

Module 4: Thoracolumbar Trauma

Case presentation: *Thoracolumbar fracture–A type*

Participants should discuss the clinical assessment of patients presenting with thoracolumbar trauma. Reinforce ATLS principles and review clinical findings and relevant radiographic investigations and interpretation.

Lecture: *Classification and management of thoracolumbar fractures*

The presentation should summarize relevant points only. There is no need to go over all historical classification systems unless relevant to the learning outcomes. Focus on what residents can use in their day-to-day practice and what will assist them when they communicate with attending surgeons and colleagues. There is no need to present excessive detail. The focus should be to identify factors that indicate the presence of significant instability or poor outcomes if neglected or treated inadequately. Include clinical examples of fracture patterns in the presentation that reinforce learning points and indicate the need for surgical intervention.

Biomechanical assessment and principles should be covered and linked to the application of the classification system for thoracolumbar trauma.

The provision of handouts or access to online resources would enable participants to review and consolidate knowledge of the relevant classification systems on their own time.

This lecture and the relevant material may be provided to participants prior to the course and considered “assumed knowledge”. In this situation focus on the application of the classification system rather than the details of the system itself. Additional time can then be allocated to the discussion of cases.

Learning outcomes

- Describe and apply an appropriate anatomical classification of thoracolumbar fractures to facilitate communication with colleagues and senior surgeons
- Identify the morphology and mechanism of a thoracolumbar injury

Case presentation: *Thoracolumbar fracture–B type*

Focus on assessment of the posterior column and significance in relation to the stability of the segment. Reinforce points from the earlier discussion of classification systems.

Neurological assessment and the differentiation of a cord vs conus vs cauda equina compromise should be covered and the ASIA classification system, discussed in cervical trauma module, reinforced.

Conclude the discussion with a brief summary of the key points and take-home messages.

Lecture: *Clinical and radiographic assessment of stability*

Discuss the process undertaken to evaluate and “clear” the thoracic and lumbar spine in the presence of spinal trauma.

Review and reinforce items discussed in the cervical trauma section relating to the need to follow ATLS principles and the assessment of spinal cord or neurological injury.

Review the use of plain x-rays, CT, and MRI in the assessment of the morphology of thoracolumbar trauma and the assessment of stability. Link these features to the evaluation of the need for surgical intervention and the classification of these injuries.

Learning outcomes

- Perform a screening clinical examination to assess the presence and extent of a spinal injury
- Assess and identify the presence of a spinal cord or neurological injury
- Order and interpret appropriate radiographic investigations
- Recognize radiographic features of instability

Lecture: *Indications for surgical intervention: aims and approach*

Discuss evidence-based treatment options, the indications for surgical intervention, the approach and timing, especially in relation to the presence of a neurological deficit.

Also cover associated injuries and how these may influence decision making regarding indications for surgery.

Learning outcomes

- Identify features indicating either instability or poor outcomes with nonoperative management of thoracolumbar fractures
- Identify those patients who will benefit from operative intervention
- Describe the indications for surgery and options in relation to surgical approach
- Appreciate the importance of a multidisciplinary approach in the management of spinal cord and neurological injuries

Case presentation: *Thoracolumbar fracture–C type*

Focus on identifying features of the history, examination, and radiographic investigations that indicate shear or translational injuries associated with significant instability.

These translational injuries are often associated with neurological compromise, so use the discussion to reinforce points discussed in the cervical trauma module and

in the discussion of “B type” injuries. Reinforce the importance of a multidisciplinary approach to spinal cord injury management.

Discuss the evidence-based treatment options, the indications for operative intervention, and the approach and timing of surgery.

Also cover associated injuries and how these may influence decision making regarding indications for surgery.

Conclude the discussion with a brief summary of the key points and take-home messages.

Lecture: *Thoracolumbar fractures–special situations*

Cover how the presence of confounding factors may influence the decision-making process when considering the need for surgical intervention, the risk of complications with surgery and nonoperative treatment, and how to overcome these issues. Use case examples to illustrate these points.

Learning outcome

- Be aware of conditions such as ankylosing spondylitis and osteoporosis and how they may alter the management of a thoracolumbar injury

Case discussion: End of day 1

The day should end with case discussion to reinforce points brought out during the program. Consider discussion of a trauma patient with ankylosing spondylitis in order to discuss the risks related to this particular patient group.

Suggested cases:

- A patient with rheumatoid arthritis or OPLL and cervical myelopathy (if not covered earlier in the program)
- A patient with a postoperative infection following stabilization of an unstable spinal injury (an example of how to manage the infection while preserving spinal stability)
- An elderly patient with an odontoid fracture (an example of the issues regarding the risk benefit analysis of surgical treatment)