

IMAGING

SPECIAL INTEREST GROUP

Call for Imaging Submissions

The Imaging SIG is soliciting submissions for publication in this space. Types of submissions can include:

- **Case Report:** A detailed description of the management of a unique, interesting, or teaching patient case involving imaging. Case reports should include: Background, Case Description including Imaging, Outcomes, and Discussion.
- **Resident's Case Problem:** A report on the progress and logic associated with the use of imaging in differential diagnosis and/or patient management. Resident's Case Problem should include: Background section, Diagnosis section which details the examination and evaluation process leading to the diagnosis and the rationale for that diagnosis, including a presentation of imaging studies. Interventions section used to treat the patient's condition and the outcome of treatment; however, the focus of the resident's case problem should be on the use of Imaging in the diagnostic process and patient management. The Discussion section offers a critical analysis of how the Imaging guided the management of the patient.
- **Clinical Pearl:** Clinical pearls are short papers of free standing, clinically relevant information based on experience or observation. They are helpful in dealing with clinical problems for which controlled data do not exist. Clinical Pearls should describe information pertaining to Imaging which help inform clinical practice.

Submissions should be sent to: John C. Gray, DPT, FAAOMPT, Publications Editor at jcgray@san.rr.com

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Imaging Pearl

John C Gray, DPT, FAAOMPT



THE VACUUM DISK PHENOMENON

In viewing images of the lumbar spine, it is not uncommon to see a vacuum disk phenomenon. On plain radiographs and CT images, the vacuum disk shows up as radiolucent (similar to air filled lungs) intradiskal gas made up of mostly nitrogen that has been released from adjacent extracellular fluid (see Figures 1 and 2).^{1,2}

An intervertebral disk without the vacuum phenomenon will look gray (see arrow pointing to L3-4 in Figure 2); whereas the disks with the vacuum phenomenon will have an area that is black (see arrows pointing to L4-5 and L5-S1 in Figure 2). On MR imaging, the disk in general will have a decreased signal intensity due to dehydration (degenerative disk disease) with a signal void at the vacuum site.² An MR signal void is an area with no radiofrequency signal because there are no protons within the gaseous vacuum.

Vacuum disk phenomenon is a sign of degenerative disk disease that occurs in approximately 2% to 3% of the population.² Lumbar vacuum disks are generally considered a benign asymptomatic indicator of degenerative disk disease. However, there are case reports of radicular symptoms secondary to gas-filled disk herniations and epidural gas cysts associated with vacuum disks.³⁻⁷

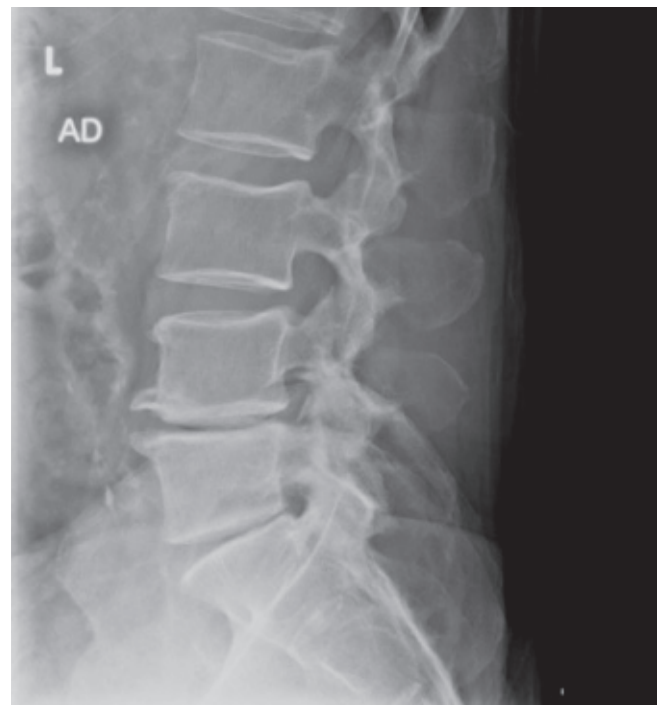


Figure 1. Plain radiograph, lateral view of lumbar spine, of 72-year-old male with severe degenerative disk disease at L4-5 and L5-S1.

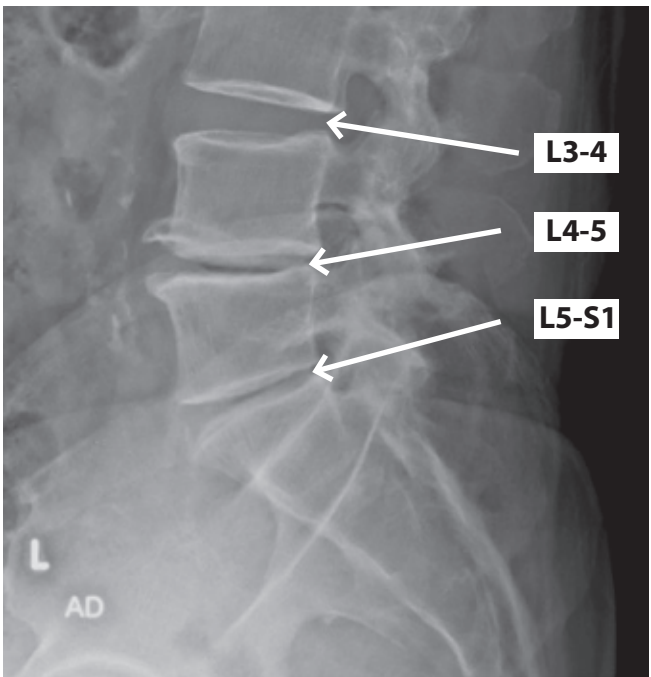


Figure 2. Close-up of image in Figure 1. Vacuum disks are noted at L4-5 and L5-S1. There is no vacuum disk phenomenon at level L3-4.

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3. Gulati AN, Weinstein ZR. Gas in the spinal canal in association with the lumbosacral vacuum phenomenon: CT findings. *Neuroradiology.* 1980;20(4):191-192.
4. Kakitsubata Y, Theodorou SJ, Theodorou DJ, et al. Symptomatic epidural gas cyst associated with discal vacuum phenomenon. *Spine.* 2009;34(21):E784-789.
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7. Yasuoka H, Nemoto O, Kawaguti M, et al. An unusual case of nerve root compression by intradiscal gas pseudocyst of the lumbar spine. *J R Army Med Corps.* 2010;156(1):47-48.