

## Canine Mammary Tumors

### WHAT IS A MAMMARY TUMOR?

Dogs have five pairs of mammary glands, starting with glands near the axillary (armpit) region, extending backwards to the glands located in the inguinal (groin) area. A set of five glands along either the left or right side of the body is called a mammary chain.

A mammary tumor is a tumor of the mammary tissue. They are common in un-spayed dogs and dogs spayed after their first heat cycle. Mammary tumors occur more frequently in breeds such as toy and miniature poodles, spaniels and German shepherds. Male dogs are rarely affected.

Mammary tumors vary in size, shape and consistency. They can be movable or attached to underlying tissue. Some dogs develop a single tumor in one gland while others develop multiple tumors in different glands or even within the same gland.

Mammary tumors are either malignant (cancerous) or benign (non-cancerous). The most common tumors are adenomas (benign), carcinomas (malignant) and adenocarcinomas (malignant). Dogs can have malignant and benign tumors at the same time or have a history of a benign tumor and then develop a malignant one (and vice versa.)

### WHAT ARE THE CLINICAL SIGNS?

Many dogs show no signs related to a mammary tumor. You may feel a lump while petting your dog or your groomer may notice a mass. Your veterinarian may also discover a mass during a routine exam.

In more advanced cases, tumors can be ulcerated or bleed. Dogs may lick at the affected gland(s). If the tumor spreads (metastasizes), dogs can show weight loss, poor appetite, vomiting, diarrhea and/or breathing difficulties.

Inflammatory mammary carcinoma is specific type of malignant mammary tumor. Dogs have severe swelling, redness and pain of the gland with the tumor. This can extend throughout the entire mammary chain on the affected side or can affect both mammary chains at the same time.

## **WHAT DIAGNOSTICS ARE PERFORMED?**

A complete physical exam to look for outward and inward signs of disease. In some cases, an aspirate of the affected gland can rule out other tumors that mimic a mammary mass. A diagnosis of a mammary tumor is confirmed with a biopsy, which is the most reliable way to distinguish a benign mass from a malignant one.

A complete blood count, serum chemistry panel and urinalysis are done to determine if there are effects of the cancer on body functions and to ensure the patient is healthy enough to handle future treatments.

Malignant mammary tumors can spread to lymph nodes found in the axillary and inguinal region. A small needle is used to take cell samples from these lymph nodes to look for spread. Chest x-rays and abdominal ultrasound look for spread to the lungs and internal organs or lymph nodes. In some cases, a CT scan or MRI are recommended. The results of these tests determine the treatment options and prognosis of your pet.

## **WHAT ARE THE TREATMENT OPTIONS?**

### **Surgery**

Wide surgical resection is recommended for malignant mammary masses. Benign tumors require less aggressive surgical margins. Surgery is the only treatment required for benign tumors and some malignant tumors. Dogs with large tumors, high-grade tumors, tumors that have already spread, and certain histological types are at higher risk for regrowth and spread following surgery. Multiple tumors can be removed at the same time. Each tumor should be submitted for biopsy because they can all be different.

Dogs spayed at the time, or within 2 years, of tumor removal lived longer than un-spayed dogs in one study.

### **Radiation Therapy**

Radiation therapy (RT) has not been investigated for the treatment of mammary tumors in dogs, despite playing a big role in the treatment of this disease in people. Possible uses include pre-operative irradiation of large tumors, post-operative irradiation of incompletely resected tumors, or palliative irradiation of inoperable tumors. Dogs with inflammatory mammary carcinoma may benefit from radiation therapy.

### **Chemotherapy**

The role of chemotherapy for dogs with malignant mammary tumors is not well-established. Chemotherapy is recommended for dogs with higher risk of metastasis or tumors that already metastasized.

### **Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)**

NSAIDs play a role in treating many different types of carcinomas. Dogs with mammary carcinoma can benefit from receiving an NSAID.

### **Prognosis**

The prognosis for dogs with benign tumors is excellent. About half of the dogs with malignant tumors also have an excellent prognosis with surgery alone. The remaining 50% of dogs with malignant tumors are at risk for spread of their tumor. This leads to illness and poor quality of life, with survival times usually less than one year. Dogs with inflammatory mammary carcinoma and mammary sarcomas have a poor prognosis, on the order of weeks to months. Early detection of tumors is key for long-term survival.

## WHAT ARE THE SIDE EFFECTS?

Side effects depend on treatment selected and the extent of disease and existing clinical signs. Surgery carries risk of anesthesia, though this is minimal. Other risks include bleeding and complications from healing or infection. Side effects of chemotherapy are infrequent and most commonly include temporary gastrointestinal upset such as vomiting or diarrhea or temporary lowered white blood cell counts. Decreased appetite and lethargy may also occur. Radiation therapy includes the use of anesthesia during treatments and side effects include gastrointestinal upset (vomiting, diarrhea), local skin/tissue irritation, and potential interference with surgical healing.

Your pet will be prescribed supportive medications for nausea and diarrhea for your use at home. It is best to be proactive with these medications as soon as signs are noted. Should you have any questions, your oncology team is available to assist your concerns.

## HOW DO I PREPARE?

We understand this is a difficult time and we are here to support you and your pet by providing the options and care necessary. Selecting a therapy is not binding and can be adjusted to you and your pet's needs. During treatment sessions, you will be provided with updates and any recommendations depending on your pet's response.

## NAVIGATING THROUGH MY OPTIONS:

Treatment	Indication	Treatment schedule	Approximate cost*
Surgery	Tumors amenable to removal. Surgery to remove the draining external lymph node is discussed	Varies according to location and extent of disease	\$3,000 - \$5,000
Chemotherapy: Carboplatin, Doxorubicin (alone or in combination)	High-risk tumors, tumors that metastasized before removal	IV treatment every 2-3 weeks for 6 treatments	\$350 - \$400 per treatment, additional expenses expected if cardiac evaluation necessary
Radiation Therapy: Definitive	Incompletely excised localized tumors	Daily treatments for 3-4 weeks	\$4,500 - \$6,000 May require CT scan
Radiation Therapy: Palliative	Inflammatory mammary carcinoma, non-surgical tumors	Varies	\$1,000 - \$3,000 May require CT scan
NSAIDs	Dogs with mammary carcinoma including inflammatory mammary carcinoma	Oral medication given at home, daily or twice daily	Varies with size of dog and type of NSAID prescribed. Generally < \$100 per month

\* Cost estimates are based on individual appointments and overall cost is dependent on patient response and does not include additional supportive care or hospitalization, if required.

## **GETTING STARTED**

Once you have determined the best therapeutic option for your pet, you will work with our oncology team to develop an appointment plan.

Scheduling: Patients undergoing treatments must have a scheduled appointment prior to arrival.

- > Schedule your appointments at reception upon check out.
- > Drop offs are requested between 7:30-8:30 am.
- > Pick ups are requested by 4:30 pm.
- > No discharges are done from 3:30-4:30 pm as our oncology team is in rounds.