

Parathyroid Tumors

These notes are provided to help you understand the diagnosis or possible diagnosis of cancer in your pet. For general information on cancer in pets ask for our handout "What is Cancer". Your veterinarian may suggest certain tests to help confirm or eliminate diagnosis, and to help assess treatment options and likely outcomes. Because individual situations and responses vary, and because cancers often behave unpredictably, science can only give us a guide. However, information and understanding for tumors in animals is improving all the time.

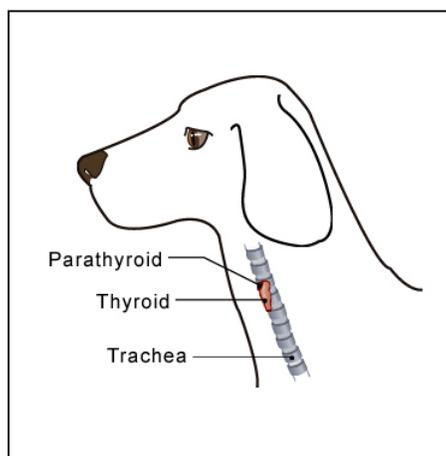
We understand that this can be a very worrying time. We apologize for the need to use some technical language. If you have any questions please do not hesitate to ask us.

What are the parathyroid glands?

The four parathyroid glands (two on each side) are attached to or within the thyroid gland situated in the neck. They are endocrine glands, that is they produce specialized chemicals called "hormones". Hormones regulate and integrate many activities to maintain internal stability of the body. The hormones pass directly into the blood to affect target cells elsewhere. The parathyroid glands produce parathyroid hormone that, with Vitamin D and with specific cells (C-cells) in the thyroid gland, regulates calcium concentration in the blood. This is essential for normal functioning of muscles (including the heart) and kidneys and formation and maintenance of healthy bones and teeth.

What are the parathyroid tumors?

Parathyroid tumors in dogs include non-cancerous cysts, formed before birth. Enlarged parathyroid glands due to cell overgrowth (hyperplasia) may be secondary to chronic kidney disease and unbalanced nutrition. Most parathyroid cancers are benign (adenomas) and slow growing. Some are malignant (spreading). Both benign and malignant parathyroid cancers produce hormones. The hormones produce signs of overactive parathyroids ("hyperparathyroidism") with clinical signs such as weakening of bones with fractures and lameness. Sometimes there is also loosening and loss of teeth.



What do we know about the cause?

The reason why a particular pet may develop this, or any cancer, is not straightforward. Cancer is often seemingly the culmination of a series of circumstances that come together for the unfortunate individual.

Parathyroid cysts in dogs are the result of abnormal development before birth. Hyperplastic parathyroid glands may be secondary to stimulation by low blood calcium in chronic kidney disease and unbalanced nutrition. We know little about the causes of the true cancers of these glands but they could also be due to chronic overstimulation.

Why has my pet developed this cancer?

Some animals have a greater tendency (genetic susceptibility) to cancer. Some breeds have far more cancers than others, often of specific types. The more divisions a cell undergoes, the more probable is a mutation so cancer is more common in older animals.

Are these common tumors?

Parathyroid cysts are common in dogs. Hyperplasia and tumors are uncommon in dogs and cats.

How will these cancers affect my pet?

Parathyroid cysts produce no clinical signs. Hyperplasia and functional tumors often have minimal clinical effect and the only significant finding is increased blood calcium. In severe cases they may induce increased thirst and increased urination with incontinence, digestive upsets, behavioral changes, weakness and fainting, weakening of bones, fractures and lameness. There may also be loosening and loss of teeth. These clinical signs may also be seen in secondary hyperparathyroidism due to kidney disease and in hypercalcemia associated with some other cancers.

How are these cancers diagnosed?

Functional parathyroid tumors may be indicated by blood tests for calcium and parathyroid hormone. Ultrasound examination may detect larger tumors.



Ultrasound

Definitive diagnosis of tumor type relies upon microscopic examination. Various degrees of surgical sampling of parathyroid lumps are possible but the larger the sample, the more accurate the diagnosis. Cytology, the microscopic examination of small samples of cells, is not diagnostic for these tumors. Accurate diagnosis, prediction of behavior (prognosis) and a microscopic assessment of whether the tumor has been fully removed rely on microscopic examination of tissue (histopathology). This is done at a specialized laboratory by a veterinary pathologist. Only examination of the whole lump will indicate whether the cancer has been fully removed.

The histopathology report typically includes words that indicate whether a tumor is 'benign' (non-spreading, local growth) or 'malignant' (capable of spreading to other body sites). These, together with the origin or type of tumor, the grade (degree of resemblance to normal cells or 'differentiation') and stage (how large it is and extent of spread) indicate how the cancer is likely to behave. The veterinary pathologist usually adds a prognosis (what will probably happen). This may include information on local recurrence or metastasis (distant spread).

What types of treatment are available?

Parathyroid adenomas are usually removed surgically. Parathyroid hormone is only active for twenty minutes in the blood so surgical removal of the tumor may result in a rapid fall in blood calcium. Short term treatment to maintain the blood calcium level may be needed.

Can these cancers disappear without treatment?

It is not common, but the loss of blood supply to a cancer can make the cells die. Unfortunately, the disappearance of the cancer is rarely complete.

How can I nurse my pet?

After any surgery, you need to prevent your pet from interfering with the operation site and keep it clean. Any loss of stitches or significant swelling or bleeding should be reported to your veterinarian. You may be asked to check for signs that would indicate low blood calcium (which occurs in approximately one third of dogs) and to give calcium and Vitamin D supplements. If you require additional advice on post-surgical care, please ask.



How will I know how the cancer will behave?

Histopathology will give your veterinarian the tumor diagnosis that helps to indicate how it is likely to behave. The veterinary pathologist usually adds a prognosis that describes the probability of local recurrence or metastasis (distant spread).

When will I know if the cancer is permanently cured?

‘Cured’ has to be a guarded term in dealing with any cancer.

The prognosis for parathyroid tumors depends on the severity of secondary changes due to the prolonged raised blood calcium before surgery and being able to prevent severe, postoperative low blood calcium. If there is evidence of severe kidney disease, lifelong medical management will be needed and survival may be short. Malignant tumors may spread to the local lymph nodes and occasionally the lung but this is rare.

Cats that undergo surgery for parathyroid tumors usually survive longer than a year.

Are there any risks to my family or other pets?

No, these are not infectious tumors and are not transmitted from pet to pet or from pets to people.

*This client information sheet is based on material written by Joan Rest, BVSc, PhD, MRCPath, MRCVS.
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