

Medical Imaging of Vertebral Compression Fractures

Introduction

Medical imaging plays a vital role in diagnosing fractures of the spine, specifically compression fractures as seen in the following case study. Radiologists can analyze images from multiple modalities and from there determine how much vertebral height has been lost, if the fracture is creating any complications for the spinal cord, and what type of medical intervention, if any, would be best for treatment of the fracture (Colangelo, 2014; Dewar, 2015; Odle, 2017).

References

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Radiography

Radiography is often the first modality of choice employed by physicians for the initial assessment of a patient's spine (see figure 1). The lateral projection provides the most diagnostic information for radiologists when assessing a compression fracture (Colangelo, 2014; Dewar, 2015; Odle, 2017).

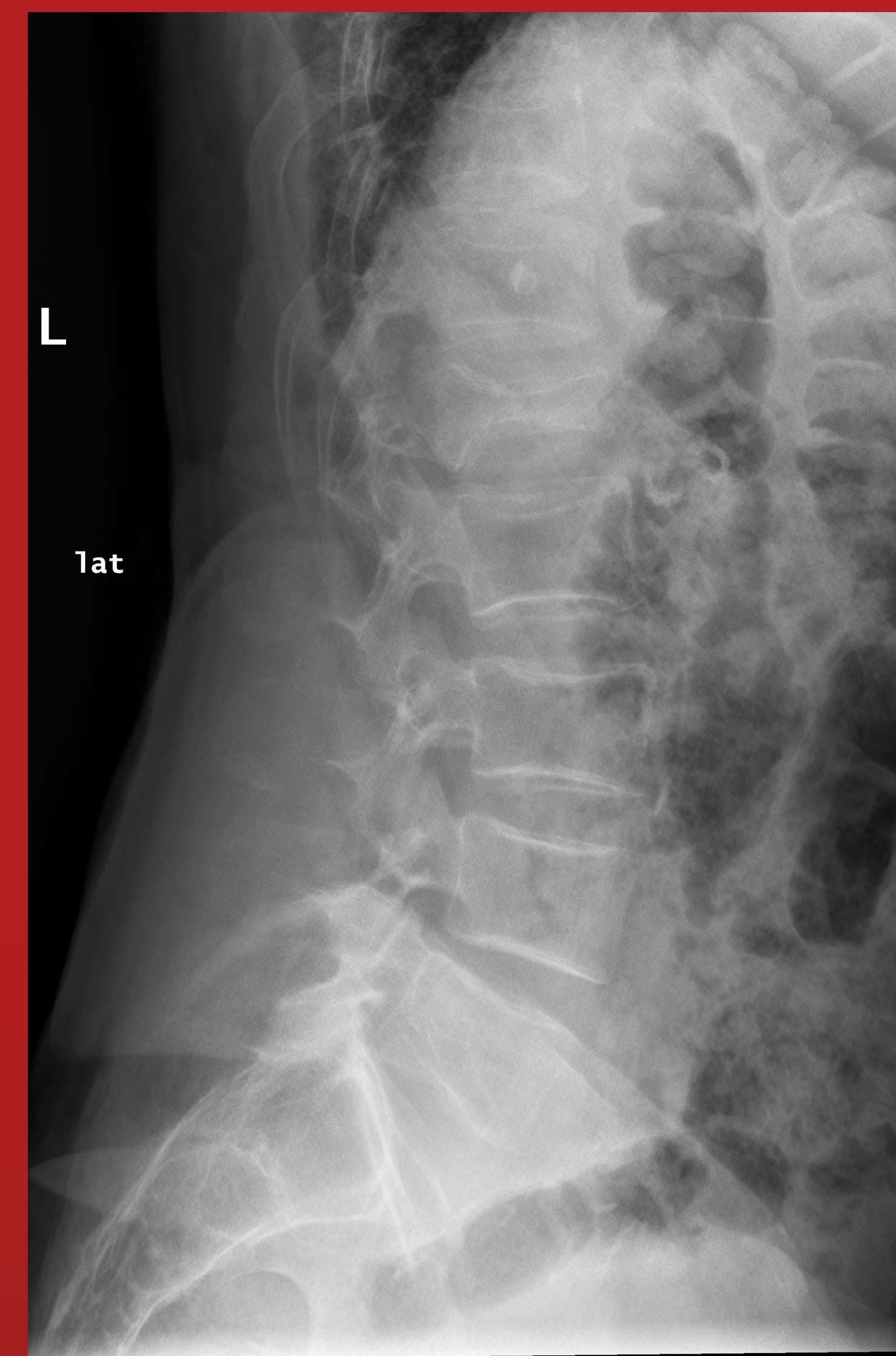


Figure 1. Lateral radiographic projection of lumbar spine demonstrating a compression fracture at L1. Significant loss of vertebral height is shown. Retrieved from facility PACS system.

Computed Tomography

Computed tomography (CT) is often utilized to better visualize bony anatomy (see figure 2). CT can provide much greater detail and analysis of a compression fracture's loss of vertebral height as well as the localization of fracture fragments (Colangelo, 2014; Dewar, 2015; Odle, 2017).



Figure 2. Coronal CT image demonstrating a compression fracture at L1. Significant loss of vertebral height is again displayed along with fragmentation of the vertebra near midline and along the left edge. Retrieved from facility PACS system.

Magnetic Resonance

Magnetic resonance (MR) is another modality that can provide more information about the extent of a compression fracture because of its ability to critically evaluate the spinal cord and other soft tissue anatomy like the vertebral disks (see figure 3). Compression fractures can be associated with a herniated nucleus pulposus, "slipped disk", and can potentially cause compression of the spinal cord leading to severe neurological deficits. (Colangelo, 2014; Dewar, 2015; Odle, 2017).



Figure 3. Sagittal MRI image demonstrating a compression fracture at L1. Retropulsion of L1 4mm into the spinal canal is exhibited. Retrieved from facility PACS system.

Conclusion

Radiography, CT, and MRI each have their part to play in the diagnosis and assessment of compression fractures. Radiographs are beneficial for first analyzing the patient's spine. Further evaluation of the vertebrae can be achieved through a CT scan, while the spinal cord and vertebral disks can be visualized through the use of MR (Colangelo, 2014; Dewar, 2015; Odle, 2017).