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
Distracting injury
Alcohol / Drug Intoxication

GCS 15
No Distracting Injury
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
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
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
Thank You