

Cooled radiofrequency ablation, kyphoplasty, and spinoplasty combined to palliate painful spinal metastasis

By: **Jeffrey Mauras, MD**, Jessin John, MD, Ethan Levitch, BS, Aaron A. Hanyu-Deutmeyer, DO
Ochsner Interventional Pain Management Department

Introduction:
Metastasis to the spine can be an excruciating source of pain for a patient. Radiofrequency technology is commonly paired with kyphoplasty to provide pain relief and improve bone stability. While the vertebral body is the most common spot in the spine for metastatic lesions, cancer can spread to the posterior elements as well. This report presents a unique combination of cooled radiofrequency ablation (RFA) combined with kyphoplasty and spinoplasty resulting in complete pain relief.

Method:
As the case report is devoid of patient identifiable information, it is exempt from IRB review requirements as per Ochsner IRB policy. The patient’s family consented to use the patient’s case for this report as the patient has passed away since this treatment.

Case Report:
This report involves a 69-year-old male with history of prostate cancer with known metastasis to the L1 vertebral body. His L1 lesion was successfully palliated with cooled RFA and kyphoplasty. He completed radiation treatment and was receiving hormonal therapy. He 4 years later with 2 weeks of acute onset worsening low back pain similar to previous presentation. Updated MRI (seen on the right) revealed evidence of new osseous metastases at the T11-L2 vertebral body levels, the posterior spinous process of L1, and the left pedicle of T11. He underwent a two-part treatment with T11 and T12 ablation and kyphoplasty followed 2 weeks later by L2 ablation and kyphoplasty plus L1 spinous process ablation and spinoplasty. All ablations were completed with the same internally cooled bipolar radiofrequency device. For the spinous process ablation, a 7mm probe was used with a 5-minute burn to create an 11x10 mm lesion within the spinous process. A midline approach was used to maximize probe surface area within the spinous process. 6 mL of cement was used for the L2 vertebral body while only 1.5 mL was used on the spinous process. The patient noted 30% relief in his pain at 1 week following the T11 and T12 procedures. He still noted procedural pain at his follow up 3 days after the second procedure, but by the 2.5 month follow up the patient’s response had improved to 100% relief of his back pain without pain medication use.

The patient was able to receive palliative radiation following these procedures which is an important consideration when considering this treatment because mapping for radiation planning must be completed after any vertebral augmentation has been done.

Discussion:
This case displays a novel use of spinoplasty paired with ablation in the setting of painful posterior element metastasis to provide complete pain relief.

Patient finds relief with addition of posterior element ablation and spinoplasty to treatment of painful spinal metastatic disease.

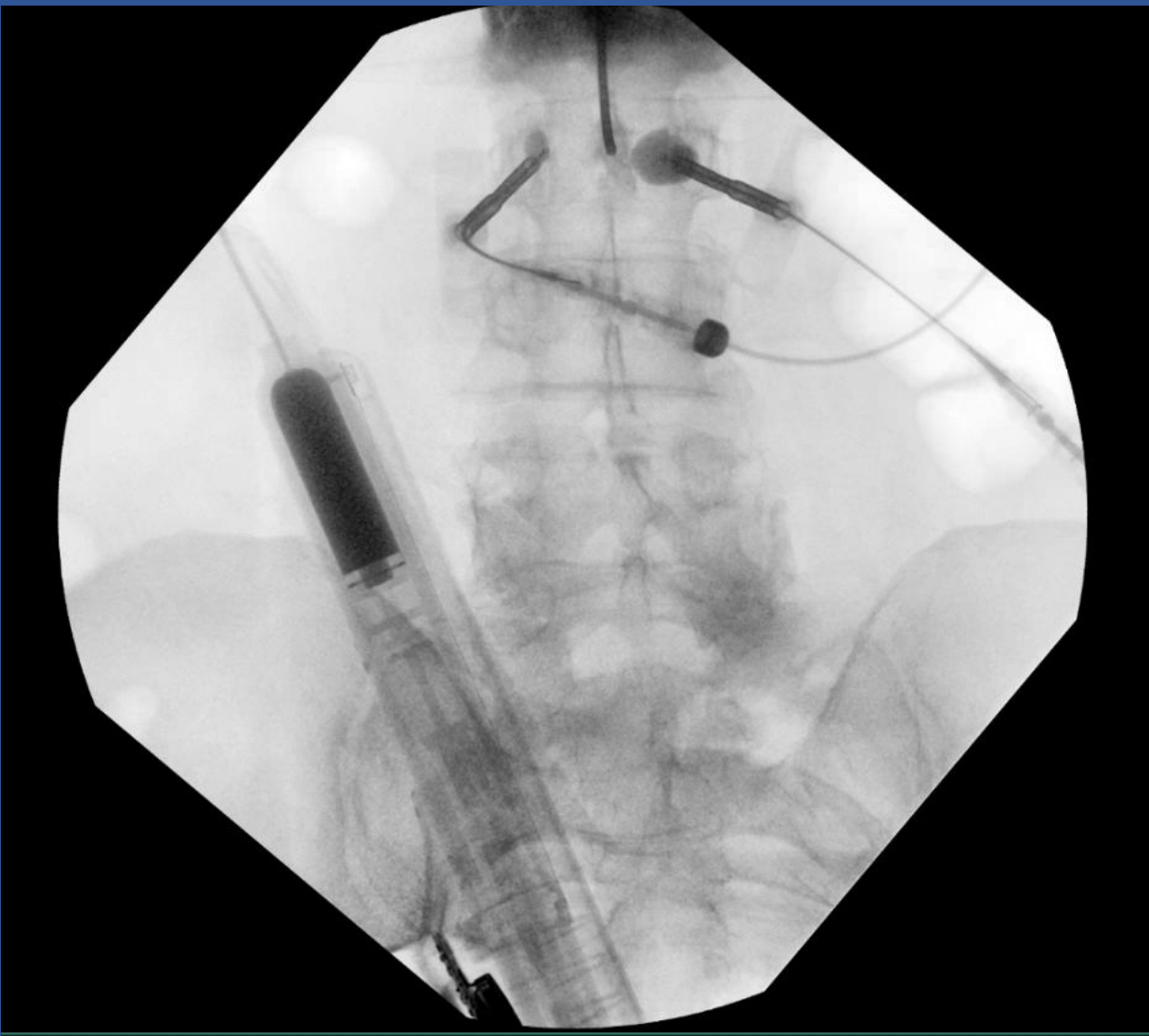
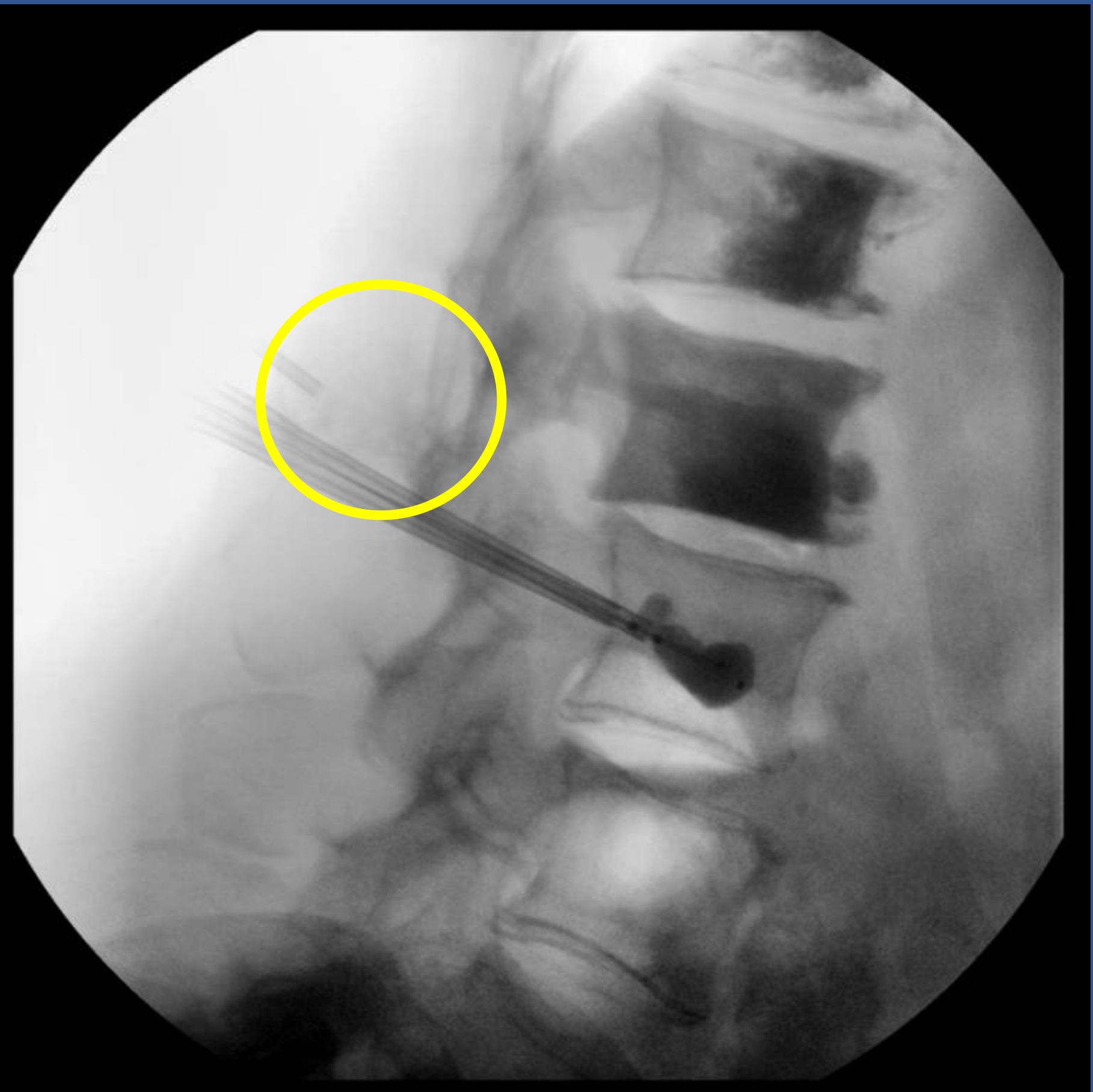
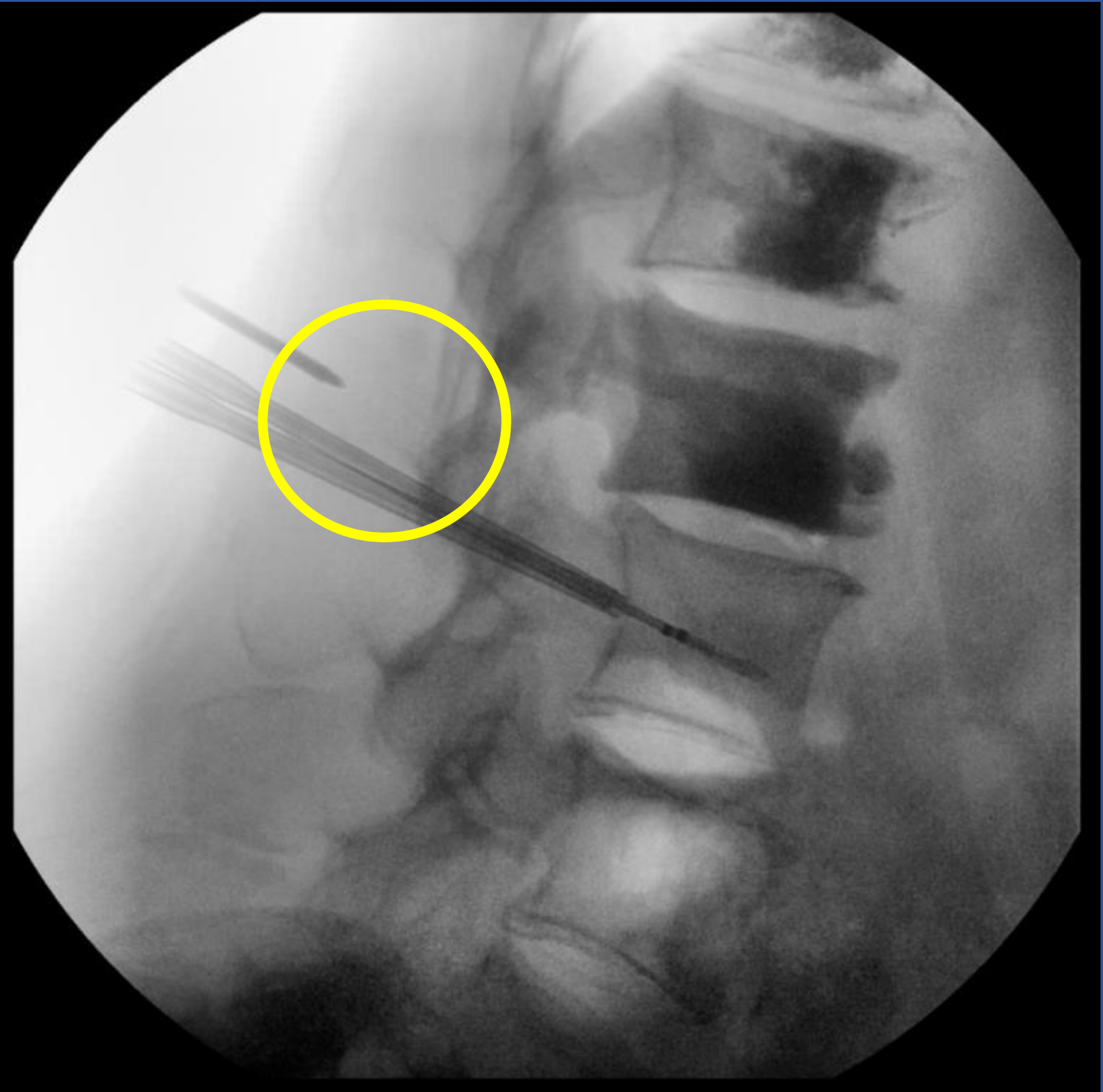
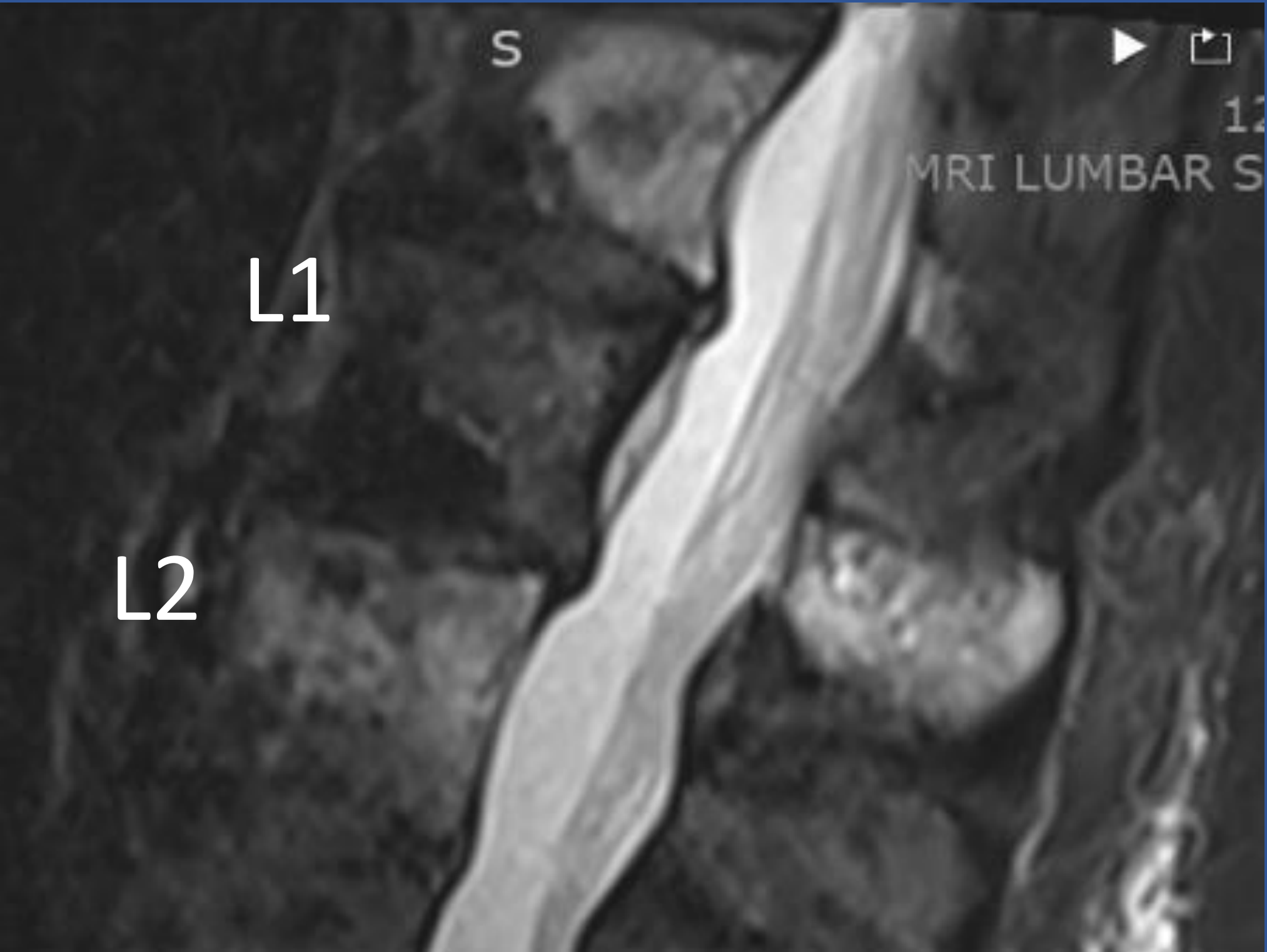
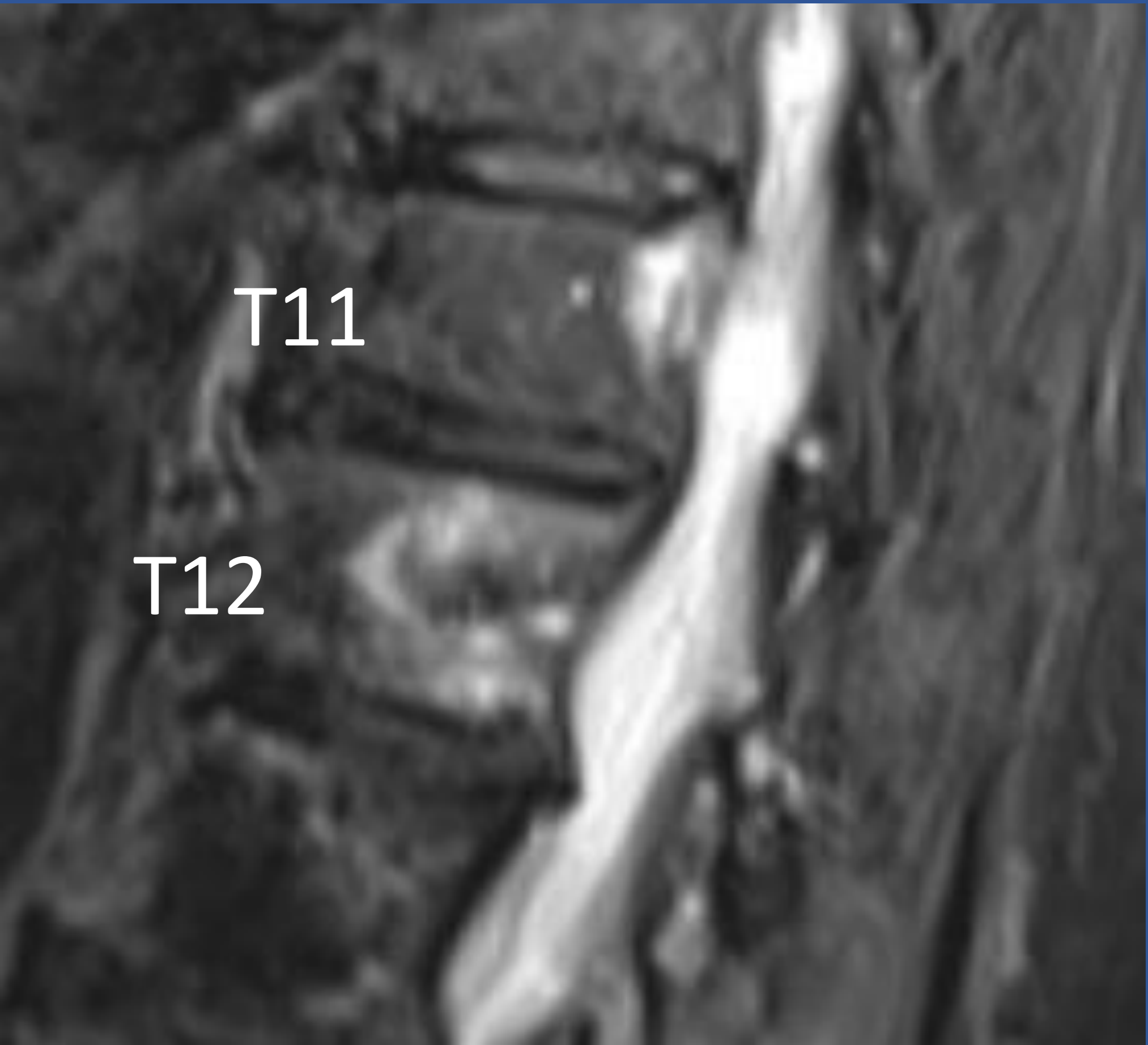


Table 1: Spinal Metastasis Prevalence	
Prevalence in Cancer Patients	10% of all cancer patients develop <i>symptomatic</i> spinal metastases
Prevalence in Patients with Systemic Metastases	60–70% have <i>some</i> degree of spinal involvement (often asymptomatic)
Prevalence at Autopsy (advanced disease)	Spinal metastases found in 36–70% of cancer deaths
Most Common Spinal Regions Involved	- Thoracic spine: 60–70% of cases - Lumbar spine: 20–25% - Cervical spine: 10–15%

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