

# What Is Your Diagnosis?

In cooperation with

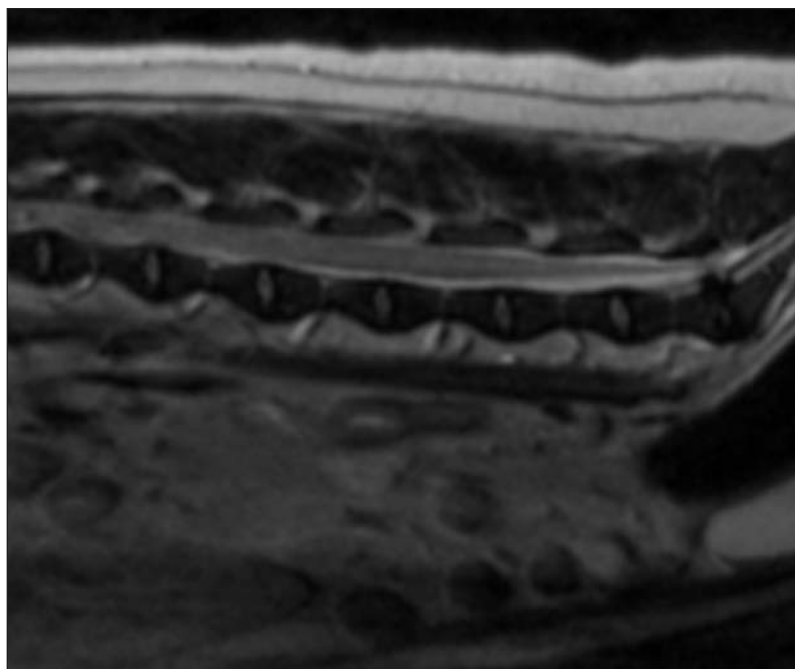


Figure 1—A T2-weighted sagittal magnetic resonance image of the lumbosacral region of a 6-year-old spayed female Miniature Poodle with a left pelvic limb lameness of 3 months' duration.

## History

A 6-year-old spayed female Miniature Poodle was referred for evaluation of lethargy, lameness of the left pelvic limb, reluctance to jump and navigate stairs, and difficulty walking on slippery surfaces. Clinical signs had been present for 1 month, were intermittent, and were not progressive.

Initial treatments by the referring veterinarian included pain medication (carprofen and tramadol), nutritional supplementation (omega-3 fatty acids and glycosaminoglycans), and strict exercise restriction. Results of serum biochemical analysis, a CBC, urinalysis, and microbiological culture of a urine sample were within reference ranges. Test results for *Borrelia burgdorferi*, *Ehrlichia canis*, and heartworm infections were negative. No abnormalities were detected by the referring veterinarian on radiographic images of the lumbosacral region of the vertebral column. The dog had minimal improvement following 4 weeks of treatment, and referral was recommended.

Upon referral, the dog was evaluated by the orthopedic service. Neurologic abnormalities were not detected. A subtle gait abnormality was observed after stair climbing and manifested as a mild lameness of the left pelvic limb. Nonsteroidal anti-inflammatory drug treatment and strict rest were continued for an additional 4 weeks. At follow-up 8 weeks after initial evaluation, signs of pain were noted on palpation of the lumbar region. Because of the persistence of clinical signs, magnetic resonance imaging (MRI) of the lumbosacral region was performed (Figure 1).

**Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page →**

---

This report was submitted by Jennifer Gambino, DVM, and Pamela Schwartz, DVM, DACVS; from the Department of Surgery, Animal Medical Center, 510 E 62nd St, New York, NY 10021. Dr. Gambino's present address is the Department of Diagnostic Imaging, Animal Health Center, College of Veterinary Medicine, Mississippi State University, Mississippi State, MS 39762. Address correspondence to Dr. Gambino (drjenvetnyc@gmail.com).

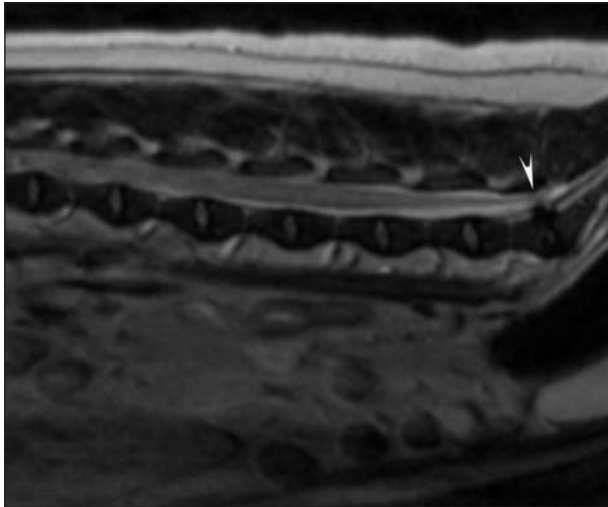


Figure 2—Same T2-weighted sagittal magnetic resonance image as in Figure 1. Hypointensity of the nucleus pulposus and herniation of disk material (arrowhead) causing an extradural mass effect are evident.

### Diagnostic Imaging Findings and Interpretation

On the T2-weighted sagittal magnetic resonance image of the lumbosacral region, almost complete signal void of the nucleus pulposus is seen at L7-S1 (Figure 2). On a T2-weighted transverse magnetic resonance image of the L7-S1 disk space, a well-margined 4-mm-diameter focal hypointensity is seen extending dorsally into the vertebral canal at the level of L7-S1 (Figure 3). This focal hypointensity almost completely occludes the left intervertebral foramen at L7-S1. There is compression of the left segmental nerve roots as they enter the intervertebral foramen. Findings on MRI for this dog are consistent with left-sided lumbosacral foraminal stenosis with nerve root compression secondary to extrusion of the L7-S1 disk.

### Comments

Physical examination findings for the dog of this report were subtle, and survey radiography did not help elucidate the cause of lameness. Differential diagnoses included intervertebral disk protrusion or extrusion, ischemic or inflammatory myelopathy, neoplasia, and diskospondylitis. Magnetic resonance imaging was especially useful in determining the cause of the clinical manifestations and source of the dog's discomfort.

The dog underwent dorsal laminectomy. Surgical exploration of the L7-S1 disk space revealed congealed, extruded disk material dorsal and cranial to the L7-S1 disk space consistent with Hansen type I intervertebral disk disease. Surgical findings correlated with MRI findings. Discectomy was performed. Stabilization of the L7-S1 disk space was not necessary. Two weeks after surgery, the owner reported that the dog was considerably more comfortable. Eighteen months after surgery, the dog was still doing well with full return to normal activity.

Clinical signs of the dog of this report correlated well with the MRI findings; lateralization of the disk extrusion and compression of the left segmental nerve roots resulted in clinical signs that were exclusive to the left

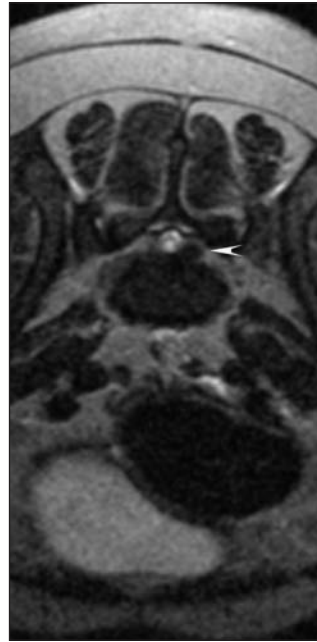


Figure 3—A T2-weighted transverse magnetic resonance image of the L7-S1 disk space. Notice the focal hypointensity representing extruded disk material occluding the left intervertebral foramen (arrowhead).

pelvic limb. Disk degeneration is characterized by water loss from the nucleus pulposus and annulus fibrosis, resulting in decreased signal intensity on T2-weighted MRI.<sup>1</sup> Hansen type I intervertebral disk disease is described as extrusion of the nucleus pulposus secondary to degeneration by chondroid metaplasia, leading to compressive myelopathy. It typically affects chondrodystrophic dogs, has an acute onset, and most commonly affects disk spaces between T12-L2, with progressively decreased incidence from T12-L3 caudally.<sup>2</sup> Dachshunds have the highest incidence (45% to 70% of all affected dogs) of frequency, followed in succession by the Pekingese, Welsh Corgi, Beagle, and Lhasa Apso.<sup>3</sup> To our knowledge, type I extrusion at the L7-S1 disk space in dogs has been reported only once before.<sup>4</sup> Middle-aged dogs with pelvic limb lameness and pain in the lumbosacral region frequently have a variation of degenerative lumbosacral stenosis. The most common cause of cauda equina compression in dogs is typically Hansen type II intervertebral fibroid disk disease resulting from a combination of degenerative changes involving the bone and soft tissues surrounding the cauda equina, leading to disk protrusion and compression of neuronal structures.<sup>5</sup>

1. Adams WH, Daniel GB, Pardo AD, et al. Magnetic resonance imaging of the caudal lumbar and lumbosacral spine of 13 dogs (1990–1993). *Vet Radiol Ultrasound* 1995;36:3–13.
2. Brown NO, Helpfry ML, Prata RG. Thoracolumbar disk disease in the dog: a retrospective analysis of 187 cases. *J Am Anim Hosp Assoc* 1977;13:665–672.
3. Bray JP, Burbidge HM. The canine intervertebral disc. Part two: degenerative changes—nonchondrodystrophic discs versus chondrodystrophic discs. *J Am Anim Hosp Assoc* 1998;34:135–144.
4. De Risio L, Sharp NJH, Olby NJ, et al. Predictors of outcome after dorsal decompressive laminectomy for degenerative lumbosacral stenosis in dogs: 69 cases (1987–1997). *J Am Vet Med Assoc* 2001;219:624–628.
5. Suwankong N, Voorhout G, Hazewinkel HA, et al. Agreement between computed tomography and magnetic resonance imaging, and surgical findings in dogs with degenerative lumbosacral stenosis. *J Am Vet Med Assoc* 2006;229:1924–1929.