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## Intervertebral Disc Disease

### **What is intervertebral disc disease (IVDD)?**

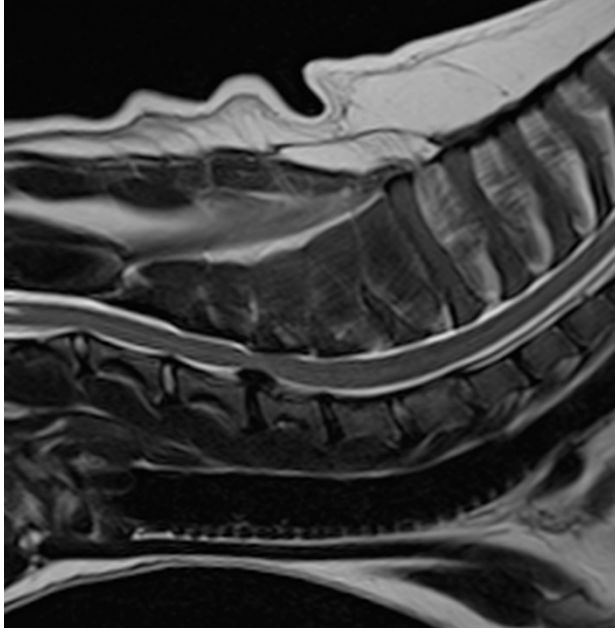
Intervertebral disc disease (IVDD) is the broad non-specific term commonly used in veterinary medicine to describe the age-related degenerative changes of the intervertebral disc that can cause spinal cord compression.

The intervertebral disc plays a critical role in stability of the vertebral column, effectively binding individual vertebrae together to provide support for the entire axial skeleton while allowing multiplanar movement. They also function as shock-absorbers within the spine. The disc consists of a jelly-like nucleus pulposus surrounded by a fibrous outer layer referred to as the annulus – comparable to a jam doughnut.

### **Types of disc disease**

Disc disease is classified by the histopathological degenerative changes that are seen.

Hansen type 1 disc disease is common in chondrodystrophic breeds, such as the Dachshund, Beagle, Pekingese, Welsh Corgi, and French Bulldog. It is described as dehydration and calcification of the nucleus pulposus that typically begins at an early age, and means the discs are less able to absorb shock. The dorsal annulus is weakened and a tear in its structure leads to acute extrusion of the calcified nucleus into the spinal canal.



Extruded disc material in the spinal canal.

Hansen type 2 disc disease is more common in large breed dogs such as German Shepherds and is more similar to disc disease experienced in humans. Overgrowth of the fibrous annulus leads to a slow protrusion of the disc into the spinal canal. Both the annulus and the nucleus can protrude, but the annulus remains intact.

There is also a third type of disc disease referred to as acute non-compressive or high velocity low volume disc extrusion. This is when a healthy nucleus acutely explodes through a tear in the annulus as a result of trauma heavy exercise. The cord is not compressed but is traumatised by the high velocity impact.

### **What are the signs of IVDD?**

Clinical signs of disc disease can vary from back/neck pain to complete paralysis and a failure to feel pain, and are graded on a scale of 1 – 5, with grade 1 referring to acute pain with no neurological deficits, and grade 5 being the most severe and referring to loss of movement and pain sensation.

How badly a dog is affected determines the treatment necessary and the prognosis for recovery. When an animal is unable to walk it is typical that they also will be unable to urinate voluntarily. Early signs of disc disease will often be pain, a hunched posture or a wobbly gait.

### **How is IVDD diagnosed?**

Initial neurological examination will often raise suspicion for IVDD.

Investigations and treatment depend on the severity of the neurological signs. If an animal is walking, they can frequently be treated conservatively. This means a period of strict rest and analgesia as required. If the patient is unable to walk or is deteriorating rapidly, further investigations would typically be advised. Magnetic resonance imaging is the preferred modality for imaging the spine as this allows any disc degeneration and herniation into the canal to be clearly seen as well as identifying any damage to the spinal cord. Computed tomography is also a cheaper alternative option but does not give as much detail and often also requires a contrast dye to be injected around the spinal cord to visualise any compressions.

### **How is IVDD treated?**

Surgical treatment is recommended if there is significant compression of the spinal cord from disc material. The surgery chosen is dependent on the position of the disc within the spinal canal. For disc extrusions in the back, a hemilaminectomy is typically performed to remove a window of bone from the side of the vertebrae to allow access to the canal and removal of the material. For disc extrusions in the neck, the spine is approached from the underside of the neck, and a window made in the bottom of the vertebrae to access the spinal canal.

### **What happens after surgery?**

Prognosis for recovery is generally good for any animal that can still feel their paws when pinched with forceps (deep pain perception). For dogs that cannot perceive deep pain, the prognosis is more guarded with a 50% chance of recovery.

Patients will typically remain in hospital for at least 24 hours following surgery, and in some cases this can be much longer. Patients who are unable to walk will often have a urinary catheter placed to allow us to manage their bladders. In some cases the catheter will remain in when they go home. Once patients have gone home we will continue to monitor their progress through outpatient appointments with our surgical and neurology team.

Physiotherapy is an essential part of recovery from spinal surgery. We include a single physiotherapy session as part of the surgical package, however further sessions may then be recommended. Hydrotherapy can also play a huge part in recovery and we are fortunate enough to have our own on-site hydrotherapy treadmill. This will be discussed on an individual basis.