

# Operative Compared with Nonoperative Treatment of a Thoracolumbar Burst Fracture without Neurological Deficit : A Prospective, Randomized Study

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## Abstract

### Background

To our knowledge, a prospective, randomized study comparing operative and nonoperative treatment of a thoracolumbar burst fracture in patients without a neurological deficit has never been performed. Our hypothesis was that operative treatment would lead to superior long-term clinical outcomes.

### Methods

From 1994 to 1998, forty-seven consecutive patients (thirty-two men and fifteen women) with a stable thoracolumbar burst fracture and no neurological deficit were randomized to one of two treatment groups: operative (posterior or anterior arthrodesis and instrumentation) or nonoperative treatment (application of a body cast or orthosis). Radiographs and computed tomography scans were analyzed for sagittal alignment and canal compromise. All patients completed a questionnaire to assess any disability they may have had before the injury, and they indicated the degree of pain at the time of presentation with use of a visual analog scale. The average duration of follow-up was forty-four months (minimum, twenty-four months). After treatment, patients indicated the degree of pain with use of the visual analog scale and they completed the Roland and Morris disability questionnaire, the Oswestry back-pain questionnaire, and the Short Form-36 (SF-36) health survey.

### Results

In the operative group (twenty-four patients), the average fracture kyphosis was 10.1° at the time of admission and 13° at the final follow-up evaluation. The average canal compromise was 39% on admission, and it improved to 22% at the final follow-up examination. In the nonoperative group (twenty-three patients), the average kyphosis was 11.3° at the time of admission and 13.8° at the final follow-up examination after treatment. The average canal compromise was 34% at the time of admission and improved to 19% at the final follow-up examination. On the basis of the numbers available, no significant difference was found between the two groups with respect to return to work. The average pain scores at the time of the latest follow-up were similar for both groups. The preinjury scores were similar for both groups; however, at the time of the final follow-up, those who were treated nonoperatively reported less disability. Final scores on the SF-36 and Oswestry questionnaires were similar for the two groups, although certain trends favored those treated without surgery. Complications were more frequent in the operative group.

### Conclusion

We found that operative treatment of patients with a stable thoracolumbar burst fracture and normal findings on the neurological examination provided no major long-term advantage compared with nonoperative treatment.

**Level of Evidence**

Therapeutic study, Level II-2 (poor-quality randomized controlled trial [e.g., <80% follow-up]). See Instructions to Authors for a complete description of levels of evidence.