



The Five Types of Disc Disease

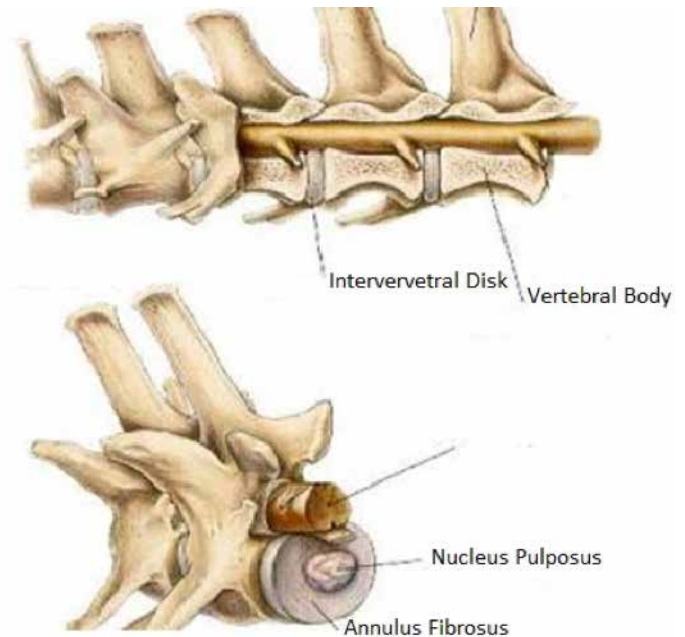
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Introduction

What do we commonly think of as a “disc” or “bulging disc” or “slipped disc”? Many things can present similarly when there’s a problem in the spinal cord and disc disease is only one of those things. But what do we mean when we say disc disease? Despite it seeming like a specific diagnosis, it is actually a general term that can be referring to one of five different types of disc disease.

Anatomy

The intervertebral discs themselves are spongy and donut shaped and are located between each vertebrae, at the level of the vertebral body, just underneath the vertebral foramen. They are located throughout the vertebral column starting between the second and third cervical vertebrae (C2-3) and ending between the last lumbar vertebrae and first sacral vertebrae (L7-S1). There are two parts to the disc: an inner semi-liquid or jelly-like nucleus pulposus, and a tough outer, layered ring of fibrous ligament called the annulus fibrosus. The purpose of the disc is to provide cushioning between each vertebrae in order to be able to support strength and flexibility of the vertebral column, as well as distribute loads during movement.



Diagnosis

Radiographs are good for showing bony changes and lesions, but will not give information about the compression or health of the spinal cord, nor the discs themselves. Myelograms can give information about compression of the spinal cord, but not the reason for the compression. MRI shows the location of the disc disease, on which side it is located and the health of the spinal cord. MRI is the best choice to not only diagnose the disc disease, but provide information on the health of the spinal cord and thus prognosis for the patient.

Hansen’s Type I: An Extruded Disc

What Happens? The nucleus pulposus extrudes through the outer annulus fibrosus, dorsally, causing compression of the spinal cord. This compression in turn causes pain and vary degrees of neurologic dysfunction.

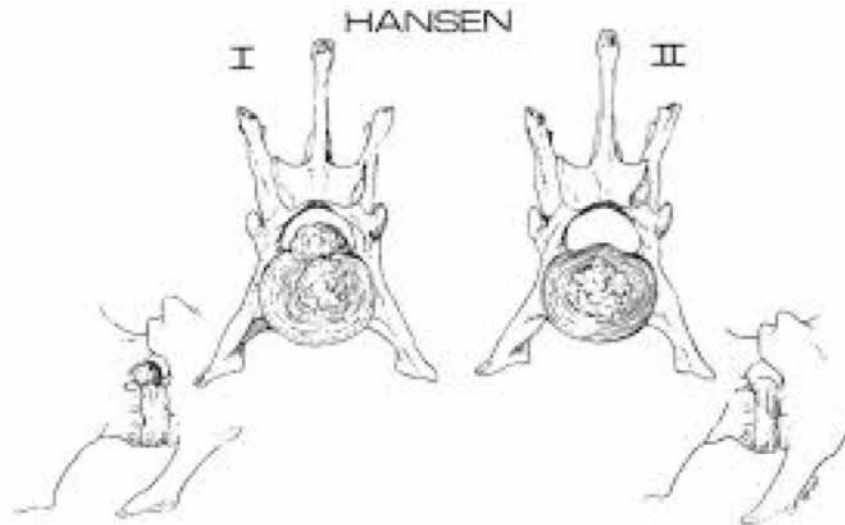
Symptoms: Patients affected by Type I disc disease are painful. There will be varying degrees of neurologic dysfunction caudal to the location of the disc extrusion. This can include weakness, ataxia, paralysis and loss of pain sensation to the limbs. Symptoms are usually acute in nature; starting over hours, days, or a couple weeks and can progress slowly or very quickly.

Who’s Affected? Primarily affects chondrodystrophic breeds such as the Dachshunds, Shih Tzus and Corgis. But also commonly affects Cocker Spaniels and Beagles as well.

How's it Treated?

- **Medical Management:** Reserved for patients that are still able to walk and may only have back pain as their chief complaint. Consists of pain medications and a strict rest period lasting at least 4-6 weeks.
- **Surgery:** Patients that are unable to walk, have lost voluntary motor to their limbs (paralysis) and/or have lost all pain sensation to their limbs will often require surgical intervention to remove the compressive disc material.

Prognosis: Prognosis will vary depending the severity of the spinal cord compression, the health of the spinal cord as imaged on MRI and whether or not surgery is indicated and elected.



Hansen's Type II: A Bulging Disc

What Happens? The nucleus pulposus hardens as the fiber of annulus fibrosus weakens, causing it to bulge. Unlike a Type I, the nucleus pulposus doesn't extrude through the annulus, but the bulging of the annulus causes spinal cord compression. This in turn causes pain and varying degrees of neurologic dysfunction.

Symptoms: Patients affected by Type II disease are painful, and as disease progresses, neurologic signs become more apparent. There will be varying degrees of neurologic dysfunction caudal to the location of the disc protrusion. This includes progressive weakness and ataxia. This disease is usually chronic in nature, with symptoms starting mild and progressing over weeks to months and is sometimes confused with orthopedic disease.

Who's Affected? Primarily older, large breed dogs such as the German Shepherd Dog and Labrador Retriever.

How's it Treated? Patients can be treated medically with pain medications, exercise restriction and physical therapy. The condition is progressive and will likely get worse with time and may require surgery if the patient loses the ability to walk. If the condition has progressed over several months, the chronic nature of the disc and associated spinal cord changes, makes surgery more complex. If surgery is performed, pets are often worse immediately after surgery and gradually improve.

Prognosis: Prognosis can be good if diagnosis is made early and surgical intervention elected. Prognosis is guarded in those patient that are severely affected over several months.

**Acute
Non-Compressive
Nucleus Pulposus
Extrusion
(ANNPE):
The “Type III” or
Concussive Disk**

What Happens? A very small portion of the nucleus pulposus strikes the spinal cord at a very high velocity. This causes bruising of the spinal cord. This bruising causes severe weakness to paralysis and has a very fast onset.

Symptoms: Onset of symptoms is very quick; often a matter of seconds. Affected patients are often playing and normal one moment, and in the next moment scream out and are immediately unable to walk. ANNPE may be painful but not as painful as a Hansen Type I extrusion.

Who’s Affected? Primarily medium to large breed dogs, but can occur in any breed.

How’s it Treated? Treatment is supportive. Patients do not require surgery as ANNPE doesn’t cause spinal cord compression. Treatments may include medications initially and physical therapy for recovery.

Prognosis: Generally good. Patients often regain function on their own with time. Prognosis may vary based on the extent of the bruising and the location of the lesion.

**Fibrocartilaginous
Embolism (FCE):
“Stroke to the
Spinal Cord”**

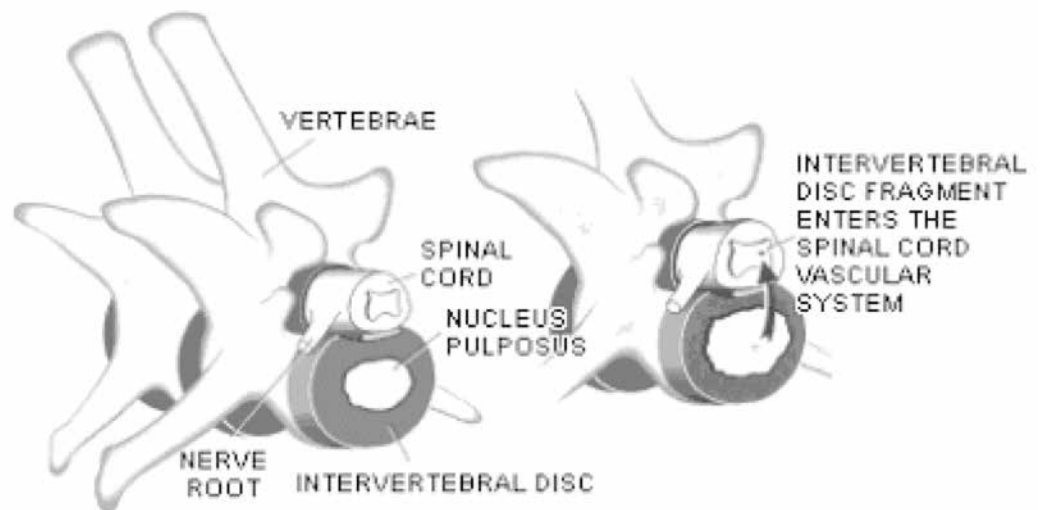
What Happens? A small portion of the annulus fibrosis breaks off and occludes a vessel to the spinal cord. Onset of signs are similar to that of ANNPE.

Symptoms: Onset of symptoms is very quick; often a matter of seconds. Affected patients are often playing and normal one moment, and in the next moment scream out and are immediately unable to walk. FCE may be painful immediately upon injury, but the pain subsides, usually within a few hours.

Who’s Affected? Primarily large to giant breed dogs, however the miniature schnauzer is over represented.

How’s it Treated? Like ANNPE, there is no spinal cord compression so surgery is not indicated. Physical therapy, supportive care for urinary function and medications.

Prognosis: Generally good. Patients often regain function on their own with time. Prognosis may vary based on the extent and the location of the lesion.



Diskospondylitis: Infection of the Disc

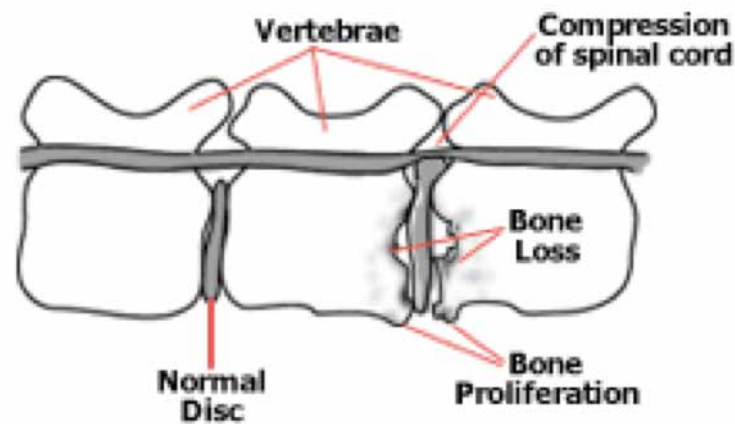
What Happens? Through various routes, bacteria or fungus reach the disc. The disc becomes infected which causes collection of purulent material, bone degradation, and spinal cord compression in some cases. This condition is extremely painful, and is most often more painful than any of the other five types of disc disease. This can be caused by the zoonotic agent *Brucella* so careful handling of these patients and their fluids is important.

Symptoms: Patients with diskospondylitis are extremely painful and may have accompanying fever. Initial symptom is pain but can progress to weakness, ataxia and paralysis without treatment.

Who's Affected? Primarily intact, male, large breed, older dogs such as Great Danes, Labradors and Boxers.

How's it Treated? Treatment requires appropriate antimicrobial therapy, often for several weeks. Surgery may be indicated for patients that have spinal cord compression or are resistant to medical therapy.

Prognosis: Prognosis is generally good for bacterial infections that remain focal. Fungal infections and patients with fractures and luxations generally have a poor prognosis.



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