

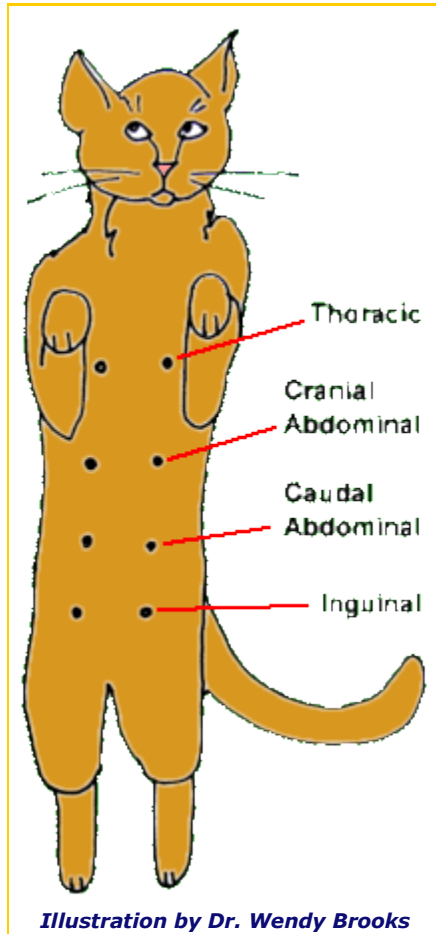
## THE PET HEALTH LIBRARY

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### Mammary Cancer in Cats



*Illustration by Dr. Wendy Brooks*

We have all heard of breast cancer in women. With approximately one woman in eight or nine falling victim to this form of cancer, there are awareness campaigns from numerous health care agencies and research continues. In cats, mammary cancer is the third most common cancer, with the most common victim being a senior female cat around age 10 to 12 years.

Dogs are lucky as only about 50% of mammary tumors are malignant for them. For cats, approximately 90% are malignant with rapid spread to adjacent glands and the nearest set of lymph nodes. Cats generally have eight mammary glands (thoracic, cranial abdominal, caudal abdominal, and inguinal – see illustration). The most commonly affected glands are the thoracic and inguinal glands. An owner should be accustomed to feeling for even small lumps in these areas. Because veins connect both the right and left sets of glands, it is easy for tumor cells to cross from one side to the other though usually the glands on the same side as the original tumor are seeded first.

At first the tumor is small and may feel like a pebble or dried pea. The tumor should be removed as soon as possible in hope of removing it completely. If left alone, mammary tumors get larger and harder and ultimately burst through the skin creating a smelly, infected ulcer.

***Tumors removed when they are less than 0.8 inches (2 cm) in diameter have a median survival time of 4.5 years.***

***Tumors removed that are greater than 1.2 inches (3 cm) in diameter have a 6-month median survival time.***

Tumors spread from the mammary glands to local lymph nodes and then on to the chest, brain, bone, and even spleen. Expect chest radiographs to assess tumor spread to the lung to be needed before surgery can proceed. Basic blood tests will also be needed.

#### Risk Factors for Mammary Cancer

- Not surprisingly, being female is the most significant factor.
- Siamese cats are overrepresented. They also tend to develop mammary tumors at a younger age than other breeds (9 years is average for Siamese and 14 for non-Siamese).
- Exposure to progestin hormones (not used much any more but previously used for behavioral issues such as urine marking) is a risk factor.

#### Protective Factors

Early spay is the single most significant protective factor. Spaying before age 6 months results in a 91% reduction in risk. Spaying before age 1 year results in an 86% reduction in risk. Spaying before age 2 years leads to an 11% reduction in risk. Having given birth to kittens has no effect on mammary

cancer risk. Spaying after age 2 years does not reduce the risk of mammary cancer development at all.

## **Types of Tumors**

Feline mammary tumors are generally either carcinomas or adenocarcinomas. Papillary or tubular carcinomas tend to be the least aggressive. Ductular carcinomas seem to kill cats about four times faster. Anaplastic carcinomas are the worst kind, usually dispatching the patient three times faster than that.

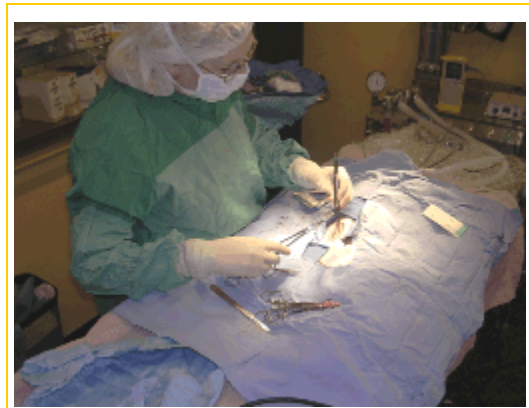
The pathologist examining the biopsy tissue uses different cellular criteria of malignancy to grade the tumor as Grade I, Grade II, or Grade III. A grade I tumor generally has a good chance of a one year survival time depending on its size and tumor type. Grade II tumors have a 57% chance at survival after a year unless chemotherapy accompanies surgery. Grade III tumors treated with surgery alone had no survivors at one year from the time of diagnosis.

## **Treatment: Surgery**

The first step in treatment is surgical removal of as much of the tumor as possible. This means removing not just the affected mammary glands but the entire chain of mammary glands on that side.

If both sides are involved, then both sides will have to be removed though there is generally not enough skin to remove both mammary chains at one time.

If only one side is involved, and the tumor is deemed to be in an early enough state for cure to be possible, consider prophylactic removal of the unaffected mammary chain (i.e. the other side) as the factors that led to tumor development on the first side undoubtedly still apply to the as yet unaffected side. A period of 3-5 weeks is generally allowed between surgeries to ensure stretching of the skin so that there is room to close the second incision.



*Photo courtesy of Dr. Wendy Brooks*

If only one side is involved but is deemed too advanced for cure, it is likely not worth removal of the second mammary chain.

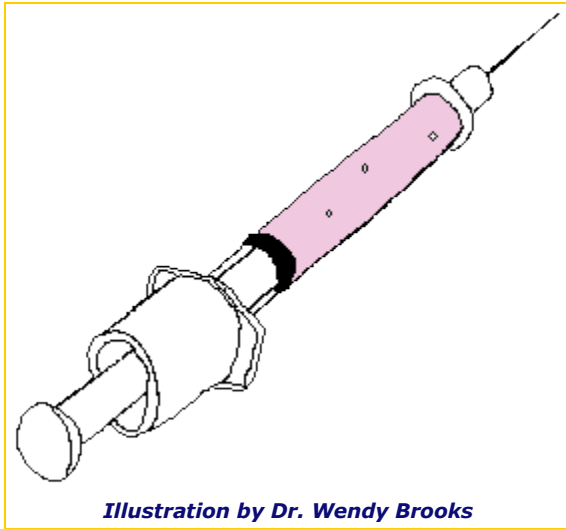
***Aggressive surgery yields a disease free interval of 1 year in about 50% of cats and 2 years in 32% of cats.***

***If lymph node involvement is already present at the time of surgery or if the tumor recurs after the first surgery, then 51-66% of cats will have a 5.5 month disease-free interval.***

If the tumor is in an obviously advanced state at the time of the first surgery, then a less aggressive surgery to palliate the infection may be more appropriate. This will at least make the cat more comfortable by losing the smelly, infected external tumor. Alternatively, radiation therapy can be used to temporarily "dry up" the stinky leaking gland, especially if the cancer poses too great an anesthetic risk for tumor removal.

## **Treatment: Chemotherapy**

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*Illustration by Dr. Wendy Brooks*

To maximize disease-free interval, surgery is followed by chemotherapy. The most common drugs used are [adriamycin](#) and [cyclophosphamide](#). This combination was tested in a group of cats who had either incomplete surgical removal of their tumor or obvious tumor spread to lymph nodes or beyond at the time of surgery. About 50% of cats showed at least some response though 21% actually achieved remission (i.e. no detectable tumor at least temporarily). In the 50% of cats that showed at least some response to therapy, median survival time increased to 150 to 180 days as opposed to 75 to 86 days in the 50% that did not respond. In studies where adriamycin was used alone, survival statistics were not improved over surgery alone - meaning the cancer still spread - but the disease-free interval was increased, meaning the patients felt good longer.

Treating mammary gland cancer is an area that not all veterinarians are comfortable with. Discuss with your veterinarian whether referral to a specialist would be best for you and your pet.

### **How Do Cats Die from this Disease?**

There are two problems that tend to lead to the cat's demise. One is simply the infected ulcerated external tumor. The primary tumor smells rotten and bleeds. Secondary tumors arise and also break through the skin. Cats are fastidious creatures and do not like having growths of this type on their bodies plus owners tend not to like rotten, bleeding flesh in their homes. Cats are commonly euthanized due to the progress of the external tumor.

The other problem is tumor spread to the chest. The lungs are invaded by tumor cells and ultimately the cat will not be able to breathe.

Cats with advanced lung involvement at the time the tumor is diagnosed have a median survival time of only one month.

Criteria for a euthanasia decision are largely personal but some guidelines have been established to assist in making this difficult decision. Please see our [euthanasia](#) page for more guidance on what to watch for.

*Information in this article was largely drawn from:*

*Wypij, J., Fan, T.M., de Lorimer L. Malignant mammary tumors: Biological behavior, prognostic factors, and therapeutic approach in cats. Veterinary Medicine June 2006, pp. 352-366, as well as Dr. Philip J. Bergman's presentation on Feline Mammary Tumors at the 2013 ABVP meeting.*

Download [a poster](#) of mammary gland cancer awareness for pets.

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