

ANIMAL EMERGENCY CENTER

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Exploratory Laparotomy in Ferrets

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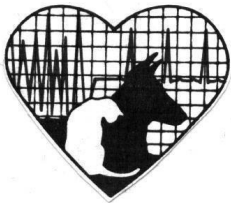
Ferrets are susceptible to a variety of diseases that can be diagnosed and treated with surgery of the abdominal cavity. Three of the most common conditions are foreign body obstruction, adrenal gland disease, and pancreatic endocrine neoplasia (insulinoma). Ferrets less than one year of age are notorious for eating items that cannot pass through the digestive tract. After three years of age a ferret reaches "geriatric" status, and neoplastic (cancerous) diseases are common. Abdominal surgery is an essential, though invasive, element of managing these and many other diseases in ferrets.

Before the veterinarian considers surgery, he or she uses many tests in an attempt to reach a diagnosis. A complete blood count (CBC), serum biochemical profile, fecal examination, urinalysis, radiographs (X-rays), and ultrasound can be very helpful in finding the cause of illness. But when these tests do not provide a diagnosis, surgery is often required for further examination, biopsies, and treatment. Preoperative tests are important to identify any existing condition that could make surgery more risky.

Because young ferrets are so inquisitive and like to chew on things, it is common for them to swallow an object that cannot pass through their gastrointestinal tract. Some examples include soft rubber, sponge, and carpet. Trichobezoars (hairballs) and indigestible food items like carrots can cause obstruction in older ferrets. Partial obstruction could lead to a chronic wasting syndrome where the ferret still eats and passes stool. More commonly they become lethargic, lose their appetite, paw at their face, and salivate. They may be very weak, and sometimes they vomit. The veterinarian might be able to palpate (feel) the firm lump inside the intestines, but he or she usually uses radiographs (X-rays) to support the diagnosis. Contrast studies, like an "upper GI," with barium are also useful.

If the patient is too debilitated for surgery, fluids and medications are required to help strengthen them. When ready, anesthesia is induced with injectable medication and gas, and the trachea is intubated. After the ferret's abdomen is shaved and cleaned for sterile surgery, an incision is made in the abdominal skin and body wall, and the abdominal cavity is explored. Once the foreign body is identified, an incision is made in the stomach and/or intestine, the object is removed, and the incision is closed with sutures. The other organs are also examined, and biopsies of abnormal tissue are collected. It is not unusual for a ferret to be suffering from several diseases at once. Closure of the abdomen calls for absorbable sutures in the body wall, and sometimes sutures in the skin that must be removed about 10 days later. Most ferrets do very well after the foreign body is removed and can go home the next day. Sometimes there is bruising under the skin around the surgery site that resolves within a few days postoperatively.

Adrenal gland disease develops in at least one-third of all adult ferrets. The average age is 3.5 years, and almost all these patients have been spayed or castrated. Initially, ferrets with adrenal gland disease lose hair on their back. It might re-grow, only to fall out again the next spring. This cycle continues until baldness remains year-round. Females often have an enlarged vulva. The most serious aspects of adrenal gland disease are estrogen toxicity in females and prostate enlargement in males. Because the tumors secrete hormones, blood levels can be measured to help confirm the diagnosis. Radiographs (X-rays) and ultrasound are also helpful in obtaining a diagnosis before surgery, but sometimes the tests are inconclusive, and surgery is still necessary to make the diagnosis.



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The exploratory surgery is similar to that for foreign body obstruction. After examination of the organs and biopsy of any abnormal tissue, the adrenal glands are checked. Disease can be present in the left, right, or both. Removal of the left adrenal gland is usually straightforward and uncomplicated. But because the right adrenal gland is attached to the vena cava (the main vein collecting blood from the entire back half of the body), removal can be risky. Sometimes, the gland can be partially removed without complications, but a tear in the vena cava will allow life-threatening hemorrhage to occur. If both glands must be removed, some hormone replacement after surgery might be needed. Because the right adrenal gland cannot be fully removed without risk, tumor re-growth is possible and surgery might need to be repeated later. After adrenalectomy, the vulva usually returns to normal in a few days, but hair re-growth can take up to six months. Sutures are removed in about 10 days. Again, bruising can occur around the surgery site and will resolve within a few days.

Pancreatic endocrine tumors, also called insulinomas, are also very common. Diagnosis is based on blood testing for glucose and/or insulin after a 4-6 hour fast. Other tests are also important to help identify concurrent diseases. Ferrets with these tumors usually have intermittent episodes of weakness, with a glassy eyed appearance and increased salivation. They sometimes paw at the mouth or lose control of their back legs. When seizures or profound weakness occur, corn syrup or honey can be rubbed on the gums and fed to increase blood glucose levels. Pancreatic endocrine tumors are often called insulinomas because they usually secrete excessive amounts of insulin into the bloodstream. This will induce hypoglycemia (low blood sugar). Frequent feeding of a high quality, meat based kitten or ferret food along with medication might work to control the hypoglycemia, but surgery is often needed for effective control. Medical treatment alone is usually effective for less than 1.5 years. Tumor removal surgery is recommended for patients under six years of age, or for those with other diseases (such as adrenal gland disease).

The exploratory surgery is as described above. All of the organs are examined, and any abnormalities will be addressed. Depending on the location and number of tumors, the pancreas might be partially removed. Intravenous fluids and glucose must be provided during surgery. Because pancreatic endocrine tumors are highly malignant, biopsy of the liver, spleen, and lymph nodes might be performed. If the tumor has spread to other organs, surgery will prolong the patient's life, but will not fully cure the disease. After surgery, ferrets stay in the hospital until they are eating well. Blood testing is important at the time of suture removal (about 10 days) and every three months thereafter. Many of these patients will have a recurrence of hypoglycemia, and may even need surgery again.

So, exploratory laparotomy is an important part of diagnosis and treatment of several common conditions of ferrets. Other tests must be performed before surgery, but often the surgery itself provides both diagnosis and treatment. Fortunately most ferrets tolerate surgery well, but complications can arise. Surgery is an aggressive and invasive part of maintaining the quality of life for many patients, but preoperative treatments and diagnostic testing help to reduce the risks. Always keep in mind that an absolute cure may not be possible even with the best medicine and surgery available.