



## **CANINE MAMMARY GLAND TUMORS**

Tumors of the mammary gland are the most common tumors of female dogs. Mammary tumors are reported to occur in approximately 2 of 1000 female dogs. Approximately half of canine mammary tumors are malignant, meaning that they have the potential to spread to other parts of the body. The remaining mammary tumors are benign.

Most mammary tumors become apparent as lumps in the mammary gland area, typically in older dogs. Other conditions can result in enlarged or lumpy mammary glands, and a biopsy with microscopic evaluation of the tissue removed by a trained pathologist is needed to make a diagnosis of benign or malignant mammary tumors. Malignant mammary tumors also referred to as “mammary cancer,” can be sub-classified as various types of carcinomas, adenocarcinomas, malignant mixed tumors, or less commonly sarcomas.

### **STAGING**

When a malignant mammary tumor is diagnosed in a dog, it is appropriate to perform a series of tests to “stage” the cancer, which means simply to determine whether the tumor has metastasized (spread) and the extent of the spread. These tests include radiographs (x-rays) of the thorax and possibly ultrasonography of the abdomen. The most common sites of mammary cancer metastasis are the lymph nodes and lungs. These tests allow detection of tumor nodules in the lungs, lymph nodes, and other organs. It must be noted, however, that nodules smaller than a few millimeters (less than approximately ¼ inch) will not be detected by these tests. Therefore, microscopic tumor cells and very small cancer nodules cannot be detected or ruled out by these tests.

### **TREATMENT**

**Surgery:** Surgical removal of the tumor(s) is the treatment of choice for benign mammary tumors and for malignant mammary tumors that have not spread beyond the mammary tissue and adjacent lymph nodes. Most benign mammary tumors are curable by surgery. Approximately half of malignant mammary tumors are also cured by surgery. This is possible because some malignant mammary tumors in the dog do not spread very quickly and can be removed before they spread. Radical mastectomy has not been shown to be any more effective than more limited surgery. Tumors that are larger than 3 centimeters and tumors that are of higher grade (as classified by the pathologist) are more likely to recur (70% recurrence at 1 year) than smaller tumors and tumors of a lower histopathologic grade (30% recurrence at 1 year). If the dog is not spayed at a young age, spaying at the time of mass removal has recently shown to increase the survival time for some dogs with malignant tumors.

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After surgical removal of a malignant mammary tumor, your dog should be examined by your veterinarian periodically to determine whether the tumor has recurred either in the mammary area or at another location in the body. An example of a typical reexamination schedule would be rechecks at 1, 3, 6, 9, 12, 18, and 24 months after surgery. These rechecks include a complete physical examination and possibly radiographs.

**Chemotherapy:** An effective chemotherapy protocol for canine mammary cancer has not been defined. A percentage of dogs have had remission with drugs such as doxorubicin (Adriamycin) and cytoxan. Because surgery alone is successful in many cases, chemotherapy is usually reserved for tumors that cannot be removed surgically, tumors that have metastasized, and tumors that have a high probability of spreading (ie, those with invasion into the lymphatics and/or blood vessels). Radiation therapy has not been studied to any extent in dogs with mammary tumors.

### **PREVENTION**

It is important to note that mammary cancer can be prevented in the dog by early ovariohysterectomy (spaying). The risk of developing mammary tumors in dogs has been reported to be 0.05% for dogs spayed before the first heat cycle, 8% for dogs spayed after the first but before the second heat cycle, and 26% for dogs spayed after the second heat cycle. Therefore, dogs that are not going to be used for breeding purposes should undergo early ovariohysterectomy.

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