

Background

VERTEBRAL COMPRESSION FRACTURES

- Vertebral compression fractures are the most common complication of osteoporosis with approximately 700,000 confirmed cases per year in the US accounting for nearly half of the 1.5 million osteoporotic fractures annually (1).
- Bone mineral density begins to decline in both men and women around the 5th decade of life, however, this process is markedly accelerated in postmenopausal women due to the loss of bone protective estrogens (2).
- The development of osteoporosis is a multifactorial process that is influenced by genetics, age of puberty onset, sedentary lifestyle, low body mass index, insufficient dietary calcium, insufficient vitamin D status, glucocorticoid use, smoking, and alcohol abuse (1).

Vertebral Augmentation

- Conservative measures are generally trialed for a 6-week period. If the patient continues to have significant pain or fracture progression on imaging, then vertebral augmentation should be considered.
- Ideal candidates often have pain and tenderness around the fracture that increases with axial loading and are typically in the subacute phase before healing is complete.

Case Report

Our patient is a 65-year-old man with history of advanced chronic obstructive pulmonary disease, congestive heart failure, and osteoporosis. The patient had initially presented to the pain clinic with approximately 4 months of midline thoracic and lumbar back pain. He states that his symptoms have been worsening and acutely worsened after picking up his dog when he felt a pop in his lower back.

Left Lateral Decubitus Kyphoplasty

The patient was initially placed in prone position in the cath lab to optimize imaging. However, due to his advanced COPD and congestive heart failure, the patient was unable to tolerate this position and had significant respiratory distress. In lieu of aborting the procedure, the decision was made to attempt left lateral decubitus positioning to improve respiratory mechanics while still optimizing patient positioning. The patient then underwent successful transpedicular kyphoplasty at L2 and T9. Much time and attention were directed toward stable positioning of the patient as he was more mobile in this position as compared to the conventional prone position.

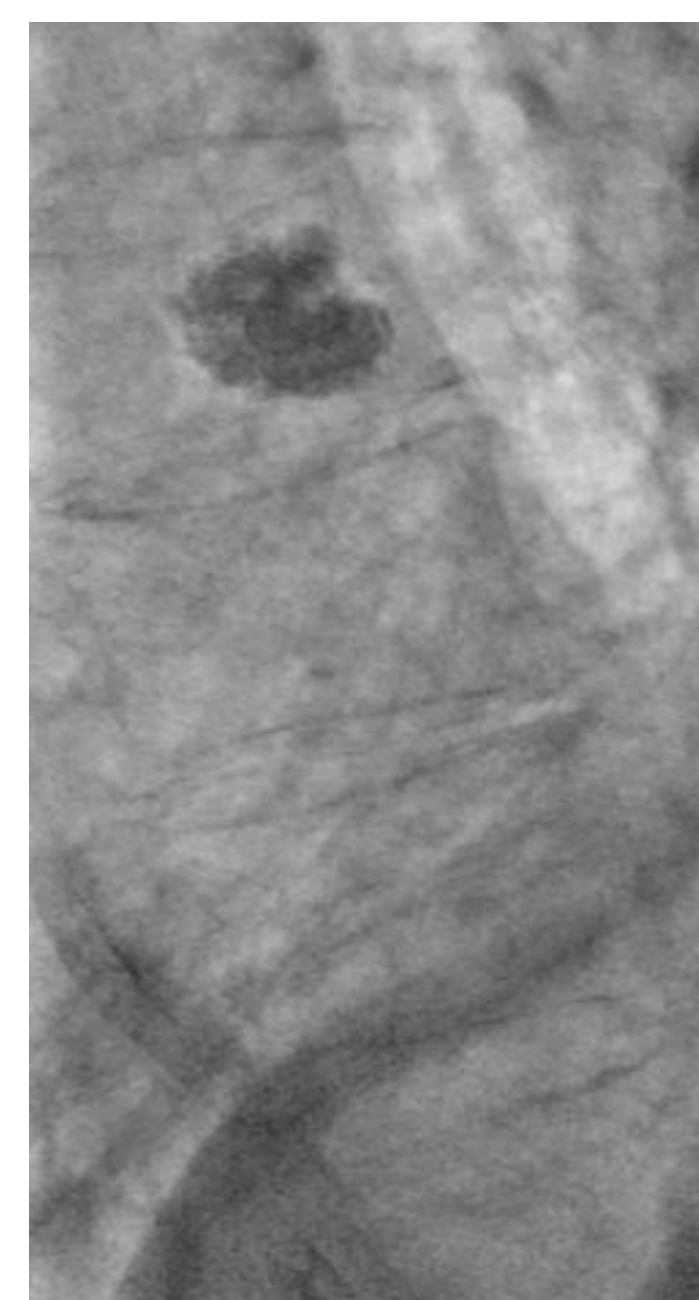


Figure 1. (left)
Fluoroscopy image of
T9 following
transpedicular
kyphoplasty

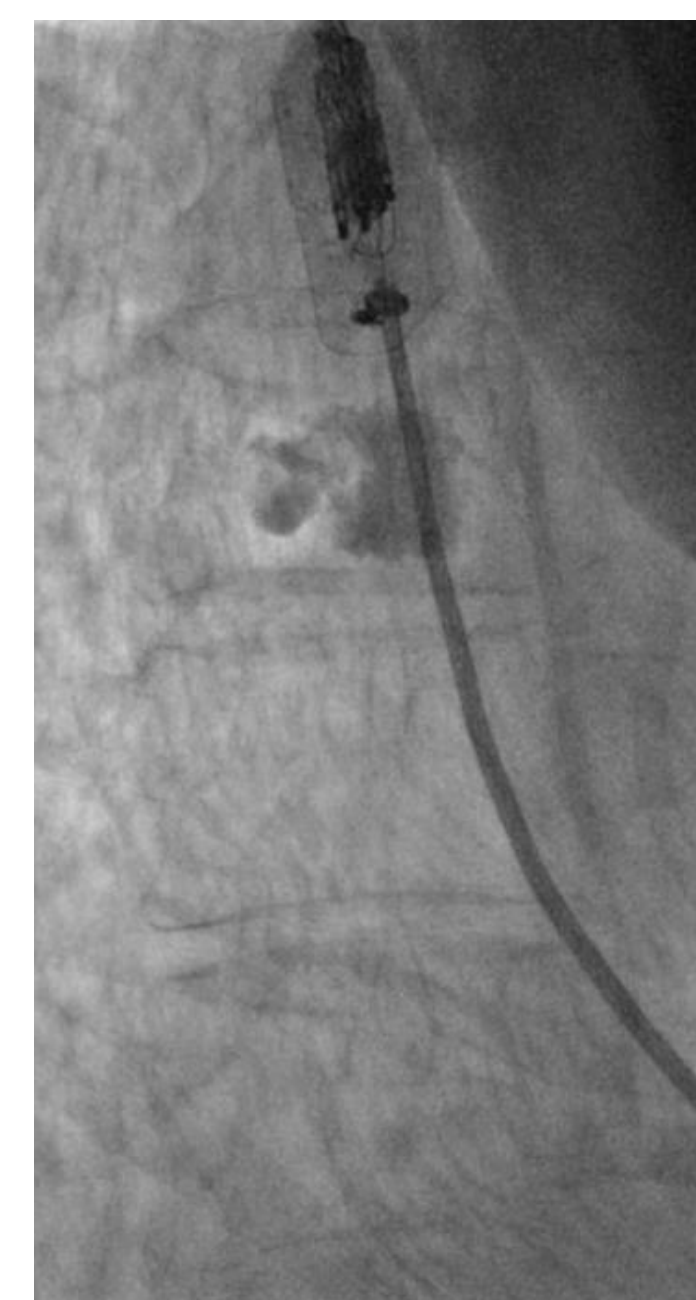


Figure 2. (right)
Fluoroscopy image of
L2 following
transpedicular
kyphoplasty

Discussion

- This case study is a proof of concept that transpedicular kyphoplasty can be performed in the left or possibly right lateral decubitus position when prone positioning is not tolerated.
- In this case, the patient's respiratory burden prevented him from being able to lie prone for even minimal periods of time without distress and detrimental variations in his oxygen saturation. By utilizing this approach, the patient was maintained in a safe and manageable position when considering his level of respiratory compromise, however, he was much more mobile and needed to be frequently asked to remain still with the addition of multiple safety straps to keep him appropriately positioned.
- While this level of detail and meticulousness is more time and labor intensive, it is an appropriate and viable approach when patients are unable to lie in the conventional prone positioning.
- This case highlights the importance of patient positioning in any case of vertebral augmentation, especially when a physician considers utilizing this approach to optimize patient outcomes.

References

1. Wong CC, McGirt MJ. Vertebral compression fractures: a review of current management and multimodal therapy. J Multidiscip Healthc. 2013 Jun 17;6:205-14. doi: 10.2147/JMDH.S31659. PMID: 23818797; PMCID: PMC3693826.
2. Imamudeen N, Basheer A, Iqbal AM, Manjila N, Haroon NN, Manjila S. Management of Osteoporosis and Spinal Fractures: Contemporary Guidelines and Evolving Paradigms. Clin Med Res. 2022 Jun;20(2):95-106. doi: 10.3121/cmr.2021.1612. Epub 2022 Apr 27. PMID: 35478096; PMCID: PMC9242734.