

## **Thoracolumbar Spine Trauma: WFNS Spine Committee Recommendations**

First Consensus Meeting: 7<sup>th</sup> February 2020, Karachi

Second Consensus Meeting: 14<sup>th</sup> June 2020, On-line

### **Incidence and Epidemiology**

- \* The most common cause of thoraco-lumbar fractures are falls and traffic accidents.
- \* The annual incidence of TL fractures is about 30 per 100,000 inhabitants, if osteoporotic fractures are counted together.
- \* The real incidences and epidemiology in developing countries are not well known.
- \* The incidence of low velocity falls is increasing, especially in elderly population
- \* Mortality rate after spinal injury is decreasing in developed countries. This is more with motor vehicle accidents due to improvements in motor vehicle safety and traffic regulations.
- \* The thoracolumbar trauma mortality rate among male elderly patients are relatively high.
- \* Vertebral fractures in children are usually multiple

### **Classification and Radiological Diagnosis**

- \* Both new AO classification and TLICS are reliable classifications for traumatic thoracolumbar fractures and should be used in clinical practice.
- \* Recent literature has shown that new AO classification despite being more complex can be more helpful in management of thoracolumbar fractures.
- \* AP and lateral standard radiographs may be obtained, if CT scan/MRI scan is not available.
- \* CT retains an important role in assessment of trauma, but it cannot reliably demonstrate disco-ligamentous complex, hence MRI should be considered.
- \* MR imaging is the most commonly used advanced imaging method and is the method of choice in disco-ligamentous abnormalities, abnormalities of the spinal cord and other pathologies associated with spinal trauma.

### **Indications of Surgery and Non-surgical Treatment**

- \* AO type B and C fractures preferably should not be treated conservatively.
- \* AO Type A2, A3 and A4 can be treated conservatively if there is no significant vertebral body collapse, significant kyphotic angulation or canal compromise with neurological impairment.
- \* There is no clinical evidence that bracing for conservative treatment of TL fractures will improve the outcome.
- \* Fracture dislocations and cases with significant instability (Score  $\geq 5$  of TLISS classification) should preferably be operated.
- \* For burst fractures with neurological deficits, surgical decompression and stabilization may be considered, although there is not enough scientific evidence to support that.

\* Burst fractures without neurological deficits can be treated either with conservative or surgical techniques.

### **Surgical Techniques for Thoracolumbar Fractures**

\* For burst fractures, a short segment posterolateral pedicle screw fixation is sufficient in most cases.

\* For burst fractures of thoracolumbar junction, incorporating the fracture level screw is preferred to increase the strength of the construct. If fracture level screw cannot be incorporated, long segment fixation should be applied.

\* When using long segment screws, there is no evidence that fusion is needed, as there is no difference in outcome with fusion or not.

\* For TL burst fractures, anterior or posterior approach does not make a difference in clinical outcomes.

\* There is not sufficient evidence that surgical treatment of burst fractures of the thoracic and lumbar spine improve clinical outcomes compared to nonoperative treatment.

\* Minimally invasive techniques may be considered in the treatment of thoracolumbar burst fractures as the evidence suggests equivalent clinical outcomes.

\* Compared to fusion surgery, non-fusion surgery for thoracolumbar burst fractures has advantages of reduced bleeding, surgical time and donor site complications.

\* There is no statistical data suggesting progression of regional kyphosis after non-fusion surgery.

### **Factors Affecting Surgical Outcomes**

\* Obesity can worsen segmental kyphosis following surgery for a thoracolumbar burst fracture.

\* Increasing age is a predictor of poor outcome.

\* Comorbidities, smoking and long-term high dose steroid usage predict poor outcome.

\* Polytrauma and high injury severity score should not be considered as a contraindication for early surgery.

\* Anterior vertebral body height loss more than 50% may lead to progression of kyphotic deformity.

\* Detection of injury of posterior longitudinal ligament complex is important, as it significantly influences the outcome.

\* Burst fractures with sagittal-transverse canal diameter ratio  $<0.40$  are highly associated with neurological injury and outcome.

\* Cobb's angle  $>10.5^\circ$  after surgery may predict poor outcome.

### **Posttraumatic kyphosis after thoracolumbar fractures**

\* The most common reason of post traumatic kyphosis is untreated, unstable burst fractures.

\* For treatment of post traumatic kyphosis, there is no definite certain kyphosis angle to decide for surgery. Instead, global sagittal balance has to be taken in consideration.

\* Posterior surgery can achieve satisfactory kyphosis correction with less blood loss and complications.