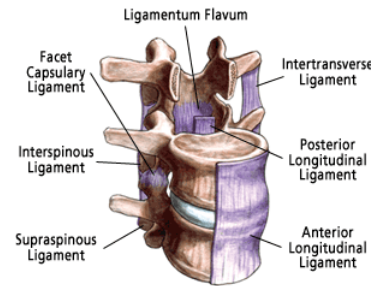


## Spinal Injuries Notes

- The cervical spine is very mobile = 55% of spinal injuries are cervical
- Males > females
- C4 and above injury = phrenic N. injury causing respiratory depression

- The atlas does not have a body. The axis has an odontoid process (dens) which is held against the ant. arch of the atlas with the strong transverse ligament

- Interspinous ligaments connect spinous processes, whereas the supraspinous ligaments connect their tips



- **Injury mechanism:**

- Hyperflexion = wedge fractures or post. ligamentous injuries
- Hyperextension
- Compression (vertical force) = burst fractures
- Axial loading, direct injury
- Penetrating

- **Management in the field:**

- 1- Immobilize
- 2- Check consciousness = if awake then keep immobilized, if not, patient might need CPR
- 3- Maintain active bleeding, BP, and oxygenation
- 4- Brief motor exam

- **Management in the hospital:**

- 1- Immobilization.
- 2- Systemic measures: CVS, RS, GIT, bladder and temp.
- 3- Detailed neuro evaluation.
- 4- Radiological evaluation.
  - Most important and first Xray should be done for the thorax
  - AP/lateral = for any fractures or dislocations
  - Schwimmer's view = for C7-T1 (most imp.)
  - CT scan
  - MRI is done after admission to visualize soft tissue structures (disc prolapse, bleeding)
- 5- Steroids; 5-10% get worse after arriving the E/R; due to edema, ischemia, or inadequate immobilization
- 6- Spinal instrumentations
- 7- Rehabilitation

- **Classifications:**

- **Significance**

- 1- Minor = processes
- 2- Major = body / dislocation

- **Stability**

- 1- Stable, e.g. wedge fracture
- 2- Unstable (injury to 2 columns), e.g. burst (ant, mid)

- **Neural involvement**

- 1- Intact cord and roots
- 2- Damaged

- a- Complete cord transection:**

- Quadriplegia with upper and lower extremity areflexia; anesthesia below the affected level.
- Neurogenic shock (i.e. hypothermia + hypotension without compensatory tachycardia).
- Loss of rectal and bladder sphincter tone.
- Respiratory insufficiency: phrenic N. may be injured if the damage is at C4 or above.

- b- Incomplete**

- Ant. spinal cord syndrome (caused by trauma or prolapse)
- Post. spinal cord syndrome
- Central spinal cord syndrome (most common):

In patients with cervical spondylosis who sustained a **severe hyperextension** injury: dissociated sensory loss (mostly pain and temp) and weakness more prominent in UL (cape-like)

- Brown-Sequard syndrome
- Cauda equina syndrome:

**Only the cauda equina** = polyradiculopathy with pain, radicular sensory changes, asymmetric LMN-type leg weakness, and then, sphincter disturbances.

**Only the conus medullaris** = early disturbance of bowel/bladder function first

- **Complications:**

- Recurrent chest infections, DVT, UTI, urinary stones, hypoproteinemia, bed sores, depressions, painful spasms, contractures, dysreflexia, loss of temp. control.

▪ Management as in the book:

Type	Cause	Management
<b>Stable, - Neuro deficits</b>	<ul style="list-style-type: none"> <li>- Spinous process Fx</li> <li>- Transverse process Fx</li> <li>- Wedge Fx &lt;50%</li> </ul>	<ul style="list-style-type: none"> <li>- Bed rest</li> <li>- Analgesia</li> <li>- Physiotherapy</li> </ul>
<b>Unstable, - Neuro deficits</b>	<ul style="list-style-type: none"> <li>- Cervical dislocation</li> <li>- Wedge Fx &gt;50%</li> <li>- Including 2 columns</li> </ul>	<ul style="list-style-type: none"> <li>- Reduction &amp; maintenance (using screws)</li> </ul>
<b>Stable, + Neuro deficits</b>	<ul style="list-style-type: none"> <li>- Temporary dislocation</li> <li>- Injury to spondylotic spine</li> <li>- Bone or disc compression</li> </ul>	<ul style="list-style-type: none"> <li>- Conservative first</li> <li>- Cord damage = methylprednisolone IV</li> <li>- High cervical injury = ventilation (tracheostomy)</li> <li>- Urine retention = catheter</li> <li>- DVT = pneumatic LL compression and anti-thrombotic</li> <li>- Surgery in case of compression is detected or pt deteriorated due to edema or hematoma</li> </ul>
<b>Unstable, + Neuro deficits</b>	-	<ul style="list-style-type: none"> <li>- Same as above</li> <li>- Surgery of reduction and maintenance</li> </ul>