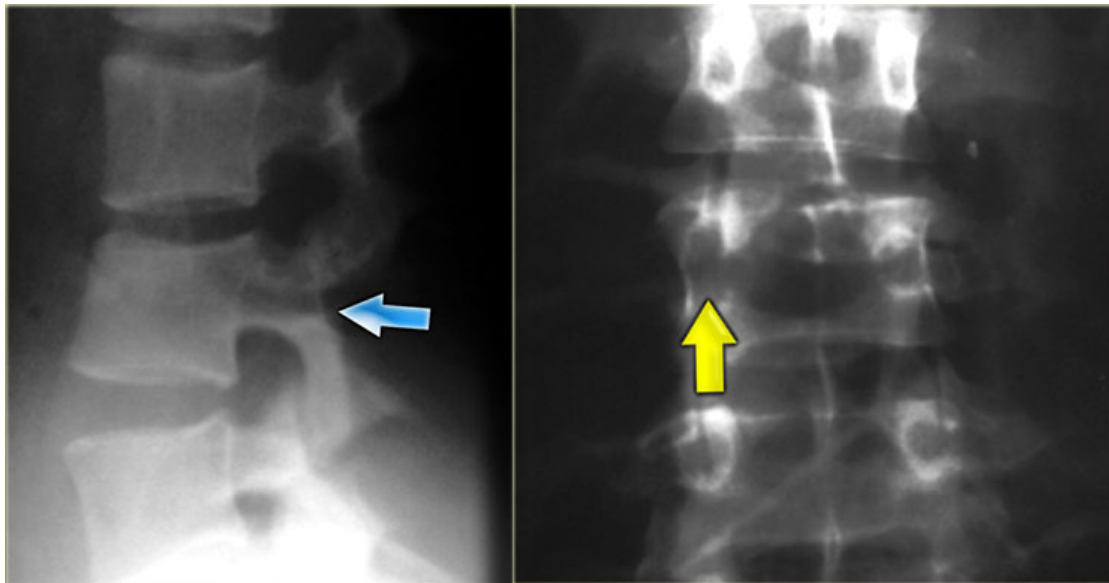


## Case 1

A 40-year-old man has acute back pain after a high-speed motor vehicle accident. He was wearing a lap belt. He could get out of car but complains of pain in the thoracolumbar region. Clinically tender over upper lumbar region, has paralytic ileus and hematuria.



**Your Diagnosis**

## Diagnosis **Chance Fracture**

Chance fractures are the result of a specific mechanism described by Chance in 1948.

The classic Chance fracture pattern is a horizontal fracture that starts in the posterior elements, involving the spinous process or laminae, and propagates anteriorly through the pedicles; associated vertebral body compression. These fractures are much more likely to present with associated intra-abdominal injury [50%], which may be life-threatening.

Modified versions of the classic pattern include a fulcrum variant with predominant anterior vertebral body pathology and a pure soft tissue flexion-distraction injury. Posterior element disruption is exclusively ligamentous in the soft tissue variant.



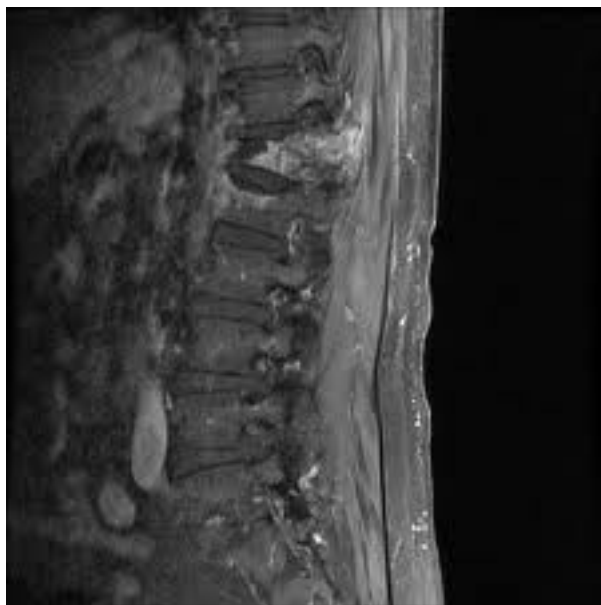
This variant is unstable, requiring surgical intervention.

Chance fractures later became known as “seat-belt fractures” or “seat-belt injuries” as it was the most

common cause after the advent of lap seat belts in cars. A head-on collision would cause the passenger wearing a lap-belt to suddenly be flexed at the waist, thus creating tremendous stress on the posterior elements of the vertebra.

Although infrequently accompanied by acute neurological injury, delay in the diagnosis of a Chance fracture can result in progressive spinal instability that is a risk for late-onset neurological damage.

The Chance fracture is most often at or near the thoracolumbar Junction [80%]. All cases had inter-spinous widening. Requires axial, Sagittal and coronal reformatted images greatly enhance the demonstration of the fractures and should always be obtained. MRI demonstrates soft tissue involvement [Sandwich sign]



## **TREATMENT**

Modern nonsurgical treatment is usually done with a custom-molded, extension based thoracolumbar orthosis.

Serial radiographic follow up is used to evaluate for delayed instability, such as progressive vertebral collapse or kyphosis

Usually requires surgical stabilization:

1. If immobilization is impractical (large body habitus, lack of compliance),
2. a reduction cannot be achieved.
3. If the patient has multiple injuries, surgical management may be indicated.
4. Neurologic injury

A posterior approach to reconstruct the posterior tension band is preferred. This can be accomplished with an older rod-hook, hook-pedicle screw-rod, or modern-day pedicle screw-rod fixation devices.

