Intervertebral Disc Degeneration or Disease	Intervertebral Disc Degeneration or Disease leads to extrusion or protrusion of intervertebral disc material into the vertebral canal, resulting in clinical signs caused nervous tissue compression and/or concussion. The intervertebral discs, which is fibrocartilage between the bones of the spine, have conditions and forces that can make them swell or rupture over time. The extent of the damage and nerve cells loss is determined by: • Type of force • Degree of force applied to the spinal cord • Length of time that the force was applied Relatively minor spinal cord damage can lead to loss of coordination while walking. Damage that is more significant leads to loss of walking or inability to move the legs voluntarily. Severe damage can lead to entire loss of pain sensation. This can carry a very poor prognosis for recovery depending on the duration that pain perception has been lost. Chondrodystrophoid breed dogs (Dachshund, Pekinese, Beagle, Lhasa Apso, Basset Hound, etc.) account for the vast majority of all disc ruptures, with the Dachshund accounting for 45-70% of all cases. In these dogs, average onset of clinical signs is between 3–6 years of age, although radiographs (X-rays) can show the presence of disc calcification by 2 years of age. Nonchondrodystrophoid dogs (Labrador Retrievers, German Shepherd Dogs, etc.) usually present between 5 and 12 years of age. Thoracolumbar (back region) discs account for 65% of all disc ruptures, while cervical (neck region) account for up to 18% of presenting cases. Signs and Symptoms: Clinical signs will depend on the location of the extrusion or protrusion of intervertebral disc on the spinal cord. Disc rupture presents with different degrees of pain; however, when nerve damage starts to develop and progress, it follows a predictable pattern: 1. Back or neck pain, possibly refusing to walk around the room. 2. Uncoordinated walk or wobbly in the hind end; hindlimb paws will often cross over as the pet steps. 3. Complete loss of hindlimb motor function. Usually at the same time, the pet loses the ability to urinate and the ability to void their bladder completely. 4. Pain perception is lost, which is a sign of severe cord injury that can carry a guarded to poor prognosis. Classification of disc ruptures is generally grouped into large regions. The following groupings are described: • cervical vertebral 1–5 (C1–C5)

- cervical vertebrae 6 through thoracic vertebrae 2 (C6–T2)
- thoracic vertebrae 3 to lumbar vertebrae 3 (T3–L3)
- lumbar vertebrae 4 through the sacrum (L4–S3).

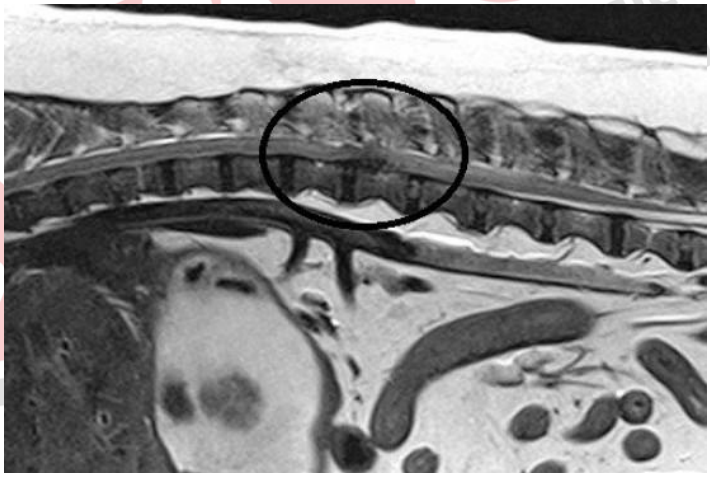
This grouping is called neurolocalization, which allows the surgeon to begin to plan which diagnostic tests and potential surgery that will be offered. Intervertebral disc rupture is generally thought to be an emergency and prognosis varies significantly with degree of function remaining when the pet is evaluated and treated.

Diagnosis: The veterinarian may recommend initial health screening that may include:

- Blood work: complete blood count (CBC), serum chemistry, and a urinalysis
- Radiographs (X-rays) of the spine or chest

Additionally, any of the following advanced diagnostics may be recommended:

- Myelogram, which is a radiographic (X-ray) series where a needle injects dye around the spinal cord to highlight any compression
- CT scan instead of or after the myelogram
- Magnetic resonance imaging (MRI) study in addition or instead of a CT scan
- Spinal tap at the same time as the imaging



MRI of patient with intervertebral disc extrusion.

Treatment: Conservative treatment with cage rest, confinement, and pain medications is often only offered to patients that have recently begun their first episode and the neurologic deficits are mild. Surgical decompression of the spine by a laminectomy procedure, which is the surgical removal of the bone over the spinal canal, is most likely recommended with advanced or progressive neurologic deficits. Additionally, based on diagnostic imaging in the cervical region, the spine may be decompressed by a ventral slot

	decompression, which is an approach from the underside of the neck and drilling a small hole through the center of the disc and adjacent vertebrae. Postoperative care: Most pets are discharged 3–7 days after surgery. They usually will return for a recheck within 1 to 2 weeks. The pet will commonly be discharge with medications for pain and bladder function. Postoperative recovery following surgery may include: • Bladder expression 3–4 times daily (if necessary) • Physical rehabilitation for muscle strength and flexibility • Exercise restriction for at least 4 weeks Life style changes may include weight loss, switching to a body harness instead of neck lead, and minimizing jumping off furniture. Postoperative complications can include: • Myelogram could precipitate seizures in the first 24 hours after the procedure • Incisional infection • Many patients have another disc herniated later in life • Continued wobbly walk or dragging hindlimb paws when walking • Progressive neurologic worsening Prognosis varies significantly with the degree of injury and the location of the injury. Most disc ruptures that present in dogs that are still walking, have a very favorable chance to return to walking. However, if the pet has lost the ability to sense pain in their limbs before surgery is performed, then they may not regain the ability to walk. Left untreated, disc rupture can lead to permanent loss of the ability to walk. Most dogs that reach this point will also lose control of their urinary bladder and are at risk for chronic urinary tract infections and urine scald. Without motor function, patients cannot turn themselves, and may develop bedsores and skin wounds.