

Canine Intervertebral Disc Disease (IVDD)

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What is a Disk?

Most people are aware that the backbone is not just one long, tubular bone. The backbone (or spine) is actually made of numerous smaller bones called vertebrae that house and protect the spinal cord. The vertebrae are connected by joints called intervertebral disks.

The disk serves as a cushion between the vertebral bodies of the vertebrae. Ligaments run below and above the disks, with the ligament above the disks being particularly rich in sensitive nerves. These ligaments run the entire length of the vertebral column.

Type I and Type II Disk Disease

There are two main types of disease that can afflict the intervertebral disk, causing it to press painfully against the spinal cord, nerve roots, and tender dorsal longitudinal ligament: Hansen Type I Disk Disease and Hansen Type II Disk Disease.

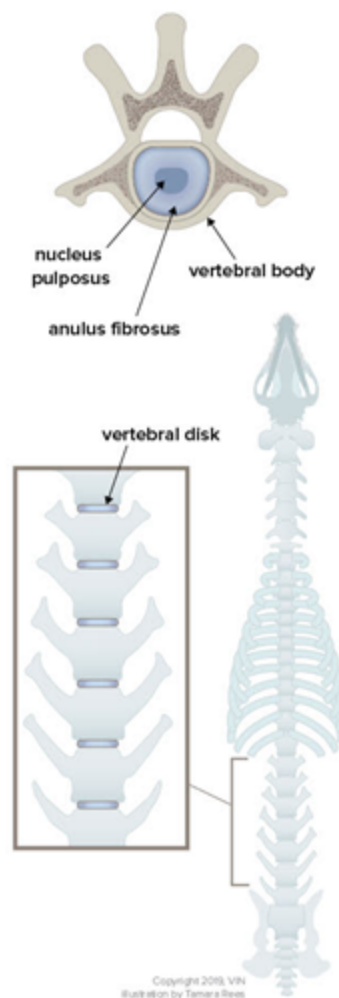
In Type I, the disk becomes calcified (mineralized). A wrong jump causes the rock-like disk material to shoot upward, it will press painfully on the ligament above and potentially cause compression and bruising of the spinal cord. If it shoots sideways, it will smack into the nerves as they exit the spinal cord. Either way, it is suddenly sharply painful with varying degrees of reduced nerve function.

Type II is a much slower degenerative process. The disk collapses and protrudes upward, creating a more chronic problem with pain and spinal cord or nerve compression over months or even years.

The condition where disk material presses against the ligament above and spinal cord is called disk herniation.

Symptoms of Disc Herniation

The area of the back or neck just over the disk involved is generally painful (whereas many degenerative spinal processes are not painful). In milder cases, pain at the site of the disk may be the only symptom. As inflammation increases in the spinal cord, neurologic deficits can occur. Disk herniations in the neck tend to have more pain and less dysfunction.



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One of the first dysfunctions (or deficits) is the loss of what is called conscious proprioception. Conscious proprioception is the ability to perceive where one's feet are and orient them properly. The examiner will turn the foot over so that the top of the foot is on the ground and will see if the patient replaces the foot in the proper position. Dogs with poor proprioception will scuff their toes or even occasionally fail to flip their feet while walking and will walk on the tops of their feet.

After the nerves that affect conscious proprioception go, next are the nerves for voluntary motion (including voluntary control of urination/defecation), followed by the nerves for superficial pain perception, and ultimately the nerves for deep pain perception (usually tested by applying a strong pinch to the toe). This can result in the inability to stand or walk.

Diagnostics

With a patient with spinal weakness, the veterinarian must determine whether the problem involves actual compression of the spinal cord. A non-compressive disease will not benefit from surgery. Such non-compressive diseases include: spinal degeneration, spinal infection or inflammation, demyelination injuries, or fibrocartilaginous embolism.

The first step after an exam is imaging typically involves plain radiographs to rule out obvious spinal issues. Broken bones or dislocations are generally obvious. Calcified disks and disk space collapse can often be seen.

If surgery is being considered, then it becomes necessary to identify the exact disk space involved so that the surgeon will know where to cut. Classically, myelography has been the next step. Myelography requires general anesthesia and the injection of iodine based dye around the spinal cord. A CT scan may also be performed in addition to or instead of a myelogram.

Treatment

Once it is clear from the plain radiographs and neurologic examination that the patient has disk disease, the decision must be made as to whether or not surgery should be pursued. Spinal surgery is very expensive and requires a long recovery period but may be the best choice if the dog is to regain normal function. There are some general rules that are typically applied in making this decision, and they are based on pain and function:

- If the dog can walk, medical (non-surgical) treatment is a reasonable choice but this also depends on how much pain the patient is in, how long the patient has had signs, and what sort of treatments have been unsuccessful in the past.
- If the dog cannot walk, medical management may still have success although surgery is definitely more likely to yield success. Furthermore, return to walking may take months with medical management vs. a few weeks with surgery. The longer the neurologic deficits have been going on, the poorer the results of treatment.
- If the dog cannot walk but has deep pain in at least one limb, there is a 80-90% success rate for recovery with surgery.
- If the dog has been unable to walk, has no deep pain perception in the limbs but has only been down less than 48 hours, success with surgery drops to around 50%. After 48 hours in this situation, the prognosis is much worse and it may not be worth considering surgery.

Medical Treatment (No Surgery)

While medication can be used to assist in recovery, the centerpiece of therapy is confinement. Confinement must be strict, which means a cage or pen must be provided. An owner will be tempted to say that the painful dog will confine himself. In reality, poor results in a dog are almost always traceable to inadequate confinement and if cage rest is not possible at home, consider boarding the dog at the veterinary hospital to ensure proper rest. The dog can be walked (or carried) outside to urinate and defecate but then must be walked (or carried) right back in.

The dog should at no time be left free to run and jump during the recovery period, even if he seems to be feeling good. Agility, jumping and fetching games or other performance activities are best removed from the dog's lifestyle permanently lest another disk herniate.

Medications typically accompany confinement. Steroids, non-steroidal anti-inflammatories, muscle relaxants, and pain relievers are commonly prescribed.

Physical Therapy Exercises During Confinement

- Massage the area gently to improve circulation to the area. This is done as many times a day as possible during the first 3 to 5 days and after that drop to three times daily.
- Sensory input is important caudal (towards the tail) to the spinal lesion. This entails tickling and pinching the toes. A withdrawal reflex should be elicited. The idea is to make the dog aware of the feet.

Surgery

Spinal surgery is highly invasive, very expensive, and with potential for great outcome as well as poor outcome depending on the damage already sustained by the spinal cord. Patients are generally not candidates for surgery unless they cannot walk, have only been paralyzed for a few days at most, and, of course, have a disease (such as disk herniation) where there is pressure on the spinal cord that can be relieved surgically. There is frequently a great deal of nursing care following surgery along with physical therapy. Spinal surgery is generally performed on an emergency basis.

The first step will be localizing the area of the compression. This will require some kind of advanced imaging such as CT scanning, MRI imaging, or myelography. The patient commonly goes directly to surgery after imaging without being awakened from general anesthesia.

Several procedures can be used to decompress the spinal cord and remove the disk material. Several common procedures you may hear about are: hemilaminectomy, pediculectomy, dorsal laminectomy, ventral slot, and fenestration.

Recovery after Surgery

The goal of surgery is to restore the pet's quality of life. In most cases, this means the return of the ability to walk. How long it takes the patient to walk again after surgery is highly dependent on how much dysfunction the dog had prior to surgery. Patients with voluntary motor control may recover the ability to walk within 2 weeks while those with deep pain but no voluntary motor control might require up to 4 weeks. For those with the loss of deep pain, it may take months for function to return. Some dogs with loss of deep pain never regain the ability to walk or stand.

Nursing care for a dog that cannot walk can be intense, including expressing the patient's bladder, keeping the patient bedded, and performing physical therapy exercises. Check with your surgeon regarding the exercises listed above as to which might be recommended for your particular pet.

When the Pet is not Expected to Walk

Taking care of a dog that is down in the back is a big project, and definitely not something that every dog owner is able to commit to. They are hard to keep clean and tend to develop pressure sores that can get infected and cause pain and illness. Make sure you are properly prepared for what you will have to do before committing to using such a device. Often euthanasia is a heartbreaking but necessary choice.

Slings or a simple towel can be the best way to support your dog while they're posturing/squatting to urinate and/or defecate. There are a variety of styles of slings on the market, including those with a handle, or even two handles to help larger dogs stand up. Booties can help protect feet from abrasion due to knuckling or dragging and can provide extra traction when learning to regain walking abilities. There are wheelchair carts that have been developed to help dogs with hind end paralysis. The idea is great, but maintenance of a dog in a wheel cart is demanding and often more difficult than it first appears, especially for big dogs.

If your dog cannot urinate on their own, you will need to express their bladder three to four times a day until they can urinate on their own. If they are just beginning to urinate consciously on their own but only a small stream or trickle is coming out, they still need help expressing their bladder until they can fully void it.

1. Apply pressure gradually and consistently with one hand on either side of the abdomen, just in front of the back legs. Keep both hands flattened and your fingers slightly spread apart while pressing so that the bladder is stabilized and squeezed evenly.
2. Gently begin to squeeze your hands together and press both hands toward the tail. Once urine starts to flow, apply steady pressure until the bladder empties completely.
3. Always keep your dog's genital and anal area clean and dry to prevent urine scald and infection. The same goes for the bedding in their crate.

Keep your dog safe in a crate with lots of padding. Be sure to check on them every couple hours to reposition them, make sure they haven't soiled their bedding, and take them out to go to the bathroom. If they aren't able to move themselves around, orthopedic dog beds help prevent calloused elbows, painful arthritic joints, and pressure sores. Bring their water and food bowls closer so they have less of a distance to cover.

Helpful Links

Harnesses: <https://www.walkaboutharnesses.com/>

Dog wheelchairs:

www.k9carts.com

www.dogwheelchairscenter.com

www.handicappedpets.com

Thank you for giving us the opportunity to help in the care of your pet. Please call if you have any questions or concerns.

For after hours emergencies, contact the East Texas Pet Emergency Clinic at (903) 759-8545. They are located at 812 Gilmer Rd., Longview, TX 75604.