Surgical Reduction Technique (Transpedicle) For Unstable Thoracolumbar Burst Fractures With Retropulsion Resulting In Severe Spinal Canal Stenosis: A Preliminary Case Reports

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INTRODUCTION:
Thoracolumbar burst fractures are common entity in polytraumatized patients. The retropulsed burst vertebral fracture may result in spinal canal invasion with or without neurological deficit. In this situation, early surgical stabilization with decompression is vital to restore neurological function.1 We employed a posterior approach with a unique transpedicular reduction technique at the level of fracture for decompression and stabilization.2

CASE REPORT:
Case 1
A 16-year-old teenage, was involved in a motor vehicle accident and suffered an unstable burst fracture L4, L5 and L3 spinous process fracture with neurological deficit (Frankel D). Posterior decompression and posterior instrumentation of L2-S1 with dura repair were performed for this patient. (Fig. 1)

Case 2
A 38-year-old university lecturer, had a fall from height of 12 feet ladder and sustained L2 unstable burst fracture with neurological deficit (Frankel D). Posterior decompression and reduction and instrumentation of T12-L4 was performed. (Fig. 2)

Surgical technique
After a standard laminectomy had been performed at the level of fracture for decompression, infero-medial segment of the pedicle on both side was undercut using Kerrison laminectomy punch as evident by the CT scans. (Fig.1,2) A Caperner gauge was passed in front of anterior thecal sac through the opening and placed on top of the retropulsed fragment. Reduction is made by gentle tapping over the fragment.

DISCUSSIONS:
Advantages of transpedicular reduction:
- Significant spinal decompression2
- Improve safety margin of indirect retropulsed fragment reduction
- Restore vertebra height2
- Spinal cord or nerve root well protected
- Less morbidity, bleeding rate and healing time compared to anterior approach1,3,5
- Single posterior approach for decompression and fixation2

Disadvantages compared to anterior approach:
- Not direct vision over fracture fragment4
- Limited kyphotic angle correction4
- Reduced posterior vertebra stability

CONCLUSION:
Posterior decompression through transpedicular approach and posterior stabilization is a safe option for thoracolumbar retropulsed burst fracture with severe spinal canal stenosis.