Nasogastric intubation in horses

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If you have never given a horse a nosebleed from passing a nasogastric tube then you have never passed one.

This article will cover indications for nasogastric intubation, a step-by-step approach to the technique, plus possible complications, how to minimise the risk of occurrence and what to do if they occur.

Indications

Nasogastric intubation’s (Figure 1) main indications are to:

- empty the stomach in gastric overfilling (lifesaving)
- allow direct hydration of intestinal contents (such as treating impaction colic)
- deliver certain drugs
- provide nutrition where the horse is unable or unwilling to eat, but can cope with enteral nutrition

Technique
Before starting, it may be helpful to hold the stomach tube next to the horse’s head with the end level with the pharynx. With permanent marker, mark the position of the nostril on the tube. When passing the tube, when you reach your mark, the end of the tube will be level with the pharynx (Figure 2).

**Gain control**

![Image](image)

**Figure 2.** When passing the tube, when you reach your mark, the end of the tube will be level with the pharynx.

Ensure the horse is under control before starting. Often, sedation administration will be needed – try not to get into a fight. A twitch can help to control the horse’s head. The handler should stand the opposite side to you (which he or she often wouldn’t normally).

Stocks can help, but they are no substitute for sedation in an anxious animal as it may try to jump out, potentially injuring itself and handlers. The author has the front door of the stocks closed, but not locked, so she can let the horse out quickly if required.

**Position yourself**

Stand to one side of the horse (stand in front and you risk a broken nose if the horse throws its head up). Loop the stomach tube over your shoulders so you don’t trip over it (Figure 3).

**Direct the tube**

Use one hand to control the nose and the other to control the end of the tube. Use both hands to direct the tube as far ventrally and medially as possible (Figures 4 and 5). Horses often object to the first 10cm of tube being passed, so carry this out quickly. Then continue slowly, stopping as
soon as you meet resistance.

Figure 3. Loop the stomach tube over your shoulders so you don’t trip over it.

If you are in the correct place (at the pharynx), the pen mark on the tube will be at the nostrils and the horse may gag. If too far dorsal then the pen mark has not yet reached the nostril and the horse will not gag. If in the wrong place, withdraw the tube almost to the nostril, reposition more ventrally and try again. If you do not notice this and continue to advance the tube, this will result in epistaxis from damage to the nasal turbinates.

Get horse to swallow

Once you are sure you are at the nasopharynx, the next stage is for the horse to swallow the tube. At present, the end of the tube is pointing ventrally, but the oesophagus is dorsal. Therefore, turn the tube 180°. Move the tube gently back and forth to encourage swallowing – blowing down the tube may help. Once the horse has swallowed it, you will be able to advance it with little resistance.

It then needs to be determined whether the tube is in the oesophagus. You may be able to see the tube in the oesophagus (left side) – it can be confused for a swallow, so move the tube back and forth and watch the end move in the oesophagus.

Hold the end of the tube close to your skin. If you can feel air on expiration, you are in the trachea – return to the pharynx and start again. Aspirate on the tube (beware health and safety). If you get resistance, you are in the oesophagus (the oesophagus collapses around the end of the tube). If you get air back, you are in the trachea. Don’t rely on just one of these.

Advance the tube
Figure 4. Use one hand to control the nose and the other to control the end of the tube. Use both hands to direct the tube as far ventrally and medially as possible.

Figure 5. Use one hand to control the nose and the other to control the end of the tube. Use both
hands to direct the tube as far ventrally and medially as possible.

Figure 6. Blowing down the tube may help get into the stomach, but beware health and safety. Often, a gurgle will occur as some stomach gas is released from the tube when you get into the stomach.

Once you are sure the tube is in the oesophagus, advance it until it is in the stomach. You may reach some resistance at the cardia and, if so, the horse may gag.

Blowing (beware health and safety) down the tube may help get into the stomach. Often, a gurgle will occur as some stomach gas is released from the tube when you get into the stomach (Figure 6). Once in the stomach, check for any reflux. If a significant amount is present (more than 1L to 2L), this is consistent with gastric overfilling.
Complications

Haemorrhage

Mild haemorrhage (Figure 7) may occur due to friction to the nasal mucosa. There is no need to treat. Using a lubricant may reduce the risk.

If repeated intubation is required then leaving in an indwelling stomach tube may help, although it is not without risks in itself. More severe haemorrhage may occur secondary to trauma to the turbinates. To help reduce this risk, ensure you:

- measure tube to pharynx and mark
- apply ventral and medial pressure when inserting the tube at the nostril
- have the horse under control

Figure 7. Mild haemorrhage may occur due to friction to the nasal mucosa.

Even more severe haemorrhage is usually self-limiting. A greater risk exists if the horse has a
bleeding diathesis (41% horses with ischaemic intestine; Cotovio et al, 2007) and there is a case report of 24L of blood loss (Trim et al, 1997).

Treatment is not usually required. Perhaps, in theory, hosing the head with cold water may encourage vasoconstriction, but the horse may object and adding in water may make the volume of blood loss appear dramatic.

Administrating tranexamic acid inhibits plasminogen activation and fibrinolysis, stabilising a blood clot and could be of use. If extreme, fluid therapy may be required to maintain blood pressure.

Plasma or whole blood will replace losses, support blood pressure and provide clotting factors. Dobutamine infusion may be used to help maintain blood pressure in life-threatening cases. Avoid hypertonic saline as it potentiates blood loss in the absence of haemostasis.

**Aspiration pneumonia**

A small amount of tap water into the lungs is unlikely to do any harm, but administration of mineral oil results in fatal lipoid pneumonia (Scarratt et al, 1998). Make sure you check placement of the tube.

**Gastric rupture**

Always check for reflux before administering fluid and then administer by gravity. Stop and reconsider whether the horse shows discomfort (but don’t rely on this as it is sedated/restrained/analgised).

It may be logical that leaving an indwelling nasogastric tube in a horse with ileus will prevent gastric rupture, but it does not. A study of 54 cases of gastric rupture (Todhunter et al, 1986) had 6 horses rupture, despite the presence of a nasogastric tube.

**Oesophageal necrosis/stricture**

Oesophageal necrosis/stricture is more likely to occur with an indwelling tube, from necrosis from pressure. A stricture could be treated if cervical, but is usually fatal. It is a rare problem and you should weigh up the risks versus benefits of an indwelling tube on a case-by-case basis.

**Delay gastric emptying**

Delaying gastric emptying is really only relevant to horses in ileus being managed with an indwelling tube. As they begin to improve, it can be helpful to help improvement in motility to continue, to remove the tube and just replace it to reflux regularly. Presence of an indwelling tube significantly delayed the gastric emptying rate of fluids (Cruz et al, 2006).
Conclusions

Performed with the correct technique, equine nasogastric intubation is a low-risk procedure. Nasal haemorrhage is a common complication, but rarely a significant one.

- Some images in this article alongside a model are used to teach students nasogastric intubation in the University of Bristol’s clinical skills lab.

References