### Differential Diagnosis of Neck Swellings

#### 1) Anterior neck lump moving with deglutition & tongue protrusion

<table>
<thead>
<tr>
<th>Suggested by</th>
<th>Confirmed by</th>
<th>Initial management</th>
</tr>
</thead>
</table>
| **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 decrease 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)

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#### 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

#### 1- Toxic goiter

**Graves’s disease**
- Young age. 
Clinical thyrotoxicosis → in 100% of patients 
Ophthalmopathy "Exophthalmos" → in 50% 
Pretilial myxoedema → in 1% 
No nodules.

**Toxic multinodular goitre**
- Old age, with a history of previous nodular goitre, multiple nodules and clinically thyrotoxic.

**Toxic Adenoma (Solitary Toxic nodule)**
- At any age, 
- Solitary hyperactive autonomous nodule

#### 2- Malignant goiter

**Symptoms suggesting malignant invasion**:
1- Invasion of recurrent laryngeal nerve → hoarseness of voice.
2- Invasion of superior laryngeal nerve → choking & hoarseness of voice.
3- Invasion of the vagus nerve → painfull 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.

**Definitive Diagnosis**
- US scan 
- Radioisotope scan: nodule taking up iodine 
- Histology of excised tissue.

#### 3- Simple goiter

**Simple diffuse goiter**
- Endemic goiter 
- Physiological goiter 
- Dyshormonogenesis 
- Sporadic goiter

**Simple nodular goiter**
- The commonest disease of thyroid gland 
   Age: 30 – 40 years. 
   Sex: female > male.

**4- Retrosternal goiter**
- Small swelling in closed space, causing pressure symptoms: (dyspnea & dysphagia)

<table>
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<tbody>
<tr>
<td><strong>Simple diffuse goiter</strong></td>
<td>Not nodular, clinically euthyroid</td>
<td>FT4 &amp; FT3 normal, TSH normal thyroid antibodies -ve.</td>
<td>Reassurance, no treatment.</td>
</tr>
</tbody>
</table>
| **Physiological goiter:** | Most common goiter. 
- Age: Yong female (15 – 20) at puberty 
- During pregnancy & lactation. | | |
| **Simple nodular goiter** | Multiple nodules, clinically euthyroid. | 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. |

- Medical TTT by L-thyroxine to decrease its size
### A- Localized:

| From skin & subcutaneous tissue: | - Sebaceous cyst  
- Subcutaneous abscess  
- Lypoma  
- hemangioma  
- lymphangioma |
|----------------------------------|-------------------------------------------------------------|
| From margins: | - Masseter hypertrophy  
- Zygomatic tumor  
- Mastoiditis |

<table>
<thead>
<tr>
<th>LNs:</th>
<th>Multiple</th>
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</table>
| Pre-auricular LNs  
Parotid LNs  
Buccinator LNs | |

**LN is diagnosed by two items:**
1. Anatomical site  
2. Multiplicity (but can be single).

**- Both are deep to parotid fascia (which is strong deep fascia).**

**- To differentiate between both by either:**
1. **US**, 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%)  
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 |

**Clinical estimation of type of tumor:**
- 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

**T/T/T 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**

#### 1. Endemic parotitis  
- Bilateral.  
- TTT: reassurance & conservative.

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

#### 3. Lipomatous pS  
- Exaggerated form of sialosis  
- Sagging of the enlargement.

#### 4. Sialodacitasis(ectatic duct)  
- by x-ray: Sand ground appearance.

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

#### 6. Sjogren’s syndrome  
- Lympo-epithelial disease complex  
- Rheumatoid arthritis  
- Dry eye  
- Dry mouth (due to chronic diffuse parotitis)

**Predisposing factors of acute bacterial parotitis:**
1. Immunosuppressive  
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

**Obstructive:**
1. Stone  
2. Stricture  
- C/P: colicky facial pain
- Can’t be differentiated clinically so ask for X-ray:
  1. If radiopaque → stone  
  2. If no → Stricture.

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

**Non-Obstructive:**
- Acute inflammation  
  1. Viral:  
  2. 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.

**Clinical:**
- Usually bilateral
- Occurs in children
- We scared of 3 complications
2. Encephalitis, Pancreatitis. Orchitis
- Require isolation, bed rest, antibiotics & vitamins
- Coxackie virus

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**Diffuse Parotid swellings**

**Acute:**

**Chronic (all bilateral):**

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<th>Chronic</th>
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### Anterior Triangle swellings

#### 1- Submandibular Triangle

<table>
<thead>
<tr>
<th>Type</th>
<th>Cause</th>
<th>Management</th>
<th>Confirmation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cystic</td>
<td>- It’s retention cyst arising from sublingual salivary gland (cyst in mouth floor)</td>
<td>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.</td>
<td><strong>management:</strong> 1. Marsupilization (deroofing) &amp; suture cyst wall to oral mucous membrane. 2. Excision ( recurrent cases).</td>
</tr>
<tr>
<td></td>
<td>- It may extend down to the neck over post. margin of mylohyoid → <em>plunging ranula</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid</td>
<td>- LNs</td>
<td>To differentiate: roll the swelling:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Inflammation</td>
<td>- If rolled → LNs</td>
<td><strong>Confirmed by:</strong> US scan, CT scan</td>
</tr>
<tr>
<td></td>
<td>* Suggested tender, solid, nodular swelling, especially ≤20y of age.</td>
<td>- If not rolled → Fixed LNs (long stand neglected inflamed LNs)</td>
<td><strong>Confirmed by:</strong> acid-fast bacilli (AFB), on microscopy or culture and sensitivity of aspirate.</td>
</tr>
<tr>
<td></td>
<td>* Neoplastic or metastatic</td>
<td>Salivary (due to floor muscle: mylohyoid muscle)</td>
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<tr>
<td></td>
<td>1- LNs</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>* Submandibular gland :</td>
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<tr>
<td></td>
<td>* Submandibular sialadenitis or</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>* Submandibular tumor</td>
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#### 2- Submental Triangle

<table>
<thead>
<tr>
<th>Type</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Cystic</td>
<td>Branchial cyst “congenital”</td>
<td>Suggested by: fluctuant swelling at anterior border of sternomastoid muscle,</td>
<td><strong>Initial management:</strong> Excision it till lateral wall of pharynx with segment of lat. Wall</td>
</tr>
<tr>
<td></td>
<td>Presents superficial to sternomastoid muscle and extends to the upper 1/3 of its ant. border</td>
<td><strong>Confirmed by:</strong> US scan, CT scan</td>
<td><strong>Confirmed by:</strong> acid-fast bacilli (AFB), on microscopy or culture and sensitivity of aspirate.</td>
</tr>
<tr>
<td>Solid</td>
<td>Tuberculosis (‘cold’ ) abscess</td>
<td>Pulsatile swelling coincides with carotid pulsation. – Carotid angiography</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carotid aneurysm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cystic</td>
<td>Pharyngeal diverticulum</td>
<td>Suggested by: intermittent, fluctuant, compressible, swelling (usually on left) under sternomastoid muscle, and dysphagia.</td>
<td><strong>Confirmed by:</strong> barium swallow fills pouch. <strong>Initial management:</strong> Surgical referral for excision.</td>
</tr>
<tr>
<td></td>
<td>It’s herniation of pharyngeal mucosa through Killian’s dehiscence</td>
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<tr>
<td>Solid</td>
<td>Laryngocele</td>
<td>Suggested by: fluctuant swelling in neck which becomes prominent on straining. Swelling is resonant &amp; compressible</td>
<td>Occurs in musicians. <strong>Confirmed by:</strong> MRI &amp; laryngoscope.</td>
</tr>
<tr>
<td></td>
<td>It’s herniation of the mucous membrane through a weak point in the thyrohyoid membrane.</td>
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</table>

#### 3- Carotid Triangle

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<tr>
<th>Type</th>
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<th>Management</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Cystic</td>
<td>Cystic hygroma (Cavernous Lymphangioma)</td>
<td>Suggested by: Very slowly growing mass with history of mass for years</td>
<td><strong>1- Angiography:</strong> widening of carotid artery bifurcation (characteristic sign)</td>
</tr>
<tr>
<td></td>
<td>* Congenital</td>
<td>- mobile : from side to side but not vertical</td>
<td><strong>management:</strong> Surgical excision with preservation of ICA.</td>
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<tr>
<td></td>
<td>* It’s dilated cavernous lymph spaces.</td>
<td>- arising from chemoreceptors at carotid bifurcation (upper third of sternomastoid),</td>
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<td></td>
<td>* Due to failure of sequestration of part of jugular lymph sac of the fetus.</td>
<td>- pulsatile , bruit maybe heard by stethoscope.</td>
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<tr>
<td></td>
<td>* Presents superficial to Sternomastoid muscle.</td>
<td>My extend to parapharyngeal space present in oropharynx.</td>
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<tr>
<td></td>
<td>1- LNs</td>
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<tr>
<td></td>
<td>Carotid body tumor (Foster Tumor)</td>
<td>Occurs in high altitude(&gt;60m)</td>
<td><strong>Confirmed by:</strong> US scan, CT scan. <strong>Complications:</strong> Recurrent infection, respiratory distress due to compression of trachea, increases in size on coughing or crying.</td>
</tr>
<tr>
<td></td>
<td>* Differentiation by size</td>
<td>Differentiation by size</td>
<td><strong>management:</strong> Surgical excision at about the age of 3 years.</td>
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<tr>
<td></td>
<td>because no pathological differentiation</td>
<td>&gt;4 cm is malignant</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;4 cm is benign</td>
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<tr>
<td>Solid</td>
<td>Tuberculosis (‘cold’ ) abscess</td>
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<td>Pharyngeal diverticulum</td>
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<tr>
<td></td>
<td>Esophageal diverticulum</td>
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<tr>
<td></td>
<td>Pneumatocele</td>
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<td></td>
<td>Herniation of the lung apex through suprathyroid membrane (Sibson’s fascia), which extends from transverse process of C7 to 1st rib.</td>
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</table>

### Posterior Triangle swellings

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</tr>
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<tbody>
<tr>
<td>Cystic</td>
<td>Cervical rib</td>
<td>Suggested by: Single, large, irregular, ill-defined, swelling that transilluminates well (only translucent neck swelling), appears at birth or &lt;20y of age.</td>
<td><strong>Confirmed by:</strong> US scan, CT scan. <strong>Complications:</strong> Recurrent infection, respiratory distress due to compression of trachea, increases in size on coughing or crying. <strong>management:</strong> Surgical excision at about the age of 3 years.</td>
</tr>
<tr>
<td></td>
<td>* It’s a supernumerary (or extra) rib which arises from the seventh cervical vertebra.</td>
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<td></td>
<td>* Mostly seen in newborns due to birth trauma</td>
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<td></td>
<td>* Rare condition in which ischemia of the muscle → fibrosis &amp; mass</td>
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<td></td>
<td>1- Marsupilization (deroofing) &amp; suture cyst wall to oral mucous membrane.</td>
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<td></td>
<td>2- Excision ( recurrent cases).</td>
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