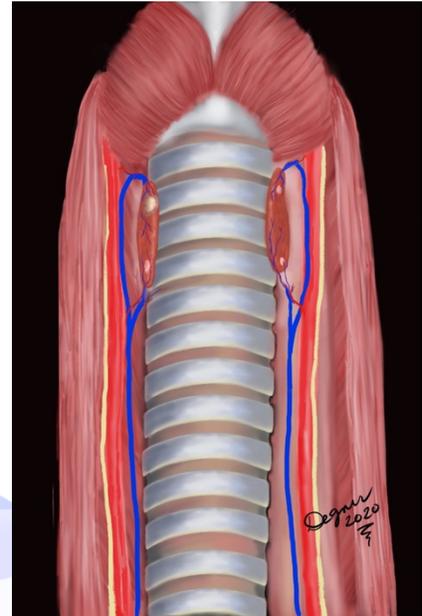


# Parathyroid Tumors

## Anatomy

Both dogs and cats have a total of four parathyroid glands: two on each side of the neck. The parathyroid glands are attached to the surface or are imbedded within the thyroid glands. One parathyroid gland is located on the top pole (end) of the thyroid and the other is located on the bottom pole. Normally these glands are about 2 to 3 mm in diameter and are tan colored. The glands produce parathyroid hormone, which causes the calcium level in the blood to increase. Because many electrical systems of the body's organs such as the kidneys, bowels, muscle, and brain are totally dependant on calcium, a change in the normal level of this important electrolyte in the blood can be very harmful to the pet. In addition, high calcium levels can cause stones to form in the urine.



## Parathyroid tumors

Parathyroid tumors are uncommon in dogs and much less common in cats. These tumors usually are benign, meaning that they usually do not metastasize or invade into nearby tissues. They usually are very small tumors that produce excessive amount of parathyroid hormone. Multiple parathyroid tumors are found in about 10% of affected patients. Breeds that most commonly develop parathyroid tumors include Keeshonds, Labrador retrievers, and German shepherds.

## Signs and diagnosis

Signs of hyperparathyroidism develop as a result of abnormally high calcium levels in the blood. Early signs of this condition include increased thirst and urination. Subsequently, lethargy, weakness, and poor appetite may be noted. Signs such as straining to urinate, passage of blood-tinged urine or the inability to pass urine may be caused by calcium-based urinary stones. Cats may have diarrhea and vomiting as additional signs. Because the relatively small parathyroid tumors are located deeply within the neck in dogs, they usually cannot be palpated. In cats, however, these same tumors can be palpated along the side of the neck. A complete blood count, chemistry profile and urine testing are completed in the initial stages of the evaluation. Blood tests showing an elevation of the calcium level may be due to a parathyroid tumor, however, there are many other diseases that may elevate the calcium in the blood. To confirm a diagnosis of a functioning parathyroid tumor, a parathyroid hormone level is measured from a blood sample. Ultrasound of the neck frequently can identify these small tumors. In addition, ultrasound is used to check the bladder and kidneys for stones. Chest x-rays are used to identify visible spread of the cancer; however, microscopic spread of the tumor to other organs cannot be detected with this test. The blood work will also be used to check for damage to internal organs that may have occurred from the high blood calcium levels.

## The day of surgery

Our anesthesia and surgical team will prescribe a pain management program, both during and after surgery that will keep your companion comfortable. This will include a combination of general anesthesia, injectable analgesics, and oral analgesics.

## Treatment

Initial evaluation of the patient will determine if the high calcium levels have damaged the kidneys, heart, or nervous system. If this is the case, treatment with medication and intravenous fluids may be needed prior to removal of the parathyroid tumor. If your companion's blood calcium level is greater than 14 mg/dl prior to surgery, there is a great risk that the calcium level will fall well below the normal range and cause seizures and other signs. We therefore recommend prophylactic treatment with a medication, calcitriol, starting the evening after surgery.

Surgery is performed by making an incision is made on the under side of the neck. The parathyroid tumor is removed with a relatively simple procedure.

## Aftercare and results

After surgery, you can continue to give your pet a prescribed pain reliever to minimize discomfort. It's also extremely important to limit your dog's activity for 3 weeks after surgery.

About 50% of dogs that have a parathyroid tumor removed will develop a low calcium level in the blood. Dogs that have a high calcium level (>14 mg/dl) prior to surgery are much more prone to developing this problem. Left untreated, a low calcium level could be fatal in some patients. Warning signs of this problem may include rubbing the face, dilation of the pupils, twitching muscles, loss of appetite, weakness and seizures. If any of these signs are seen at home, please call us as soon as possible and bring your companion in for an evaluation. If blood tests show that the calcium level is low in your pet's blood, medication will be prescribed for a few weeks until the remaining parathyroid glands start functioning again.

If your companion is recovering well following surgery and no complications develop, the surgeon will monitor the healing process with one follow-up exam scheduled two weeks after the surgery.

The overall prognosis for your pet should be favorable following treatment of a parathyroid tumor, as this disease can be cured. Yet left untreated, it can cause irreversible damage to internal organs.

## Assessment and recommendations

Patient: \_\_\_\_\_ Date: \_\_\_\_\_

### Treatment

- Surgery is recommended
- Surgery is not recommended

### The following has been prescribed

- No medications or special diet are necessary at this time.
- Calcitriol (Rocitrol); start this medication on \_\_\_\_\_
- Other medication: \_\_\_\_\_

### Preparation for surgery

- Start fasting your companion at midnight before the surgery; water should not be withheld
- Give Pepcid AC 10 mg tablets: \_\_\_\_\_ tablets with water (use a syringe if needed) at 6 AM on the day of surgery