THORACOLUMBAR INTERVERTEBRAL DISC DISEASE

INTERVERTEBRAL DISC DEGENERATION

Intervertebral Disc Disease is the most common neurologic syndrome in the dog. Disc degeneration has been reported in 84 breeds with particular susceptibility in certain small breeds. These breeds (Dachshund, Pekingese, Poodle, Beagle, etc.) have characteristic skeletal changes that predispose the disc to change at a very early age.

Intervertebral discs act as cushions between the vertebrae and function as the shock absorbers of the spine. A normal disc has 2 regions: a resilient gelatinous nucleus in the center and an outer fibrous ring that encircles the nucleus (Fig. 1). A degenerative disc loses its resiliency when its jelly-like center calcifies and takes on a gritty, hardened consistency. No longer able to cushion the vertebrae, the center is predisposed to bulging and to rupture (extrusion), resulting in pressure on the spinal cord, pain, and paralysis.

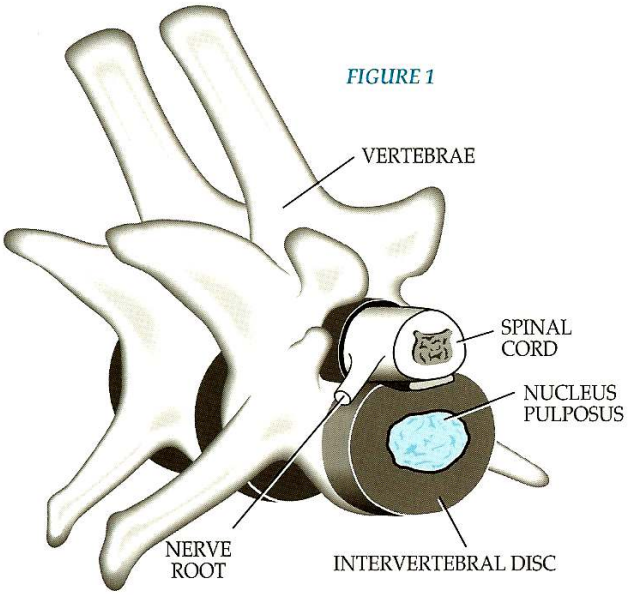

FIGURE 1

A mild disc rupture may cause back ***pain*** while a more moderate rupture causes ***weakness*** and a ***wobbly gait*** (Fig. 2). If a large amount ruptures, or if it ruptures quickly and causes spinal cord swelling, the pressure results in a potentially life-threatening ***paralysis*** (Fig. 3).

DIAGNOSIS

A tentative diagnosis of thoracolumbar intervertebral disc disease is made on the ***History*** and ***Neurologic Examination***. Radiographs (x-rays) can reveal the presence of degenerative, calcified discs and may outline narrowed disc spaces with evidence of extruded (ruptured) calcified disc material in the spinal canal. A definitive diagnosis may require a special x-ray test. The ***Myelogram*** (a contrast dye study of the spine) is used to confirm and document not only the location of the ruptured disc but also the amount of spinal cord swelling. With new gas anesthetics, advanced monitoring equipment, and modern "contrast" agents for the dye study, the myelogram is now a common and safe diagnostic procedure when performed with care and under the proper conditions.

The individual prognosis depends on many factors:

1) the severity of neurologic dysfunction
2) the number of previous episodes of back pain
3) the amount of disc material that has ruptured
4) the degree of accompanying spinal cord swelling
5) how quickly the disc ruptured (minutes to over several days)
6) the length of time the disc has been ruptured
7) the overall physical condition of the patient

This means that paralysis is not the only factor in the individual patient's prognosis for recovery.

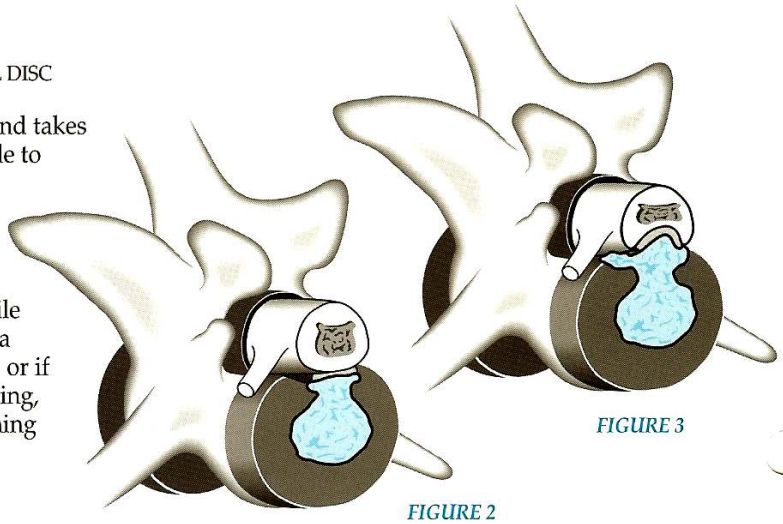

FIGURE 3

FIGURE 2

In general, the ability to perceive deep pain in the rear limbs and tail area remains the key prognostic indicator. If paralysis is present, how quickly they "went down" and how quickly they may have lost deep pain perception are the keys to determining if permanent damage has occurred. Therefore, the neurologic status and radiographs (x-rays) are therefore used to determine the severity of each individual's condition and, subsequently, the best treatment.

TREATMENT

Individuals experiencing their first episode of back pain with minimal neurologic dysfunction may be treated medically. The medications include corticosteroids (cortisones) to relieve the cord swelling and pain caused by the intense inflammation. Patients with recurring painful episodes or neurologic deficits are candidates for a ***Hemilaminectomy***. This procedure removes one wall of the vertebrae allowing the surgeon to delicately extract the disc material from the spinal canal without injuring the spinal cord (Fig. 4). With pressure removed from around the cord, neurologic function may then begin to return.

A second procedure is then performed to remove the center of the adjacent degenerative discs. This procedure can include up to 6 intervertebral discs and involves cutting a window in the outer fibrous ring of the disc followed by extraction of the calcified, degenerative center. This ***Fenestration*** of the disc centers should reduce the chance of disc rupture, while allowing normal, pain free motion at each disc site. As the resected center of each disc scars, there is little to no effect on back mobility (Fig. 5).

FIGURE 5

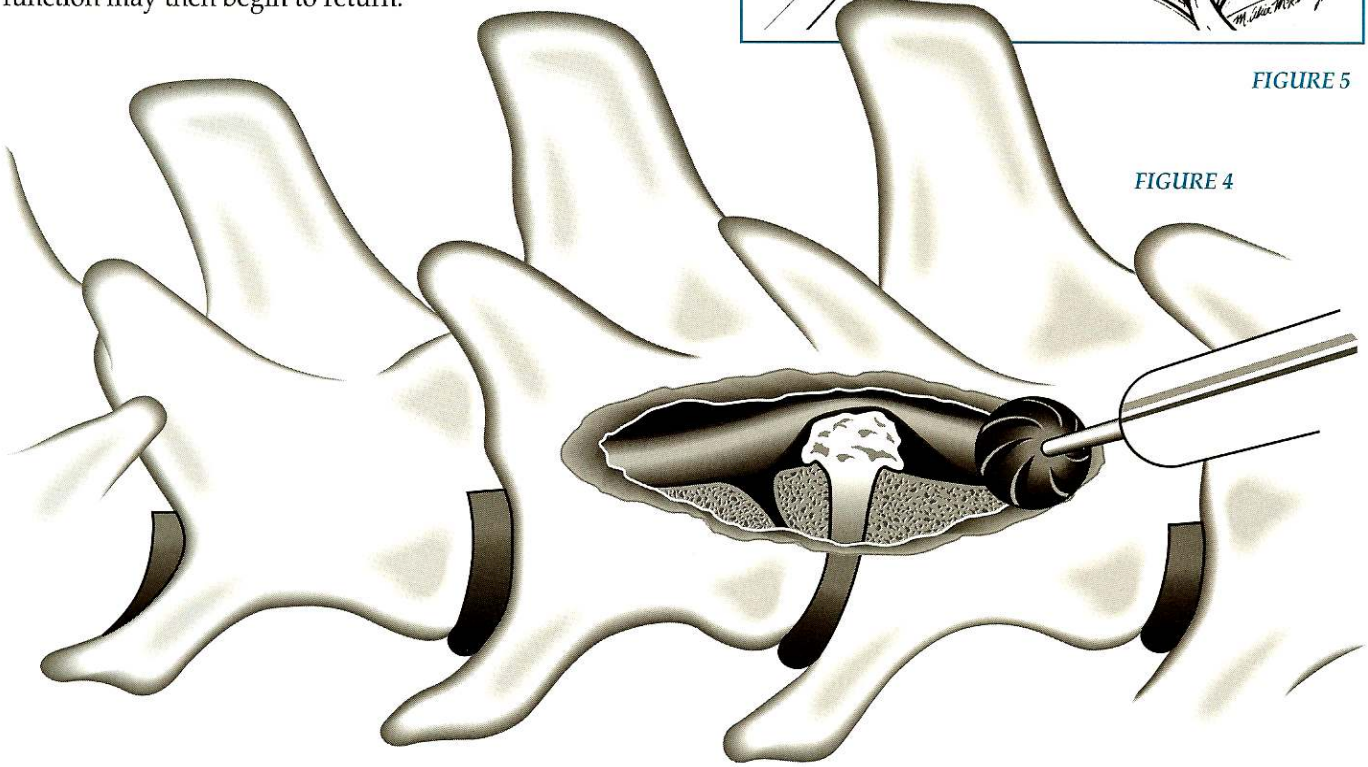

FIGURE 4

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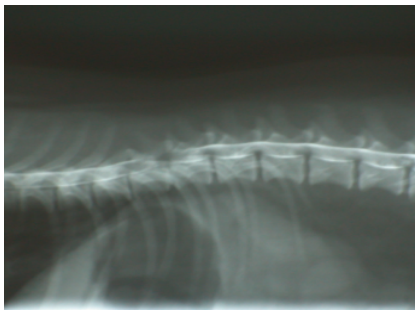
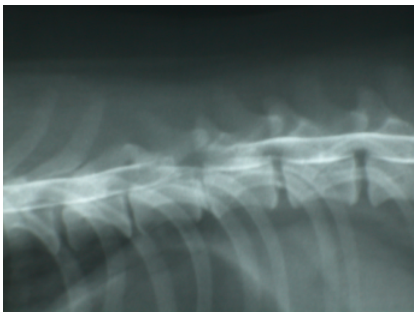
OPERATIVE REPORT

Patient: Dach Sample
Date: 2006
Surgery: Hemilaminectomy and Myelogram

Pre Op: Dog is painful in T-L junction. Neurological signs suggest a lesion caudal to T2. Dog has deep pain in both rear limbs. There are no motor neuron signs nor proprioception in both rear legs. Reflexes are indicative of upper motor neuron. Solumedrol was given. Cefazolin 200mg IV. IV Catheter in Place. See er report for additional info. Fentanyl patch applied. Urinary catheter in place.

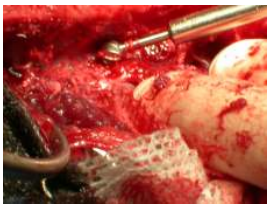
Myelogram: A 22 g x 3 ½ inch spinal needle was inserted into the subarachnoid space at L5-L6. 1.5 cc of iopamidol was injected. Contrast Myelography : There are signs of cord swelling at T11-T12 marked by displacement of the contrast. Disc protrusion is most likely at this location.





Hemilaminectomy: The dog was positioned in ventral recumbancy and the area was shaved and prepped for surgery. A dorsal midline incision was made extending from the Mid-Thorasic to the caudal lumbar regions. The sub-cutaneous fat and fascia were incised. The fascia of the Spinalis et semispinalis muscle cranially and the superficial layer of the deep external fascia caudally were incised on the left side along the dorsal spinous processes. Proceeding from caudal to cranial with scissors in a craniomedial direction, the multifundus and longissimus muscles were separated by blunt dissection of the intermuscular septum. The lateral aspect of the vertebrae were exposed and the nerve

roots cranial to the discs were identified. With gelpi retractors used for exposure, a hemilaminectomy was performed.



The lateral spinous processes along T10 through T13 were removed with ronguers. Next a high-speeds burr was used to remove the outer , middle and inner cortex of the vertebra from the lat spinous process of T10– T13. A small lambert ronguer was used to remove the very most inner lining of bone with care given to preserve the spinal cord. As this inner lining was removed, the obvious swollen cord protruded as more of this lining was removed. The laminectomy was extended cranial to T10 until epidural fat was visualized. The laminectomy was extended caudally to L1until epidural fat was visualized. Large amounts of disc material were found compressing the spinal cord at T11-T12.

The annulus fibrosus of all the discs extending fro T10 to L5 were fenestrated laterally to remove nucleus pulposus material. A strip of fat was removed from the subcutaneous area and placed over the spinal cord.

The fascia was closed with 2-0 PDS in a simple continuous pattern. Next the subcutaneous tissue was closed with 2-PDS in a simple continuous pattern. Skin was closed with skin staples.

Post Operative Care: No running, jumping or stairs. Pain meds and solumedrol as directed. Continue antibiotics for 14 days. Take sample to your regular veterinarian for care over the next few days. Your pet will need close supervision and nursing during this time. Towel walk and check bladder frequently.See discharge instructions for care.

Staple removal in 10-14 days. Please call if you have any questions or problems.

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