

Thoracic and Lumbar Spine Injuries

Diagnosing Instability

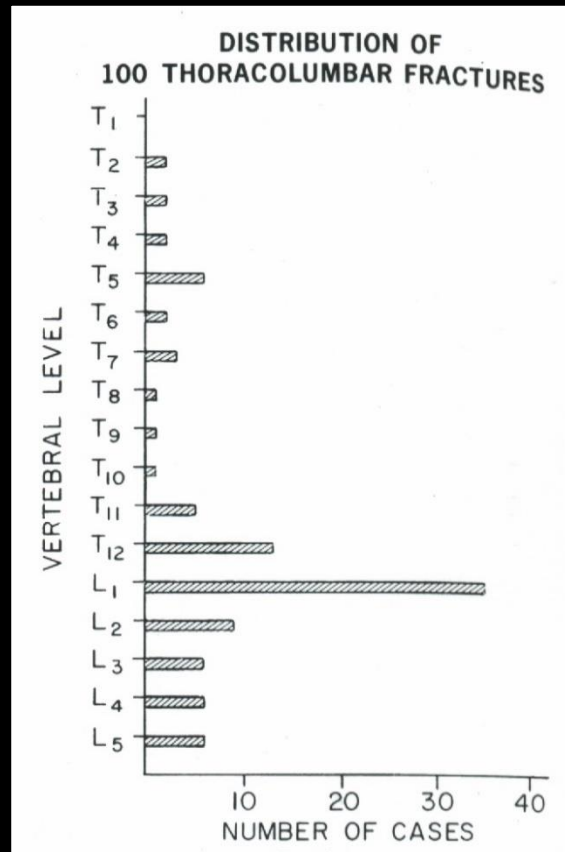
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University of California San Francisco

Director, Orthopaedic Spine Service
San Jose Regional Medical Center



Fracture distribution



**T10 - L2 Transitional zone
accounts for > 50 % vertebral
body fractures and 40 % SCI**

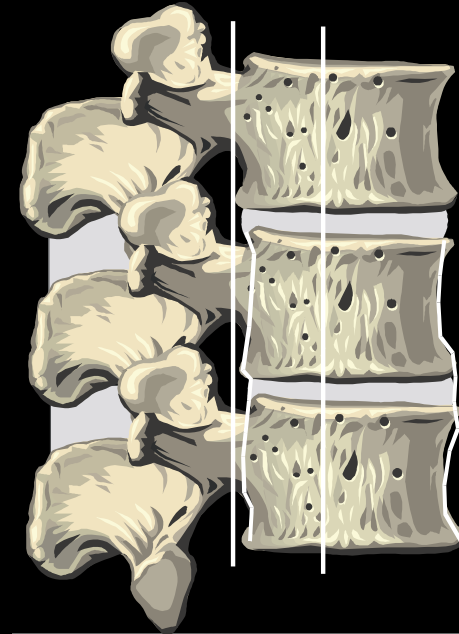
- T 1 - T 10 16 %
- T 11 - L 1 52 %
- L 2 - L 5 32 %

Operative Indications

- Decompress what is compressed
- Stabilize what is unstable.

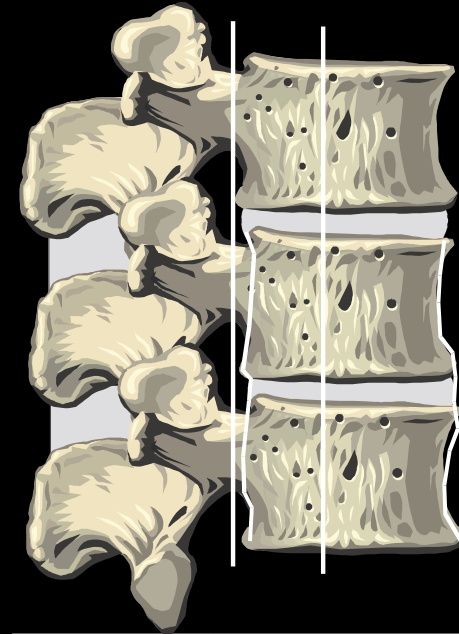
Anatomy

- 3 columns to the T and L spine:
 - Anterior- ALL , anterior 2/3 body
 - Middle - post 1/3 body, PLL
 - Posterior- all structures posterior to PLL

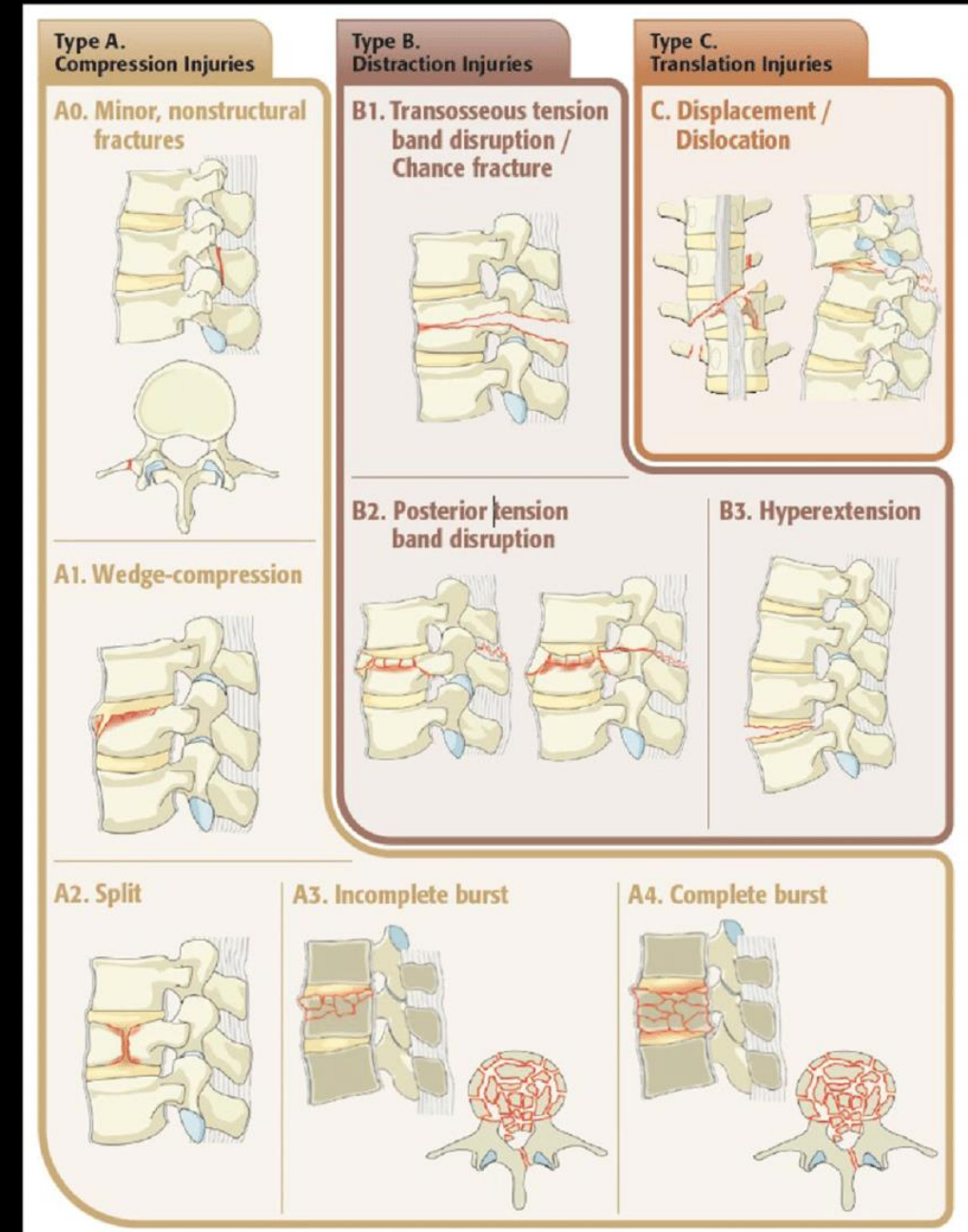


Anatomy

- Anterior vertebral body withstands axial load and compression
- Posterior ligamentous complex is a tension band that resists forward flexion or kyphosis



- Compression Injuries
- Distraction Injuries
- Translation Injuries

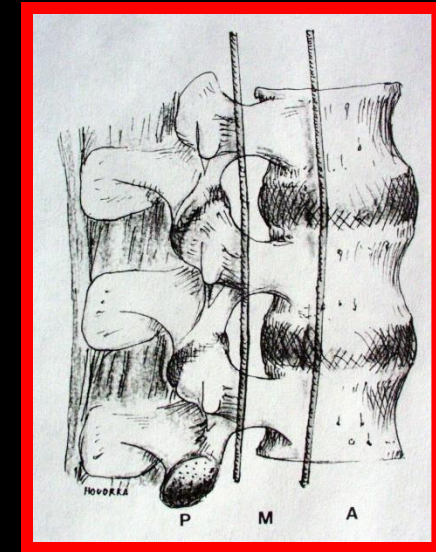


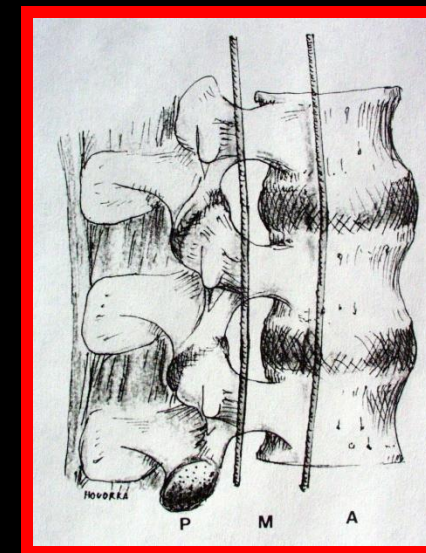
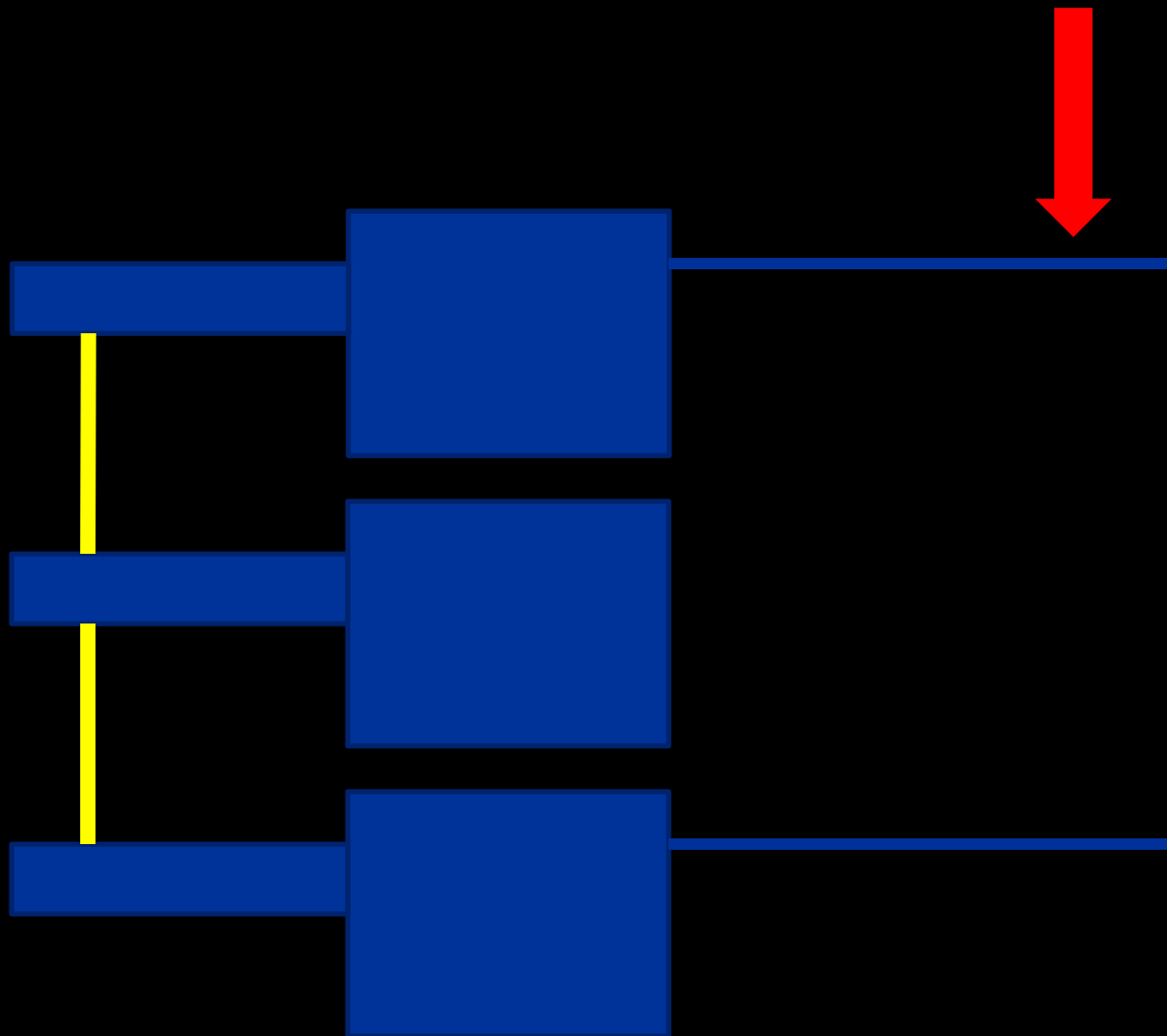
posterior

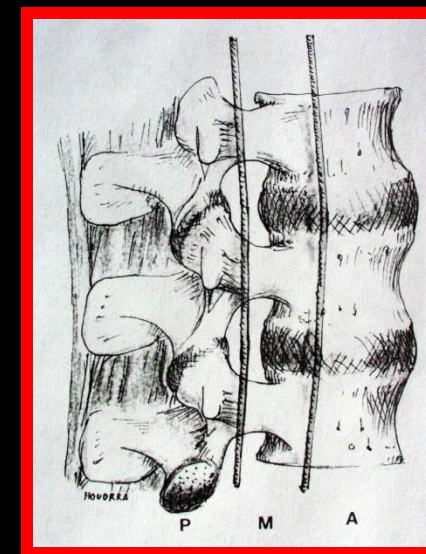
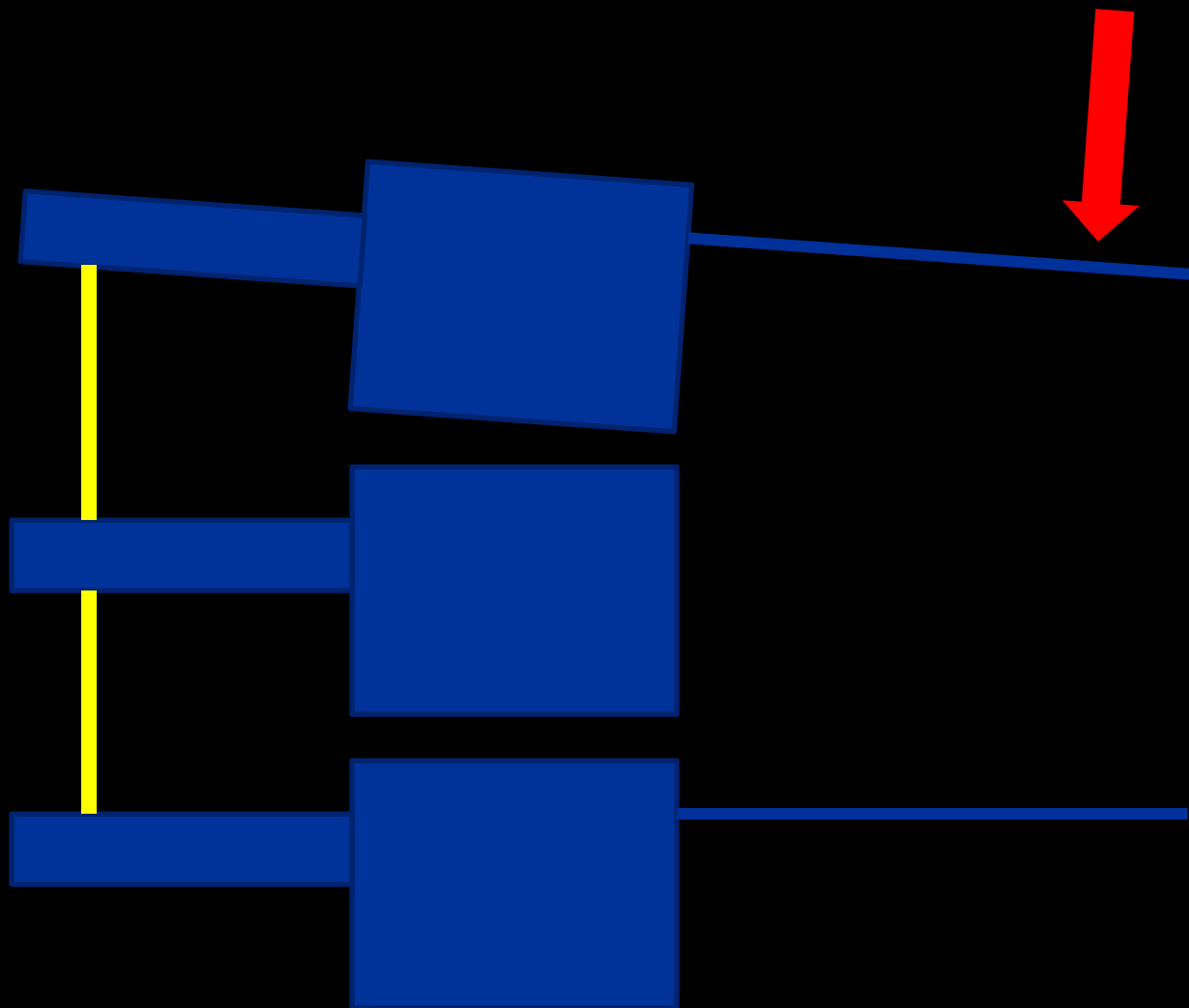
anterior

SP

Vertebral
body







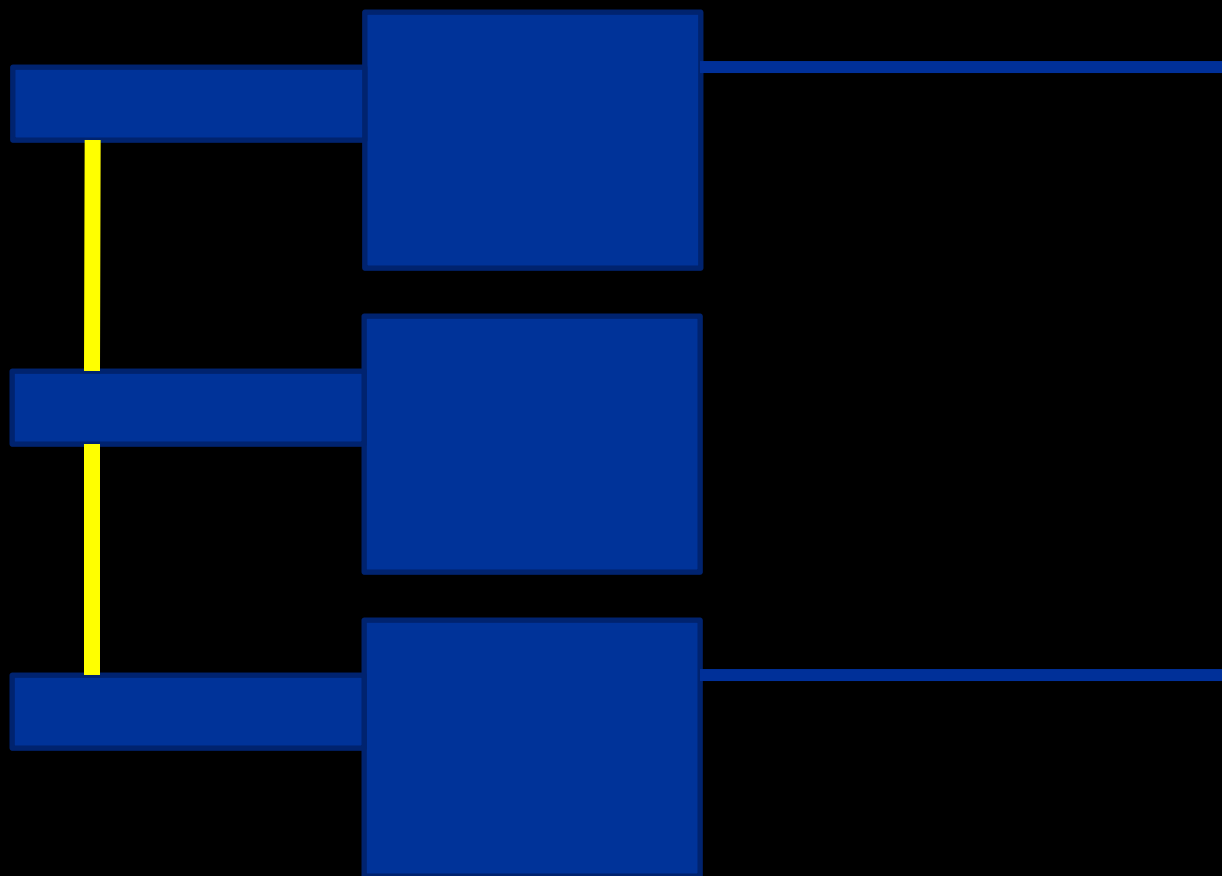
Axial Loading Injuries

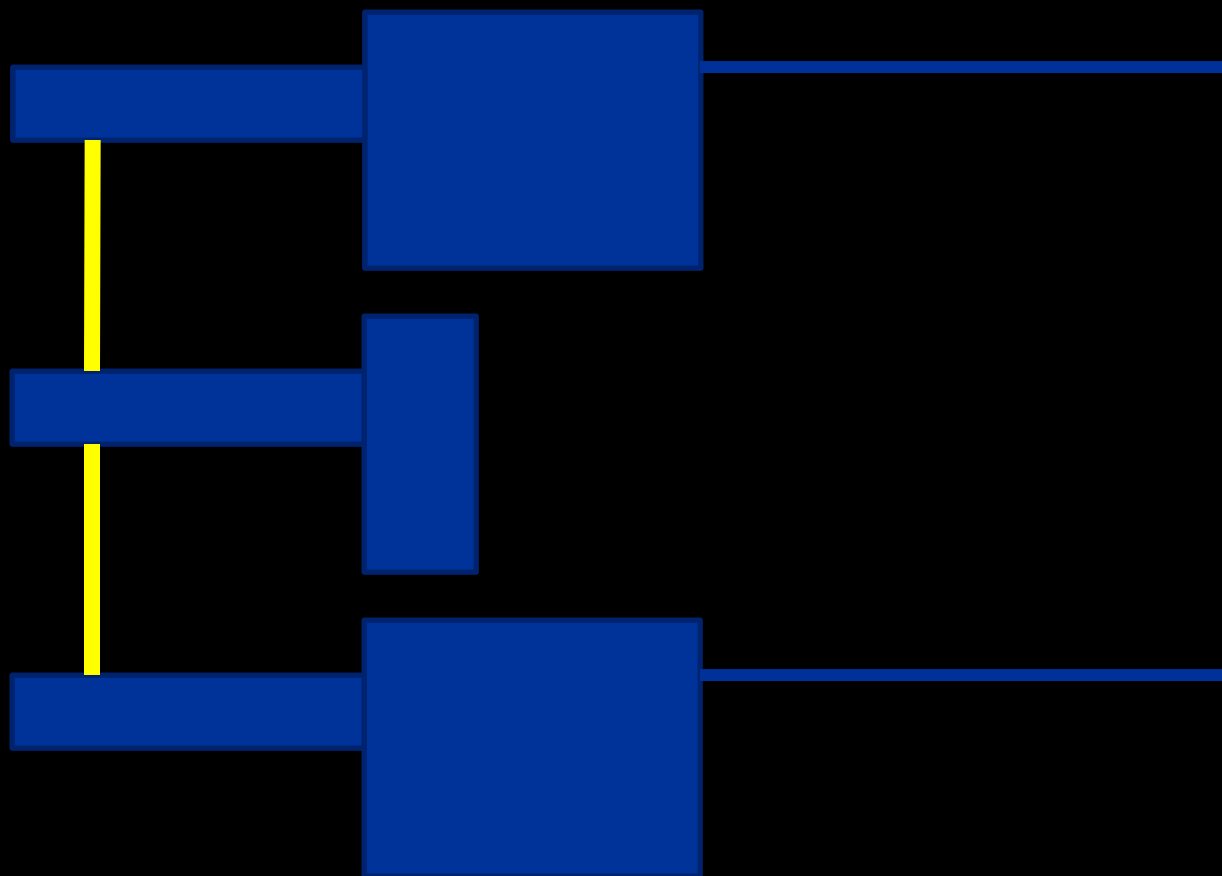
Compression fractures

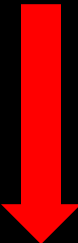


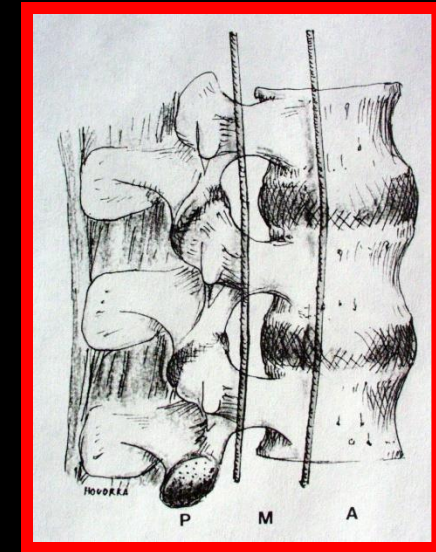
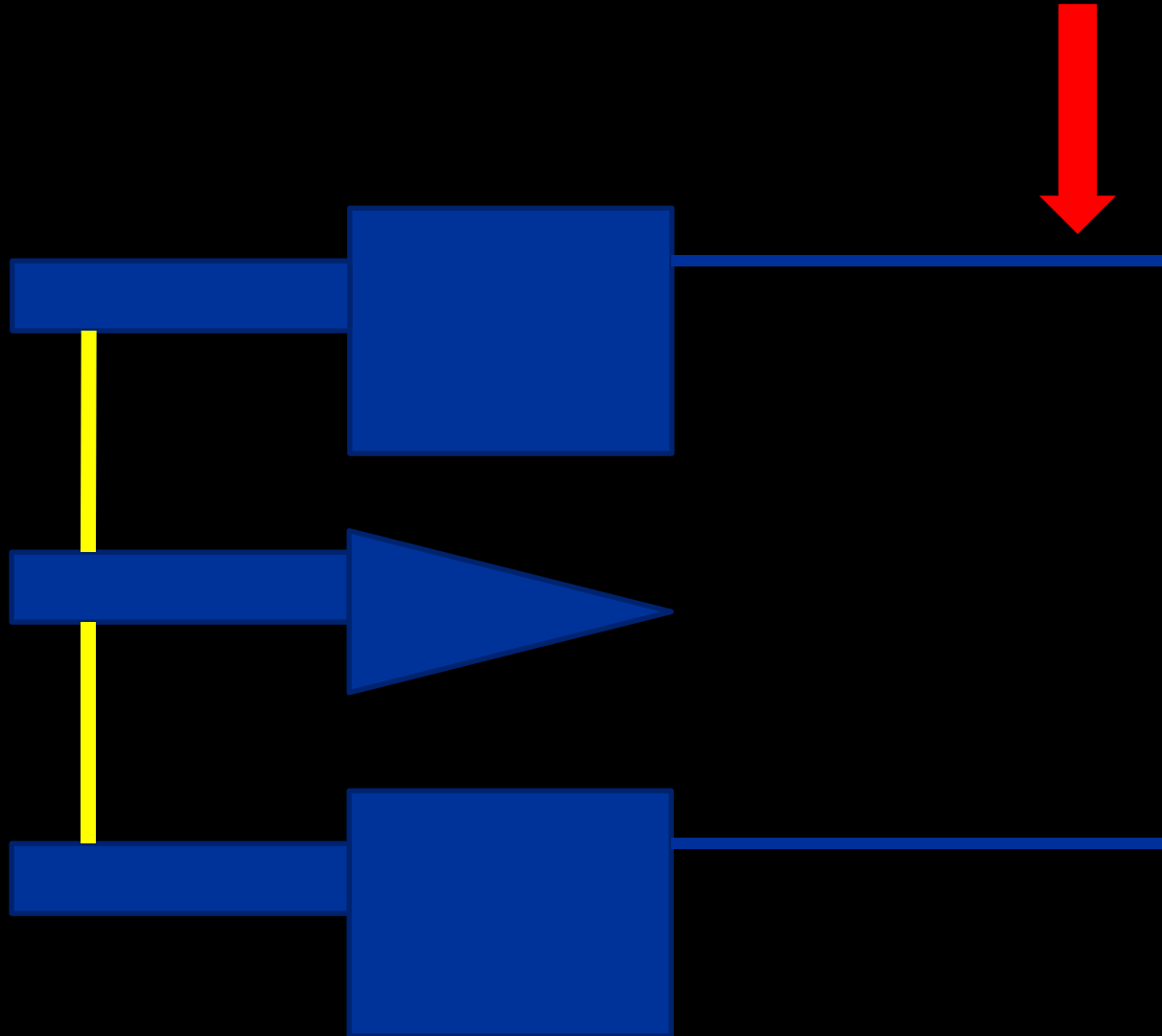
Burst fractures

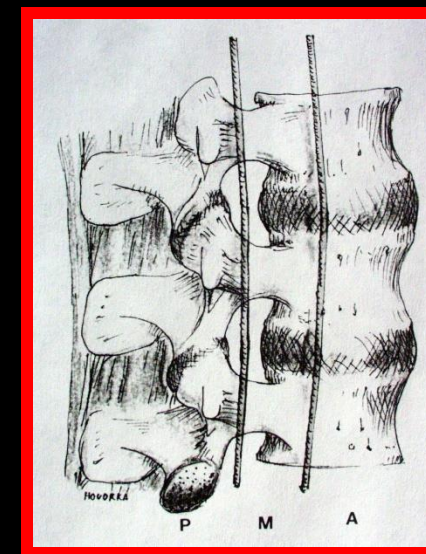
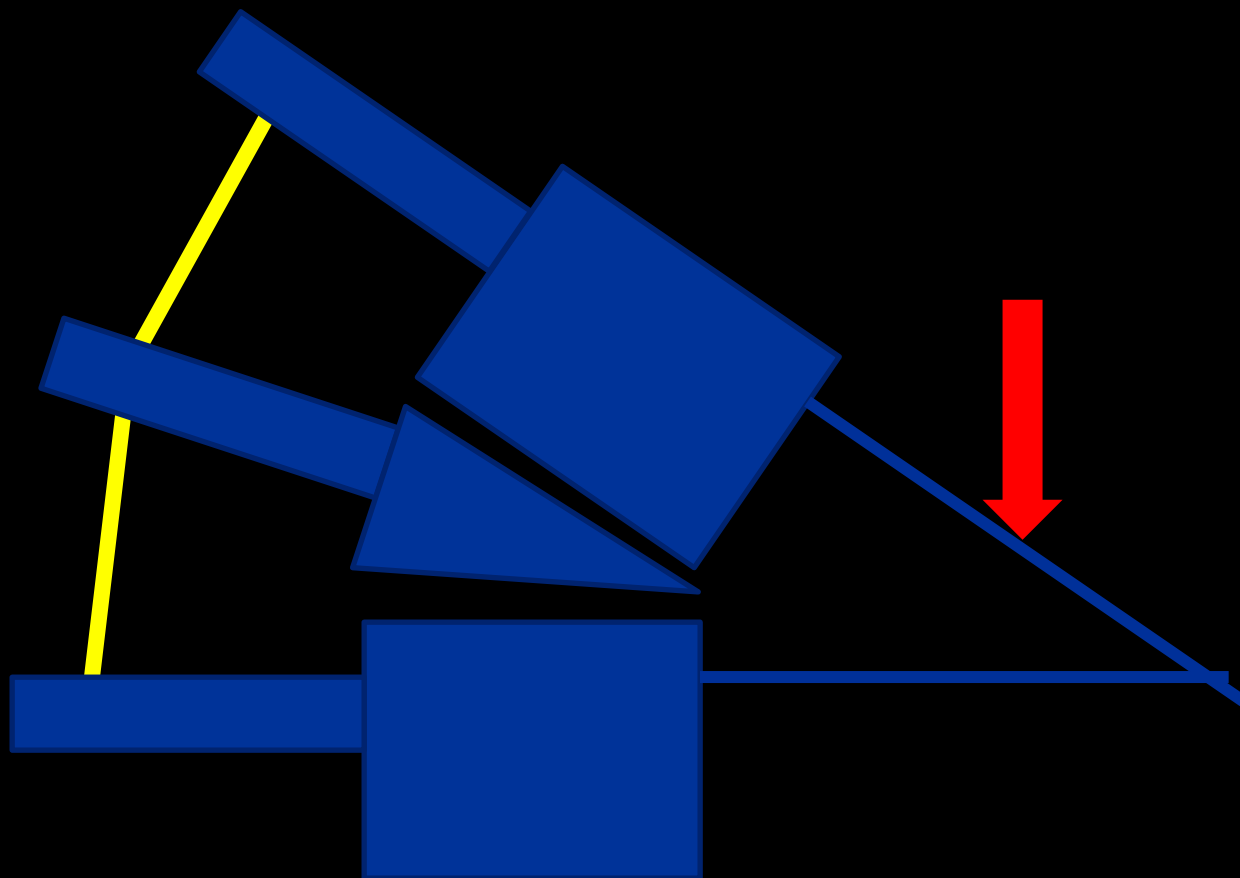




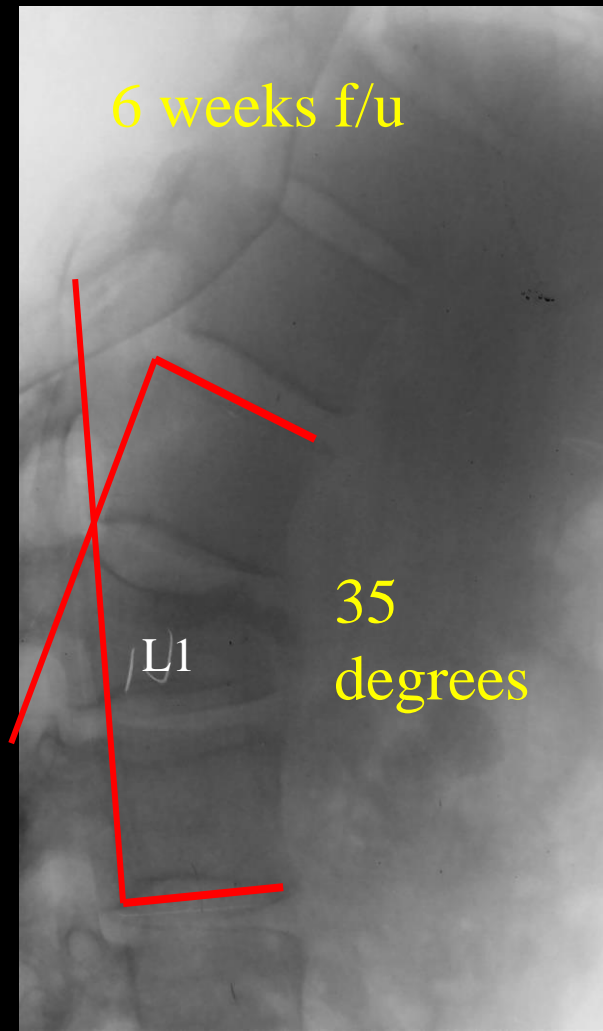




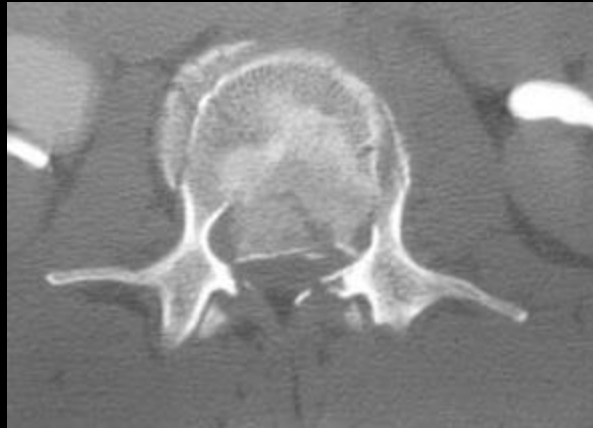




L1 Burst Fracture



Burst fractures

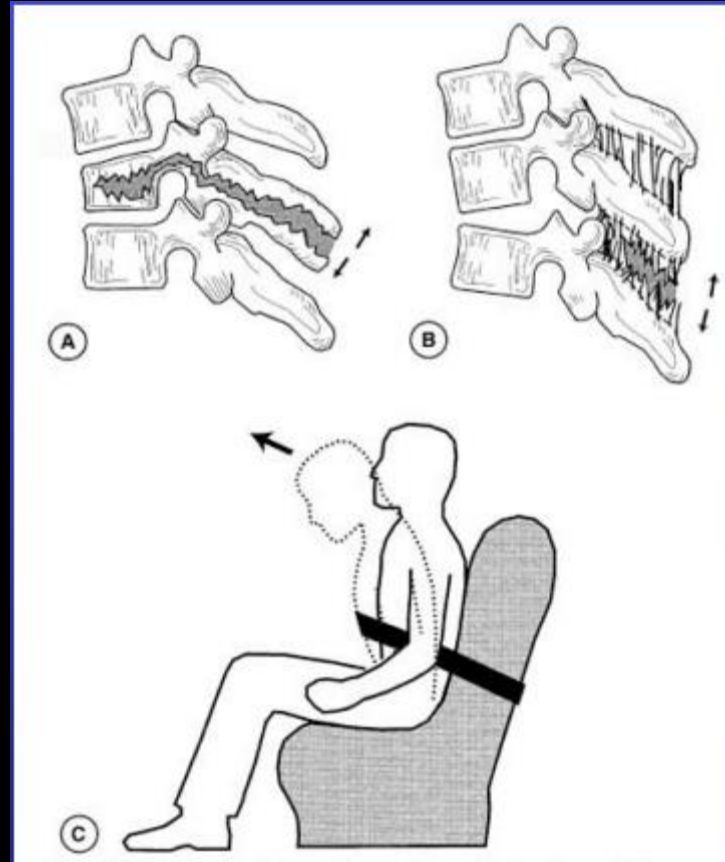


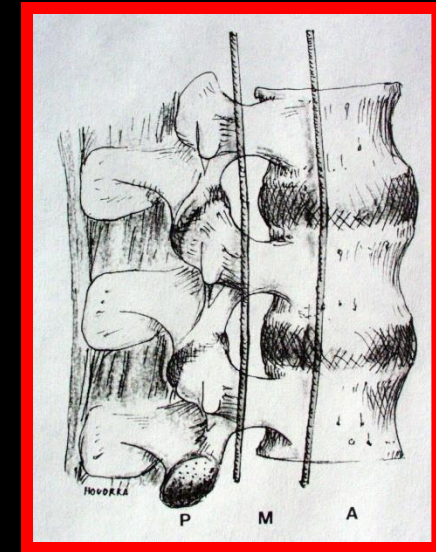
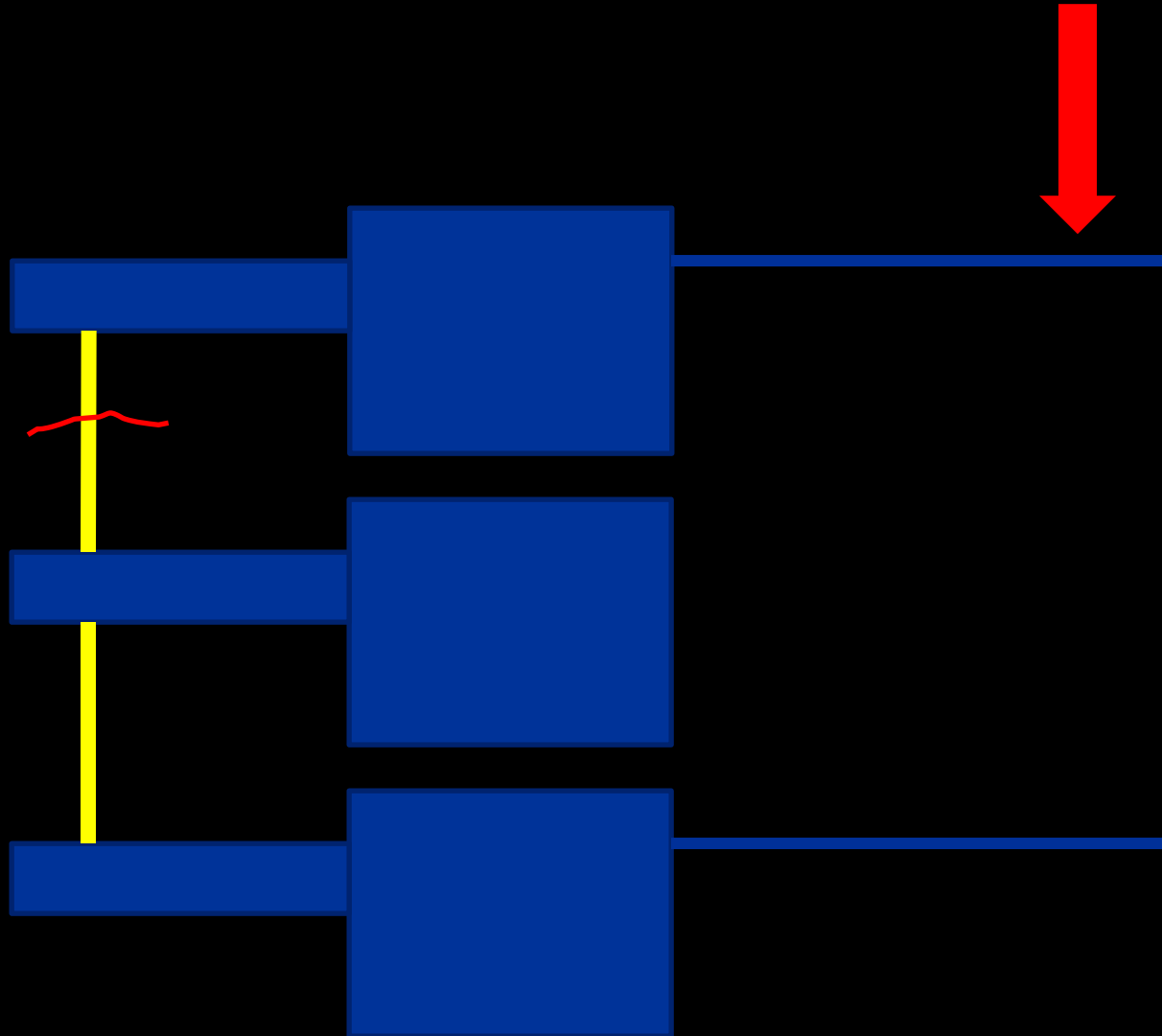
Distraction Injuries

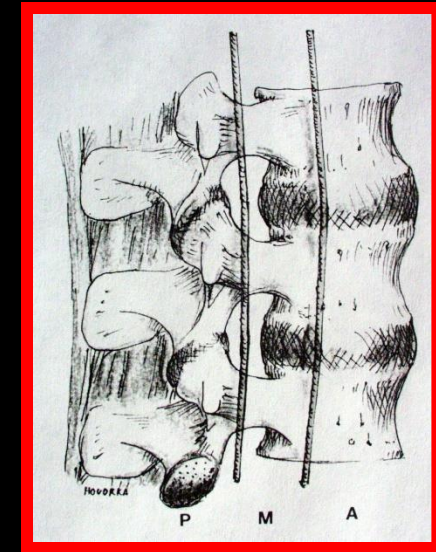
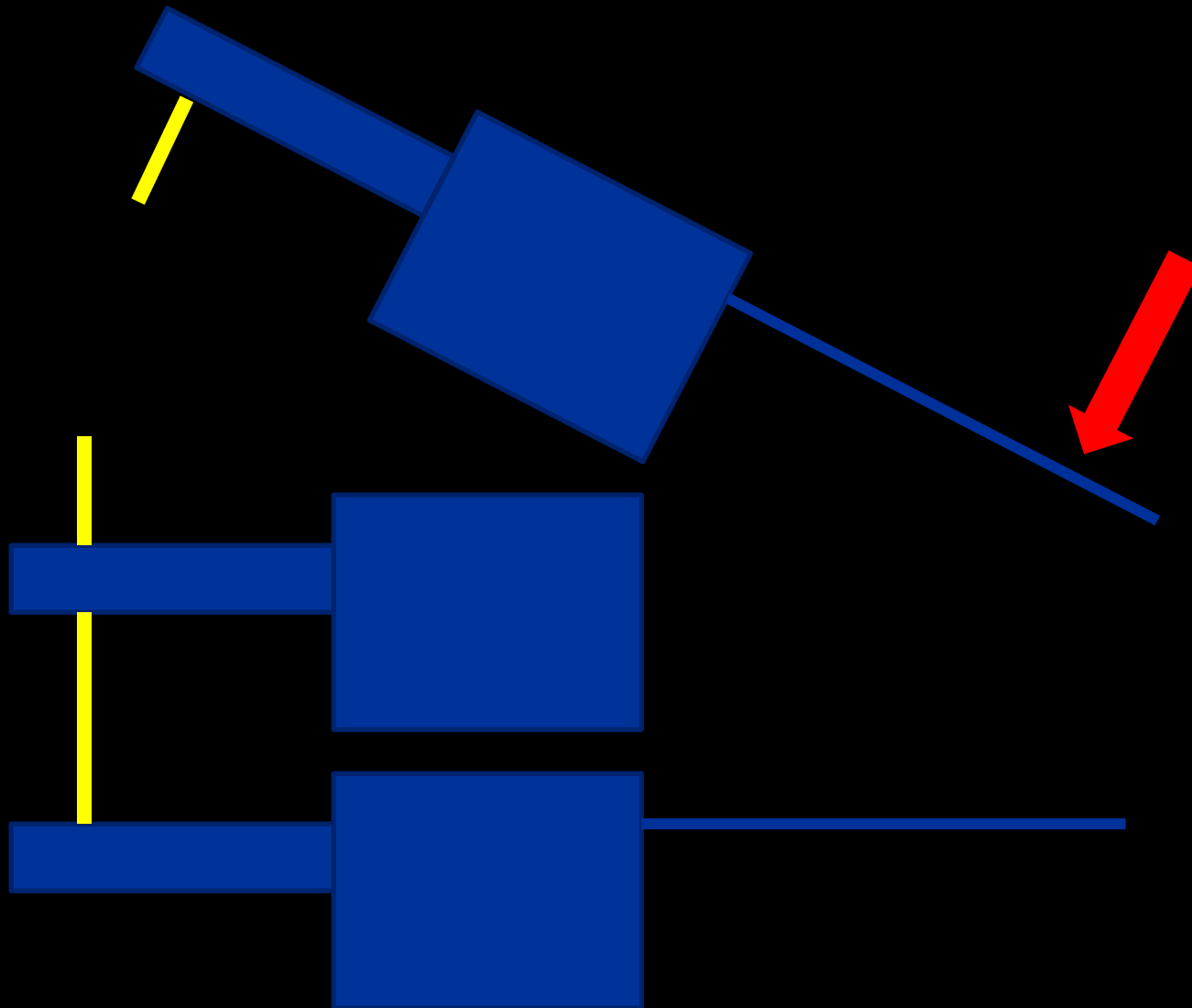
- Chance Fracture
- Flexion Distraction Injury
- Hyperextension Injury

Flexion Distraction

- Classic example is a Chance fracture





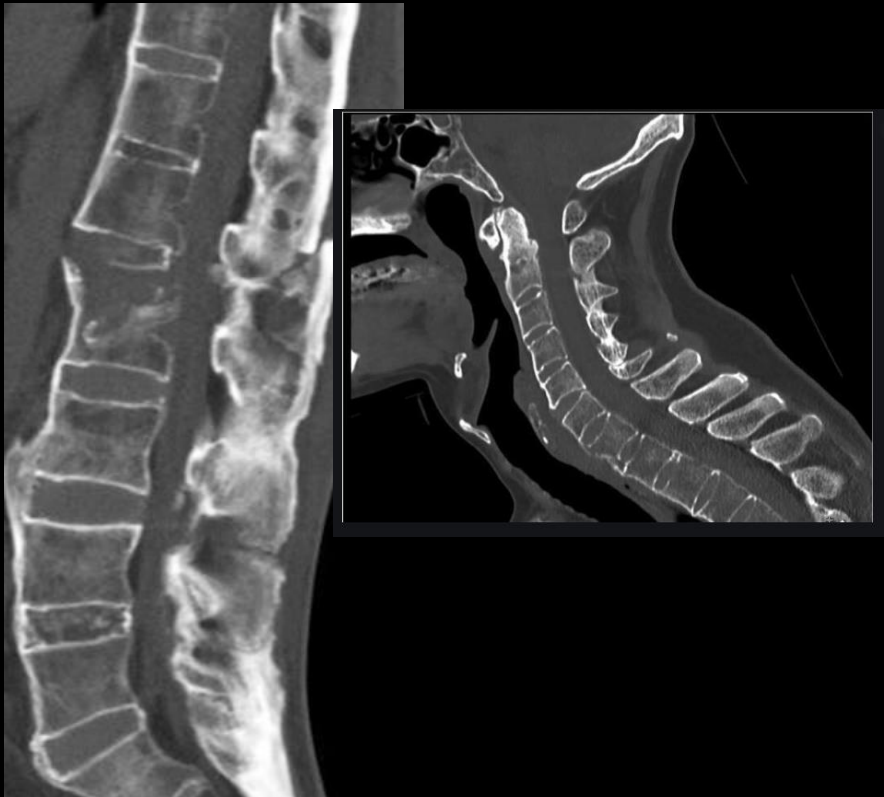




Ankylosed spine

Subset of patient who present with ankylosed spines

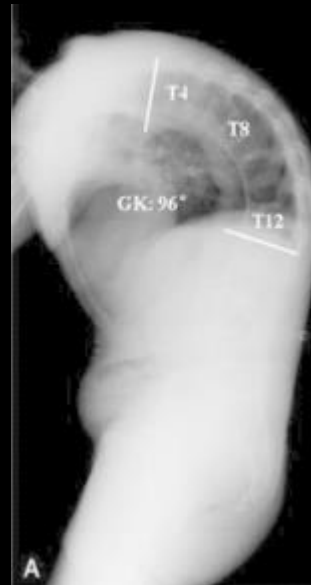
- Ankylosing Spondylitis
- Diffuse idiopathic skeletal hyperostosis



R 2012 / C-2294 / Pictorial review of

Ankylosed spine

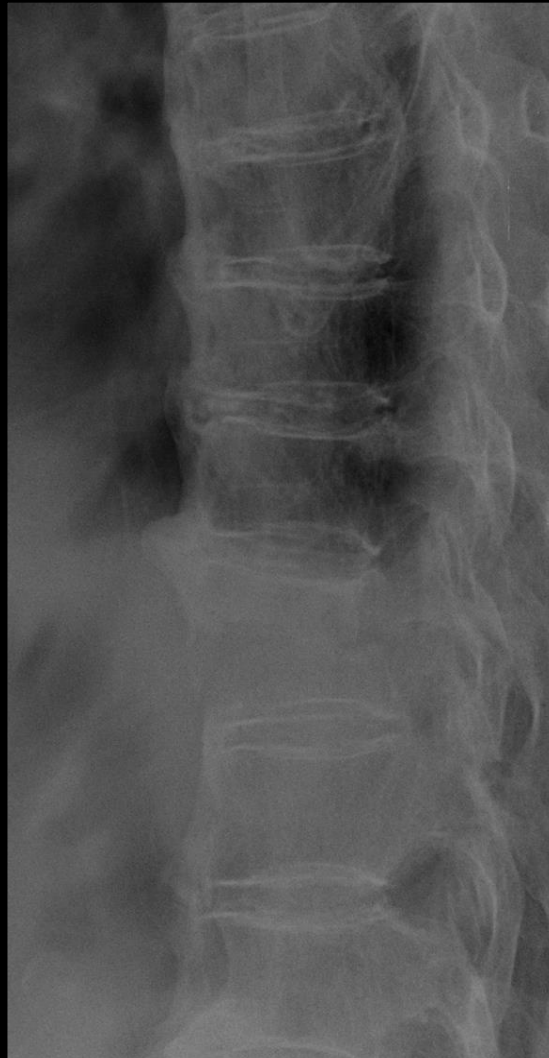
- If presenting with neck or back pain, they have a fracture until proven otherwise
- If no fracture seen on CT, obtain MRI (so long as they can fit in the MRI scanner)
- These are the patients who go to the MRI intact and come out paraplegic



Ankylosed spine

85 yo F

6.D2C0.6.C*1.0*1.0



Ankylosed spine

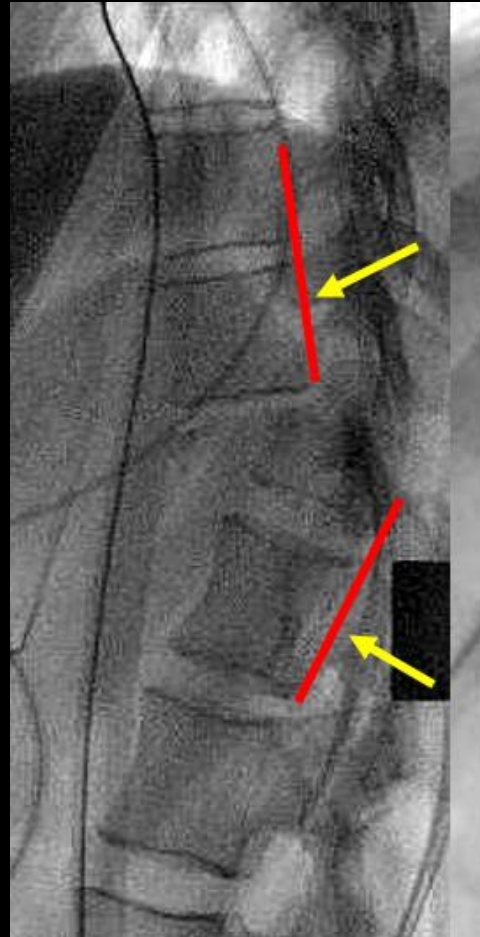
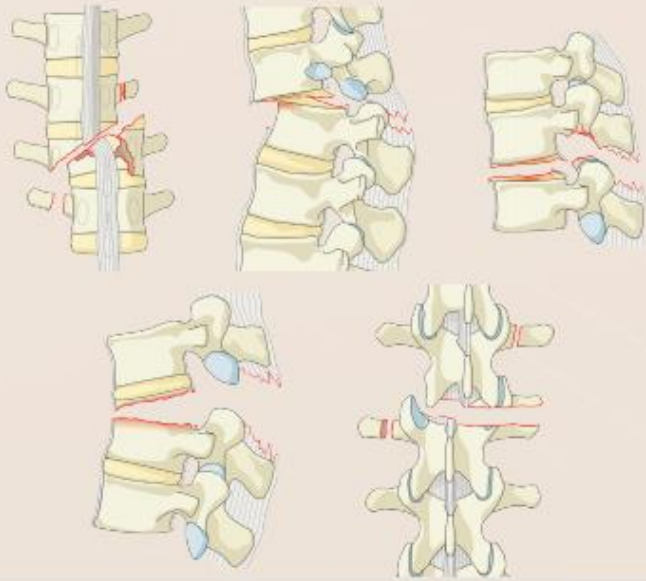


Translational Injuries

Type C. Translation Injuries

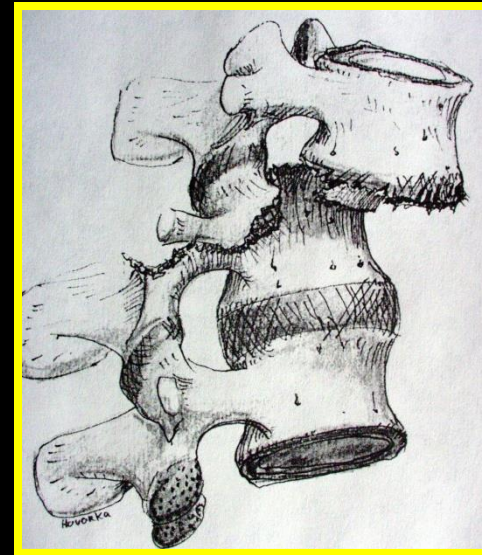
C Displacement or dislocation

There are no subtypes because various configurations are possible due to dissociation/dislocation. Can be combined with subtypes of A or B.



C-type

- Fracture dislocations (rotation or shear)
 - Disruption of all three columns
 - High incidence of neurologic deficits
 - Require surgery
 - Long segment fixation



Decision making in T-L fractures

- Considerations for operative intervention
 - Fracture morphology
 - Posterior ligamentous complex integrity
 - Neurologic impairment

Thank You!