

Thoracic and thoracolumbar fractures

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The system developed by the AO (Arbeitsgemeinschaft für Osteosynthesefragen) can be used to classify these fractures. There are three main injury types, A, B and C, with increasing instability and risk of neurological injury. Type A fractures are vertebral body compression fractures. Type B injuries involve distraction of the anterior or posterior elements and type C injuries are rotational and often coexist with type A or type B injuries. The majority of type B and type C injuries require surgical stabilisation. Thoracic spine (T1–T10) Osteoporotic wedge compression fractures in older adults are the commonest injury in this group. Most of these fractures heal, but symptomatic fractures can be treated with percutaneous bone cement augmentation, known as vertebroplasty or kyphoplasty (Figure 30.32). (b) In trauma cases, unstable fractures are associated with significant energy transfer to the patient and may be associated with major internal injuries, such as pulmonary contusion and spinal cord injury. The combination of thoracic spine disruption and a sternal fracture (Figure 30.33) also carries a significant risk of aortic rupture. Multiple posterior rib fractures and rib dislocations above and below a thoracic spinal injury signify a major rotational injury to the chest and can be associated with vascular injury and significant pulmonary contusion (Figure 30.34). Multimodality diagnostic imaging is recommended. Surgery is appropriate for most thoracic injuries if unstable.

80 67 Figure 30.32 (a) Lateral radiograph showing multiple osteoporotic compression fractures. (b) Reduction in thoracic kyphotic deformity following four-level kyphoplasty.

George Quentin Chance, Director of Diagnostic Radiology, The Derby Group of Hospitals, Derby, UK. The thoracolumbar junction is especially prone to injury. This can vary from a minor wedge fracture to spinal dislocation (Figure 30.35). Burst fractures are comminuted fractures of the vertebral body. They are characterised by widening of the distance between the pedicles and can be associated with retropulsion of bone fragments into the spinal canal (Figure 30.36). Anterior surgery for this type of fracture is now very rarely used and the current treatment principles involve posterior fixation (Figure 30.37). Chance fractures

Figure 30.33 Sagittal computed tomography reconstruction

showing an upper thoracic spine fracture dislocation (long arrow) and an associated sternal fracture (short arrow). Figure 30.34

Rotational (type C) injury at the thoracolumbar junction. Note rib fractures (long arrows) and dislocation (short arrow), and the presence of a chest tube. (a) (b)

Figure 30.35 Total spinal sagittal computed tomography reconstruction demonstrating a thoracolumbar fracture dislocation (long arrow) and fracture of L5 (short arrow). Figure 30.36 Lumbar

burst fracture with an increase in the interpedic

ular distance (a) (arrow) and spinal canal compromise (b) .

are flexion-distraction injuries of the thoracolumbar junction and are classically associated with the use of lap belts (Figure 30.38). Duodenal, pancreatic and/or aortic ruptures are also associated with these injuries. Lumbar spinal fractures (L3-S1) Most fractures of the lower lumbar spine can be treated non-surgically because the incidence of neurological injury is lower. The neural canal is more capacious at this level (the spinal cord terminates at L1/L2). Owing to the lumbar lordosis, patients with these injuries are less likely to develop a kyphotic deformity than those with injuries at the thoraco - lumbar junction. Summary box 30.7 Thoracic and thoracolumbar fractures /uni25CF

Figure 30.37 Lumbar burst fracture at L2 (a) , and posterior instrumentation with indirect reduction Figure 30.38 A bony Chance fracture at the thoracolumbar junction (arrow) secondary to a lap-belt injury. (b) . Unstable thoracic spine fractures and thoracolumbar /f_l exion- distraction injuries are commonly associated with vascular and/or visceral injuries

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