

# Chapter 27

## Thoracolumbar Spine Trauma

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**Keywords** Thoracolumbar spine • Compression • Burst • Flexion-distraction • Chance • TLICS

### Overview

Thoracolumbar spine trauma—including compression, burst, and Chance fractures—necessitates a comprehensive neurologic exam, evaluation of the thoracolumbar junction, associated injuries, displacement/listhesis, and history of previous spinal fusions.

### What to Ask

1. What is the patient's neurologic status?
2. Are there any associated injuries? Concomitant retroperitoneal and intra abdominal injuries are common.

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3. Has the patient had any previous surgeries, hardware, or injections?

## What to Request

1. CT scan if not already obtained
2. Logroll precautions if potential instability presents
3. Ensure adequate resuscitation and mean arterial pressure if concern for spinal cord injury

## When to Escalate

1. Any evidence of spinal fusion, either from ankylosing spondylitis, DISH, or previous surgical arthrodesis
2. Neurologic deficits, especially if the exam is worsening

## Imaging

1. Plain films will be used primarily in follow-up and to assess alignment.
2. CT imaging of the thoracic or lumbar spine.
3. MRI should be performed if there are neurologic deficits or if the patient is obtunded.

## Effective Communication

1. Neurologic status is crucial.
2. Thoracolumbar junction.
3. Associated injuries.
4. Displacement/listhesis.
5. Any previous spinal fusion.
6. Compression versus burst fracture.

## Key Exam Pearls

1. Tenderness anywhere along the spinal axis
2. Complete neurologic exam, including reflexes and rectal tone
3. Pathologic signs, including Hoffman's, Babinski, and clonus
4. May consider post-void residuals if concern for neurogenic bladder

## Injuries

Compression fractures occur from failure of the anterior column alone in compression and are most common in elderly, osteoporotic spines (see Fig. 27.1). The vast majority of compression fractures are treated nonoperatively, though kyphoplasty can be considered with persistent pain. Additionally, tumor must always be considered, and MRI or further laboratory workup should be pursued if findings are atypical. Bracing, such as with a Jewett brace, may be utilized for kyphosis. Soft braces are also useful for pain control.

Burst fractures are usually caused by an axial load and involve failure of the anterior and middle columns. Retropulsion of bone into the canal may compress the cord, particularly in the narrower canal of the thoracic spine. Generally, burst fractures may be treated nonoperatively with or without a brace if the posterior ligamentous complex is preserved, but they require fusion if the complex is disrupted. Surgical decompression is generally required regardless of stability if there is neurologic compromise.

Flexion-distraction injuries (see Fig. 27.2), also called "Chance" injuries, are associated with lap belts and abdominal trauma and may be bony or purely ligamentous. They result from failure of the anterior and middle columns in compression with concomitant failure of the posterior column in

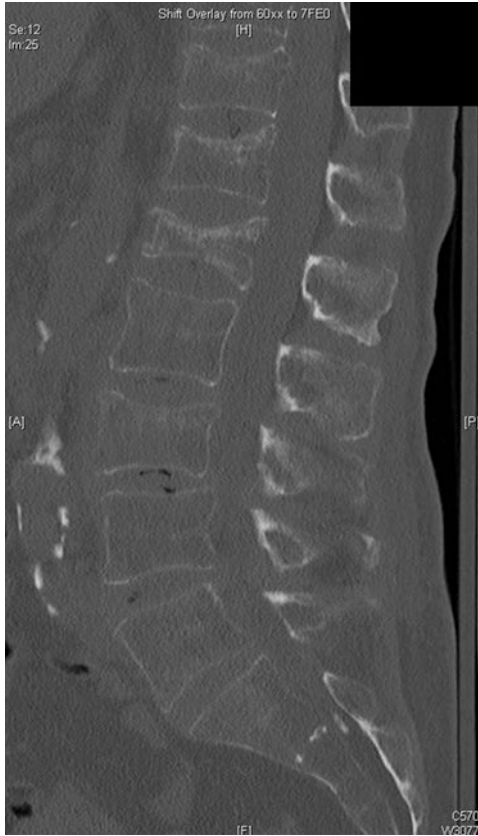


FIGURE 27.1 A compression fracture of the spine demonstrated on a CT scan. Note the low density of the bone on this image, suggestive of osteoporosis

tension. Purely ligamentous injuries may be easy to miss; high suspicion necessitates MRI. Bony injuries may be treated nonoperatively if the pattern is stable; for all other patterns, decompression and fusion are required.

Be aware of the thoracolumbar injury classification system (TLICS), which can be helpful to determine stability. The TLICS includes fracture pattern, posterior ligamentous



FIGURE 27.2 CT scan image and radiograph demonstrating a compression fracture of L1 with displacement of the anterior aspect of the superior end plate. This fracture pattern is suggestive of a flexion-compression mechanism

complex injury, and neurologic involvement to determine whether operative intervention is required; injuries with scores greater than four will almost always be treated operatively.

## Follow-Up

1. Follow the neurologic exam.