Canine medicine

OTHER LESS COMMONLY USED MEDICATIONS

Cisapride

- No known anti-emetic effects, but it helps to enhance gastric emptying
- Potential risk of cardiac arrhythmias in humans so gloves should be worn when administering
- No licensed product.

Domperidone

- Potent anti-emetic, similar mechanism to metoclopramide, but with fewer adverse CNS effects as it does not cross the blood–brain barrier
- No licensed product.

Prochlorperazine

- Anti-emetic activity is due to its effects primarily in the brain's emetic center and chemoreceptor trigger zone, but it also has some peripheral activity
- Used to control motion sickness and emesis associated with vestibular disease
- No licensed product
- Adverse effects: sedation or hypotension.

Propantheline

- A peripherally acting anti-emetic
- No licensed product.

KEY LEARNING OBJECTIVES

- To understand how vomiting occurs
- To understand the difference between the anti-emetics available
- To know which medications are licensed for use

MULTIPLE CHOICE QUESTIONS

1. Where is the emetic/vomiting centre located?
(A) Medulla oblongata of the brainstem
(B) The pancreas
(C) Cerebral cortex
(D) Gastrointestinal tract
2. Cerenia® is the trade name for which medication?
(A) Metoclopramide
(B) Ondansetron
(C) Maropitant
(D) Medetomidine
3. Which of the following is a central cause of vomiting?
(A) Toxins
(B) Medications
(C) Infections
(D) Pancreatitis

The top to bottom of endoscopy: a practical approach

Laura George

Due to the range of endoscopes becoming more readily available, the veterinary nurse should be competent in setting up, using and maintaining the different types. Both rigid and flexible endoscopes are available with the rigid option being cheaper and less fragile but of limited use.

COMPONENTS

All flexible endoscopes are constructed in a similar manner consisting of a hand piece with suction/insufflation buttons and directional dials, an insertion tube, an instrument channel and an umbilical cord that transmits light, air for insufflation and also allows for suction. The suction unit may be wall mounted or a portable unit and is connected directly to the endoscope.

A light source is required and this may be contained in a unit with an air pump or may be a separate unit requiring a cable to transmit light through the endoscope.

CARE

All endoscopes are transported in a case protecting them from damage. When not being transported flexible endoscopes are hung in a designated cupboard with the insertion tube hanging straight down. If stored in a case, the insertion tube may permanently curl and become unusable.

Endoscopes must be watertight, to prevent damage from fluid leaking into inner workings. Leak testing is performed before and after every use. A leakage tester is attached and pressurized to an appropriate level (manufacturer guidelines for specific endoscopes are available); if the level remains stable there is no leak. It is cheaper to repair a leaking endoscope if detected early rather than long-term damage from on-going undetected leaks.

Cleaning occurs immediately after use to avoid mucus drying in the instrument channel, which can cause corrosion. Prior to cleaning it is important to establish if the endoscope can be submerged in cleaner, a blue ring around the hand piece generally indicates it is safe but due to the risk of damage it is prudent to check with the manufacturer. An appropriate-sized cleaning brush is passed down the instrument channel ensuring it is thoroughly cleaned. Endoscopes are then disinfected between patients reducing cross-contamination.

There are various sterilization methods for endoscopic equipment including ethylene oxide gas, it is important to consult the manufacturer checking which methods are suitable. Flexible endoscopes are rarely compatible with steam sterilization due to the high temperatures required which cause extensive damage.

INSTRUMENTS

Depending on the indication for endoscopy various instruments may be required including biopsy forceps, foreign body retrieval, cautery loop or cytology brush. Instruments are either single or multi-use but must be sterile. They are checked before and after use for damage to the shaft or hinges as this can cause trauma to the instrument channel if used. Multi-use instruments are cleaned and sterilized between patients.

SPECIFIC PROCEDURES

Depending on the area being scoped there may be specific patient preparation (e.g. enema prior to colonoscopy), equipment requirements and potential complications. The veterinary nurse should be aware of these specific differences.

KEY LEARNING OBJECTIVES

- Know the components of an endoscope
- Learn how to prepare and maintain equipment
- Understand specific endoscopic procedures

MULTIPLE CHOICE QUESTIONS

1. Which of the following statements is TRUE?
 - (A) Flexible endoscopes should be stored in their case
 - (B) Flexible endoscopes should be hung vertically to dry
 - (C) Endoscopes can be sterilized using heat
 - (D) Leak testing is performed once a month
2. Which of these components is not part of the endoscope handpiece?
 - (A) Suction button
 - (B) Insufflation/flush button
 - (C) Air pump
 - (D) Directional dials
3. What colour ring on the endoscope hand piece can indicate that it is safe to fully immerse the equipment?
 - (A) Red
 - (B) Yellow
 - (C) Green
 - (D) Blue

Low-stress bronchoscopy

Laura George

Bronchoscopy is a useful diagnostic (e.g. airway collapse) and therapeutic tool (e.g. foreign body removal) but may also carry uncommon but important risks. Being aware of the required equipment and potential complications is essential to achieve low-stress bronchoscopy.

EQUIPMENT

A flexible endoscope is most commonly used and is examined for damage, leak tested and sufficiently disinfected prior to use. It is recommended to disinfect the endoscope within 3 hours prior to the procedure, hanging it in a clean, safe environment to dry.

Depending on the indication for bronchoscopy, equipment may be required to collect a bronchoalveolar lavage (BAL) including sterile NaCl 0.9%, mucus extractor and BAL catheter. Various endoscopic instruments may be required including biopsy forceps, cytology brushes and foreign body retrieval forceps, all of which must be sterile.

It is advisable to gather equipment enabling oxygen supplementation alongside the scope during the procedure. In larger dogs the endoscope may be passed down the endotracheal tube (ETT) but small dogs are extubated once stable under general anaesthetic (GA) and oxygen can be provided by passing a sterile BAL catheter down the instrument channel and connecting to oxygen.

PATIENT

These patients will benefit from preoxygenation followed by rapid induction and intubation ideally with a sterile ETT. The preferred GA method is total intravenous anaesthesia to maintain a suitable depth while reducing the risk of environmental contamination with volatile agents.

The patient is placed in sternal recumbency with their head slightly elevated. A suitable-size mouth gag is essential but it is important to avoid overextension of the jaw as this can cause cerebral ischaemia (particularly in cats).

The veterinary nurse may be responsible for GA monitoring and alongside vital parameters should monitor oxygen saturation (SpO₂) using a pulse oximeter.

COMPLICATIONS

Airway irritation can occur if GA depth is insufficient and this may manifest as gagging and coughing. Regular assessment of GA depth and clear communication with the veterinary surgeon throughout the procedure is vital.

Hypoxaemia (SpO₂ <95%) can occur both during and after the procedure. If hypoxaemia occurs during, the endoscope is removed, the patient intubated if not already and 100% oxygen supplied. The procedure continues once SpO₂ has normalized. The recovery environment should be calm and quiet and on-going oxygen supplementation is provided until the patient is ambulatory. Pulse oximetry should also remain connected, monitoring for hypoxaemia. It is advisable to have equipment prepared for emergency GA and intubation if required.

Bronchospasm occurs when the bronchi narrow due to the smooth muscles tightening and can lead to respiratory obstruction. This is treated using bronchodilators, for example, terbutaline, and it is useful to have the drug