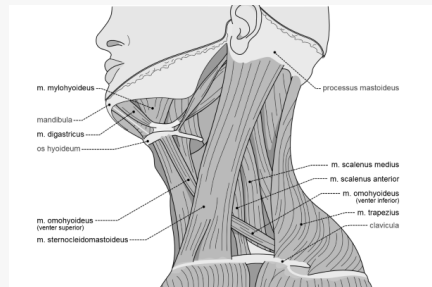
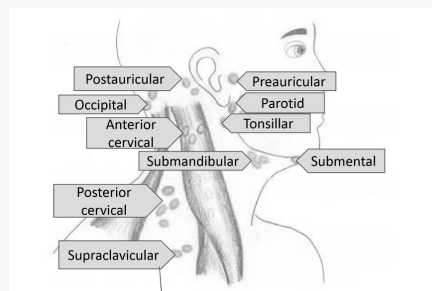


### Anatomy in the neck



Lymph nodes  
Thyroid + parathyroid gland  
Salivary Gland  
Blood Vessels  
Muscles, bones, cartilage  
Nerves  
Oesophagus + trachea

### Cervical Lymphnodes



### Non-MSK causes of neck pain

**Oesophagus:** Indigestion, Difficulty swallowing

**Thyroid:** Enlargement, Infection/Inflammation, cancer

**Carotid Artery:** Dissection

**Lymph nodes:** Infection/inflammation, cancer - Submental, Submandibular, Tonsillar, Parotid, Preauricular, Postauricular, Occipital, Anterior cx, Posterior cx, Supraclavicular

**Heart:** MI/IHD - refer to neck and jaw + down left arm

**Lung:** Apical Tumours - refer to neck, shoulder and arm

- Consider

Age, Hx of the lump, Location of the lump, Exam of the lump, Exam of the head/neck

### Questions to ask

Pain related to exertion, relieved by rest? Risk factors of IHD/Cardiac issues

Respiratory symptoms? Smoker?

Swellings in the neck? (lymphnodes/thyroid?) - How long? Where is it? How was it noticed? Enlarging or changing? Local symptoms? Other symptoms? Other lumps? Hx of cancer? Smoking/alcohol? Travel/trauma?

GI Symptoms?

Hx of neck traum/headache/visual disturbances/neurological symptoms?

Recent infections/ hx of cancer?

- Lumps should reduce within 6 weeks , if not, consider possible malignancy (should be seen within 2 weeks)
- Painful nodes = infection
- Firm, hard, painless = cancer

### Neck Pain Causes

- Pain from superior nuchal line to the tip of T1 , sagittal planes

**Caused by:**

- Myofascial Pain Syndrome
- Intervertebral Joint Hypomobility
- Spondylosis
- Musculoligamentous strain/sprain
- Intervertebral Disc Derangement

**Serious Disorders**

- Meningitis/SAH
- Angina/MI referral
- Metastasis
- Vascular Lesions
- Oesophageal Disorders

**Pitfalls**

- RA
- PMR
- Fibromyalgia
- Myelopathy - look for stiffness of the legs

**Lumps:**

- Children: Reactive lymphadenopathy - infections in head/neck/congenital cysts
- Young adults: Inflammation/infection - Viral/bacterial adenitis, Thyroid cancer
- >40s : Malignant until proven otherwise



### Refer

#### - Refer to GP when:

- Symptoms of Cx radiiculopathy persists/not improved with conservative management within 4 weeks
- Clinical Evidence of NR compromise
- Incapacitating Neck/Arm Pain

### Injury Mechanisms

- CT best for fractures, MRI better for soft tissue damage
- F# commonly @ C1-2, C5-7 & T12-L2
- Four types of Spinal F#/Dislocation
  1. Compression
  2. Burst
  3. Seat Belt Injuries
  4. Fracture- Dislocations
- Compression:** Hyperflexion + Axial Compression - usually posterior height is maintained
- Burst Fractures** Axial loading of the spine
- Seat-Belt** Rapid Deceleration - Axis, middle + posterior structures affected

### Investigations

#### Canadian C-Spine Rules

For Alert (GCS = 15) pts over 16 after trauma

- High Risk Factor**
  - >65 yo or Dangerous Mechanism of injury/Paresthesia in Extremities
- Low Risk Factor - allows safe assessment of ROM**
  - Simple Rear End Collision
  - Sitting Position in Emergency Department
  - Walking at any time
  - Delayed onset of Neck Pain
  - Absence of Midline Cx tenderness

#### Are they able to turn their heads Left and Right 45 degrees

N/A for <16, GCS <15, Acute Paralysis, Known Vertebral Disease/ previous surgery

**Dangerous Mechanism of Injury** = Fall from elevation >3 ft/five stairs, axial load to head, high speed vehicle accidents (>100km/h), rollover, ejection, motorised recreational vehicles, bicycle/collisions



### Features in the history

|                                            |                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Location</b>                            | <ul style="list-style-type: none"> <li>- Localised/Radiating</li> <li>- Localised = Muscle strain, ligament sprains, manipulable lesions, facet joint/disc degeneration - Radiation into the arm = nerve/MTrps</li> </ul>                                                                                                         |
| <b>Characteristics of pain</b>             | <p>Sharp (acute) Dull/aching (Chronic) = Muscle/ligament/disc</p> <p>Deep/Boring pain = Bone/joint</p> <p>Electrical, numbing, tingling, shooting = neurogenic</p>                                                                                                                                                                |
| <b>Onset</b>                               | Trauma? Anything that set it off? Life/Activity changes prior to the onset?                                                                                                                                                                                                                                                       |
| <b>Aggravating &amp; Relieving Factors</b> | <p>Pain during neck extension - compression of posterior elements - Usually the Facet Joints, consider NR if pain radiates down Arm</p> <ul style="list-style-type: none"> <li>- Pain with overhead Activities Consider TOS</li> <li>- Pain at the end of the day = chronic overuse, mechanical disorder, degeneration</li> </ul> |
| <b>Pain duration</b>                       | <p>Muscle strains = Recover in a few days to a couple of weeks</p> <p>Ligament Sprains = Up to a couple of months</p> <p>Disc Injuries/herniation = 3-6 months</p> <p>Chronic Pain = &gt;6 months - degenerative, mechanical instability, chronic inflammatory/neuropathic process</p>                                            |
| <b>Associated symptoms</b>                 | <p>Arm symptoms (pain, paraesthesia, weakness, clumsiness)</p> <p>Headaches, dizziness, nausea</p> <p>Difficulty Walking - scuffing of toes, feeling unbalanced (CSM)</p> <ul style="list-style-type: none"> <li>- Did they come on the same time as your complaint?</li> </ul>                                                   |



### Red Flags

| Condition                          | Red Flags                                                                                                                                                                                       |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>F#</b>                          | Trauma, Loss of consciousness, Thrown from a vehicle, inability to move neck due to pain, Rust's sign, use of high doses Steroids, Pain on Percussion                                           |
| <b>Tumour</b>                      | >50 yo, Pain at rest, Unexplained weight loss, Hx of cancer, Failure to improve with previous treatments, Dysphagia, Headache, Vomiting, Pain on Percussion                                     |
| <b>Infection</b>                   | Systemic S&S, Risk factors ( immunosuppression, underlying disease, penetrating wound, exposure to infectious disease), Intravenous Drug use, Pain at rest, Nuchal rigidity, Pain on Percussion |
| <b>Spinal Cord Compression</b>     | Trauma to the neck, Paraesthesias of upper and or lower extremities, Difficulty walking/stiff gait, Babinski + Hoffman +ve, Hyperactive Reflexes, Ankle Clonus                                  |
| <b>Cerebral/Spinal Haemorrhage</b> | Cerebrovascular symptoms/signs, Anticoagulant Use                                                                                                                                               |
| <b>Vertebral/Carotid Aneurysm</b>  | Cardiovascular Risk Factors, TIA                                                                                                                                                                |

### Neck Pain in Children

**Consider:** Infection, inflammation of cx lymphnodes - tonsillitis/pharyngitis. Meningitis, acute torticollis - Chronic Juvenile Arthritis

### Neck Pain in the Elderly

**Consider:**

- Cx spondylosis with radiculopathy/myelopathy
- Atlantoaxial Subluxation - RA
- PMR
- Metastatic Cancer
- Pancoast Tumour
- Angina/MI
- Pharyngeal & Retropharyngeal infection/tumour



### Lumps Where?

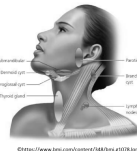
Midline: Thyroid swellings, Thyroglossal cyst, Submental lymph nodes

Lateral (anterior triangle): Thyroid swellings, Submandibular gland swelling, Lymph nodes, Parotid swellings

Lateral (posterior) : Lymph nodes, Carotid artery aneurysm, Cx ribs

### Neck Lumps

|                              |                                                          |                                   |                                                  |
|------------------------------|----------------------------------------------------------|-----------------------------------|--------------------------------------------------|
| Congenital                   | Dermoid cysts                                            | Thyroglossal cysts                | Thyroglossal cysts → <i>points up when shrug</i> |
| Developmental                | Branchial cysts                                          | Pharyngeal pouch                  |                                                  |
| Skin and subcutaneous tissue | Sebaceous cyst<br><i>don't report it unless infected</i> | Lipoma<br><i>fat lump</i>         |                                                  |
| Thyroid                      | Goitre                                                   | Malignancy                        | Thyroiditis                                      |
| Salivary gland               | Infection eg mumps<br><i>swollen when eating</i>         | Ductal stone                      | Malignancy                                       |
| Lymph nodes                  | Infection                                                | Malignancy (primary or secondary) |                                                  |



### Exam

Site, Size, Shape, Surface (4 S's)

Consistency, Colour, Compressible/fluctuant (3 C's)

Transillumination, Tenderness, Tethered (3 T's)

### Autoimmune

Diabetes

RA

Pernicious Anaemia

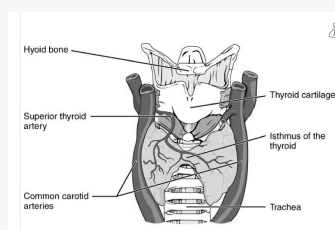
Hashimotos

MS

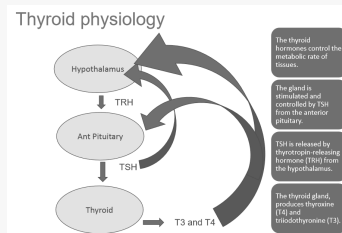
SLE

Vitiligo

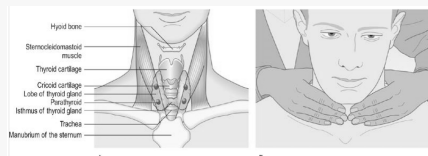
### Thyroid Anatomy



### Thyroid Physiology



### Palpating the thyroid



### Hypothyroidism

- If goitre = Hashimotos, if no goitre = Atrophic primary hypothyroidism

- **Caused by:** Hashimotos, Surgery/radioactive treatment to the thyroid, Side effect of medications (Amiodarone, Lithium), Iodine deficiency, Pituitary Tumour

**Symptoms:** Tiredness, Lethargy, Xanthomas, Constipation, Intolerance to cold, Muscle stiffness, Cramps, CTS, Menorrhagia, Slowing of intellectual activity, Reduced motor activity, decreased appetite, weight gain, Dry skin + hair loss, Deep, hoarse voice

**Signs:** Expressionless, dull face with periorbital + tongue swelling, Sparse hair, Pale cool skin with rough, doughy texture, Coarse dry brittle hair, Goitre, Bradycardia, Obesity, Prolonged relaxation phase of DTR, Peripheral neuropathy

- Thyroxine

### Hyperthyroidism

- Grave's disease

**Symptoms:** Restless, nervous, emotional irritable, sleeping poorly, Tremour of the hands, Losing weight, Palpitations, Sweating and dislike of heat, Diarrhoea, SOB, Menstrual changes (light/infrequent), Skin problems - hair thinning, itching. Increased thirst, Tiredness + muscle weakness

**Signs:** Sinus Tachycardia (can be atrial fib), Fine tremour, Warm, moist skin, Goitre, Hyperreflexia, Proximal Myopathy, muscles weakness and wasting, exophthalmus

- **Medication:** Beta blockers, Carbimazole, Surgery: Thyroidectomy, Radio Iodine (kills iodine producing cells)

**Exam:** Observe + Palpate Thyroid gland with two hands standing behind the patient, get patient to swallow **Normally, gland is not palpable unless enlarged!**