

# Percutaneous Pedicle Screw Fixation after Direct Spinal Canal Decompression in Magerl Type A3 Thoracolumbar Burst Fractures with Neurological Injury: An Alternative Option

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## Introduction

Utilization of a posterior approach to the spine for placement of pedicle screws for fixation has become a popular treatment of TLBFs. PPSF systems have increasingly been used, but not explored in combination with decompression for TLBFs with neurological injury. To investigate the surgical results of percutaneous pedicle screw fixation (PPSF) after spinal canal decompression via a small laminotomy for the treatment of thoracolumbar burst fractures (TLBFs) with neurological deficits

## Methods

Seventeen patients who had neurological injury after a thoracolumbar burst fracture and underwent decompression followed by immediate percutaneous pedicle screw fixation were retrospectively reviewed for operative time, length of hospital stay, Cobb angle, vertebral wedge angle, and vertebral body index. A sample of 17 patients sustaining neurological injury due to a single-level thoracolumbar burst fracture. Operative time, length of hospital stay, neurological assessment as determined using the Frankel grading system, Cobb angle, vertebral wedge angle, and vertebral body index were measured. Seventeen patients underwent PPSF after spinal canal

## Results

The average follow-up period was 20 months (range 6 to 62 months). The average Cobb angle was  $15.77^\circ \pm 6.64^\circ$ , and significantly decreased to  $6.54^\circ \pm 6.22^\circ$  postoperatively ( $p < 0.001$ ). The average vertebral wedge angle was  $20.58^\circ \pm 6.26^\circ$ , and decreased significantly to  $12.21^\circ \pm 6.22^\circ$  postoperatively ( $p < 0.001$ ). The vertebral body index significantly decreased from  $0.58 \pm 0.11$  to a postoperative value of  $0.78 \pm 0.10$  ( $p < 0.001$ ). No patient deteriorated subsequent to surgery

## Conclusions

Percutaneous pedicle screw fixation after spinal canal decompression via small laminotomy provides significant kyphotic correction and improved neurological outcome while offering decreased surgical morbidity. This may be applied as an effective primary surgery in select patients with TLBFs with neurologic deficits

## Learning Objectives

By the conclusion of this session, participants should be able to:

- 1) not be afraid to manage for thoracolumbar burst fracture
- 2) get the another surgical option for thoracolumbar burst fracture

## References