BELMATT
HEALTHCARE TRAINING

Neck complaints

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Session Aims and Objectives

Overall aim of this session is to develop your skills and knowledge to confidently assess and treat patient presenting with neck complaints

Objectives

- Identify patients who needs immediate referral to ED
- Understand criteria for neck immobilisation and imaging
- Undertake assessment of patients with neck complaints

Session Agenda

- Initial assessment consideration for neck complaints
- Overview of history taking including RED FLAGS
- Demonstrate examination technique
- Understand management, referral and discharge advice of patients with neck complaints

Case study

- PC: 50 year old c/o neck pain

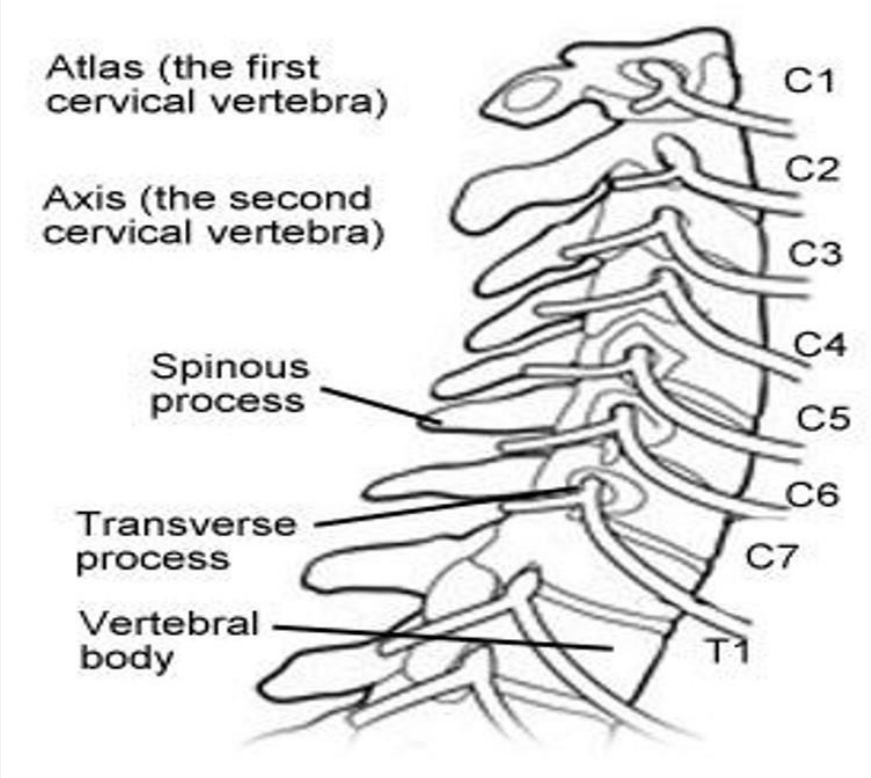
- Hpc: RTC 1/7 ago- was driving car-approx. 20mph- (restrained in seat belt) when other car drove into side of his car –lateral impact Airbag not deployed, Ambulance not called No head injury Reports awkward tilting of his neck- slight initial pain only. Walking after accident .Woke up this am with worsening pain in neck. No other complaints

- O/e: Alert. Clinically well. Walked into examination room, Back and neck exposed (verbal consent taken): No deformity/erythema/no swelling or wounds
- C-spine: Mid line tenderness over C4-5.
- No neurology to arms,
- Given NSAIDS and re-examined 45 min later: C spine tenderness remains,

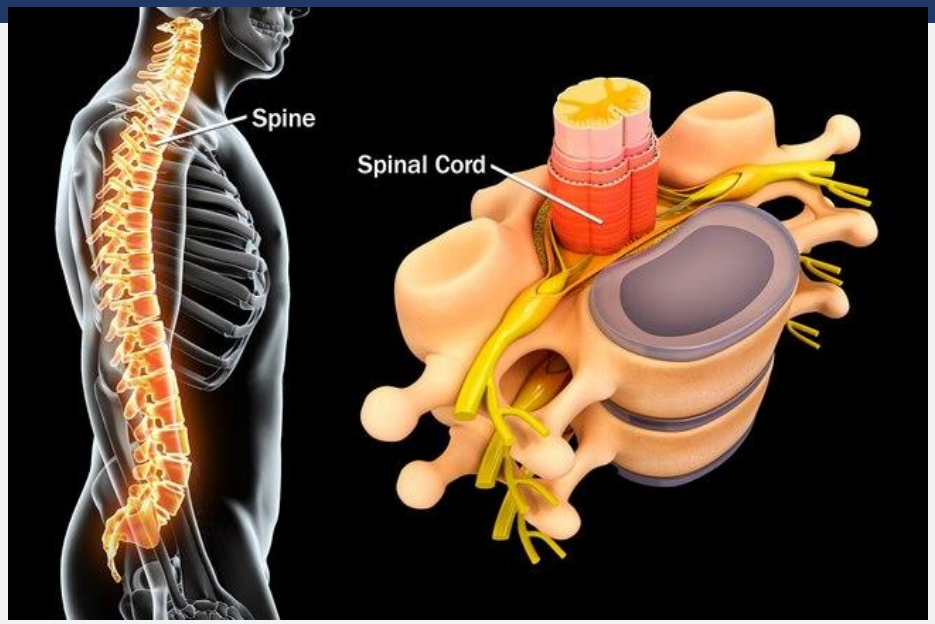
- WHAT IS YOUR ACTION ?

Cervical Spine Anatomy

- The cervical spine is made up of 7 vertebrae
- C1 (Atlas), C2 (Axis) are specialised
- C3-C7 have a body, pedicle, Laminae, Spinous Process and facet joint
- 50% of flexion/extension happens between occiput and C1
- 50% of rotation happens between C1 and C2
- Vertebra arteries sit in foramina to supply brain


Atlas (the first cervical vertebra)
Axis (the second cervical vertebra)
Spinous process
Transverse process
Vertebral body
C1
C2
C3
C4
C5
C6
C7
T1

- Neck and lower back: linked though the spine
- C7/T1 are the most prominent processes
- L4/5 is at level of iliac crest
- Approx. 2.5 cm lateral to spinal process s the facet joints
- Thoracic spine is relative immobile; some rotation:



Red Flags

- History of major trauma or minor trauma in the elderly
- Extremes of age(<20 or >55)- high risk of non MSK cause of pain)
- Systematic symptoms (weight loss, fevers, chills)
- History of malignancy
- Night pain
- Intravenous drug user
- Immunocompromised (HIV, chemotherapy)
- Chronic steroid use
- Rheumatoid arthritis /ankylosing spondylitis
- Significant /progressive neurological signs
- Bladder or bowel dysfunction
- Saddle numbness
- Osteoporosis
- Referred pain eg AAA

Morris et al (2014) page 63

Cervical Spine

- Overall incidence of cervical spine Injury is 3.7%.
- In alert patients the incidence is only 2.8%,
- In patient who were clinically unevaluable (reduced GCS ,, intoxication etc) , the incident is higher : 7.7%.
    - Bottom line: Patients presenting with potential neck injuries, the vast majority of them will not have a cervical spine injury.

<u>Cervical spine immobilisation carries risks in itself:</u>

- Collars significantly raise intracranial pressure: an effect that is potentially significant in the presence of head injury
- Long boards and collars cause pain and tissue ischaemia which can lead to pressure sores
- Supine immobilisation causes considerable deterioration in respiratory function

Blackham et al, 2017

Initial assessment consideration

Any of the following features present?:

- GCS <15
- Age >65
- Dangerous mechanism of injury*
- Neurological deficit
- Intoxication

YES

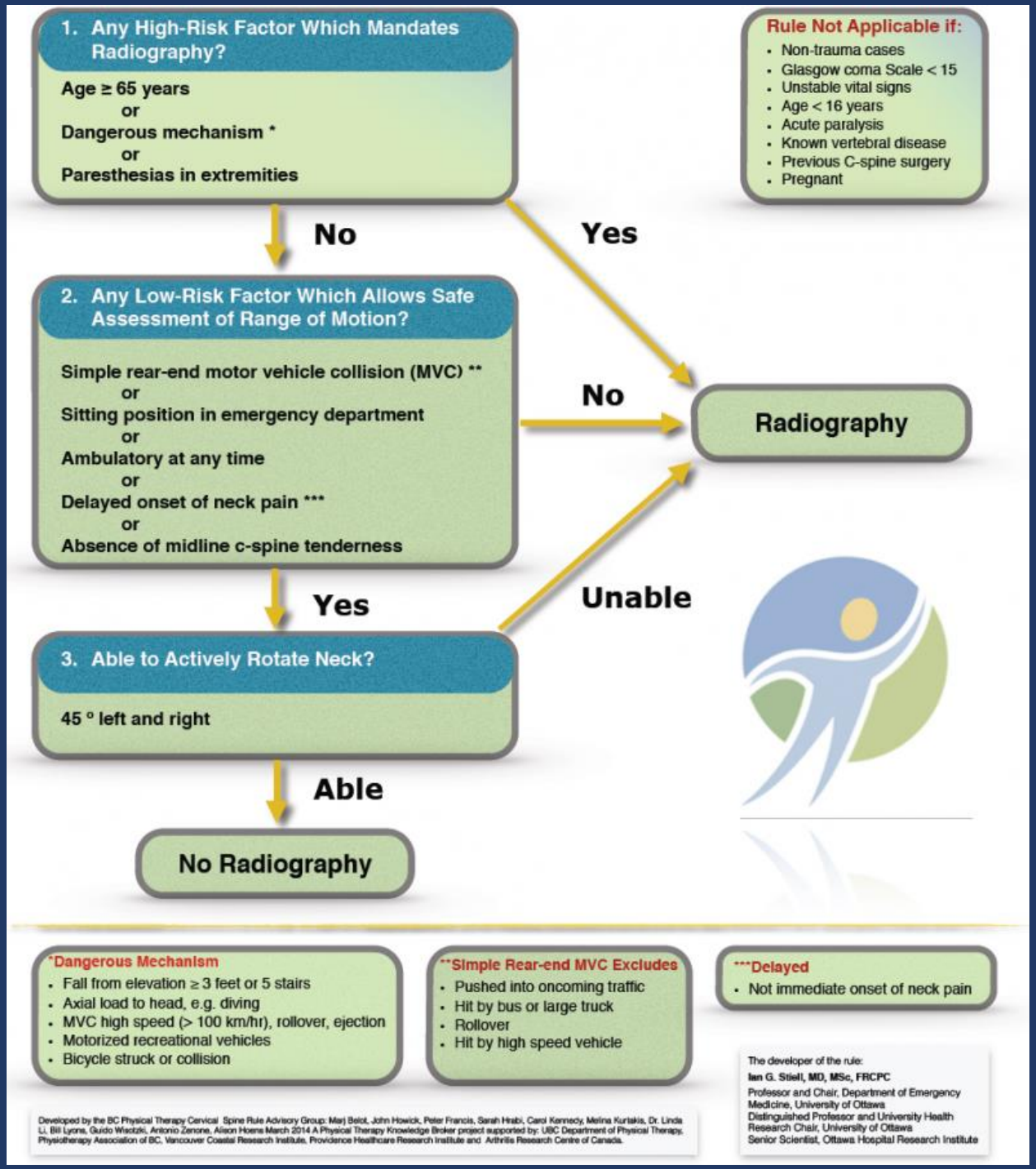
Immobilise

***Dangerous MOI** :

- fall from a height of greater than 1 meter or 5 steps,
- axial load to the head – for example diving,
- high-speed motor vehicle collision, rollover motor accident, ejection from a motor vehicle, accident involving motorised recreational vehicles,
- bicycle collision, horse riding accidents)

NICE 2016

Canadian C-spine rules



Mid line tenderness & **ANY** of the following features :

- Simple rear end collision
- Sitting/standing at any time since accident
- Delayed onset of neck pain

YES

LOW RISK

But needs imagining

- No collar, blocks or tape

no

Does the patient meet the following criteria:

- Fully alert
- No intoxication
- No mid-line C spine tenderness
- No focal neurological deficits
- No distracting Injuries
- Able to rotate neck 45 ° left and right without experiencing pain ?

NO

Imaging –
Block & Tape

YES

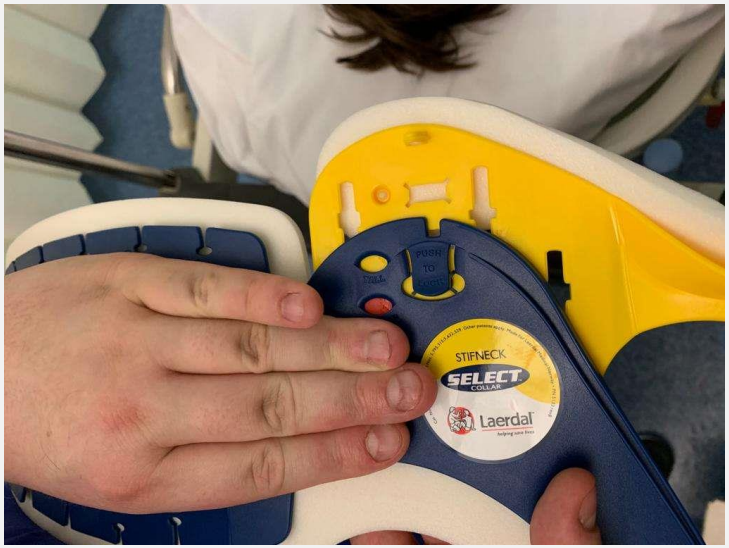
NO imaging required

Tx in

C-spine immobilization: now called "restriction of c-spine movement" or ROCSM, in situ.

- There's no meticulously clear consensus guideline on this process.
- ATLS provides an outline and basics
- *Apply Manual Inline Stabilisation (MILS)*
  1. Ask the patient to keep their neck still
- 2. Ask the patient to lie down on a handy trolley, on a trauma mattress if you have one available.
  - Process of "standing takedown" using several health care processions is now outdated and 'less is more '– and the patient moves their neck less if they're left to their own devices.
- 3. "Manually stabilise" the neck by firmly placing your hands either side of their head, making sure you don't cover up their ears.
  - You'll want the trolley lifted up so that you don't get a bad back.

Fitting collar : measuring for size



Applying the collar

- Collars are stored flat – give them a little ill before applying it – it makes it work much more easily.
- If you then fold the velcro flat, it stops it sticking to hair and pulling the patient's hair out 8. Apply the collar
- One person must maintain manual inline stabilisation.
- The helper should push the collar down into the bed and then under the patient's neck, from right to left, until the velcro pops out (pushing it through left to right will put it on upside down).
- Then, swing the front piece down and under the chin, so the chin rests nicely in the support (there's usually a dot or spot in the middle of the chin rest – this should be in the middle of the chin).
- Attach the velcro.
- Check the fit.

Applying the collar

- Apply the tape. The tape is to help reduce neck rotation (shaking of the head), as well as attaching the blocks to the bed.
- One strip over the forehead, one across the chin. Stick the ends down to something immobile, like the trolley base

Collars, blocks and tape – gold standard! Blocks and tape – acceptable alternative. Just hard collar = NEVER acceptable.

Clinical examination of the C-Spine

- History
- General Examination
- Inspection (look)
- Palpation (Feel)
- Movement and measurements
- Special tests
- Neurology

History

- History taking in patients with problems in the neck, trapezius or shoulder region should be as detailed as possible and great care should be taken to define every symptom precisely.
- *Age, Hobbies, work, sports may give an idea of postures, movments or strains that may be causative or provocative*
- *Cervical spine lesions* may lead to the following symptoms: pain, paraesthesia, vertigo or symptoms related to the vertebral artery, and incoordination and spasticity.

History

- Pain
- Onset (when, where, how)
- Evolution (location, distribution, duration)
- Current pain (PQRST)
- Paraesthesia (spinal cord or nerve root)

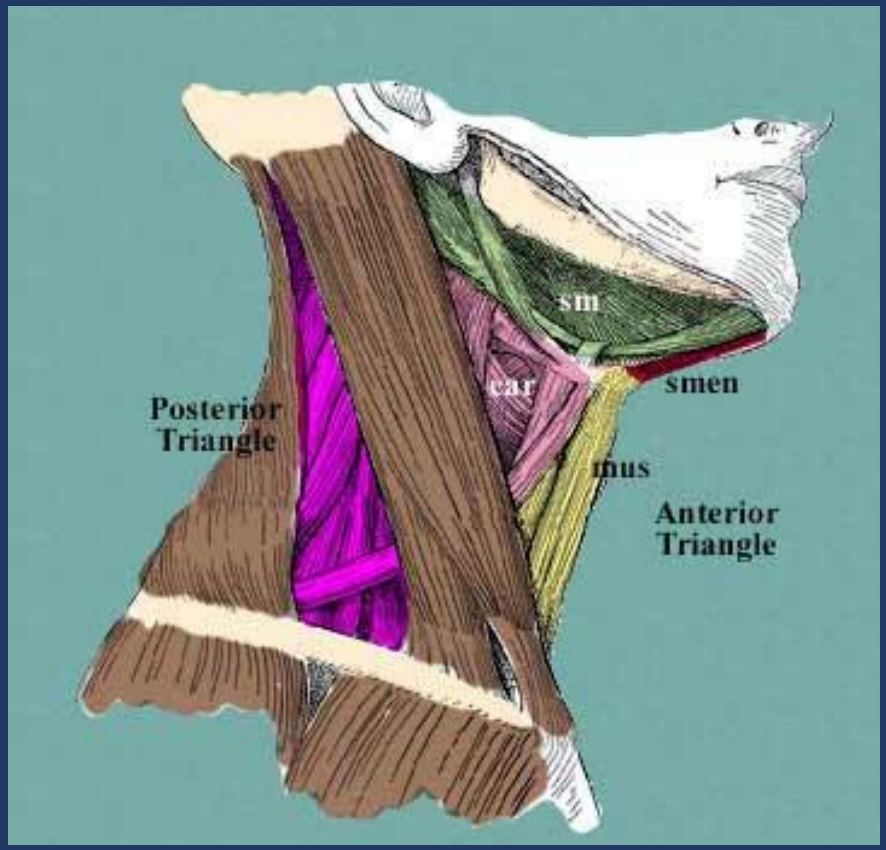
LOOK

- Observe general stance and how head/neck is held
- Use neck triangles for anatomical description:

➢Anterior triangle

➢Posterior triangle

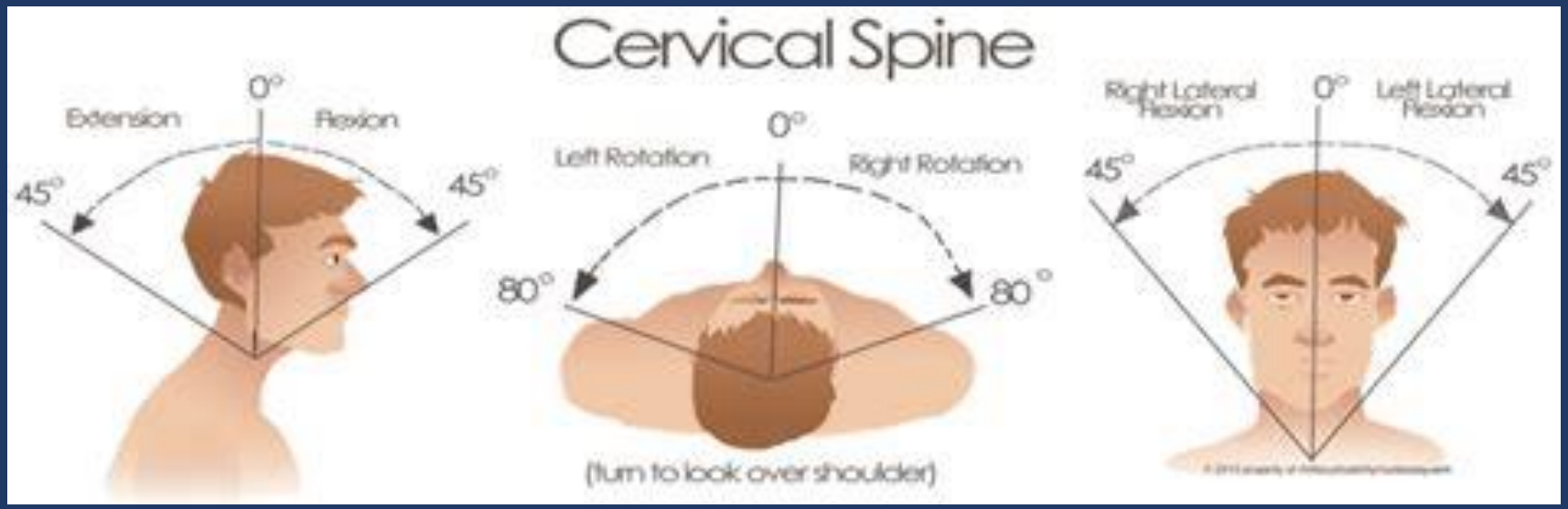
➢Lateral group



Feel

- Palpate cervical spine & spinal processes
- Paravertebral muscles
- Trapezius
- Sternomastroid muscles
- Note any tenderness, muscle spasm or palpable gaps or deformity (very rare)

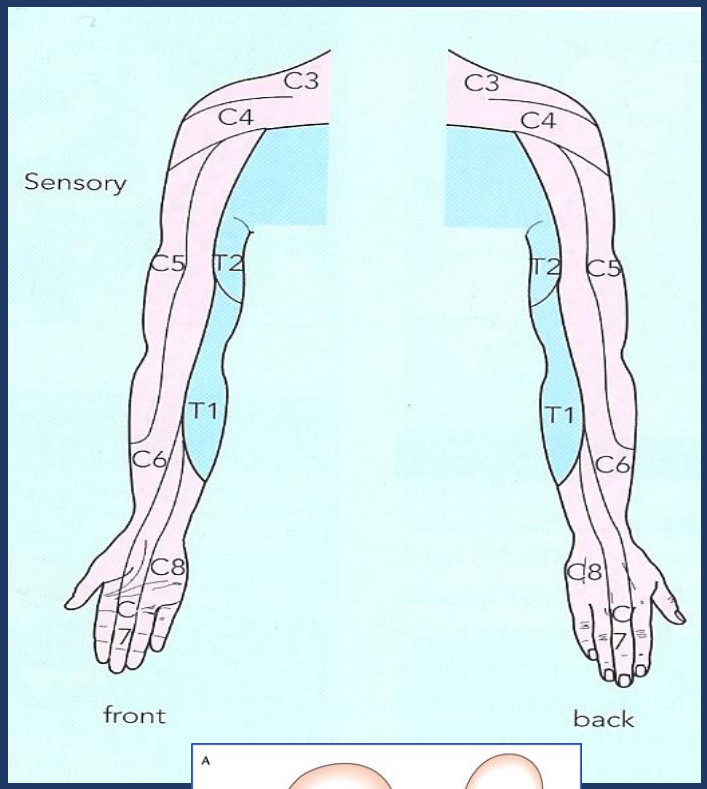
MOVE

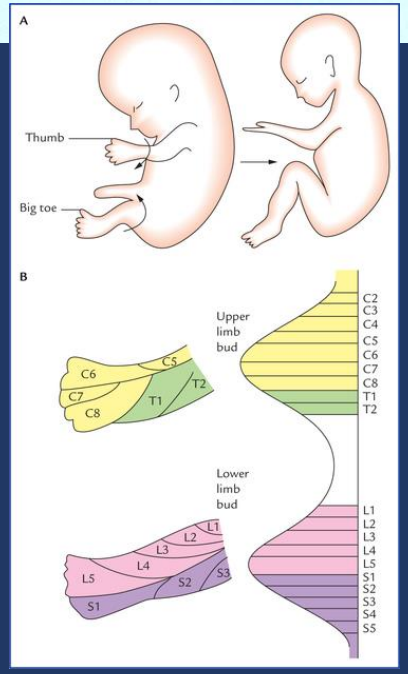

Cervical Spine
0°
Extension
Flexion
45°
45°
0°
Left Rotation
Right Rotation
80°
80°
(turn to look over shoulder)
Right Lateral Flexion
0°
Left Lateral Flexion
45°
45°

Sensory supply

Dermatone pattern

- Assess sensation by asking patient to close eyes
- Use light touch
- Compare with other side
- Any abnormalities- discuss with senior doctor
- Also test sensation to angle to jaw & lower ear (C3/4)





POWER

Power in myotomes are supplied by segments C5 to T1- assess by resisted tests- this is a basic initial examination. If abnormalities found, other screening tools can be used (e.g. wrist extension-C6,7):

- C5 Shoulder abduction (deltoid)
- C6 Elbow flexion (biceps)
- C7 Elbow extension (triceps)
- C8 Finger flexion
- T1 Intrinsic muscles of the hand

DEEP TENDON REFLEXES :

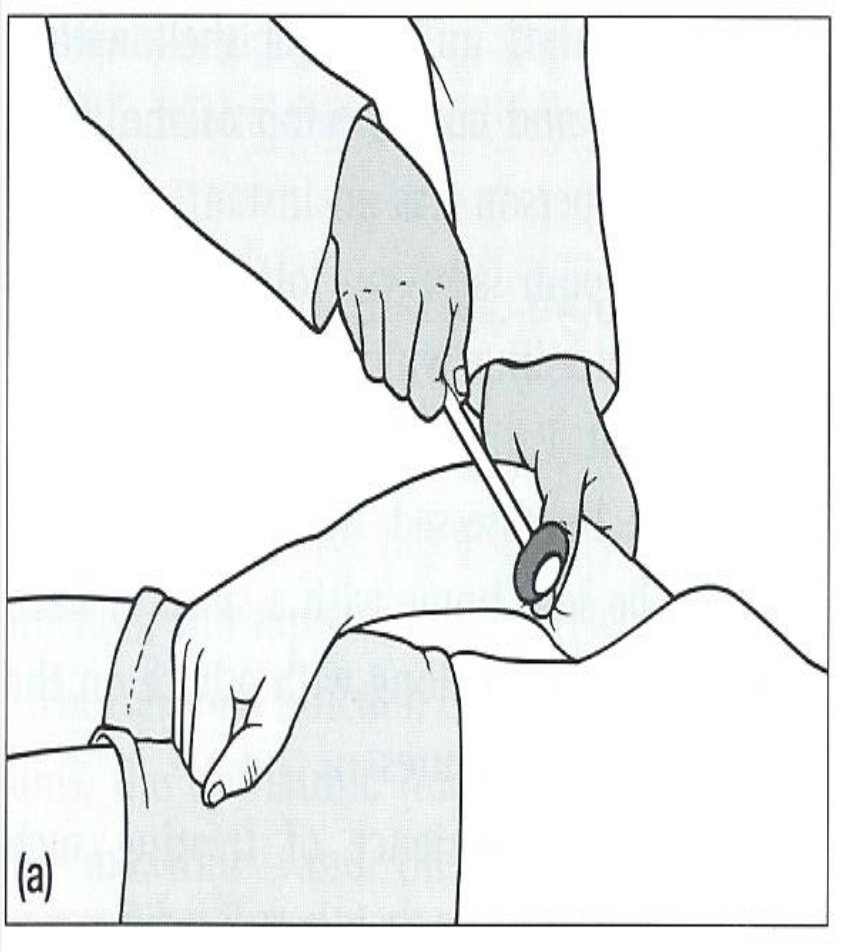
Biceps: C5/6

Triceps: C6/7

Supinator jerk: C5/6

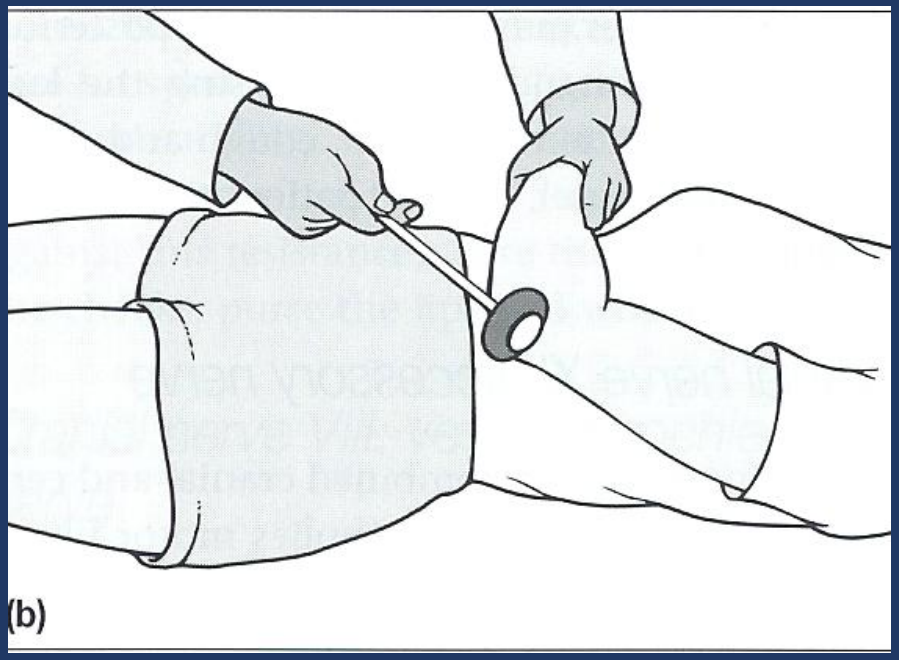
BICEPS

- Place thumb or index finger on the bicep tendon and strike it with patella hammer
- Use a pendular motion & grasp hammer at the end
- Observe for contraction of biceps muscle
- If no response, ask patient to clench their teeth or grip the fingers of the other hand just before testing
- Compare with other side



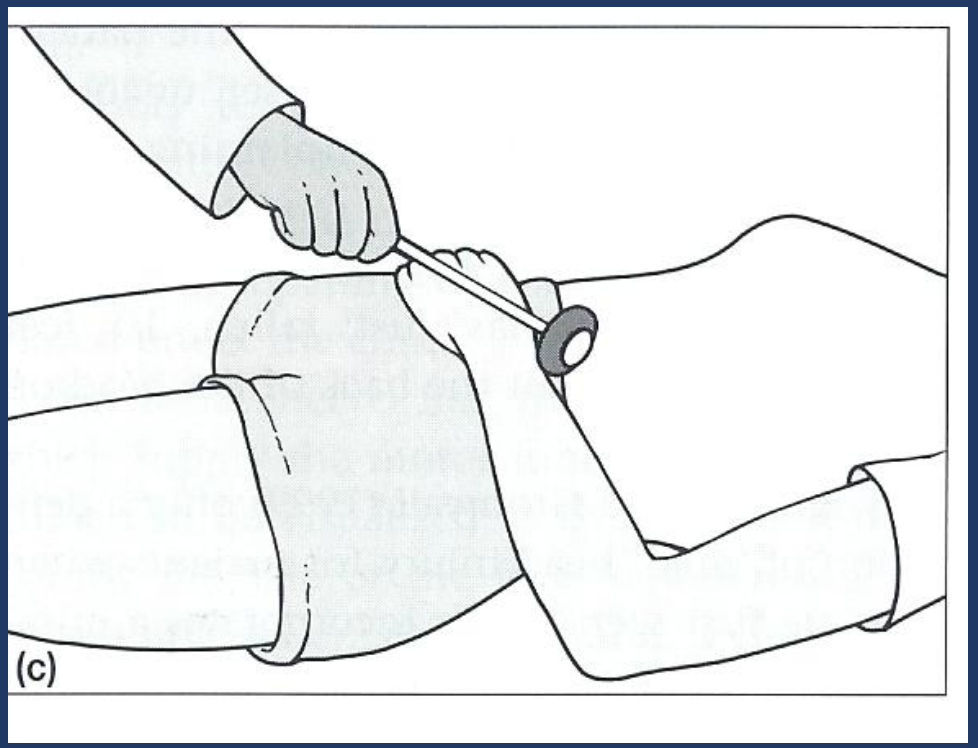
TRICEPS

- Bring patients arm well across the body
- Elbow is flexed to expose tendon
- Strike tendon with hammer
- Normal response is contraction of the triceps
- Compare with other side



Supinator

- Strike the radial margin of the forearm approximately 5cm above the wrist
- The response is contraction of brachioradialis and biceps
- Also observe the fingers of the hand. A brisk reflex if accompanied by finger flexion



NECK PAIN

TRAUMA

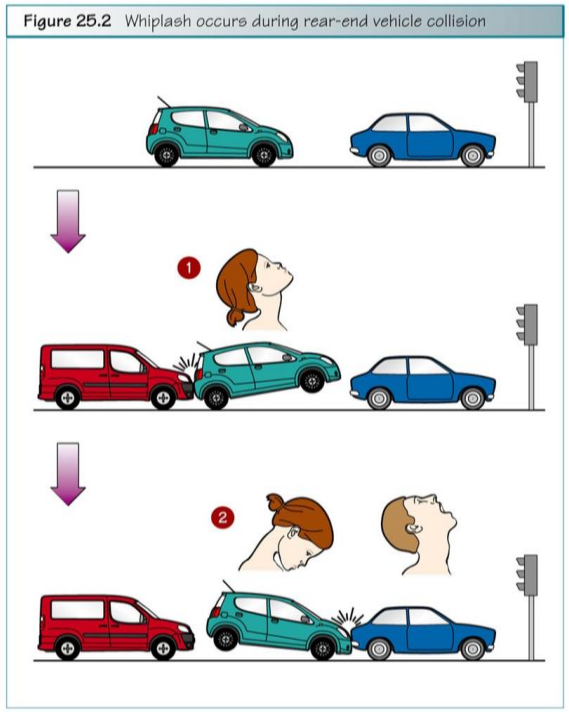
ESTABLISH EXACT MOI

- RTC
  - MOTORCYCLE, BICYCLE, PEDESTRIAN
- DIVING
- FALL > 1 METER, eg DOWN STAIRS
- RUGBY ACCIDENTS

NON TRAUMA

- ✓ **Mainly torticollis**
- ✓ **Osteoarthritis**
- ✓ **Spinal infections/tumours**

Whiplash



- Pain & stiffness of often delayed –can take up to 48 hrs for maximum
- Often associated back/shoulder pain and headache

Treatment:

- Early mobilisation
- Analgesia
- Advice leaflet
- NO soft collar !

Ref: Morris et al,. 2014: page 62

Treatment & advice

Three part question

In [patients with a neck sprain] is [early neck mobilisation or immobilisation in a soft collar] better at [reducing early and late neck symptoms]?

Clinical scenario

A 45 year old man attends the emergency department following a road traffic accident. He complains of neck discomfort. He has discomfort on neck movement and clinical examination reveals muscular tenderness. You diagnose a neck sprain (whiplash injury). You wonder whether a early mobilisation is better than immobilisation in a soft collar.

Comment(s)

There are numerous PRCTs and a systematic review in this area. The evidence appears to consistently suggest that active treatments are superior to rest or collar use. The systematic review is cautious in its conclusions as the quality of many of the studies (by their own unique score) was low. One difficulty is that in several studies long term findings are not that different, which arguably may well be the case. However, the active groups do appear to get better quicker.

Clinical bottom line

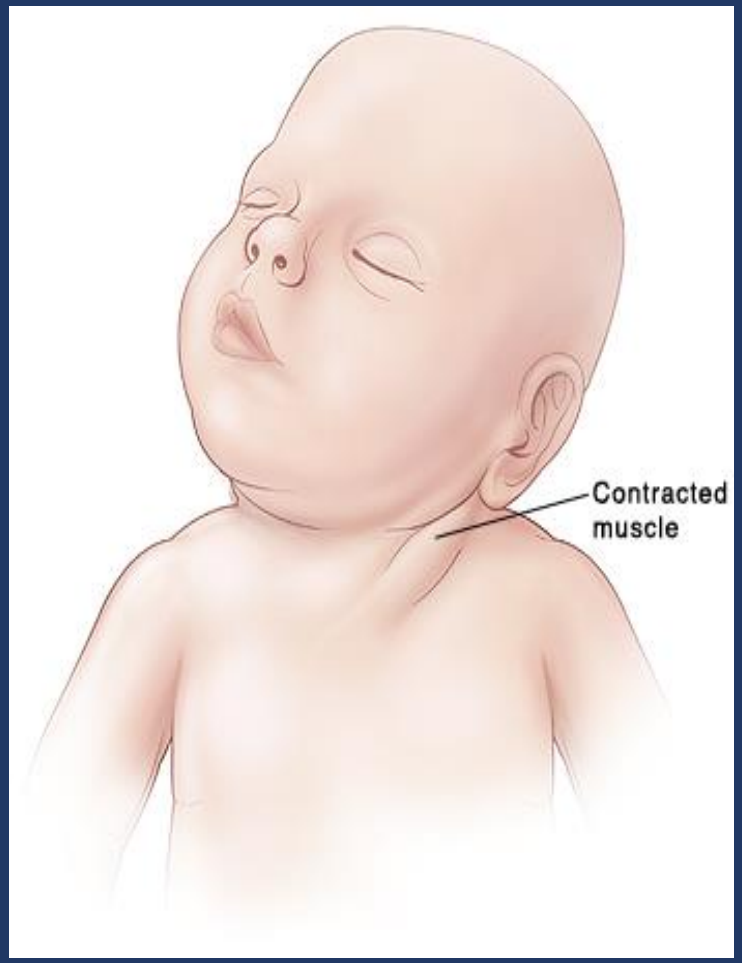
Patients with simple neck sprain (whiplash) should be advised on neck mobilisation and encouraged to commence as soon as possible. They should not be given cervical collars.

Level of evidence

Level 2 – Studies considered were neither 1 or 3.

TORTICOLLIS /WRY NECK

- Torticollis or wry neck is common and is thought to be due to minor local musculoskeletal irritation causing pain & spasm in neck muscles.
- Cause is often unknown but it may be due to bad posture, e.g. positioning at a computer screen, sleeping without adequate neck support



History :

- Sudden onset (often on wakening) of severe unilateral pain with deviation of the neck to that side. Occasionally the pain may be at the back of the neck. The pain often refers to the head or shoulder region.
- The neck feels stuck in one position and attempts to move causes sharp spasms of pain.
- There will be NO history of trauma. There may be a history of exposure to cold, prolonged or unusual positioning of the neck or unusual posture
- If there is history of trauma refer to Canadian C spine rules and if required discuss with GP

EXAMINATION

- Tenderness is usually diffuse on the involved side with palpable muscle spasm, there may be trigger points (tender points of muscle spasm).
- Look for restricted or painful movements.
- Check for any red flag signs that would suggest a more serious cause-
- Ensure there are NO neurological signs,
    - check for power and sensation in the arms.
- Check the throat for infection and check for regional lymph nodes which would again suggest a different cause.
- There should be no bony tenderness in the neck

TREATMENT

- Explain to the patient that acute torticollis usually resolves within 24-48 hours, although occasionally may take up to a week.
- Recurrence is common.
- Offer analgesia (paracetamol or ibuprofen first line)
- It is important to advise gentle mobilisation within the comfort zone, soft collars are NOT recommended.
- Intermittent heat or cold packs may help reduce pain and spasm. Sleep on low firm pillow, maintain good posture

Referral

- Consider referral to GP, in severe cases where a muscle relaxant may be prescribed.
- If you are unsure of the diagnosis or if any neurological symptoms: refer to GP or ED

Cervical Spondylosis

- Degenerative changes in intervertebral disc and bony osteophytes
  - Narrowing of canal with nerve root compression
- COMMON & incidence increasing
- 90-95% of men over 50 and 70-90% of woman over 60-65 years of age have radiological evidence of this
- Approx. 25% have symptoms
  - Pain (can radiate to shoulder) & stiffness
  - Headache at the back of head

Treatment:

- Exercise - ? Physio
- Simple analgesia

Refer if:

- Worsening pain
- Pins & Needles to upper limb
- Problems with co-ordination
- Any ‘red flags ‘ spine

Ref: Nagaratnam et al (2016)

NECK INJURIES IN CHILDREN

Can sustain cord injury without a fracture: Ligamentous injury know as

SCIWORA

Spinal Cord Injury Without Radiographic Abnormality

Have a low threshold for referring children to ED unless:

- Fully conscious and able to communicate
- No high risk injury
- No neurological deficit in arms or legs
- No distracting painful injury elsewhere
- No torticollis or abnormal posture of head
- Able to rotate head 45 ° left and right

Canadian C-spine rules applicable aged 10 and above.

Davies, et al (2017)

Case study

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No neurology to arms,

Given NSAIDS and re-examined 45 min later: C spine tenderness remains,

WHAT IS YOUR ACTION ?

CASE STUDY -2

- D/W with ED Consultant on call:
    - Needs X-ray to exclude bony injury but in view if self extrication after injury and normal neurology:
        - Can make own way to ED – no need for ambulance.

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