Commentary: Posterior tension band wiring and instrumentation for thoracolumbar flexion-distraction injuries

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Tension band wiring has been used to re-appose bone fragments, secure ligaments or tendon to bone, and improve stability in weakened constructs. The spinous ligaments, ligamentum flavum, facet capsular ligament, and posterior longitudinal ligaments collectively form the natural posterior spinal tension band. The integrity of the posterior spinal ligamentous structures is critical, as they function to limit translation (anterior and posterior), flexion, and rotation of the spine. Flexion-distraction injuries (FDIs) lead to posterior disruption and elongation, and hyperextension with or without shear causing anterior disruption and elongation. Proper evaluation of the posterior elements is important for the diagnosis of FDIs. Magnetic resonance imaging has high diagnostic accuracy and inter-observer reliability. Reconstruction of the posterior tension band combined with spinal instrumentation for FDIs improves stability and aids early rehabilitation. Cables, wires, and other strands have been used to re-establish posterior tension band stability.

In this issue, Hasankhani and Omidi-Kashani describe their evaluation of treatment outcome of tension band wiring followed by posterior spinal fusion and instrumentation for thoracolumbar FDIs. Although the follow-up period was long, the cohort was small. Large, prospective, randomised, controlled studies, meta-analyses, and systematic reviews are warranted. This study concluded that besides anterior and middle column stabilisation, posterior column integrity should also be restored for satisfactory outcome and to avoid distraction of posterior structures while trying to increase anterior vertebral height. Nonetheless, controls are lacking and thus the results could not be validated against fixation without posterior tension band wiring, particularly when laminectomy is routinely performed for global decompression in all thoracolumbar injuries with neurologic deficit. Furthermore, use of spinous processes for tensioning, especially in osteoporotic bones, may not be appropriate. When posterior bony elements are intact/not disturbed, tension band wiring can be used for supporting long interlaminar corticocancellous strut grafts to enhance posterior fusion.

REFERENCES