

Worsening Retropulsion of Bony Fragments Following Image Guided Radiofrequency Ablation and Vertebroplasty

C. Harlow Ladd, D.O.^{1,2}, Laura Furtado Pessoa de Mendonca, M.D.², Christine Hunt, D.O.²
Department of Anesthesia and Perioperative Medicine¹, Department of Pain Medicine²
Mayo Clinic, Jacksonville, FL

INTRODUCTION

- Percutaneous vertebroplasty is commonly indicated for the treatment of medically refractory vertebral body compression fractures.
- Relative contraindications include disruption of the posterior vertebral body wall or tumor extension into the spinal canal.
- Radiofrequency ablation (RFA) can be incorporated to improve pain outcomes.
- Complications may arise even after reassuring post-operative imaging.

CASE PRESENTATION

- A 48-year-old female presented to her local ED with a chief complaint of acute low back pain.
- CT scan did not reveal any apparent etiology of the back pain.
- MRI of the spine demonstrated a pathological fracture of the L2 vertebral body and soft tissue protrusion into the ventral epidural space (Figures 1,2).
- Malignancy suspicion was confirmed after lymph node and neck mass biopsies.
- The patient underwent palliative radiofrequency ablation combined with vertebroplasty.
- Two 11-gauge needles were advanced to the posterior aspect of the vertebral body, and the RFA was carried out.

PRE-PROCEDURE

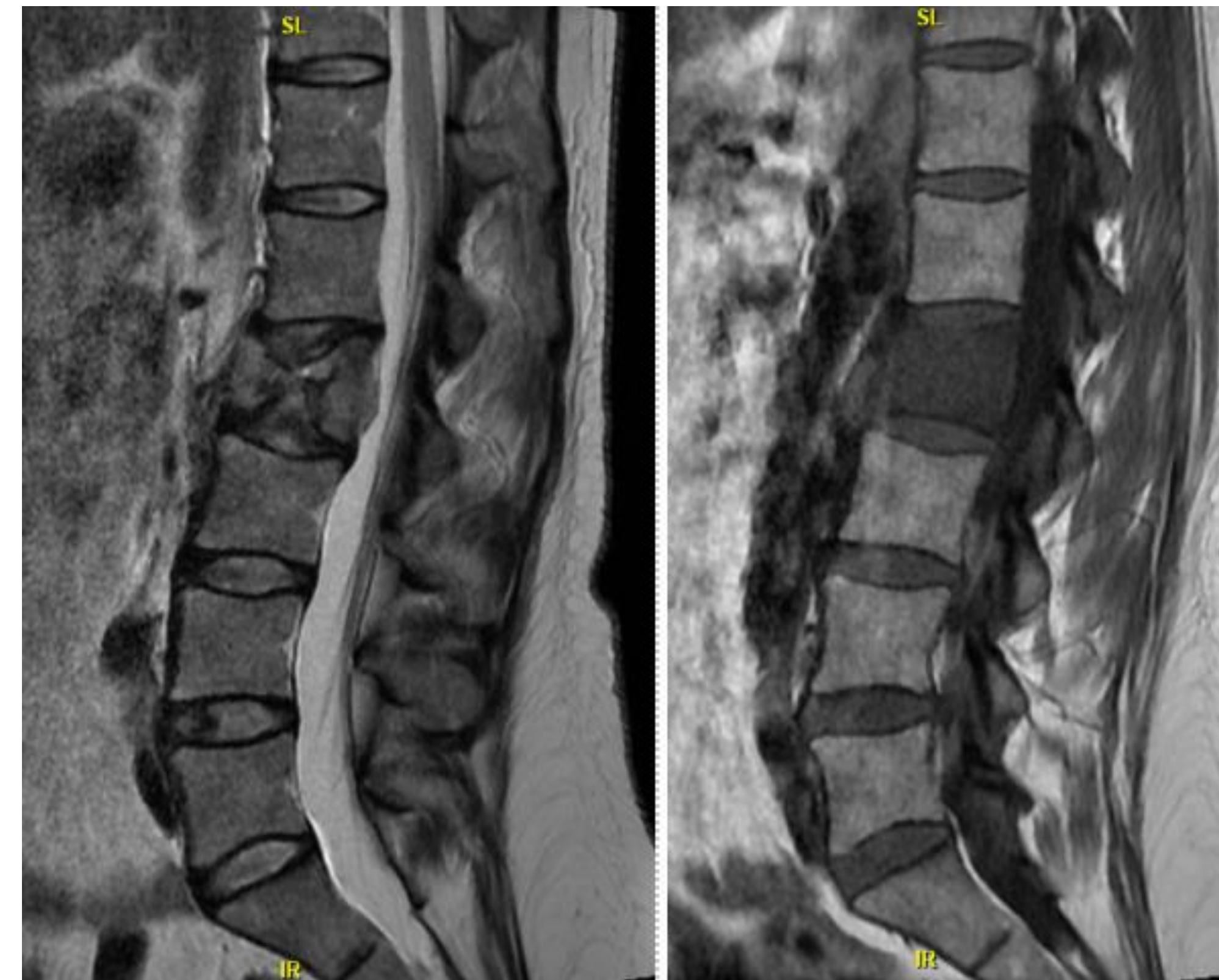


Figure 1

Figure 2

- Polymethylmethacrylate mixture (PMMA) was delivered under fluoroscopic guidance with good coverage and no significant extravasation (Figures 3,4).
- Upon emergence from anesthesia, the patient reported severe low back pain.
- Repeat MRI confirmed a collapse of L2 vertebrae and showed a larger epidural soft tissue tumor, causing moderate compression of the thecal sac and severe stenosis of bilateral L2 lateral recesses (Figures 5-7).
- Ultimately, the patient went through an L2 laminectomy with image-guided T12-L4 instrumental fusion and ameliorated her symptoms.

RESULTS

INTRA-PROCEDURE

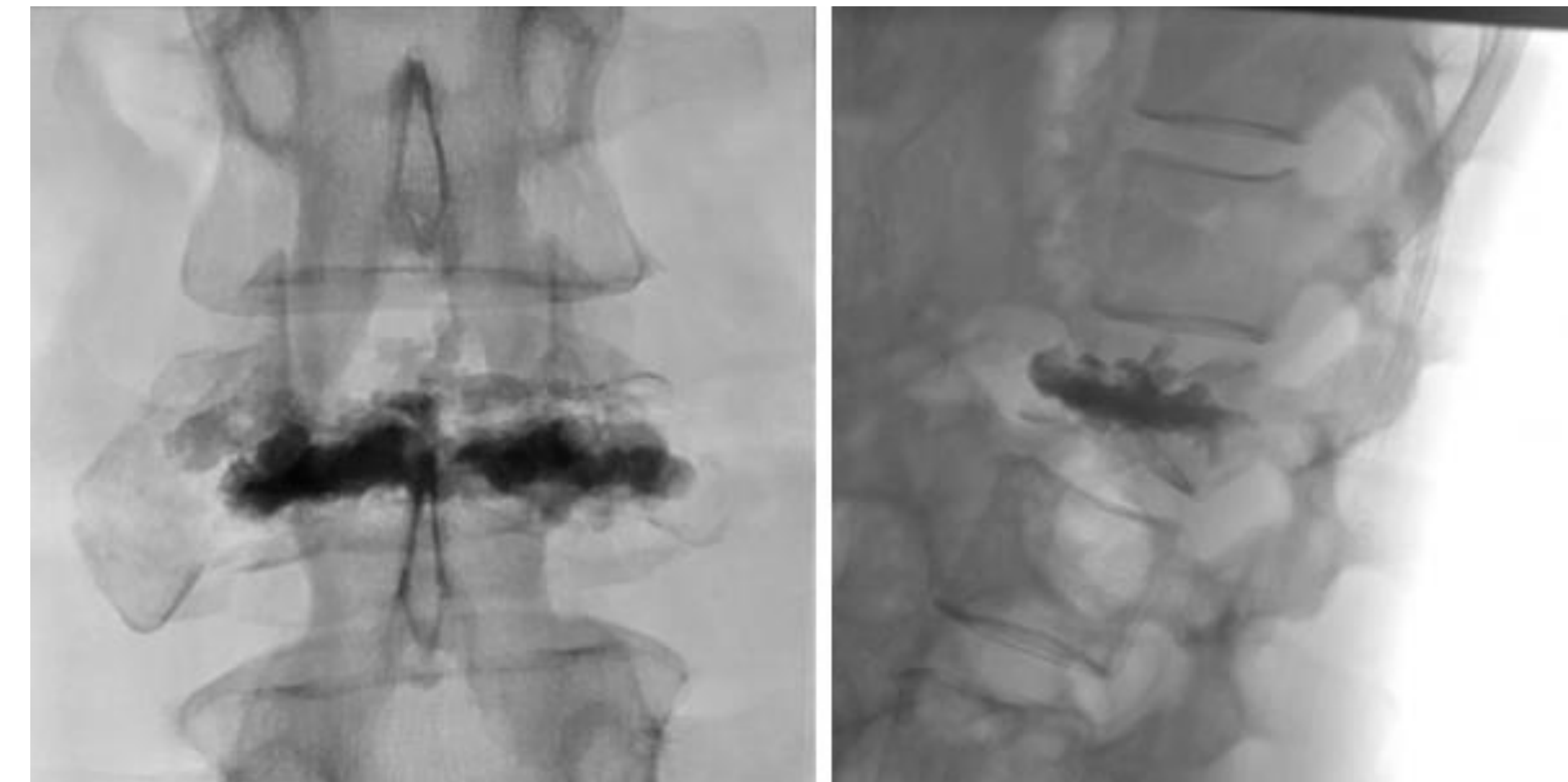


Figure 3

Figure 4

POST-PROCEDURE



Figure 5

Figure 7

CONCLUSIONS

- Vertebroplasty is a relatively safe procedure with reported complication rates of 5% for patients with metastatic tumors.
- Retropulsion of remnant compression fracture fragments and further protrusion of an epidural soft mass leading to worsening central canal stenosis is less frequently documented.
- The challenging part of this case was the reassuring spread pattern of PMMA and the appearance of the vertebral body, which made it difficult to anticipate the development of collapse and retropulsion.
- Patients with underlying malignancy may be at higher risk for complications due to their disease.

REFERENCES

1. Gangi, Afshin, et al. "Quality Assurance Guidelines for Percutaneous Vertebroplasty." *CardioVascular and Interventional Radiology*, vol. 29, no. 2, 2005, pp. 173-178, <https://doi.org/10.1007/s00270-005-0146-5>.
2. McGraw, J. Kevin, et al. "Society of Interventional Radiology Quality Improvement Guidelines for Percutaneous Vertebroplasty." *Journal of Vascular and Interventional Radiology*, vol. 14, no. 9, 2003, <https://doi.org/10.1097/01.rvi.0000082822.75926.4c>.