



# Intervertebral Disc Disease in Dogs

## Who can be affected?

*Disc disease is more prevalent in certain breeds of dogs (Dachshunds, Beagles, Shih Tzus/Lhasas, Bichons, Cocker Spaniels, Corgis, and French Bull Dogs). It is a breed characteristic for their intervertebral discs to age faster than the rest of their bodies.*

*Any breed can get intervertebral disc disease, even cats can develop it. Any disc can rupture, but the discs in the mid-back and neck are at the highest risk.*

## What is intervertebral disc disease?

Intervertebral discs are cushions between the vertebrae. They have a fibrous outer membrane (the annulus fibrosus), and a core (the nucleus pulposus) filled with hydrated and elastic materials. The discs act as shock absorbers for the spine; they separate the vertebrae and keep them from bumping into each other.

A healthy, non-degenerative disc is like a jelly donut with gel or fluid-filled sac in the middle. With time, as part of the aging process, the core begins to solidify and eventually becomes like “dried toothpaste” or “a bag of gravels”. While the soft inner material begins to harden, the outer protective lining gets weaker.

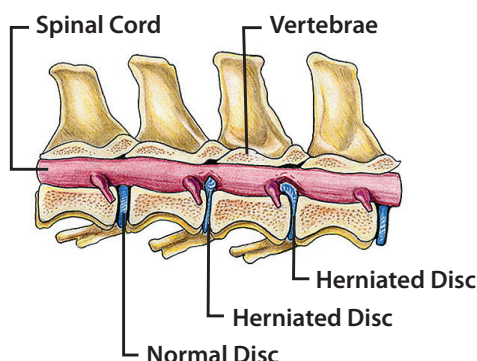
Other terms you may hear for this disease process include pinched nerve, disc herniation or IVDD.

A degenerative disc itself rarely causes clinical signs. It causes a problem when it herniates.

With any degree of activity (from a simple sneeze to jumping 6 feet high and falling), abrupt movement can put stress on a disc, cause swelling of the disc's inner material, and push it through the outer membrane into the spinal canal.

The extruded material can cause both external injury and internal injury to the spinal cord.

- External injury is mechanical. The extruded disc causes compression of the spinal cord.
- Internal injury happens when the disc herniates out and hits the spinal cord. It causes concussive injury or bruising of the spinal cord.
- Intervertebral disc material itself is highly inflammatory to the spinal cord. This can also cause further microscopic damage to the spinal cord.



## Signs of Disease

A herniated disc disrupts information delivered from the brain to the limbs. If the disc herniation happens in midback, you will see signs in the back legs only. If the disc herniation is in the neck, then all four legs will be affected.

The signs of intervertebral disc herniation vary based on the degree of the damage. We can use a neurological grading system in dogs with intervertebral disc disease.

- **GRADE 0:** normal
- **GRADE 1:** pain only
  - » Decreased appetite, hiding, being quite, aggressive or irritable, tense abdomen or yelping when being picked up, reluctance to jump or use stairs or walk, etc.
- **GRADE 2:** ambulatory paresis (weakness) with decreased proprioception (the brain cannot sense where the legs are)
  - » Standing with toes knuckled under foot, standing with feet too close or too far apart, crossing legs when walking, walking “funny” like he/she is drunk. At this stage, the patient is still able to walk in all four legs.
- **GRADE 3:** nonambulatory paraparesis with absent proprioception
  - » All grade 2 signs and the animal cannot walk. With support they still can move their legs. Most of the time they retain their bladder function at this point.
- **GRADE 4:** paralysis with intact pain perception
  - » The animal has no movement in the legs but still can feel their toes. At this point, the dog will have no ability to urinate on their own.
- **GRADE 5:** paralysis with no pain perception
  - » Neither voluntary movement nor sensation in the toes can be detected.
  - » At this stage, there is a 10% of chance patient will develop a condition called “myelomalacia”. Myelomalacia is a fatal condition where the spinal cord starts to break down and causes irreversible damage. It can happen anytime within 5-14 days following the initial spinal injury no matter what we do.

## Diagnosis

At BVNS we use MRI (magnetic resonance imaging) to make the diagnosis and plan for surgery, when necessary. Radiographs (X-rays) can only detect bony changes of the spine and are not sensitive enough to evaluate the spinal cord. CT (computed tomography) has the advantage of being accurate and fast but CT does not give information about the health of the spinal cord. MRI provides much more information and is used in most of our cases.

## Treatment Options

### Medical Management

Medical management includes pain management and strict rest; both are essential to recover from disc disease.

**Strict rest:** Cage confinement for a total of 4-6 weeks.

Confinement to a crate or small area is optimal. Running, jumping, stairs, and excessive movement should be prohibited. Being carried from the crate to outside and walking just a few steps in order to eliminate is ideal. Exercise restriction should continue until there are no signs of pain or weakness. Once your pet shows no signs of pain or weakness, your BVNS doctor will help formulate a plan for your pet to slowly return to nearly normal activity. As a precaution against repeated episodes of disc disease a patient should spend much of the rest of their life with four feet on the ground.

**Pain medication:** Multiple pain medications will be dispensed in the first 1-2 weeks. Most patients need only two weeks of pain medication and then the protocol can be adjusted. Common medications include non-steroidal anti-inflammatory medications, gabapentin, tramadol, and muscle relaxants (diazepam and/or methocarbamol).

To avoid further damaging of spinal cord, chiropractic adjustments should not be performed on acute intervertebral disc herniations. Forced rest is the most essential key to success for medical management.

Medical management is successful greater than 50% of the time in most cases. Although strict rest may resolve the first episode of weakness, the chance of a recurrence is higher compared to surgical intervention. Recurrences are generally more severe than the initial episode and can be harder to fix surgically.

## Surgery

Surgical management is advised in these circumstances:

- Repeat episodes of pain and /or weakness
- First time episode but poor response to medical management
- Patient is unable to stand or walk (neurological grading > 3/5)
- Advanced imaging shows moderate to severe spinal cord compression

During surgery the disc material causing the compression is removed allowing the spinal cord to heal and better transmit signals. There is a one to three day hospital stay following surgery. Once the patient is eating and comfortable, the exercise restrictions and medications can be continued at home. A follow up visit is scheduled about two weeks after surgery for suture removal and adjustment of medications and exercise plan. The final check-up is scheduled 6 weeks following surgery when most patients can slowly return to nearly normal activity.

For patients with intervertebral disc herniation, the success rates for surgical management is greater than 90% of the time when the patient is still able to perceive a deep pain stimulus prior to surgery. The recurrence rate for surgically treated acute disc disease patients is between 10 and 25%, and it is substantially lower than medically treated patients.

Once there is loss of deep pain and/or tone, success rates can drop dramatically and 5-10% of these patients will die from spinal cord disease (e.g. develop myelomalacia). MRI is useful in predicting success rates in surgical management of dogs without deep pain.

High success rates and low recurrence rates make surgery an ideal option in many cases. Benefits unique to surgery include faster pain control, rapid return to function, and low recurrence rates.



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