Cauda Equina Syndrome
(Degenerative Lumbosacral Stenosis)

Cauda equina syndrome (degenerative lumbosacral stenosis) is caused by compression of the nerve roots (cauda equina) coursing through the lumbosacral spinal canal in the lower back. Nerve root entrapment and pressure can result from an arthritic process, infection, a degenerative disc rupture, or tumors. Most dogs affected by lumbosacral degeneration are middle aged or older large, athletic breeds.

The most common symptom is progressive sharp pain. However, this syndrome can manifest itself in a number of ways. Intermittent lameness in one or both pelvic (rear) limbs or a stilted gait is a common initial sign. The patient may progressively have more difficulty rising from a prone position or may be unusually reluctant to leap. The dog may act suddenly painful or lame immediately after getting up or jumping. Strenuous activity may exacerbate the signs. Vocal expression of pain may vary from moans or whimpers when the dog tries to rise to sharp cries or howls when touched over the rear quarters or when making a wrong move during exercise. Eventually even the most pain tolerant individuals will react to the burning pain of the nerve root entrapment caused by this syndrome. Chewing at the tail or rear feet as well as bowel and bladder incontinence may be seen in advanced cases where severe pressure on the nerve roots causes a burning sensation. The most devastating cases can evolve to full paralysis.

Diagnosis

The neurological examination begins by observing the gait. Specific tests for pain and neurological dysfunction are then performed to confirm the site of the lesion.

Individuals with hip dysplasia will often show a mild response to hip extension whereas dogs with lumbosacral disease will object more acutely to hip extension and cry when pressure is added to the lumbosacral junction (see Fig.1).

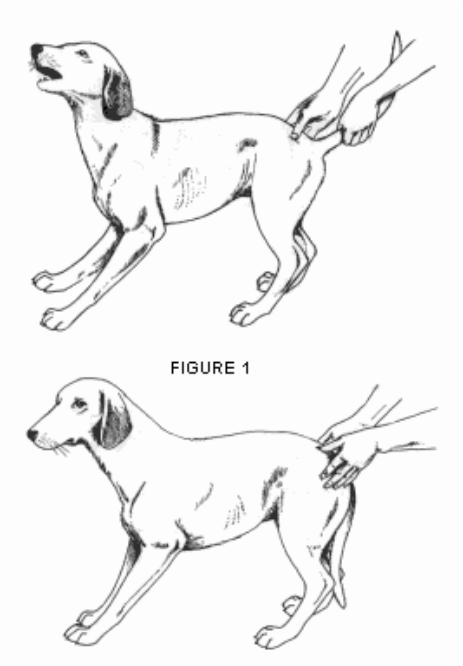
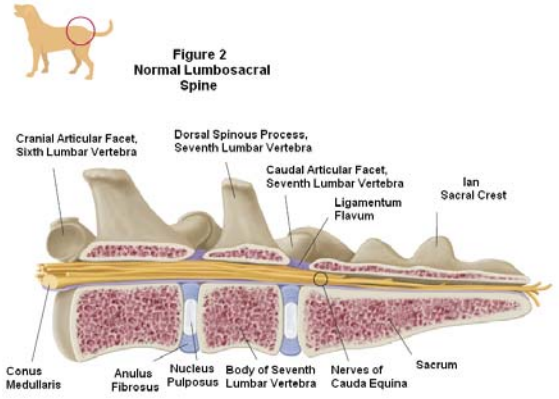
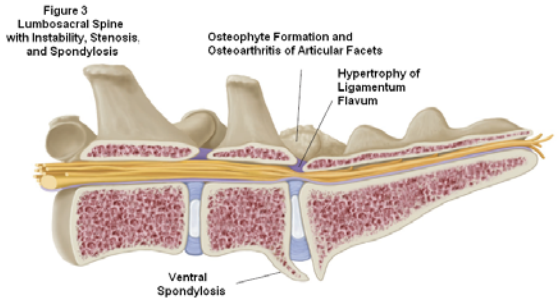


FIGURE 1

Manipulation and hyperextension of the tail causes an exquisite pain response. The spinal reflexes are tested, including the perineal reflex and anal tone, to assess the early signs of nerve root entrapment.

Nerve root entrapment and pressure can result from an arthritic process, infection, a degenerative disc rupture, or tumors. Therefore, it is essential to accurately diagnose the animal's problem before considering treatment (see Figs. 2 and 3).





This requires radiography (x-rays). Plain radiographs may not be useful in diagnosing such things as infection. A definitive diagnosis may require a MRI or myelogram / epidurogram (contrast dye studies of the spine) to confirm not only the location of the lesion but also the position of any ruptured discs in relation to entrapped nerve roots as the spine is flexed and extended (Fig. 4).

Figure 4
Lateral projection of an epidurogram demonstrating compression of the cauda equina at the lumbosacral junction (L7-S1)

The myelogram and epidurogram are common and safe diagnostic procedures when performed under the proper conditions. In difficult cases, MRI or CT scan has become the test of choice. Electromyography (EMG) may be of value in substantiating the diagnosis and the severity and symmetry of nerve root entrapment.

Treatment

Medical therapy consisting of rest and anti-inflammatory/analgesic medications should be attempted in patients experiencing an initial episode with only mild pain.

Indications for surgical intervention include neurological deficits, pain unresponsive to conservative treatment, and frequent recurrences of pain (even if the episodes respond well to medical treatment). To relieve pressure on the entrapped nerve roots, a dorsal laminectomy is performed. This involves removing portions of the bony spinal canal surrounding the entrapped nerve roots.

The nerve roots (cauda equina) are then gently retracted to one side with blunt nerve hooks exposing any herniated discs as a large dome on the floor of the spinal canal. Any herniated discs are excised, compressive osteophytes are removed (Fig. 5), and foramenotomies (opening the nerve root canals) are performed to relieve root entrapment. Once the pressure is relieved, neurological function gradually returns.

In extreme cases, the vertebrae may be unstable and subluxated (Fig. 6). Internal fixation and bone grafting may be required to augment a spinal fusion and prevent recurrent nerve root entrapment.

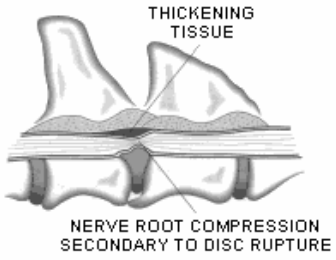


FIGURE 5

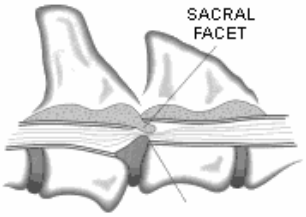


FIGURE 6 NERVE ROOT COMPRESSION SECONDARY TO CHRONIC LIGAMENTOUS THICKENING, JOINT INSTABILITY AND DISC DEGENERATION

Postoperative Care

A course of rest is the most important component of postoperative care. All strenuous activity should be curtailed for at least six weeks. At that time the exercise level is gradually increased. If the dog is obese, weight should be reduced.

The prognosis depends on the severity and chronicity of clinical signs before surgery. Dogs with pain, reluctance to jump, or tenderness upon getting up as their only symptoms will usually improve rapidly and dramatically. Some patients may have an occasional, transient, painful episode. Dogs with chronic neurological dysfunction will take much longer to improve, and they may never return to completely normal function. However, at the very least they will return to a pain free lifestyle.

After surgery, the patient generally requires one or two nights of analgesics (pain medication) and is then released. Three weeks of strict confinement to a small room, covered playpen, or cage is mandatory. During the convalescent period, the patient's paralysis, tenderness, or weakness will slowly improve. The specific type of rehabilitation therapy, as well as the protocol for performing the rehabilitation therapy, will be outlined on an individual basis. Patients may require occasional medications for discomfort. They can be carried outside for eliminations and must be walked using a harness rather than a neck collar.

Towel Walking

Place a sheet or large towel under your pet's abdomen as a means of support, holding an end in either hand. Use a towel or sheet that is large enough to enable you to stand in an upright position (Figure 4).

Support your pet so that he/she is unable to bear full weight on the affected limb(s). Over the passage of time (usually two to three weeks), you will notice that your pet will be able to accommodate a greater percentage of its actual weight, requiring less assistance from you.

In the case of a male dog, you will need to reposition the towel/sheet so as not to impede urinary function. This would be done once the dog is outside and ready to urinate. Allow him to lean against you while urinating. This will provide stability for him while urinating.

Supporting ambulation with a towel

Tail Walking

You may also assist your dog with ambulation by holding its tail in an upright manner. This serves as a 'rudder' and provides the needed stability for walking.

NOTE: Not all pets will tolerate this method. You will need to decide which method of assistance will be the most effective.

Medicating Your Dog

1. When administering medication in capsule or tablet form to your dog, you may find it much easier to simply place the medication in a small amount of food and offer it as a treat to your pet.

2. If your dog will not accept mediation in the above mentioned fashion, it will be necessary for you to manually 'pill' your pet (Figure 6). Place your hand around your pet's upper jaw and gently apply pressure by pressing the lips against the teeth. Using your other hand, gently pull the lower jaw downward and place the medication in the very back of your pet's throat. By holding his/her muzzle and gently stroking the throat, you will stimulate your pet to swallow.

Administering medication to a dog

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