Intervertebral Disc Disease  
Alexandra Brown

Imagine the following scenario: your seven-year-old Dachshund, let’s say his name is Frankfurter, jumps off the living room sofa, lands on his feet, but immediately begins shrieking in pain. You rush to your family veterinarian and little Frank is diagnosed with a condition called Intervertebral Disc Disease, or IVDD for short. This is the nightmare many pet parents with Dachshunds try to avoid, but we often fail to realize that something as mundane as jumping off the sofa could be so detrimental to our fur baby’s health. This article aims to educate owners about all aspects of IVDD including signs, diagnosis, treatment options, prognosis, and how to minimize your pet’s risk.

What is an Intervertebral Disc?
The spine is made up of many vertebrae which are aligned in a column, providing rigidity and structure to the back as well as protection for the spinal cord. Each vertebra has a hole through its center allowing the spinal cord to pass through and carry signals from the brain to the rest of the body. Intervertebral discs live between each vertebra, under the spinal cord, and function as shock absorbers throughout the spine, while also providing flexibility to the spinal column (1,2,3). An intervertebral disc consists of a soft center known as the nucleus pulposus, surrounded by a ring called the annulus fibrosis. In general, the annulus fibrosis can be thought of as a donut with the jelly center being the nucleus pulposus. All these components of the spine have to interact with each other without invading another structure’s space for everyday activities such as walking, running, and even using the bathroom to take place.

What is IVDD?
Intervertebral disc disease is a condition where the discs that exist between the vertebrae of the spine degenerate and then proceed to bulge or burst into the space containing the spinal cord. This protrusion or extrusion can occur at any location in the spinal column and cause subsequent compression of the spinal cord, resulting in nervous system dysfunction (1,3,4,5,6). IVDD typically occurs in chondrodystrophic breeds such as Dachshunds, which account for 45-70% of all cases; other breeds affected include Pekinese, Corgis, Basset Hounds, French Bulldogs, and Miniature Poodles (2,3). In these breeds, chondroid degeneration of the intervertebral discs begins between two months and two years of age, but clinical signs do not appear until later in life, typically 3-6 years of age (4).

IVDD falls into two main categories: Hansen Type I and Type II. Hansen Type I, also known as chondroid degeneration, typically occurs in chondrodystrophic breeds. In Type I the nucleus pulposus becomes dehydrated and mineralized while the annulus fibrosis weakens and herniates into the vertebral canal (2,4). Essentially the portion that used to be “jelly” is now rigid and bursts out of the “donut”, causing rapid compression of the spinal cord. Hansen Type II, or fibroid degeneration, has a slower onset than Type I and is more commonly seen in older nonchondrodystrophic dogs. Type II involves dehydration of the nucleus pulposus with fibrocartilage invasion occurring slowly over time, resulting in the disc bulging into the vertebral canal (2,4).
**Signs of IVDD:**
Signs of IVDD vary depending on the severity of spinal cord compression as well as the length of time that compression has occurred. Most often, herniation occurs along the thoracolumbar region accounting for 65% of IVDD cases (3). Common signs of disc herniation include: back or neck pain, unwillingness to jump or climb stairs, and refusing to walk. Animals can also exhibit incoordination in their rear legs; this can manifest as simple stumbling or as walking on top of their paws rather than placing their paws flat on the ground (1,2,3).

**Diagnosis of IVDD:**
IVDD diagnosis begins at home. If you notice any of the above signs in your dog, it is extremely important to have him/her evaluated by your family veterinarian as quickly as possible. Quick intervention is key in preventing further compression of the spinal cord as prolonged compression increases your pet’s risk for permanent paralysis. While the above signs are consistent with IVDD, they can also be exhibited with other disease processes such as vertebral fractures or neoplasia. Your veterinarian will first need to perform a physical examination, including neurological evaluation, to assess the animal’s neurological function or dysfunction. Definitive diagnosis is based on imaging studies including radiographs (X-rays), MRI, myelogram, or CT scan to determine the location of the lesion as well as the extent of the spinal cord damage (1,3,4,5,6). These test results will determine the appropriate and best therapy for your animal.

**Treatment options:**
A diagnosis of IVDD does not mean your pet will live in pain for the rest of its life. Treatment can involve medical management or surgical removal of disc material that has caused spinal cord compression. Medical management aims to give the disc time to heal itself through strict cage rest and pain management (2). If no improvement occurs with medical management or your dog’s condition continues to deteriorate surgery is recommended. Veterinarians cannot stress enough the importance of cage rest when your pet is recovering from IVDD, whether that be medical management or surgical intervention. While your pet may begin to feel better due to pain medications, cage rest is a mandatory part of the recovery process to prevent further herniation of a disk or of a subsequent disc (4,6). Controlled physical therapy can slowly be implemented to help your pet regain muscle strength. Laser therapy can also be utilized to help provide a speedy recovery. The Mississippi State University Animal Health Center currently offers both of these services and has had great success in rehabilitating patients with IVDD. If you would like more information regarding these services, please contact the MSU AHC 662-325-1351.

**Prognosis:**
Prognosis of dogs with IVDD depends on the location of herniation, the number of disc spaces involved, the extent of compression of the spinal cord, and the amount of time the animal has been affected. In general, dogs that are able to ambulate after disc herniation have an excellent prognosis to recover completely (3). Surgery that is pursued within 24 hours of the animal showing clinical signs provides a better outcome for nerve function to return (4). Sensing pain is a strong prognostic indicator for recovery; dogs that have an absence of deep pain have a poor prognosis for recovery even with surgery (4). Some dogs will never reach full recovery, even
when treated appropriately, but these dogs can still have a very wonderful life thanks to the development of wheelchairs specialized for dogs.

**Minimizing your pet’s risk:**
While IVDD cannot be prevented, there are a multitude of things you can do at home to decrease your pet’s risk. Maintaining your dog at a healthy body weight can reduce stress on its back. If your dog pulls while walking on a leash, a harness may be a beneficial investment to prevent strain on the neck (2). If you own an at-risk breed, limiting high-impact activities, such as jumping on and off of furniture, will minimize the risk of rapid herniation due to landing incorrectly.

In conclusion, IVDD is a common and serious neurologic disease, but if you own an at-risk breed, following the prevention techniques above may help reduce the risk for your fur baby. If you have any questions or concerns about this condition please contact your family veterinarian or Mississippi State University Animal Health Center for more information.

**Resources:**


3. *Intervertebral Disc Disease.* American College of Veterinary Surgeons. https://www.acvs.org/small-animal/intervertebral-disc-disease

