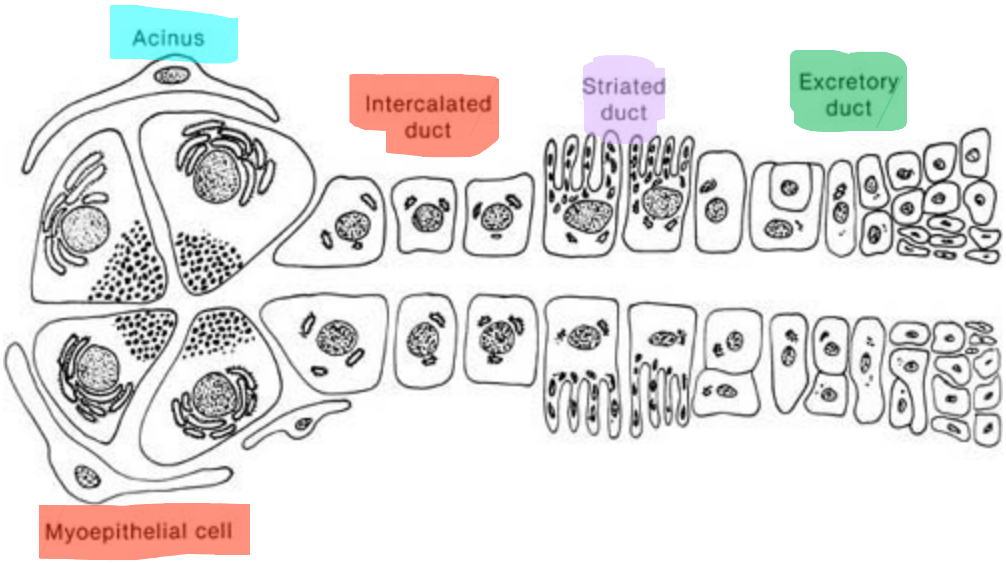
SALIVARY GLAND TUMORS



TYPES OF SALIVARY GLAND TUMORS:

PLEOMORPHIC ADENOMA
ONCOCYTIC TUMORS
ACINOUS CELL TUMORS
MUCOEPIDERMOID TUMORS & SQUAMOUS CELL CARCINOMA

Benign SGT	**Malignant SGT**
Slow, painless & local	Fast, painful & metastasize
Soft, rubbery	Hard
Pseudo-encapsulated	Non encapsulated
Not fixed	Fixed
No facial nerve involvement	Facial nerve involvement
Ulceration not common	Ulceration is common
Small	Large

BENIGN SALIVARY GLAND TUMORS

1. Pleomorphic Adenoma
2. Warthin's Tumor
3. Monomorphic Adenoma
4. Oncocytic Tumor
5. Sebaceous Adenoma
6. Ductal Papilloma

1) PLEOMORPHIC ADENOMA (M++ 4^{th}-6^{th})

- Most common salivary gland neoplasm (and most common parotid gland tumor)
- Parotid Gland > Minor Gland Tumors (Palate > Upper Lip > Buccal Mucosa).
- 90% in superficial lobe of the parotid gland (tail of gland)
- Signs: Non-ulcerated, slow, painless, mobile swelling (except hard palate)

- Gross Pathology: Smooth, well-demarcated, solid, cystic changes, **myxoid stroma**.

- Components:

Epithelial	Stromal (Mesenchymal)
• Tubular and cord-like or solid-sheet arrangement. • Mitosis is rare.	• Attribute to myo-epithelial cells. • Most tumors show chondroid differentiation • Sometimes there is osseous metaplasia • Relatively hypocellular and composed of pale blue slightly eosinophilic tissue.

- Microscopic: **Diverse pattern**
  Duct-like structures of cuboidal cells
  Loose chondromyxoid stroma
  Hyalinized CT
  Cartilage and osseous tissue
  Pseudo-encapsulated (however, tumor islands (**tumor pseudopods**) can be found in fibrous capsule and contribute to disease recurrence.

- Behavior:
  Recurrence is common (Malignant transformation increases with every recurrence).
  Benign with low risk of malignant transformation.

- Management:
  Excision (parotidectomy, submandibular gland excision or wide local excision of minor salivary glands) while preserving the facial nerve.
  Radioresistant (Radiotherapy is contraindicated).

- Signs of Malignant Transformation:
  Weakness in facial nerve distribution
  Appears to be fixed to underlying bone
  Palpable regional lymph nodes
  Ulceration
  Difficulty in breathing, talking & mastication
  Irregular nodular lesion
  Recurrence with multiple nodules.

2) WARTHIN'S TUMOR (M++)
[ADENOLYMPHOMA | BENIGN PAPILLARY CYSTADENOMA LYMPHOMATOSUM]

- Second most common parotid gland tumor (6-10%)
- Occurs in the inferior lobe of the parotid gland (posterior to angle of mandible)
- Bilateral in 10% of cases.
- May contain **Mucoid Brown Fluid** in FNA.
- Dough to cystic mass
- Encapsulated with smooth lobulated surface & round outline.

- Components: Both must be present to diagnose the disease.

Epithelial	Lymphoid
• Numerous cystic spaces with irregular outline. • Cystic spaces contain **papillary fronds** (which demonstrate 2 layers of oncocytic epithelial cells: luminal & basal) • Lining cells overlie lymphatic tissue with germinal center. • Cytoplasm stains deep pink with abundance of mitochondria. • Undergoes squamous metaplasia occasionally (can be mistaken for SCC in FNA)	• Abundance of lymphoid tissue. • Occasional germinal centers. • Lymphoid tissue forms core or papillary structures.

- Behavior: Seldom recurrent with rare malignant transformation.

- Treatment: Excision

- Radionucleotide Scan: Oncocytes selectively incorporate technetium (Tc 99m) and appear as hotspots in radionucleotide scan.

3) MONOMORPHIC ADENOMA

- Similar to 1) Pleomorphic Adenoma except there is no mesenchymal stromal component (there is no chondroid differentiation or osseous metaplasia)
- Most common in minor salivary glands of the upper lip.
- Rare malignant potential
- 12% bilateral.
- Types:

Basal Cell Adenoma (M++ 3rd - 8th)	Canicular Adenoma (F++ >5th)	Myoepithelioma Adenoma
• 1-2% of SG Adenoma • 70% in Parotid gland • Upper lip is most common IO site	• Exclusive within the oral cavity (upper lip)	• MSG, PG, SMG
• Slowly growing, painless swelling. • **Firm on palpation**	• Freely movable, asymptomatic. • **Encapsulated** • 20% are multifocal	• **Circumscribed**, painless mass
• Uniform **basaloid** epithelial cells with **monomorphous** pattern. • Arrangement of tumor cells may be **trabecular, tubular or solid.**	• Bilayer stands of **basaloid** cells that branch & anastomose within delicate highly vascular stroma. Individual cells: cuboidal to columnar with eosinophilic cytoplasm	• **Sheets of plasmacytoid or spindle cells** • 70% contain spindle cells • 20% composed of plasmacytoid
• These tumors can be distinguished from pleomorphic adenoma by **Absence of chondromyxoid stroma and presence of uniform epithelial pattern**	• Treated by excision.	• Treated by conservative surgical excision.

4) ONCOCYTIC TUMOR

include: **[ONCOCYTOMA & OXYPHILIC ADENOMA]**

- Predominant in PG (**rare in oral cavity**)
- Solid, ovoid encapsulated lesion
- Slow growth rate.

- Histopathology:
  Sheets of polyhedral cells with granular eosinophilic cytoplasm & centrally placed vesicular nucleus.

- Behavior: Malignant transformation could be seen

- Treatment: SF parotidectomy.

5) SEBACEOUS ADENOMA

- Rare
- Originate in intralobular ducts
- Composed of sebaceous gland-derived cells.

6) DUCTAL PAPILLOMA

include: **[SIALOADENOMA PAPILLEFERUS | INVERTED DUCTAL PAPILLOMA | INTRADUCTAL PAPILLOMA]**

- All arise within interlobular & excretory duct

Sialoadenoma Papilleferus	Inverted Ductal Papilloma	Intraductal Papilloma
• Rare, resemble squamous cell papilloma • IO (Buccal mucosa & palate)	• Proliferation of squamoid epithelia with multiple thick bulbous papillary projection that fill the ductal lumen.	• Arise from greater depth within ductal system, presenting as salivary obstruction

MALIGNANT SALIVARY GLAND TUMORS

1. Mucoepidermoid Carcinoma
2. Adenoid Cystic Carcinoma
3. Acinic Cell Carcinoma
4. Malignant Mixed Tumors
5. Clear Cell Tumor
6. Squamous Cell Carcinoma
7. Polymorphus Low Grade Adenocarcinoma

1) MUCOEPIDERMOID CARCINOMA (F++ adults++)

- Most common salivary malignancy (29% - 43%)
- Parotid (45-70% of cases), Palate (18%)
- Partially encapsulated
- Histologically classified into low grade (slowly growing, painless) and high grade (rapidly growing +- pain)
- Low-grade tumors have a protracted course & higher percentage of mucinous cells
- Higher grade correlates with a poorer prognosis, features:
  Epithelial predominance
  Four or more mitotic figures per 10 high-power fields
  Neural invasion
  Necrosis
  Intra-cystic component <20%
  Cellular anaplasia

- Histopathology:
  Mucous secreting epithelial cells
  Intermediate epithelial cells
  Epidermoid epithelial cells

Low Grade	Intermediate Grade	High Grade
• Composed of mucous secreting cells arranged around microcystic structure with large & numerous intermediate cells and few epidermoid cells with minimal cellular atypia.	• Contains mucus cells & microcystic spaces, not as numerous as in low grade.	• Clusters of proliferating epidermoid cells that are more solid with few mucous cells. • Mistaken for SCC due to mucin staining.

- Prognosis: related to the histopathologic grading (low has benign clinical course but with wide metastasis, while high grade has aggressive course with local & distant metastasis into cervical lymph nodes).
  Intraoral tumors have poorer prognosis.

- Treatment: Influenced by site, stage, grade
  Stage I & II : wide local excision
  Stage III & IV : radical excision +- neck dissection +- postoperative radiation therapy

2) ADENOID CYSTIC CARCINOMA (F++)

- Second most common malignancy and first most malignancy of the submandibular gland.
- 5% of major gland tumors, 25% of minor gland tumors.

- Features:
  Slow growth
  Neurotropism; neurotropic spread leading to recurrences after treatment.
  Local recurrence
  Distant metastasis
  May ulcerate or be painful.

- Histopathology: solid islands, cords, strands of darkly staining epithelial cells in a delicate fibrous connective tissue stroma, however much variation. Distinctive feature: **perineural invasion**. (**spread may occur by emboli along nerve lymphatics)**
  Three distinct histologic patterns that may co-exist in the same tumor;

Cribriform Pattern	Tubular Pattern	Solid Pattern
• Best recognized pattern • Has a glandular architecture • Characterized by pseudocystic spaces containing mucin (Swiss Cheese Pattern) • Best prognosis.	• Composed of smallest islands of cells with distinct duct like structure centrally. • Intermediate prognosis	• Shows little duct formation with large islands of small-medium cells with areas of central necrosis • Indicate aggressive form of the disease • Poorest prognosis.

- Treatment:
  Complete local excision
  Tendency for perineural invasion ➔ facial nerve sacrifice
  Postoperative XRT (Radiotherapy)

- Prognosis:
  Local recurrence: 42%
  Distant metastasis: Lung
  Indolent Course: 5-y survival: 75% || 20-y survival: 13%

3) ACINIC CELL CARCINOMA [BLUE DOT TUMOR]

- Low-grade behavior with the best survival rate of any other malignancy.
- Intra-orally: Palate & Buccal Mucosa
- Origin: Intercalated duct & reserve cells
- Parotid site is most common site of origin (2nd most common in parotid and pediatric)

- Gross Pathology:
  Well-demarcated
  Most often homogenous
  Classic multicystic pattern
  Stained by PAS (cells heavily stained)
  Slowly growing, painful
  Bilateral involvement in 3% of patients (second-most common neoplasm (after Warthin's) to exhibit bilateral presentation)

- **Characterized by benign histomorphologic picture but occasional malignant behavior.**

- Histopathology: Tumor cells are uniform and well differentiated similar to that found in normal acinic cells. Three patterns:
  Solid (most common)
  Papillary
  Follicular

- Treatment:
  Complete local excision
  +/- Postoperative XRT

- Prognosis:
  10-y survival: 68%
  25-y survival: 50%

4) **MALIGNANT MIXED TUMORS**
includes: **[CARCINOMA EX-PLEOMORPHIC ADENOMA | CARCINO-SARCOMA | METASTATIC MIXED TUMOR]**

CARCINOMA EX-PLEOMORPHIC ADENOMA:

- Carcinoma developing in the epithelial component of pre-existing pleomorphic adenoma.
- 3% - 7% of pleomorphic adenomas. Risk of malignant degeneration is 1.5% at first 5-years and 9.5% after 15-years.
- Typical clinical history includes a longstanding salivary mass that begins to rapidly enlarge, often to substantial size, although many patients have no history of prior tumor.
- Fixation of mass to surrounding tissue, ulceration & regional lymphadenopathy.
- Local recurrence.

- Gross Pathology: poorly circumscribed, infiltrative, hemorrhage and necrosis

- Histology:
  Malignant cellular change adjacent to typical pleomorphic adenoma
  Carcinomatous component

- Treatment:
  Radical excision
    - Neck dissection (25% with lymph node involvement at presentation)
    - Post-operative XRT

- Prognosis: Dependent upon stage and histology.

CARCINO-SARCOMA

- True malignant mixed tumor – carcinomatous and sarcomatous components.

METASTATIC MIXED TUMOR

- Metastatic deposits of otherwise typical pleomorphic adenoma.

5) **CLEAR CELL TUMOR**
include: **[CLEAR CELL CARCINOMA | EPIMYOEPITHELIAL CARCINOMA]**

- Low grade tumor (predominantly in minor salivary glands)
- Abundant clear cells
- Treatment: local excision with high recurrence.

6) **SQUAMOUS CELL CARCINOMA** (M++++ 7^{th}-8^{th})

- Limited to major salivary glands (1.6% of salivary gland neoplasms)
- Obstructive sialadenitis is predisposing factor.
- Well-differentiated with no evidence of mucin production
- Must rule-out:
    - High-grade mucoepidermoid carcinoma
    - Metastatic SCCA to intraglandular nodules
    - Direct extension of SCCA

7) **POLYMORPHUS LOW GRADE ADENOCARCINOMA**

- Low-grade malignancy with low risk of recurrence & metastasis.
- Exclusive in minor salivary glands (palate) it's the second most common malignancy of MSG.
- Originate from reserve cells in most proximal portion of salivary duct.
- Myoepithelial differentiated cells appear in this neoplasm
- Firm, elevated, non-ulcerated nodular swelling
- Painless, submucosal mass
- Morphologic diversity (Solid, glandular, cribriform, ductular, tubular, trabecular, cystic)
- Slow growth (1-4cm) in long duration
- Metastasis in 10% of patients