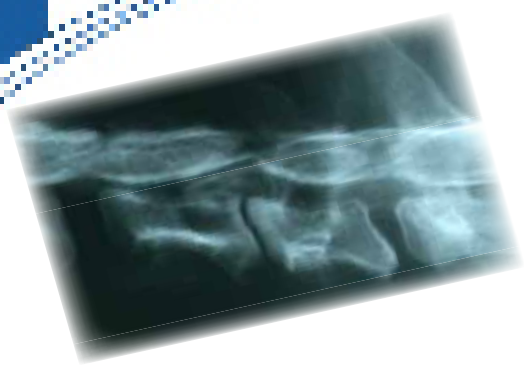
# Animal Surgery Centre

## Common Spinal Conditions



We are pleased to present an informational brochure reviewing the more common canine spinal conditions seen in small animal practice.

As household pets become accepted as family members, more and more owners are willing to consider diagnostic and treatment alternatives for their dogs with spinal pain, weakness or ataxia. In many cases, incomplete recovery is possible and minor neurological deficits can persist. Clients can and will accept this as long as the patient is pain-free and ambulatory.

Hopefully you find this colour brochure useful and informative to refresh your memory of spinal conditions and also as an educational guide to use with clients (showing them images of myelography and / or surgery).

As always, we are committed to continuing education after graduation and welcome your telephone enquiries to assist you with managing your patients. If you would like to see any of the surgical procedures on your client's pets, we will do our best to accommodate you.

## Signalment & History:

Young adult chondrodystrophic breeds (eg. Shih Tzu) are predisposed to acute, disc degeneration with nuclear extrusion into the canal and severe paresis / paralysis. There may be a chronic intermittent prior history of apparent discomfort.

Older, larger, active dogs (eg. Labrador) tend to develop lumbosacral stenosis and lower back pain. They become unwilling to jump and are often misdiagnosed as suffering from 'arthritis'. Temporary relief of discomfort with NSAIDs is common.

Adult male Dobermans with tetraparesis typically have 'Wobbler' syndrome with chronic dorsal annular protrusion and cord impingement. They are often not painful and improve with oral glucocorticoids.

## Neurological Evaluation:

Gait evaluation, ideally performed on a level surface with limited distractions, is best conducted outdoors. It is useful to have an owner calling to encourage limb movement in non-ambulatory patients. You may need an assistant to support the body so that you can focus on looking for limb movement. Evidence of voluntary motor function is important when issuing a prognosis. Proprioceptive positioning and postural reactions are best performed in the standing patient.

Segmental spinal reflexes can be evaluated with the patient in lateral recumbency. The most reliable of the myotactic reflexes is the patellar tendon reflex. Hypo- or hyper-reflexia can suggest LMN or UMN lesions respectively. The paniculus reflex is useful to aid lesion localization in suspected thoracolumbar cases (eg. paraplegic small breed with Hansen type I IVDD). Look for asymmetric deficits too.

Assessment of spinal pain is subjective and difficult in many pet dogs due to their temperament. Focal yet firm pressure over each of the spinal segments is applied to yield a convincing and consistent response by the patient (not the observing owner!).

In my opinion, accurate assessment of pain perception is critical in the decision making process. The **loss of pain perception** (grade V) is associated with a **grave prognosis** and clients will need to know this early. For traumatic (ie. HBC - fracture / luxation), embolic (FCE) and degenerative (IVDD) causes of acute, severe paresis / paralysis, the prognosis for return of ambulatory function is **favourable** provided patients have **intact perception of distal limb pain** (grades I-IV). We recommend using robust haemostats and clamping the base of the nailbed on each toe (if required) to demonstrate to yourself that the pet does or does not convincingly respond.

### *Neurological Grades*

I ***Spinal Pain***
(either spontaneous or evoked)

II ***Ambulatory Paresis***
(able to stand and walk unassisted)

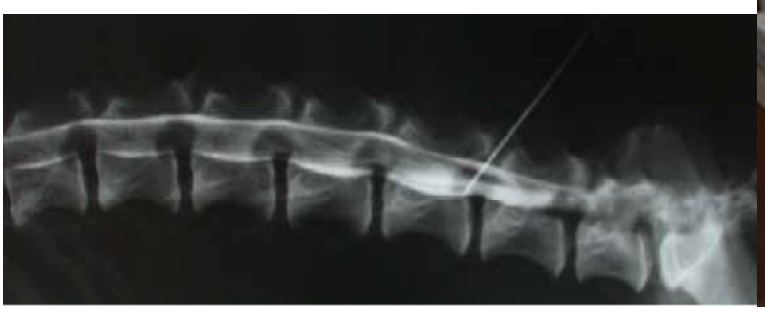
III ***Non-ambulatory Paresis***
(voluntary movement present)

IV ***Para / tetra-plegia***
(complete abscence of movement)

V ***Loss of pain perception***
(no recognition of distal stimulus)

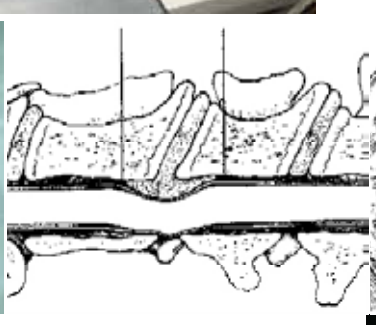
## Basic Diagnostic Workup

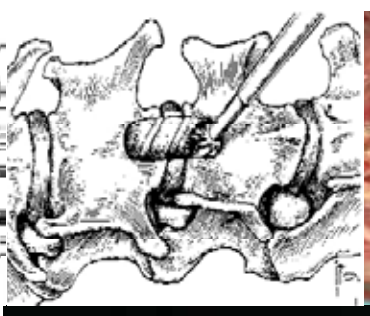
In addition to a general physical and neurological examination, you may wish to perform CBC / biochemistry prior to referral for myelography and CSF analysis. The Animal Surgery Centre has a licenced flouroscopy unit to assist with needle placement into the subarachnoid space and evaluate contrast flow. Typically lumbar puncture is attempted prior to cisternal puncture to reduce patient risks and allow 'pressurization' of the injection in cases with obstructive disease. Emergency myelography is available 24/7.

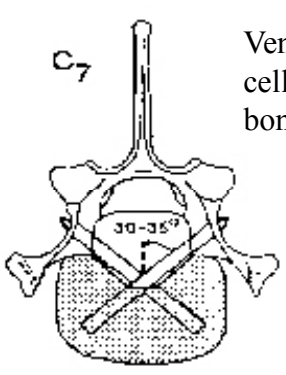


# Cervical disc disease

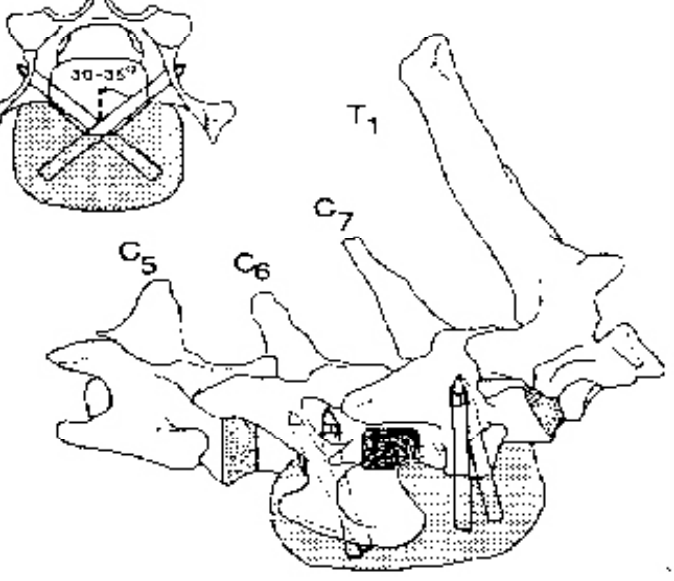
Intermittent vocalization, reluctance to move and mild ataxia are the common presenting problems with cervical IVDD. Acute extrusion of a degenerate nucleus into the extradural space can cause cord impingement with associated neurological deficits. 'Ventral slot' or anterior decompression is achieved by drilling a channel centered over the interspace and retrieving disc material. Lateralized discs can cause nerve root pain and these dogs tend to present with unilateral thoracic limb lameness ('root signature').






Ventral interbody fusion using cancellous autograft, threaded pins & bone cement, for dynamic lesion

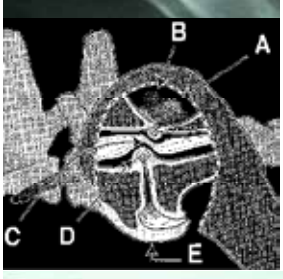

Adult Doberman Pinschers are predisposed to developing caudal cervical spondylomyelopathy or 'wobbler' syndrome whereby redundant dorsal annulus causes cord compression and tetraparesis. The gait is characteristic with a stiff, shortened thoracic limb stride and wide-based ataxia in the pelvic limbs. Juvenile giant breeds also suffer from a form of 'wobblers' with congenital osseous stenosis, often at multiple levels. Dorsal decompressive laminectomy may be required in these dogs to remove the offending portions of the articular facets.

# Thoracolumbar disc disease

Chondrodystrophic breeds (eg. Dacshund, Shih Tzu, Toy Poodle) undergo premature metaplasia of their discs as young adults (2-6yo). This is considered normal in these breeds. Single episodes of mild spinal pain can be effectively treated with cage confinement and strategic use of either NSAIDs or glucocorticoids.

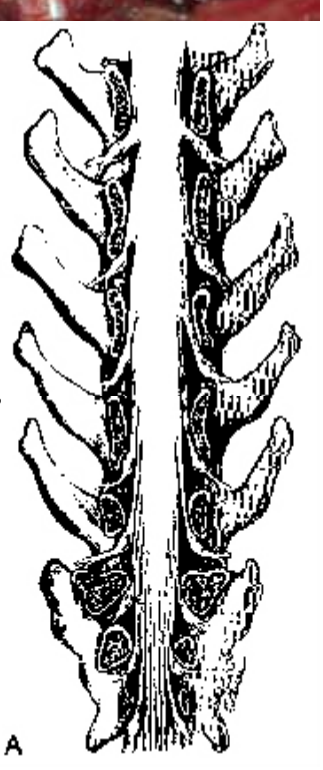
Plain spinal radiographs can illustrate interspace collapse and possible calcification at the level of the intervertebral foramen, which supports a diagnosis. Many larger dogs have impressive spondylosis, as seen in the case here. It is important to recognize that other than restricting flexion and extension, most dogs do not develop neurological deficits with this condition. Myelography is required to establish a definitive diagnosis of extradural cord compression. Surgical intervention, by way of laminectomy, is indicated in cases with severe pain or deteriorating neurologic status.


# Lumbosacral disc disease




As in humans, degenerative lower back pain is common. In my opinion, this problem is often overlooked by veterinarians and alternative, incorrect diagnoses are made (mostly spinal arthritis or hip dysplasia) - primarily because of a lack of understanding of the pathology and diagnosis.

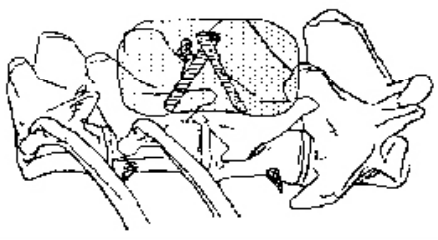
*Cauda equina* is a term used to describe the nerve roots crossing the L7-sacral level. Lumbosacral disc degeneration results in dramatic stenosis and nerve pressure. The typical presentation is focal pain and reluctance to jump, run and extend the spine at this level. MRI is the test of choice. Decompressive laminectomy and fusion using facet screws resolves pain in most dogs.

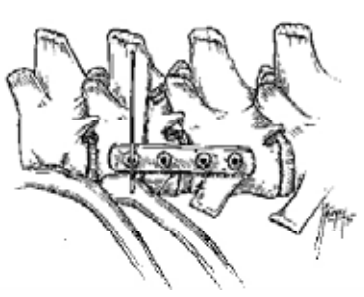



# Spinal trauma

Unfortunately, despite improved control of roaming dogs, spinal trauma still occurs. Many dogs are euthanized due to complete cord transection. If your patient has ***intact deep pain perception***, the prognosis is ***excellent*** if treated appropriately with emergency surgical stabilization. Again, it is imperative to accurately assess their level of pain perception and not assume that a withdrawal reflex means that they can feel pain.

The most common injuries include C2 & L7 fractures and T13-L1 fracture-luxations. Bolus IVFs and methylprednisolone at 30 mg/kg should be administered within 8 hours of trauma along with potent analgesics. Early referral for emergency spinal alignment and stabilization yield the best results.





# Non-surgical spinal conditions

Fibrocartilaginous embolism (FCE)
Degenerative myelopathy (DM)
Discospondylitis
Granulomatous meningoencephalitis (GME)
Neoplasia (both primary & metastatic)

Signalment and history can help narrow the differental list. It is helpful to understand: the **duration of onset** as well as the clinical signs, if the condition is **progressive or static**, if there has been a **response to therapy** with NSAIDs or steroids, if **spinal pain** is present, if neurologic deficits are **symmetric or asymmetric** and is the patient **ambulatory or recumbent**.

***FCE*** tends to occur acutely during vigorous activity and the pelvic limbs tend to be preferrentially affected. These patients tend to be large dogs and no ongoing spinal pain is present. Most patient improve neurologically within weeks. Emergency myelography is appropriate to exclude surgical disease. Slowly progressive weakness and ataxia in the pelvic limbs of an older GSD, is highly suggestive of ***DM***. Younger dogs that are teething or have had recent surgery may develop marked spinal pain and neurological deficits consistent with infectious ***discospondylitis***. Survey spinal radiographs typically illustrate endplate lysis and these dogs recover following prolonged systemic antibiotic therapy. Maltese and other 'small white fluffy' dogs can develop intermittent, asymmetric spinal pain and CSF analysis will reveal a mixed pleocytosis. A poor prognosis is issued with ***GME*** however aggressive glucocorticoid therapy can achieve durable remission. The most common primary spinal ***neoplasms*** are meningiomas and ascending PNSTs in dogs and lymphoma in cats.