

A CASE OF LUMBAR RADICULOPATHY FOLLOWING VERTEBRAL AUGMENTATION

Kirk Sheplay MD*, Denaeya Easley-Terrones**, Christopher Trower MD***

*ODU/EVMS PM&R Residency **EVMS Medical School ***Wake Forest Pain Fellowship



MACON & JOAN BROCK VIRGINIA HEALTH SCIENCES

Eastern Virginia Medical School

AT OLD DOMINION UNIVERSITY

Introduction

- Vertebral augmentation such as percutaneous vertebroplasty and balloon kyphoplasty have been shown to be an effective treatment for acute or subacute osteoporotic vertebral compression fractures.
- The procedure is done through a transpedicular approach into the vertebral body where polymethyl methacrylate is pressurized to fill the fracture, which improve pain symptoms, increase functionality, and enhance the fractured vertebrae's stability.
- Recent literature has shown improvement in patient outcomes and increase in mobility with these procedures.
- Although vertebral augmentation has many benefits, complications still arise due to inappropriate patient selection, cement extravasation, infection, and/or damage to surrounding structures.
- We report a patient status post sacroplasty presenting with radiculopathy secondary to extravasation of cement impinging on the right L5 nerve root.

Case Report

- Our patient is a female who presented with chronic low back pain with bilateral leg weakness for 3 years.
- MRI showed moderate T6 compression fracture, sacral insufficiency fracture, and mild L5 compression fracture.
- She underwent L5 and T6 kyphoplasties using a bi-pedicular approach.
- The patient returned a few weeks later with unchanged back pain and underwent a sacroplasty.
- Since the procedure, she had severe weakness in her right toe and severe and debilitating radiating pain down her right leg.
- An initial CT scan showed extravasation of cement from the right sacrum into her anterior sacral wall into the retroperitoneal space.
- MRI scan confirmed that the extravasation of cement was impinging on her right L5 nerve root.
- She also underwent an EMG/NCS which revealed a right L5 radiculopathy.
- The patient elected to have the extravasated cement surgically removed, which resolved her symptoms.

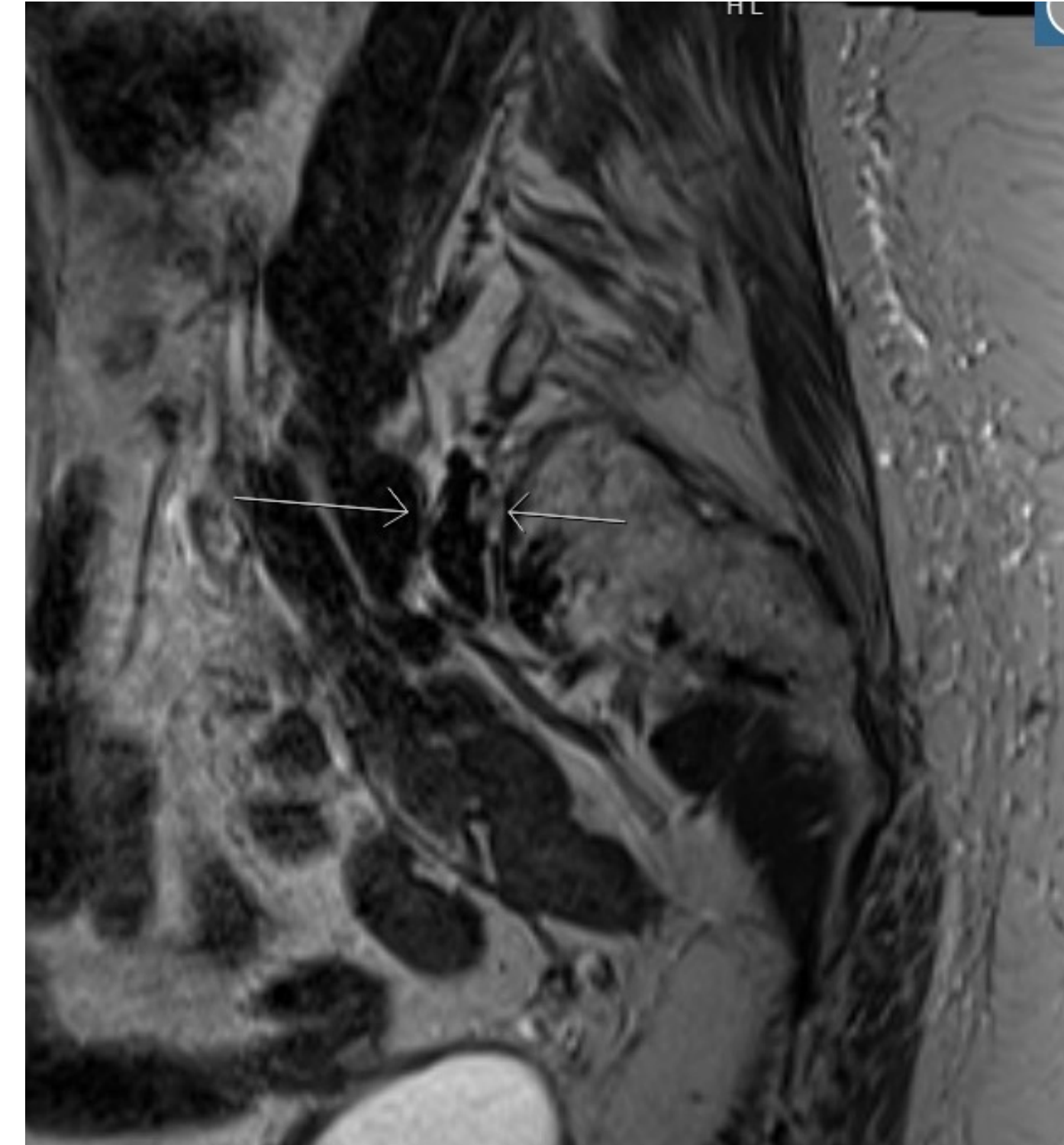


Image 1: SAG T2 MRI Extravasation of Cement Impinging on L5 Nerve Root

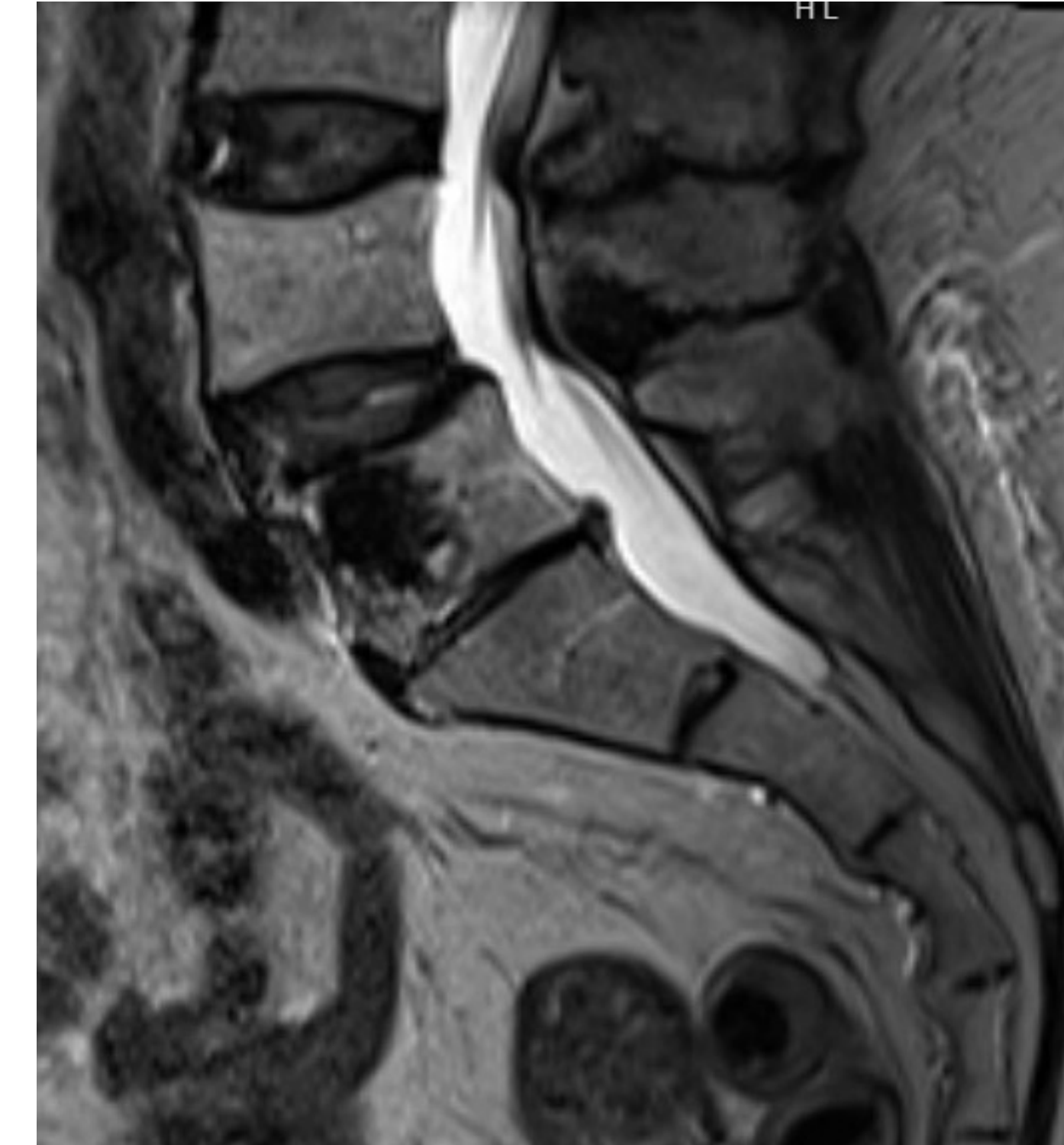


Image 2: SAG T2 MRI Pre-Existing L5 Kyphoplasty

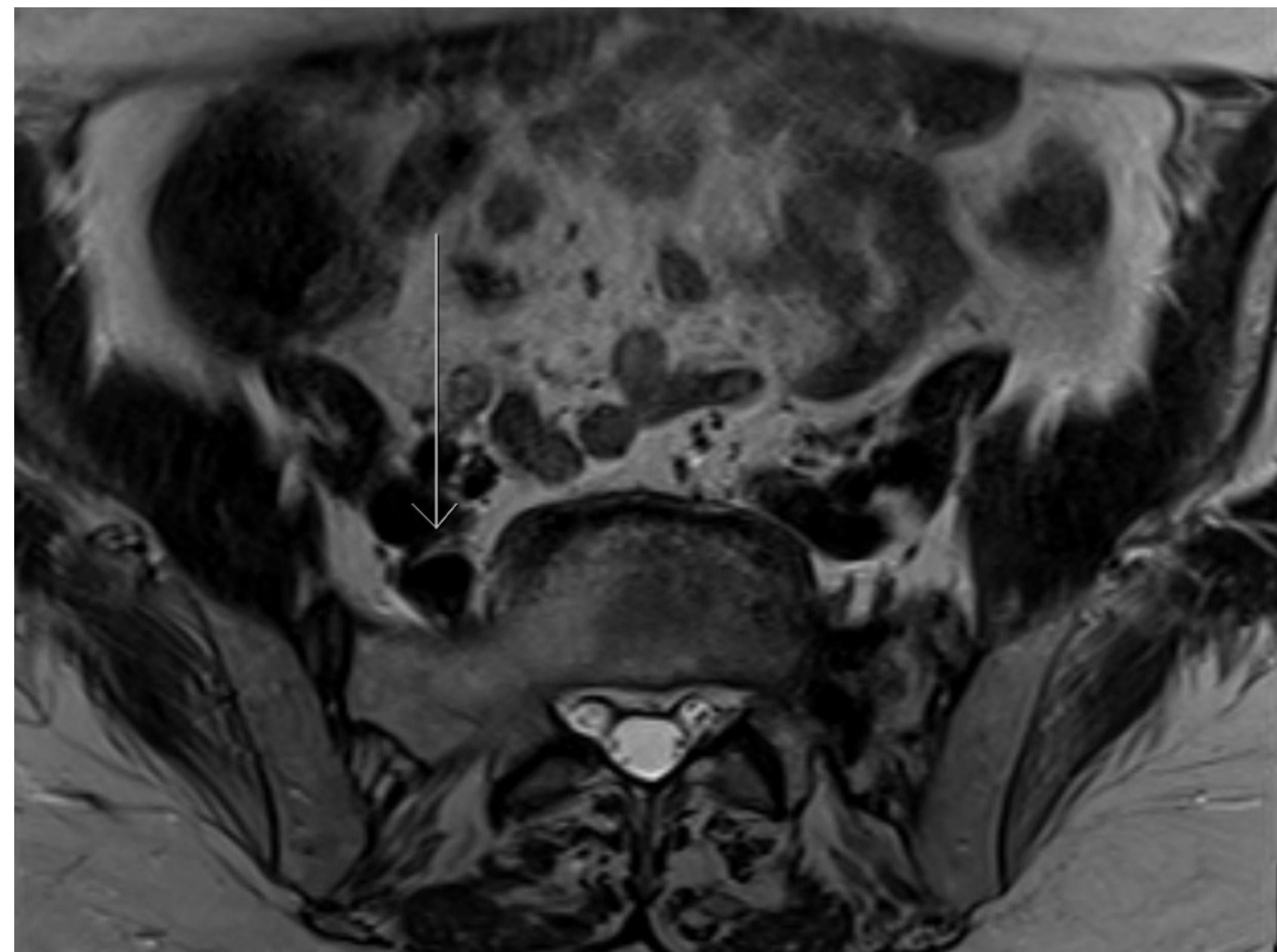


Image 3: Ax T2 MRI Extravasation of Cement

Discussion

- The most common complications of cement augmentation include infection, bleeding, vasovagal and allergic reactions.
- More serious complications include: extravasation, cement embolism, adjacent vertebral fractures, and neurologic injury.
- The incidence of cement extravasation ranges from 18% to 88% of cases and most common site includes the end plate, disk, paravertebral space, and epidural space.
- Cement embolism occurs as a monomer that polymerizes in distant sites or as small fragments of polymerized cement. A systematic review showed the incidence of cement embolism ranged from 2% to 26%.
- After cement augmentation, there is risk of fracture at the adjacent vertebral body. In a meta-analysis comparing conservative care to vertebroplasty, approximately 20% of patients experienced a new fracture at 6 to 12 months after the procedure.
- Neurological injury related to cement extravasation into the epidural space is rare. A literature review in 2013 on the overall number of reported cases of neurological deficit after cement leakage showed 21 cases of cement extravasation with neurological deficit.
- Vertebral augmentation procedures are relatively safe, but certain precautions should be taken to avoid such complications including high-resolution biplanar fluoroscopy, the use of a local anesthetic, and controlling the location of cement spread in relationship to the posterior vertebral body.

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