Disclaimer

SALIVARY GLAND TUMOURS

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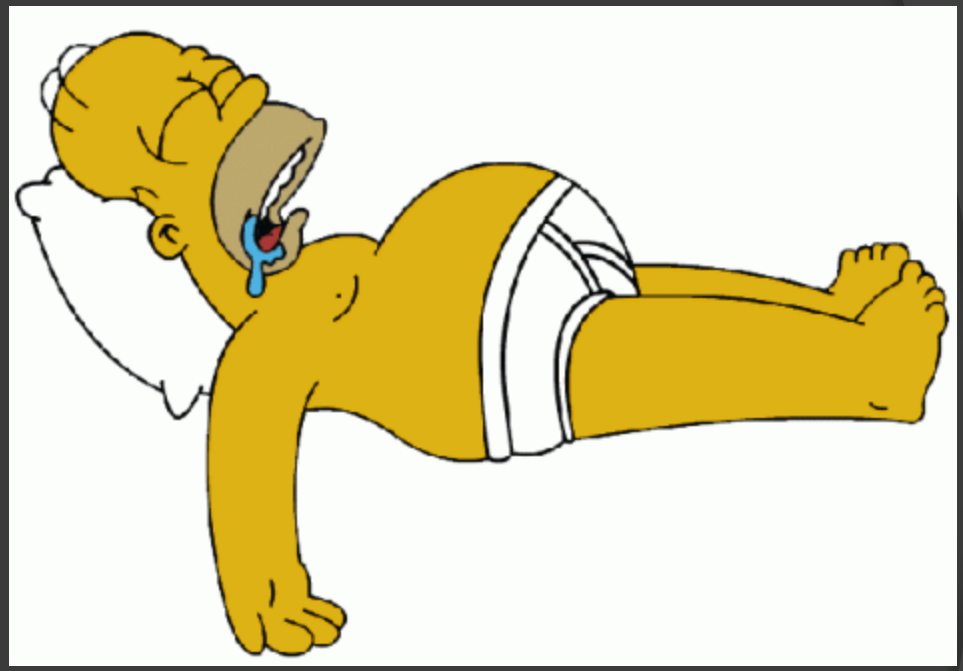
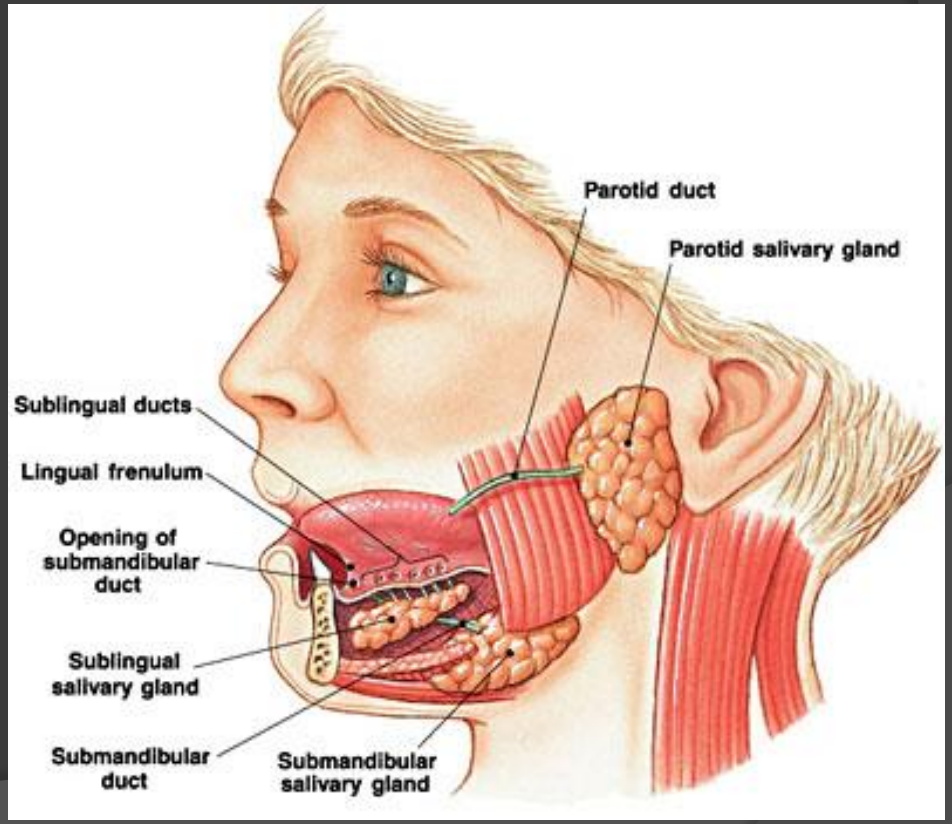
Salivary Gland Tumours

- Anatomy
- Physiology
- Tumours



Anatomy

- Major
  - Parotid, submandibular and sublingual
- Minor



Anatomy: Parotid

- Embryology
  - 6th-8th week gestation
  - 1st to develop, last to encapsulate
    - developing lymphatics trapped
    - Incorporation of salivary epithelial cells into lymphatics
  - Grows posteriorly to meet anteriorly advancing facial nerve

Anatomy: Parotid

- 80% overlies Masseter/Mandible
  - Tail over upper ¼ of SCM
- 20% Retromandibular
  - Connects via isthmus (ramus and post belly digastric)
- 20% have accessory parotid gland
  - Over masseter
  - Cranial
- Capsule – superficial layer of DCF

Anatomy: Parotid

- Retromandibular
  - Stylomandibular Tunnel

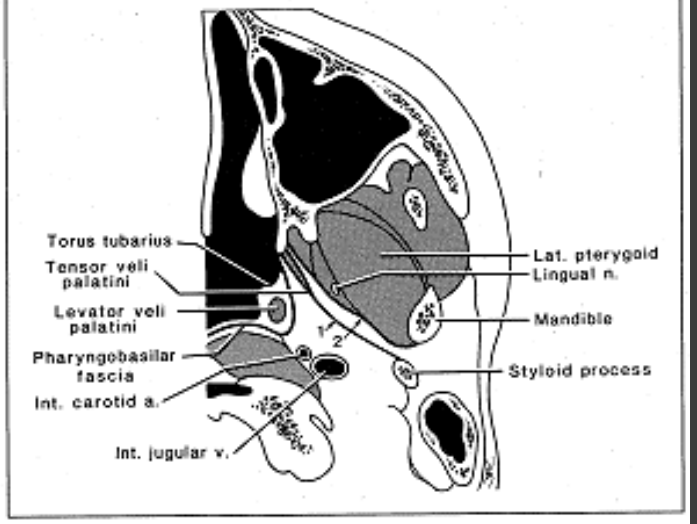


Figure 2: Parapharyngeal Space, Axial View—Axial view of the parapharyngeal space at the level of the nasopharynx. Arrow 1 indicates the fascia extending from the levator veli palatini muscle of the styloid process, which divides the parapharyngeal space into prestyloid and post-styloid compartments. Arrow 2 points to the fascia of the pterygoid muscles.

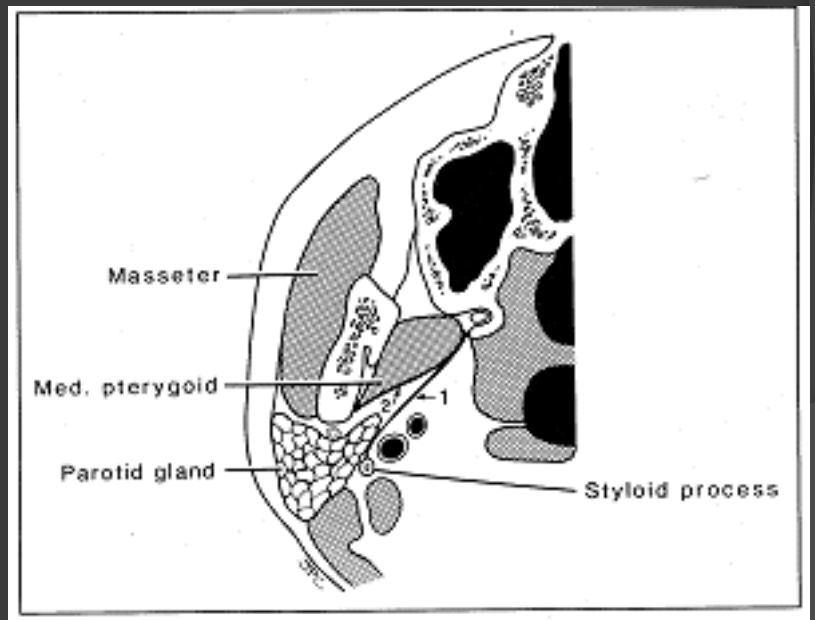


Figure 3: Another Axial View—Axial view of the parapharyngeal space at a lower level.

Anatomy: Parotid

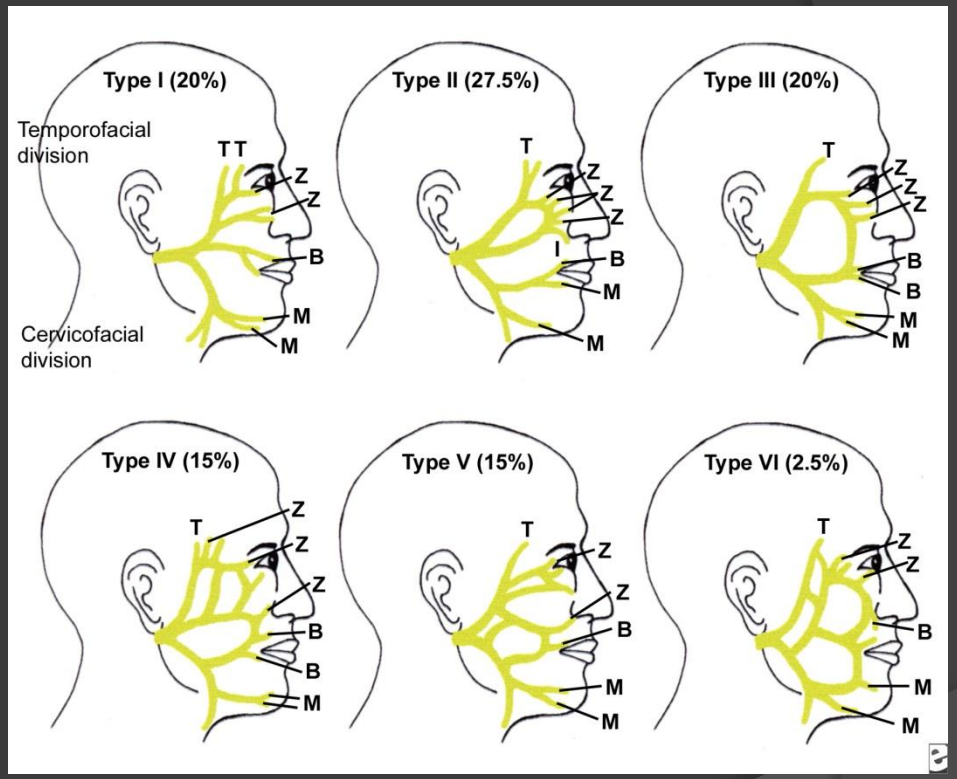
- Stensen's Duct
  - Arises from anterior border
  - 1.5 cm inferior to Zygomatic arch
  - Pierces Buccinator at 2nd molar
  - 4-6 cm in length; 5 mm in diameter
  - line between the upper lip philtrum and the tragus
  - Travels with buccal branch

Anatomy: Parotid

- Parotid Space
  - Nerves
    - VII, auriculotemporal (parasym), greater auricular
  - Artery – ECA / STA (sym)
  - Retromandibular vein
  - Lymphatics
    - Paraparotid
    - Intraparotid

Anatomy: Parotid facial nerve

- Identify VI nerve
  - Anterograde
  - Retrograde
  - Mastoidectomy



Anatomy: Parotid facial nerve

- Tragal pointer –1-1.5 cm deep and inferior to the pointer
- Tympanomastoid suture – traced medially, 6-8 mm deep to the suture line
- Posterior belly of Digastric – nerve just superior and posterior to the cephalic margin of the muscle
- Styloid process – sits 5-8 mm deep to the Tympanomastoid suture; the trunk of VII lies on the posterolateral aspect of the Styloid near its base

Anatomy: Parotid

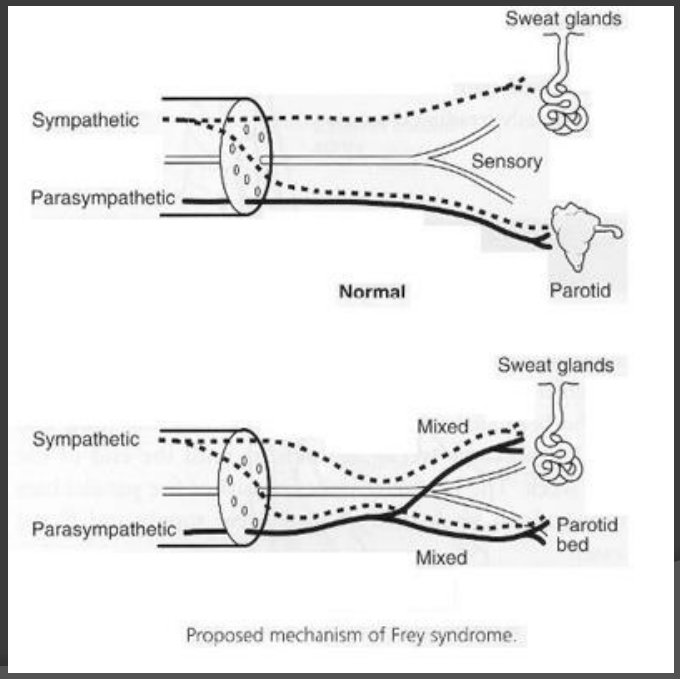
- Retromandibular vein
  - runs lateral to the Carotid artery
  - Deep to Facial nerves
  - joins
    - Postauricular vein to form the External Jugular
    - Anterior Facial vein to form the Common Facial vein, which empties into the Internal Jugular

Anatomy: Parotid

- Lymphatic drainage
  - Paraparotid nodes
    - more numerous
    - drain the temporal region, scalp, and ear.
  - Intraparotid nodes
    - drain the posterior nasopharynx, soft palate, and ear.
  - Drain into the superficial and deep cervical lymph nodes.

Freys syndrome (auriculotemporal syndrome)

- Damage to AT nerve
- Reinnervation to sweat glands and blood vessels = gustatory sweating



Freys syndrome

- Iodine and starch test
- Treatment
  - Topical anticholinergic ointments (scopolamine, glycopyrolate)
  - Topical anti-perspirants (deodorant)
  - Topical α agonist (clonidine)
  - Botulinum toxin injections
  - Surgery
    - Dermal fascial graft, TPF flap, ADM

Anatomy: Submandibular

- Lies in submandibular triangle
- Divided by mylohyoid muscle
- Invested by superficial layer of DCF

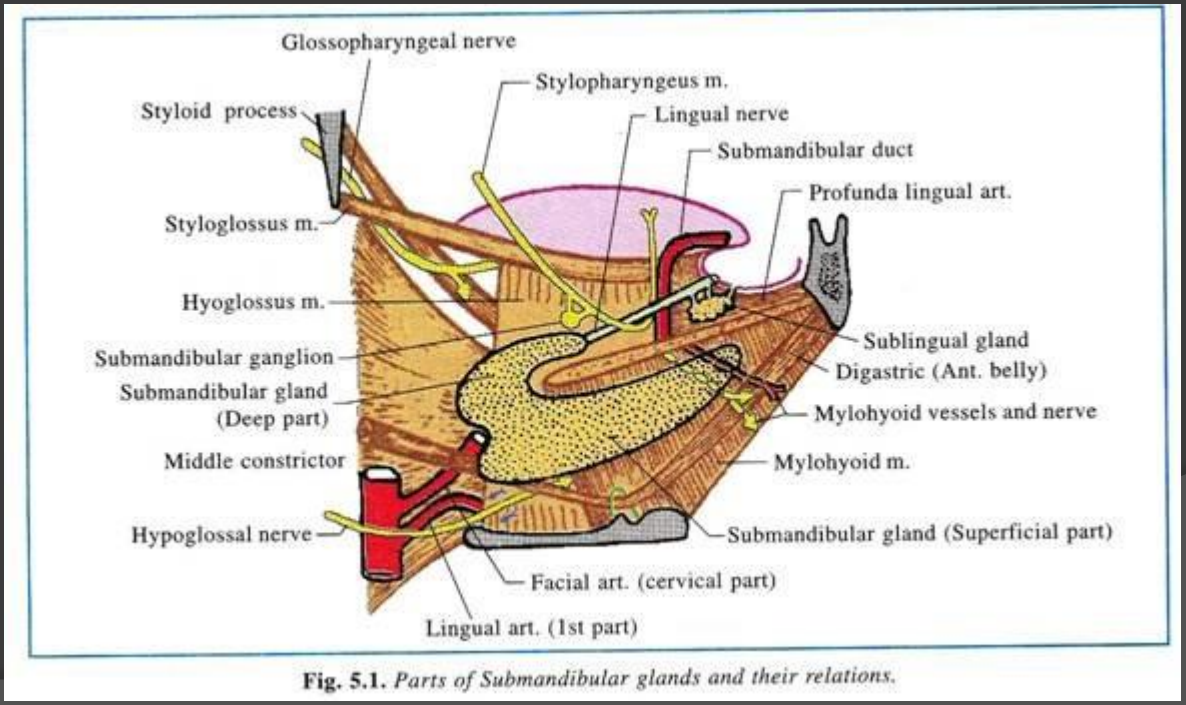


Fig. 5.1. *Parts of Submandibular glands and their relations.*

Anatomy: Submandibular

- Innervation
  - Superior Cervical Ganglion (symp)
  - Submandibular Ganglion (para)
- Artery: Submental artery
- Vein: Anterior Facial vein
- Lymphatics
  - Deep Cervical and Jugular chains
  - Facial artery nodes

Anatomy: Submandibular

- Wharton's duct-
  - exits the medial surface of the gland
  - runs between Mylohyoid and Hyoglossus muscles and on to Genioglossus muscle.
  - Empties lateral to the lingual frenulum
  - Length = 5 cm.
  - Lingual nerve wraps around duct, starting lateral and ending medial
  - CN XII parallels the Submandibular duct, running just inferior to it.

Anatomy: Sublingual

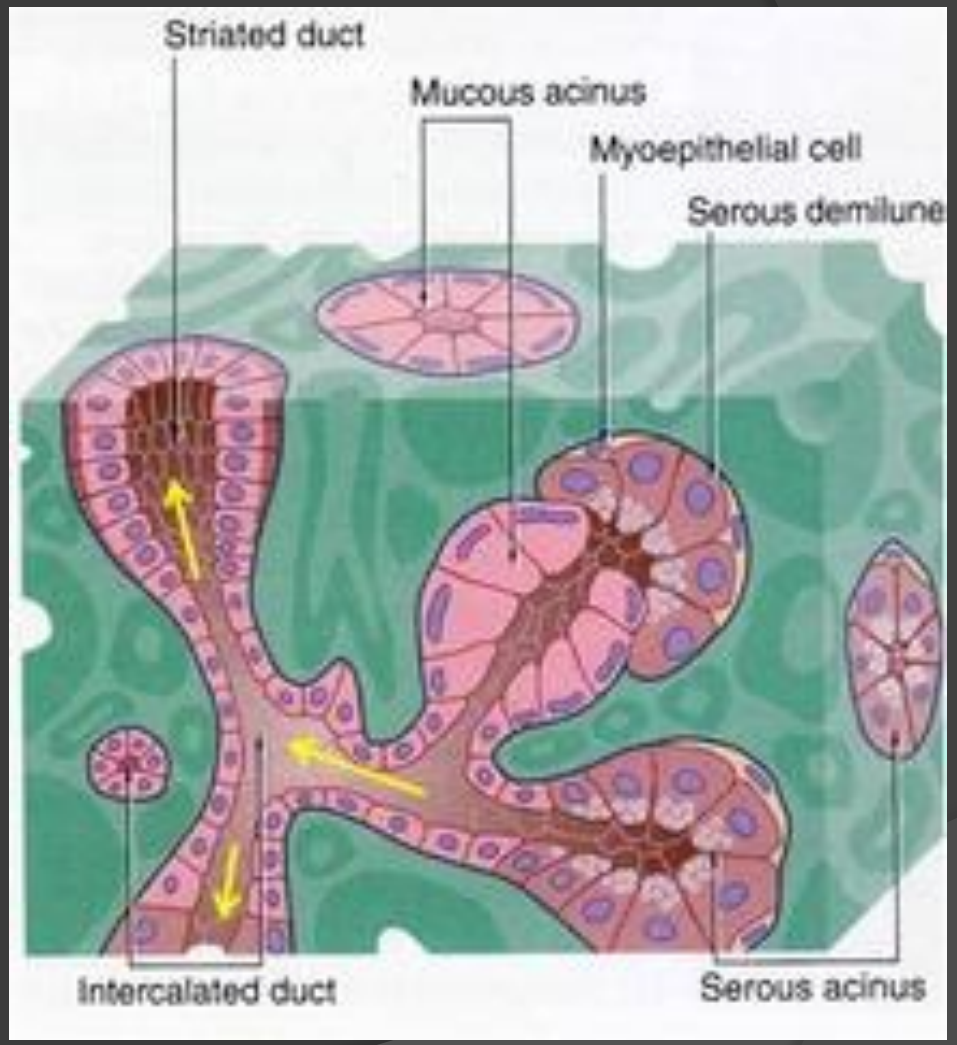
- Between Mandible & Genioglossus
- No capsule
- Ducts of Rivinus +/- Bartholin's duct
- Innervation: Same as Submandibular
- Artery/Vein: Sublingual branch of Lingual & Submental branch of Facial
- Lymphatics: Submandibular nodes

Anatomy: Minor Salivary

- 600-1,000
- Simple ducts
- Sites : buccal, labial, palatal, lingual(von Ebners), superior tonsils (Webers glands)
- Tumor sites: Palate, upper lip, cheek
- Lingual & Palatine nerves (parasym)

Physiology

- secretory unit
  - the acinus
  - myoepithelial cells
  - intercalated duct
    - Absorb Cl
    - Secrete HCO3
  - striated duct
    - absorb Na
    - secrete K
  - excretory duct



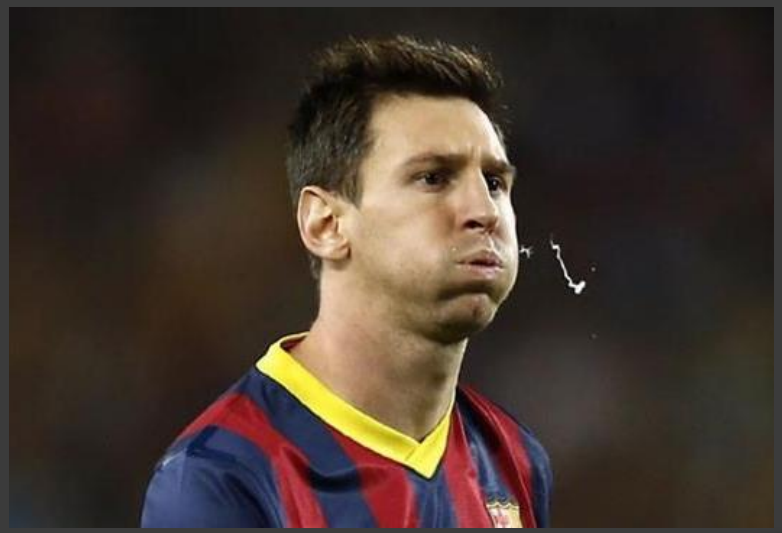
Physiology

- Contributions (at rest)
  - Submandibular gland=60% (sero-mucous)
  - Parotid gland=30% (serous amylase)
  - Sublingual gland=5% (mucin)
  - MSG = 5%(mucin);
  - von Ebner glands = serous lipase
- Sublingual(10%) and minor glands(70%) produce majority of mucous

Physiology

1. Moistens oral mucosa.
2. Moistens dry food and cools hot food.
3. Provides a medium for dissolved foods to stimulate the taste buds.
4. Buffers oral cavity contents (HCO_3)
5. Digestion. Alpha-amylase breaks 1-4 glycoside bonds, while lingual lipase helps break down fats.
6. Controls bacterial flora of the oral cavity.
7. Mineralization of new teeth and repair of precarious enamel lesions. Saliva is high in calcium and phosphate.
8. Protects the teeth - saliva protein coat containing antibacterial compounds. (Lysozyme, Secretory IgA, and Salivary Peroxidas)

Physiology



Neoplasms

Primary Salivary Gland Tumours

- 6% of all HN tumours
- 75% occurs in parotid; 10% SM; 15% MSG; <1% SL
  - Benign in
    - 75% of parotid
    - 50% of SM
    - 25% of MSG
    - <1% SL

Aetiology

- Multicellular theory
  - Each type of neoplasm from a different cell type within the salivary gland unit
  - excretory duct cells = SCC
  - intercalated duct cells = pleomorphic adenomas
  - striated duct cells = oncocytomas
  - acinar cells = acinic cell carcinomas

Aetiology

- Bicellular reserve cell theory
  - Undifferentiated basal stem cells acting as reserve cells with potential to differentiate
  - the excretory duct reserve cell or the intercalated duct reserve cell.
  - Excretory stem cells = squamous cell and mucoepidermoid carcinomas
  - intercalated stem cells = pleomorphic adenomas, oncocytomas, adenoid cystic carcinomas, adenocarcinomas, and acinic cell carcinomas.

Risk Factors

1. Alcohol consumption
2. Smoking
3. Aflatoxins
   - common in workers working in life stock feed processing units (aflatoxin B1)
4. Ionizing radiation
5. Ebstein Barr virus infections (undifferentiated carcinoma of parotid)
6. Diet and nutritional habits: Intake of polyunsaturated fatty acids have a protective effect

Classification

1. Epithelial neoplasms
2. Nonepithelial neoplasms
3. Malignant secondary neoplasms

Epithelial neoplasms

- Pleomorphic adenoma/mixed tumour (or carcinoma ex pleomorphic adenoma).
- Warthin tumor / papillary cystadenoma lymphomatosum
- Monomorphic adenomas:
  - Basal cell adenoma (or basal cell adenocarcinoma).
  - Canalicular adenoma.
  - Oncocytoma (or oncocytic carcinoma).
  - Sebaceous adenoma.
  - Sebaceous lymphadenoma (or sebaceous lymphadenocarcinoma).
- Myoepithelioma (or myoepithelial carcinoma).
- Cystadenoma (or cystadenocarcinoma).
- Ductal papillomas
- Sialoblastoma

Nonepithelial neoplasms

- benign lymphoepithelial (or lymphoma)
  - Autoimmune (Mikulicz, Sjogren's syndromes)
  - Increased risk of NHL (MALT)
    - 16% of all malignant tumours
- mesenchymal neoplasms
  - malignant schwannomas, hemangiopericytomas, malignant fibrous histiocytomas, rhabdomyosarcomas, and fibrosarcomas – 1.5% of all malignant tumours

Malignant Secondary Neoplasms

- metastatic tumors constituted 10% of malignant neoplasms in the major salivary glands, exclusive of malignant lymphomas.
- Mechanisms – Direct invasion, hematogenous and lymphatic
- Direct invasion principally from skin BCC and SCC
- 80% of metastases from head/neck; 20% infraclavicular
- The parotid gland is the site of 80-90% of mets
- The majority are head/neck SCCs and melanomas
- infraclavicular primary tumours –lung, kidney, and breast

Benign neoplasms

Plemorphic adenomas

- 70% of all parotid tumours
- 85% in parotid (90% in superficial lobe mostly tail)
- 10% in MSG(palate, upper lip, buccal mucosa)
- 40-60yr old; F>M (3-4:1)
- Slow growing, painless, hard mass
- Usually solitary but can occur with a second tumour (esp Warthins)
- Facial nerve very rarely involved
- Histo: incomplete encapsulation and transcapsular growth of tumor pseudopods
- Treatment is complete surgical excision with a margin of normal tissue
- Enucleation =20-45% recurrence (pseudopods). Spillage may increase risk of recurrence
- Metastases with benign histology described (bone, lungs,HN)

Warthin's Tumour (papillary cystadenoma lymphomatosum)

- 2nd most common parotid neoplasm (15%); 90% in superficial lobe
- 0.1% risk of malignant transformation (epithelial component)
- 60-70yr old white male smoker(4:1); 15% bilateral
- Histo: epithelial cells forming papillary projections into cystic spaces in a background of a lymphoid stroma
- Treatment – enucleation or superficial parotidectomy; low risk of recurrence

Oncocytoma

- Rare – 2% of tumours; 80% in parotid; slow growing mass in superficial lobe
- Histo: sheets, nests or cords of uniform oncocytes -large cells with distinct borders and filled with an acidophilic granular (60% mitochondria) cytoplasm
- Standard treatment is surgical excision with a margin. Enucleation or curettage is not appropriate

Monomorphic Adenoma

- 2% of tumours
- Basal cell adenoma most common
  - Most occur in parotid
- Cannalicular adenomas tend to occur in upper lip(74%) and buccal mucosa (12%)
  - Presents as submucosal nodule
- Most display nonaggressive behaviour and are adequately treated with surgical excision

Malignant Tumours

Classification

I. Mucoepidermoid carcinoma.
II. Adenoid cystic carcinoma.
III. Adenocarcinomas
    I. Acinic cell carcinoma.
    II. PLGA.
    III. Adenocarcinoma, NOS.
    IV. Rare adenocarcinomas
        I. Basal cell adenocarcinoma.
        II. Clear cell carcinoma.
        III. Cystadenocarcinoma.
        IV. Sebaceous adenocarcinoma.
        V. Sebaceous lymphadenocarcinoma.
        VI. Oncocytic carcinoma.
        VII. Salivary duct carcinoma.
        VIII. Mucinous adenocarcinoma.
IV. Malignant mixed tumors
    I. Carcinoma ex pleomorphic adenoma.
    II. Carcinosarcoma.
    III. Metastasizing mixed tumor.
V. Rare carcinomas
    I. Primary squamous cell carcinoma.
    II. Epithelial-myoepithelial carcinoma.
    III. Anaplastic small cell carcinoma.
    IV. Undifferentiated carcinomas
        I. Small cell undifferentiated carcinoma.
        II. Large cell undifferentiated carcinoma.
        III. Lymphoepithelial carcinoma.
    V. Myoepithelial carcinoma.
    VI. Adenosquamous carcinoma.

Mucoepidermoid carcinoma

- Most common malignancy in major and minor glands (33%); 70% in parotid; 20% in palate
- 50yr old with history of ionizing radiation
- characterized by a t(11;19)(q14–21;p12–13) translocation
- High-grade tumours behave like SCC; low-grade tumours often behave similar to a benign lesion
- High grade tumours have high propensity for lymphatic involvement
- Stage 1-2 – resection; stage 3-4 with adjuvant DXT
- Overall 10-year survival is 50%
- 5-year survival is 75-95% for low grade Stage 1-2; 5% for high grade stage 3.

Adenoid cystic carcinoma

- 2nd most common salivary malignancy(8%); M=F 50 yr old
- Most common malignancy in SM, SL and MSG
- characterized by unpredictable behaviour and perineural spread (skip lesions common)
- May be highly invasive or may remain quiescent for a long time.
- Often asymptomatic but more likely than others to cause symptoms (pain or paresthesias)
- Metastasis is more common to distant sites (esp lung) than to regional nodes
- has the highest incidence of distant metastasis(30-50%)
- Histology (solid, tubular, cribriform) is correlated with survival
- Treatment = surgery and DXT
- Overall 5-year survival is 35%

Acinic cell carcinoma

- third most common salivary gland epithelial neoplasm
- generally regarded as a low-grade malignancy
- Tumour may be bilateral or multicentric
- 80% in parotid, F>M 45yr old
- Stage is correlated with survival, not histo
- Treatment is surgical excision. Elective neck dissection is not warranted.
- DXT may be helpful in cases of questionable residual disease after surgery.
- Occasional late recurrence/met
- 5 year survival 82%

Polymorphous Low-grade Adenocarcinoma (PLGA)

- Limited to MSG; 2nd most common MSG malignancy
- tendency for perineural and perivascular invasion, however it typically follows an indolent course
- 60yr old F (2:1); often palate, cheek, lip
- Treatment is surgical resection
- >80% 10 year survival

Carcinoma ex-pleomorphic adenoma

- 4% of all salivary neoplasms
- risk of malignant degeneration in a PA increases from about 1.5% in the first five years to 9.5% for adenomas >15 years.
- 60-80 yr old (10yrs older than PA patients), mainly in parotid, SM and palate
- 33% will have facial paralysis and 25% will be Stage 3 on presentation
- 25-65% 5 year survival

SCC

- Primary SCC rare (2% of all salivary neoplasms)
- Exclude high-grade mucoepidermoid carcinoma, metastatic SCC to gland or intraglandular nodes and direct extension
- Male, previous(15yr) exposure to radiation
- Overall 5-year survival is 25%

Summary


I DON'T ALWAYS STUDY
BUT WHEN I DO, I MAKE SURE IT IS THE NIGHT BEFORE THE EXAM