

Neck mass Evaluation & Management

MOHAMMED ALESSA MBBS, FRCSC

ASSISTANT PROFESSOR

CONSULTANT

OTOLARYNGOLOGY , HEAD & NECK SURGICAL ONCOLOGY

KSU , MEDICAL CITY & KCUH

Objectives

Obtain map overview in neck surgical anatomy .

Differential diagnosis of adult neck mass .

Differential diagnosis of pediatric neck mass .

Work up of a patient with neck mass

Management

Neck Surgical Anatomy

Anterior triangle

- Common carotid artery (its branches),
- Cranial nerves (VII,X,XI,XII) , Sympathic chain,
- Lymph nodes,
- Organs :



Pharynx , Esophagus



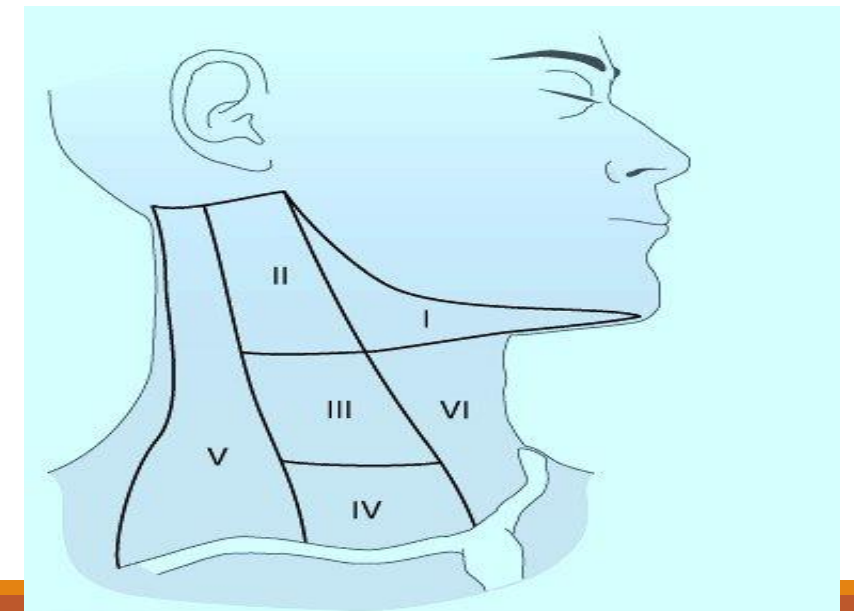
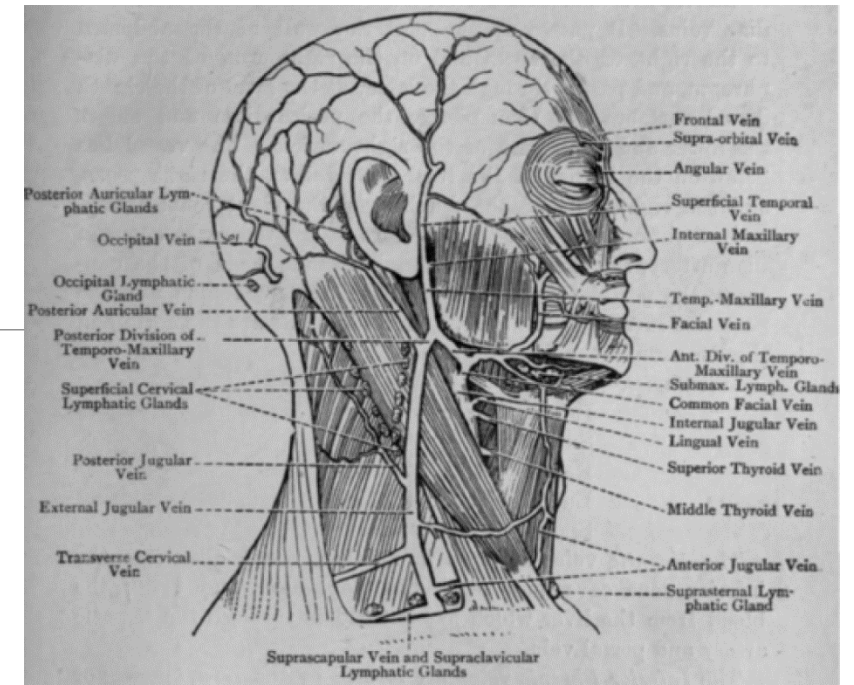
Larynx , Trachea



Thyroid gland

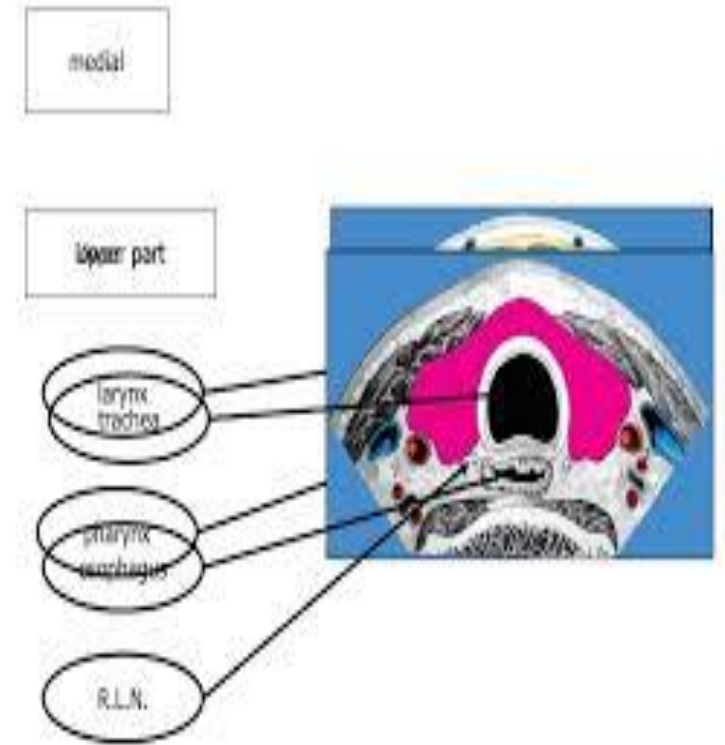
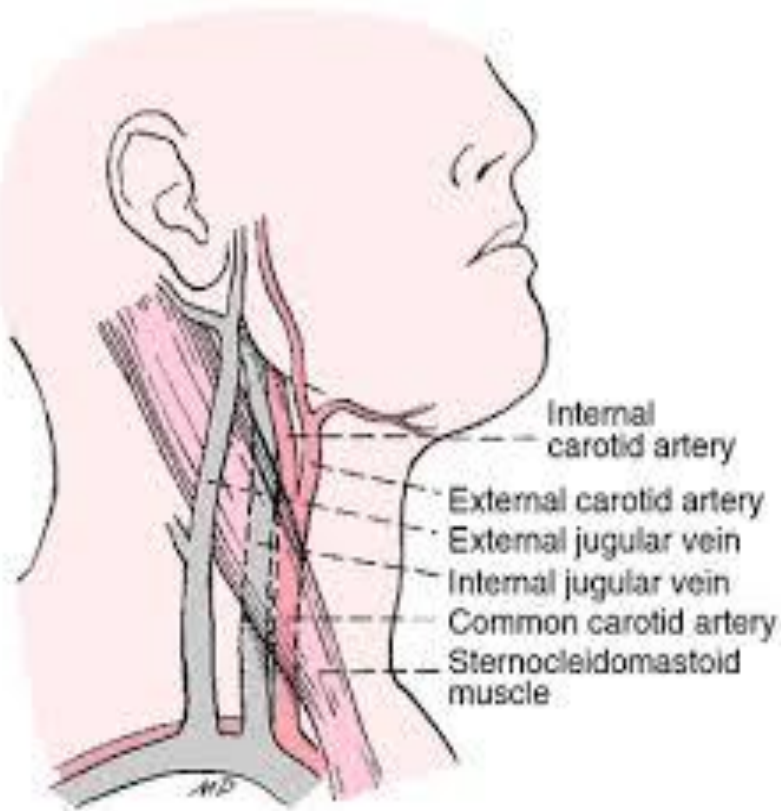


Salivary glands



Neck Surgical Anatomy

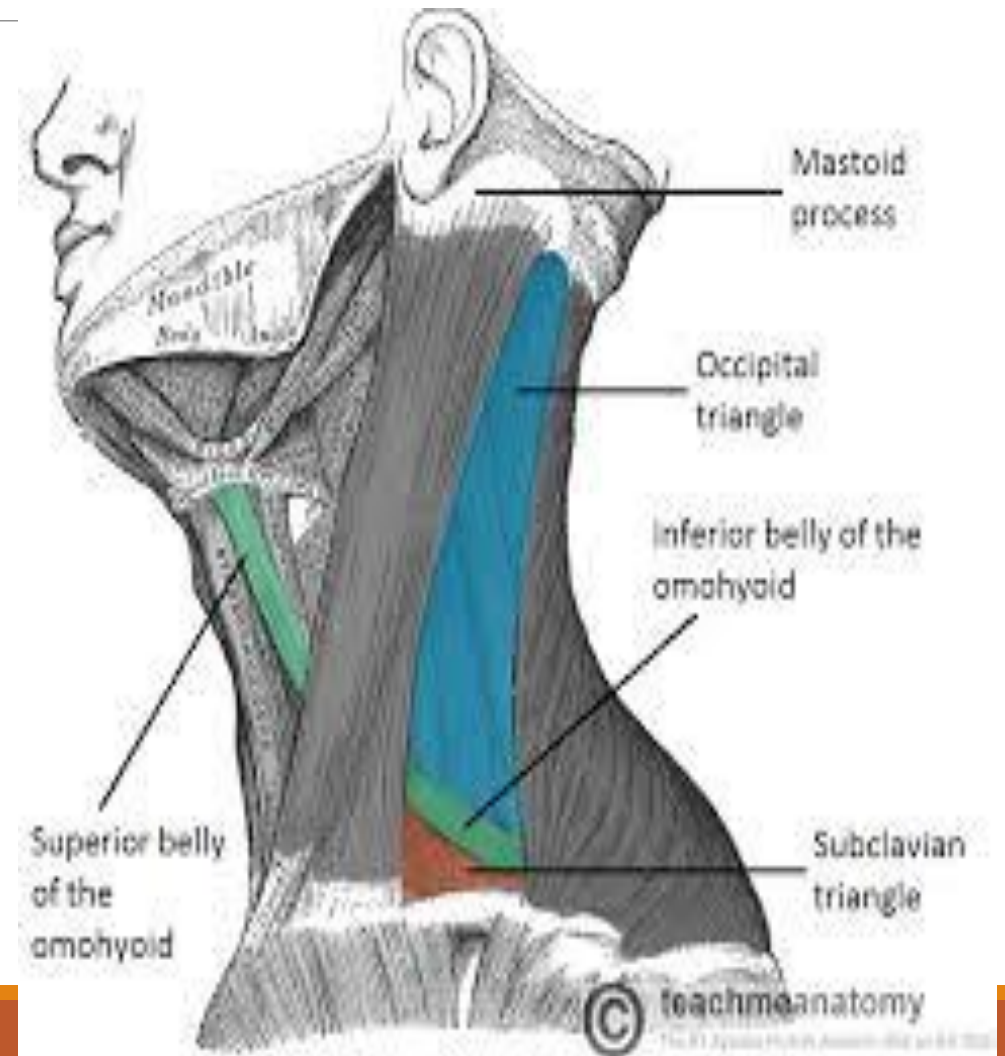
Anterior triangle



Neck surgical anatomy

Posterior triangle:

- Subclavian A&V , branches,
- Nerves : CN (XI), phrenic N , Brachial plexus,
- Lymph nodes



Differential DX Neck mass

Neoplastic

➤ Carcinoma (CA)

- Squamous (SCC)
- Adeno

Lymphoma

Metastatic CA

- oral cavity , pharynx
- Thyroid
- Salivary gland
- osseous lesion (amelobalstoma)
- Infracalvicular

Inflammatory/ Infectious

Granulomatous dis

Bacterial

viral

Congenital

Thyroglossal duct cyst

Branchial cyst

Ranula

vascular malformation

Teratoma

Layngocele

Adult neck mass work up

- Obtain a thorough **History** might narrow DDX spectrum etiologies ,
- Neck , ear , nasal , oral & **pharyngeal examination** will provide site localization ,
- Get a DDX list ,
- Order **Laboratory** investigations based on DDX priority list,
- Order **Radiological** investigations based on DDX priority list .



Neck mass work up , History

	Congenital	Infectious	Neoplastic
Pain	Rare	Common	Rare
Duration	Long	Short	Long
Constitutional symptoms	None	Fever ,	Weight loss , Loss of appetite

Neck mass work up , physical examination

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

Radiology & laboratories

- U/S,
- Computed tomography (CT scan with contrast),
- Magnetic resonance imaging (MRI) ,
- Positron emission tomography (PET),
- Fine needle aspiration cytology (FNA),
- Open biopsy (remember indications).

Radiology

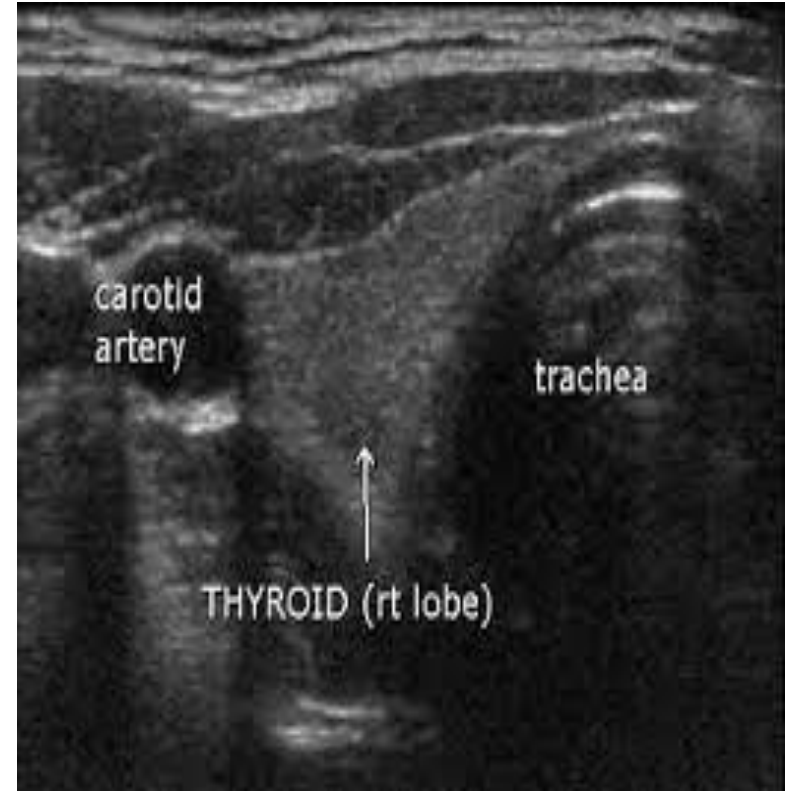
US

Advantages :

- Availability & affordability ,
- Safety ,
- Non invasive
- Consistency

Disadvantages :

- Operator dependent ,
- Anatomical assessment,
- Soft tissue & osseous details I.e. trachea , esophagus



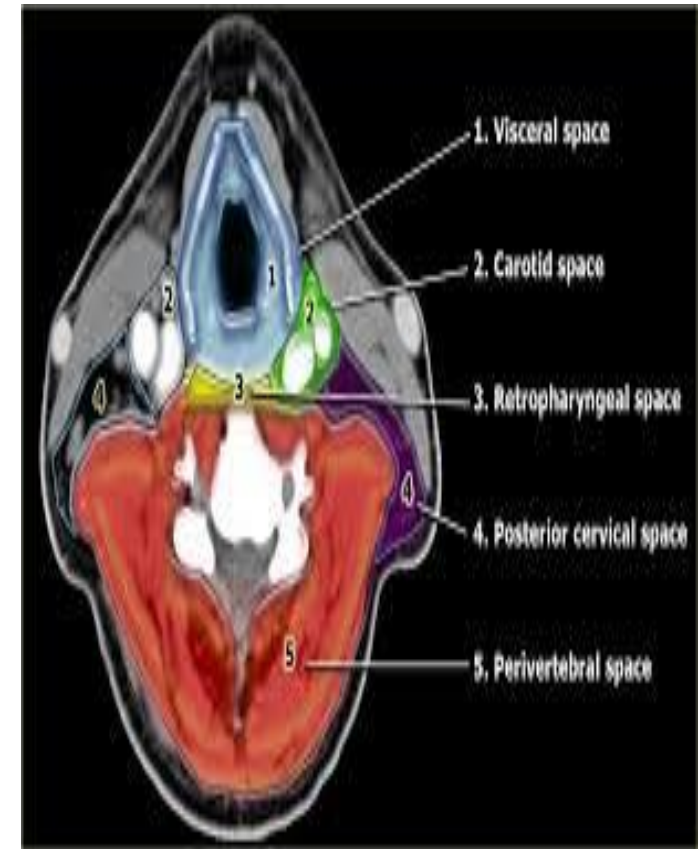
Radiology CT Scan

Advantages :

- Static ,
- Anatomical assessment ,
- Osseous assessment,
- Soft tissue details (contrast).

Disadvantages :

- Affordability,
- Safety
 - pregnancy
 - childhood
 - contrast allergy & anaphylaxis



Radiology

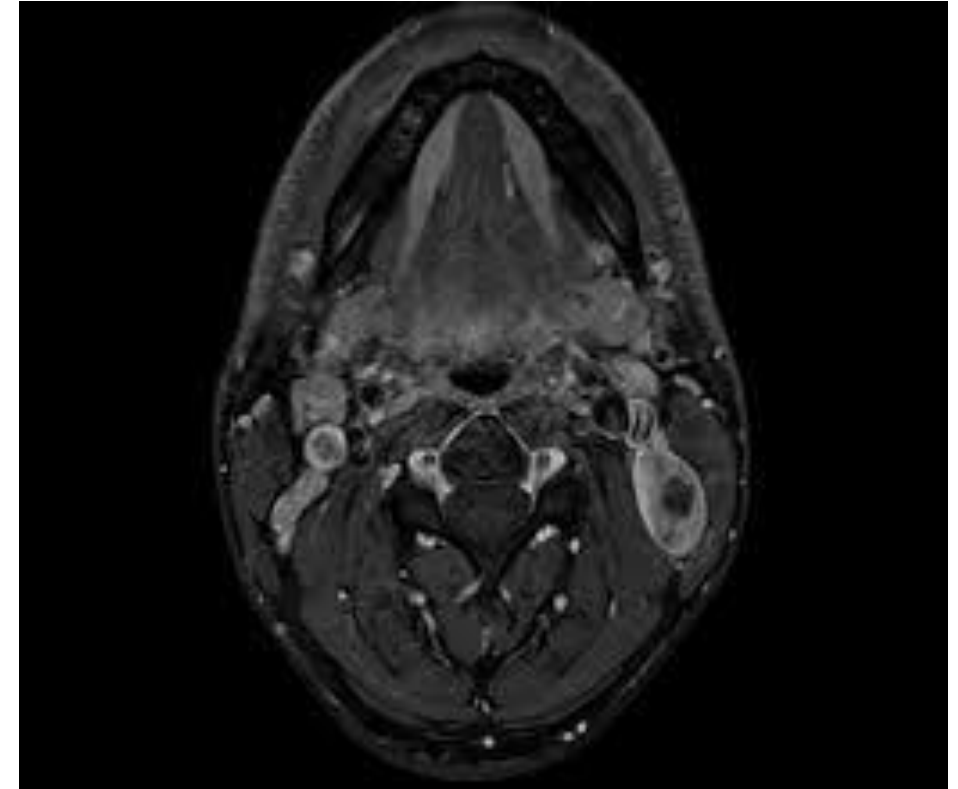
MRI

Advantages :

- Safety (pregnancy)
- Non invasive ,
- Soft tissue assessment,
- Skull base (perineural invasion)

Disadvantages :

- Magnetic
- Affordability
- Age limitation , (sedation)



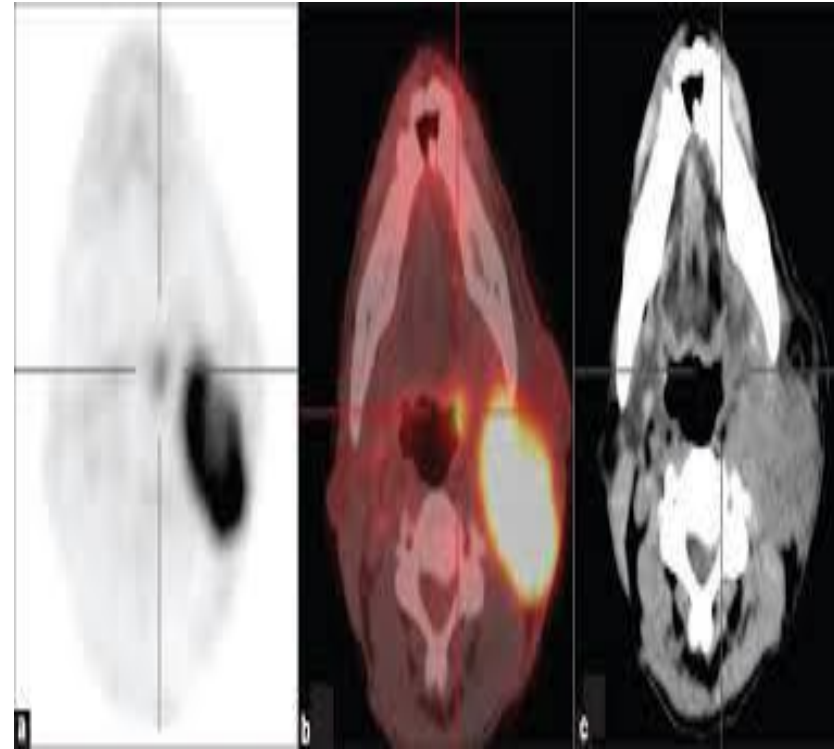
Radiology

PET

- Nuclear medicine
- (functional imaging)
- FDG uptake,
- Integrated with anatomical studies.

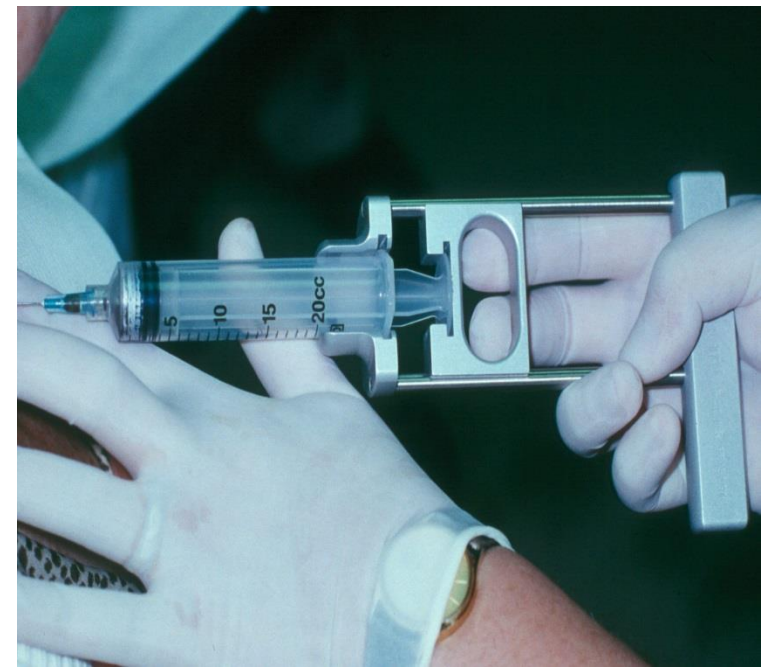
Indications :

- Staging & surveillance (malignancy)
- Role in unknown primary
- Head & Neck neoplasm .



FNA

- Minimum : 3-4 passes,
- Skillful cytotechnician & cytopathologist on site .
- Indication US guided FNA:
 - Non diagnostic conventional FNA
 - Non palpable masses
 - > 50% cystic content .



Open neck biopsy

Avoid it in HNSCC

Indication :

- 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

Differential DX Neck mass

Neoplastic

➤ Carcinoma (CA)

- Squamous (SCC)
- Adeno

Lymphoma

Metastatic CA

- oral cavity , pharynx
- Thyroid
- Salivary gland
- Infracalvicular

Inflammatory/ Infectious

Granulomatous dis

Bacterial

viral

Congenital

Thyroglossal duct cyst

Branchial cyst

Ranula

vascular malformation

Teratoma

Layngocele

Neck mass salivary glands

- Parotid gland
- Submandibular gland
- Sublingual gland
- Minor salivary gland (oropharynx , nasal cavity)

Salivary gland : Sialolithiasis

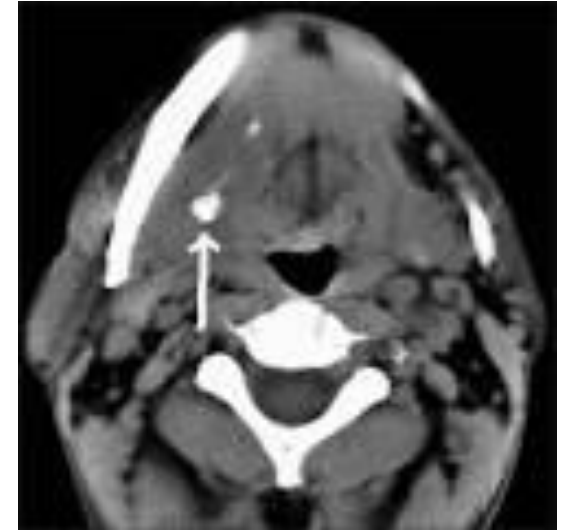
- Submandibular gland
(most common)
- Recurrent painful swelling
- Aggravated by eating

Dx:

- CT scan neck

Management:

- Treat underlying infection
- Sialoendoscopy & lithotripsy &
stone removal
- Submandibular gland excision



Salivary gland: Neoplasm

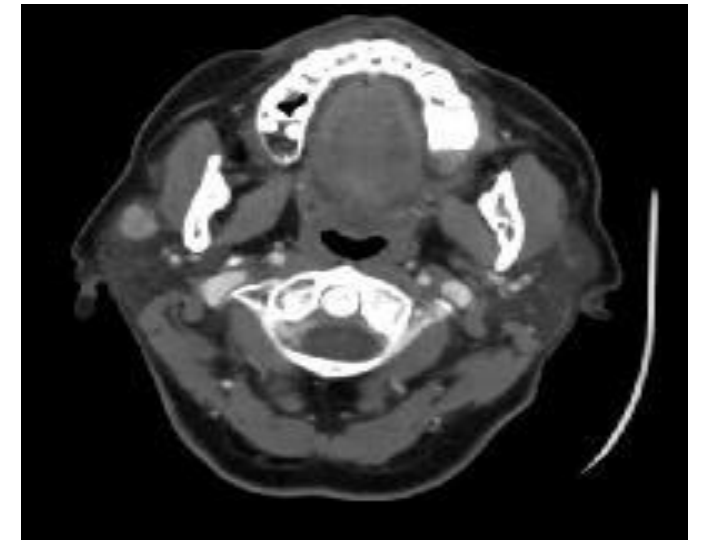
- 80% parotid gland
- 80% benign
- 80% polymorphic adenoma
- Slowly painless enlarging mass

Dx:

- CT neck with contrast
- MRI with contrast
- FNAC

Management:

- Excision
 - ✓ Superficial parotidectomy
 - ✓ Submandibular gland excision



Salivary gland: malignant neoplasm

- Rapidly enlarging mass
- Pain
- Fixation into adjacent structures
- Lymphadenopathy
- Facial nerve paralysis

Dx:

- CT ,MRI neck with contrast
- FNA
- True cut biopsy

Management

- Total parotidectomy
- +/- facial nerve resection



Osseous neoplasm Ameloblastoma

- benign neoplasm of uncertain origin
- locally invasive
- Age : 3-4 decades
- Mandible (most common)
- Painless , slowly growing
(facial asymmetry)

Dx:

- Panorex
- MRI mandible
- Incisional biopsy

Management:

- Wide local excision with 1 cm margin
- Immediate reconstruction)



Case scenario

55 year old male .

Neck mass .

How would it be approached ?



Case scenario

Painless slowly enlarging over 2-3 month with dysphagia & 10 pound/weight loss .

No other lymphadenopathy

Normal Cranial nerve .

Level II lymph node 3-4 cm , hard

What further examination mandated ?

Case scenario

Flexible nasopharyngoscopy.

CT neck with contrast

FNA : Squamous cell CA (SCC)

What is next point in investigations ?

case scenario

unknown primary Head & Neck SCC (HNSCC)

Quadrascopy

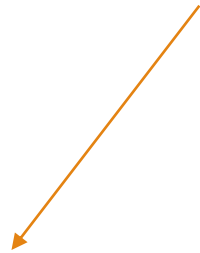
- Esophagoscopy
- Laryngoscopy
- Pharyngoscopy (EAU Nasopharynx & ipsilateral tonsillectomy)
- Bronchoscopy

PET/CT scan helpful in these cases .

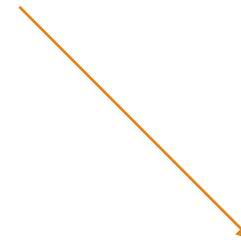
HNSCC

SCC
Primary

known



Unknown



Treatment :
Based on primary sub site:
I.e.
Oropharynx < Radiation therapy
(XRT) to primary and neck >

Radical neck dissection +/- XRT
Or
XRT + Chemotherapy

Case scenario

- 2 attempts FNA : Nondiagnostic .

- What is your next line in management ?

- Open biopsy

- Granuloma  TB , Sarcoidosis

- Inflammatory process or abscess  G stain , culture

Congenital Neck masses

Age : **Neonate**

Prenatal : polyhydramnios .

Antenatal : airway obstruction

Dx : Teratoma

Management :

- Multidisciplinary team approach .
- EXIT procedure
- Secure airway (intubation & tracheostomy)
- Surgical resection



Congenital Neck mass

Age : child or adulthood

Midline neck mass , sinus (URT

Dx:

U/S neck :

- Identify Thyroid gland in its anatomical location .

Dx: Thyroglossal duct cyst

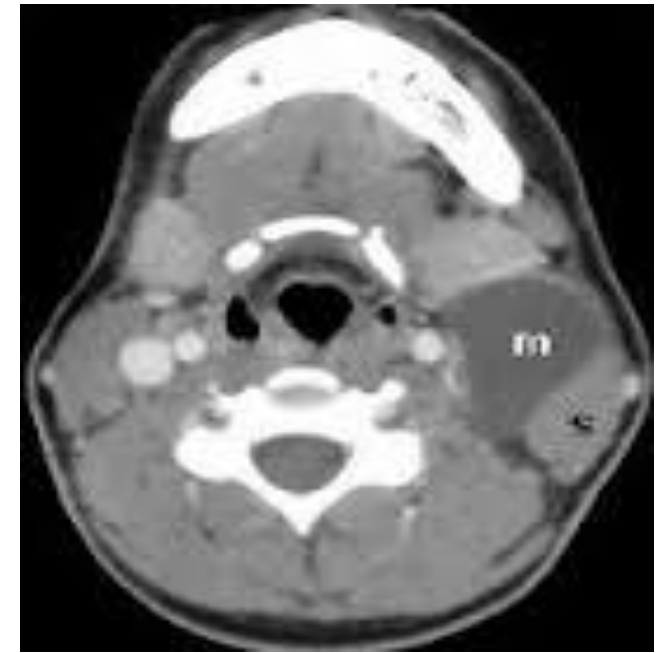
Management :

- Sistrunk procedure



Branchial anomalies

- Age : child, adulthood
- Lateral neck mass , sinus (URTI)
- Dx:
 - U/S , CT scan confirm findings
 - FNA (adult) , R/O metastasis SCC
- Management :
 - Excision (stepladder)



plunging ranula

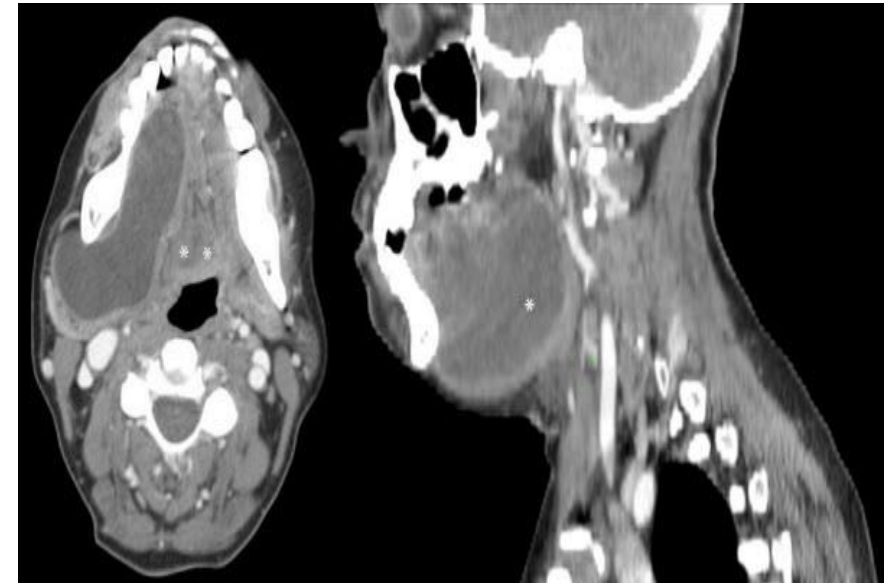
- Mucocele (floor of mouth)
- Age : children more common
- Midline neck mass (submental area)
- Floor of mouth mass (compressible)

Dx:

- CT ,MRI neck

Management :

- Excision of mucocele & sublingual gland (trans oral)
- Marsupialization



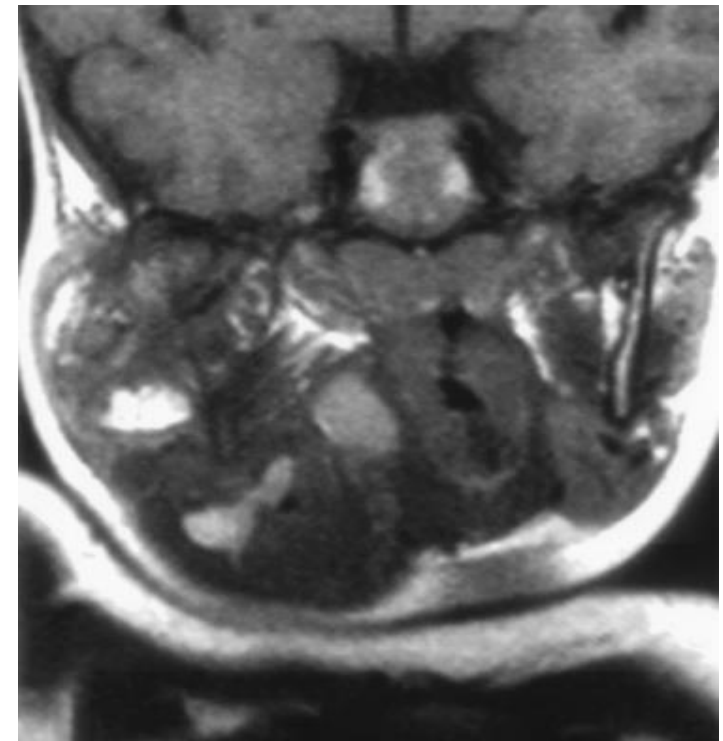
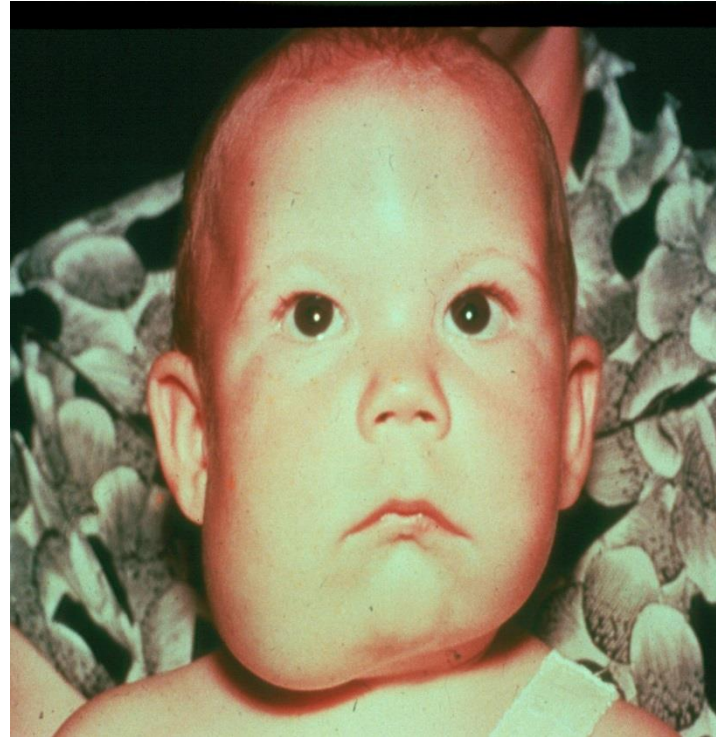
Vascular malformation Hemangioma

- Age : Infant (6 month)
- Neck mass , skin discoloration
- Dx:
 - MRI Neck with contrast .
- Management :
 - Reassurance (resolve spontaneously)
 - Medical Rx systemic steroid
laser therapy ,surgical resection
 - Aerodigestive symptomatology
 - Vision loss
 - Cosmesis



lymphangioma

- Age : newborn
- Lateral or midline neck mass
- Dx:
 - MRI neck with contrast
(low flow)
- Management :
 - Sclerotherapy
 - Surgical resection



Neck mass/infectious Ludwig's angina

- Age : adult
- Recent odontogenic infection,
- **Rapidly progressing submental & floor of mouth swelling**
- Acute airway obstruction

Dx:

- Clinical exam
- CT scan neck (contrast)

Management :

- Secure airway , tracheotomy
- Abscess Incision & drainage
- dentistry consult
- Systemic Abx



Infectious cat scratch disease

- Age : Childhood
- HX of Cat exposure
- Cutaneous lesion ,
- Cervical lymphadenopathy
 - tender \longrightarrow painless
- Fistula

Dx :

- Cat scratch Ag
- C/S : G -ve intracellular bacillus

(**Warthin Starry stain**)

- Pathology : granuloma &
micro abscess



Infectious cat scratch disease

Management :

- Reassurance
- Aspiration
- Avoid Incision /drainage

Atypical mycobacterium

- Age : childhood , unlikely adult.
- HX of **foreign travel** , **immunocompromised**
- Corneal ulceration
- Unilateral cervical adenopathy
(skin adherent)

Dx :

- AFB stain (2-4 weeks)
- PCR
- PPD (often not helpful)
- Pathology : granuloma

Management :

- Complete excision (Neck dissection)
- Avoid incision & drainage
- Antimicrobial resistance .



Neck mass/infectious

	atypical mycobacterium M.Avium M.scrofulaceum M.Intracellulare	Typical mycobacterium M.Tuberculosis
<u>Age</u>	Children	Elderly
<u>Patient characteristics</u>	<ul style="list-style-type: none"> ▪ Foreign travel ▪ Immunocompromised 	<ul style="list-style-type: none"> ▪ HIV (immunocompromised) ▪ Poor socioeconomics ▪ Immigrant
<u>Pulmonary & systemic involvement</u>	Rare	Common
<u>Cervical lymphadenopathy</u>	<ul style="list-style-type: none"> ▪ Unilateral ▪ Anterior triangle ▪ Tender 	<ul style="list-style-type: none"> ▪ Bilateral ▪ Ant & posterior triangle ▪ Non tender
<u>Management</u>	Excision (Neck dissection)	Antimicrobial

Neck mass

Kawasaki syndrome

- Age : childhood
- Fever , rash , conjunctivitis ,
- dry red lip & Strawberry tongue
- Cervical lymphadenopathy
- Pathophysiology : vasculitis
- Complication : Acute MI

Dx

- CBC : Thrombocytosis
- ESR : ↑
- Echocardiography :
coronary aneurysm.

Managment :

- γ globulin
- Aspirin



Lipoma

- Age : adult
- Painless , soft neck mass

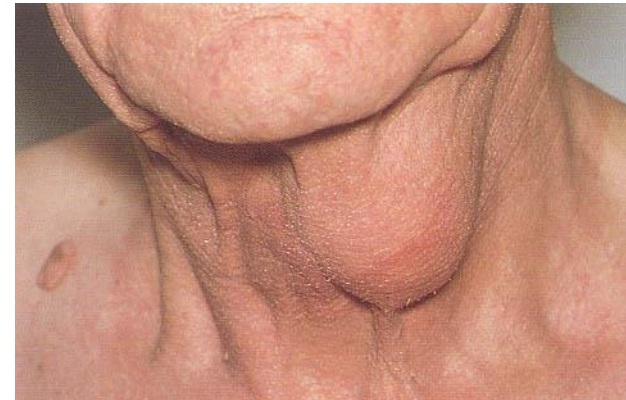
Dx:

- CT scan

(clinical exam is adequate)

Management :

- Excision
- Observation



Conclusion

In Dental /OMFS practice neck mass usually from infection etiology .

Most of time due to odontogenic source .

Trial of systemic Antibiotics for 2 weeks .

Referral to Head & Neck surgeon

- If no response to medical therapy.
- Concern about airway obstruction.

<http://fac.ksu.edu.sa/malessa/home>

Thank you

