start to subside once the pressure on the spinal cord is relieved. Some nerve function should start to return and gradual recovery begins.

#### Postoperative Recovery and Care

After back surgery one should expect approximately four weeks of intensive home nursing care before clinicians may fully determine the outcome of the procedure. During this recovery phase your pet may not have bladder or bowel control and may have no or only partial movement of the limbs. Because of these conditions, the patient will require a great deal of assistance and attention. Our staff will provide you with complete instructions to assist you during this recovery period.

Many paralyzed pets start to move their legs in approximately two to four weeks time. Within four to eight weeks many will regain continence and start to walk. Some pets return to very good hind limb function, while others may have permanent impairments and wobble or have difficulty jumping for the remainder of their lives.

The primary goal of neck surgery is to relieve the pain caused by the ruptured disc and most pets also regain very good motor function. It is important to keep the patient quiet and confined for four weeks following surgery to help with healing and recovery. Again, temporary neurologic deficits may persist and, although generally they are not permanent, they may prolong postoperative rehabilitation.

In most cases the swelling and pain associated with a ruptured neck disc subside in two to four weeks. If nerve damage also exists, improvement may take four to eight weeks or longer. Decreasing doses of steroids may be administered during this transition to decrease inflammation and associated pain. Even with the most ideal surgical technique and recovery management, it is possible that your pet may not recover full function of the limbs or return to pre-injury functional status.

Remember, regardless of the location along the spine of a disc rupture, the very best indicator of your pet's chances of recovering full functional status (walking and continence) is the neurologic status at the time of surgery. Fortunately, even pets that remain permanently paralyzed and incontinent, while challenging to care for, can live happy and healthy lives.

#### Conclusion

An accurate diagnosis and prognosis for surgical success can be made only after a thorough medical, physical and neurologic examination of your pet. We will discuss our findings and expectations with you to help make the best decisions for your family and for your friend. Please call Veterinary Surgical Centers with any questions or concerns about intervertebral disc disease in your pet.



#### www.vscdsurgerycenters.com

With offices in: Berkeley Dublin Walnut Creek

To schedule an appointment, please call: 925/201-3400 or 510/595-4600





## The Disc

## Treating Back and Neck Disc Disease



# Come. Sit. Stay. Heal...

© 2010 Veterinary Surgical Centers

#### **Disc Disease**

Disc disease is most prevalent among small and toy breed dogs such as Dachshunds, Lhasa Apsos, Poodles, Beagles and Pekingese dogs. However, there is also a significant occurrence of disc disease in large and giant breed dogs such as Dobermans, Dalmations, Labradors, Mastiffs, St. Bernards, German Shepherds, Rottweilers, and Great Danes as well as cats! In the more prevalent smaller breeds, primarily due to genetic factors, the disc is prone to premature aging thus making them more likely to rupture even with minimal movements. In these genetically predisposed breeds the highest incidence of disc rupture occurs between three and six years of age. Intervertebral discs can rupture either in the middle-back (thoraco-lumbar region) or the neck (cervical spine). Different clinical signs in the effected patient will depend on the site of rupture and the amount of trauma associated with the disc rupture.

### The Disc: Anatomy and Pathology

A normal disc resembles a jelly-filled doughnut. The outer layer (the dough) is called the annulus and consists of a tough

fibrous tissue that connects each of the spinal vertebrae together into a column. (Fig. 1) Due to the flexibility of the annular fibers, the vertebral column is able to flex and bend. The center of the intervertebral disc (the jelly) is called the nucleus and contains a viscous liquid.

Within degenerating discs (discs susceptible to

rupture), the nucleus changes in consistency, becoming denser and more like toothpaste rather than jelly. Simultaneously, cracks will develop in the annulus: when these cracks become sufficiently large or sufficiently weaken the structure, the central nuclear material can herniate (squirt out), resulting in compression and damage to the spinal cord.

Even a small amount of ruptured nuclear material may cause your pet to experience mild to moderate back or neck pain with or without limb weakness (paresis) and unsteadiness (ataxia). Larger quantities of disc material expelled (extruded) at once and with extreme velocity, however, can cause acute loss of control of the legs (paralysis), sudden loss of bowel and bladder function and, in severe cases, difficulty breathing, abnormal heart rhythms and death.

The chance of your pet recovering from a ruptured disc depends on overall medical health, the number of previous episodes of pain or paralysis, and the length of time between the onset of the current problem and the intervention of veterinary care. The best indicator of return to good function is your pet's neurologic status at the time of surgery.



If your pet fails to respond sufficiently to non-surgical, medical management, surgery may be indicated. If so, radiographs (x-rays) and a myelogram are important diagnostic tools to identify the exact location of disc rupture.

A myelogram must be performed with the patient under general anesthesia. A spinal tap is performed and radio-opaque dye is injected around the spinal cord to make its shape visible

on radiographs. Following the injection a series of radiographs may indicate which disc has ruptured and delineate the amount of compression of the spinal cord. (Fig. 2) The surgeon can then determine which type of surgical technique to use and where the surgical approach should take place.



Rarely, following a myelogram, a patient may have transient seizures (usually resolving with overnight monitoring and treatment). A more common side-effect of myelography is an increase in limb weakness that may last for as long as one to two weeks. More severe side effects are rare but possible. The benefits of myelography far outweigh these risks and this diagnostic modality still remains one of the most routine tests available to identify a ruptured disc. In some situations, myelograms are slowly being replaced by CT's and MRI's. (Figs 3 & 4) However, these alternatives are more expensive, they are not always available on an emergency basis, nights or weekends, and even with these advanced imaging techniques, radio-opaque dye injection may still be indicated.



Fig. 3: CT

Fig. 4: MRI

#### **Disc Surgery: Back**

Often, pets with back pain only or minor spinal cord injury can benefit from a fenestration surgery. (Fig. 5) In this procedure, the surgeon cuts a window in the annulus of several discs in the back and removes the inner, abnormal nuclear material that is applying pressure to the spinal cord. This technique removes the nucleus from the currently rupturing disc as well as that of other discs that appear likely to rupture in the future. Unfortunately, this technique is rarely effective in patients with demonstrable disc extrusion.

Instead, paralyzed patients, or patients with demonstrable disc extrusion, are candidates

Annulus Nucleus Window Fig. 5: Fenestration Surgery

for laminectomy surgery. (Fig. 6) This technique involves removing part of the bony vertebrae surrounding the region of damaged spinal cord. The material extruded from a ruptured disc is removed from around the spinal cord, thus relieving pressure and preventing further trauma. As the swelling in the cord gradually subsides following surgery, some nerve function

returns to the legs. It is important to realize that recovery does not happen overnight, and that not all nerve function may recover.

Some pets suffer temporary setbacks in their neurologic



status following surgery. These delays relate to the effects of the myelogram, manipulation of the spinal cord during surgery and the progressive swelling and damage from the initial disc rupture. While these setbacks are not usually permanent, they do prolong the patient's postoperative rehabilitation and require additional efforts by owner, pet and veterinarian alike.

### **Disc Surgery: Neck**

Once a cervical (neck) disc has ruptured, your pet will rarely improve without treatment or surgery. Often, there may be a reduction in the pain by administering anti-inflammatory medications and muscle-relaxants, but steroids are not recommended because of harmful side effects when used long-term. Surgical repair of ruptured cervical discs is generally quite successful.

After the specific ruptured disc is located by myelography or MRI, a ventral cervical slot procedure allows access to the spinal cord and removal of the extruded material. The ventral slot technique relieves pressure from the spinal cord and also

fenestrates additional cervical discs to remove abnormal nuclear material and prevent at-risk discs from rupturing in the future. (Fig. 7) The annulus is left intact to stabilize Disc Material the neck and to allow the vertebrae of the neck to move normally after surgery.

Similar to disc surgery in the back, inflammation and neck pain



#### **Slot Procedure**



#### Fig. 1: Normal Disc