Differential Diagnosis of Neck Swellings

1) Anterior neck lump moving with deglutition & tongue protrusion

	Suggested by	Confirmed by	Initial management
1- Ectopic thyroid tissue	**Solid lump** at any point of the course thyroglossal tract.	- **US scan** shows non-cystic lesion,**(mainly)** -**radioisotope scan:** nodule taking up iodine **CT scan,** **histology** of excised tissue.	It's the only source of thyroid tissue in body , so **managed conservative** : - Medical TTT by L-thyroxine → to decease its size
2- Thyroglossal cyst	**Cystic lump** , fluctuant, in midline or just to the left, (commonly subhyoid in midline)	- **US scan** shows cystic lesion, **(mainly)** - **radioisotope scan**: cyst is cold **CT scan,** **histology** of excised tissue.	**Surgical management: "sistrunk op."** **Excision of the cyst, track and central part of hyoid bone** (due to its different relation with it, can't differentiate above, center or below it)

- Very important to differentiate between both types, because each has a different management
- Both are deep to the fascia, so their consistency is similar (firm) → diagnosed by **U/S.**

2) Neck lump moving with deglutition but not with tongue protrusion → Thyroid swelling

1- Ask about **" toxic manifestations " .**
2- If no toxic manifestations → ask about **" Symptoms suggesting malignant invasion ".**
3- If no → the patient is non-toxic, non-malignant →**Simple goiter :** ask about **" Pressure symptoms – Dysphagia & Dyspnea " :**
- Huge goiter → occurs in *colloid Goiter* & *Simple nodular Goiter* .
- Retrosternal goiter.
- Certain malignant types : Anaplastic tumors.

goitre	Suggested by	Confirmed by	Initial management
1- Toxic goiter			
Graves's disease	- **Young age ,** Clinical thyrotoxicosis → in 100 % of patients Ophthalmopathy "Exophthalmos"→ in 50% Pretibial myxoedema →in 1 % No nodules.	- ↑***FT4*** or ↑***FT3*** & ↓***TSH*** - **TSH receptor antibody** +ve. - **U/S** → Diffuse gland enlargement - **Isotope scan** →Diffusely increased uptake	**Propranolol** 40 to 80mg 8 hourly to control symptoms. **Carbimazole** 40mg od reduced to 5-10mg over 1-3mo with monthly TFT. FBC before starting. Written warning for agranulocytosis causing sore throat. Radioiodine or thyroidectomy offered if relapse after 6-18mo carbimazole.
Toxic multinodular goitre	- **Old age ,** with a history of previous nodular goitre, multiple nodules and clinically thyrotoxic.	↑***FT4*** **or** ↑***FT3*** **&** ↓***TSH*** **and** - **U/S** → Multiple Nodules. - **Isotope scan**→ increase uptake from nodules themselves while other cold , or from paranodular tissue or combination of both.	carbimazole (± β-blocker for symptoms). Radioiodine very effective (not used if compression of adjacent structures in the neck and thoracic inlet—surgery offered instead).
Toxic Adenoma (Solitary Toxic nodule)	- **At any age**, - Solitary hyperactive autonomous nodule	↑***FT4*** **or** ↑***FT3*** **&** ↓***TSH*** - **U/S** → Solitary nodule. - **Isotope scan** →single hot nodule.	
2- Malignant goiter	**Symptoms suggesting malignant invasion :** 1- Invasion of recurrent laryngeal nerve → hoarseness of voice. 2- Invasion of superior laryngeal nerve → chocking & hoarseness of voice. 3- Invasion of the vagus nerve → painful ear. 4- Invasion of sympathetic chain → Horner's syndrome . - *No dysphagia or dyspnea because tracheal rings resist malignant invasion & underlying esophagus is protected by these rings.* - *No invasion of carotid sheath, it just push it backward.* 5- No dyspnea or dysphagia except in **Anaplastic tumor.**	- Normal thyroid function - U/S → cystic or solid. - Isotope scanning shows cold nodule - Biopsy	
3- Simple goiter			
Simple diffuse goiter 1- Endemic goiter 2- Physiological goiter 3- Dyshormonogenesis 4- Sporadic goiter	**Not nodular , clinically euthyroid** **Physiological goiter :** - Most common goiter. - Age: Yong female (15 – 20) at puberty or during pregnancy & lactation.	***FT4*** & ***FT3*** normal, ***TSH*** normal **thyroid antibodies** -ve.	Reassurance, no treatment.
Simple nodular goiter	**Multiple nodules, clinically euthyroid.** The commonest disease of thyroid gland Age: 30 – 40 years. Sex: female > male .	***FT4*** & ***FT3*** normal, ***TSH*** normal. Nodules on **US scan or thyroid isotope scan**.	Surgery only if indications: 1- Cosmetic 2- Pressure symptoms 3- Suspicion of malignancy.
4- Retrosternal goiter	Small swelling in closed space, causing pressure symptoms : (dyspnea & dyphagia)	CT scan CXR → shadow in sup. Mediastinum	Surgical excision

3) Neck lump doesn't move with deglutition nor tongue protrusion → Other neck swellings

Parotid region swellings

A- Localized :

From skin & subcutaneous tissue:		**- Sebaceous cyst** **- Subcutaneous abcess** - Lypoma - hemangioma - lymphangioma	
From margins :		- Masseter hypertrophy - Zygomatic tumor - Mastoiditis	
LNs :	**Multiple**	- **P**re-auricular LNs - **P**arotid LNs - **B**uccinator LNs	*LN is diagnosed by two items :* *1-* Anatomical site *2-* Multiplicity (but can be single) .
	Single	- **P**re-auricular LNs or - **P**arotid gland neoplasm	- Both are deep to parotid fascia (which is strong deep fascia). - To differentiate between both by either : 1- **U/S**, is there ***line of cleavage*** ? If yes → LNs If no → Parotid neoplasm. 2- **CT**, is there ***line of cleavage*** ? *We ask for images because the least biopsy in parotid gland swelling is superficial parotidectomy because of branches of facial nerve ! (it might be just LN).*

If Parotid gland neoplasm

Pathological differentiation of parotid neoplasm : (can't be assessed by clinician).

A) Benign :

1- Pleomorphic adenoma (most common 85%) → It's pleomorphic adenoma till proven otherwise.
2- Monomorphic adenoma "Adenolymphoma" , "Warthin's Tumor" , " papillary cystadenoma lymphomatosum"

B) Malignant :

1- Adenocarcinoma on top of pleomorphic adenoma (most common malignancy).
2- Adenocarcinoma from the start
3- Adenoid cystic carcinoma
4- Acinic cell tumor.
5- Epidermoid carcinoma
6- Mucoepidermoid carcinoma

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Clinical estimation of type of tumor :

The pathognomonic signs of parotid malignancy are late signs:
1- Facial nerve palsy
2- Fixity of mandible

- **If old male , with history of remission & exacerbation → think of "adenolymphoma"**

  ↓

  Ask for technetium scan → Hot spot → adenolymphoma (only hot spot tumor)
  Cold spot→ other benign & malignant tumors

  TTT of adenolymphoma: The only tumor will be treated by *evacuation* (not by superficial parotidectomy), because it's very localized tumor.

- **If history of *pain* before swelling because tumor spread along sheaths of facial nerve branches→ think about "adenoid cystic carcinoma" → Ask for CT or MRI** (not felt because parotid is covered by very dense fascia).

  The pathognomonic signs are ***early*** in adenoid cystic carcinoma because the tumor spread along myelin sheaths of facial nerve branches → so if you neglected the pain of the patient and didn't diagnose the neoplasm , the patient might come early with facial nerve palsy.

B- Diffuse :

Diffuse Parotid swellings

Predisposing factors of acute bacterial parotitis :
1- Immunosupressive
2- Local irradiation
3- Chemotherapy
4- Diabetic,neglected,poor control
5- Bad oral hygiene.

It's difficult for parotid to get inflamed because it's highly vascular, so there should be predisposing factors ,, TTT of these predisposing factors

Acute

Obstructive :

1- Stone
2- Stricture

- C/P : colicky facial pain
- Can't be differentiated clinically so ask for X-ray :
  - If radiopaque → stone
  - If no → Stricture.

TTT:
- **Proximal** (near gland)→ superficial Parotidectomy
- **Distal** (near duct)→ meatomy
- **Intermediate** → expectant ttt : *by dilating duct every month by dilator till we found the stone or relieve stricture.*

Non-Obstructive :

- Acute inflammation

- **Viral :**
  1- Mumps
  - Usually bilateral *(may start unilateral)*
  - Occurs in children .
  - we scared of 3 complications 2ry encephalitis, Pancreatitis. Orchitis
  - Require isolation , bed rest ,antibiotics & vitamins

  2- Coxsackie virus

- **Bacterial** (usually unilateral)

TTT:
1- TTT of predisposing factors
2- Analgesia & Massive antibiotics
3- Hilton incision *(pre-auricular longitudinal incision & open the fascia transversely to avoid injury of facial nerve)* & evacuation
- Don't wait for fluctuation because of dense parotid fascia.

Chronic (all bilateral)

1- Endemic parotitis
- Bilateral.
- ttt: reassurance & *conservative*.

2- Sialosis (Sialadenosis): *conservative.*
- Better seen (inspection) than felt
- Associated with :
  - Acromegaly
  - Diabetes (controlled or not)

3- Lipomatous pSeudohypertrophy
- Exaggerated form of sialosis
- Sagging of the enlargement.

4- Sialectasis(ectatic duct) *conservative.*
→ by x-ray: *Sand ground appearance*.

5- Sarcoidosis :
- Generalized lymphadenopathy with hilar shadow *except submental LNs*
- Renal calcinosis & Renal stones

6- Sjogren's syndrome
Lympho-epithelial disease complex
- Rheumatoid arthritis
- Dry eye
- Dry mouth (due to chronic diffuse parotitis)

Anterior Triangle swellings

1- Submandibular Triangle	**Cystic**	**Ranula** - It's retention cyst arising from sublingual salivary gland (cyst in mouth floor). -It may extend down to the neck over post. margin of mylohyoid → **"plunging ranula"**	*Suggested by:* translucent cyst lateral to midline, with domed, bluish discoloration in **floor of mouth** lateral to frenulum → presents itself as swelling in submandibular or submental triangle. *management:* 1- Marsupilization (deroofing) & suture cyst wall to oral mucous m. 2- Excision(difficult) in recurrent cases.
	Solid	**Multiple** **LNs**	
		Single **1- LNs** * Inflammation *"Suggested:* tender,solid,nodular swelling especially <20y of age." * Neoplastic or metastatic **2- Submandibular gland :** * Submandibular sialadenitis or * Submandibular tumor	To differentiate, **roll the swelling:** - If rolled → LNs - If not rolled → - Fixed LNs (long stand neglected inflamed LNs) - Salivary (due to floor muscle: mylohyoid muscle) ↓ **Bimanual examination :** - if 2 lobes are palpable → Salivary gland - if Not→ Fixed LNs or superficial parotid tumor ↓ Excision & pathology to differentiate.
2- Submental Triangle	**Cystic**	**Ranula**	
	Solid Single or Multiple	**LNs** only (no salivary gland)	N.B. Sarcoidosis has generalized lymphadenopathies except **Submental LNs** .
3- Carotid Triangle *Branchial cyst dangerous because it passes between the carotid bifurcation to the glossopharyngeal & vagus nerve*	**Cystic**	**Branchial cyst** "Congenital" Presents partially deep to sternomastoid muscle and extends to the upper 1/3 of its ant. border.	*Suggested by:* fluctuant swelling at anterior border of sternomastoid muscle, *Confirmed by:* **US scan**, **CT scan** *Initial management:*excision it till lateral wall of pharynx with segment of lat. Wall
		Tuberculosis ('cold') abscess	*Suggested by:* fluctuant(cystic) swelling with low grade or no fever. *Confirmed by:* acid-fast bacilli (AFB), on microscopy or culture and sensitivity of **aspirate**.
		Carotid aneurysm	Pulsatile swelling coincides with carotid pulsation. – **Carotid angiography**
		Pharyngeal diverticulum It's herniation of pharyngeal mucosa through Killian's dehiscence	*Suggested by:* intermittent, fluctuant, compressible, swelling (usually on left) under sternomastoid muscle , and dysphagia. *confirmed by:* ***barium swallow*** fills pouch. *Initial management:* surgical referral for excision.
		Laryngocele It's herniation of the mucous membrane through a weak point in the thyrohyoid membrane.	*Suggested by:* fluctuant swelling in neck which becomes prominent on straining. Swelling is resonant & compressible Occurs in musicians . *Confirmed by:* MRI & laryngoscope.
	Solid	**Multiple** **LNs**	
		Single **Carotid body tumor**(potato Tumor) - Occurs in high attitude.(pero) - Differentiation by size because no pathological differentiation : **>4cm is malignant** **<4 cm is benign.**	*Suggested by:* Very slowly growing mass with history of mass for years - mobile : from side to side but not vertical - arising from chemoreceptors at carotid bifurcation (upper third of sternomastoid), - pulsatile , bruit maybe heard by stethoscope. - My extend to parapharyngeal space present in oropharynx. *Confirmed by:* **1- Angiography:** widening of carotid artery bifurcation (characteristic sign) *management:* Surgical excision with preservation of ICA.

Posterior Triangle swellings

	Cystic	**Cystic hygroma** (Cavernous Lympangioma) "Congenital" - It's dilated cavernous lymph spaces. - Due to failure of sequestration of part of jugular lymph sac of the fetus. -Presents superficial to Sternomastoid muscle	*Suggested by:* Single , large , irregular, ill-defined, swelling that transilluminates well (only translucent neck swelling) , appears at birth or <20y of age. *Confirmed by:* **US scan, CT scan**, *Complications:* Recurrent infection , respiratory distress due to compression of trachea, increases in size on coughing or crying. *management:* Surgical excision at about the age of 3 years.
		Tuberculosis ('cold') abscess (most common site)	*Suggested by:* fluctuant(cystic) swelling with low grade or no fever. *Confirmed by:* acid-fast bacilli (AFB), on microscopy or C& S of **aspirate**.
		Esophageal diverticulum	*Confirmed by:* ***barium swallow*** fills pouch.
		Pnematocele Herniation of the lung apex through weak suprapleural membrane **(Sibson's fascia),** which extends from transverse process of C7 to 1st rib.	*Suggested by :* - Cystic swelling in the supraclavicular region -Become prominent on straining - Resonant & compressible *management :* 1- Correct straining factors 2- plication of Sibson's fascia.
	Solid	**Multiple** **LNs**	
		Single **LNs**	
		Cervical rib is a supernumerary (or extra) rib which arises from the seventh cervical vertebra	The presence of a cervical rib can cause a form of **thoracic outlet syndrome** due to compression of the lower trunk of the brachial plexus or subclavian artery → Compression of the brachial plexus may be identified by weakness of the muscles around the muscles in the hand, near the base of the thumb *"neurovascular deficient"* . *(diagnosed by x-ray or CT)*
		Sternomastoid tumor	- Mostly seen in newborns due to birth trauma - Rare condition in which ischemia of the muscle → fibrosis & mass

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