

Thyroidectomy

Thyroidectomy is the surgical removal of one or both lobes of the thyroid gland. This surgery is performed on cats with hyperthyroidism.

The thyroid gland is divided into two lobes, each about ½ inch long and shaped like a narrow bean. They are located on each side of the trachea (windpipe). When they are normal, they are high in the neck at the level of the larynx. As they enlarge due to hyperthyroidism, they move down the neck toward the chest.

Attached to each thyroid lobe are two parathyroid glands, one within the thyroid lobe (the internal parathyroid gland) and one on the surface of the thyroid lobe (the external parathyroid gland). They are about two times the size of the head of a pin.

Possible Complications

Surgery always carries a risk of anesthetic complications. Since almost all hyperthyroid cats are over 10 years of age, this is always a special concern. However, before surgery is performed, tests are performed to detect high-risk patients. If the pre-operative tests do not find evidence of pre-existing problems, surgery is generally very safe since we have anesthetic agents that are improved over those of just a few years ago.

Before surgery is performed, your cat will be placed on a drug (methimazole) to control hyperthyroidism. This drug will reverse the effects of the disease on the heart and other vital organs that increase the risks of surgery.

The most common and serious post-op complication is loss of parathyroid function. Since the parathyroid gland is so small, its artery is also very tiny. If this vessel is not preserved during surgery, the parathyroid gland will quit functioning for several days or permanently. In some cases, parathyroid function will be disrupted just by the handling involved in surgery. In either case, if both parathyroid glands are not functioning the result will be a dramatic fall in blood calcium levels (controlled by the parathyroid gland), seizures, and, in some cases, death. If calcium level falls, calcium and vitamin D supplements may need to be given for as short as a few days or as long as months. Symptoms of low calcium levels include muscle twitches (most obvious on the muscles of the face), weakness and poor appetite.

There are several ways to perform this surgery. Some are better at protecting parathyroid function than others. However, the skill and experience of the surgeon is an important factor, as tedious dissection is needed. One of the surgical options is to perform two different surgeries if both sides of the thyroid need to be operated. The second one is performed about 1 month after the first. During that month, the parathyroid on the first side has time to recover from the first operation and be fully functional. If the thyroid disease is only on one side, only one surgery is needed and there is almost no risk of parathyroid failure.

Most cats are hospitalized for 2 nights following surgery. This short period of hospitalization is well tolerated by almost all cats.

Aftercare

Your cat needs to be kept indoors for at least 3 days and usually until the time of skin suture removal. Appetite and activity level should be normal within 24 hours of returning home. If that is not the case, please contact us.

Kidney Diseases and Hyperthyroidism

The kidneys are often the organs that wear out first in many old cats. Since hyperthyroidism usually occurs in older cats, there is always concern about kidney function in these patients.

When hyperthyroidism occurs, excess thyroid hormone affects many body functions, including the heart. This means that the heart is beating faster with increased circulation to many organs, including the kidneys. If the cat has kidneys with marginal function, the increased blood flow through caused by hyperthyroidism then makes them function better. In this situation, borderline kidney disease is masked and the kidney function tests will usually be normal.

When hyperthyroidism is treated, either with surgery, radiation therapy, or methimazole, the heart rate falls to normal, blood flow through the kidneys falls to normal, and borderline kidney disease becomes apparent and possibly life threatening. Therefore, as the thyroid hormones decline due to treatment of hyperthyroidism, it is important to monitor kidney function. Follow-up tests after treatment for hyperthyroidism include thyroid hormone (T4), kidney tests (BUN, creatinine, and/or phosphorus), calcium if surgery has been done, and any other tests indicated for the particular patient.

Prior to permanent treatment of the hyperthyroid condition by surgery or radioactive iodine, most cats are treated with a trial of methimazole to make sure the kidneys can tolerate the normal thyroid state. If kidney values increase as thyroid levels decrease in response to medication, surgery is not performed. Treating these cats with thyroidectomy or radioactive iodine could result in kidney failure. If kidney disease is found prior to surgery or radioactive iodine treatment, the best approach is often to try and find a compromise between kidney disease and thyroid disease. By trial and error, we find a dose of methimazole that controls most of the signs of hyperthyroidism but does not send the cat into kidney failure.

Thyroid Supplementation Following Surgery

In most cases, it is not necessary to supplement the cat with thyroid medication after both thyroid lobes are removed. There are clusters of thyroid cells scattered throughout the neck region. When the thyroid lobes are removed, these cells are stimulated to increase in number and to function to produce thyroid hormone. This occurs about 95% of the time. If thyroid replacement hormone is given, it stops this from happening. Therefore, we generally do not use thyroid hormones following surgery. The thyroid hormone value (T4) should be checked about 3 months after surgery. If it is normal, no replacement hormone is needed. If it is not normal and there are symptoms of low thyroid function, hormonal supplementation is started and continued for the rest of the cat's life.

If surgery is performed to remove only one thyroid lobe, no replacement hormone is needed because the remaining lobe will easily meet the body's needs.

Recurrence of Hyperthyroidism

If a cat lives for a number of years after thyroidectomy, it is possible for the disease to recur. If both thyroid glands are removed, residual tumor cells left behind can grow until enough hyperthyroid tissues is present in the body to cause hyperthyroidism again. If only one thyroid gland is removed, it is also possible the other to become abnormal later. If that occurs, surgery is performed on that lobe at that time.

Follow-up Testing

Because of the possibility of recurrence, your cat should have a blood test (T4) for hyperthyroidism every 6-12 months following surgery. However, if any of the signs of hyperthyroidism occur, especially weight loss, the blood test should be performed immediately.

Surgery vs. Other Forms of Treatment

The two treatment choices other than thyroidectomy for hyperthyroidism include long-term medication (methimazole) and radiation therapy (radioactive iodine).

If methimazole is used, the disease is not cured; therefore, treatment requires giving a tablet usually 2 times per day for the rest of the cat's life. For some owners and cats this is not a problem. For others, it is a major problem. If a cat cannot be given medications by mouth easily, it is possible for the pharmacist to formulate a transdermal ointment to be put on the ear, so the medication can be absorbed through the skin and into the bloodstream. Since methimazole does not cure the disease, the thyroid continues to enlarge, producing increasing amounts of thyroid hormone. Therefore, the cat's T4 level must be checked every 6-12 months and the dose adjusted accordingly. About 15-20% of cats have reactions to methimazole. The most common is loss of appetite and vomiting; some cats have fatal liver toxicity. Other cats can have itching and swelling of the face, or decreased blood counts. These reactions may occur immediately and most often occur within the first several weeks of treatment; however, in some cats they do not occur until the cat has been on the drug for 6 months or more.

If radiation therapy is chosen, the cat must be transported to a veterinary facility licensed to perform this procedure. Although this form of treatment has some advantages to surgery, its main disadvantage (in addition to inconvenience) is the required hospitalization following treatment. Your cat must stay until it is no longer radioactive, generally 7-14 days. The cost for radiation therapy is often more than two surgeries and considerably more than one surgery.

References:

Wendy Blount, DVM - *PracticalVetMed*
Wellness Handouts