

Risk factors of loss of correction after long pedicle screw fixation in unstable thoracolumbar burst fracture

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Introduction: Despite applying long segmental fixation in unstable thoracolumbar burst fracture, progression of kyphotic deformity and loosening of screws were found. This study was conducted to evaluate risk factors of loss of correction (LOC) after long pedicle screw fixation.

Methods: Thirty-two patients were evaluated with a minimum 2 year follow-up. Cases with the level of instrumentation which was two segments proximally and one segment distally from fracture site were included in this study. At least one pedicle screw was inserted in the fractured body to strengthen the construct. LOC was defined as 1) progression of segmental kyphotic angle $>10^\circ$, 2) worse than preoperative value in kyphotic angle, 3) $>3\text{mm}$ change in the position of screws.

Results: Ten of 32 patients showed LOC. The average age was 56.8 ± 19 in the LOC group and 43.3 ± 12.5 in the control group with a significant difference. ($p=0.005$) The T-score in BMD in the LOC group was -3.9 ± 0.48 . Sagittal index was 8.24 ± 16.38 in the LOC group and 1.32 ± 3.16 in the control group. ($p<0.001$) The mean score by load sharing classification was 6.4 ± 1.89 in the LOC group and 6.13 ± 1.58 in the control group with no difference. ($p=0.68$)

Conclusion: Loss of correction after long segment fixation was not uncommon in unstable thoracolumbar burst fracture. The risk factors were identified old age and osteoporosis. The comminution of vertebral body and the amount of fracture displacement were not associated with the LOC.

Summary: Despite applying long segmental fixation in unstable thoracolumbar burst fracture, progression of kyphotic deformity and loosening of screws were found. Ten of 32 patients showed loss of correction. Sagittal index was 8.24 ± 16.38 in the LOC group and 1.32 ± 3.16 in the control group. ($p<0.001$) The risk factors were identified old age and osteoporosis. The comminution of vertebral body and the amount of fracture displacement in load sharing classification were not associated with the LOC.

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