d.c. Vets, inc.

Thoracolumbar Intervertebral Disc Disease

Intervertebral disc disease is the most common neurologic syndrome seen in the dog. Disc degeneration has been reported in 84 breeds with particular susceptibility in certain small breeds. These breeds (Dachshund, Pekinese, Poodle, Beagle, etc.) have characteristic skeletal changes that predispose the discs 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 two regions: a resilient gelatinous nucleus in the center and an outer fibrous ring that encircles the nucleus (see 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.

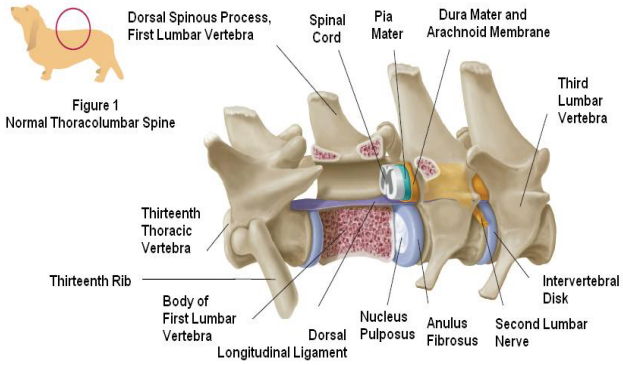


Figure 1
Normal Thoracolumbar Spine

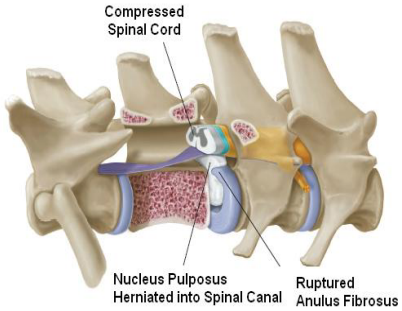


Figure 2
Hansen Type I Disk
Herniation in Lumbar Spine

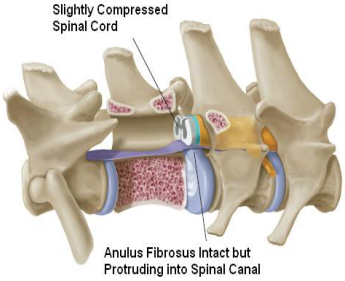


Figure 3
Hansen Type II Disk
Protrusion in Lumbar Spine

Mild disc rupture may cause back pain while a more moderate rupture causes weakness and a wobbly gait (see Fig. 2). If a large amount ruptures, or if the disc ruptures quickly and causes spinal cord swelling, the pressure can result in a potentially life threatening paralysis (see 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 MRI or a 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 (see Fig. 4). The myelogram is a common and safe diagnostic procedure when performed with care and under the proper conditions. Complicated cases may require a MRI.

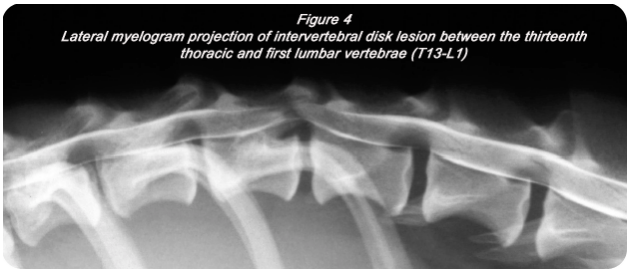


Figure 4
Lateral myelogram projection of intervertebral disk lesion between the thirteenth thoracic and first lumbar vertebrae (T13-L1)

An individual's prognosis depends on many factors:

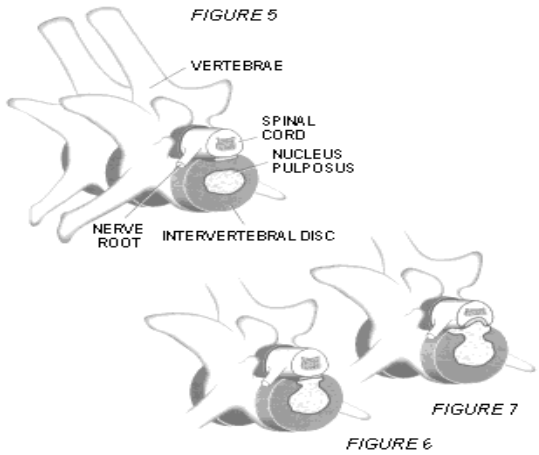
- The severity of neurologic dysfunction
- The number of previous episodes of back pain
- The amount of disc material that has ruptured
- The degree of accompanying spinal cord swelling
- How quickly the disc ruptured (minutes to over several days)
- The length of time the disc has been ruptured
- The overall physical condition of the patient

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

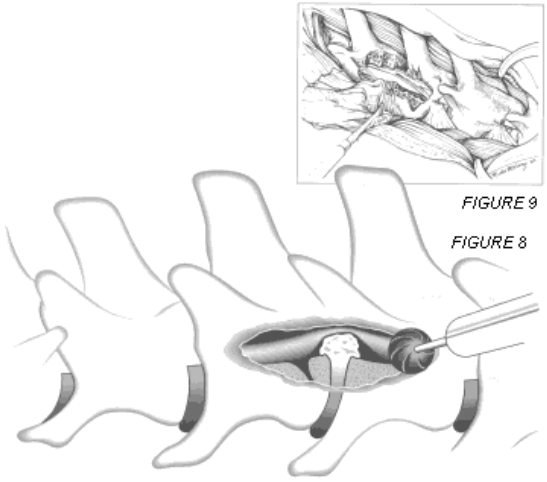
In general, the ability to perceive deep pain in the rear limbs and tail area remains the key prognostic indicator. If paralysis is present, how quickly they went down and how quickly they may have lost deep pain perception are the keys to determining if permanent damage has occurred. Therefore, the neurologic status and radiographs (x-rays) are 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 may include corticosteroids or non-steroidal anti-inflammatory drugs (NSAIDS) to relieve the cord swelling and pain caused by intense inflammation (see Fig. 5 and 6). Patients with recurring painful episodes or significant neurologic deficits are candidates for a hemilaminectomy (See Fig. 5 and 7). 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 (see Fig. 8). 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 six intervertebral discs and involves cutting a window in the outer fibrous ring of the discs followed by extraction of the calcified, degenerative centers. This fenestration of the disc centers should prevent recurrence of any disc ruptures, while allowing normal, pain free motion at each disc site. As the resected center of each disc center scars, there is little to no effect on back mobility (See Fig. 9)



Postoperative Care

Postoperative care is critical to long term success. The most critical element is confinement of the dog to a small area with ample bedding and good footing. Physical therapy begins at suture removal and involves flexing and extending the hip for a few minutes three or four times a day. Swimming therapy and

short walks, gradually increasing in length, begin three to six weeks after surgery depending on the individual. Again, complete confinement to a small room, pen, or cage when not working on physical therapy is mandatory. Avoid slick floors, jumping, running, stair climbing, and all acrobatics until recovery is complete.

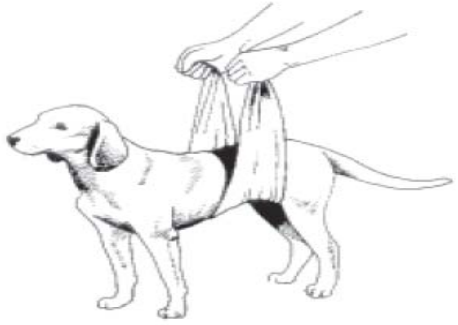
During your pet's convalescence, it may be necessary to offer assistance with ambulation (walking). Two such methods are:

Towel Walking

Place a sheet or large towel under your pet's abdomen as a means of support, holding an end in either hand. Use a towel or sheet that is large enough to enable you to stand in an upright position (below).

Support your pet so that he/she is unable to bear full weight on the affected limb(s). Over the passage of time (usually two to three weeks), you will notice that your pet will be able to accommodate a greater percentage of its actual weight, requiring less assistance from you.

In the case of a male dog, you will need to reposition the towel/sheet so as not to impede urinary function. This would be done once the dog is outside and ready to urinate. Allow him to lean against you while urinating. This will provide stability for him while urinating.



Supporting ambulation with a towel

Tail Walking

You may also assist your dog with ambulation by holding its tail in an upright manner. This serves as a 'rudder' and provides the needed stability for walking.

NOTE: Not all pets will tolerate this method. You will need to decide which method of assistance will be the most effective.

Medicating Your Dog

1. When administering medication in capsule or tablet form to your dog, you may find it much easier to simply place the medication in a small amount of food and offer it as a treat to your pet.

2. If your dog will not accept mediation in the above mentioned fashion, it will be necessary for you to manually 'pill' your pet (Figure 6). Place your hand around your pet's upper jaw and gently apply pressure by pressing the lips against the teeth. Using your other hand, gently pull the lower jaw downward and place the medication in the very back of your pet's throat. By holding his/her muzzle and gently stroking the throat, you will stimulate your pet to swallow.

Administering medication to a dog

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