

# Clearing the Thoracolumbar Spine

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# Why

- In multiply injured patients the thoracolumbar spine injury may be overlooked because of more obvious or immediately life threatening injury
- Secondary survey is often not performed immediately because of life threatening injury
- If diagnosis is delayed the risk of secondary neurological injury increases





# When

- All victims of blunt trauma require a thorough examination of the entire body to detect all injuries
- Cervical spine protection and clearance is well discussed
- Thoracolumbar spine clearance is less well considered

# Background

- Incidence of a thoracolumbar injury following blunt trauma is from 2 to 7.5%
- Incidence of another spinal injury once one is noted is 10%
- Fractures of the thoracolumbar spine have a rate of neurological deficit of 26–40%



# Background

- 37% – 47% of patients with thoracolumbar fractures have other associated major injuries (pelvis, long bone, or significant chest / abdominal injury)
- 31–33% of patients with thoracolumbar injuries have altered level of consciousness

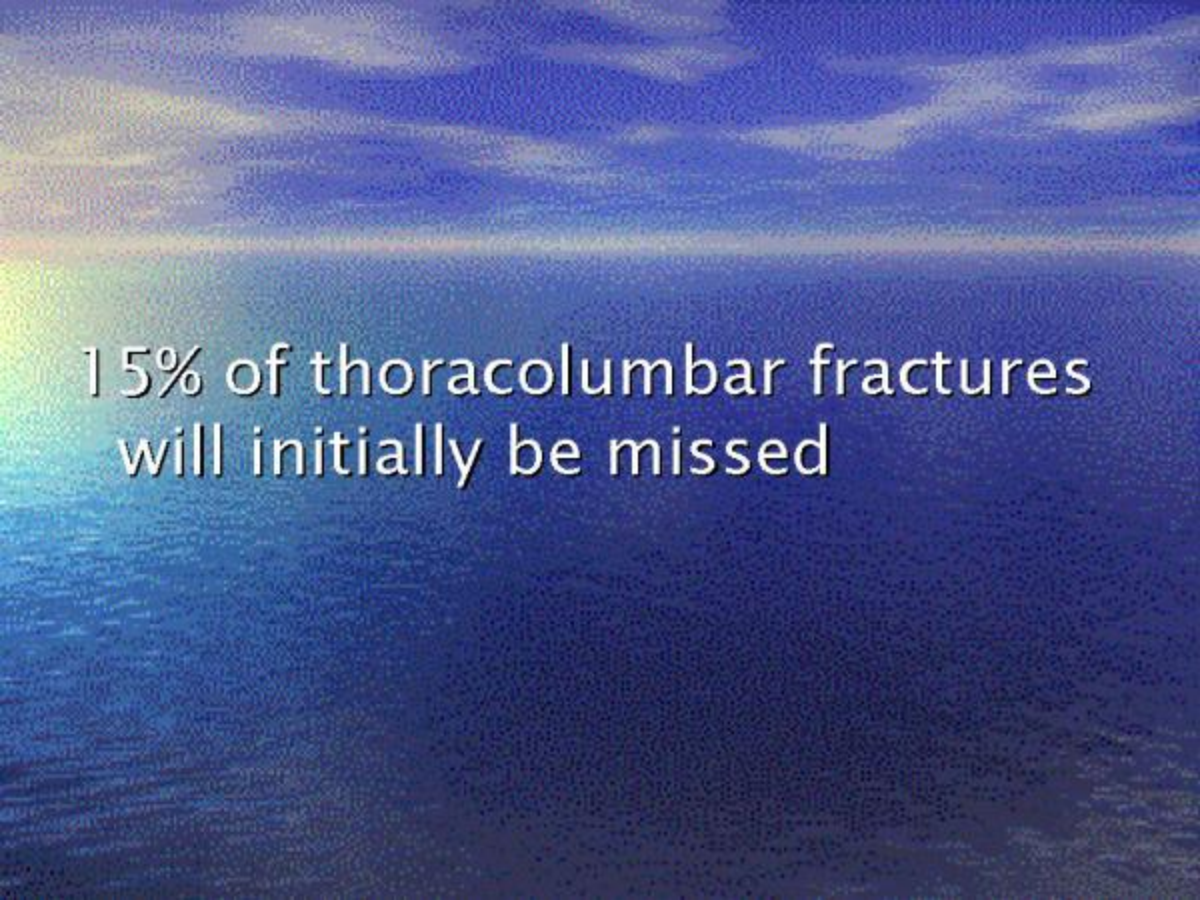
- So 1 in 20 blunt trauma patients will have a thoracolumbar fracture
  - Of these 1 /3 will have
    - Neurological deficit
    - Altered level of consciousness
    - Other major injury



# Missed injuries

- Delayed diagnosis of thoracolumbar fractures in 11% of patients
- Missed diagnosis in 5.5%
- Overall misdiagnosis rate of 15–17%
- 10 fold increase in risk of secondary neurological deficit if the diagnosis is delayed





15% of thoracolumbar fractures  
will initially be missed





# Aims of early diagnosis

- To prevent secondary neurological injury
- To allow planning of patient management and need for further imaging or referral

# How to clear the thoracolumbar spine

- No universally accepted system
- Several proposed



# History

- Everything in medicine starts with the history
  - All blunt trauma victims must have the spine cleared



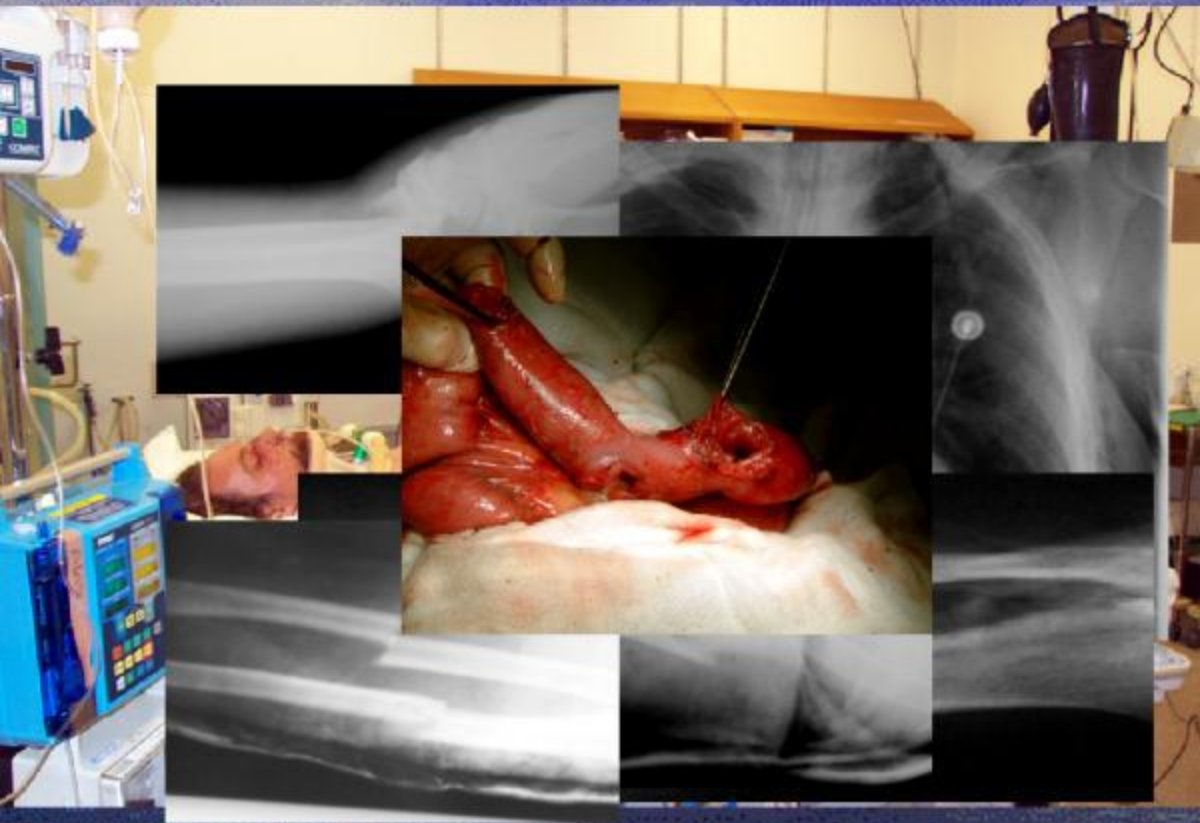
# Examination

- Remove all clothing
- Log roll
  - Look at all of back for bruising, deformity or old scars
  - Feel for tenderness, step, crepitus
- Full neurological examination of the patient including rectal tone and perianal sensation
- Record time and findings



# EMST / ATLS

- Primary Survey
- Resuscitation
- Secondary Survey
- Documentation
  - If you have not done part of the examination yet then record it in the notes



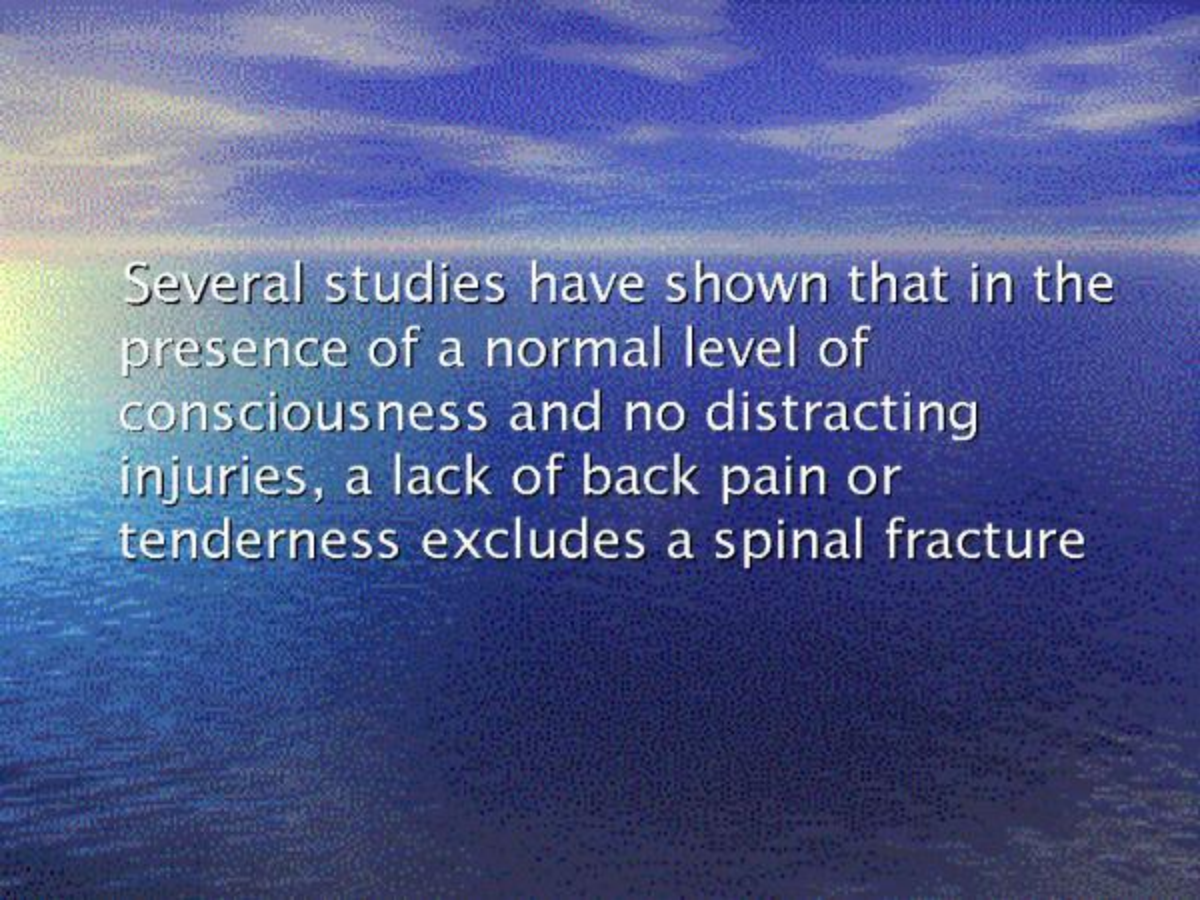
# Investigation

- Do all patients require imaging?



## Pain on examination

- Presence of back pain / midline tenderness is present in 80% of patients with thoracolumbar fractures
- In patients with thoracolumbar fractures only 7% have no detectable clinical signs (Hsu et al)



Several studies have shown that in the presence of a normal level of consciousness and no distracting injuries, a lack of back pain or tenderness excludes a spinal fracture



## But

- Normal level of consciousness is GCS 15 not 14
- Any distracting injury makes exclusion by purely clinical grounds unsafe

# Blunt Multitrauma Patient High Force Mechanism

Back Pain / Midline Tenderness  
Localised signs of thoracolumbar injury  
Neurological Deficit  
Cervical Spine Fracture

No Back Pain / Midline Tenderness  
No localised signs of Thoracolumbar injury  
No Neurological deficit  
No Cervical Spine injury

GCS < 15

GCS 15

Distracting injury  
Alcohol / Drug Intoxication

No Distracting Injury  
No Alcohol / Drug Intoxication

Thoracolumbar  
Imaging

Observe





# Thoracolumbar Imaging

- Plain Radiographs
- CT
- MRI



# Plain Radiographs

- Fast to perform
- Cover a wide area
- Readily available
- Exclude most dangerous pathology
- Essential pre-requisite to CT or MRI, usual first investigation
- If of poor quality must be repeated or other imaging sought



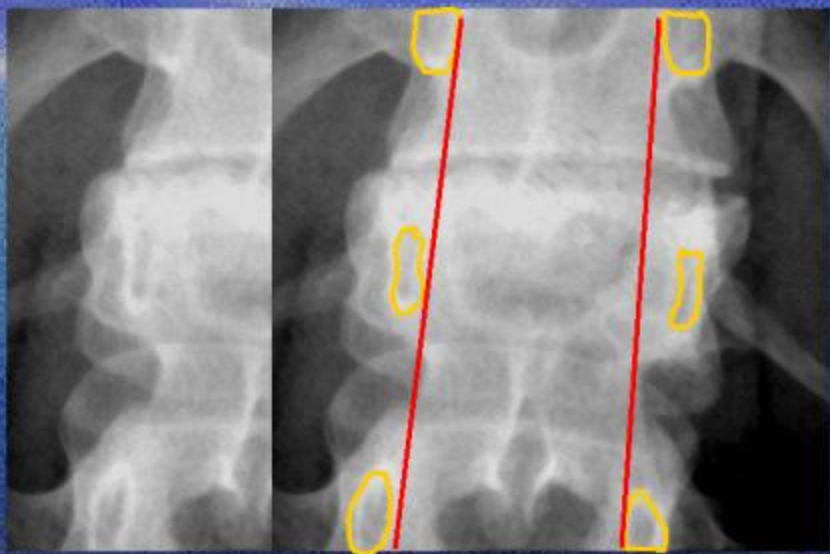
# Standard Views

- AP and Lateral
- Look for
  - Obvious fracture
  - Step / Gap
  - Loss of alignment

# Signs of a broken ring

- Pedicles splayed
- Fractures seen
- Vertebral body widened







# Chance injury



# Transverse process fractures









# CT

- Indicated if an injury is suspected and further information sought

# CT

- Many patients undergo CT imaging of the abdomen and pelvis as part of their trauma management
- Use of Abdominal CT and lateral CT scanogram has been shown to be as good as screening plain radiographs in picking up thoracolumbar fractures



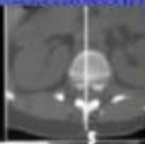
# MRI

- Often less readily available
- At present arranged on request of specialist
- Useful in diagnosis of purely soft tissue injuries and cord injury



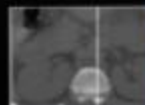
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Ref Scan 30  
Ref TP -149.0



W 2000  
C 300

H

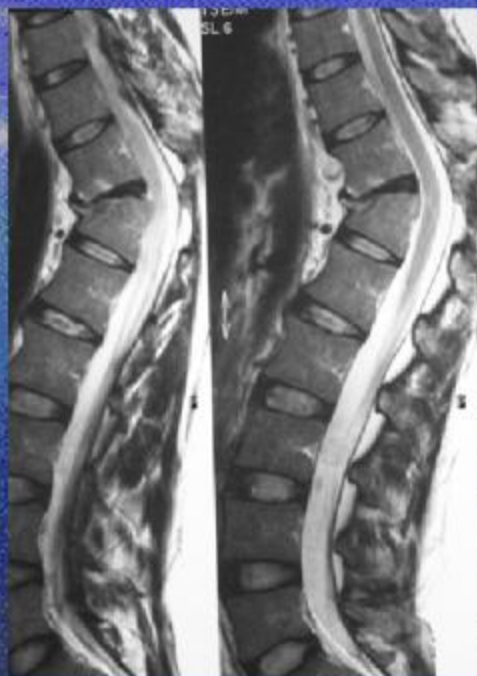


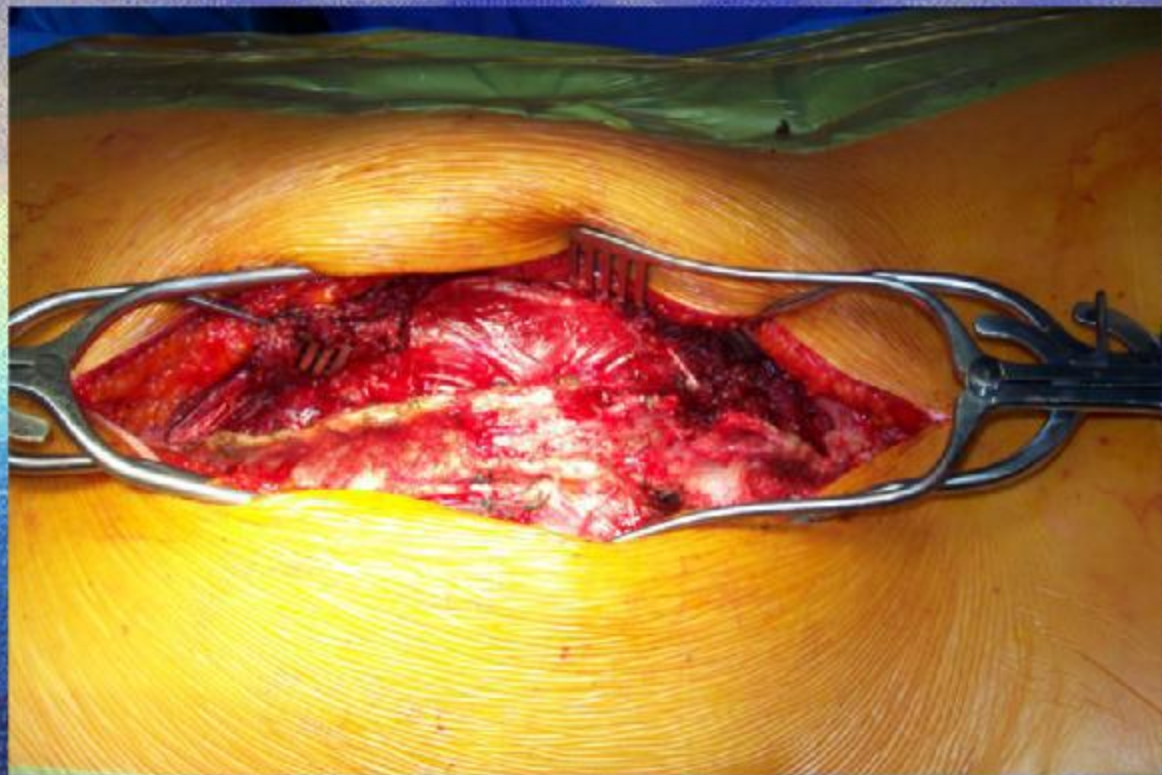
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# Interpretation

- In one large study from the US 50% of 'missed' Thoracolumbar fractures could be seen on the initial radiographs
- If you are unsure get another opinion
- If they are unsure then keep the patient on strict bedrest until a definitive answer is found, or conclusive imaging organised



# Summary

- Thoracolumbar fracture must be actively excluded in all patients with blunt injury
- Clearance can be from clinical examination alone if the patient is alert with no distracting injury
- Imaging must be appropriate, of good quality and suitably interpreted
- Documentation is essential

The background of the slide is a photograph of a sunset or sunrise over a body of water. The sky is a deep blue with some wispy clouds. The sun is low on the horizon, creating a bright glow. On the left side, a rainbow is visible, with its colors reflecting on the water's surface. The text "Thank You" is centered in the middle of the image.

Thank You







