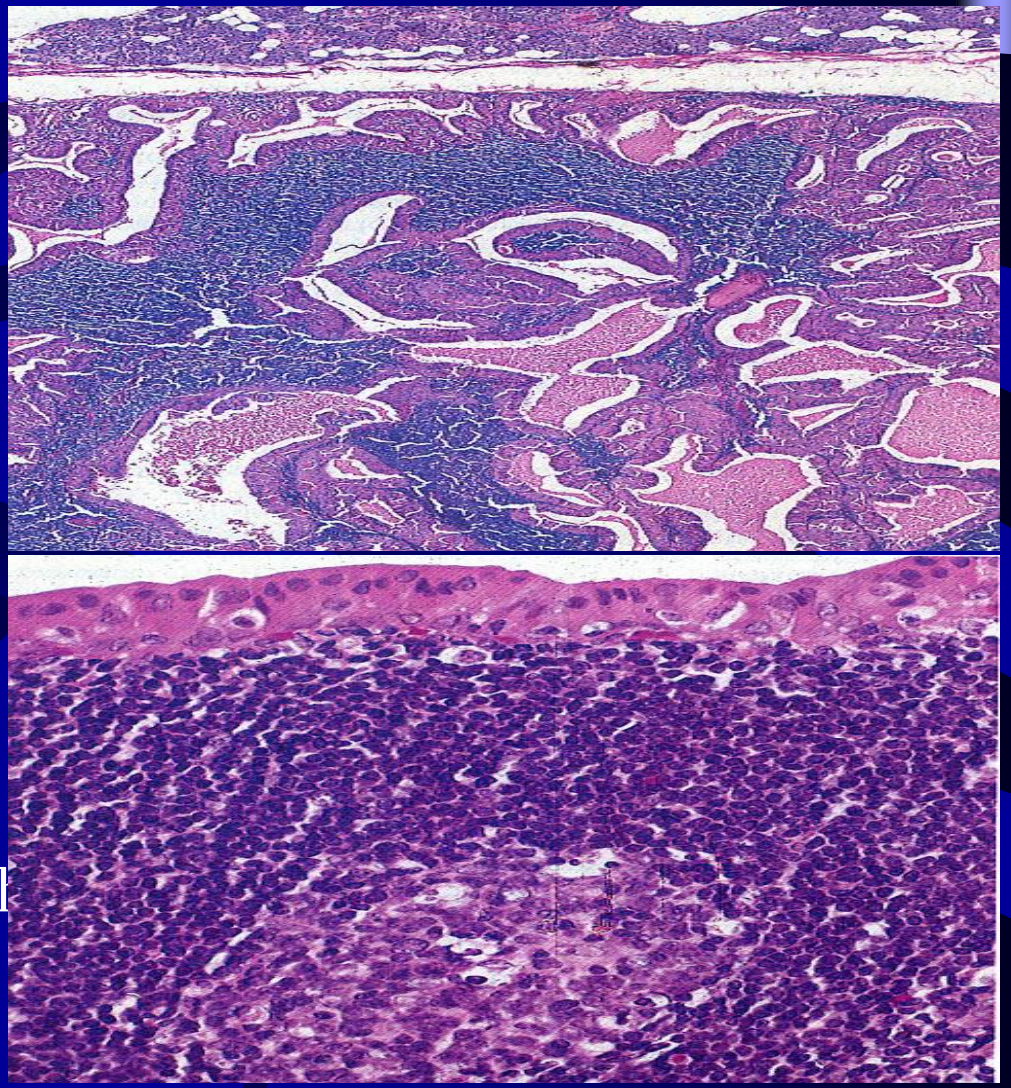
Warthin's Tumor

- Gross pathology
  - lobulated mass
  - Cross section: multicystic appearance with fluid-filled spaces separated by grayish septa.

Warthin's Tumor

*Microscopically:

- Papillary projections into cystic spaces surrounded by lymphoid stroma
- Epithelium: double cell layer
  - Luminal cells
  - Basal cells
- Stroma: mature lymphoid follicles with germinal centers

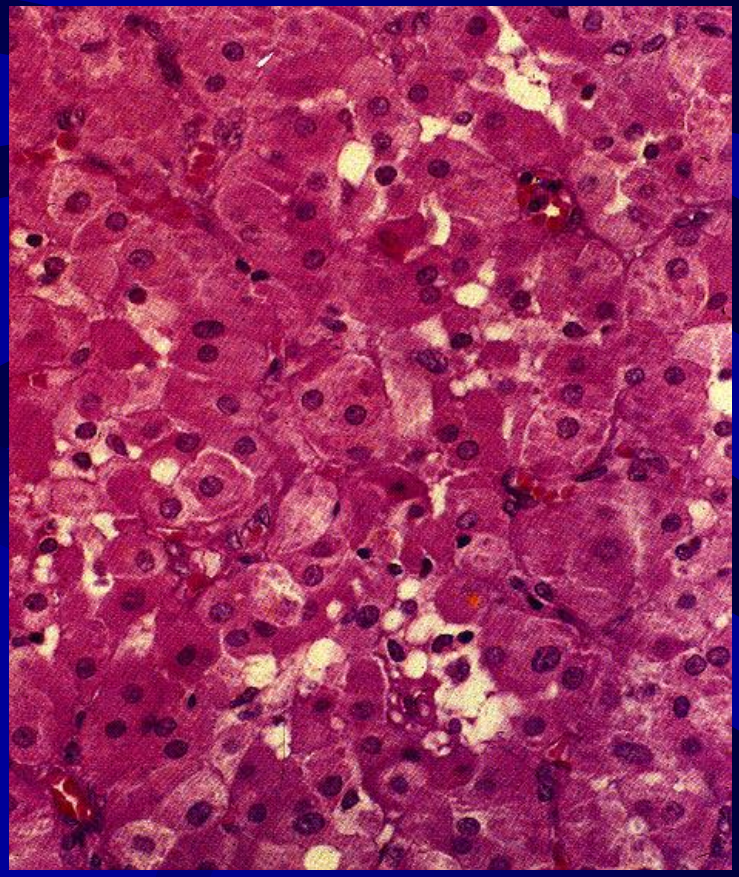


Oxphilic adenoma (Oncocytoma)

- The majority in the parotid
- 20% of patients had either radiation therapy to the region or long term occupational exposure.

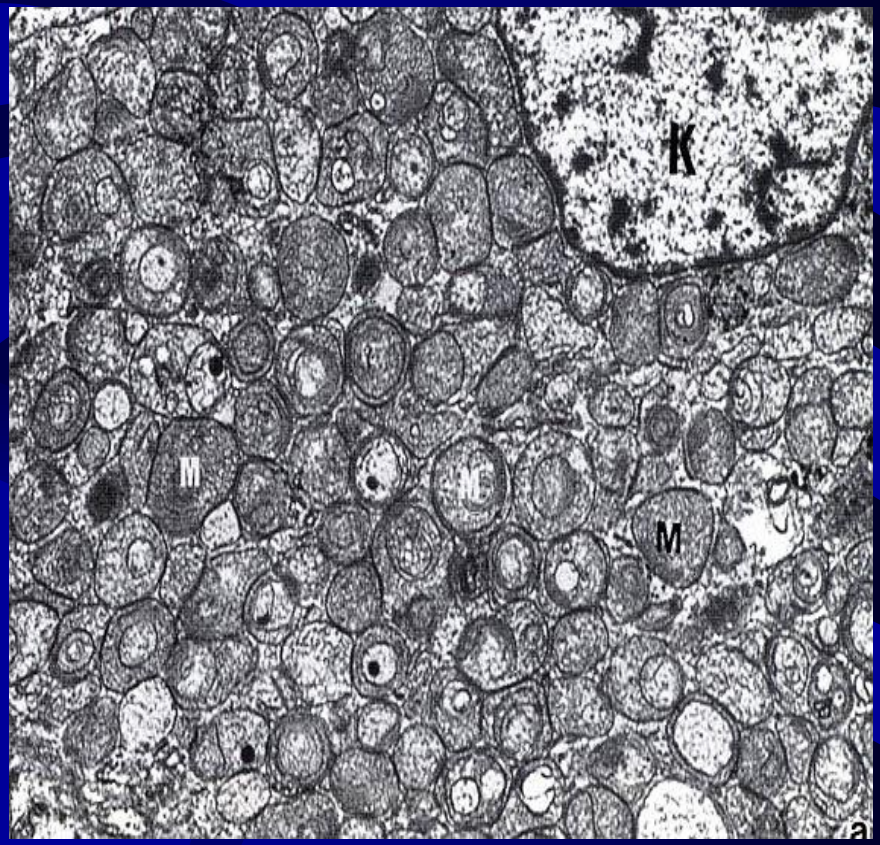
Oncocytoma

- Gross
  - solid
  - Well circumscribed
  - Tan color
- Microscopically:
  - Cords of Large polyhedral cells
  - Granular, eosinophilic cytoplasm
  - Central, round nucleus



Oncocytoma

- Electron microscopy:
  - Mitochondrial hyperplasia
  - 60% of cell volume



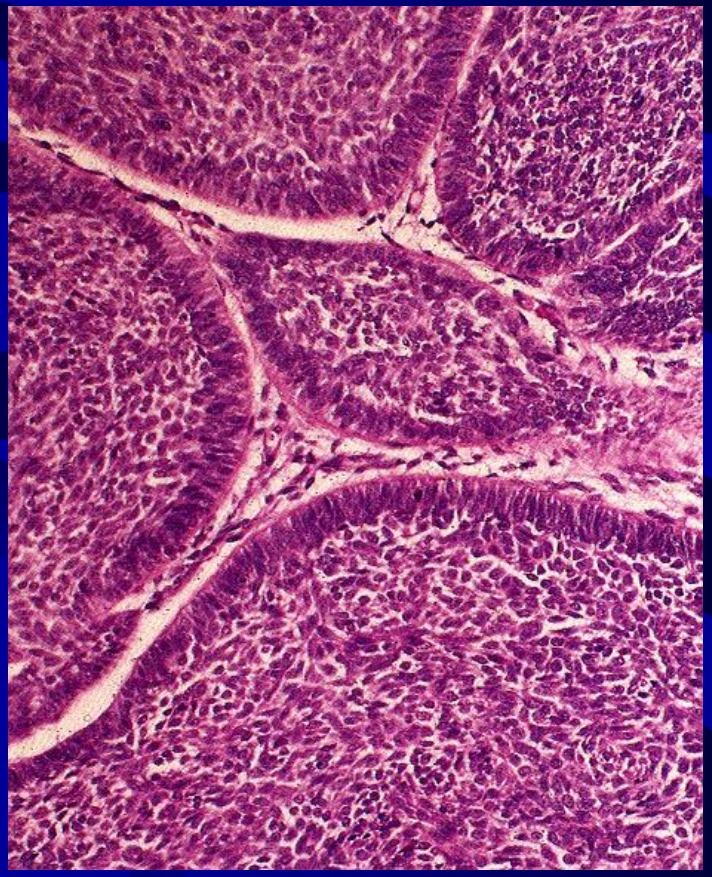
Monomorphic Adenomas

Basal cell adenoma:

- adults
- Slight predilection for female
- Most common in parotid

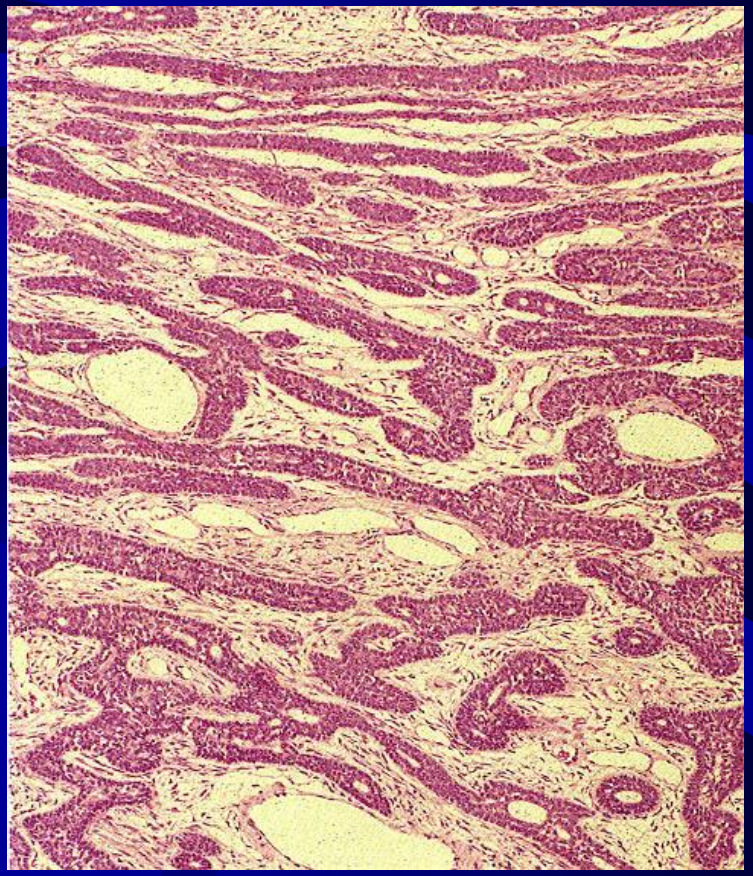
Basal Cell Adenoma

- Solid
  - Most common
  - Solid nests of epithelial cells(basaloid)
  - Uniform, hyperchromatic, round nuclei, indistinct cytoplasm
  - Peripheral nuclear palisading
  - Scant stroma



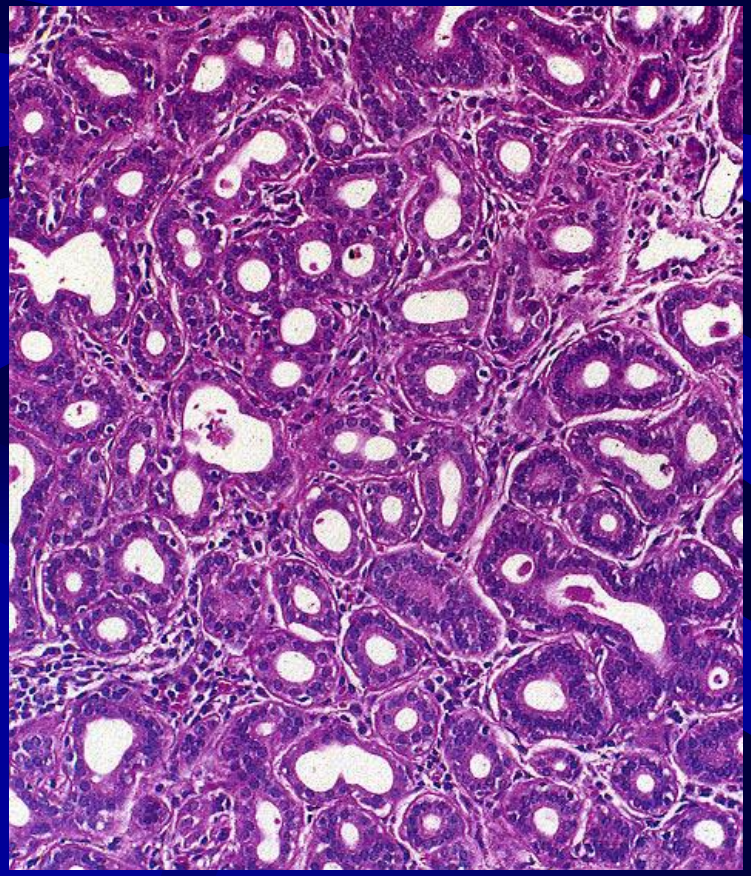
Basal Cell Adenoma

- Trabecular
  - Cells in elongated trabecular pattern
  - Vascular stroma



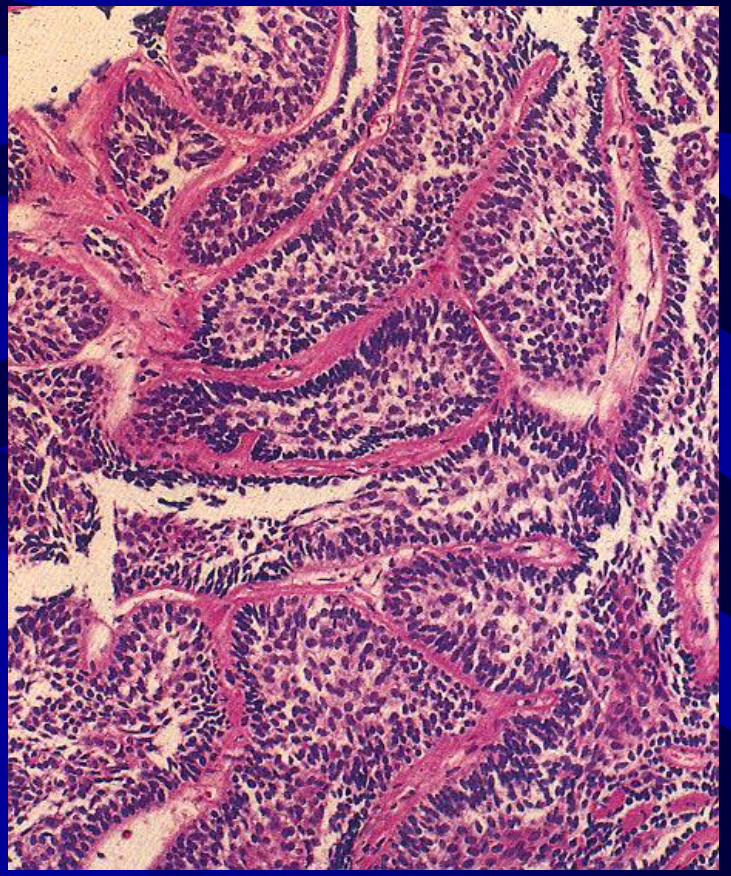
Basal Cell Adenoma

- Tubular
  - Multiple duct-like structures
  - Columnar cell lining
  - Vascular stroma



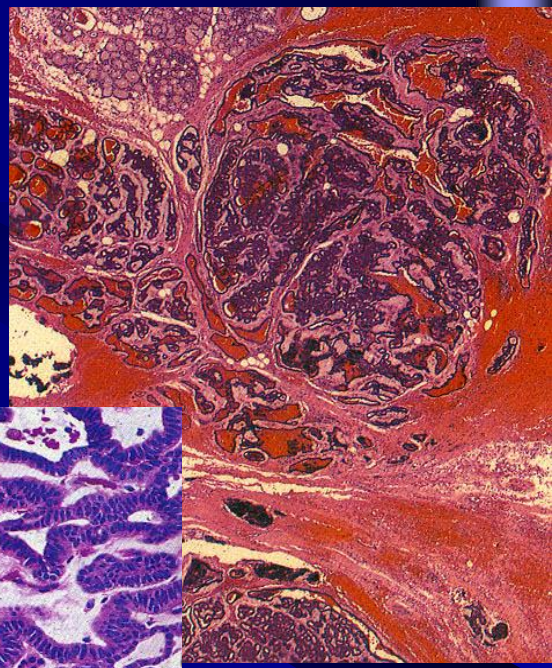
Basal Cell Adenoma

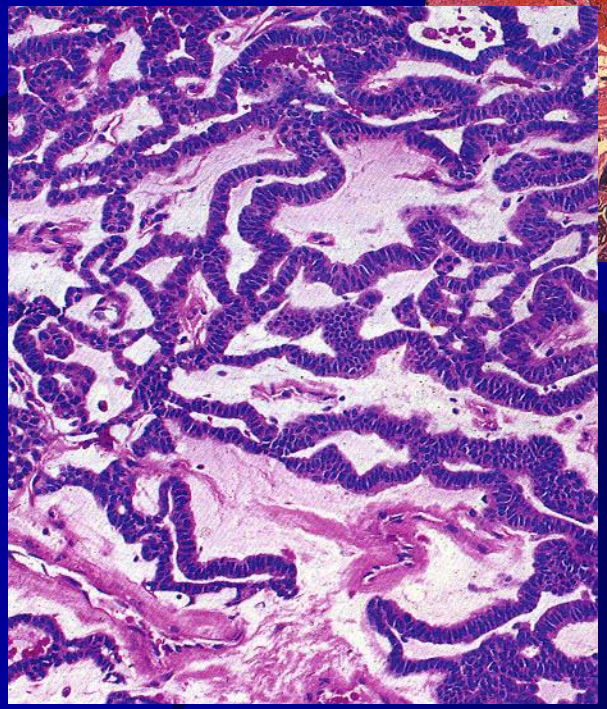
- Membranous
  - Thick eosinophilic hyaline membranes surrounding nests of tumor cells
  - “jigsaw-puzzle” appearance



Canalicular Adenoma

- Microscopically:
  - -bilayered strands or ribbon of columnar cells separated by Loose well Vascular stroma



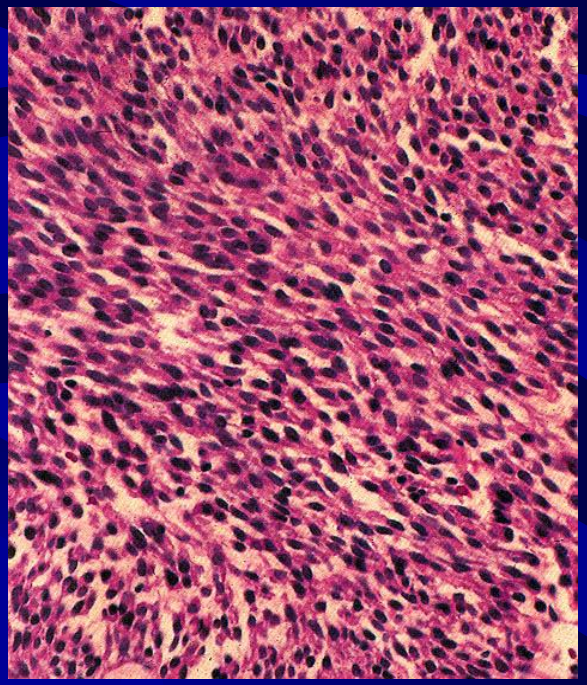


Myoepithelioma

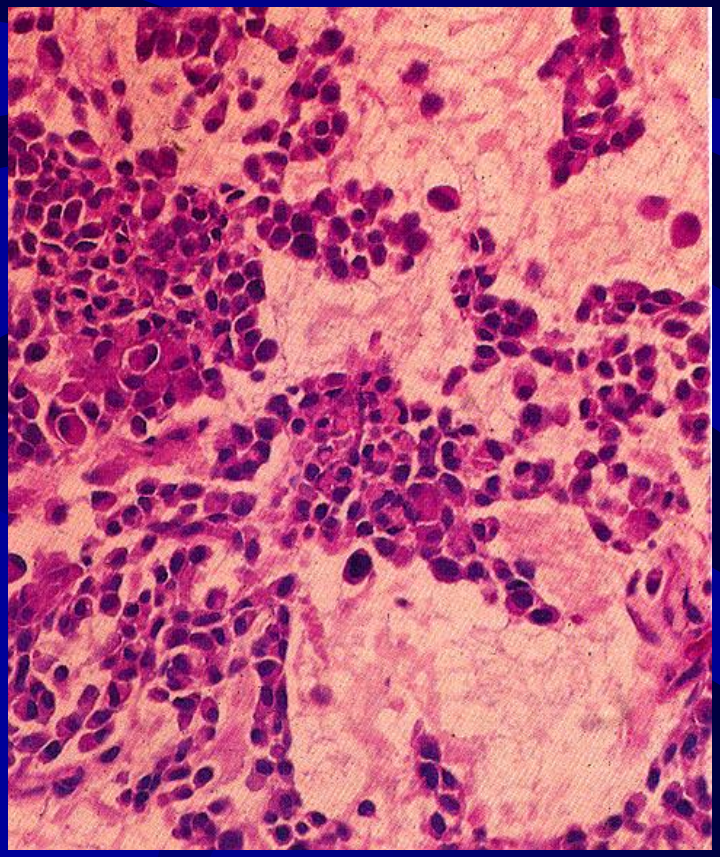
- <1% of all salivary neoplasms
- 3rd-6th decades
- F>M
- Minor salivary glands > parotid > submandibular gland

Myoepithelioma

- Microscopically:
  - Spindle cell
    - More common
    - Parotid
    - Uniform, central nuclei
    - Eosinophilic granular or fibrillar cytoplasm



-Plasmacytoid cell
Some degree of pleomorphism&hyperchromasia
Scant or no mitotic activity
Eccentric oval nuclei



Mucoepidermoid Carcinoma

- Most common salivary gland malignancy in children
- Parotid most of cases

Mucoepidermoid Carcinoma

- Presentation
  - Low-grade: slow growing, painless mass
  - High-grade: rapidly enlarging, +/- pain.

Mucoepidermoid Carcinoma

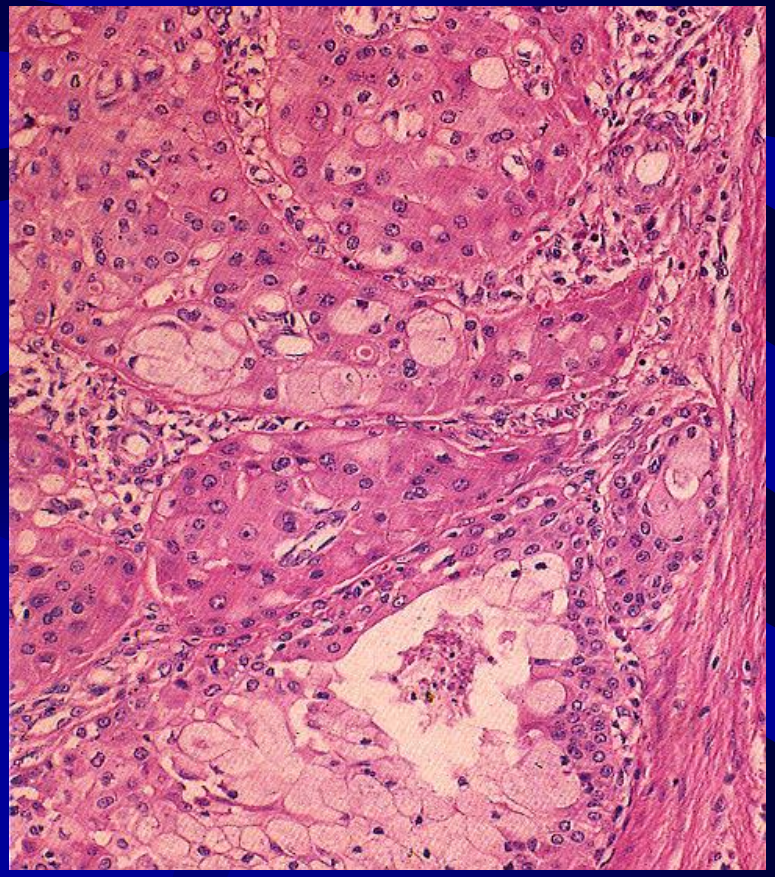
- Gross pathology
  - Well-circumscribed to partially encapsulated to unencapsulated
  - Solid tumor with cystic spaces

Mucoepidermoid Carcinoma

- Microscopically:

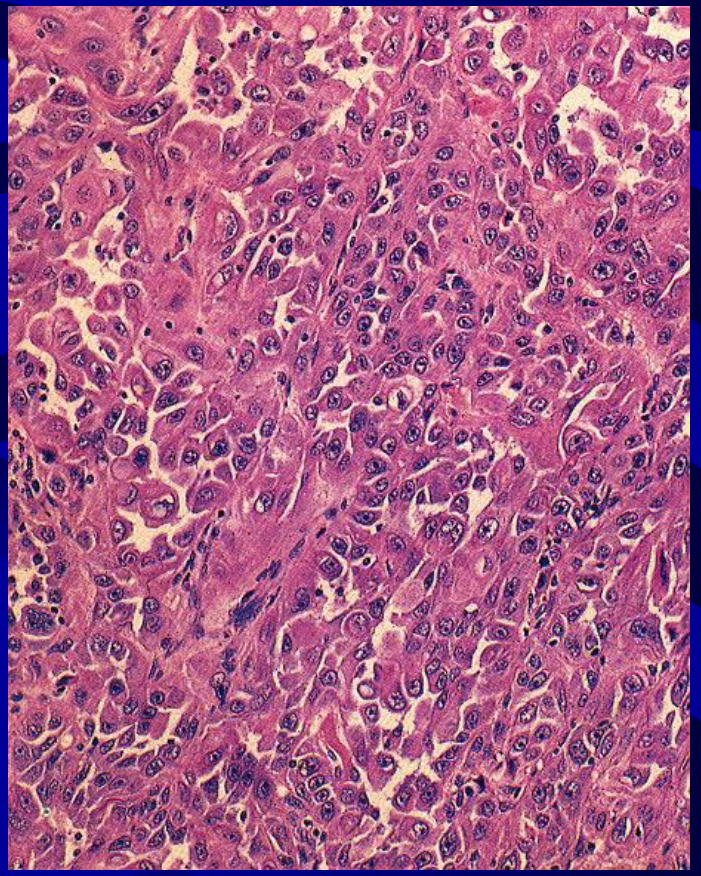
—Low-grade

  - Mucinous cell predominate
  - Prominent cysts
  - Mature cellular elements



Mucoepidermoid Carcinoma

- Histology—High-grade
  - Epidermoid > mucus
  - Solid tumor cell proliferation
  - Mistaken for SCCA
    - Mucin staining



Adenoid Cystic Carcinoma (Cylindroma)

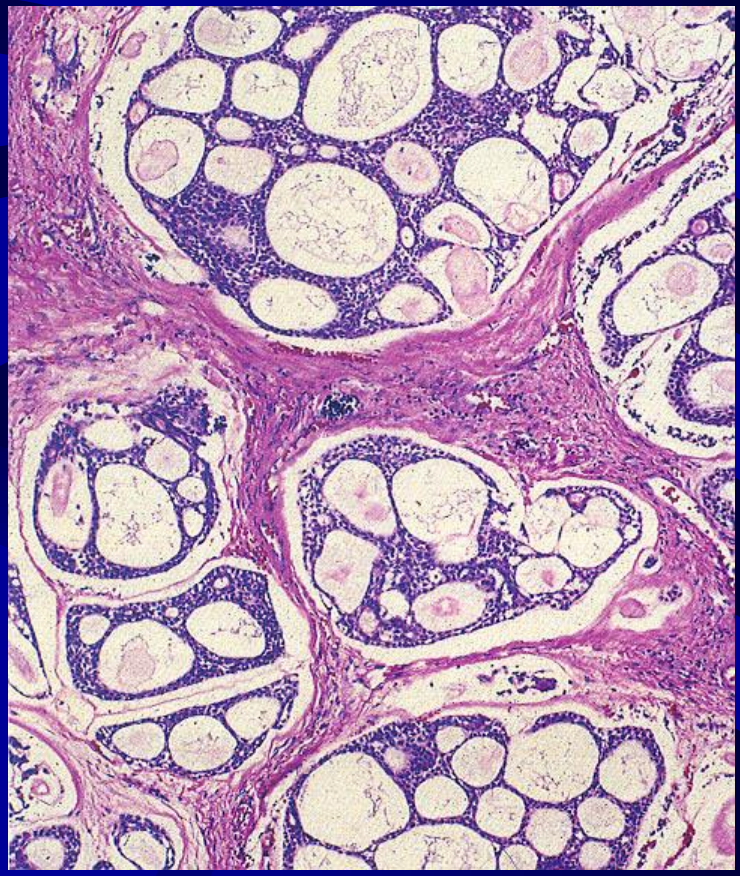
- Overall 2nd most common malignancy
- Most common in minor salivary glands
- Slowly growing but highly malignant neoplasm.

Adenoid Cystic Carcinoma

- Gross pathology
  - Well-circumscribed
  - Solid, rarely with cystic spaces
  - infiltrative

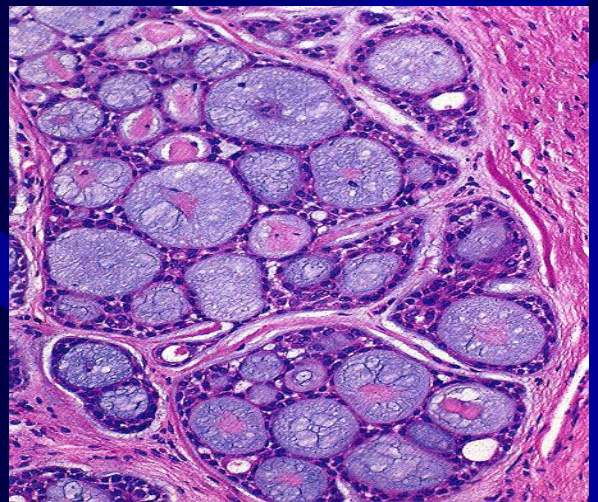
Adenoid Cystic Carcinoma

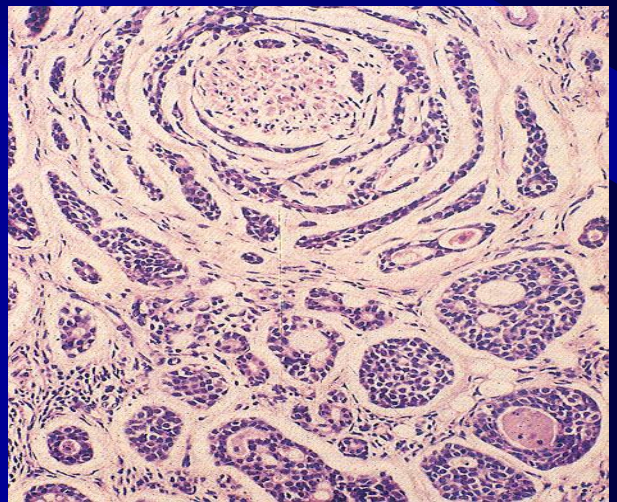
- Micro:-cribriform pattern
  - Most common
  - “swiss cheese” appearance



Adenoid Cystic Carcinoma

- Micro:- tubular pattern
  - Layered cells forming duct-like structures
  - Basophilic mucinous substance
- Histology—solid pattern
  - Solid nests of cells without cystic or tubular spaces



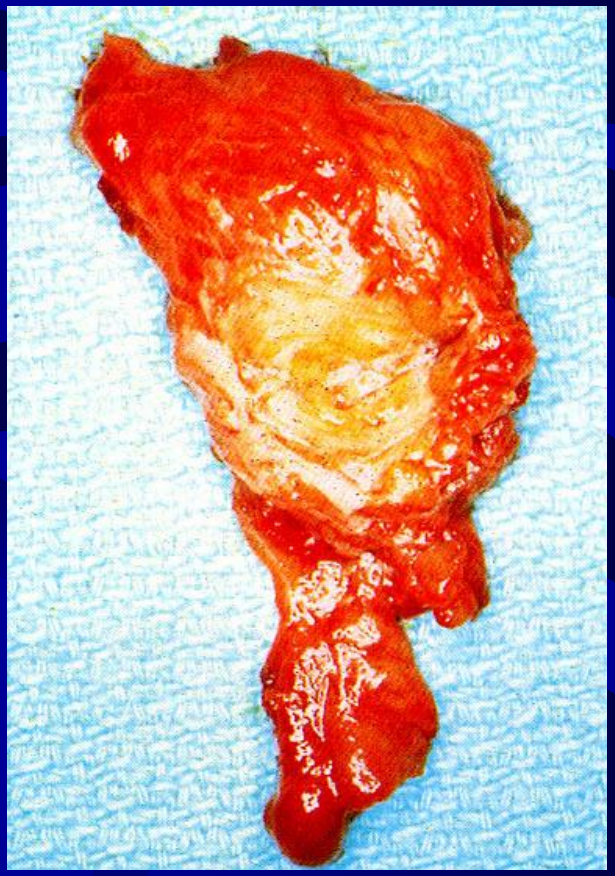


Acinic Cell Carcinoma

- 1%-3% of all salivary gland tumors.
- 3th decade
- M predominance
- Majority in parotid

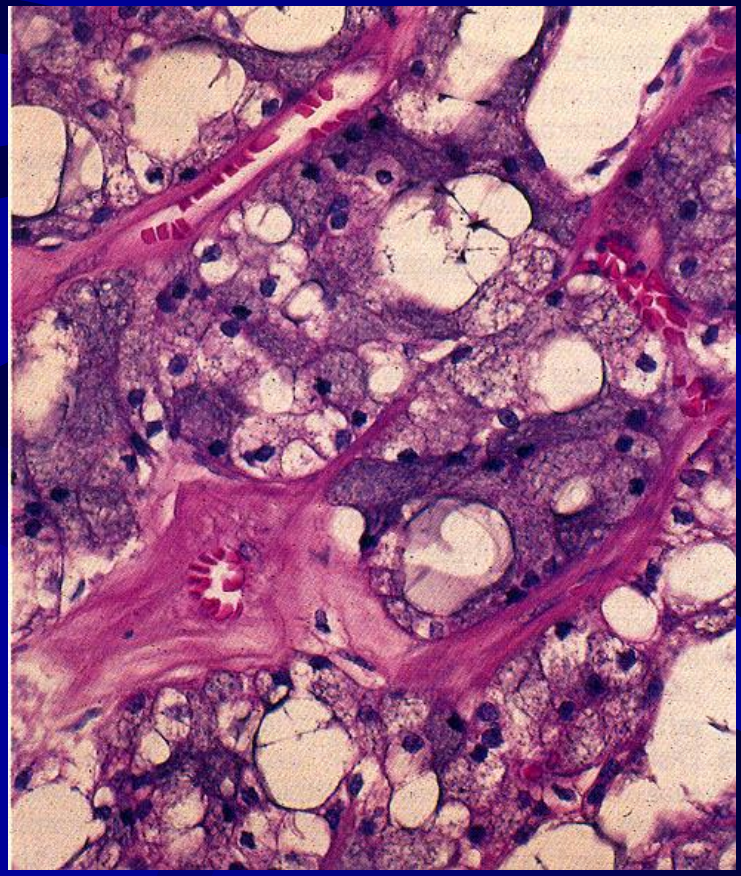
Acinic Cell Carcinoma

- Gross pathology
  - Encapsulated round mass
  - Solid, friable, grayish cut surface
  - <3cm in diameter



Acinic Cell Carcinoma

- Microscopically:
  - Solid, microcystic, papillary-cystic or follicular patterns
  - Polyhedral cells
  - Small, dark, eccentric nuclei
  - Basophilic granular cytoplasm

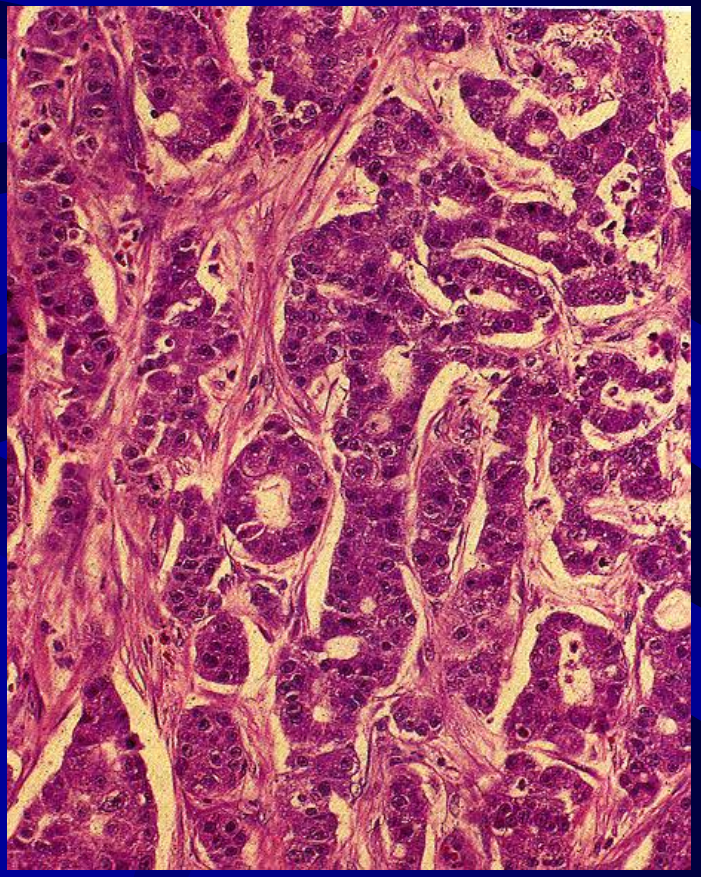


Adenocarcinoma

- Rare
- 5^{th} to 8^{th} decades
- F > M
- Parotid and minor salivary glands

Adenocarcinoma

- Microscopically:
  - Presence of glandular structures and absence of epidermoid component



Malignant Mixed Tumors

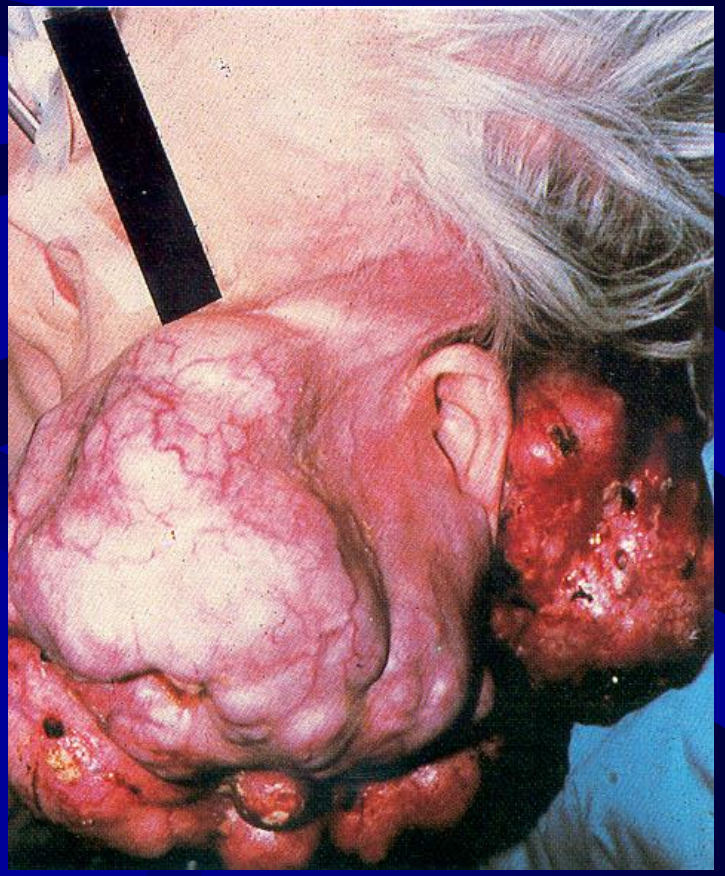
- Carcinoma ex-pleomorphic adenoma
  - Carcinoma developing in the epithelial component of preexisting pleomorphic adenoma
- Carcinosarcoma
  - True malignant mixed tumor—carcinomatous and sarcomatous components
- Metastatic mixed tumor
  - Metastatic deposits of otherwise typical pleomorphic adenoma

Carcinoma Ex-Pleomorphic Adenoma

- 2-4% of all salivary gland neoplasms
- 4-6% of mixed tumors
- 6^{th}-8^{th} decades
- Parotid > submandibular > palate

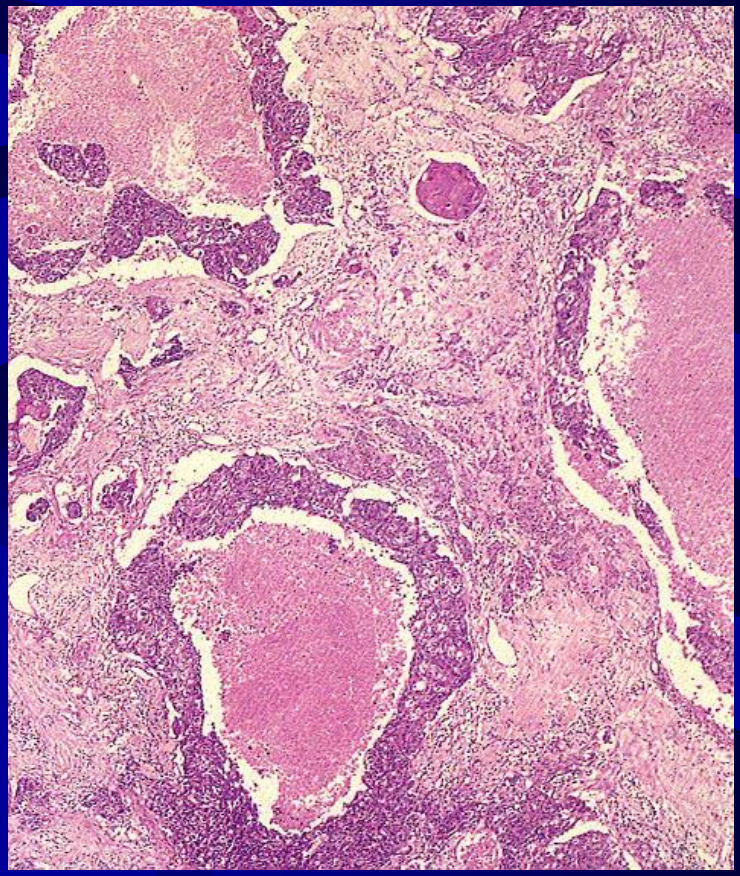
Carcinoma Ex-Pleomorphic Adenoma

- Gross pathology
  - Poorly circumscribed
  - Infiltrative
  - Hemorrhage and necrosis



Carcinoma Ex-Pleomorphic Adenoma

- Microscopically:
  - Malignant cellular change adjacent to typical pleomorphic adenoma
  - Carcinomatous component
    - Adenocarcinoma
    - Undifferentiated



Carcinosarcoma

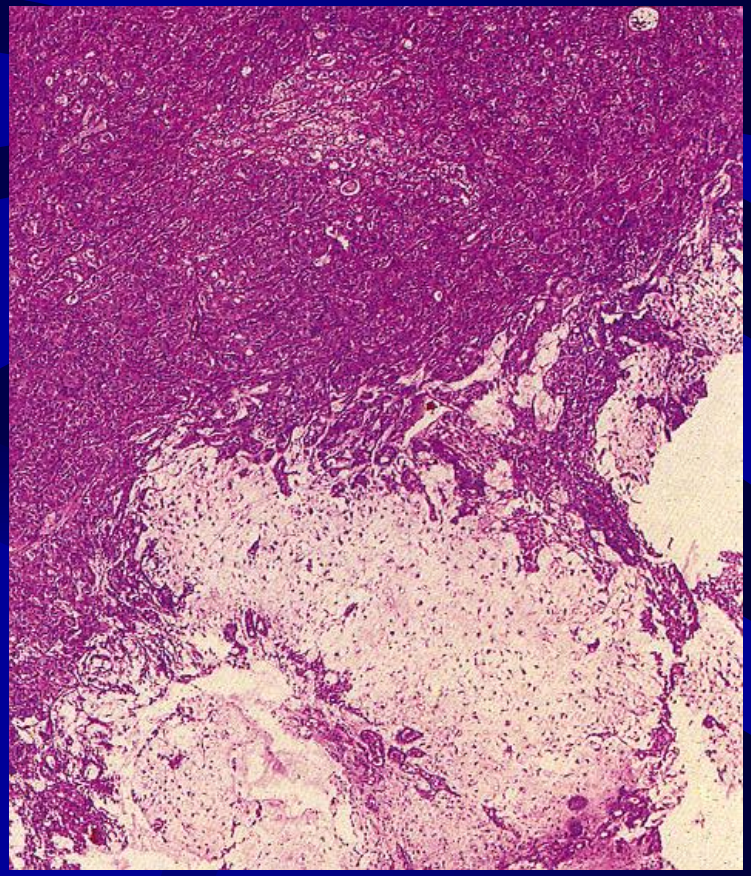
- Rare: <.05% of salivary gland neoplasms
- 6th decade
- M = F
- Parotid
- History of previously excised pleomorphic adenoma, recurrent pleomorphic adenoma or recurring pleomorphic treated with XRT

Carcinosarcoma

- Gross pathology
  - Poorly circumscribed
  - Infiltrative
  - Cystic areas
  - Hemorrhage, necrosis
  - Calcification

Carcinosarcoma

- Microscopically:
  - Biphasic appearance
  - Sarcomatous component
    - chondrosarcoma
  - Carinomatous component
    - Moderately to poorly differentiated ductal carcinoma
    - Undifferentiated

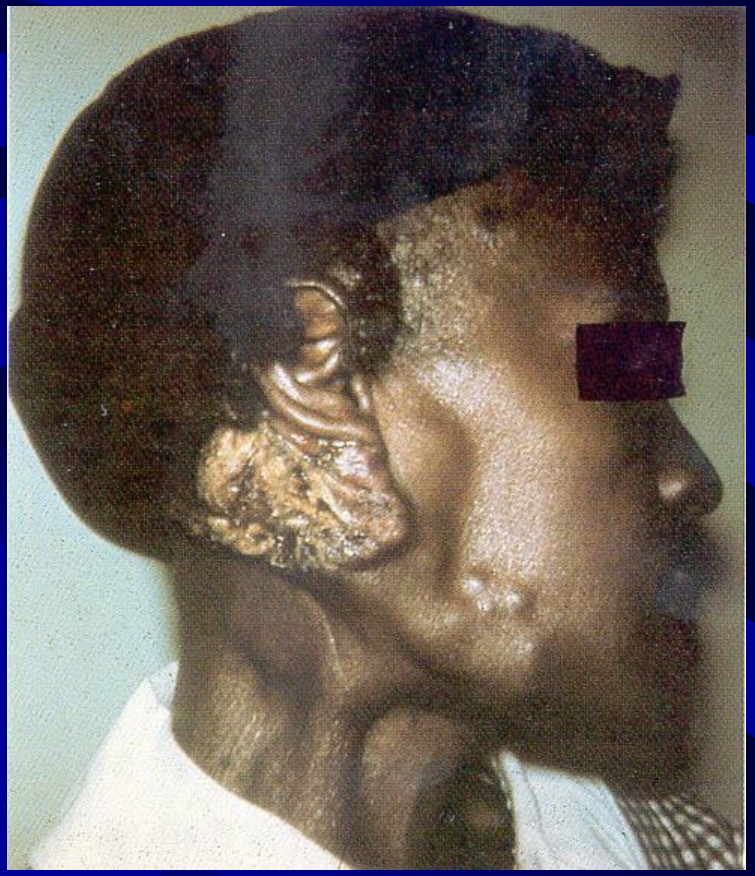


Squamous Cell Carcinoma

- 1.6% of salivary gland neoplasms
- 7^{th}-8^{th} decades
- M:F = 2:1
- MUST RULE OUT:
  - High-grade mucoepidermoid carcinoma
  - Metastatic SCCA to intraglandular nodes
  - Direct extension of SCCA

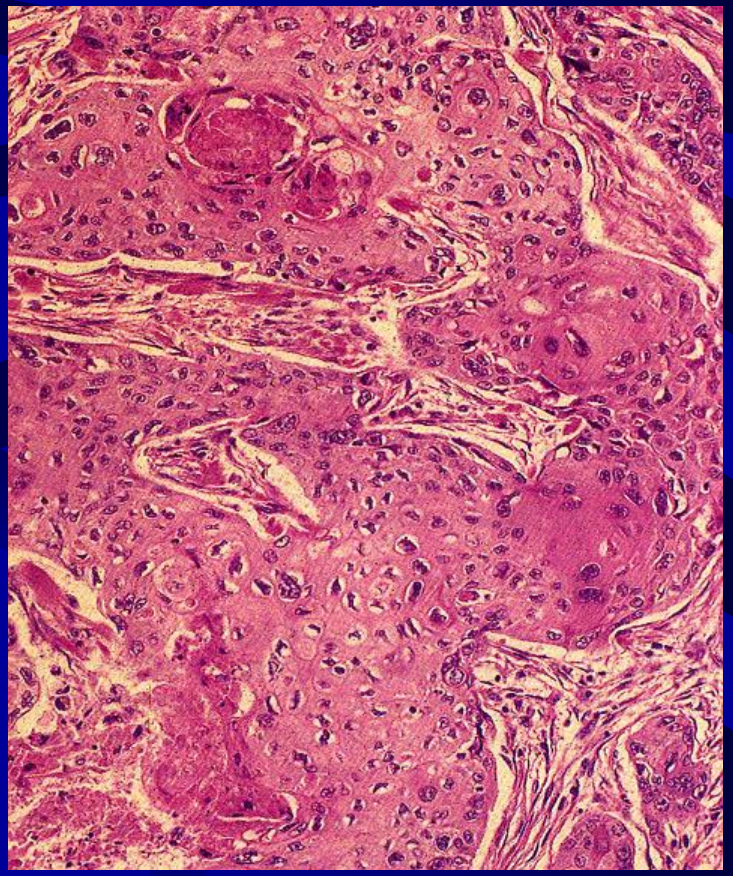
Squamous Cell Carcinoma

- Gross pathology
  - Unencapsulated
  - Ulcerated
  - fixed



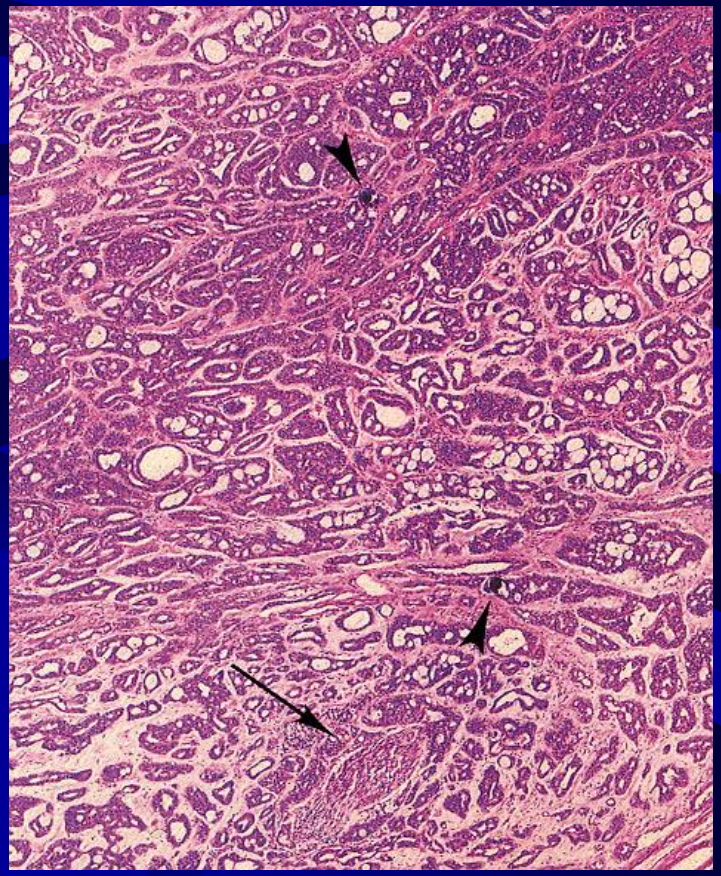
Squamous Cell Carcinoma

- Microscopically:
  - Infiltrating
  - Nests of tumor cells
  - Well differentiated
    - Keratinization
  - Moderately-well differentiated
  - Poorly differentiated
    - No keratinization



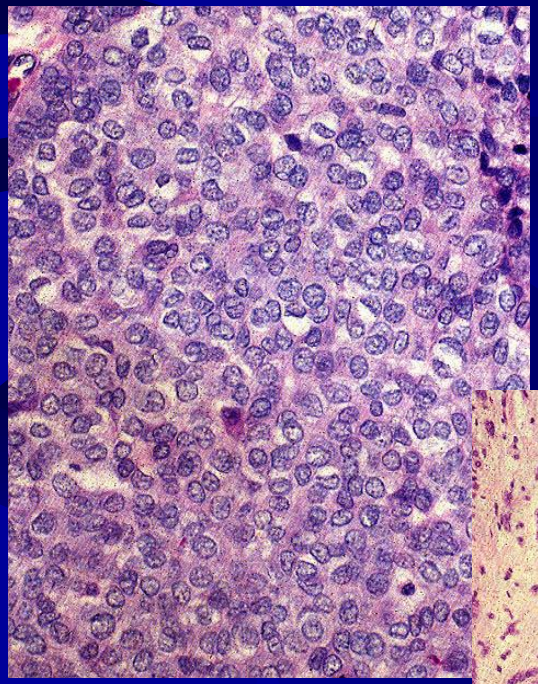
Polymorphous Low-Grade Adenocarcinoma

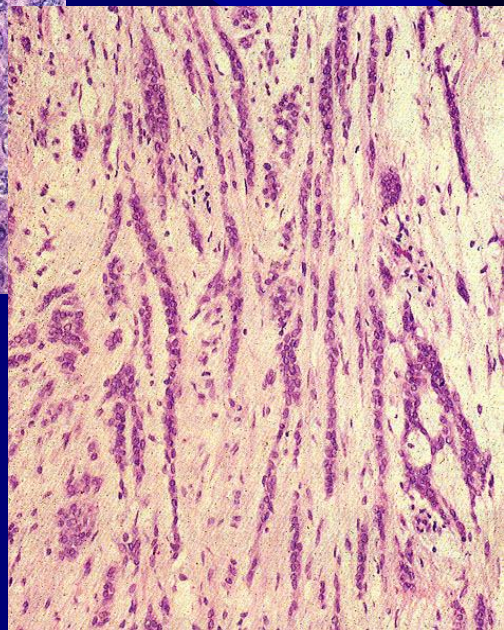
- 2nd most common malignancy in minor salivary glands
- 7th decade
- F > M
- Painless, submucosal mass
- Morphologic diversity
  - Solid, glandular, cribriform, ductular, tubular, trabecular, cystic



Polymorphous Low-Grade Adenocarcinoma

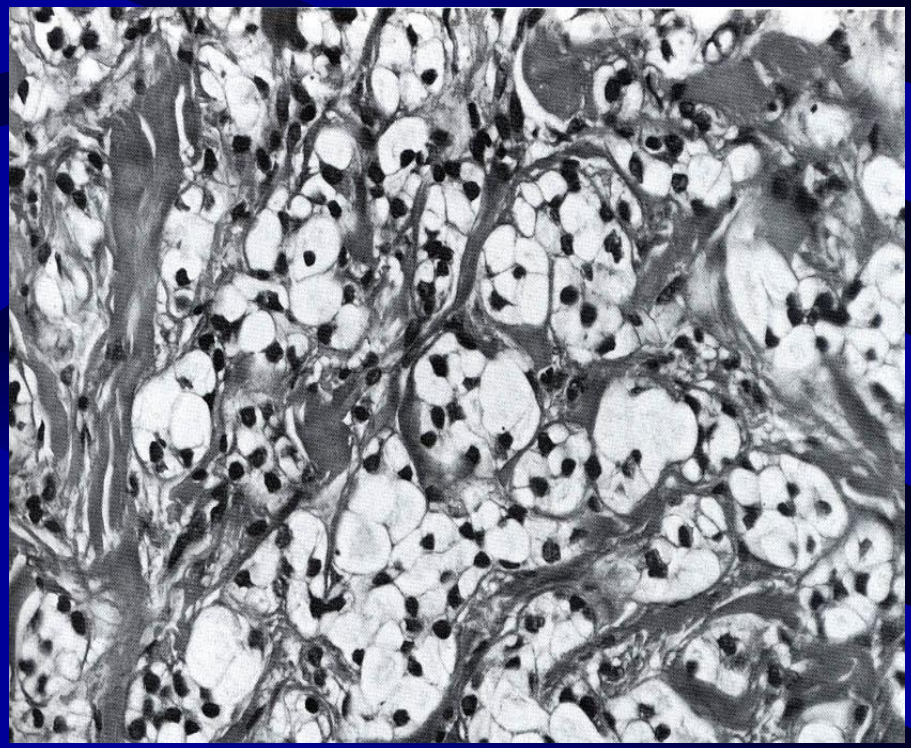
- Microscopically:
  - Isomorphic cells, indistinct borders, uniform nuclei
  - Peripheral “Indian-file” pattern





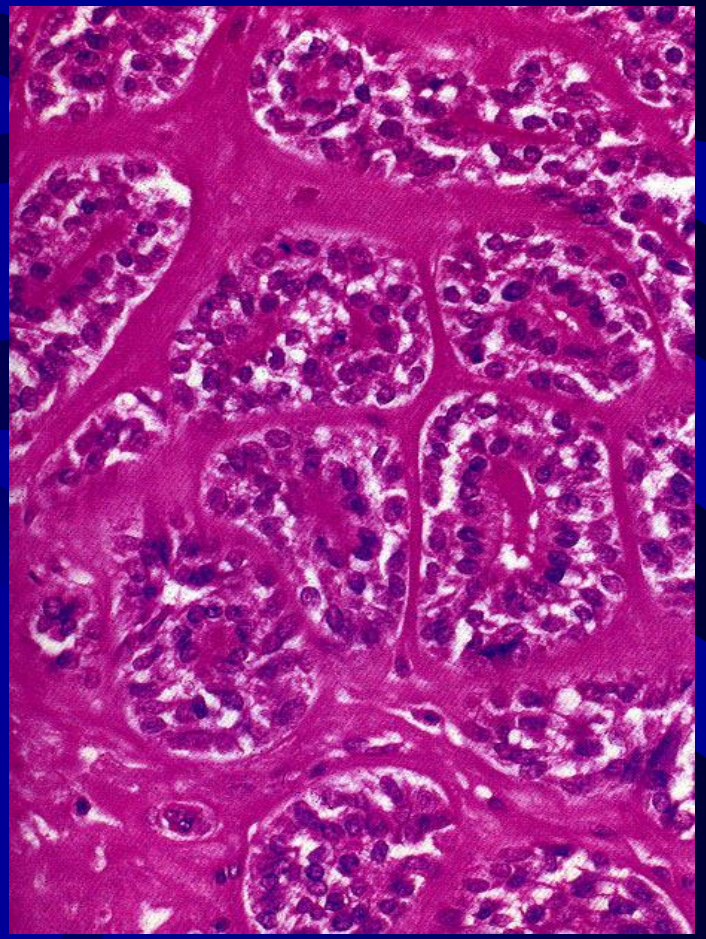
Clear Cell Carcinoma

- Glycogen-rich
- Palate and parotid
- 6^{th}-8^{th} decade
- M = F
- Microscopically:
  - Uniform, round or polygonal cells
  - Peripheral dark nuclei
  - Clear cytoplasm



Epithelial-Myoepithelial Carcinoma

- < 1% of salivary neoplasms
- 6^{th}-7^{th} decades, F > M, parotid
- Microscopically:
  - Tumor cell nests
  - Two cell types
  - Thickened basement membrane



Undifferentiated Carcinoma

- Lymphoepithelial
  - Eskimos: parotid, F > M, familial
  - Asian: submandibular, M > F
- Large-cell
  - Bimodal peaks
  - M > F
  - Parotid
- Small-cell
  - 6^{th}-7^{th} decades
  - M:F = 1.6:1
  - parotid