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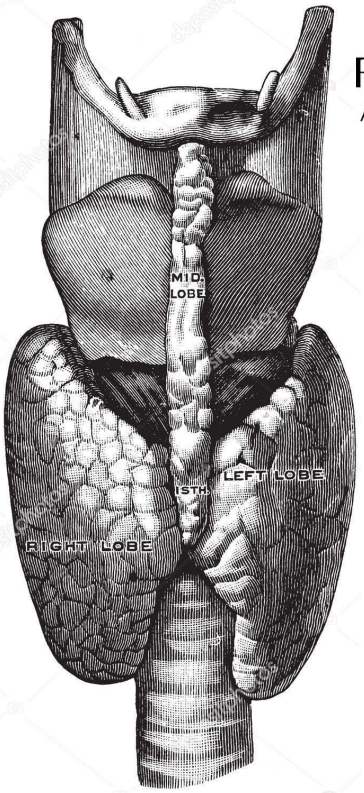
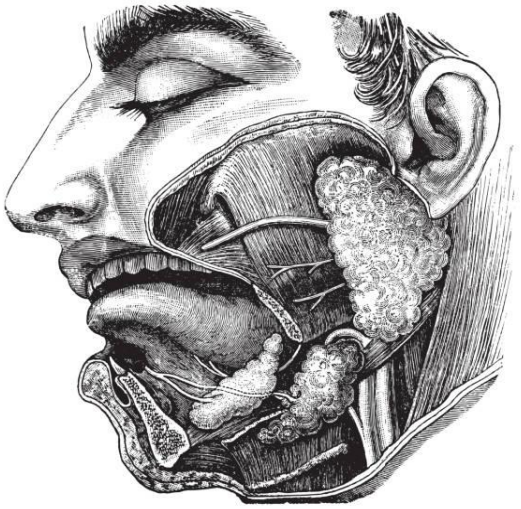




Head & Neck Tumors I, II, & III

Presented by PROF. Khalid Alqahtani

★ Lecture Objectives:

- Neck masses-intro, anatomy, diagnosis, differential diagnosis, examples
- Thyroid-anatomy, thyroid. nodule eval, thyroid cancer, surgery & complications
- Salivary glands, anatomy, physio. (in brief),infection, autoimmune & tumours,
- Tumour of oral cavity,
- Introduction, Premalignant lesion, Leukoplakia etc.,malignant lesion , SCCA
- Tumors of pharynx, Nasopharyngeal ca, Oro & hypopharyngeal ca,
- Tumour of larynx, Intro.,
- laryngeal papillomatosis, ca larynx

Disclaimer: this lecture contains topics not covered by prof.Khalid, it is best to cover all topics in case if this lecture were covered by other doctors in the future.

Color Index:

Important Original content Doctor's notes[439] Doctor's notes[441] Golden Notes Extra

Approach to Neck Masses

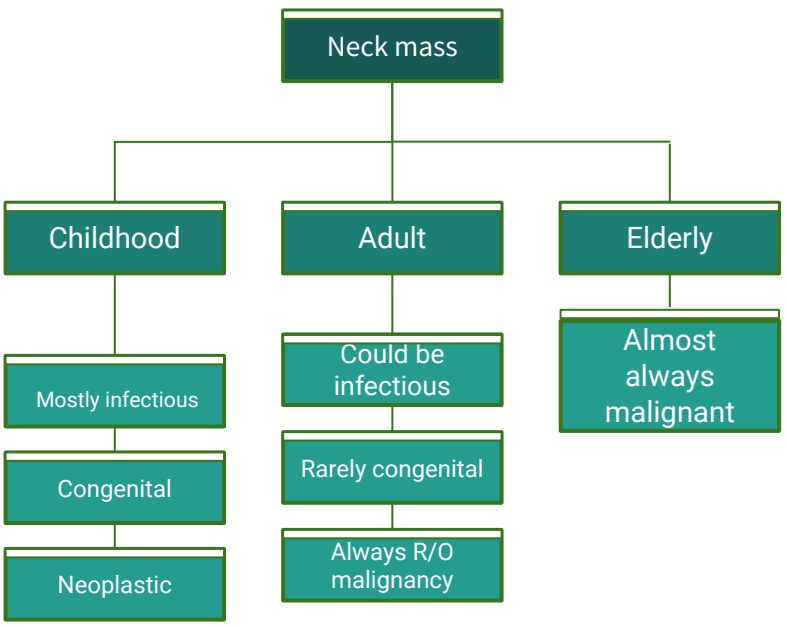
History

First thing is to obtain a good history

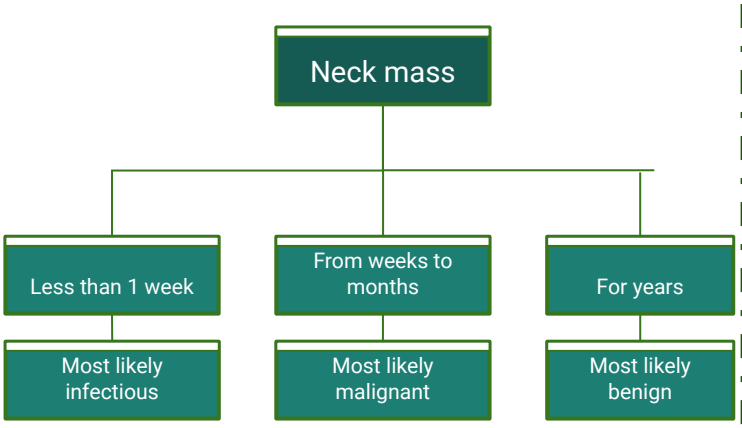
- **Age** (pediatric causes are usually infectious or congenital, while in the elderly it could be tumors), gender (some conditions like thyroid are more common in females), ethnicity (e.g., pharyngeal cancer is more common in asians). (Higher risk of malignancy in the elderly, while benign conditions for pediatrics and young adults.)
- **Duration of neck mass** (short duration is likely infectious; while longer ones (>2 weeks) are likely to be malignant, if it's since birth, it's likely to be congenital).
- **Location of the mass**
  - Congenital masses: Consistent in location.
  - Metastatic masses: key to primary lesion.
- Progression (of the mass size, increasing or decreasing; slow or fast growing).
- Associated symptoms :URTI, dysphagia, otalgia, voice.
- Voice change (pressure or recurrent laryngeal injury by thyroid/neck masses).
- Hx of cough, fever, sore throat, night sweats,weight loss → suspect malignancy or TB
- Recent travel (goes more with infectious).
- Insect bite.
- Dental problems (could lead to deep brain abscess)
- Tobacco and alcohol use (risk factors for malignancy) old smoker with neck mass that serious.
- Previous irradiation or surgery (risk factors for malignancy)
- Family history of malignancy.
- **The alarming symptoms:** weight loss, decrease appetite, persist dysphagia, persist sore throat. voice change. referred pain to the ear because tonsil supply by glossopharyngeal nerve that supply ear too. (Neck mass. Unilateral ENT S/S.)

- Old patient with neck mass think of neoplastic (colon , kidney, breast).
- Infant with neck mass think of congenital causes.
- Inflammatory comes to all age groups but most likely in pediatric

Age



Timeline



Approach to Neck Masses

◀ Physical Examination

- **For each patient with any neck mass, perform a** full head and neck examination including the cranial nerves and Nasopharyngolaryngoscopy.
- ear, nasal, oral & **pharyngeal examination** will provide site localization
- Location of the mass: midline (thyroid mass, thyroglossal duct cyst, dermoid cyst), lateral (branchial cyst, lymph node enlargement).
- Size, consistency, tenderness (more with infectious), mobility.
- Pulsation (might be a vascular mass)
- Skin changes.
- Movement with swallowing or tongue protrusion (thyroglossal duct cyst common in exams).
- Emphasis on location, mobility and consistency

◀ Work up

	Congenital	Infectious	Neoplastic
pain	Rare	Common	Rare
Duration Most important to obtain ddx	Long	Short	Long
Constitutional symptoms	None	Fever	Weight loss Loss of appetite Dysphagia Voice changes

◀ Work up, physical exam

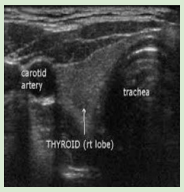
	Congenital	Infectious	Neoplastic
Consistency	Soft, firm	Soft, firm	Hard
Mobility	Common	Common	Rare
Tenderness	Rare	Very Common	Rare
Number	Solitary	Solitary vs multiple	multiple

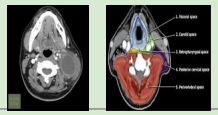
- **adult with unilateral middle ear effusion need an evaluation, why?** Because nasopharyngeal tumor may block the eustachian tube and cause unilateral middle ear effusion

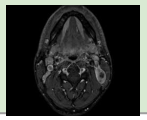
- **If patient have unilateral tonsil mass for a few week that doesn't respond to antibiotic what are the differential ?** Carcinoma , lymphoma

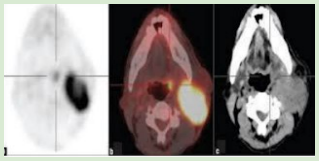
Approach to Neck Masses

◀ Radiology and laboratories

	Advantages	Disadvantages
US 	• Availability & affordability , • Safety , • Non invasive • Consistency	• Operator dependent , • Anatomical assessment, • Soft tissue & osseous details I.e. trachea , esophagus • we can use US for children and pregnant and it is operator dependent

CT scan the gold standard 	• Static.
	• Anatomical assessment.
	• Osseous assessment,
	• Soft tissue details (contrast).
		• Affordability,
		• Safety:
		  ○ pregnancy
		  ○ childhood
		  ○ contrast allergy & anaphylaxis

MRI 	• Safety (pregnancy) • Non invasive , • Soft tissue assessment, • Skull base (perineural invasion) .	• Magnetic • Affordability • Age limitation (sedation)

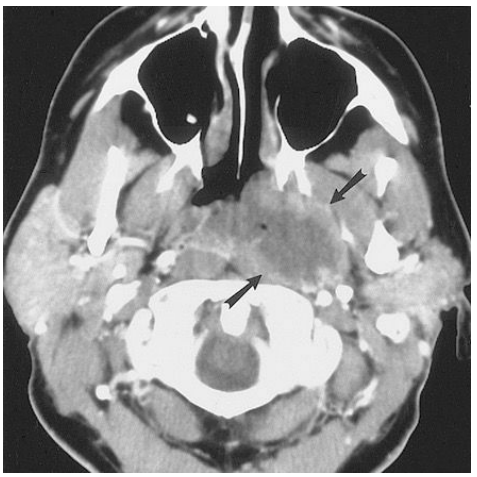
	overview	indications
PET 	• Nuclear medicine • functional imaging • FDG uptake, • Integrated with anatomical studies.	• Staging & surveillance (malignancy), • Role in unknown primary Head & Neck neoplasm • PET scan use to confirm the diagnosis (FDG Uptake by the cancer)
FNA 	• Minimum: 3-4 passes. • Skillful cytotechnician & cytopathologist on site.	**<u>US</u> guided FNA:** • Non diagnostic conventional FNA • Non palpable masses • > 50% cystic content

Open neck biopsy	Avoid it in head and neck Squamous cell carcinoma (HNSCC)	• Non diagnostic FNA (At least 2 attempts) without evidence of primary lesions (clinical, radiological, EUA)
		• Suspicious of certain Dx:
		  ○ Hematological pathologies I.e. lymphoma
		  ○ Granulomatous diseases
		  ○ Inflammatory disease

- if there is parotid gland mass with facial nerve paralysis what type of image should we do ? MRI because there is nerve lesion
- Patient had neck mass before 4 weeks not improve with antibiotic, the characteristic of the mass painless, hard, not tender, fixed, multiple. Constitutional symptoms: weight loss, change appetite. The CT scan confirm there are multiple pathological lymph node what the next step? The next step is FNA

Approach to Neck Masses

◀ Diagnostic Tests Cont.



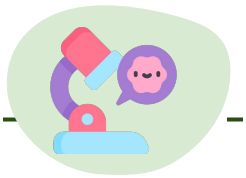
Computed Tomography:

- Distinguish cystic from solid.
- Extent of lesion.
- Vascularity (with contrast).
- Detection of unknown primary (metastatic).
- Pathologic node (lucent, >1.5cm, loss of shape).

Fine Needle Aspiration Biopsy:

- Standard of diagnosis.
- Indications:
  - Any neck mass that is not an obvious abscess.
  - Persistence after a 2 week course of antibiotics.
- Small gauge needle:
  - Reduces bleeding.
  - Seeding of tumor - not a concern.
- No contraindications (vascular ?).

◀ Differential Diagnosis



- **Adults:**
  - Infective and inflammatory masses.
  - **Neoplastic masses.**
  - Vascular masses.
  - Traumatic masses.
  - Metabolic, idiopathic and autoimmune conditions.
  - Thyroid gland masses.
  - Salivary gland masses.
  - Parapharyngeal masses.
- **Pediatric:**
  - Infective and inflammatory masses.
  - **Congenital masses.**
  - Vascular masses.
  - Traumatic masses.
  - Metabolic, idiopathic and autoimmune conditions.

◄ General Approach to Neck Masses

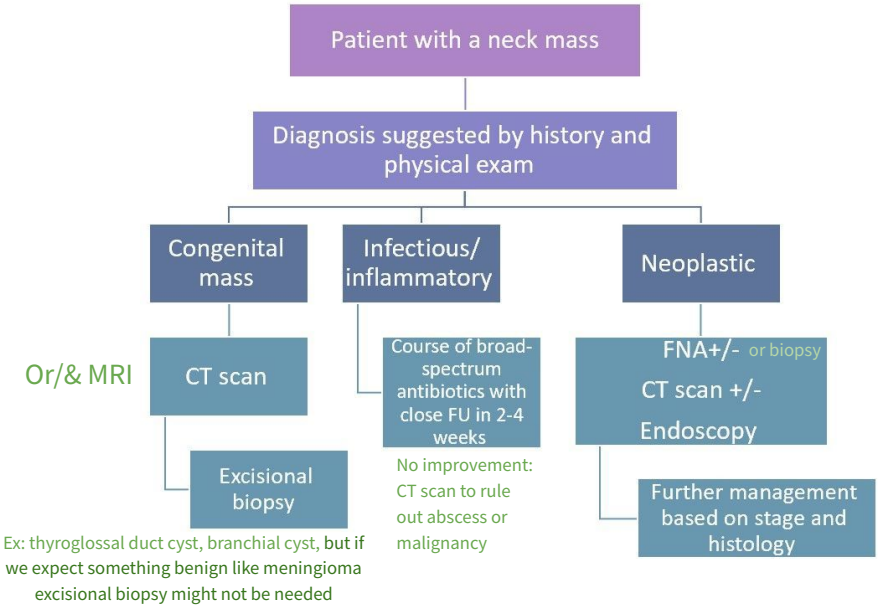


Table 1. Common Neck Masses

Neoplastic	Congential/Developmental	Inflammatory
Metastatic Unknown primary epidermoid carcinoma	Sebaceous cysts	Lymphadenopathy
Primary head and neck epidermoid carcinoma or melanoma	Branchial cleft cysts	Bacterial
Adenocarcinoma	Thyroglossal duct cysts	Viral
Thyroid	Lymphangioma/hemangioma	Granulomatous
Lymphoma	Dermoid cysts	Tuberculous
Salivary	Ectopic thyroid tissue	Catscratch
Lipoma	Laryngocele	Sarcoidosis
Angioma	Pharyngeal diverticulum	Fungal
Carotid body tumor	Thymic cysts	Sialadenitis
Rhabdomyosarcoma		Parotid
		Submaxillary
		Congenital cysts
		Throtrast granulomas

	Anterior Triangle	Midline	Posterior Triangle
Inflammatory	Adenitis from various causes Reactive adenopathy Parotitis Atypical mycobacteria	Adenitis Thyroiditis Ludwig's angina	Adenitis Sialadenitis
Congenital	Branchial cleft cyst Laryngocoele Congenital torticollis	Thyroglossal duct cyst Dermoid cyst	Cystic hygroma
Neoplastic	Hemangioma Neurogenic tumors Salivary gland tumors	Thymomas Lymphoma Lipoma Goiter	Lymphoma Metastatic lesions Neuroblastoma Rhabdomyosarcoma
Traumatic	Hematoma Acquired torticollis	Laryngeal fracture	Hematoma Acquired torticollis

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Anatomical considerations

- Prominent landmarks.
- Triangles of the neck.
    - Lymphatic levels:

Level Ⅰ: submental and submandibular.

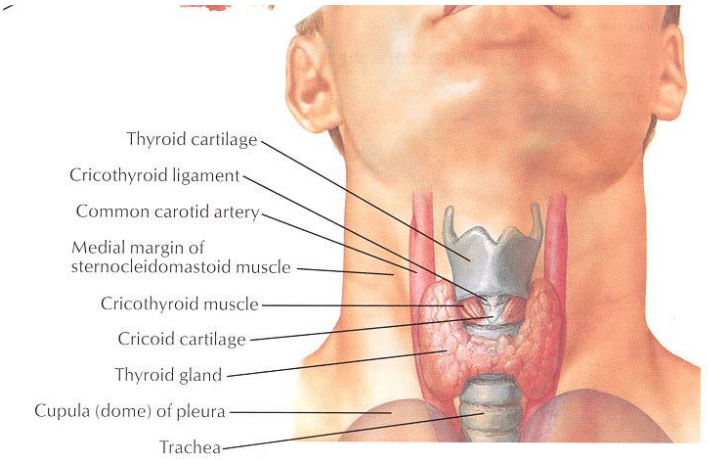
Level Ⅱ: upper jugular.

Level Ⅲ: middle jugular.

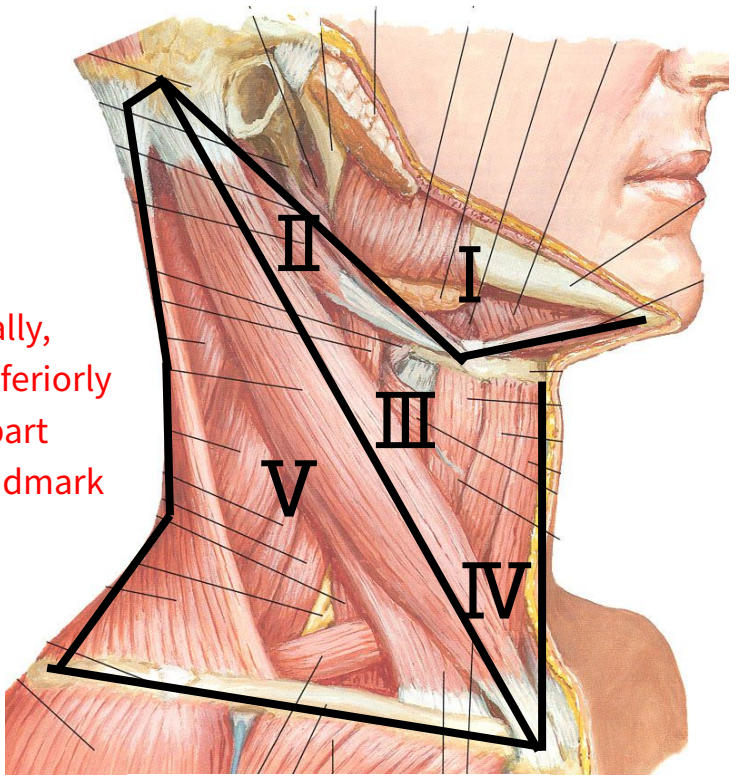
Level Ⅳ: lower jugular.

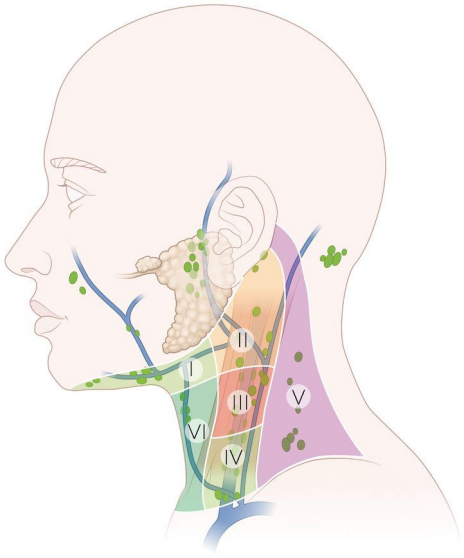
Level Ⅴ: posterior triangle.

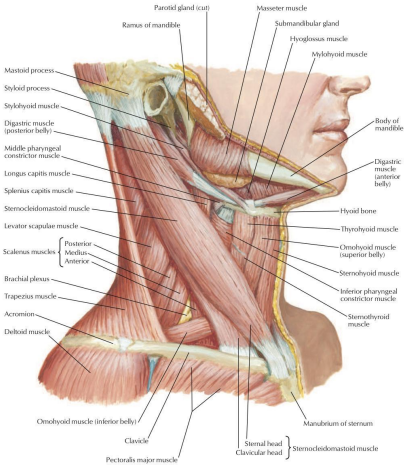
- Carotid bulb.



1. **Level I:** submandibular triangle
2. **Level II:** skull base to hyoid bone
3. **Level III:** hyoid bone to omohyoid
4. **Level IV:** omohyoid Muscle to clavicle
5. **Level V:** posterior triangle b/t SCM medially, trapezius muscle laterally, and clavicle inferiorly (the part above omohyoid is 5A and the part below omohyoid is 5B [omohyoid is a landmark regarding level V])
6. **Level VI:** from hyoid to sternum notch







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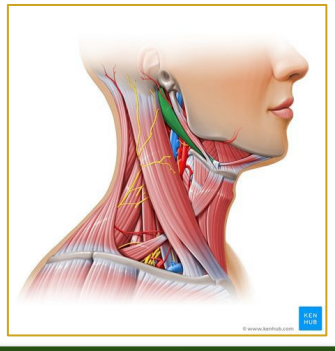
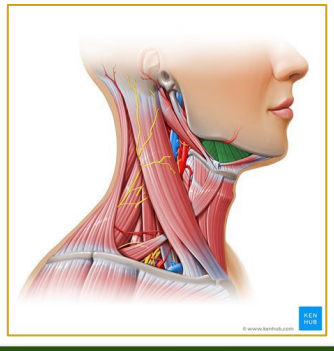
Key Facts About the Triangles of the Neck

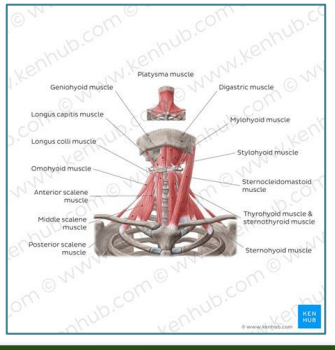
Definition	Two triangular areas found anterior and posterior to the sternocleidomastoid muscles which contain the visceral structures of the neck. (the sternocleidomastoid divides the neck into 2 triangles)
Anterior Triangle	**Borders:** - Superior - Inferior border of mandible. - Medial - Midline of neck. - Lateral - Anterior border of sternocleidomastoid muscle. **Subdivisions:** - Muscular (omotracheal) triangle. - Carotid triangle. - Submandibular triangle. - Submental triangle. **Contents:** - Muscles - Thyrohyoid & Sternohyoid muscles - Organs - Thyroid gland, Parathyroid gland, Larynx ,Trachea, Pharynx & Esophagus - Arteries - Superior and Inferior thyroid, Common carotid, External carotid, Internal carotid and sinus, Facial, Submental & Lingual arteries. - Veins - Anterior jugular, Internal jugular, Common facial, Lingual, Superior thyroid, Middle thyroid, Facial, Submental & Lingual veins. - Nerves - Vagus (CN X), Hypoglossal (CN XII), Sympathetic trunk & Mylohyoid nerves. **Pathology**: Congenital: ● Branchial cyst ● Thymic cyst ● Hemangioma ● Torticollis Acquired: ● Benign: ○ Lipoma. ○ Neurofibroma. ○ Carotid body tumour. ○ Salivary G lesions. ○ Thyroid. ● Malignant.
Posterior Triangle	**Borders:** - Anterior - Posterior margin of sternocleidomastoid muscle. - Posterior - Anterior margin of trapezius muscle. - Inferior - Middle one-third of clavicle. **Subdivisions:** (divided by the omohyoid muscle) - Occipital triangle. - Subclavicular (omoclavicular) triangle. **Contents:** - Vessels - The third part of the subclavian artery, Supracapsular and transverse cervical branches of the thyrocervical trunk, External jugular vein & The lymph nodes. - Nerves - Accessory nerve (CN XI), Brachial plexus trunks & Fibers of the cervical plexus. **Pathology:** ● Congenital: Lymphangioma (cystic hygroma). ● Acquired: Lymphadenitis - Lymphoma - Metastatic carcinoma.

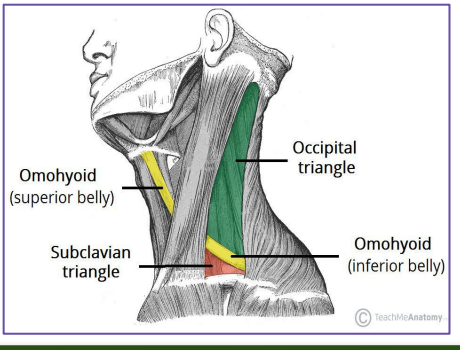
◀ Other Triangles of the Neck

Key Facts About the Triangles of the Neck	
Carotid Triangle	**Borders:** - Anterior - Superior belly of omohyoid muscle. - Superior - Stylohyoid and posterior belly of digastric muscles. - Posterior - Anterior border of sternocleidomastoid muscle. **Contents:** - Arteries: Common carotid, External carotid and branches *except* maxillary, Superficial temporal and posterior auricular, internal carotid artery and sinus. - Veins: Internal jugular, Common facial, Lingual, Superior thyroid, Middle thyroid veins. - Nerves: Vagus (CN X), Hypoglossal, (CN XII) & Part of the sympathetic trunk.
Submandibular Triangle	**Borders:** - Superior - Inferior border of mandible - Anteriorly- Anterior belly of digastric muscle. - Posteriorly- Posterior belly of digastric muscle and stylohyoid. **Contents:** - Viscera - Submandibular gland and lymph nodes (anteriorly), Caudal part of the parotid gland (posteriorly). - Vessels: facial artery and vein, submental artery and vein, lingual artery and vein. - Nerves - Mylohyoid & Hypoglossal (CN XII) nerves.
Submental Triangle	**Borders:** - Inferior - Hyoid bone. - Lateral - Anterior belly of digastric muscle. - Medial - Midline of neck. **Contents:** - Anterior jugular vein, Submental lymph nodes.
Occipital Triangle	**Borders:** - Anterior - Posterior margin of sternocleidomastoid muscle. - Posterior - Anterior margin of trapezius muscle. - Inferior - Inferior belly of omohyoid muscle. **Contents:** - Accessory nerve (CN XI), Branches of the cervical plexus, Upper most part of brachial plexus, supraclavicular nerve.









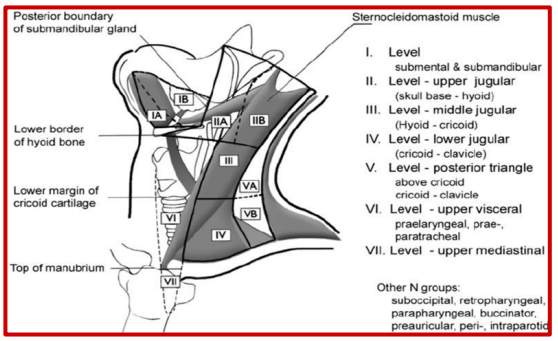
◄ Other Triangles of the Neck

Key Facts About the Triangles of the Neck	
Supraclavicular Triangle	**Borders:** - Superior - Inferior belly of omohyoid muscle. - Anterior - Posterior edge of sternocleidomastoid muscle. - Posterior - Anterior edge of trapezius muscle. **Contents:** - Third part of the subclavian artery, Brachial plexus trunks, Nerve to subclavius muscle & Lymph nodes.

◄ Cervical Lymph Nodes

Lymphatic triangles: anatomical point of view:

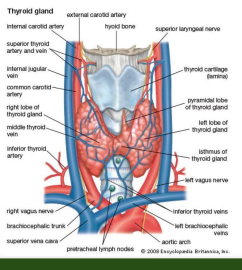
- Anterior: lied by midline anteriorly and SCM posteriorly.
- Posterior: lied by SCM anteriorly and Trapezius posteriorly.

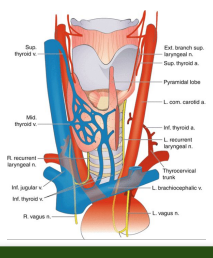


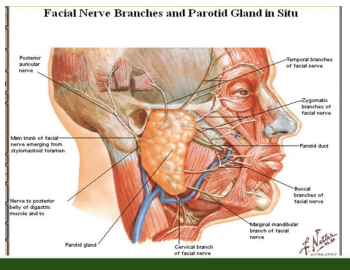
Notes: Cervical lymph nodes are very important & commonly present in the exam (especially levels 2 & 3). Know each level, its content, and boundaries. Level 1 lymph nodes are divided to 1A (Submental Part) & 1B (Submandibular Part). Level 2 (also called the upper jugular, extends from the base of the skull up to the hyoid bone; & is divided by the accessory nerve to IIA & IIB). Level 3 (Middle jugular, from the hyoid up to cricoid). Level 4 (from the cricoid up to the clavicle). Level 5 (posterior triangle) divided by the accessory nerve to 5A & 5B. Level 6 (around the trachea, removed in thyroid surgeries). Level 7 (upper mediastinal).

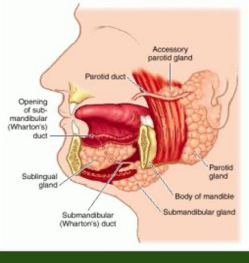
◄ Anatomy of Thyroid, Parotid and Submandibular Glands

Contents of the Head & Neck	
Thyroid gland	○ Butterfly-shaped gland. ○ Isthmus: overlying 2nd to 4th tracheal rings. (doctor said to 3rd, and it varies between individuals). Supplied by the recurrent laryngeal nerve ○ Parathyroids: Posterior to thyroid gland.
Parotid Gland	○ Lies over the angle of mandible. ○ Divided to superficial and deep lobes by the facial nerve. ○ Stenson's duct: opens in the mouth opposite to maxillary second molar.
Submandibular Gland	○ Lies inferior and posterior to the mandible. ○ Mylohyoid muscle runs through the lobules of the gland and section it into superficial and deep parts (lobes) ○ Wharton's duct opens at the lingual papillae.









Anatomy (extra 436)

Anatomical landmarks: Angel of mandible and Clavicle and mastoid. The ONLY obvious landmarks in every single patient including obese. Always look for bones! So, make sure you locate them before starting your examination.

➔ In the midline of the neck, there is a cricoid. Anything above the cricoid is called upper midline (your DDx will be B/W the carotids).

➔ Anything below the cricoid to the Suprasternal notch, we call it lower Midline (DDX related to thyroid lobes).

Thyroid:

- Shield shaped, may be H- or U-shaped.
- 2 lateral lobes connected by an isthmus.
- Isthmus at level of 2nd to 4th tracheal cartilages (may be absent) each lobe measures approximately 4 cm high, 1.5 cm wide, 2 cm deep.

Lobes have superior and inferior poles:

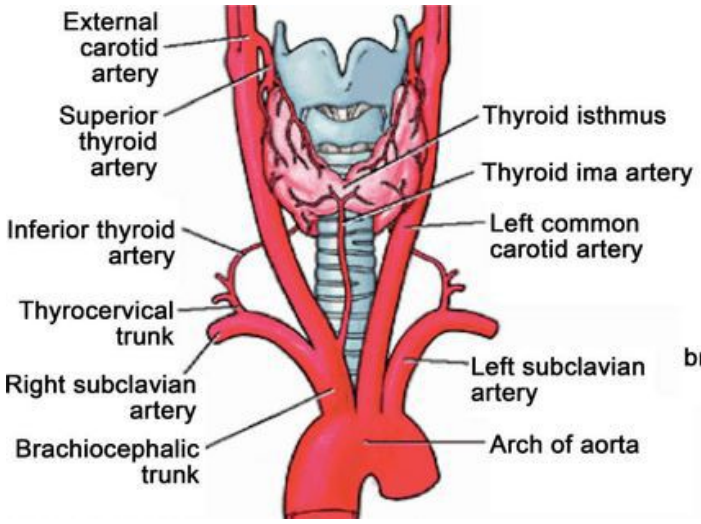
- Superior pole: may extend as far as the oblique line of the thyroid cartilage.
- Inferior pole: may extend inferiorly as far as the 5th or 6th tracheal rings.

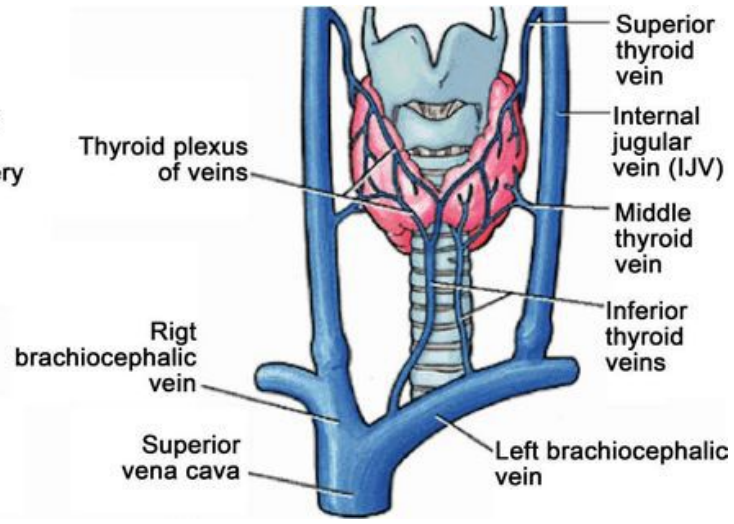
Arterial Blood Supply:

- Superior thyroid artery (STA): 1st branch of ECA, Followed by SLN until superior pole, Anastomosis with contralateral STA.
- Inferior thyroid artery (ITA): From thyrocervical trunk (1st part of subclavian at 1st rib)

Venous Drainage: 3 pairs of veins:

- Superior thyroid vein: Parallels course of STA on anterior surface thyroid, ascends to drain into internal jugular vein (IJV).
- Middle thyroid vein: Direct lateral course from thyroid to IJV, Shortest of 3 veins.
- Inferior thyroid vein: Ant surface thyroid (opposite of ITA), Vertical downward course to brachiocephalic v.3.





Congenital masses

◄ Thyroglossal duct cyst:

- Most common congenital neck mass (70%)
- 50% present before age of 20
- Midline (75%) or near midline (25%)
- Usually just inferior to hyoid bone (65%)
- Cystic midline swelling (Anywhere on the midline).
- Affecting young children but can occur at any age.
- Increase in size with URTI.
- +/- Sinus. Can present with sinus and discharge (infective).
- Moves with tongue protrusion or swallowing because of its attachment to the foramen cecum.

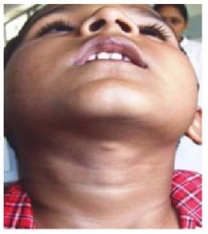


Fig. 1: Thyroglossal cyst in a 7-year-old boy

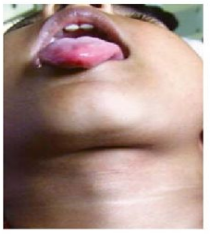
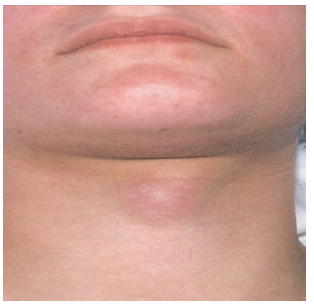


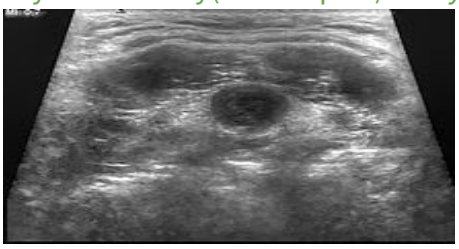
Fig. 2: Thyroglossal cyst puckering with protrusion of the tongue

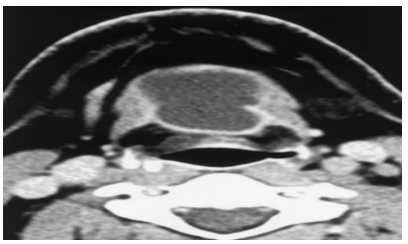


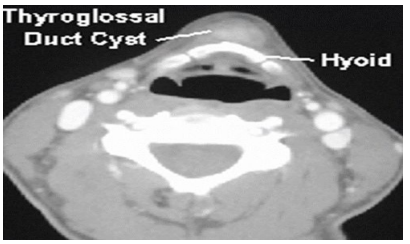
- It may contain the only functioning thyroid tissue. Do US (to check thyroid) and thyroid function test.
- Rarely malignant, <1%.
- Investigations: Ultrasound (to evaluate cyst and thyroid).

➔ **Treatment:**

after resolution of any infection; Surgical excision including the body of hyoid bone and core of tongue tissue to prevent recurrence **Sistrunk's procedure** excise the cyst with body(central part) of hyoid bone.

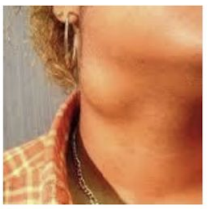


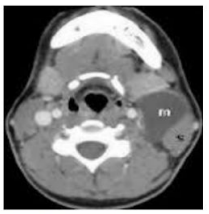


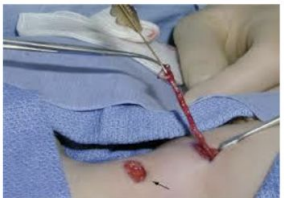


◄ Branchial anomalies

- Branchial cyst is common, It can be from any cleft, but most commonly from the remnant of the second and third branchial cleft.
- 2nd cleft most common (95%) – tract medial to XII nerve between internal and external carotids
- Child and adulthood common in the second decade of life often after URTI
- Lateral neck mass (posterior to the anterior two thirds of sternocleidomastoid)
- Most common as smooth, fluctuant mass underlying the SCM
- Skin erythema and tenderness if infected
- 1 st cleft less common – close association with facial nerve possible
- May have sinus or fistula (you have to excise it completely)
- U\S and CT to investigate mass /// FNA to rule out SCC for adult
- **Treatment:** Initial control of infection. Surgical excision, including tract. May necessitate a total parotidectomy (1st cleft).







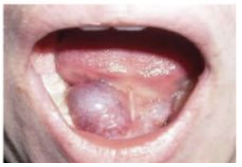
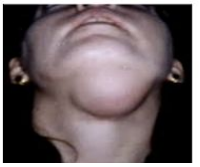
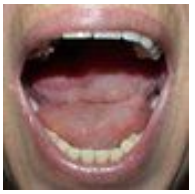
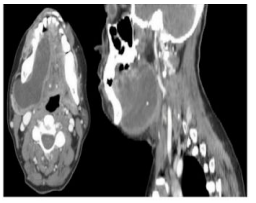
Initial control of infection.

excision procedure Complete surgical excision of both the cyst and any associated tracts with step ladder incision (video)

Congenital masses

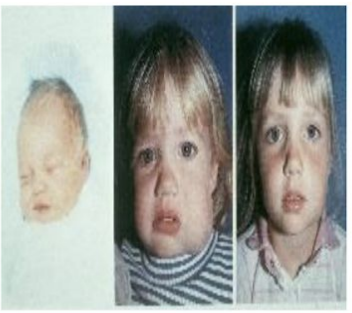
◄ plunging ranula

A2 didn't take it

- It is a pseudocyst caused by extravasation of mucus from obstruction to sublingual salivary gland comes with mucocele
- presents as an isolated swelling in the submandibular area and is transilluminate.
- Medline neck mass floor of mouth mass compressbl)
- Diagnosed by CT and MRI neck
- Treatment is total excision along with removal of sublingual gland. And Marsupialization

◄ Vascular malformation Hemangioma



- Age: infant (6 months) present at birth with neck mass with skin discoloration
- **Infantile hemangioma** start to appear in the first 4 weeks of life, early rapid growth,
- We use MRI with neck contrast (investigation of choice bear in mind that the affected population are infants in children so in order to use MRI we sedate the patients under General Anesthesia)
- GLUT-1.
- Markers of hemangioma proliferation: VGEF, urinary beta-fibroblast growth factor, urinary matrix metalloproteinase MMP.
- Management:

Most of management in this type of cases depend on the presentation

- Reassurance and observation (not symptomatic because they resolve),
- Systemic steroid
- Laser
- Surgical excision (if affecting other structures [Aerodigestive symptomatology, Vision loss, hearing loss, and swallowing problems] or in case of cosmesis)
- Tracheostomy (to secure the airway),
- Propranolol (new treatment of choice if not causing symptoms).

Under ultrasound examination prenatally when we see a polyhydramnios and on antenatal there are signs of airway obstruction most of the time the case will be Teratoma (Benign Tumor of nasopharynx)

- Managed by:

1. Multidisciplinary team approach
2. EXIT procedure
3. Secure airway (intubation & tracheostomy)
4. Surgical resection

Ex utero intrapartum treatment, The procedure preserves uteroplacental gas exchange so baby can continue to receive oxygen and nutrients from mom while the surgical team works to establish an airway.

Congenital masses

◄ Lymphangioma be careful it is also called CYSTIC HYGROMA

- Lateral or midline neck mass affecting newborn (Seen in neonate, early infancy or childhood) diagnosed by low flow MRI neck with contrast
- commonly in the posterior triangle of the neck level(5) , When present at birth, they cause difficulty in labor. (C-section, immediate intubation & tracheotomy), exit procedure.
- Arises from Obstruction or Sequestration of jugular lymph sac.
- Soft, cystic and partially compressible.
- Management:
  1. surgical excision with preservation of neural and vascular structures. Bipolar diathermy is useful
  2. Injection of sclerosing agents is not favored but can be used as it makes later dissection more difficult.

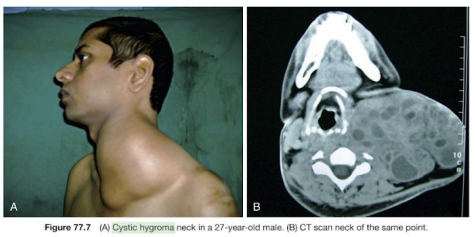
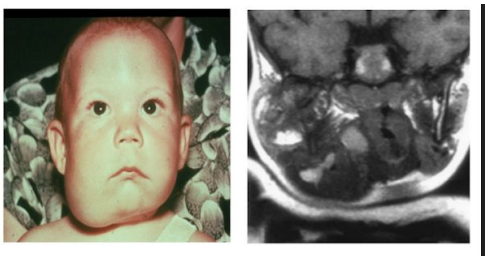
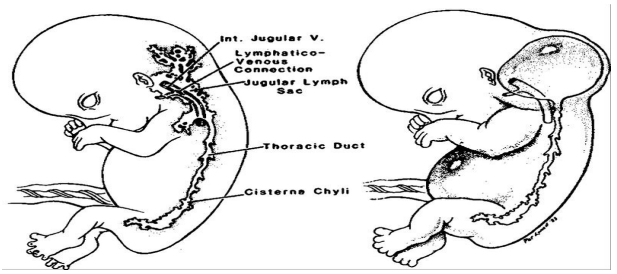
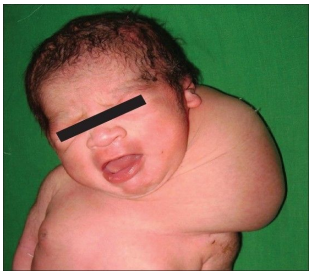


Figure 77.7 (A) Cystic hygroma neck in a 27-year-old male. (B) CT scan neck of the same point.

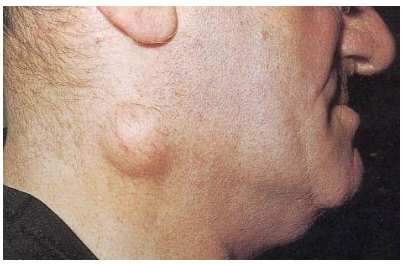






◄ Sebaceous cyst:

- Older age group.
- **Clinical diagnosis:**
  - Elevation and movement of overlying skin
- **Treatment:** Excision.



Which level ? level ll
Give 1 DDX : branchial cyst
What you do ?
1. Give empirical therapy for 10 days
2. If didn't disappear, do CT than FNA

◄ Dermoid/epidermoid cyst:

- Cystic mass resulting from congenital epithelial inclusion or rest.
- **Epidermoid:** epithelial elements only, fluid content.
- **Dermoid:** epithelial elements plus dermal substructure (hair, sebaceous glands).
- Typically seen in the midline of the neck, usually in the submental region (important).
- **Treatment** is complete surgical excision.

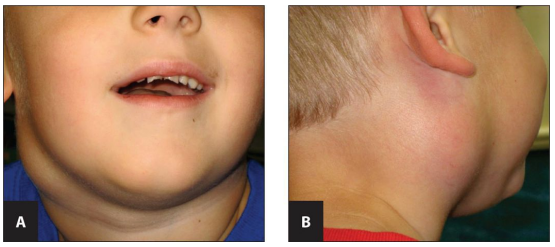
Infectious/inflammatory masses

◀ Cervical lymphadenitis

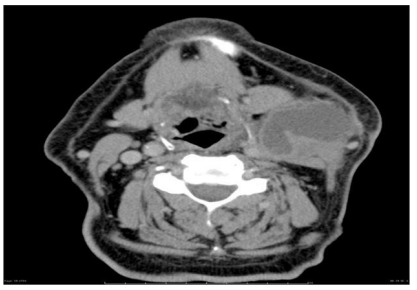
A2 didn't take it

- Most common in children and adolescents.
- **Etiology:**
  1. Bacterial: streptococcal and staphylococcal infections, mycobacterial infections (common here), secondary to dental or tonsillitis and rarely cat-scratch disease and actinomyces.
  2. Viral: EBV, CMV, herpes simplex virus, others.
  3. Parasitic: toxoplasmosis.
  4. Fungal (rare): coccidiomycosis.
  5. Sialadenitis, common, inflammation of salivary glands
- Diagnosis: CBC (for leukocytosis), CT scan (if patient does not respond to antibiotic, to check for any abscess).
- Treatment: broad spectrum antibiotics.
- Rule out neck abscess formation if no improvement with antibiotics by CT neck **with contrast**.
- Incision and drainage (important): in case of abscess or pain continue despite the antibiotics.

Boy Image: Enlargement of lymph node at **level 2** (you should know the borders of level 2; they might ask you to define it). We see redness, which goes with inflammatory/infectious causes.



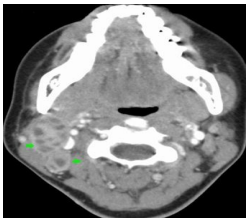
Patient has taken antibiotics for 2 weeks with no improvement what is the next step? CT scan with contrast
CT Scan: Axial cut with contrast showing a collection (abscess formation).



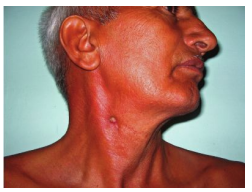
A2 didn't take it

◀ Tuberculous cervical lymphadenitis

- Scrofula (another name).
- Most common manifestation of extrapulmonary TB.
- Non tender.
- If untreated, spontaneous discharge and sinus formation (Sometimes we don't really know it's TB and we do incision & drainage and it gets complicated with sinus formation but if we know it's TB we don't do incision & drainage especially if it's not acute then it's treated medically and we do aspiration to prevent sinus formation).
- CT scan may show necrotic/cystic nodal matting (Matting: Multiple lymph nodes adherent to each other -- characteristic for TB).
- FNA (for culture) / excisional biopsy (excisional biopsy: to differentiate between TB and lymphoma).
- Treatment: antimycobacterial medications.



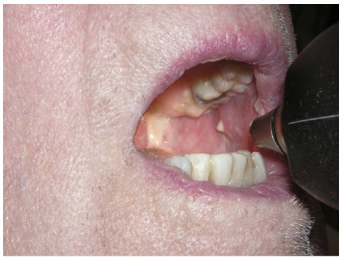
Matting



Sometimes confused with malignancy

◀ Acute suppurative parotitis/sialadenitis

- Commonly seen in elderly, diabetic, debilitated, dehydrated and oncology patients.
- Staph aureus is the usual causative organism.
- Fever, swelling , pus from stensen's duct.
- Antibiotics and hydration.
- If you suspect abscess do CT + incision & drainage.

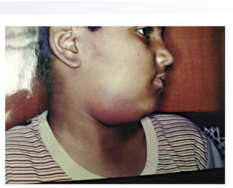


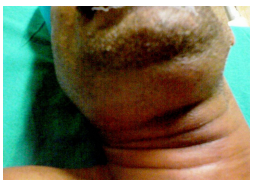
Infectious neck masses

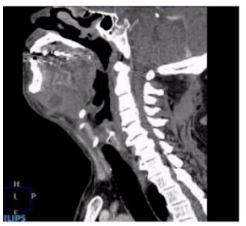
◀ Ludwig's angina

A2 didn't take it

- Happens to adults after recent odontogenic infection, Submandibular sialadenitis, injuries of oral mucosa and fractures of the mandible account for other cases. Mixed infections involving both aerobes and anaerobes are common. Alpha-haemolytic Streptococci, Staphylococci and Bacteroides groups are common.
- Rapidly progressing submental & floor of mouth swelling
- Acute airway obstruction hence it is considered an EMERGENCY
- Hard red and painful swelling with a tender area







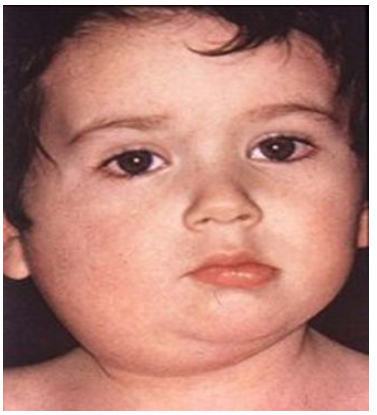
Our concern is the airway as the mass will push the trachea backward

- Management:
  1. Secure airway, tracheotomy
  2. Systemic antibiotics.
  3. Incision and drainage of abscess.
  4. Dentistry consult

(a) Intraoral drainage → if infection is still localized to sublingual space.

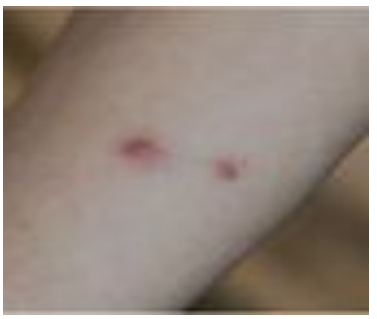
(b) External → if infection involves submaxillary space.

◀ Mumps (viral parotitis)



- Viral infection caused by paramyxovirus.
- Droplet infection and fomites.
- Children are more affected.
- Fever, malaise, parotid swelling.
- Orchitis , ophritis, aseptic meningitis , unilateral SNHL.
- Treatment is supportive, hydration and analgesics.

◀ Cat Scratch disease

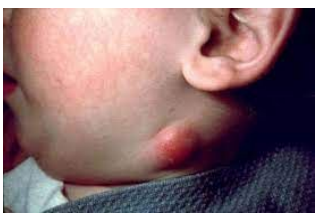


- Occurs in childhood with history of cat exposure
- Shown as cutaneous lesion with cervical lymphadenopathy with fistulate skin
- Tender and painless
- Cat scratch

Bartonella henselae

A gram-negative, aerobic, rod-shaped bacterium that causes cat scratch disease. Can also cause bacillary angiomatosis

Cat scratch antigen
Warthin-Starry staining of the involved lymph node may show clusters of rod-shaped bacteria. H&E staining of cutaneous lesions may show necrotizing granuloma formation and neutrophilic infiltrate.

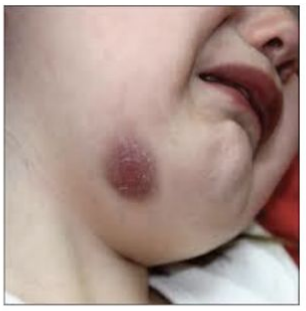


- Management: Reassure and aspirate if there was abscess and avoid incision

Mild or moderate cases: azithromycin (5-day course) to decrease lymphadenopathy and the duration of illness

Infectious neck masses

◀ Atypical mycobacterium



- Happens in childhood unlikely adults
- Child has a history of foreign travel or immunocompromised
- **Cervical lymphadenitis** in Unilateral cervical adenopathy(skin adherent)
- Can present with corneal ulceration
- Diagnose:

1. AFB stain (2-4 weeks)
2. PCR
3. PPD (purified protein derivative.) not helpful
4. Granuloma

- Management:

1. Complete excision (Neck dissection)
2. Avoid incision & drainage
3. Antimicrobial resistance

	atypical mycobacterium M.Avium M.scrofulaceum M.Intracelluare	Typical mycobacterium M.Tuberculosis
Age	Children	Elderly
Patient characteristics	Foreign travel Immunocompromised	HIV (immunocompromised) Poor socioeconomics Immigrant
Pulmonary & systemic involvement	Rare	Common
Cervical lymphadenopathy	Unilateral Anterior triangle Tender	Bilateral Ant & posterior triangle Non tender
Management	Excision (Neck dissection)	Anti-Microbial

In conclusion:

- Neck masses are common and most often due to lymphadenopathy secondary to self-limited infection or inflammation
- A basic knowledge of neck anatomy is required
- Thorough history and physical examination usually suggests a diagnosis
- Appropriate investigation should be performed by specialist and managed accordingly

◀ Deep Neck infections

AMBOSS

Mostly caused by mixed flora

Peritonsillar abscess

- Most common deep neck infection
- ***Streptococcus pyogenes*** (most common), *Streptococcus anginosus,* viridans streptococci, *Staphylococcus aureus*, and *Haemophilus* species
- Features of tonsillitis: fever, malaise, severe sore throat, dysphagia, and odynophagia
- **"Hot potato" voice** (muffled speech), drooling, or halitosis
- **Trismus**
- **Uvula shifted** to the contralateral side, with inferior and medial displacement of tonsil
- Ipsilateral cervical lymphadenopathy (and neck swelling)
- Airway management is always the first step!
- IV antibiotics with good gram-positive and anaerobic coverage: empiric **clindamycin** or **ampicillin-sulbactam** .
- Incision and drainage or needle aspiration (surgical drainage): risk of airway obstruction, complications, or immunodeficiency.

Parapharyngeal abscess
Pathogens: Streptococci (viridans streptococci, *S. pneumoniae*), staphylococci (including MRSA), *Haemophilus influenzae*, oral anaerobes

- Dental infections (most commonly)
- Acute tonsillitis
- Peritonsillar abscess into the parapharyngeal space
- Pharyngeal or salivary gland infections
- Features of peritonsillar abscess, especially **trismus**
- Posterior space abscess: **medial displacement** of the lateral pharyngeal wall and tonsil
- Anterior space abscess: **indurated swelling** below the angle of the mandible down to the hyoid bone
- Respiratory distress: **dyspnea**, **stridor**
- Limited cervical neck extension

Retropharyngeal abscess

Retropharyngeal abscess

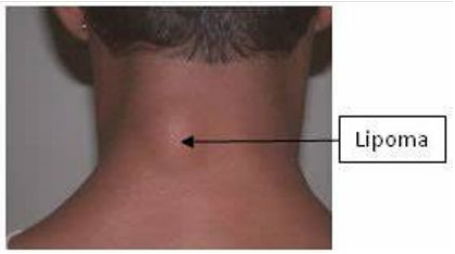
Pathogen: *Streptococci* (viridans Streptococci, *S. pneumoniae*), *Staphylococci* (including MRSA), *Haemophilus influenzae*, oral anaerobes (*Peptostreptococci*, *Bacteroides* species),

- Contiguous or lymphatic spread from oral (most common) or upper respiratory tract infections Local **penetrating** pharyngeal trauma
- Features of tonsillitis and trismus (minimal)
- Neck **asymmetry** with **unilateral swelling** of the posterior pharyngeal wall (possible fluctuance) → **inability to extend neck**
- **Torticollis**
- Anterior cervical lymphadenopathy
- Respiratory distress
- IV broad-spectrum antibiotics: empiric options include **ampicillin-sulbactam** or **clindamycin**.
- Needle aspiration or incision and drainage of abscess (**surgical drainage**

Neoplastic Masses

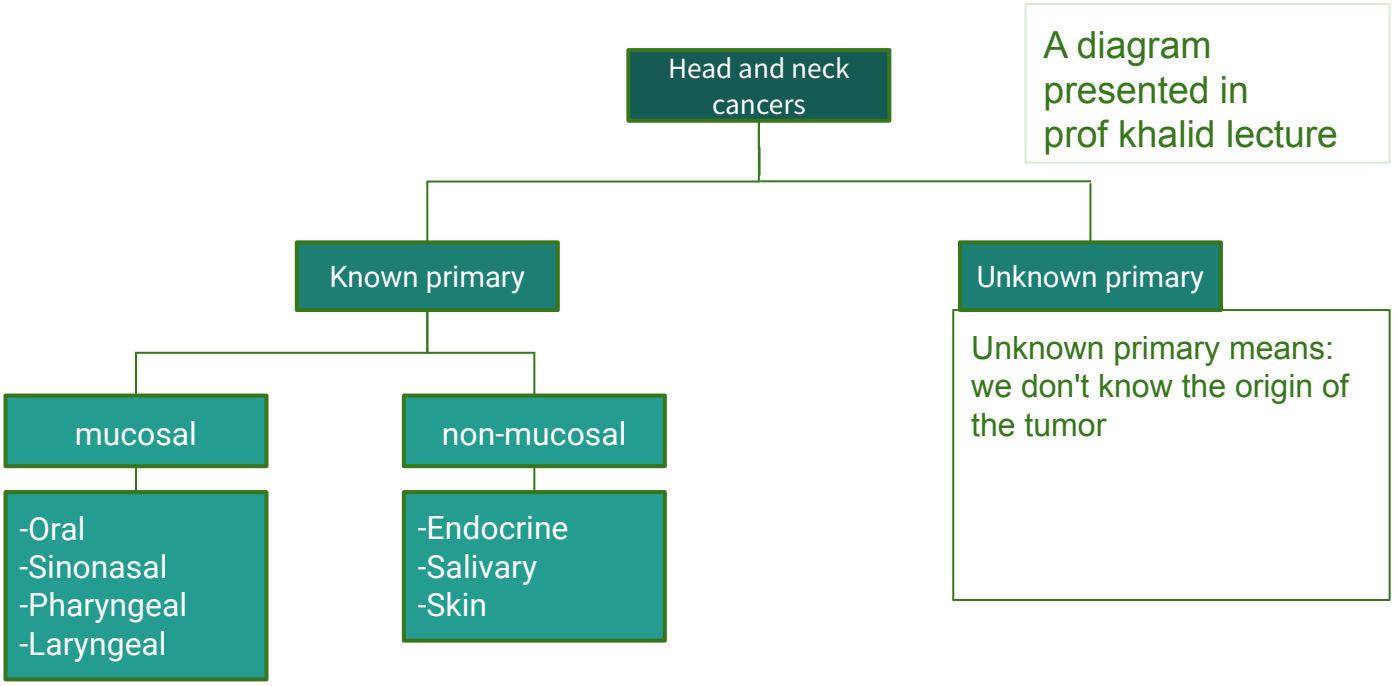
➔ **Benign:**
- Lipoma, fibroma, neuroma and schwannoma.

➔ **Malignant:**
- Primary neck tumors – sarcoma, salivary gland tumors, thyroid gland tumors, parathyroid gland tumors.
- Lymphoma. (common)
- Metastasis.



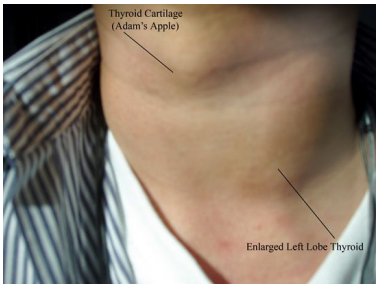
◀ Lipoma

- common benign tumor of subcutaneous soft-tissue, made up of mature fat cell, happens in adult
- Slow-growing round, soft, rubbery tumor (may be solitary or multiple)
- Diagnosis is made clinically and sometimes CT scan is ordered
- Treatment is usually not required
- Surgical excision can be considered in the following cases:
  - If tumor causes pain
  - Cosmetic reasons
  - If tumor grows rapidly or is firm on palpation



Neoplastic Masses

◀ Thyroid gland nodules



- Benign thyroid nodules (central neck masses) are very common (especially in females)
- 5-10 % are malignant.
- Hot vs cold, the most common is cold.

➔ **Thyroid Nodule Evaluation:**

- **U/S** (1st & **best** modality - shows nodule characteristics).
- FNA (2nd step, done if indicated).
- Thyroid Function Tests.
- CT (has certain indications; like in huge goiter to rule out sternal extension, if there is voice hoarseness (affecting the RLN) or when you suspect lymph nodes metastasis).

■ **Risk factors for malignancy:**

➔ **History:**

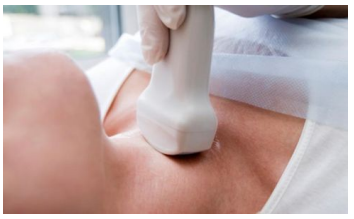
- External radiation during childhood.
- Age <20 or >60 years.
- Male gender.
- Family history of thyroid cancer.
- Hoarseness, dysphagia (indicate invasion or compression of nearby structures e.g. esophagus, recurrent laryngeal nerve).
- Rapid growth (goes with lymphoma, other malignancies, or transformation from differentiated thyroid cancer to undifferentiated thyroid cancer like in anaplastic thyroid carcinoma)

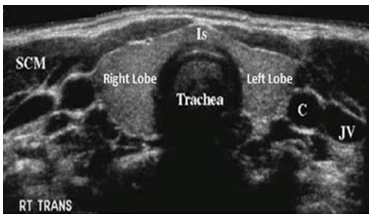
➔ **Physical Exam:**

- Firm or hard (goes with malignancy).
- Fixed to soft tissue or skin.
- Lymphadenopathy.

◀ Thyroid Imaging

- **Ultrasound:** Best for thyroid
  - Often first modality, helps delineate architecture.
  - Accessible, inexpensive, safe.
  - Help locate nodule, assist with FNA.
  - Micro-calcifications and central blood flow.
    - Suggests CA.
  - Not useful for large masses.



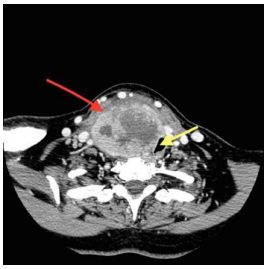


Characteristics of thyroid nodules that increase suspicious of malignancy:

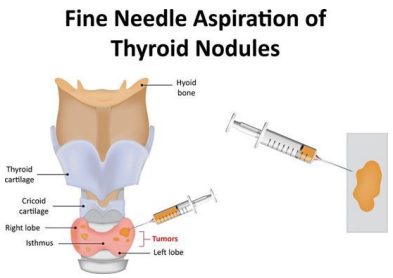
- Taller than wide shape (oval)
- Spiculated (irregular) margin.
- Microcalcifications.
- Marked hypoechogenicity.
- Increased vascularity.

- **CT scan:**

  Cases indicating CT scan:
  - Recurrent disease.
  - Lymph node metastasis.
  - Vocal cord paralysis.
  - Fixation of tumor to adjacent structures or skin.
  - Huge goiter, retrosternal extension.



◄ Thyroid Biopsy



- **Fine needle aspiration (FNA):**
  - Gold standard.
  - Sensitivity ⟶ 65% to 98%
  - Specificity ⟶ 72% to 100%
  - Safe and minimally invasive.
  - Indicated for nodules > 1 cm except if it looks purely cystic (benign) and it's > 1 cm but 2 cm or less then no need for FNA or nodules with suspicious features of malignancy (even if it's small < 1 cm)
  - US guided FNA (to be specific).
    - **Results of FNA:**
      - Non-diagnostic (repeat it) ⟶ re-aspiration diagnostic in 50%.
      - Benign (observe) ⟶ adenoma, goitre, thyroiditis.
      - Indeterminate (do diagnostic lobectomy) ⟶ FTC and Hurthle most common.
      - Malignant (surgery) ⟶ most common PTC.

◄ Malignant Thyroid Lesions

1. **Well Differentiated (85%):**
   - Papillary Thyroid Carcinoma (PTC) most common.
   - Follicular Thyroid Carcinoma (FTC).
   - Hurthle Cell Carcinoma (HCC).
2. **Poor differentiated malignant neoplasms:**
   - Medullary thyroid carcinoma (MTC).
   - Anaplastic thyroid carcinoma (ATC).
3. **Other malignant tumors:**
   - Lymphoma.
   - Metastatic tumors.

437A:

- for thyroid we always start with US.
- MCQs:
  - WHAT is the imaging of choice for any mass?? IF NOT IN THE THYROID, WE DO CT SCAN WITH CONTRAST
  - Pic shows a mass in the nasopharynx, how do we confirm it's a nasopharyngeal carcinoma? TAKE a BIOPSY.

We always start with CT-contrast in ENT except in:
1-Pediatrics
2-Pregnant
3-Thyroid

- Treatment:
  - Observation for small (1-2 cm), benign looking and not causing any compression symptoms, cystic nodules.
  - Follow Up with ultrasound every 6 months to monitor progression or look for any malignant transformation.
- Thyroidectomy indicated for:
  - Malignancy or Suspicious for malignancy.
  - Compression symptoms (shortness of breath, voice changes, dysphagia).
  - Cosmetic.
  - Graves disease if not responding to medical Tx.
  - Toxic nodule.
  - The choice to do total or hemithyroidectomy is controversial & depends on the diagnosis, but almost always if there is malignancy: total thyroidectomy)
- Post op complications:
  - RLN Injury recurrent laryngeal nerve (<1%, if unilateral: hoarseness/aspiration, if bilateral: airway symptoms/stridor). Hoarseness happen because of vocal cord paralysis
  - Hypocalcemia (due to parathyroid gland injury, can be transient or permanent).
  - Hematoma, usually happens within first 24 hrs and patient presents with shortness of breath & stridor.

Thyroid Neoplasms Extra 436

1- Well Differentiated (85%):

A- Papillary Thyroid Carcinoma (PTC):

The most common type.

- Constitutes 80% of thyroid carcinomas.
- Spreads lymphatically and slowly.
- 10 yr. survival rate is 95%. Good 131 I uptake.
- Lymph node involvement in 30%.
- Distant mets least common: 1 - 25% during illness or 1 - 7% at Dx.
- Predisposing Factors: Ionizing radiation - 5-10% of pts have +ve FamilyHx.
- Clinical presentation: Young females,palpable mass in thyroid or cervical LN (1/3rd have lymphadenopathy).

➔ Treatment:

  - Hemithyroidectomy (usually not enough).
  - Or Total Thyroidectomy most appropriate.
  - Post-Op need to give thyroid hormone replacement.
  - Post-Op 131 I scan can diagnose and treat!
  - **Can be metastasized.**

B- Follicular Thyroid Carcinoma (FTC):

- 13% of thyroid cancers.
- Hematogenous spread (commonly to bone).
- More aggressive, well differentiated compared to PTC.
- Good 131 I uptake.
- 10 yr. survival is 90%.
- Dx cannot be made with FNA!!!
- Tissue structure (capsule) needed for diagnosis.
- Malignancy if there is capsular or blood vessel invasion.
- Tx same as in papillary cancer.

C- Hurthle Cell Carcinoma (HCC):

- Subtype of FTC (15% of FTC's).
- Like FTC, cannot exclude carcinoma vs adenoma based of FNA or frozen.
- Clinical Presentation: Thyroid nodule or mass - 35 % will have distant mets during illness. Higher rate nodal mets than FTC

➔ Surgical options:

  - Total thyroidectomy (>1.5cm).
  - Thyroid lobectomy (<1.5cm).
  - +/- Neck dissection.

➔ Adjuvant Therapy:

  - Post-op I-131
  - External beam RT: Tumors that do not pick up I-131 - Advanced disease (mets, residual disease).

2- Poor differentiated malignant neoplasms:

A- Medullary thyroid carcinoma (MTC):

- Sporadic (80%) More Aggressive Type - Late presentation (age 40 – 60) - Early Mets To Regional Lymph Nodes(50%).
- Familial (20%):
  - MEN IIA, MEN IIB, Mutation in RET-proto oncogene. (Do RET testing CT (for pheochromocytoma) if familial)
  - Autosomal Dominant.
  - Early presentation (birth – 20's).

➔ Treatment:

  - Total thyroidectomy with bilateral SLND.
  - Prophylactic surgery for relatives with RET mutation (preferably before age 7) No adjuvant therapy advocated.
  - Radiotherapy and chemotherapy for palliation (usually ineffective).

B- Anaplastic thyroid carcinoma (ATC):

- Undifferentiated carcinoma arising in 75% of previously differentiated thyroid cancers.
- 1-2% of all thyroid cancers.
- FNA helps diagnose.
- Major DDx includes lymphoma (much better prognosis).
- Highly aggressive and fatal.
- Median survival 3 - 6 months.
- Distant mets common (lung).
- Grossly, large and bulky tumors.
- Invade into surrounding tissue.
- Rapid expansion.
- Treat small tumors: Total Thyroidectomy (possibly w external beam radiation).
- If there is airway obstruction, then do a **debulking surgery and tracheostomy.**
- **Dismal prognosis:** Most pt have stage IV (distant mets) at presentation.

3- Other malignant tumors:

A- Lymphoma:

- More common in children and young adults.
- Up to 80% of children with Hodgkin's have a neck mass.
- Signs and symptoms:
  - Lateral neck mass only (discrete, rubbery, nontender), not impro w antibiotics.
  - Fever.
  - Hepatosplenomegaly.
  - Diffuse adenopathy.

➔ Investigations:

- CT head and neck with contrast "showed multiple lymph node, 3—4 cm, homogeneous, WHAT'S next? FNAB. DON'T FORGET THAT!!! MCQs.
- FNAB – first line diagnostic test.
- If suggestive of lymphoma – open biopsy. ONLY DONE If: we don't know the diagnosis or FNAB showed lymphoma.
- Full workup – CT scans of chest, abdomen, head and neck; bone marrow biopsy.

B- Metastatic tumors:

- Be aware that the immediate removal of enlarged lymph node for diagnostic purposes is NOT GOOD for pt w metastatic cervical carcinoma. Disruption of lymphatic drainage and manipulation of the mets decrease chance for clean excision and cure.
- Enlarged nodes high in neck or in posterior triangle suggest nasopharyngeal lesion.
- Enlarged jugulodigastric nodes suggest tonsils, base of tongue or supraglottic larynx.
- If nodes are in supraclavicular area or lower 1/3 or neck then consider the whole digestive tract, lungs, breast, GU tract, and thyroid gland.
- Mets spread from chest or abdomen via thoracic duct (left side mets more common than right).

In summary, treatment of malignant thyroid lesions is as follows: Important

Malignant of thyroid cancer		
Type		Management
Well-differentiated	Papillary carcinoma	Total thyroidectomy + post-op Radioactive Iodine (I-131)
	Follicular carcinoma	
	Hurthle cell carcinoma (sub-type of follicular)	
Poorly-differentiated	Medullary carcinoma	Total thyroidectomy + Neck dissection "removal of level 2,3 & 4 lymph nodes"
	Anaplastic carcinoma	Surgery, Adjuvant radiation & Chemotherapy. (palliative chemo+tracheostomy)

lymphoma: chemotherapy

Diffuse Thyroid Enlargement Extra 436

Definition of Goiter:

-A goiter is diffuse enlargement of the thyroid gland seen in Graves' Disease, Plummer's Disease, Iodine Deficiency, Acute Thyroiditis, Subacute Thyroiditis, and Chronic Thyroiditis (Hashimoto's and Riedel's Diseases).
-Also, goiters are seen in Diffuse Multinodular Goiter. So, patient with a goiter can be clinically euthyroid, hyperthyroid or hypothyroid. (Most important test is TSH)

Grave's Disease

- Diffuse goiter with hyperthyroidism, exophthalmos, and pretibial myxedema.
- **Caused by** circulating antibodies that stimulate TSH receptors on follicular cells of the thyroid and cause deregulated production of thyroid hormones.
- **Diagnosed by** Increased T3 and T4 and very low TSH and global uptake of radioiodine.
- **Treated in 3 ways:** medical blockade (methimazole, PTU, propranolol, iodide), radioiodine ablation, surgical resection.

Acute Thyroiditis

- Rare complication of septicemia. High fever, redness of overlying skin, tenderness.
- **Needle aspiration to identify organism.**
- Intensive Abx therapy.
- Occasionally, incision and drainage.

Subacute Thyroiditis

-Secondary to viral infection and usually there is complete resolution within months.
-Fever, goiter and anterior neck pain. Possible sx and signs of hyperthyroidism w exquisitely tender thyroid gland on palpation.
-"Cold" uptake on scan distinguishes it from Graves b/c later in the course of the disease, pt becomes euthyroid and then hypothyroid.
Treat with NSAIDS usually or prednisone if sx are bad.

Chronic Thyroiditis

-Hashimoto's Thyroiditis: lymphocytic infiltration and destruction of gland resulting in hypothyroidism and a diffuse goiter.
-Hashimoto's common in women.
-Most common cause of goiter and hypothyroidism in USA.
-T3 and T4 either normal or low. TSH is elevated.
-Tx: thyroxine but then surgery if dominant mass is not suppressed by this therapy.

Diffuse Multinodular Goiter

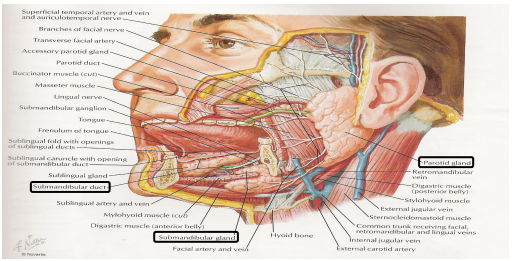
-This is adenomatous hyperplasia of the thyroid gland that is asymptomatic (non-toxic/euthyroid).. R/O malignancy w FNA.
-Multiple nodules suggest a metabolic rather than a neoplastic process, but irradiation during childhood, a positive family history, enlarged cervical nodes, or continuing enlargement of one of the nodules raises the suspicion of malignancy.

Iodine Deficiency:

Rarely a cause of goiter in the USA.
If seen, it is usually treated medically and only rarely surgically for compressive symptoms.

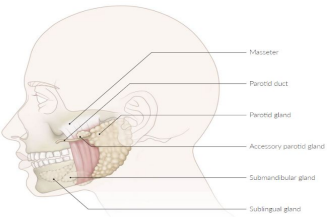
Salivary Glands

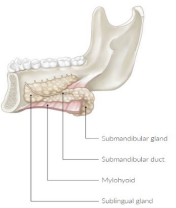
- There are 6 major salivary glands: 2 parotid, 2 submandibular, 2 sublingual.
- 100's of minor salivary glands lining the upper aerodigestive tract
- It's main job.... Saliva!!!!



- **Parotids**: **(most common gland to get infected)**
  - Serous cells only (**weak** bacteriostatic factors BC. it's serous).
  - On side of the face, deep to skin, subcutaneous tissue, superficial to the masseter.
  - Stensen's duct begins at anterior border of the gland 1.5cm below the zygoma.
  - Traverses the masseter 5-6 cm, pierces the buccinator.
  - Opens in mouth lateral to 2nd upper molar.
  - Tail of parotid extends superficial to SCM.
    - ➢ **Nerve Injured during surgery? Marginal mandibular nerve.(Branch of the facial nerve)**

- **Submandibular gland:**
  - Mucous and Serous cells.(Secretion is thick & mucous, so less chances of infection but more chances of stones.)
  - Submandibular triangle: Anterior and Posterior bellies of digastric and Inferior margin of the mandible.
  - Medial and Inferior to the mandible; **Wharton's duct**.
    - Exits the gland from the medial surface travels b/w the hyoglossus and **mylohyoid muscles** enters the genioglossus muscle and opens into mouth just lateral to lingual frenulum.
  - CN XII Inferior to the duct and lingual nerve is Superior to the duct.
  - ➢ **Nerve injured during surgery? (SAQ question)**
    1. **Marginal mandibular nerve (most common).**
    2. **Lingual nerve.**
    3. **Hypoglossal nerve.**





- **Sublingual gland:**
  - Mucous secreting.
  - Just below the floor of mouth mucosa.
  - Bordered by genioglossus/hyoglossus medially, mandible la
  - Wharton's duct and lingual n. travel b/w SL gland and genioglossus muscle.
  - No facial capsule.
  - Ducts of Rivinus (~10) along the superior aspect of the gland open into the mouth along sublingual fold in the floor of mouth.
  - Innervated by the PNS/CNS systems in the same way as the SM gland.

- **Minor salivary glands:**
  - Either mucous, serous or both.
  - 600-1000 /person
  - Each gland has its own duct
  - Found most commonly in buccal, labial, palatal, and lingual regions.

- **Salivary flow rates:**
  - ~1000-1500 ml/24 hrs, or 1 ml/min.
  - Unstimulated 69% of flow from SM gland, 26% parotid, 5% SL.
  - Stimulated parotid and SM.
  - Minor glands independent of stimulation usually account for 7-8% total flow.

Role of saliva:

- Lubricates. -Moistens, help with mastication. - Cools hot food. -Buffers chemicals.
-Homeostasis -Cleans the mouth (lavage). -Prevent dental caries. - Protects mucosa.
- Antibacterial (lysozyme, IgA, peroxidase).

Salivary glands infections

- **Acute Suppurative Sialadenitis:**
  - "Surgical parotitis", "Surgical mumps" >Other names
  - Retrograde migration of bacteria from the oral cavity.
  - Parotid gland most frequently involved,
    - inferior bacteriostatic properties.

➔ ***Symptoms of Acute infections:***

  - Rapid onset of pain, swelling, induration.
  - Fever chills.
  - Increased WBC count.
  - Suppurative discharge from the gland.
  - S. Aureus.

➔ ***Treatment:***

  - **Antibiotics.**
  - Steroids.
  - **Analgesics.**
  - Local heat application.
  - Increased fluid intake.
  - **Surgical treatment if no improvement within 48h.**
  - **CT or US to rule out abscess.** (drainable > incision, not drainable > surgery)
  - Sialogram C/I in acute phase.

Pathogenesis of Acute infections:

- Stasis permits retrograde flow.
- Compromised host resistance.
- Poor oral hygiene (increase oral bacteria).
- Chronic disease or prolonged recovery.
- DEHYDRATION.
- Anticholinergics or diuretics.
- Anorexia reduces salivation.
- 25% bilateral.

- **Viral Infections – Mumps:**
  - Most common nonsuppurative infection.
  - Children.
  - Parotid (occ. SMG).
  - Bilateral, generalized swelling.
  - Paramyxovirus
    – Highly contagious.
    – Airborne droplet spread.
    – Incubation 18 days.
    – Virus spread for 1 week following swelling.
  - Treatment:
    – Hydration
    – Rest
    – Modify diet to decrease gland stimulation

- **Acquired Immunodeficiency Syndrome:**
  - HIV.
  - Lymphoproliferative and cystic enlargement of the major salivary glands.
  - High suppressor T-cells and lymphocytosis.
  - Can be initial presentation.
  - Parotid (15- 30% bilateral) with lymphocytic interstitial pneumonitis.
  - HIV in saliva.

- **Chronic Sialadenitis:**
  - Repeated episodes of pain and inflammation.
  - Parenchymal degeneration and fibrous replacement of the gland
  - Initial severe acute infection.
  - Duct obstruction.
  - Depressed glandular secretion.
  - Parotid.
  - More infections = more damage to gland and duct.

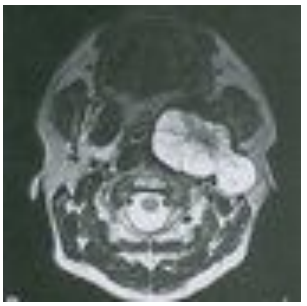
➔ ***Pathophysiology and Treatment:***

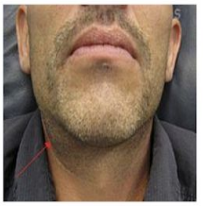
  - Obstruction of salivary flow.
  - **Intraductal calculus.**
  - Stricture.
  - Mucous plug.
  - Ductal papilla lesion.
  - Extrinsic compression.
  - No consistent Tx.
  - Tympanic neurectomy.
  - Duct ligation.
  - Gland excision.

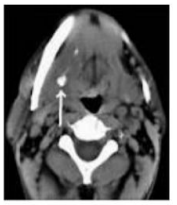
Salivary glands stones

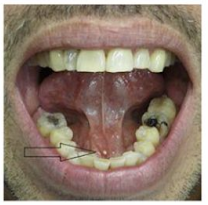
◀ Sialolithiasis (salivary stones)

- formation of stones in the salivary ducts
- Submandibular gland is the most common site (80%) Parotid gland accounts for 20% of the cases
- Thick saliva calcification causes stone
- Common with chronic sialoadenitis
- Causes:
  - Stagnation of saliva.
  - Focus for formation from duct injury.
  - Biological factors (calcium salts).
- Location:
  - 80% Wharthon's duct "of submandibular gland".
  - 19% Stenson's.
  - 1% Sublingual.
  - **Why Wharthon's?**
    - Alkaline and Viscous saliva.
    - Increased Ca and Phos.
    - Angulation of the duct at Mylohyoid.
    - Vertical orientation at the distal segment.
- History: tender, fever, short duration
- P/E: swelling, tenderness
- ***Symptoms and Management:***
  - Recurrent painful swelling
  - Can be associated with eating and subset after a short period of time
  - Colicky postprandial pain "diagnostic".
  - Swelling.
  - Plain films.
  - Sialography.
  - Neck CT scan use to diagnose U/S will not give details
  - If the stone is small we treat it medically and observe (drink a lot of water).
  - Like sialoadenitis.
  - Avoid vigorous probing.
  - Incise duct orifice.
  - Stenting.
  - Treat the infection with antibiotic, warm compress, sour candy, if the is recurrent infection do lithotripsy and stone removal









Salivary glands neoplasms

- **Diverse histopathology**
  - Determines Aggressiveness.
- **Relatively uncommon**
  - 2% of head and neck neoplasms.
- **Distribution**
  - 95% in adults.
  - **Parotid: 80% overall; 80% benign.**
  - **Submandibular: 15% overall; 60% benign.**
  - **Sublingual/Minor: 5% overall; 40% benign.**

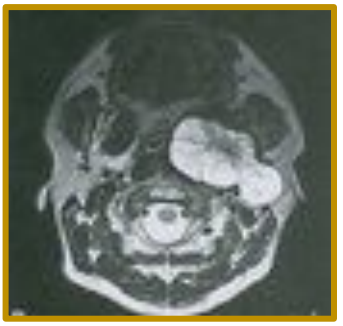
Rule of 80%:
80% of tumors is parotid.
80% of parotid tumors is benign.
80% of them is pleomorphic adenoma.

- **Benign** tumors are a mobile, non-tender and Asymptomatic except for the mass. While **Malignant** tumors are Rapid growth, skin fixation, cranial nerve palsies, painful and fixed.
- Benign salivary gland management is surgery. Why? because there is 5-10% probability of becoming malignant.
- **Malignant tumors** may involve lymph nodes (evidence of local metastasis) and/or facial paresis/paralysis. (fast growing tumor and pressure symptoms depends on the site).
- **Diagnostic tests: (CT first then FNA)**
  - Open excisional biopsy (submandibulectomy or parotidectomy) preferred. ➔ CT/MRI – deep lobe tumors, intra vs. extra-parotid.
  - **FNAB**: (Shown to reduce surgery by 1/3 in some studies).
    - ❑ Delineates intraglandular lymph node, localized sialadenitis or benign lymphoepithelial cysts.
    - ❑ May facilitate surgical planning and patient counseling.
    - ❑ Accuracy >90% (sensitivity: ~90%; specificity: ~80%).
- **Treatment** is generally via adequate surgical resection with neck dissection for node-positive necks and radiation. **Be prepared for total parotidectomy with possible facial nerve sacrifice.**
- **Most common parotid tumors:**
  - **Benign:**
    - **Pleomorphic Adenoma.**
    - **Warthin tumor.**
  - **Malignant:**
    - **Mucoepidermoid Carcinoma (MEC).**
    - **Adenoid Cystic Carcinoma.**

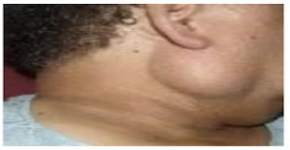
Rule of size; the bigger the size of the tumor the higher probability of it being benign, but any parotid mass should be excised even if it was benign BC:
1. FNA is not accurate in salivary glands.
2. Malignant transformation possibility 5-10%.
3. Cosmetic purposes.

◄ Benign Neoplasms

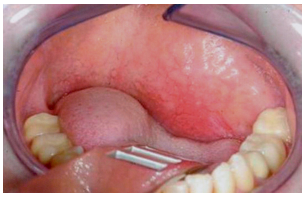
◄ Pleomorphic adenoma:

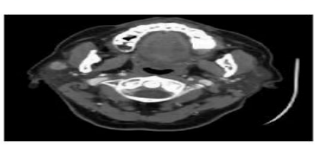


- Pleomorphic (polymorphic) adenoma is the most common salivary gland tumor
- Most common salivary gland tumor (accounts for 85% of benign salivary gland tumors) usually the **parotid gland** (~ 80% of cases) submandibular or minor salivary glands
- usually seen in 3rd or 4th decade
- Slowly painless enlarging mass, non-tender on physical examination
- CT scan with contrast and FNA to confirm the diagnosis
- MRI with contrast can be used
- Treatment with excision
- superficial parotidectomy to prevent recurrence, and Submandibular gland excision



- **Warthin tumor (papillary cystadenoma lymphomatosum)**
- **Oncocytoma** (~ 2% of cases)
- **Basal cell adenoma** (~ 1–2% of cases)
- **Myoepithelioma** (~ 1% of cases)





Salivary glands neoplasms

Warthin's tumor	• Papillary Cystadenoma Lymphomatosum. • 2nd most common benign salivary gland tumor (accounting for 10% of benign cases) • 6-10% of parotid neoplasms. • Older, males. • 10% bilateral; 20% multicentric. • 3% with associated neoplasms. ➔ **Presentation:** Slow-growing, painless mass in parotid tail. ➔ **Treatment:** surgery

Most common pathology for benign tumors in salivary gland ??? Pleomorphic adenoma (imp)

◄ Malignant Neoplasms

- Most common: parotid gland → **parotid carcinoma**
- Rapidly enlarging mass
- Pain
- Fixation into adjacent structures
- Lymphadenopathy
- Facial nerve paralysis. We consider it malignant if there was facial nerve injury
- CT ,MRI neck with contrast (better because there is nerve invasion), FNA to confirm the diagnosis
- more aggressive than benign total parotidectomy + neck dissection
- may need extra treatment base of on the stage (we may need to do facial nerve resection)

Submandibular gland tumors are less common but more frequently malignant than parotid tumors. Generally, the smaller the gland, the higher the risk a tumor is malignant!

● Frey's syndrome (Gustatory sweating) Qexam

- Aberrant reinnervation of postganglionic parasympathetic nerves to the sweat glands of the face
- 10% of patients overtly symptomatic
- Diagnosis: Minor's starch iodine test

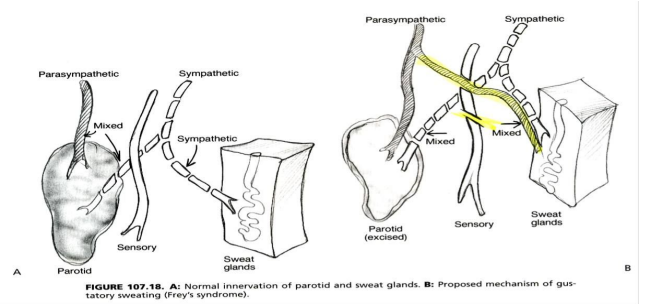


FIGURE 107.18. A: Normal innervation of parotid and sweat glands. B: Proposed mechanism of gustatory sweating (Frey's syndrome).

BOX 61-13

TREATMENT OF GUSTATORY SWEATING

Nonsurgical
- Topical glycopyrrolate
- Topical antiperspirant

Botox injection

Surgical
- Fat grafting
- Dermal grafting
- Temporalis fascia interposition flap
- Sternocleidomastoid interposition flap
- Tympanic neurectomy

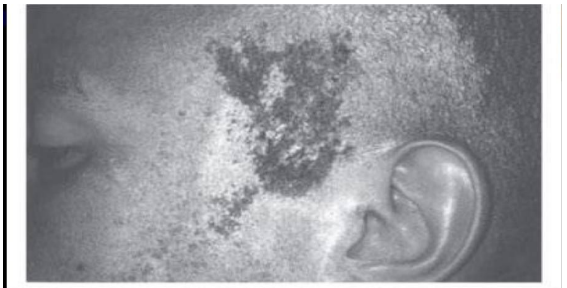
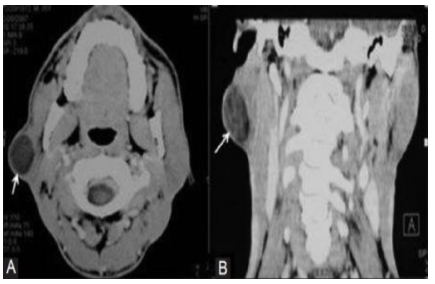


Figure 3. The Minor's test showed areas where the secretion of sweat gland diluted with iodine, which reacted with the starch.

Salivary glands masses

438 slides

◀ Mucoepidermoid carcinoma:



- Most common salivary gland malignancy.
- Can invade the facial nerve. → Facial paralysis
- Slow growing.
- 5-9% of salivary neoplasms, Parotid 45-70% of cases, Palate 18%.
- 3rd-8th decades, peaks in 5th decade, Females more than males.

➔ **Presentation:**

- Low-grade: slow growing, painless mass.
- High-grade: rapidly enlarging, +/- pain.
- Minor salivary glands: may be mistaken for benign or inflammatory process.

➔ **Treatment:** surgical excision

- Influenced by site, stage and grade.
- Low-grade tumors: complete resection by parotidectomy.
- High-grade tumors: parotidectomy, neck dissection and radiotherapy.

Adenoid cystic carcinoma	• Overall, 2nd most common salivary gland malignancy and 2nd most common of the parotid. • Most common in submandibular, sublingual and minor salivary glands. • Males=Females (5th decade). ➔ **Presentation:** Asymptomatic enlarging mass.Pain, paresthesias, facial weakness/paralysis. ➔ **Treatment:** • Complete local excision. • Tendency for perineural invasion; facial nerve sacrifice. • Post-op *Neutron Beam XRT.*

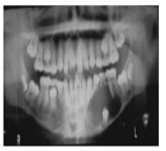
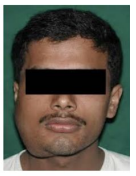
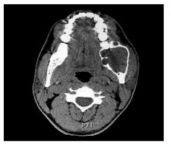
Most common malignancy in submandibular, sublingual and minor salivary glands is the Adenoid Cystic Carcinoma (Mucoepidermoid Carcinoma is 2nd). (Opposite to Parotid)

Don't take a break....

And Enjoy a nice cup of coffee

Osseous neoplasm

◄ Ameloblastoma

- benign neoplasm of uncertain origin
- A tumor of odontogenic epithelium that most commonly develops in the lower jaw
- locally invasive and destructive to tissue around the jaw, sinuses, and orbits
- The most common site is mandibule , patient come with asymmetrical
- Age 30-40
- Mandibula (facial asymmetry)
- invades the maxillary sinus
- Diagnosis by MRI mandible panorex and incisional biopsy, panorex shows lytic lesion
- Management: wide local excision with 1 cm margin with Immediate reconstruction

Case Scenario (From Dr's Slide)

Case Scenario:

- 55 year old male with neck mass.
- **How will it be approached?** HISTORY and examination FIRST
- Painless slowly enlarging over 2-3 months with dysphagia & 10 pound weight loss with a decreased appetite, Normal Cranial nerve. Level II lymph node 3-4 cm, and hard
- **What further examination mandated?** Here we have a clue that it is neoplastic not Congenital nor inflammatory just by simple history so we investigate by the following:
    1. Flexible Nasopharyngoscopy
    2. CT neck with Contrast
    3. If confirmed it was a pathological lymph node after that we did FNA and it showed Squamous Cell Carcinoma (SCC),

- **What the Next Point in investigation?**

We have to know the source of the Carcinoma so do Quadrascopy (Sometimes patients are not cooperative so we put them under General anesthesia and do the quadrascopy in the OR):

- Esophagoscopy
- Laryngoscopy
- Pharyngoscopy (EAU Nasopharynx & ipsilateral tonsillectomy)
- Bronchoscopy
- And a PET/CT scan is handful in these such cases

- **Treatment of primary head and neck SCC:**

1. Known primary site of scc = based on the primary site i.e. Oropharynx radiation therapy (XRT) to the primary neck and head tumor
2. Unknown HNSCC= radical neck dissection with or without XRT or XRT and chemotherapy

chemotherapy is considered an excellent treatment

If 2 FNA were Nondiagnostic, **What is your next line in management ?**

- Open biopsy:

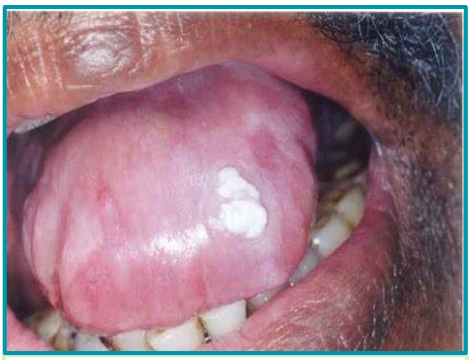
1. Granuloma means TB or Sarcoidosis
2. Inflammatory process or abscess order G stain and culture

Premalignant oral cavity lesions

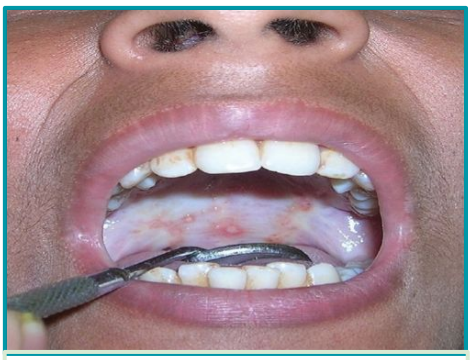
438 slides

◀ Oral Submucous Fibrosis (OSMF):

- OSMF is a high risk precancerous condition that predominantly occurs among indians, uncommon in KSA.
- **Factors implicated in the pathogenesis of submucous fibrosis:**
  - Chilly consumption.
  - Betel-nut chewing.
  - Genetic predisposition.
- OSMF is a chronic mucosal condition affecting any part of the oral mucosa.(usually hard palate)
- Mucosal rigidity of varying intensity due to fibroelastic transformation of juxta epithelial connective tissue layer.
- The presence of **palpable fibrous bands is a diagnostic criterion** for submucous fibrosi (clinical diagnosis).
- When the tongue is affected, it is devoid of papillae and its mobility, especially the protrusion is impaired (it'll be pale).
- The opening of the mouth is restricted (even if not malignant).
- In severe OSMF, the patient cannot protrude the tongue beyond the incisal edges and there is a progressive closure of the oral opening.
- **The most serious aspect of this disease is the high risk for the development of oral cancer.**
- The epithelium is atrophic in this condition which renders it susceptible to the action of carcinogens.
- **Treatment:**
  - Some temporary relief from the symptoms and improvement in the oral opening with medicinal treatment such as local injections of cortisone.
  - It's essential to follow-up the patients regularly due to the risk of malignancy.
  - Patient education to discontinue the use of Betel-nut and tobacco in any form.



Pics in exam: Pale and fibrosis. No papillae

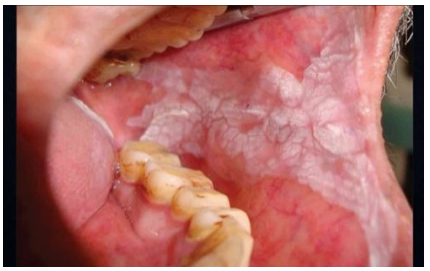


Hard palate: trismus & inability to open the mouth.

Premalignant oral cavity lesions

438 slides

◀ Leukoplakia:



- Leukoplakia is the **most common premalignant** or "potentially malignant" lesion of the oral mucosa (buccal mucosa).
- It's predominantly white lesion of the oral mucosa.
- Differentiated from other benign lesions by **inability** to scrape away the lesion.
- In general the reported prevalence ranges from 0.2% to 5%.
- It's seen most frequently in middle-aged and older men.
- Men are more affected in some countries. Because of smoking and alcohol.

➔ **Presentation:**

- Can be either Solitary or Multiple.
- May appear on any site of the oral cavity.
- Common sites being: **buccal mucosa** (most common), alveolar mucosa, floor of the mouth, tongue, lips and palate.

➔ **Classically two clinical types of leukoplakia are recognized:**

- **Homogenous Leukoplakia** is defined as a predominantly white lesion of uniform **flat** and **thin** appearance that may exhibit shallow cracks. This type is usually asymptomatic.
- **Non-homogenous Leukoplakia** has been defined as a predominant white or white-and-red lesion **"erythroplakia"** that may be either irregularly flat, nodular **"speckled leukoplakia"** or exophytic **"exophytic or verrucous"** more risky (associated with malignancy).

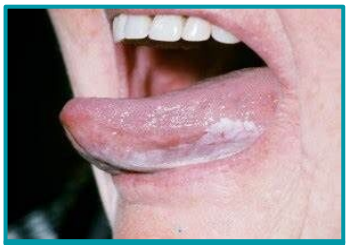
➔ **Risk factors:**

- **Smoking**.
- **Alcohol**.
- Inadequate diet, Vitamin deficiency, e.g. Vit A and C.
- Areca nut (betel) chewing.
- Chronic traumatic irritation. (Dental)
- Poor oral hygiene.
- Poor socioeconomic status.

Non-homogenous, irregular red (dangerous)

➔ **Treatment:**

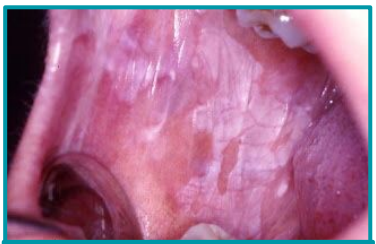
- Risk of malignant transformation isn't completely eliminated by any of the current therapies (bc the whole area is prone ➔ so follow up is necessary).
- Initial treatment of a white oral lesion is the elimination of the possible aetiological factors. (Stop smoking, alcohol, and betel nut).
- **Complete surgical removal (leaving free-lesion borders)** is recommended in cases with epithelial dysplasia (to make sure everything is removed).
- Apart from the surgical excision, other treatment modalities available include cryosurgery, laser surgery, retinoids, beta-carotene, bleomycin, calcipotriol, photodynamic therapy. Biopsy to r/o carcinoma.



Homogenous, lateral part: whitish and superficial.

➔ **Prognosis:**

- The malignant transformation rate of oral leukoplakia varies from 0% to 33%.
- **Regular check-up of these patients is essential**, probably every 3, 6 and then 12 months, both in treated and untreated patients.



(Describe the picture) Predominant white lesion of the oral mucosa (leukoplakia), from 437.

Premalignant oral cavity lesions

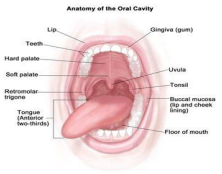
438 slides

◄ Lichen Planus:

- chronic inflammatory and immune-mediated disease that affects the skin, nails, hair and mucous membranes. It is a premalignant condition.
- characterized by polygonal, flat-topped, violaceous papules and plaques with overlying, reticulated, fine white scale (Wickham's striae)
- Commonly affecting dorsal hands, flexural wrists and forearms, trunk, anterior lower legs and oral mucosa → patients usually present to dermatology
- Punch biopsy if suspected or to confirm the diagnosis
- Rx: topical steroids

Oral Cancer

438 slides



- Squamous cell carcinoma is the most common.
- Tobacco and alcohol have synergistic effect (major risk factor).
- Treatment of early oral cancer is surgery. (More than chemo and radiation)
- Locally advanced T3/4 are best treated with combined Surgery and Radiotherapy.
- **High risk of second primary cancer** (tongue, thyroid, laryngeal, etc..)
- for example, there could be primary tongue cancer in addition to primary buccal mucosa cancer, therefore ruling out other oral cancers after making the diagnosis is essential.
- The oral cavity extends from vermilion border of the lips to the plane between junction of the hard palate and the soft.
- Includes: lips and oral cavity (buccal mucosa, tongue, gingiva, retromolar trigone, floor of the mouth, hard palate).

➔ **Presentation:**

Non healing ulcers, Induration, Verrucous/Cauliflower, Hot potato chewing, Trismus (lockjaw, due to invasion of mastication muscles), LN enlargement (neck swelling).

➔ **Pathology:**

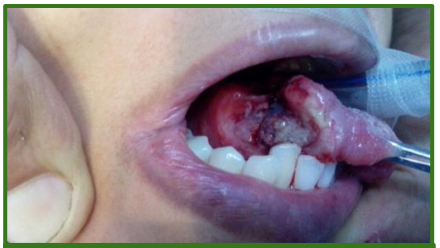
- **90% SCC** (squamous cell carcinoma): Well/Moderate/Poorly/Undifferentiated (affects prognosis).
- Exophytic, Ulcerative, Infiltrative, Verrucous.
- Other malignancies; Adeno Car / from malignant minor salivary gland tumors, melanoma, sarcomas.
- Premalignant lesions: Leukoplakia, hyperplasia, Erythroplakia, and dysplasia.
- Regional Lymph node metastasis related to size and thickness of primary tumor (the larger the more prone to lymph node metastasis).

➔ **Risk factors:**

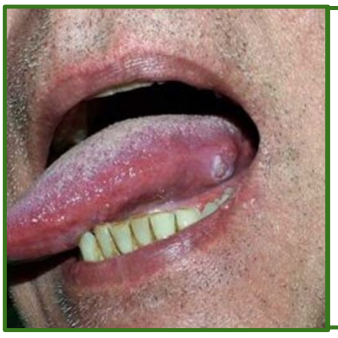
- **Heavy tobacco consumption**.
- **Alcohol**.
- Syphilis.
- Viruses (EB (nasopharyngeal), HSV, HPV, HIV).
- Neglect of oral dental hygiene (chronic infection, unfit dentures) irritation.
- Lichen planus, **Plummer Vinson syndrome**.
- Immunosuppression, malnutrition.

➔ **Diagnosis:**

- **Clinical:** History, detail clinical examination (use headlamp and mirror), Bimanual palpation (to know the depth of invasion in tongue cancer, very important) Cervical lymph node examination (to rule out metastasis to the neck).
- **Endoscopy:** examining other areas of the head and neck to rule out second primary, (very important).
- **Biopsy:** prove the diagnosis (most commonly SCC).
- **Staging:** CT with contrast, MRI (especially with tongue cancer), PET scan (to rule out metastasis to lung, live and bone).



Ulcerative, looks malignant, squamous carcinoma.



There are leukoplakia changes involving the tongue, squamous carcinoma.

Oral Cancer

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➔ **Treatment:**

- Goals:
  - To eradicate of the primary tumor and LN metastasis (we remove with premargin).
  - To maintain the function (reconstruction).
  - Cosmetic reconstruction (regional flap or thigh flap).
- Factors affecting choice of treatment:
  - Tumor factors.
  - Patient factors.
  - Resource factors. (What the hospital can provide)
- **Surgery:** Addressing the tumor, neck (LN metastasis, to check neck metastasis for possible radical neck dissection), reconstruction and secure the airway to make sure it's safe (because oral cavity tumors are bulky, we sometimes do a tracheostomy for a few days until the edema subsides).
- Radiotherapy.
- Chemotherapy.
- Concomitant, Radio+Chemotherapy.

} If there are free margins

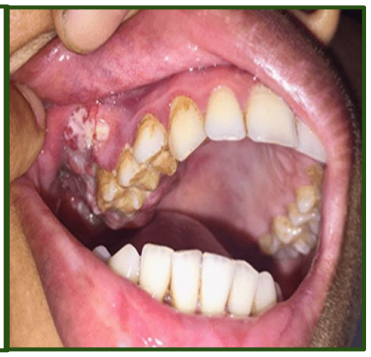
- Palliative Chemotherapy for advanced diseases.

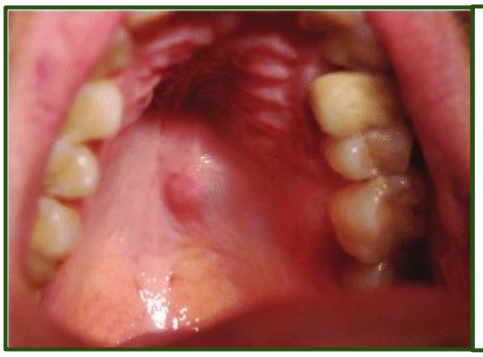
Treatment methods depends on TNM stage: (Tumor size, spread to Nodes and Metastasis).
Stage 1, 2: single modality. (Surgery or radiotherapy)
Stage 3, 4: double modality. (Either Surg. & Radiation or Radiation & Chemotherapy).

➔ **Prognosis:**

- Location/thickness/depth of primary tumor.
- Staging depends on early or late.
- Type of histology.
- Grading.
- Presence of perineural spread.
- Mandibular invasion (we might have to do mandibulectomy).
- LN extension (Level, size, extracaps of meta).
- Metastasis.

Fungating mass involving the alveolar ridge, extending to the buccal mucosa and maybe the maxillary bone, looks malignant, squamous carcinoma.





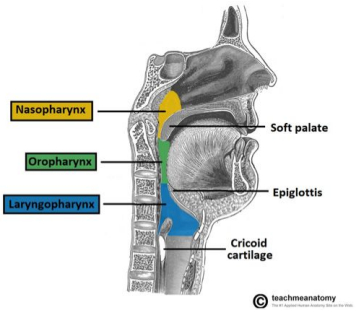
Hard palate, mucosa is intact, minor salivary glands tumor.
This is a submucosal hard palate lesion and the most common type in this case is pleomorphic adenoma, unlike other oral cancers where SCC is more common.

Extra from 437

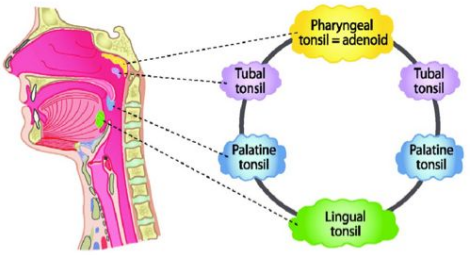
- **For a patient with suspected oral cancer, management step-by-step:**
  1. **History & Examination** inc. neck exam for metastasis.
  2. **CT with contrast**.
  3. **MRI** if tongue is involved, very important.
  4. **Biopsy**.
  5. **TNM staging** (tumor size, nodes involves, metastasis to other regions is ruled out through CT CAP).
  6. Present the case to the **tumor board** to decide the management.

The Pharynx - Anatomy

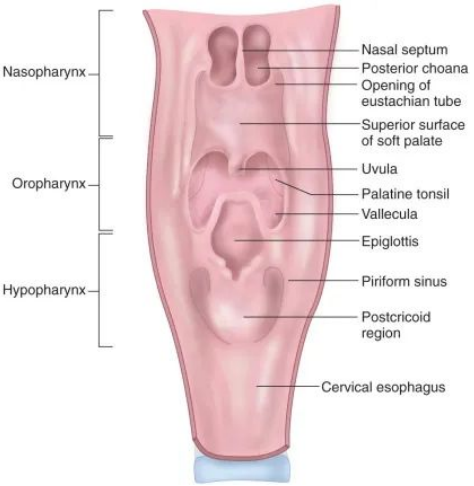
438 slides



- It is 12-14 cm long , extending from base of the skull (basioccipital and basisphenoid) to the lower border of cricoid cartilage where it becomes continuous with the esophagus.
- The width of pharynx is 3.5 cm at its base and this narrows to 1.5 cm at pharyngo-esophageal junction which is narrowest part of digestive tract apart from the appendix.
- It is divided into 3 anatomic regions:
  - Nasopharynx
  - Oropharynx
  - Hypopharynx

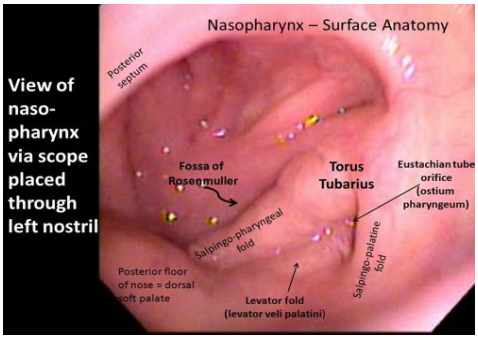


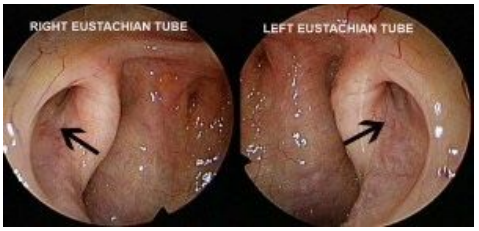
- **Structures of the pharyngeal wall:** (From within outwards it consists of four layers: Mucous membrane)
  - Pharyngeal aponeurosis
  - Muscular coat
  - Buccopharyngeal fascia
- **Waldeyer's Ring:** (lymphoid tissue)
  - Adenoids.
  - Palatine tonsil.
  - Lingual tonsils.
  - Tubal tonsils (in fossa of Rosenmuller; common site for nasopharyngeal carcinoma).
  - Lateral pharyngeal bands.
  - Nodules (in posterior pharyngeal wall) enlarge in case of allergy.



◄ Nasopharynx (Epipharynx):

- It lies behind the nasal cavities and extends from the base of skull to the soft palate or the level of the horizontal plane passing through the hard palate.
- It is lined by pseudostratified ciliated columnar epithelium
  - ➔ **Roof:** basisphenoid and basiocciput.
  - ➔ **Posterior:** prevertebral muscles and fascia. In case of cancer it will invades the muscles and skull.
  - ➔ **Floor:** soft palate.
  - ➔ **Anterior wall:** posterior choanae.
  - ➔ **Lateral wall:** ET.
- Opening of eustachian tube situated 1.25 cm behind the posterior end of inferior turbinate
- Above and behind the tubal elevation is a recess called fossa of Rosenmuller which is the commonest site for origin of carcinoma
- Cancers in the fossa of Rosenmuller can grow & compress the ET → ET obstruction → unilateral otitis media with effusion (so in cases of unilateral OM with effusion, especially in smokers, always rule out nasopharyngeal tumors by doing nasal endoscopy)

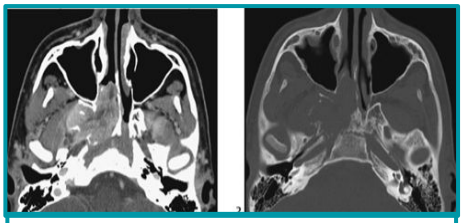




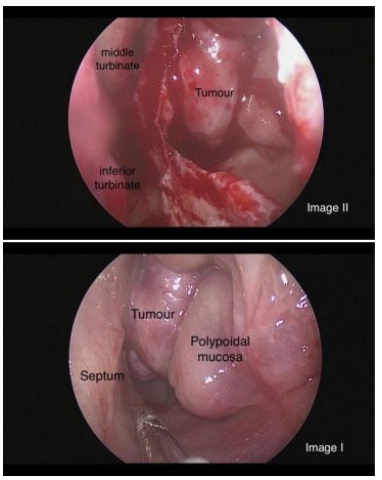
Pharynx

438 slides

• Nasopharyngeal Fibroma (Juvenile Nasopharyngeal angiofibroma):



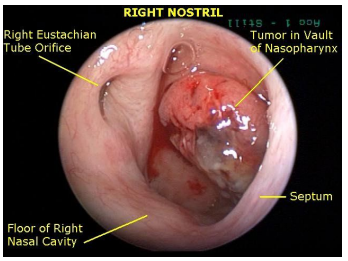
Bone destruction



➔ **Investigation:**
- Soft tissue lateral film of nasopharynx.
- X-rays of paranasal sinuses and base of skull.
- CT scan of the head **with contrast** (bc it is vascular) enhancement is now the investigation of choice.
- MRI (indicated if we suspect skull base involvement/intracranial extension).
- Carotid angiography.
- Biopsy Avoided (bleeding risk & difficult to perform).

➔ **Treatment:**
- **Surgical excision** is now the treatment of choice.
- Endoscopic (if small) vs open approach (if large and invasive).
- Pre op Embolization to reduce bleeding (24 - 48 hrs).
- Recurrence is possible.

• Nasopharyngeal malignant tumors:



- Chinese and asians are more prone than other ethnicities due to genetic predisposition.
- Associated with Epstein-Barr virus. Smoking and alcohol are also risk factors.

➔ **Pathology:**
- **Squamous cell carcinoma (most common).**
- Lymphomas.
- Rhab-domyosarcoma, malignant mixed salivary tumour or malignant chordoma.(rare)

➔ **Clinical features: neck mass + nasal obstruction = nasopharyngeal malignancy**
- **Nasal obstruction.**
- **Unilateral Otitis Media with Effusion.**
- Nearly all the cranial nerves may be involved when extension so examine them all.
- Jugular foramen syndrome.
- Cervical lymphadenopathy (most common) (60-90%) neck mass.

➔ **WHO CLASSIFICATION:** These types have also been correlated to titres of Epstein-Barr(EB) virus and also to response to radiotherapy.

➔ **Diagnosis:**
- Biopsy if non vascular.
- CT scan with contrast. (For any head & neck cancer)
- MRI (if expecting skull base invasion/intracranial extension).
- Bone scan (to rule out metastasis).
- TNM staging.

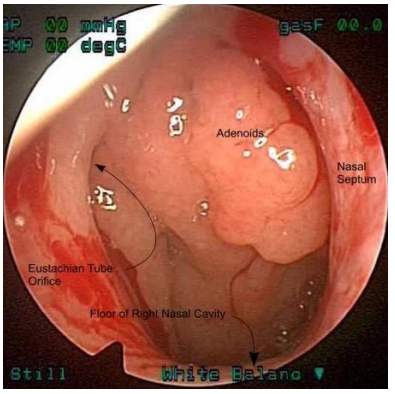
➔ **Treatment:** chemoradiation (main therapy, response very well), salvage surgery.

IMPORTANT: For elderly patients presenting with unilateral otitis media with effusion or unilateral conductive hearing loss, rule out nasopharyngeal cancer (examine nasopharynx to make sure no tumor is compressing ET) Alarming sign.

Pharynx

438 slides

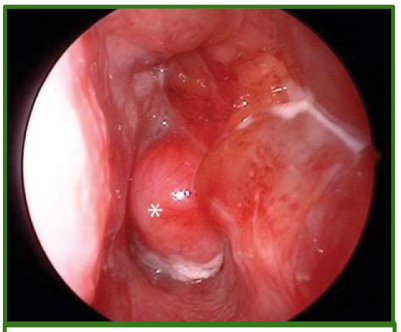
◀ Nasopharynx (Epipharynx):



- The most common presentation for nasopharyngeal cancer is a neck mass with unilateral otitis media with effusion)
- **Nasopharyngeal tonsil (adenoid):**
  - It is a subepithelial collection of lymphoid tissue.
  - It increases in size up to the age of 6 years and then gradually atrophies. May cause sleep apnea and snoring.
- **Lymphatic drainage:**
  - Drain into upper deep cervical nodes either directly or indirectly through retropharyngeal and parapharygeal lymph nodes.
  - They also drain into spinal accessory chain of the nodes in the posterior triangle of the neck.

● Nasopharyngeal Fibroma (Juvenile Nasopharyngeal angiofibroma):

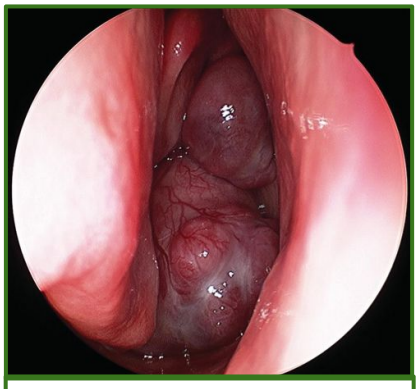
- It is a rare tumor, though it is the commonest of all benign tumors of nasopharynx.
- The exact cause is unknown.
- Adolescent males (doesn't come in females).
- Example Q: 15 year old male, presented with left recurrent epistaxis, what is the DDx? Juvenile nasopharyngeal angiofibroma.
- Such patients have a hamartomatrous nidus of vascular tissue in the nasopharynx and this is activated to form angiofibroma when male sex hormone appears. Theory; that's why in adolescents.



This is a surgical view in a pediatric patient. The adenoids look benign, lobulated & are not compressing the gradually atrophies eustachian tube)

➔ **Site of origin and growth:** Arise from the posterior part of nasal cavity close to the superior margin of sphenopalatine foramen.

➔ **Pathology:**
- Made up of vascular and fibrous tissues.
- Mostly, the vessels are just endothelium-lined spaces with no muscle coat → no muscle so no contraction to stop the bleeding causing heavy epistaxis.
- Extensions of nasopharyngeal Fibroma.
- **Benign.**
- **Locally invasive.** Even after treatment.



Vascular mass.

➔ **Clinical features:**
- Age and sex(male 10-20 years).
- Profuse and recurrent epistaxis (exam scenario).
- Progressive nasal obstruction and denasal speech.
- Conduction hearing loss and serous otitis media because ET is obstructed.
- Mass in the nasopharynx nasal cavity.
- Depend on the extent of tumour can disrupt adjacent structures.

Pharynx

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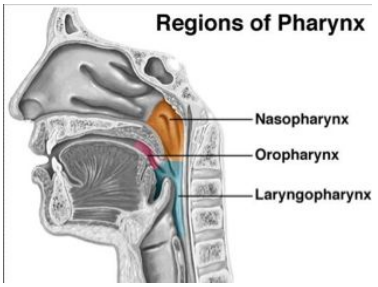
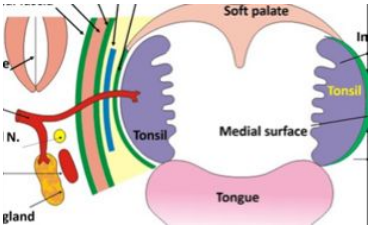
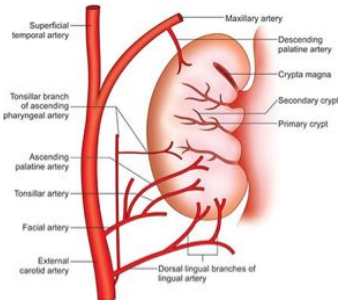
◀ Oropharynx:



- extends from the plane of hard palate above to the plane of hyoid bone.
- **Boundaries of oropharynx:**
  - It is related to retropharyngeal space and lies opposite the second and the upper part of the third cervical vertebrae.
    1. Base of tongue, posterior to circumvallate papillae.
    2. Lingual tonsils.
- **Palatine tonsil:**
  - are a collection of lymphoid tissue present in the submucosa of the oropharynx.
  - Located in the tonsillar fossa , one on each side.
  - Blood supply:
    - Tonsillar artery a branch of the facial artery.
    - External carotid.
    - Lingual artery.
    - Maxillary artery.
  - Lymphatic drainage: jugulodigastric lymph nodes.

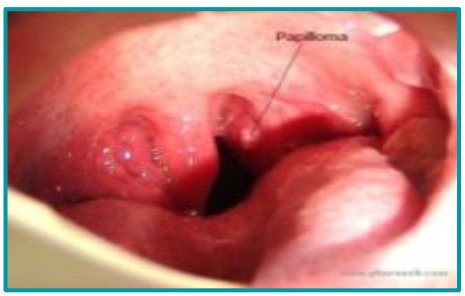


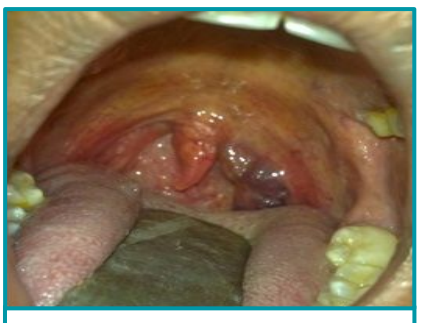


- **Boundaries of tonsillar fossa:**
  - Anterior: palatoglossal arch.
  - Posterior: palatopharyngeal arch.
  - Inferior: dorsal surface of posterior 1/3rd of the tongue.
  - Lateral: lateral wall of the oropharynx (superior constrictor muscle).

● Benign tumors of the oropharynx:

- Papilloma: (HPV) It is usually pedunculated, arises from the tonsil, soft palate or faucial pillars.
- Hemangioma (rare) CT scan 1st, biopsy only if possible.
- Pleomorphic Adenoma.
- Ddx of midline lingual mass: common Q
  - Thyroglossal duct cyst.
  - Lingual thyroid (ectopic thyroid, didn't descend) mostly.





Hemangioma

Malignant tumors of the oropharynx:

➔ **Common sites of malignancy in the oropharynx:**

- Posterior one third (or base) of tongue. Vague symptoms (dysphagia, abnormal sensation so diagnosed late)
- Tonsil and tonsillar fossa. Present with pain and ulcers so diagnosed early)
- Faucial palatine arch, soft palate and anterior pillar.
- Posterior and lateral pharyngeal wall.

➔ **Subsites in the oropharynx:**

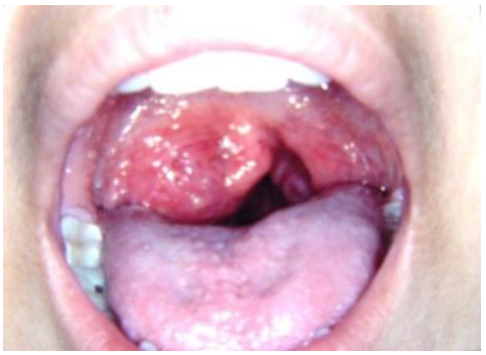
- Base of tongue.
- Tonsil, tonsillar fossa.
- Faucial arch.
- Pharyngeal wall.

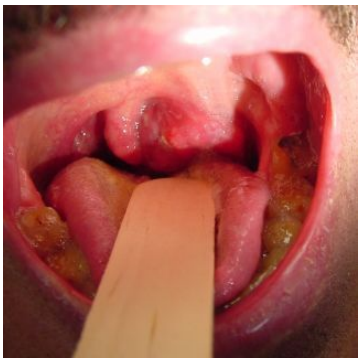
➔ **Histologically the tumor may be:**

- **Squamous cell carcinoma (the most common).**
- Lymphoepithclioma.
- Adenocarcinoma.
- Lymphomas.

Carcinoma tonsil and tonsillar fossa:

- Squamous cell carcinoma is the most common and presents as an ulcerated lesion with necrotic base.
- Lymphomas in the tonsils may present as unilateral tonsillar enlargement with or without ulceration and may simulate indolent peritonsillar abscess (where they present with sore throat + asymmetrical tonsils - so take a biopsy of asymmetrical tonsils).
- Peritonsillar abscess differ: all area is red not only the tonsil, uvula deviated, and acute symptoms.
- ulceration is more common in SCC.
- As if infection; but non respondent to Abx.



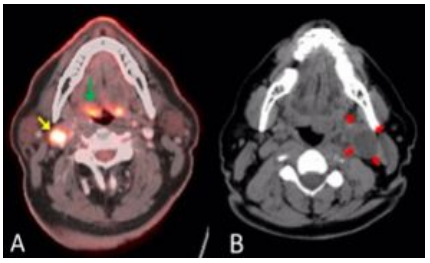


Pharynx

438 slides

● Carcinoma of posterior one-third or Base of tongue:

- The lesion remains asymptomatic for long time and patient presents when metastases in cervical nodes .
- Earlier symptoms (not clear symptoms) of sore-throat, feeling of lump in the throat (foreign body sensation)and slight discomfort on swallowing referred pain in the ear, dysphagia, bleeding from the mouth, and the change in the quality of speech. due to that, they usually present late/advanced stage.

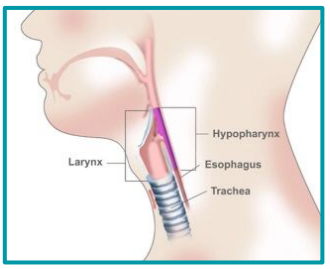


➔ **Diagnosis:**

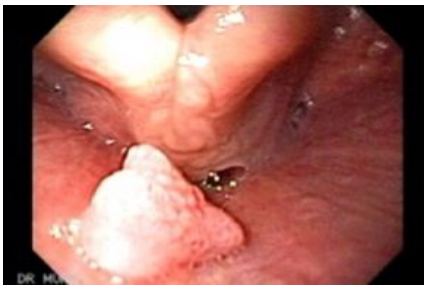
- Biopsy.
- CT scan with contrast.
- MRI.
- TNM staging. (Early stage single modality, late stage combined).

➔ **Treatment:** surgery, chemotherapy, radiotherapy, or combination.

◀ Hypopharynx:



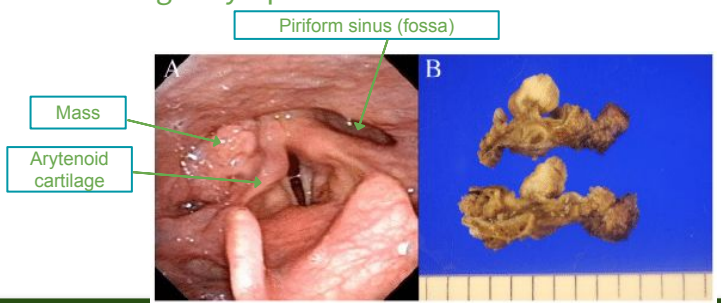
- Lowest part of the pharynx.
- Superior limit: the plane passing from the body of hyoid bone to the posterior pharyngeal wall.
- Inferior limit: lower border of the cricoid cartilage.
- **Subdivisions:**
  - Pyriform sinus (fossa).
  - Post-cricoid region.
  - Posterior pharyngeal wall.
- **Function:**
  - Common pathway for air and food.
  - Provides a vocal tract for resonance of certain speech sounds .
  - Helps in deglutition.

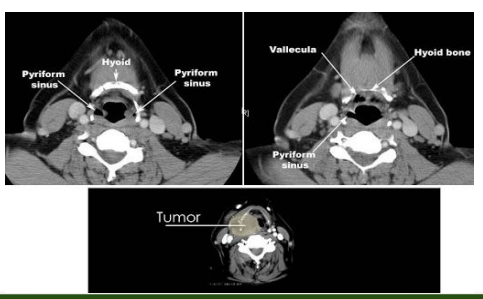


- Benign tumors of hypopharynx are uncommon.
- Malignant tumors involves various subsites:
  - Pyriform sinus.
  - Post-cricoid region (behind the cricoid).
  - Posterior pharyngeal wall.

● Carcinoma of pyriform sinus:

- Constitutes 60 % of all hypopharyngeal cancer.
- Mostly affecting males above 40 years of age.
- Metastatic neck nodes may be the first presentation they come late due to vague symptoms.

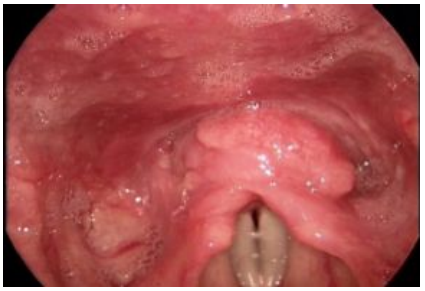




Pharynx

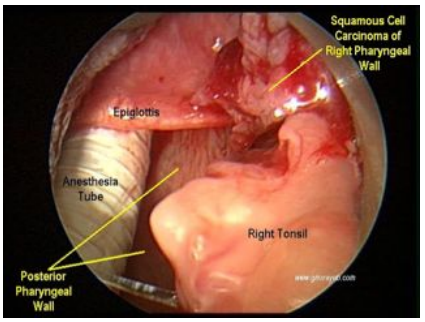
438 slides

Carcinoma of post-cricoid region:common Q



- 30% of hypopharyngeal cancer.
- Associated with Paterson-Brown-Kelly (**Plummer-Vinson**) syndrome characterized by hypochromic microcytic anemia.
- Young female with dysphagia and iron deficiency anemia (rule it out).
- Plummer Vinson Syndrome Triad:
  - Hypochromic microcytic anemia.
  - Young female.
  - Carcinoma of post cricoid region.

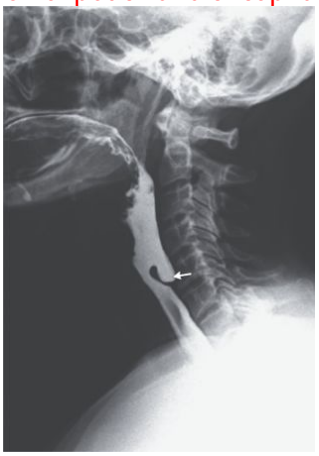
Carcinoma of posterior pharyngeal wall:

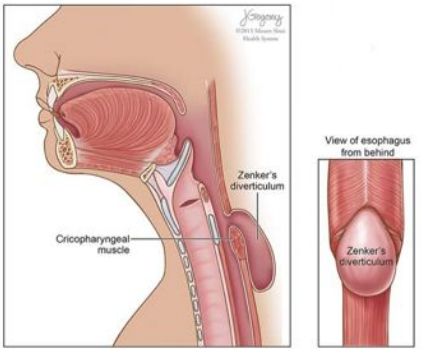


- Only 10% of hypopharyngeal cancer.
- Mostly seen in males above 50 years of age.
- Difficult to diagnose.

Pharyngeal Pouch:

- Zenker's diverticulum (common in exams).
- Pulsion diverticulum where pharyngeal mucosa herniates through the Killian's dehiscence.
- Killian's dehiscence is a weak area between two parts of the inferior constrictor. above cricopharyngeal muscle.
- Cause is unknown.
- Due to spasm of cricopharyngeal sphincter or its uncoordinated contractions during the act of deglutition.
- It is usually seen after 60 years of age.
- CF: dysphagia, regurgitation of undigested food.
- **Investigation of choice:** Barium swallow.
- Rx excision of pouch and cricopharyngeal myotomy.



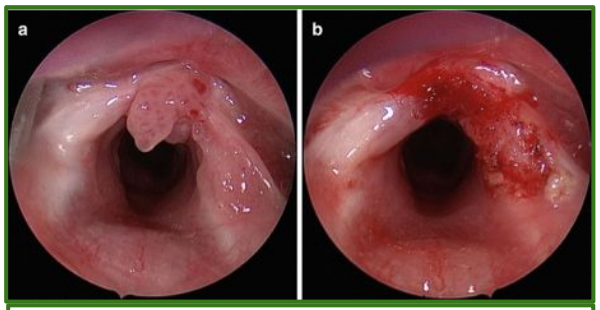


Larynx

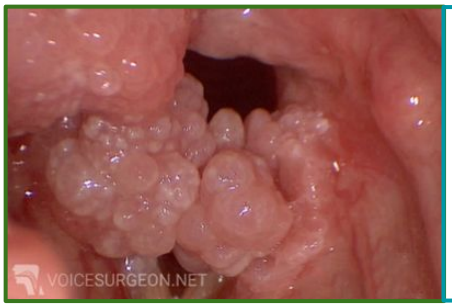
438 slides

◄ Recurrent respiratory papillomatosis: common Q

- Recurrent growth of small, benign tumors or papilloma in the respiratory tract.
- Human papillomavirus (types 6,11).
- Rare malignant, the types causing malignancy are (16,18).
- Juvenile onset (less than 3 years: more aggressive & needs surgical debulking every 2-3 months), adult onset.
- Treatment: surgical debulking, Cidofovir.
  - When we do surgical excision, we try to avoid leaving raw areas in order to prevent scarring & webbing between the vocal cords. Which results in hoarseness and airway obstruction .
- Avoid tracheostomy if possible because it might cause seeding in the skin or lower airway).



It is involving anterior commissure



Treatment of choice: Debulking; cause airway obstruction in severe cases +/- Adjuvant Antiviral injection. grape like lesion extend from nose to lungs

◄ Laryngeal cancer:

- Divided to: Supraglottic, glottic (common), or subglottic.
- Male > female.
- Risk factors: smoking, alcohol, radiation.
- Presented early.

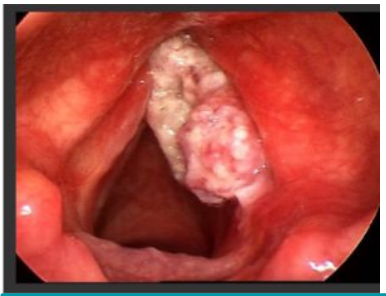
➔ **Diagnosis:**

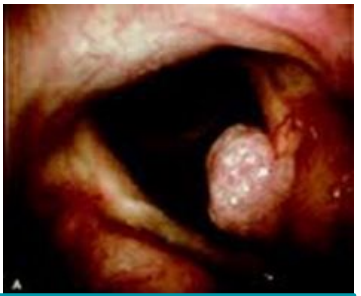
- History.
- Physical exam.
- CT and MRI.
- Biopsy.
- TNM staging.

➔ **Treatment:** surgery, chemotherapy, or radiotherapy (usually radiotherapy to preserve the voice and swallowing).

• Glottic cancer:

- Present early cause voice changes, we need to biopsy and order CT and MRI to rule out invasion to thyroid cartilage and gland





Aggressive fungating mass, extended

Summary of Mucosal cancers

Mentioned by 441 doctor

◀ Sinonasal Cancers

- DDx: **Squamous cell carcinoma**(most common), Adenoid cystic carcinoma
- Risk factors:chemicals, occupational
- Presentation: Unilateral nasal obstruction, epistaxis, unilateral ear pain in adult, neck mass
- Investigation: CT scan, Biopsy(not FNA), TNM classification
- Treatment:Surgery

◀ Oral cavity Cancers

- DDx: **Squamous cell carcinoma**(most common), Minor salivary gland carcinoma
- Risk factors:Smoking, Alcohol, HPV, Poor oral hygiene, frequent trauma (teeth biting due to bad angle teeth)
- Presentation: Mass, Tongue pain,pale tongue, ulcer, dysphagia
- Treatment: Surgery

◀ Pharynx Cancers

- DDx: **Squamous cell carcinoma**(most common)
- Risk factors:Smoking, Alcohol, HPV, GERD
- Presentation: Neck Mass,hoarseness of voice, dysphagia
- Treatment: nonsurgical (chemotherapy)

MCQ
Nasopharyngeal carcinoma is associated with EBV(Epstein Barr virus) +genetics
Oropharyngeal carcinoma is associated with HPV(human papillomavirus)

◀ Larynx Cancers

- DDx: **Squamous cell carcinoma**(most common)
- Risk factors:Smoking, Alcohol, HPV,GERD
- Presentation: Neck Mass,hoarseness of voice, dysphagia
- Treatment: nonsurgical (chemotherapy)

- Treatment summary for mucosal cancers based on TNM staging:
  - If it is early stage (stage 1 or 2) one treatment needed either **surgery** or **radiotherapy**
  - If it is late stage (stage 3 or 4) 2 simultaneous treatment, either **surgery with radiotherapy** or **radiotherapy and chemotherapy** (here we don't give radiotherapy alone)

- Whens should we do surgery or radiotherapy? Ans: based on cancer origin, if it is from the sinonasal or the oral cavity we do **surgery**, if it is from the pharynx or larynx we do **radiotherapy**

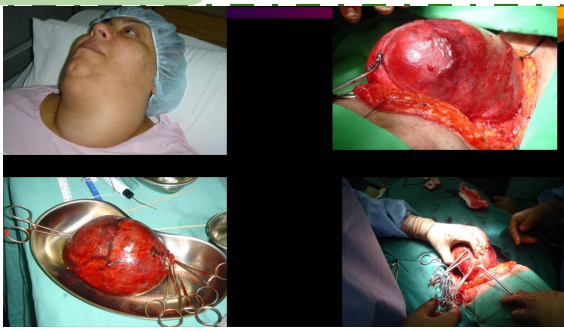
Note: in late stage treatment we neither give chemotherapy alone nor with surgery

- **QDOC:** if I asked in what are the treatment options you should answer with both type of treatments (SAQ)
  If I asked you what is the best type of treatment you answer with one treatment based on its origin.

Cases from PROF.Khalid slides

Mentioned by 441 doctor

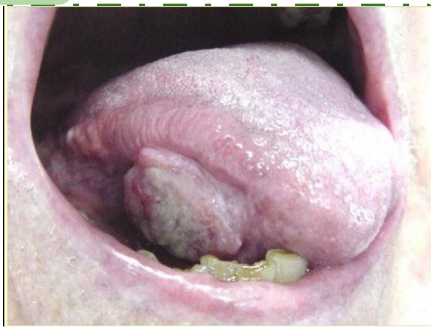
Case 1



- What is abnormal? Neck mass
- What is your DDx? Papillary thyroid carcinoma, follicular thyroid Carcinoma, hurthle cell carcinoma
- What is the most likely Dx? Papillary thyroid carcinoma
- work up > US followed by CT followed by FNA (in the end we find benign Thyroid mass)
- Management ? should we surgery?
  If one of the following indications is met we do surgery:

1. Suspicion of malignancy
2. Cosmosis
3. Compression symptoms
4. Uncontrolled hyperthyroidism
5. Patient wishes

Case 2

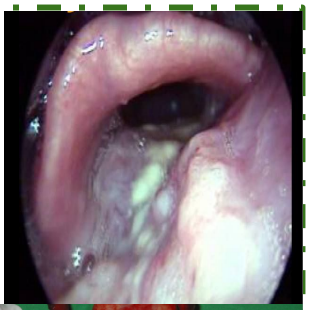


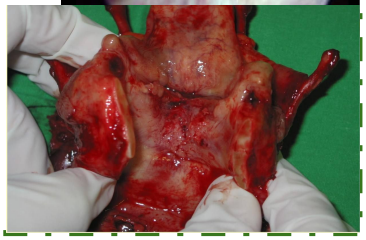
- What is abnormal? Mass in the under the tongue (due to teeth sharp edges)
- What is your DDx? SCC (squamous cell carcinoma)
- What is the most likely Dx? SCC (squamous cell carcinoma)
- work up? CT followed by biopsy then (CT chest or abdomen or PET scan to find TNM staging)
- Management?
  first we stage with ct
  if early stage we treat it with surgery (or radiotherapy)
  if late stage we treat it surgery and radiotherapy (or radiotherapy and chemotherapy)

Case 3

65 y old
C/O : hoarseness X 10 Months
Heavy smoker-2p/day X 40 years
O/E : – hoarse voice – Mild stridor – Neck mass 5X4 cm

Doctor: assume SCC at the larynx TNM stage 3, what's the treatment?
answer : radiotherapy with chemotherapy



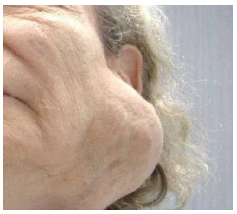


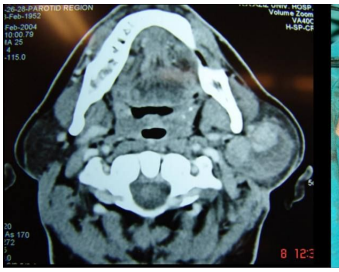
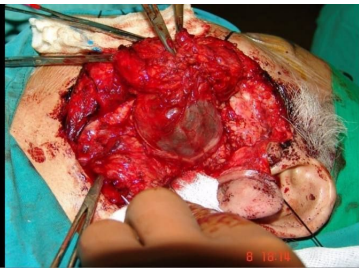
Cases from PROF.Khalid slides

Mentioned by 441 doctor

Case 4

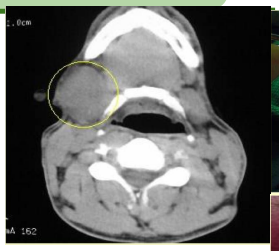
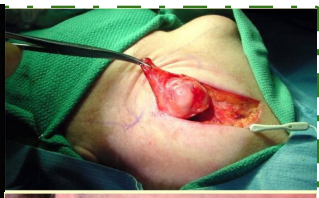
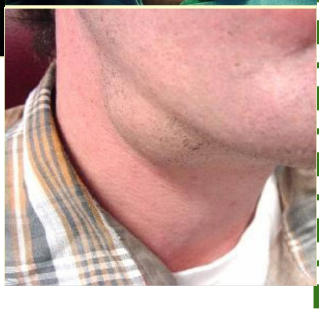
- What is abnormal? Mass at parotid gland
- What is your DDx? Mucoepidermoid carcinoma, adenoid cystic carcinoma
- What is the most likely Dx? Mucoepidermoid carcinoma
- Work up ? CT then FNA
- What are the areas you should examine? Skipped by doc
- Management? Total removal of salivary gland + neck dissection + radiotherapy
- Can we leave it? Skipped by doc



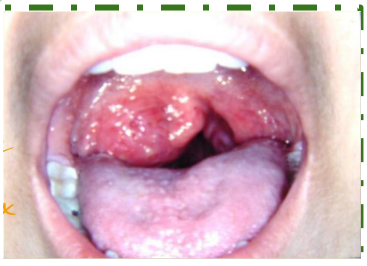
Case 5

- What is abnormal? Neck mass at level 2
- What is your DDx? Branchial cyst
- What is the most likely Dx? Branchial cyst
- work up CT
- Management skipped by doc

Case 6

- What is abnormal? Asymmetrical tonsils
- What is your DDx? SCC (squamous cell carcinoma), Minor salivary gland carcinoma
- What is the most likely Dx? SCC (squamous cell carcinoma)
- work up
- Management? Considered as part of the pharynx, if it is an early stage tumor we Treat it with radiotherapy



Prof.Khalid notes

Mentioned by 441 doctor

- Anatomy of neck: neck level boundaries
  - Level 1 : between the 2 bellies of digastric muscle and mandible-> submandibular glands
  - Level 2,3,4 are over the carotid sheath
  - Lv 2 skull base to hyoid bone
  - Lv 3 hyoid to omohyoid
  - Lv 4 omohyoid to clavicle
  - IMP:Lv 5 (pos triangle) or area between traps, clavicle, sternocleidomastoid.
  - What is the most common congenital anomaly at lv 5? Ans: cystic hygroma
  - Give 3 Cancers at lv 5? Nasopharynx, thyroid metastasis and Lymphoma
  - Lv 6 paratracheal, paraesophageal (not important)

==========

Examination of head and neck
We check 8 areas:
1. Face
2. Parotid
3. Oral cavity

The rest 5 you examine with scope (nose, nasopharynx, oropharynx, hypopharynx, larynx)
And
Neck(6 levels with medline)

- Why we do all this ?

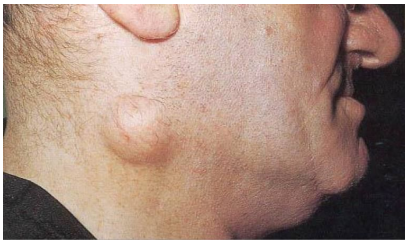
1. Complete neck exam
2. You may find another finding (e.x., synchronous tumors)
3. Find primary mass

- In head and neck ultrasound used in 3 cases

1. Pediatric age group
2. Pregnancy
3. Thyroid mass

A lv 3 mass with a duration of 1 month in 50yr old pt with smoking history, what is the choices of investigation can help us in the case?
Investigation ct with contrast then FNA

70yr male presented with a mass for 4 years
Check Pic ----------->
What is the level of the mass? Lv 2
Ddx sebaceous cyst



7yr old child came with 1 week painful neck mass and inflammation
Ddx acute lymphadenitis

What is the Most common organism
Staph aureus

Treatment: penicillin

What is the treatment for Thyroglossal cyst?
sistrunk procedure (Removal of the mass from of the hyoid bone)

Prof.Khalid notes

Mentioned by 441 doctor

- In suspicious(flus) thyroid mass/nodule, What is the management? For the exam answer with diagnostic hemithyroidectomy

- Indication for surgery:

Suspicion of malignancy
Cosmosis
Compression symptoms
Uncontrolled hyperthyroidism
Patient wishes

- Well differentiated thyroid tumors treatment:
  - Total thyroidectomy
  - Iodine 131

- Poorly diff (medullary) treatment:
  - Total thyroidectomy + lymphadenectomy

Note: anaplastic type has no treatment

- Complication of thyroidectomy IMP IMP
  - 1. Hypothyroidism
  - 2. Hematoma
  - 3. If one side of thyroid was taken> hoarseness , if both sides > stridor
  - 4. Hypocalcemia

====
(notes here are almost similar to what was shown in salivary gland part)
Salivary glands

- Types:
  - Major (parotid, submandibular, sublingual)
  - Minor

- Location of glands: Parotid in preauricular area
- What nerve go through it? Facial nerve (know its 5 branches)
- Relation to Muscles : Masseter muscle above it
- Stensen's duct opens at lateral side of the mouth Upper second molar

- What is the most commonly injured nerve ?
  - If surgery > marginal mandibular nerve then lingual nerve then hypoglossal nerve
  - If trauma > buccal (usually affected with the duct)

- What is the most commonly affected salivary gland with infection? Parotid gland

---
Submandibular

- Location is at lv1
- Name of duct? wharton's duct
- Muscles around it: Belly of digastric muscle and Mylohyoid
- Type of secretion? Thick Mucus secretion

- What are the Causes of wharton's duct obstruction? Alkaline and Viscous saliva.Increased Ca and Phos., Angulation of the duct at Mylohyoid ,Vertical orientation at the distal segment.
- What is the most common benign salivary gland mass? Pleomorphic adenoma
- The most common malignant salivary glands mass? All glands Adenoid cystic carcinoma (except for parotid it is mucoepidermoid)
- Adenoid cystic carcinoma treatment: Total removal of salivary gland + neck dissection + radiotherapy

May come in exam: Frey's syndrome(gustatory sweating) (definition: Aberrant reinnervation of postganglionic parasympathetic nerves to the sweat glands of the face)
Diagnosis: Minor's starch iodine test (if the test is +ve it will shoe dark blue discoloration)

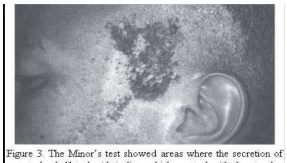


Figure 3. The Minor's test showed areas where the secretion of sweat gland diluted with iodine, which reacted with the starch.

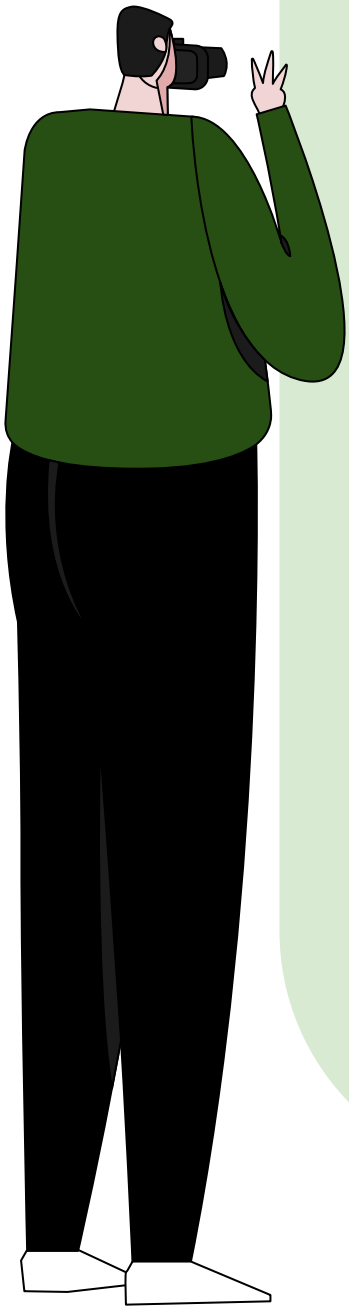
BOX 61-13
TREATMENT OF GUSTATORY SWEATING

Nonsurgical
- Topical glycopyrrolate
- Topical antiperspirant

Botox injection

Surgical
- Fat grafting
- Dermal grafting
- Temporalis fascia interposition flap
- Sternocleidomastoid interposition flap
- Tympanic neurectomy

THANK YOU!



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Special Thanks to

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