



Intervertebral Disc Herniation or "slipped disc" Fact Sheet

A slipped disc (also known as intervertebral disc herniation) is the most common cause of paralysis in dogs. Cats are much less often affected.

What is the intervertebral disc?

The spine is the name given to the collection of bones (vertebrae) inside which the spinal cord is contained. The spinal cord is made of cables of nerves (like the wires running in an electrical cable), linking the brain to the local nerves that control the movement of the limbs and other functions (the peripheral nervous system).

The intervertebral disc is a spongy, doughnut shaped pad in the main joint between the vertebrae. The disc lies just underneath the spinal cord in dogs and cats. Each disc has a semi-liquid centre (nucleus pulposus) and a tough outer fibrous layer (annulus fibrosus). The discs form a bridge between two neighbouring vertebrae and act as a cushion, giving strength and flexibility to the spine.

Why does a disc 'slip'?

A slipped disc in dogs can happen in two ways:

1. Rupture of a healthy disc can be caused by trauma (such as a road traffic accident, or a fall from height) with tearing of the annulus fibrosus.
2. Degeneration of the disc as a result of a premature ageing process. This causes progressive thickening of the dorsal part of the annulus fibrosus which presses up on the spinal cord (disc protrusion). Disc degeneration is more common in the regions of the spine which are particularly exposed to physical stress (the lower neck, mid-back and lower-back).

Degeneration can also result in stiffening of the disc as the semi-liquid centre becomes dry and loses its cushioning properties. If this happens the annulus fibrosus can tear allowing the, now stiff, nucleus to bulge out and put pressure on the spinal cord (disc extrusion). This type of degeneration is mainly seen in breeds with short 'bandy' legs (also known as chondrodystrophic breeds) as these breeds are born with abnormal cartilage. Dachshunds, Shi Tzu, and Pekingese are the most commonly affected breeds and signs usually develop around two to four years of age.

How would I know if my pet has a slipped disc?

Spinal pain is the most common sign of disc disease. If your pet has spinal pain they will adopt an abnormal posture (low head carriage, rounding of the back), be reluctant to move or exercise and may cry when moving around. A slipped disc in dogs can put pressure on the spinal cord,

this damages the nerves and causes the symptoms. If the disc slips suddenly there may also be bleeding into the spine, which puts even more pressure on the nerves. This can cause any or all of the following signs:

- Loss of coordination
- Weakness
- Paralysis
- Lameness
- Faecal or urinary incontinence
- Loss of sensation in the leg.

How do I know how severe the slipped disc is in dogs?

The symptoms that develop following disc damage are the result of:

1. Pressure of the herniated disc material on the spinal cord (compression component)
2. 'Bruising' of the spinal cord caused by the impact of the disc as it is herniate (concussion component)

It is not possible to say how much each of these components contributes to the symptoms in an individual animal by examination alone. Myelography, CT or MRI can help to determine how much the spinal cord is being compressed. However, it can be very difficult to assess how much bruising has occurred – even with these specialised techniques. This concussion can sometimes be seen as spinal cord 'swelling'.

The cables making up the spinal cord are organised into groups depending on their function within the nervous system. The most superficial cables are those running from the leg to the brain. Their main function is to send messages to the brain about the position of the leg and body in space. Because this group of nerves is the most superficial, they are the first to be affected by pressure from a slipped disc.

Damage to these nerves results in the animal being wobbly on his legs. As we move deeper into the spinal cord, the next group of cables are the ones from the brain sending messages to move the legs.

Damage to these cables results in weakness of the legs, which can progress to total paralysis. The deepest cables (in the centre of the spinal cord) are the ones responsible for informing the brain that the bladder is full, and finally the one carrying pain sensation from the limbs from the brain. Loss of function in these cables results in the animal not being able to urinate and being unaware of painful stimulation in the toes.

As an animal recovers from spinal damage, their nerve functions return in the reverse order to that in which they disappeared.

Depending on the site of spinal damage (neck, back or lower back), these signs may affect only the back legs or the front ones as well.

Rarely, a slipped disc in dogs can cause lameness by trapping one of the spinal nerves as it exits the spine.

How will my vet know what is wrong with my pet?

If your pet has any signs of back problems or lameness your vet will want to perform a full neurological examination.

Diagnosis of a slipped disc in dogs is rarely possible using standard X-rays alone. A standard X-ray can only show the bones of the vertebrae and not the joints between them (the discs) or the spinal cord running inside them. Sometimes changes seen on conventional X-rays suggest disc degeneration without the animal showing any signs.

A definite diagnosis of a slipped disc in dogs can only be made using either myelography (X-rays taken after the injection of dye around the spinal cord), CT (computed tomography) or MRI (magnetic resonance imaging). These special tests help to confirm if there is a slipped disc, where it is and will also show up other causes of spinal pain or paralysis if they are present.

Will my pet need an operation?

In most cases a slipped disc in dogs should be considered to be a surgical disease except where:

- This is the first time the animal has had back pain,
- The animal has a medical condition that contraindicates general anaesthesia,

- Or if the animal has minimal spinal cord compression and it is suspected that spinal bruising is responsible for most of the signs.

Non-surgical treatment consists of strict rest, in a cage or room (depending on the size of your pet), for at least 4 weeks and treatment with drugs that will reduce inflammation and pain. Your vet will want to see your pet regularly to ensure that they are not getting worse without surgery.

How can an operation help my pet?

Surgical treatment consists of drilling a hole in the vertebrae to remove the part of the IVD that is putting pressure on the spinal cord. Recovery time varies from 1 to 4 weeks. Despite carrying a small risk of causing further trauma, surgery should prevent further deterioration and relapse in the future.

Success of surgery depends mainly on how much spinal cord function has been lost and especially whether or not, and for how long, the animal has lost the ability to feel pain in its toes. The prognosis is very good for most animals that retain pain sensation. Paralysed dogs with no pain sensation in their rear legs have a slightly better than 50:50 chance of recovering the ability to walk, unless this sensation has been lost for more than 48 hours when, unfortunately, the prognosis then becomes very poor.

Will my pet recover without surgery?

Although surgical treatment is often preferred, 4 out of 5 dogs that are weak or paralysed in their back legs will make a good recovery without surgery provided that they have good sensation in the affected limbs. However, these dogs may take a long time to recover – from 6 to 12 weeks before they can walk. Unfortunately, about one-third of the dogs that recover suffer a second episode of disc disease later in life and a significant proportion of dogs in this category will be left with some permanent defect, such as wobbliness.

Related Fact Sheets

Neurological Examination Fact Sheet

Neuro-Diagnostic Tests Fact Sheet

If you are concerned about the health of your pet you should contact your veterinary surgeon.