

# Mammary Cancer in Dogs

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Spaying greatly reduces the chances of a female dog developing mammary cancer. In those females spayed prior to their first heat cycle, mammary cancer is very, very rare. The risk of malignant mammary tumors in dogs spayed prior to their first heat is 0.05%. It is 8% for dog spayed after one heat, and 26% in dogs spayed after their second heat. It is believed that the elimination or reduction of certain hormonal factors causes the lowering of incidence of the disease in dogs that have been spayed. These factors would probably be estrogen, progesterone, a similar hormone or possibly a combination of two or more of these.

What are the types of mammary cancer in dogs?

There are multiple types of mammary cancers in dogs. Approximately one-half of all mammary tumors in dogs are benign, and half are malignant. All mammary tumors should be identified through a biopsy and histopathology (microscopic examination of the tissue) to help in developing the treatment plan for that particular type of cancer.

The most common benign form of canine mammary tumors is actually a mixture of several different types of cells. For a single tumor to possess more than one kind of cancerous cell is actually rare in many species. This combination cancer in the dog is called a 'benign mixed mammary tumor' and contains glandular and connective tissue. Other benign tumors include complex adenomas, fibroadenomas, duct papillomas, and simple adenomas.

The malignant mammary tumors include: tubular adenocarcinomas, papillary adenocarcinomas, papillary cystic adenocarcinomas, solid carcinomas, anaplastic carcinomas, osteosarcomas, fibrosarcomas, and malignant mixed tumors.

What are the symptoms of mammary cancer in dogs?

Mammary tumors are observed as a solid mass or as multiple swellings. When tumors do arise in the mammary tissue, they are usually easy to detect by gently palpating the mammary glands. When tumors first appear they will feel like small pieces of pea gravel just under the skin. They are very hard and are difficult to move around under the skin. They can grow rapidly in a short period of time, doubling their size every month or so.

The dog normally has five mammary glands, each with its own nipple, on both the right and left side of her lower abdomen. Although mammary cancer can and does occur in all of the glands, it usually occurs most frequently in the 4<sup>th</sup> and 5<sup>th</sup> glands. In half of the cases, more than one growth is observed. Benign growths are often smooth, small, and slow growing. Signs of malignant tumors include rapid growth, irregular shape, firm attachment to the skin or underlying tissue, bleeding, and ulceration. Occasionally, tumors that have been small for a long period of time may suddenly grow quickly and aggressively, but this is the exception not the rule.

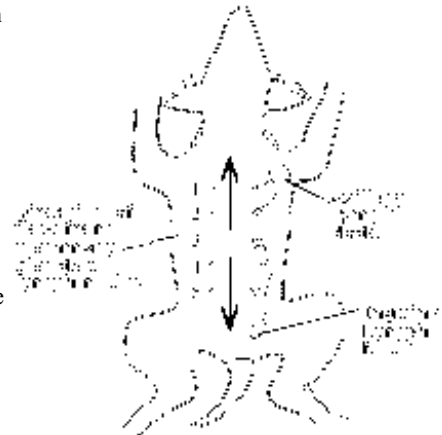
It is very difficult to determine the type of tumor based on physical inspection. A biopsy or tumor removal and analysis are almost always needed to determine if the tumor is benign or malignant, and to identify what type it is. Tumors, which are more aggressive may metastasize and spread to the surrounding lymph nodes or to the lungs. A chest x-ray and physical inspection of the lymph nodes will often help in confirming this.

Mammary cancer spreads to the rest of the body through the release of individual cancer cells from the various tumors into the lymphatics. The lymphatic system includes special vessels and lymph nodes. There are regional lymph nodes on both the right and left sides of the body under the front and rear legs. They are called the 'axillary' and 'inguinal' lymph nodes, respectively. Mammary glands 1, 2, and 3 drain and spread their tumor cells forward to axillary lymph nodes, while cells from 3, 4, and 5 spread to the inguinal ones. New tumors form at these sites and then release more cells that go to other organs such as the lungs, liver, or kidneys.

What is the treatment of mammary cancer in dogs?

**Surgical Removal:** Upon finding any mass within the breast of a dog, surgical removal is recommended unless the patient is very old. If a surgery is done early in the course of this disease, the cancer can be totally eliminated in over 50% of the cases having a malignant form of cancer. The area removed depends on the judgment of the veterinarian. Sometimes only the mass itself will be removed. Other times, taking into consideration how the cancer spreads, the mass and the rest of the mammary tissue and lymph nodes that drain the gland will be removed. For example, if a growth were detected in the number 2 gland on the left side, we would remove glands, 1, 2, and 3 and the axillary lymph node on that side. If it were found in the number 4 gland on the right side, then glands 3, 4, 5, and the inguinal lymph node on that side would be completely removed. With some tumor types, especially sarcomas, complete removal is very difficult and many of these cases will have tumor regrowth at the site of the previously removed tumor.

Owners may confuse a surgical removal of a mammary gland in the dog with a radical mastectomy in humans, with all of the associated problems. In humans, this type of surgery would affect the underlying muscle tissue which complicates the



recovery. In the dog, however, all of the breast tissue and the related lymphatics are outside of the muscle layer, so we only need to cut through the skin and the mammary tissue. This makes the surgery much easier and recovery much faster. A radical mastectomy in a dog means all the breasts, the skin covering them, and the four lymph nodes are all removed at the same time. Although this is truly major surgery, suture removal usually occurs in 10 to 14 days with normal activity resuming at that point.

Many veterinarians will spay a dog having a mastectomy (unless she is very old). The value of this in decreasing the recurrence of tumors is still controversial.

**Chemotherapy and Radiation Therapy:** Chemotherapy has not been a very successful nor widely used treatment for mammary tumors in dogs. However, with the constantly changing and improving drugs available, a veterinary oncologist should be consulted to find out if there is an effective drug available for your dog's particular type of mammary cancer. The effectiveness of radiation therapy has not been thoroughly researched. Some anti-hormonal drug regimens are being tested in dogs. At this point in time, surgical removal of the tumors is the treatment of choice.

How can I prevent mammary cancer in my dog?

There are few cancers that are as easily prevented as mammary cancer in dogs. There is a direct and well-documented link between the early spaying of female dogs and the reduction in the incidence in mammary cancer. Dogs spayed before coming into their first heat have an extremely small chance of ever developing mammary cancer. Dogs spayed after their first heat but before 2.5 years are at more risk, but less risk than that of dogs who were never spayed, or spayed later in life. We all know the huge benefits of spaying females at an early age, but every day, veterinarians still deal with this easily preventable disease. Early spaying is still one of the best things pet owners can do to improve the health and ensure a long life for their dogs.

Conclusion

Mammary cancer is a very common cancer and can often be successfully treated, if caught early. If all non-breeding dogs and cats were spayed before their first heat this disease could be almost completely eliminated. If you find a growth or lump in the mammary tissue of your dog, you should inform your veterinarian immediately and not take a "wait and see" attitude.