

ENDOSCOPY IN DOGS AND CATS: LOWER GASTROINTESTINAL ISSUES

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SIMON TAPPIN discusses why patient preparation is key to achieving good endoscopy results, and explains colonoscopy techniques

LOWER gastrointestinal endoscopy allows evaluation of the rectum, colon, caecum and distal ileum.

It is most commonly performed as part of the evaluation of large intestinal diarrhoea or difficulty in passing faeces. As with the upper gastrointestinal tract, endoscopy will allow gross visualisation and biopsies to be taken from all of the areas examined, but it usually follows at the end of a diagnostic pathway, which may include blood work, imaging and faecal analysis.

Prior to endoscopy, a careful digital rectal examination is essential, as it may reveal the cause of the signs seen and, as forward-facing endoscopes are used, the very distal rectal mucosa cannot be easily evaluated endoscopically.

Lower gastrointestinal endoscopy is indicated as part of an investigation of:

- haematochezia;
- dyschezia;
- tenesmus;

- colitis or large intestinal diarrhoea; or
- constipation.

Equipment

Flexible endoscopes are most commonly used for lower gastrointestinal endoscopy, as they allow evaluation of the entire length of the colon compared to rigid endoscopes.

Most gastroscopes will be suitable for lower gastrointestinal tract endoscopy, but in large dogs, a longer colonoscope ([Figure 1](#)) may be needed to evaluate the proximal colon. A rigid proctoscope can be used to evaluate the descending colon and rectum. This will allow biopsies to be taken of this area, and has been used to allow electrocautery of rectal polyps and tumours.

Patient preparation

Adequate preparation is essential for any patient undergoing lower gastrointestinal endoscopy, and is especially important if ilial intubation is to be attempted.

If faecal material is present within the colon, the view becomes obscured, making full evaluation difficult or impossible. Successful preparation requires planning and for the patient to be hospitalised for 24 to 36 hours prior to the procedure.

Food is withheld for 24 hours prior to procedure, and oral cleansing solutions are administered over the 12 to 24 hours before endoscopy.

Polyethylene-containing solutions act to rapidly cleanse the bowel. Although some dogs will drink these solutions, most find them unpalatable in the quantities required (10ml/kg to 20ml/kg in total over two to three divided doses). Therefore, a naso-oesophageal or stomach tube may be needed to administer the solution ([Figure 2](#)).

As well as oral cleansing solutions, enemas should also be administered to remove material from the colon.

Warm-water enemas are most effectively administered with a Higginson's pump ([Figure 3](#)), and two to three warm – water enemas are provided in the four to six hours prior to anaesthesia for the procedure. Ideally, these should be repeated until the enema water obtained returns clear of faecal material.

In animals where this is difficult (such as cats and fractious dogs), commercial enema preparations that contain osmotic stimulants – such as sodium citrate – may be helpful, although they are not quite as effective as warm-water enemas. Whichever enema type is used, care must be taken to

avoid iatrogenic damage to the rectal mucosa. In contrast to humans, all lower gastrointestinal endoscopy in animals is performed under general anaesthesia to facilitate restraint and comfort during the procedure.

Although lower gastrointestinal endoscopy is not usually painful, premedication with lowdose acepromazine (0.01mg/kg) in combination with an opioid is suggested, combined with a standard anaesthesia protocol. Once anaesthetised, the patient is positioned in left lateral recumbency; this allows fluid to pool in the descending colon, thus aiding manipulation of the endoscope into the transverse and ascending colon, and ilial intubation ([Figure 4](#)). Recording endoscopic findings is essential, and the WSAVA gastrointestinal standardisation group (www.wsava.org/standardizationgroup) has produced forms that are very useful for this purpose.

Colonoscopy

The first 10cm to 15cm of the endoscope (avoiding the tip) is lubricated with a water-soluble lubricant. The endoscope is then inserted gently through the anus into the rectum.

Insufflation should reveal the rectal lumen – however, air may escape through the anus. If this occurs, an assistant may be needed to pinch the anus around the endoscope to prevent air leakage. The normal colonic mucosa is pale, pink and smooth, with submucosal vessels easily visible ([Figure 5](#)). When inflammatory disease is present, these vessels can become obscured due to infiltration of the lamina propria ([Figure 6](#)).

Once in the rectum, the endoscope is gently advanced to allow evaluation of the descending colon. Rectal polyps or neoplasia ([Figure 7](#)) may be seen in this area; if present, they are usually bypassed to allow complete evaluation of the lower gastrointestinal tract, and biopsies are taken as the endoscope is withdrawn. As the endoscope is inserted, the splenic flexure is reached. This is an obvious sharp bend and needs to be negotiated using tip flexion ([Figure 8](#)).

Once around the splenic flexure, the transverse colon can be examined before coming to the hepatic flexure leading to the ascending colon. Once this flexure is passed, the ileocaecal junction will be quickly visible, as the ascending colon is relatively short. The ileocaecal valve appears as a red “button-like” protuberance, and can easily be confused with the opening to the caecum, which is often more open ([Figure 9](#)).

Once the blind-ending caecum has been examined, ilial intubation can be attempted. This is harder to achieve compared to the duodenum, firstly because of its relatively smaller size compared to an endoscope. Secondly, the passage of the endoscope past two tight flexures hinders mobility. Finally, the endoscope may not be long enough to allow this procedure.

Poor patient preparation ([Figure 10](#)) will also hinder visualisation of the ileocaecal junction. Iliac intubation is achieved in much the same way as passing the pylorus, with the endoscope tip

directed towards the centre of the ileocaecal valve opening and the endoscope gently advanced with small amounts of insufflation to aid passage of the endoscope.

If passage is difficult, then closed forceps can be used as a guide wire, or blind biopsies may be taken. If blind biopsies are taken, great care must be exercised and the number is usually limited to two or three. The ileum has a paler and smoother surface compared to the duodenum and is more friable. For this reason, it is easy to create iatrogenic mucosal damage ([Figure 11](#)).

Biopsies can be taken after full evaluation of the lower gastrointestinal tract. At least three to four biopsies should be taken of the ascending and transverse colon, with a further four to six for the descending colon. If lesions or masses are present, further biopsies are collected into a separate pot.

As with upper gastrointestinal biopsies, due to their size, biopsies should be submitted to a pathologist with experience of interpreting endoscopic samples.

Postoperative management

Recovery from lower gastrointestinal endoscopy is usually uneventful and patients can usually be discharged on the same day as the procedure.

Diarrhoea is occasionally seen, but this is usually transient and self-limiting. Lower gastrointestinal endoscopy complications are rare, but perforation has been occasionally reported.

If this occurs, insufflation can lead to pneumoperitoneum, with obvious palpable tympany.

If perforation occurs, immediate surgical exploration is warranted, as if the perforation is undetected or untreated, septic peritonitis will ensue.

Further reading

- Bexfield N (2007). Gastrointestinal endoscopy in the dog and cat. Part two: lower gastrointestinal tract and biopsy techniques, *UK Vet* **12**(8): 27-34.
- Simpson J W (2008). Flexible endoscopy: lower gastrointestinal tract, *BSAVA Manual of Canine and Feline Endoscopy and Endosurgery*, BSAVA, UK.
- Richter K P (2005). Endoscopic evaluation of the colon, *Veterinary Endoscopy for the Small Animal Practitioner*, Elsevier Saunders, Missouri.