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ENDOSCOPIC EXAMINATION OF THE SMALL AND LARGE INTESTINES

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The definitive diagnosis of many diseases that cause chronic vomiting or diarrhea often requires mucosal biopsy. In the past, exploratory laparotomy was necessary to obtain duodenal or colonic biopsy specimens. However, the use of flexible fiberoptic endoscopy in veterinary medicine allows tissue samples to be obtained less invasively. Indications for performing duodenoscopy in dogs and cats include: chronic vomiting, chronic small bowel diarrhea, and protein losing enteropathy. Indications for performing colonoscopy include chronic large bowel diarrhea, chronic mixed bowel diarrhea, and tenesmus, hematochezia, and excess fecal mucus associated with a formed stool.

Thorough endoscopic examination of the duodenum and/or colon of the dog and cat can be performed with a flexible fiberoptic gastroscope with an outside diameter of 10 mm or less. Four-way control of the tip of the endoscope is helpful. Biopsy channels of at least 2.8 mm in diameter will provide less. Four-way control of the tip of the endoscope is helpful. Biopsy channels of at least 2.8 mm in diameter will provide adequate biopsy samples for histologic evaluation. They will also accommodate a wide variety of foreign body forceps.

The duodenoscopic examination is performed after an overnight fast with the animal under general anesthesia and placed in left lateral recumbency. A longer fasting period is necessary if the animal had a history of delayed gastric emptying. Avoiding narcotic premedications will ease duodenal entry. The endoscope should only be advanced if the gastrointestinal lumen is clearly visible, reducing the possibility of tissue perforation.

To enter the duodenum, the scope should be advanced towards the pylorus and gently pushed through. If difficulty is encountered, rolling the animal into dorsal recumbency may allow successful passage. In cats, intravenous use of glucagon, metoclopramide, or atropine may ease passage into the duodenum. The duodenal mucosa has a more granular appearance than the stomach and is slightly paler. The endoscope should be gently advanced as far as possible as long as the lumen can be seen. In medium and large dogs it may only be possible to examine the descending duodenum. In small dogs and cats it is often possible to reach the ascending duodenum or proximal jejunum. Smooth oval shaped pyers patches should be visible and not mistaken for ulcerations. The major duodenal papilla, site of entry of the common bile duct, is visible in most cases. A duodenal aspirate for Giardia should be performed by flushing 10 ml of saline through polyethylene tubing placed in the biopsy channel and aspirating with a syringe. The fluid can be centrifuged and the sediment evaluated for motile trophozoites.

Abnormalities seen in the duodenum include increased granularity and friability of the mucosa, hyperemia, erosion or ulceration, masses, parasites or dilated small bowel lacteals. If abnormalities are found, multiple biopsies of lesions should be collected. If gross abnormalities are not present, multiple biopsies from several areas of the small intestine should be obtained. Brush cytology of mass lesions to assess the presence of small intestinal bacterial overgrowth.

Chronic large bowel diarrhea is a common problem in dogs and cats. Because there are many causes, diagnosis can be difficult. Colonoscopic examination of dogs and cats with chronic large bowel diarrhea is a high yield diagnostic procedure. Colonoscopy can be performed with an inexpensive and simple rigid endoscope or with an expensive and slightly more difficult to use flexible fiberoptic endoscope. The skills necessary to adequately perform colonoscopy in dogs and cats can be rapidly mastered by clinicians.

Dogs and cats that present with large bowel diarrhea have frequent defecation of small fecal volumes, tenesmus, hematochezia, and excess mucus production. Weight loss does not commonly occur. A diagnostic plan for dogs and cats with chronic large bowel diarrhea includes the following: a laboratory minimum data base consisting of a complete blood count, biochemical profile and urinalysis, multiple fecal examinations for parasites, rectal cytology, a dietary trial with a bland and easily digested diet, and therapeutic deworming for whipworms. If clinical improvement is not seen, colonoscopic examination with mucosal biopsy should be performed.

Adequate preparation for colonoscopy requires withholding food for 24-36 hours. Warm water enemas (20 ml/kg) should be given after each GoLYTELY® dose and prior to anesthesia induction. In addition, two doses (2 hours apart) of the colonic lavage solution, GoLYTELY® (Braintree Laboratories) should be given, 60 ml/kg, the evening before a morning colonoscopy and the morning prior to an afternoon colonoscopy. In dogs, GoLYTELY® can be administered via orogastric tube. In cats, a nasogastric tube is convenient.

Inexpensive rigid proctosigmoidoscopes are available in adult (17 mm) and pediatric (9 mm) diameters. They are usually 25 cm in length, which limits visualization to the descending colon. However, most inflammatory disorders of the canine and feline colon involve the descending colon. Rectal or uterine cup biopsy forceps can be used to obtain biopsies. A flexible endoscope with a diameter less than 10 mm and a working length of 100 cm is adequate to perform complete colonoscopic examination in most dogs and all cats. A longer endoscope (140-160 cm) may be necessary to reach the cecum in giant breed dogs.

Sedation or general anesthesia is needed to perform complete colonoscopy with a flexible endoscope. Mild sedation or only physical restraint is needed to perform rigid endoscopy. When performing colonoscopy, the endoscope should only be advanced if the colonic lumen is clearly visible. With the rigid endoscope, this requires advancing the scope slowly, repeatedly inserting the stylet, advancing and re-evaluating the position of the endoscope by insufflating air with the stylet removed. This can be a tedious procedure but can avoid colonic perforation. With the flexible endoscope, air can be insufflated and the scope advanced under direct visualization. The risk of perforation during biopsy is less using the small forceps through the flexible colonoscope.

Using the flexible endoscope, a junction will be found between the descending and transverse colon. The scope can be passed around this fold and into the transverse colon. The ascending colon junction will be reached and the ileocolic and cecocolic sphincters should be visible. Further manipulation will allow the endoscope to enter the cecum or the ileum as desired. Complete evaluation of the colon is performed as the endoscope is slowly removed. Care should be taken to visualize the entire circumference of colonic lumen. Multiple biopsies should be taken from all visible
lesions and from the following areas: cecum, ascending colon, orad transverse colon, and three locations spaced evenly along the descending colon.

Normal colonic mucosa is pale, pink, smooth and glistening. Submucosal blood vessels should be visible throughout the length of the colon. In addition, scattered 1-3 mm lymph follicles should be visible in the rectum and the cecal area. Hyperemia can be a normal physiologic response and can occur secondary to a warm water enema, mild trauma from the endoscope, or blood flow changes secondary to patient positioning or anesthesia. Mucosal abnormalities include increased granularity, increased friability, erosions or ulcers. Intramural masses may be present. Submucosal blood vessels may be obscured by edema or inflammatory cells. In addition, the lumen can be narrowed due to stricture formation. Visual abnormalities are often associated with histologic evidence of disease.

Colonoscopy is simple to perform in dogs and cats. It is an extremely useful tool in the diagnosis of chronic large bowel diarrhea. A knowledge of normal anatomy will enable the endoscopist to correctly identify gross abnormalities within the colon. Diagnosis will be aided by histologic evaluation of multiple colonic biopsies.

REFERENCES