



## CANINE THYROID TUMORS

### What are thyroid tumors?

Thyroid tumors arise from the thyroid tissue located in the neck. Occasionally, “ectopic” thyroid tissue is present in the chest cavity, ventral neck, or under the tongue, which can also give rise to tumors. The majority (80-90%) of thyroid tumors are malignant (carcinomas). The majority of dogs with thyroid tumors have normal thyroid function. In a low percentage of dogs (10%), the thyroid tumor will result in hyperfunctioning of the thyroid gland. Decrease thyroid gland production can also occur due to tumor destruction of normal thyroid tissue. Thyroid carcinomas have a moderate potential for metastases, with approximately 33% of patients having evidence of metastases at the time of diagnosis.

### How are thyroid tumors diagnosed?

Most dogs will present for a mass or swelling in the neck. Tumors may be discrete and freely moveable or may cause a large diffuse swelling of the neck. Diagnosis may be made with either a fine needle aspirate or incisional biopsy. Because these tumors have a large blood supply, blood contamination may prevent identification of cancer cells in samples with limited tissue or fine needle aspiration. For small moveable tumors, removal with biopsy will yield a definitive diagnosis. Ultrasound evaluation is often helpful with large masses to determine the degree of invasion and possibility of surgical removal. Once a thyroid tumor has been diagnosed, chest X-rays are recommended to evaluate for possible metastases (spread) to the lungs. Routine blood work, including a thyroid level is also recommended to evaluate your pet's overall health, including thyroid function.

### What is the treatment?

#### Surgery

Treatment recommendations for thyroid tumors are dictated by the size of the mass, degree of invasion, and whether the tumor is functional. For small moveable tumors, surgical removal is recommended. If the tumor is contained within the capsule of the gland, is completely removed, and low grade, no further therapy may be needed. For tumors where surgery is unable to remove all of the tissue or there is evidence of invasion into blood and lymphatic vessels, additional therapy may be warranted.

#### Radiation therapy

Definitive (curative intent)-Definitive course radiation therapy is recommended for patients whose tumors have been “debulked” with surgery, but surgery fails to remove all microscopic tumor tissue. Radiation therapy is administered in order to kill any remaining tumor cells at the surgical site. Chemotherapy is often recommended in combination with radiation to try and prevent metastatic disease. Radiation therapy is administered Monday through Friday daily for 3-4 weeks. General anesthesia is necessary for

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treatment to keep the pet still. Please refer to the radiation handout for further information. Palliative-Palliative radiation therapy is recommended for patients with large diffuse tumors that cannot be removed with surgery. Radiation is administered once weekly for 4 consecutive weeks. Chemotherapy is recommended in combination with radiation to address possible metastatic disease and to act as a “radiation sensitizer” to improve the effectiveness of the radiation.

## **Chemotherapy**

Chemotherapy is recommended for patients whose tumors exhibit characteristics of aggressive behavior such as invasion into blood or lymphatic vessels. Chemotherapy may be used as an adjuvant to surgical removal of the tumor. Chemotherapy is also used in combination with radiation therapy for patients whose tumors have been removed or for patients undergoing palliative radiation for large unresectable tumors. Chemotherapy without surgery or radiation has not been very effective in controlling thyroid carcinomas. Little information has been published regarding the effectiveness of chemotherapy following surgery for thyroid carcinomas. Cisplatin, carboplatin and doxorubicin chemotherapies appear to have some efficacy in thyroid carcinomas. Chemotherapy is administered intravenously every 3 weeks for 4-5 treatments. We will discuss with you which chemotherapy is best for your pet.

## **What is the prognosis?**

The prognosis for benign thyroid tumors (adenomas) is good, as most benign tumors can be cured with surgery. The prognosis for thyroid carcinomas is dependent on size of the tumor, grade (differentiation), degree of local invasion, and presence of lymphatic and/or vascular invasion. For small moveable tumors, surgery alone may yield survival times of 2-3 years or longer.

For tumors that cannot be completely removed with surgery or tumors that have evidence of lymphatic and/or vascular invasion, additional therapy (radiation and/or chemotherapy) is recommended. Ultimately, most patients with thyroid carcinomas will develop metastatic disease; however with combination therapy, many patients will enjoy cancer-free good quality of life for 1-2 years.

For large, invasive tumors that cannot be removed with surgery, combination chemotherapy and radiation therapy will often result in decrease of the tumor for an average of 2 years.

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