LIMB AMPUTATION:
Understanding, Accepting, Living Fully

Direct Veterinary Surgery
Surgical Solutions Direct to You

Overview—"I don't understand what amputating a limb entails; please help me understand the condition and the treatment."

Our dog and cat friends & family are lucky; not only do they have us (!), they have four legs. Having these four legs gives them the edge when running fast and doing agile things; their four legs allow them to jump and climb better than us; and those four legs offer a surplus when medical conditions harm one of the legs. It is often hard for us humans to understand this benefit of four legs when it comes to losing one leg; when we lose a leg, it often means we must significantly adjust our lifestyle. And until and unless it happens to us or someone close to us, we will never fully appreciate the effect losing a limb will have. Similarly, until and unless we share time with a dog or cat who has lost a limb, we rarely appreciate how they can or will accommodate and adjust to three (or even two) legged status. ***I recently amputated my own dog's front leg to treat bone cancer; living thru the recovery with her has added this personal perspective to my professional knowledge and experience. LMRasmussen, DVM, DACVS 2012-13*

The typical standard of surgical treatment for limb amputation is to remove the leg up close to its attachment to the body, a "high" amputation, with no remaining portion for use by the patient (no attachment stump for prosthetic use as is common in humans, for example). In the case of a front leg amputation, the standard of surgical treatment is to remove the entire leg from scapula (shoulder blade) on down. This complete removal creates a smooth, well-padded amputation site on the side of the chest that will not get pressure sores or interfere with movement in anyway.

In the case of a rear leg amputation, there are two common surgical options depending on where the disease/injury is on the lower leg—removal at the hip joint or removal just below hip across the thigh bone. The remaining site is usually a rounded rump of gluteal muscles over the hip region.

"Why is this procedure being recommended for my pet?"
The most common reason for leg amputation is to treat cancer—either bone tumor or soft tissue tumor. Some tumors can be successfully cured with amputation, while others we use amputation to treat the pain associated with the tumor on the leg and then follow that with medications to treat the potential spread (metastasis) of cancer to the rest of the body.

Other reasons for leg amputation include birth defects involving a limb; severe/untreatable trauma to the leg; and loss of a foot due to trauma.

"What options do I have to treat my pet's condition?
Amputation is used for different reasons, so it is difficult to answer this general question about amputation as a specific treatment recommendation. Where there may be room for fine-tuning options is what kind of amputation should you choose.

The most common location for removing a damaged or diseased limb in dogs and cats is up high where the limb meets the body. This is so that any remaining portion of the leg does not become a problem for the pet. Any portion of a limb that remains may become traumatized during daily activities or interfere with movement. The custom of high amputation has developed out of several historical pet parameters, several of which are still realities today—medical costs, technical expertise in pet prosthetics, logistics of pet prosthetic management.

We have also seen over the years that many 4-legged pets navigate life extremely well on three legs, so the motivation for pursuing lower amputations with the intent to use prosthetics has not been present, and the medical science has been slow to develop. We are at a stage now where prosthetics are a reasonable medical

option for some pets and owners. Planning for an amputation with the intent to fit and use a prosthetic has to start early in the process before any surgery. Some medical conditions and the location of injury/disease may eliminate this option. Please discuss your thoughts with your primary care veterinarian and ask for references of prosthetist specialists **before** any surgery is performed.

"What postoperative complications do I need to know and understand when considering this surgery?"

Postoperative complications are uncommon. The incisions are large and commonly in contact with the ground when your pet lies down, so incisional inflammation, infection and suture breakdown can be seen. These are usually minor and can be manage with topical treatments and attention to covering and protecting the incision during the healing period.

"Are there situations when the surgical outcome is not what we hoped it would be?"

There are four concerns with outcomes that are hard to predict but should be factored into your decision making.

For patients who have a sudden onset of limb problem that ends up having an amputation, the adjustment to 3-legged mobility can be challenging. This compares to patients who have had a gradually worsening limp over weeks to months that results in an amputation; they have had those weeks/months to adjust to the postoperative 3-legged mobility. Time and practice is what is needed for most pets, and your assistance and accommodations will make for an smoother transition to a new way of moving.

As an amputee ages, other limb problems may develop or be made worse with the added strain of the 3-legged way of moving. Thorough evaluation of common joint problems should be considered when making your treatment decisions.

Front limb amputees are more challenged in their mobility than rear limb amputees; 60% or so of the weight distribution in a 4-legged pet is borne in the front legs. Hopping on a rear limb is easier to do than hopping on a front limb. Stumbling happens more frequently in the front limbs and falling on the front half of the body is more dramatic, uncomfortable and difficult to bounce up from than in the rear. Helping a front limb amputee is logistically more challenging than helping a rear limb amputee; sling and harnesses (and a tail) are all better designed and worn on the back half.

Phantom limb pain is a known condition in human medicine, but hard to characterize in the pet population (because they cannot speak to us about "odd" sensations). It is very rare for pets to show evidence of ongoing pain associated with their amputation site, but it is possible. The presumed cause for this isolated, random pain is abnormal healing of the ends of the major nerves to the former leg; this is called a neuroma. When this condition exists, surgery can be performed to remove the neuroma and treat the end of the nerve more aggressively with anti-inflammatory medications to reduce the chance of phantom limb pain continuing.

"How is my pet's life and lifestyle likely to change after this procedure?

In general, most dogs and cats adjust to losing a leg, and they experience a good quality life as a 3-legged pet. More accommodation from owners is needed for front limb amputees than rear limb amputees. Having lived through this experience with my own large breed dog, I have lived the new lifestyle with one I cared for a great deal. It is an adjustment for you and them, no doubt about it. Older dogs, larger dogs, overweight pets, poorly mobile pets all have more lifestyle changes and limitations.

Talking to people with 3-legged pets is probably the best way to get a flavor of what life will be like for you and your pet. That said, one person's horrible or fantastic experience should not overly influence your decision making. And try not to use how you would feel as an amputee to guide your decisions too much either; dogs

and cats live in the moment, whereas we have a much more complex thinking and feeling existence. While dogs and cats undoubtedly live highly emotional lives, they do not seem to display the sense of emotional loss after losing a limb as many people do. They either do not appreciate it as a loss or they move past it and accommodate to the loss so quickly and effectively, that we do not appreciate it as a problem for them.

Rear limb amputees tend to return to near normal mobility; front limb amputees need to adjust their gait more significantly and will not be as agile or fast. But, young to middle aged animals who were healthy and athletic prior to their amputation rarely look back! They can romp and play and run with the crowd. Perhaps they won't win the tennis ball chase every time, but they always enjoy the challenge it seems.

For the older pet, learning to move after an amputation may take more time. They may need help on/off the couch when they didn't before. The dog may need to rest more frequently when out for his/her daily walks. Or the cat may need a shallower litter pan to make bathroom trips easier. But their enjoyment of life can be full and carefree with your love and guidance.

I strongly, strongly advise to keep your pet on the thin side of normal his/her whole life. Any minor orthopedic condition can progress with arthritis over time with excessive, wear & tear; carrying less body weight will reduce the energy they must use and will relieve some of this stress on the joints of the remaining three limbs. Good parameters to monitor body condition are:
1) you should be able to feel the ribs and pelvic bones, but not see them;
2) your pet should have an "hour glass" figure when viewed from above looking down;
3) your pet should have a tucked up belly when viewed from the side.

Assist your pet with activities that he/she often fails in; it can get very frustrating for them if they always miss that last 2 inches when jumping into the car, for example. You can also provide accommodations to their home environment to make life easier for them. For example, a ramp up to the sofa or down the back stairs might make those activities more enjoyable.

"Are there circumstances or medical conditions that will make it very hard to my pet to live as an amputee?"
There are some pets who are not good candidates for limb amputation. While advancing age, a large body size and the health of the other legs are all strong considerations, how fit a pet is is probably the biggest predictor of a successful amputee lifestyle. If your pet is unable to go for a 5-10 minute walk with you (for various reasons), he or she is not likely to be able to recover and adjust to a limb amputation. A

An advancing age is not a specific predictor of poor success with amputation, but age brings many other chronic medical conditions that effect the heart and lungs, muscles, joints and brain. It also brings with it an impending end of life. Although we never know exactly when a pet will die, we do know their lifespan is finite and somewhat predictable based on breed and body size. Discuss with your veterinarian, your pet's predicted lifespan to help understand how much life he or she may have ahead.

A large body size (whether due to breed influence or obesity) can negatively affect amputees. This is a much more important factor in front leg amputees than rear leg amputees. The force of gravity is distributed to only three points of contact with the ground, instead of four. The remaining three legs must take that extra load, so the joints and muscles must do extra work. For some very large animals, this will be impossible; for others, the extra load will cause deterioration of the remaining limbs very quickly. Obesity can be address with aggressive reduction in calorie intake, but the first few months of surgical recovery may be very difficult for pet and owner alike.

The health of the remaining limbs will also play an important role in predicting a successful amputation lifestyle. As mentioned above, the remaining three legs must take up the additional load. If there is neurological or

muscular weakness in one or more of the remaining legs, this will be made worse after amputation. If there is joint pain in one or more of the remaining legs, an amputee will not be able to limp (i.e. "favor" the other leg) to ease that pain.

"Are there things I can do to prepare myself, my home and/or my pet for this procedure?"

Immediately after surgery, mobility will be limited and uncomfortable. Setting up an area with bedding that is not too deep or difficult to get in/out of and is close to an outdoor bathroom area is a good idea. Having an assisting harness available will make these early days easier for you and your pet; plan to adjust and tinker with any devices to make them work better on the 3-legged pet.

Ramps and soft footing (not rough gravel) for common areas travelled might be helpful long term. Custom boots with spikes can be beneficial for our slippery Great White North weather. Full body harnesses that allow you to support the front and back ends can be useful, but the variety of designs and sizes is considerable; advanced research and fitting your pet when not in recovery is recommended, when feasible.

www.tripawd.com is a website with many ideas and examples of pets living 3-legged lives. Learning from and commiserating with fellow pet owners will help make the transition smoother and less frustrating.

Outpatient surgery and anesthesia can be uncomfortable, painful, disorienting, and frustrating experiences for animals; watching your pet work through the early postoperative period and recover from anesthesia and pain medications can be worrisome, scary and frustrating for pet owners. The vast majority of the time this period of difficulty is brief, and *your pet is actually more comfortable and secure at home with you*. Sometimes it doesn't feel like that at two in the morning when your pet is anxious and not consolable, and you are unsure of what to do. You always have the option of transporting your pet to a 24-hour veterinary facility postoperatively. If you do not want to have your pet home in the first few days postoperatively, please advise your primary care veterinary staff. They will provide contact information for a local 24-hour veterinary facility and help get an estimate for the ongoing care.

Summary

You may be facing this decision whether or not to proceed with a limb amputation for your pet. It may be recommended because of cancer or severe trauma, or a birth defect may have created a useless leg. Regardless of the cause, the decision to proceed with amputation is a big one. Understanding the procedure and the expectations for life after surgery may help guide you in your decision-making. If you have access to the Internet, you may find online chat groups for people with pet amputees to share your story and ask for input. Your veterinarian may be able to introduce you to fellow clients with pet amputees with whom you can discuss life issues for an amputee. A limb amputation, though scary, may be a very successful solution to a difficult medical condition. Dogs and cats can relatively easily accommodate the loss of one of their four legs; some pets are even known to live wonderfully active lives with only two legs. With help and support from their human family, pet amputees can live a rich and enjoyable life.

It is important that you have proper expectations about this procedure; your experience and you pet's outcome will benefit greatly. Please discuss this information with your veterinarian when working through the decision-making process regarding **limb amputation**.

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(See additional materials at www.directvetsurg.com for pet owners and veterinary professionals.)