How can upper gastrointestinal endoscopy help me make a diagnosis in dogs and cats? Part 1

DISEASE OF THE UPPER GASTROINTESTINAL TRACT is common in small animal practice and flexible endoscopy can provide a powerful diagnostic tool in the investigation of such cases.

The problem facing the clinician is the range in size of patients which may require endoscopic investigation; from small cats and dogs to giant breeds such as the Great Dane. This variation in size creates real challenges in being able to physically carry out an endoscopic examination. Therefore, when considering purchase of a flexible endoscope it is important to take time to consider the animals you are most likely to be investigating and choose endoscopic equipment appropriate to your practice needs.

The specifications for a veterinary gastroscope are shown in Figure 1. However, there are several important factors to consider before making your purchase.

In small dogs and cats, a standard one-metre insertion tube will be adequate for carrying out a thorough examination of the stomach and duodenum. However, in large dogs the fundus of the stomach is much larger. It is for this reason that veterinary gastroscopes are now manufactured with an insertion tube length of at least 1.4 metres.

The second important factor to consider is the diameter of the insertion tube. It is quite possible to carry out an upper gastrointestinal endoscopy, it is very important to know the normal anatomy – especially of the stomach. The stomach can be very large and it is easy to get “lost” when carrying out an examination unless endoscopic landmarks are recognised (Figure 2).

Carrying out your endoscopy

To carry out an upper gastrointestinal endoscopy, it is important to

- Take time to consider the animals you are most likely to be investigating
- Choose endoscopic equipment appropriate to your practice needs

The size of the biopsy channel can vary, but the minimum requirement should be a channel of at least 2mm diameter. Some veterinary endoscopes have biopsy channels of 2.8 to 3mm in diameter.

Why does this matter? The larger the biopsy sample you can collect, the more diagnostic the sample is likely to be. Very small biopsy samples can be difficult to block and section and may result in samples which are difficult to interpret.

Ideally use the largest forceps the biopsy channel will accept and use forceps with small holes in the side cups – called “fenestrated” forceps – as they allow samples to bulge through the small holes and reduce crush damage.

Rugal folds can be used to guide you through the stomach as they run the length of the stomach and not transversely. So, if you want to reach the pylorus, in general follow the rugal folds.

The angular incisure marks the entrance to the antral canal, appearing as a sharp fold on the lesser curvature. It is also where carcinoma of the canine stomach is most often detected.

To ensure that the important landmarks you are looking for are always in the same place as you enter the stomach, always place the patient in left lateral recumbency. The appearance of the stomach looks entirely different in right lateral recumbency.

Prior starvation of the patient is essential. Endoscopic examination carried out with food or fluid within the stomach is impossible to complete successfully. Endoscope lenses refract light when they come into contact with fluid or food, creating what is called a “glitter effect” (or image loss). So starve patients for at least 12 hours prior to the procedure to ensure the stomach is empty.

The gastrointestinal tract is normally a collapsed tube, so in order to view the mucosa it is necessary to inflate the lumen with air. The air facility on the gastroscope is available to do this in a controlled manner. Only inflate the lumen with enough air to allow clear vision; take great care not to over-inflate the lumen, especially in the stomach where this can cause compression of the lumen and compromise breathing.

It also creates a large cavity where all the landmarks in the stomach are lost and intubation of the duodenum becomes impossible as the pylorus becomes tightly-closed.

Start your endoscopy by passing the endoscope along the hard palate, into the pharynx and then through the weak cricopharyngeal sphincter.

Once in the oesophagus, gently inflate the mucosa so a clear image of the mucosa can be seen. Advance the endoscope slowly, examining the mucosa as you proceed, thus ensuring any lesions observed are “real” and not artefacts created by the gastroscope.

The oesophagus is not a straight tube but bends as it passes through the thorax. Adjust the tip of the gastroscope to allow for a good image. There should be no food or fluid accumulating in the oesophagus. It is normally not possible to routinely obtain a biopsy the oesophagus, as the mucosa is very tough and difficult to sample.

The cardia (lower oesophageal sphincter) marks the entrance to the stomach and is normally closed. The cardia

JAMES W. SIMPSON provides some tips on what to buy and how to use it, detailing the most effective way to take biopsy samples and what to watch out for when ‘going in’.

Insertion tube length: 4.1 to 1.4 metres
Insertion tube diameter: 7 to 8mm
Forward viewing tip
Four-way tip movement
Retroflex capability
Biopsy channel minimum 2mm
Air/wash facility
Suction facility

Figure 1. Basic specifications for a small animal gastroscope.

James W. Simpson, SDA, BVMB&S, MPhil, FHEA, MRCVS, RCVS
Specialist in Internal Medicine, qualified from Edinburgh University in 1977 and spent three years in general practice before returning to successfully study for a Phil degree. He became lecturer, senior lecturer and ultimately professor of canine medicine at the Royal (Dick) School of Veterinary Studies, where he was head of small animal medicine.

In 2011 he took early retirement and started his own referral service. He lectures both nationally and internationally and is medicine co-ordinator for the BSAVA Certificate programme.

Advance the gastroscope through the sphincter by “feel” as the image will disappear when the lens comes into contact with the mucosa.

The sphincter is not particularly difficult to overcome and once you “feel” the endoscope pass into the stomach, stop further advancement and inflate the stomach with enough air to visualise the fudal rugal folds.

Examine the stomach systematically, ensuring that the entire mucosal surface has been examined. Do not forget to retroflex the endoscope tip to examine the cardia, which is a blind spot when entering the stomach (Figure 3). Pass the endoscope around the angular incisure and into the antral canal. Prior lubrication of the insertion tube will aid this process and reduce resistance to forward movement.

The gastric mucosa should have a uniform pink colour throughout. Biopsy samples should be collected from any lesions observed or from round the edge, not the centre, of ulcers. Where no lesions are visualised, collect multiple biopsy samples from different areas of the stomach.

The pylorus may be open or closed in the normal patient. In some cases, bile may be seen refluxing into the stomach; this is normal. The pyloric sphincter is powerful and once closed, it can be very difficult to pass the gastroscope into the duodenum. It is well-recognised as the hardest endoscopic procedure to carry out, even by experienced endoscopists.