

Thoracolumbar spine fracture treatment indications

see [Thoracolumbar spine fracture surgery indications](#).

The majority of injuries can be treated conservatively; however, unstable injuries require surgical treatment for a variety of reasons. In the grey area between stable and unstable injuries, a clinical decision based on clinical experience is necessary in order to select the best treatment. A wide variety of parameters must be included and a change in strategy from conservative to operative may also be necessary. [Posterior instrumentation](#) is the most common procedure; purely anterior stabilization is rarely used. The length of the instrumentation/spondylodesis depends on bone quality, age of the patient, and fracture. The decision as to whether anterior operative treatment should be performed depends on fracture morphology, the success of reduction, and the resulting stability. The open surgical procedure is increasingly being replaced by minimally invasive procedures in posterior and anterior techniques but can be an advantage in complex injuries (B and C injuries according to AO). Hybrid procedures are also possible. This also applies to the treatment of osteoporotic fractures, since a clear assignment between traumatic and osteoporotic causes is not always easy and possible ¹⁾.

[Thoracolumbar spine fracture stability](#) is an important factor in determining the treatment of the Thoracolumbar spine fracture. Fracture stability is comprised of mechanical stability and neurological stability.

The mechanical stability of thoracolumbar spine is evaluated by whether [posterior ligament complex](#) (PLC), which is composed of [supraspinous ligament](#), [interspinous ligament](#), [ligamentum flavum](#), and [facet joint capsule](#), is damaged or not ^{2) 3) 4)}.

On plain radiographs, a decrease of 50 percent in [vertebral body height](#), an increase of [interspinous distance](#), and greater than 30 to 35 degrees of [kyphotic deformity](#) are suggestive of [posterior ligament complex injury](#).

[Computed tomography](#) (CT) is the most appropriate examination for assessing diastasis of [facet joint](#), related to [posterior ligament complex injury](#) ^{5) 6) 7)}.

Magnetic resonance imaging (MRI) is regarded as a significant examination in determining the treatment plan because it can evaluate PLC injury directly.

PLC injury shows high signal intensity on fat suppression T2-weighted MR images. Many studies reported that MRI has high sensitivity and specificity for detecting PLC injury, as a result of comparing MRI findings and intraoperative findings.

Neurological symptom caused by involvement of a single nerve root is classified as Frankel Grade E.

Except for that, the Thoracolumbar spine fracture with a complete or incomplete neurologic deficit caused by spinal canal involvement is classified as an unstable fracture regardless of the instability from fracture itself or posterior element injury. Although the fracture accompanied with neurologic injuries is not an absolute indication for operative treatment, the operative treatment is mostly

performed for patients with an incomplete neurologic deficit because it prevents further progression of neurologic injury, helps neurological recovery, and makes early mobilization possible by achieving the stability of the fracture. However, if patients have Frankel A paralysis caused by the fracture with complete neurologic injury, the neurologic exam should be performed again after spinal shock is over. Then, if the paralysis persists even in the second neurologic exam, it means that there is little chance of neurologic recovery resulting from surgical decompression.

Therefore, the goal of operative treatment is limited to not the recovery of neurologic injury but the restoration of spinal alignments and fracture stabilization.

On the other hand, there is a report that anterior decompression is required in order to prevent syringomyelia and maintain the proper dynamics of cerebrospinal fluid flow ⁸⁾.

TLICS Recommendations

In [Thoracolumbar spine fracture treatment](#) indications, the total number of points helps guide managing surgeons and physicians to determine a management plan depending on the presence of other co-morbidities and injuries. Patient with a score of:

Less than 4 - usually treated non-operatively

4 - may be treated operatively or non-operatively

More than 4 - usually considered for operative management

The [TLICS](#) results and recommendations matched treatment in 96% of conservative group cases. In the surgical group, TLICS recommendations matched treatment in 93% of cases. The TLICS recommendations and surgeon decision making displayed very good concordance. The TLICS appears to be effective in the classification of thoracic and lumbar spine injuries and in guiding treatment in the pediatric age group ⁹⁾. see [Thoracolumbar injury classification and severity score](#).

¹⁾

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³⁾

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