

Goals & Objectives

- **To understand the importance of soft tissue algorithm on spine imaging**
- **Identify commonly overlooked soft tissue pathology on spine imaging.**
- **Briefly describe typical CT features of four different types of soft tissue pathology with example cases.**

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Disclosures

No conflicts of interest
No relevant disclosures



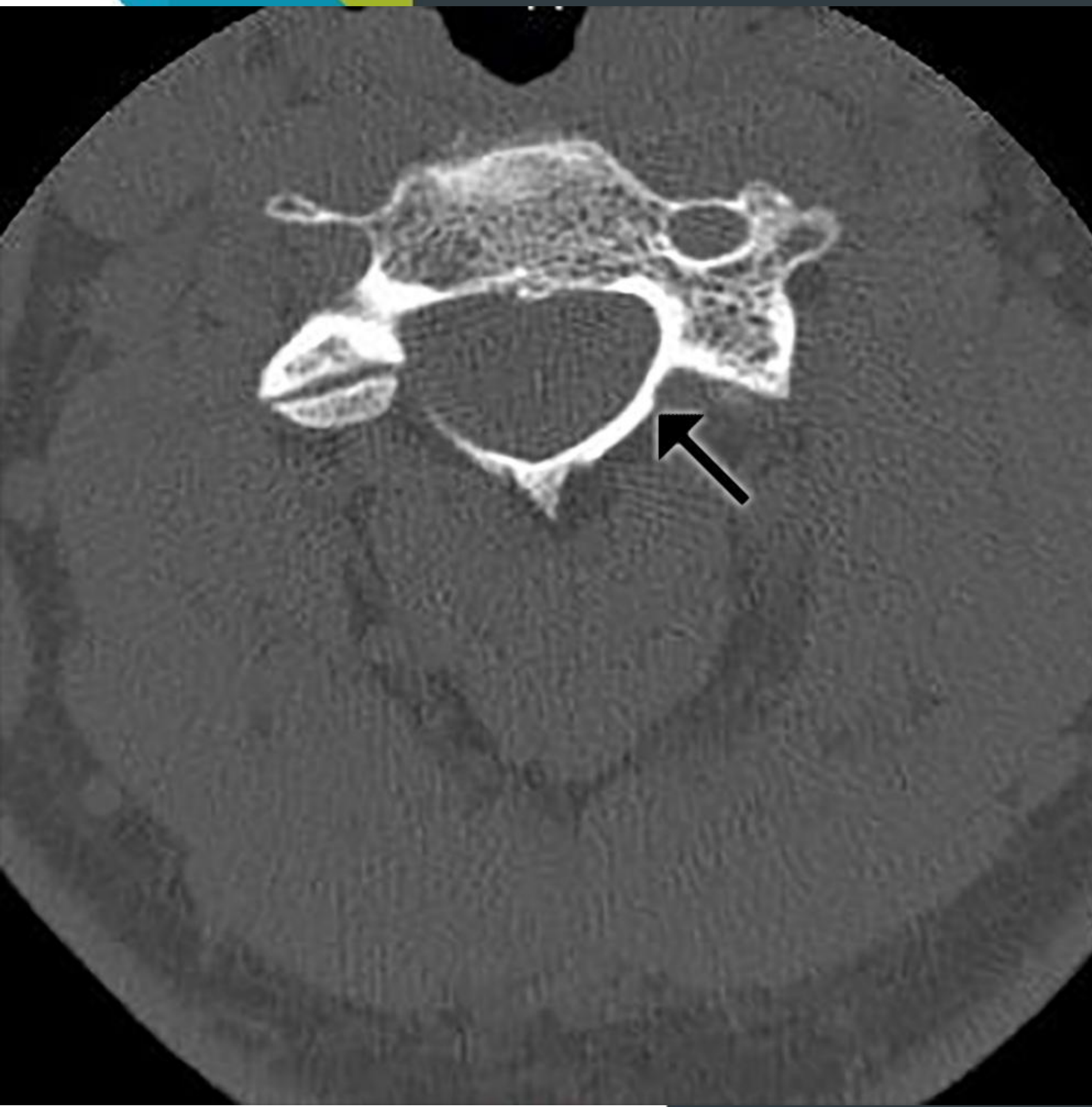
Background

There are many factors leading a radiologist to fatigue during spine CT evaluation. Nevertheless, the ubiquitous use of CT for trauma, a patient's inability to tolerate an MRI, difficult patient history and sometimes incorrectly ordered imaging modalities are all predisposing factors that place added burden on the radiologist to not only evaluate the osseous structures, but also the soft tissues in order to make the correct diagnosis. It has been observed that occasionally spine CTs performed at outside facilities have contained only a bone algorithm. There are **critical findings** to be **seen on the soft tissue algorithm** and our education exhibit is designed to highlight the importance of using soft tissue windowing on spine CT with a few example cases.

Epidural Hematoma

This is a case that had an obvious C2 fracture (not shown) seen with bone algorithm. However, there is also an epidural hematoma causing **severe spinal canal narrowing**, which becomes much more apparent on the soft tissue algorithm. This finding was confirmed by MRI.

Teaching Point: In the setting of trauma, it is critical to recognize epidural hematoma on CT.





Discitis Osteomyelitis

There are endplate defects and sclerotic changes resembling degenerative disease.

Teaching Point: Often discitis is obvious on bone algorithm, with dramatic destructive changes centered on the disc space. This case shows how earlier discitis can be misleading though.



However, by observing the **paraspinal inflammatory changes** on the soft tissue algorithm you can have more confidence in suggesting discitis. MRI confirmed the diagnosis.

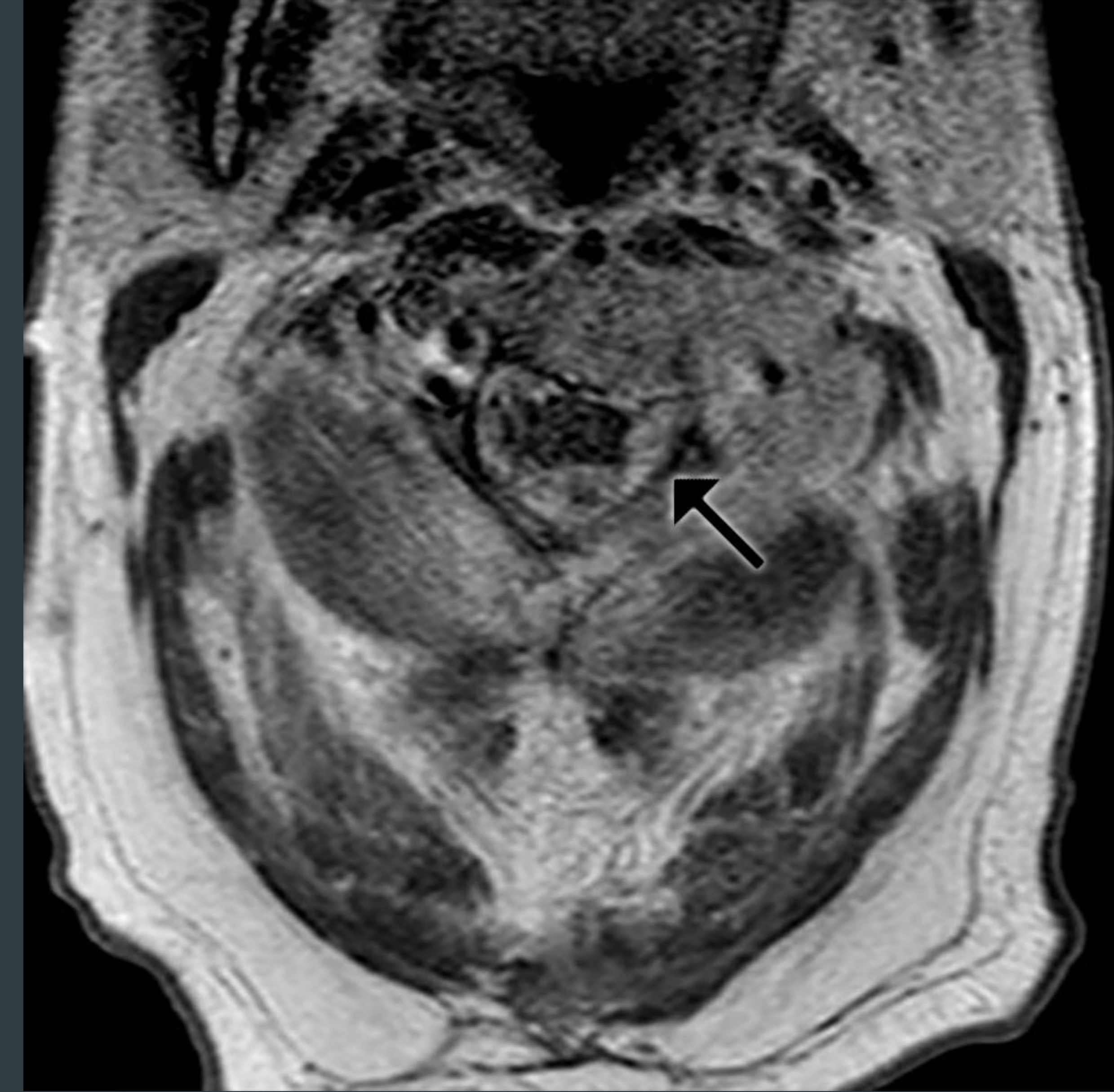
Epidural Tumor Spread



Bone algorithm images demonstrated a pathologic fracture of the C2 posterior elements (black arrow).

On the soft tissue algorithm, the tumor clearly extends into the epidural space and causes spinal cord compression (white arrow).

Teaching Point: A pathologic fracture should prompt a search for extra-osseous extension of tumor.



Enhanced MRI was completed for confirmation and demonstrates enhancing tumor that involves the epidural space and narrowing the spinal cord.



Disc Herniation

In this thoracic spine CT, there are multiple levels of severe degenerative disease that appear similar on bone algorithm, and appear to cause mild-moderate spinal canal narrowing.

Teaching Point: Soft tissue algorithm will better delineate spinal canal narrowing and non osseous structures.



However, on the axial soft tissue algorithm, it becomes apparent there is a large disc bulge at one level causing severe spinal canal narrowing.

References

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