



Limb Amputation: Understanding, Accepting and Living Fully

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Overview

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; 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 so very well they 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 a personal perspective to my professional knowledge and experience. LMRasmussen, DVM, DACVS 2012-13*

Surgical Amputation *"I don't have a medical background; what happens during an amputation?"*

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.

For the front leg, the most successful and cosmetic amputation is by "scapular disarticulation"; this means that the entire limb is removed from the toes to the scapula (shoulder blade). Since the normal anatomy of the

front leg only has muscles that attach the front leg to the chest wall, it is straightforward to remove the limb by cutting these muscles and sewing the area closed. 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.

For the rear leg, there are two techniques that are commonly used. The first is a “high femur” amputation that results in a short, well padded stump at the level of the rump/thigh. The muscles of the mid-thigh are cut and the femur (thigh bone) is cut close to the hip. When the tissues are sewn together, this provides good padding for the pelvis when the pet is lying down and offers a cosmetic appearance by maintaining symmetry of the rump area. The second technique is often used when the disease of the rearleg is in the thigh area; the leg is removed by “coxofemoral (hip) disarticulation”. This means that the leg is removed at the hip joint; only the pelvis and the surrounding muscles remain. This amputation technique is very successful as well, with slightly less padding over the amputation site and a less symmetrical appearance.

People are often interested in saving more of the leg if the injury or disease is low on the leg. This is not recommended in the majority of patients for the reasons mentioned above. But in cases where multiple legs are compromised and preserving leg function is preferred or required, there have been some successful cases of prosthetic limbs being created for and used by pets. This field is not as well developed in animals as it is in humans; cases must be evaluated individually with veterinary surgeon and human prosthetic specialist working together to create a successful outcome. Ongoing management of prosthetic limbs in animals requires a strong commitment from the pet’s owner.

After Amputation *“How can I help my pet when he/she comes home from surgery?”*

For the first few days to weeks after surgery, there are some things you can do to help you pet adjust and recover.

- Please keep your pet in a comfortable, safe indoor location for 24-48 hours until he/she is very steady on his/her feet. Do not allow free access to stairs or slippery floors.
- Your pet may be groggy for a few days. He or she may whine or appear more anxious than usual; this may indicate pain/discomfort or side-effects of the medications. Call your veterinarian for assistance with medication adjustments or return for exam and additional pain medications as needed.
- For front leg amputees, use a sling under the chest and for back leg amputees, use a sling under the belly during the first 7-10 days to assist when walking or going down the occasional stair and to prevent falling on slippery surfaces.
 - **There are some products that can be used to assist pets during walking; some can be ordered specifically for amputees. Examples include: RuffWear Web Master Harness (front); WalkAbout Harness (front, rear and belly options).
- Avoid any rigorous activity for 4 weeks. Short, leashed walks are fine.
- Monitor appetite and attitude. If both do not steadily improve over the first 2-3 days, call your veterinarian or return for progress evaluation and problem-solving.
- You can expect your pet to have a bowel movement within 5 days. He/she may need assistance with posturing to defecate; supporting the rear leg or holding him/her under the belly may be beneficial. Some animals take longer for their first bowel movement depending on when they last ate prior to surgery and when they started eating after surgery. It may be abnormal in color and consistency for 2-3 days. If you have any concerns, please speak with your veterinarian.

- Please confirm that your pet has urinated within 24 hours of returning home. If he/she does not, or you notice any problems related to urination, please speak with your veterinarian. Your female dog may need assistance with posturing to urinate; supporting the rear leg or holding her under the belly may help.

- Please look at the incision on your pet's hip or chest twice daily. It should be dry, slightly red along the margins, and slightly swollen/thick on the edges. Over several days, it should lose redness and swelling. Incision problems to call your veterinarian about:
 - gapping (the edges should be exactly touching)
 - discharge (other than small amount of crusting)
 - swelling (other than slightly raised skin near edges).
 Some bruising is normal and will resolve in 5-7 days.

- It is not uncommon in front limb amputees for a seroma to develop under the incision near the bottom in the first 2 weeks; this is a pocket of normal tissue fluids that develops in a high motion/loose tissue area such as the armpit region after an amputation. If the swelling is smaller than a plum, monitor and apply warm compresses to the area to encourage the fluid to reabsorb more quickly (3-7 days.) If the seroma progressively enlarges, please have your veterinarian assess the problem. ***Bandaging all the way around the chest or using a ThunderShirt™ to apply pressure to the surgical site will prevent this fluid accumulation and may improve comfort significantly by stabilizing the muscles that have been sewn together.*

- Do not allow your pet to lick or chew the incision. Pets tend to want to lick early in the healing period and this can compromise the incision and predispose to infection. If necessary, please use an E-collar or cover the incision area with a customized t-shirt or shorts if you must leave your pet unattended.

Living without all Limbs *“Will my pet ever be happy and normal again?”*

After a few days to a few weeks of recovery, life without a typical number of legs proceeds very well. The functional prognosis for dogs treated surgically with amputation is considered very good. The majority of dogs return to a high level of activity and endurance for their age. Following the four week recovery period, there are no general limitations to their lifestyle. 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.

Rearlimb amputees tend to return to near normal mobility; forelimb 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.

Ideally, 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 3 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.

A Poor Candidate *"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.

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 to ease that pain.

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 or surgeon 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.