



**ANIMAL SURGICAL CLINIC**  
of SEATTLE

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## Primary Hyperparathyroidism

The parathyroid glands are 4 glands that reside within the thyroid glands: there are two parathyroid glands attached to each thyroid gland. The thyroid/parathyroid glands lie on either side of the trachea (wind pipe) about midway down the neck.

**The job of the parathyroid glands is to regulate calcium in the body. They secrete a hormone called parathyroid hormone (PTH), and this hormone draws calcium out of the bone where it is stored, as well as acting on the kidney and intestine to increase blood calcium.** This is a normal process in response to fluctuations in blood calcium levels. The calcium in the blood is regulated by PTH (increases blood calcium) and calcitonin (a hormone secreted by the thyroid gland to decrease calcium) in order to keep it within a normal range. When the calcium gets too high or too low, symptoms arise.

The **most common symptoms of high calcium are increased thirst and urination.** Other signs include: lethargy, weakness, diarrhea, inappetance, weight loss, tremors or stiffness. In about 50% of dogs with high calcium, urinary stones +/- urinary tract infection is present.

Tumors (enlargement) of the parathyroid gland are typically not malignant, but they do over-secrete PTH. In 90% of cases only one of the four glands is enlarged. By one gland enlarging and over-secreting PTH, the three other glands typically shrink and temporarily stop functioning.

**Parathyroid tumors are suspected based on consistent blood work that shows elevated or normal PTH in the face of elevated calcium** (the normal feedback mechanism would mean that when calcium is high, PTH is not needed and therefore is low). The next step after blood work is to have an **ultrasound of the neck to determine which of the 4 parathyroid glands is affected.** In rare cases the abnormal parathyroid tissue is “ectopic” or outside of the normal anatomical location. These cases pose more of a diagnostic and surgical challenge for finding the abnormal tissue. These cases are not common.

**Surgical removal of the enlarged parathyroid gland is the treatment of choice for primary hyperparathyroidism.** Other techniques such as injecting alcohol into the glands have been described but are not commonly performed.

Surgery is performed under general anesthesia. The dog is placed on their back and the neck is shaved. An incision is made down the midline of the neck and the thyroid gland/parathyroid gland of concern is exposed (the opposite side glands are also inspected).

The parathyroid gland may be dissected from the thyroid tissue in some cases, and in others the entire thyroid and parathyroid complex (on one side) is removed. The choice in technique depends on the anatomy of the parathyroid tissue—one gland on each side is buried deep within the thyroid and can't be dissected out while the other gland just sits on top of the parathyroid and is relatively easily dissected free. The type of removal is up to the surgeon and does not affect the prognosis.

**As soon as the enlarged parathyroid is removed, the blood calcium levels will begin to drop—this occurs within minutes.** This means that monitoring blood calcium levels after surgery and supplementing calcium is important until the remaining parathyroid glands resume functioning—this takes days to weeks.

**Treatment of hyperparathyroidism is a team effort between the surgeons and internal medicine specialists.** As soon as surgery is completed, the patient will be taken care of by Dr. Donovan, our internal medicine specialist. She will be able to monitor the calcium every few hours and make adjustments to supplements over the days and weeks following surgery. Typically dogs stay in the hospital 1-2 nights after surgery, but usually additional blood calcium checks are needed every few days until it has been established that the levels are normal.

Risks of surgery are considered low (far outweighed by the benefits of the procedure). All surgeries carry the risks of anesthesia, bleeding, infection, nerve damage and wound complications. The biggest concern following parathyroid removal is low calcium levels which can lead to facial rubbing, muscle twitching and seizures—this is why we are very proactive with working with our internal medicine service to monitor closely and supplement with calcium as appropriate.

Recovery from surgery is about 2 weeks. During this time patients are not allowed to run, jump, play with other dogs, or go to day care. They must wear a harness rather than a collar and should go for short leash walks only. We will provide detailed and patient specific instructions at the time the dog goes home after surgery. We will prescribe pain medication for 1-2 weeks as needed. Most dogs are feeling like nothing happened within a few days after surgery (before their 2 week healing period is complete!). It is crucial that they be kept quiet and prevent over activity in order to avoid wound complications.

When dogs also have urinary bladder stones, surgery to remove the stones (cystotomy) is also indicated and can be performed in the same anesthesia as the parathyroid gland removal.