MINIMALLY INVASIVE SURGERY

Endoscopy provides a way to directly examine the internal surfaces of many tissues and organs without surgery, and samples can be obtained for biopsy and culture. In some cases endoscopy can also be used to provide treatment (especially removal of a foreign body). No skin incision is required for endoscopy. Most endoscopic procedures require general anesthesia.

Laparoscopy refers to the use of an endoscope to look into the abdominal cavity through small incisions in the body wall. The abdominal cavity is distended with gas (typically carbon dioxide) throughout the procedure to improve visualization. Small "portals" are placed through skin incisions to allow access by the endoscope and/or instruments, and have a one-way valve to prevent the gas from escaping. The external surfaces of many structures and organs can be directly examined. Samples can be obtained for biopsy and culture, and some surgical procedures can be performed laparoscopically without the need for a large incision. The gas is removed from the abdomen at the conclusion of the procedure, and each incision is closed with sutures.

Thoracoscopy is the newest of the minimally-invasive techniques. The external surfaces of the lungs, heart, lymph nodes and airways can be directly examined by making small incisions between the ribs. Samples can be obtained for biopsy and culture. Some surgical procedures can be performed thoracoscopically without the need for a large incision or painful spreading of the ribs.

The following procedures are commonly performed by using one of these minimally-invasive methods:

Bladder Stone Removal

Bladder stones can cause bloody or frequent urination, predispose an animal to a urinary tract infection (UTI), or may be clinically "silent." They also have the potential to obstruct your pet's ability to urinate, a life-threatening emergency. Although some bladder stones can be dissolved by feeding special diets, most require surgical removal for treatment. In many pets, bladder stones can be removed using a minimally-invasive laparoscopic approach.

Thoracoscopic Pericardectomy

Pericardial effusion is fluid that builds up within the tissue sac that surrounds the heart. Left untreated, it will progress to life-threatening heart failure. Pericardectomy is partial removal of the pericardium (sac) to allow fluid to drain into the chest, where it can be absorbed by the body. Dogs that have open chest surgery for this procedure are hospitalized for 2-3 days with chest tubes and require multiple types of pain medications. Plus, they must be kept quiet for two weeks to allow healing. However, after thoracoscopic pericardectomy, many dogs go home the following day and post-op exercise restriction is not required.

Prophylactic Gastropexy

Gastric dilatation-volvulus (GDV), or "bloat," is a life-threatening condition of large- and giant-breed dogs. The stomach dilates with air, then twists, cutting off its own blood supply and releasing toxins into the bloodstream. Emergency surgical intervention is required for survival, and intensive post-op treatment is needed. Attaching the stomach to the side of the body within the abdomen (gastropexy) prevents the stomach from twisting into the abnormal position of GDV. A gastropexy requiring only two small incisions can be performed in any adult large-breed dog to prevent GDV at a later date.

Minimally-invasive procedures usually result in less trauma and shorter hospital stays.

Laparoscopic abdominal or full-thickness GI biopsies

Laparoscopy allows many pets to avoid the pain of a traditional surgery when the goal is diagnosis rather than treatment. Laparoscopy allows a superior, close-up view of the internal organs in the abdomen. Biopsy samples can be taken from the most affected area of specific organs, and the sample is larger than with ultrasound-guided techniques or endoscopy. Full-thickness samples of the intestinal tract can be obtained without the need for a full, "open" surgical procedure. In some cases laparoscopy may reveal a problem that was not previously diagnosed, and will guide the surgeon to convert to an "open" procedure for definitive treatment under the same anesthetic episode, without waiting for biopsy results.

Bronchoscopy

Pets with airway and lung problems generally need blood testing and chest x-rays to help diagnose their condition and to guide treatment. If these tests are not definitive or your pet is not responding to treatment as expected, bronchoscopy may be required for further evaluation. While your pet is under anesthesia, a specialized camera is passed into the airway and lungs for direct visualization of the airways. Samples are obtained for bacterial and fungal cultures, and for evaluation by a pathologist.

Gastroduodenoscopy

Persistent or recurrent vomiting, regurgitation, loss of appetite, and weight loss are common signs of a problem with the upper GI tract. If blood testing, x-rays and abdominal ultrasound do not reveal the cause of the problem, gastroduodenoscopy may be required for further evaluation. While your pet is under anesthesia, a specialized camera is passed through the mouth into the GI tract for direct visualization of the esophagus, stomach and upper small intestine. If a foreign body is present it can often be removed by long specialized instruments, without the need for surgery. Samples can be obtained from the inner surface of the stomach and upper small intestine for biopsy evaluation by a pathologist.

Rhinoscopy

Because the nasal openings in dogs and cats are very small, only superficial evaluation is possible with standard equipment. Rhinoscopy allows full evaluation of the nasal passages using a specialized camera for direct visualization of the tissues. If a foreign body is present it can be identified and removed. Abnormal tissue is biopsied and samples for bacterial and/or fungal culture can be obtained.

The following is an excellent Web site providing several examples of pets whose lives were improved by minimally-invasive procedures:

www.vet.uga.edu/mis/cases/index.php

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