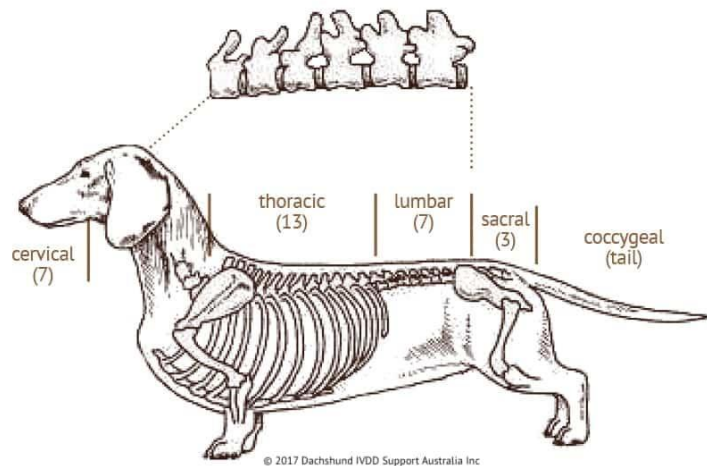




## Intervertebral Disc Disease

The spine is made of numerous bony vertebral bodies that surround and protect the spinal cord. Soft intervertebral discs are present between each of the vertebrae to allow movement of the spine. There are seven cervical (neck) vertebrae, thirteen thoracic (chest) vertebrae, seven lumbar (lower back) vertebrae, three sacral vertebrae (which are fused) and a variable number of coccygeal (tail) vertebrae.



Intervertebral disc disease refers to the displacement of one or several intervertebral discs, resulting in compression of the spinal cord with corresponding pain and neurological deficits. Although trauma may result in the displacement of an intervertebral disc, this condition is more commonly associated with a chronic degeneration of the disc.

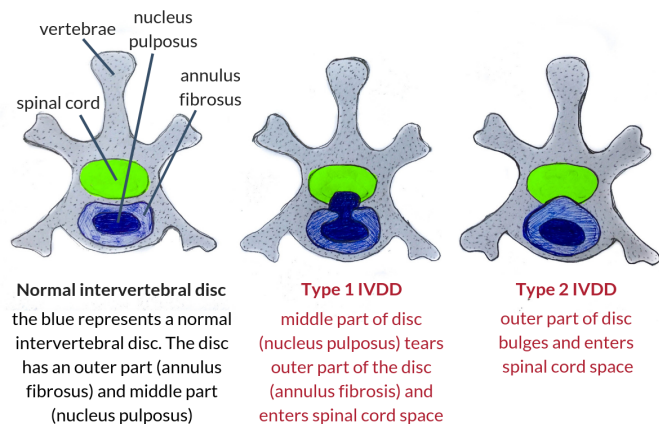
## Types of Intervertebral Disc Disease

### *Hansen Type 1*

Progressive transformation of the nucleus pulposus to mineralized hyaline cartilage. It loses its gelatinous cushioning properties and suddenly herniates upward and is displaced beyond the outer edge of the annulus, resulting in swelling and inflammation of the spinal cord. This is commonly seen in young chondrodystrophic breeds such as dachshunds.

## Type 1 and Type 2 IVDD

Illustration by DJANGO



## *Hansen Type II*

Slower, age related degeneration occurs and the annulus fibrosus becomes soft. As the disk is compressed between the vertebrae, the annulus fibrosus bulges upwards and puts pressure on the spinal cord gradually. The disc material is displaced from the disc space but is contained within an intact annulus. This is more common in older large breed dogs.

The most common sites of disc herniation are between the 11<sup>th</sup> and 12<sup>th</sup> thoracic vertebrae and between the 2<sup>nd</sup> and 3<sup>rd</sup> lumbar vertebrae. Cervical disc herniations occur in 15% of all disc herniation patients but dachshunds, beagles and poodles represent the majority of these patients.

## Symptoms



## *Cervical (neck) Disc Disease*

- Commonly seen in small, middle-age to older chondrodystrophic breeds
  - Beagles and dachshunds
- Neck pain – low head carriage, arching back, stiffness or decreased motion of the neck, vocalizing and spasms of the neck muscles.
- +/- Lameness of one or both thoracic limbs
- +/- Ataxia, loss of conscious proprioception (ability to perceive where one's feet are and orient them properly), weakness or paralysis of all limbs

***Disc herniations in the neck tend to have more pain and less neurological deficits***

### *Thoracolumbar (back) Disc Disease*

- Commonly seen in Chondrodystrophic breeds
- Sudden or gradual onset of signs can be sudden or gradual, depending on the force, quantity and location of the disk material and duration of disk herniation
- Reluctance to run, jump or climb stairs and may have kyphosis
- Tense abdomen
- +/- Mild ataxia of pelvic limbs to complete paraplegia with urinary and fecal incontinence and absent deep-pain perception.

***Ten percent of patients with thoracic disc herniation will have back pain with no neuro signs***

### *Lumbosacral (lower back) Disc Disease*

- Pain and difficulty jumping
- Limp tail
- Decreased anal tone
- Urinary +/- fecal incontinence

## **Diagnosis of Intervertebral Disc Disease**

A thorough history and physical examination will aid in the diagnosis of this condition. For definitive diagnosis, MRI is considered the gold standard diagnostic modality for intervertebral disc disease. This technology is accurate and non-invasive but quite costly. Radiography, myelography and CT can also be used to diagnose disc disease and rule out other potential causes of the patient's clinical signs. While radiographs can determine the location of a disk herniation in 50-75% of cases, myelography can effectively identify the area of compression in 85-95% of cases. A CT scan provided a more accurate image of the disk herniation and its location.

## **Treatment Of Intervertebral Disc Disease**

If the patient is unable to walk at the time of presentation, surgery provides the best chance of recovery. If the patient is painful but still able to walk at the time of presentation, non-surgical treatment options can be considered. Important considerations include:

- Duration of clinical signs - The longer the neurologic deficits have been present, the poorer the prognosis for full return to function
- Degree of patient discomfort - It can be very difficult to manage excessive neurological pain effectively enough to facilitate conservative management
- Presence of deep pain sensation
  - Paralysis with presence of deep pain at the time of presentation = 83-90% success rate for recovery with surgery
  - Paralysis < 48 hours with absence of deep pain at the time of presentation = 50% success rate for recovery with surgery
  - Paralysis > 48 hours with absence of deep pain at the time of presentation = Guarded prognosis

## *Medical/Conservative Treatment*

Conservative management works best for dogs that are able to walk, with deep pain perception, and do not exhibit urinary/fecal incontinence. Roughly half of these patients will recover full return to function. Recurrence of clinical signs due to disc herniation at the same or different locations occurs in about one third of patients.

During conservative management, it is important to avoid motions that might risk further herniation of disc material for the first month of treatment.

The mainstays of conservative management include:

### *Medical intervention*

Patients with intervertebral disc disease often experience excessive pain initially. Many affected animals will benefit from pain control medications and muscle relaxants to improve comfort. In addition, inflammation of the spinal cord, resulting in pain and neurological impairment, should be addressed with non-steroidal anti-inflammatories or steroids.

### *Confinement*

In order to minimize stress on damaged discs to facilitate healing, strict confinement must be implemented. This will typically require the use of a crate or pen. Affected patients can be walked on leash or carried outside to urinate and defecate but should then be returned to confinement. Three weeks of cage rest is the minimum, followed by a gradual return to activity over 2-3 weeks. The patient should be completely restricted from running or jumping during the recovery period. Agility, jumping and fetching games are best removed from the dog's lifestyle completely. In addition, collars should be replaced with harnesses for patients with cervical intervertebral disc disease.

### *Rehabilitation*

- Cryotherapy - Decreases inflammation and improves comfort following initial presentation
- Heat therapy/therapeutic ultrasound/laser therapy - Facilitates muscle relaxation and increases blood flow to the injury site to improve healing
- Electrical stimulation - Supports muscle mass and function in paralytic patients; Improves comfort
- Massage - Improves circulation to the affected area, as well as relaxes soft tissue and improves comfort; Provides sensory input and stimulates reflexes to improve proprioception.
- Therapeutic exercises - Provides tactile stimulation, muscle strengthening; Improves balance and aids in range of motion maintenance
- Controlled aquatic therapy - Provides soft tissue relaxation and pain relief, muscle mass and range of motion maintenance, and tactile stimulation to improve proprioception.
- Assistive device fitting - Patients may require the temporary or long term use of an assistive walking device, such as a sling, harness cart or wheelchair

## *Surgical Intervention*

Surgical disc decompression involves the removal of herniated disc material from around the spinal cord to relieve spinal cord compression. The patient's recovery is directly correlated to the degree of dysfunction present prior to surgery and the duration of clinical signs. Patients with voluntary motor control prior to surgery often recover the ability to walk within 2 weeks post-operatively, while those that have no voluntary motor control but presence of deep pain perception may require up to 4 weeks. Nursing care during recovery can be intense, including expressing the patient's bladder and performing physical therapy exercises.

## *Post-operative Rehabilitation*

Postoperative physical rehabilitation is an integral part of the overall care of disc disease patients. In addition to the benefits discussed for conservatively managed patients, rehabilitation will allow a more rapid return to function, improved comfort level and mental stimulation for these patients with impaired mobility.

**Formal rehabilitation following surgical decompression has been shown to reduce the time to standing and walking in these patients by half.**

## **Immobile pets**

Proper fitting with a sling in the immediate postoperative period is recommended for paraplegic and paraparetic patients. A wheelchair or cart is recommended if the disability is expected to last longer than 4-6 weeks. A rehab practitioner can assist with sling/harness fitting and cart measurements. The proper fitting of an assistive device will improve quality of life, both physically and mentally.



Intervertebral disc disease is a common cause of pain, paresis and paralysis in many breeds of dog. This condition can significantly impact a pet's mobility and long term quality of life. Early identification and treatment, including a customized physical rehabilitation program, will ensure an optimal outcome and rapid return to function, allowing our furry friends to get back to doing what they love. For further information about how rehabilitation can help your pet, please contact Blue Springs Animal Rehabilitation Center.

[www.bluespringsanimalrehabcenter.com](http://www.bluespringsanimalrehabcenter.com)