



Cement Augmented Percutaneous Pedicle Screw Fixation for the Treatment of Thoracolumbar Fractures Secondary to Metastatic Tumors

David Rubin MD; Eric Lis MD; Yoshiya Josh Yamada MD, FRCP; Mark H. Bilsky MD; Ilya Laufer MD
Memorial Sloan Kettering Cancer Center, New York, New York



Introduction

Mechanical instability and axial load pain represent a major source of morbidity from pathologic fractures in the cancer population. In the absence of spinal cord compression, vertebral body cement augmentation and/or open surgical instrumentation have been shown to be viable treatment options. However, in our experience vertebral body cement augmentation alone may be inadequate in cases of planum fractures or when posterior elements are affected by tumor. In these cases, surgical stabilization may be required. Recent publications suggest multiple advantages to using MIS procedures in the non-cancer population including shorter recovery times, decreased hospitalization time and preservation of spinal musculature. Cement augmentation of the screw insertion sites has been shown to improve pull-out strength. We present five patients treated with cement augmented percutaneous pedicle screw placement (PPSP) for unstable pathologic fractures of the thoracolumbar spine.

Methods

Five patients underwent PPSP with cement augmentation for mechanical instability of the thoracolumbar spine caused by spinal metastases. None of the patients required spinal canal decompression. All patients experienced movement-related back pain and mechanical radiculopathy and had spinal instability neoplastic scores (SINS) that were consistent with indeterminate instability or instability. Pedicle screws were placed one level above and one level below the fracture. Patients were followed with serial x-rays and/or CT scans and VAS scores. Paired student t-test was used to measure the change in VAS.

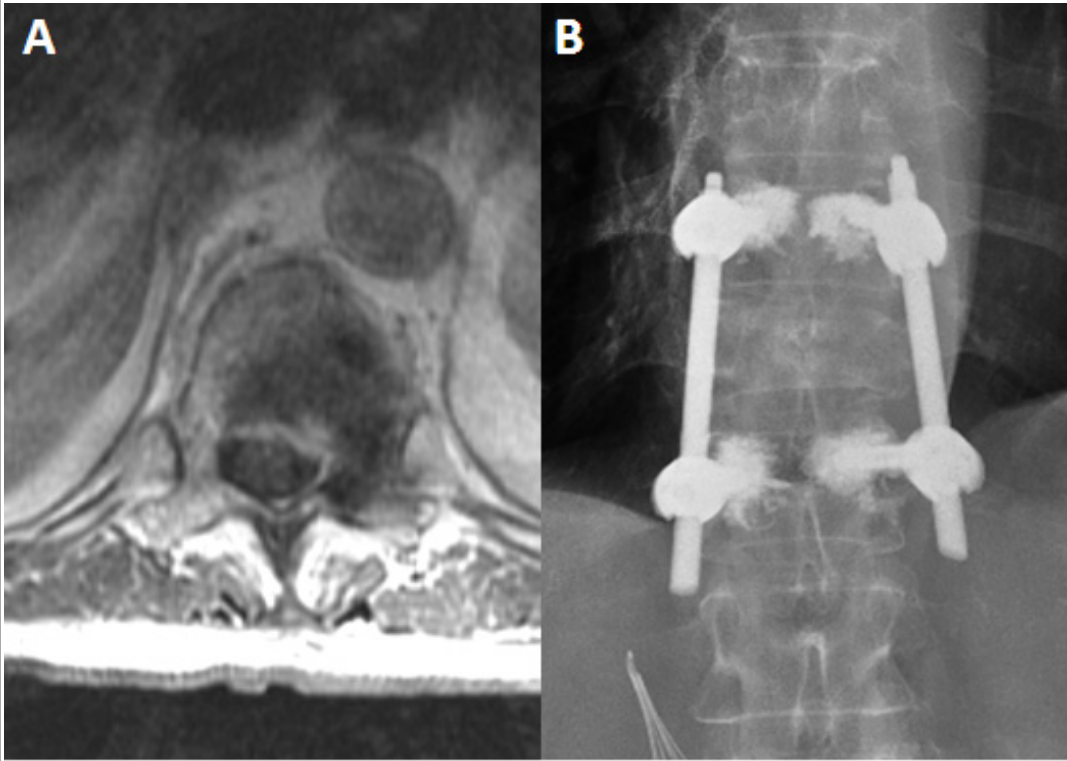
Results

Three of five patients had complete resolution of VAS pain symptoms by two-week post-operative follow-up. The remaining two patients continued to have pain two weeks post-operatively but pain was substantially reduced (VAS 7.6 reduction, $p < 0.001$). Median follow-up was 2.5 months (range 2-8 months), without major complications.

Conclusions

Cement augmented PPSP, represents a novel stabilization technique for patients with spinal metastases causing mechanical instability and provides significant pain relief.

Case Illustration



(A) 75 year-old woman with metastatic lung adenocarcinoma at T11 with posterior element involvement and stable tumor after stereotactic radiosurgery. (B) Post-operative x-ray showing T10 and T12 percutaneous pedicle screw stabilization with cement augmentation.

Learning Objectives

By the completion of this session, participants should be able describe the role of percutaneous pedicle screw placement with cement augmentation in the treatment of thoracolumbar fractures secondary to metastatic tumors.