



EQUINE REPRODUCTION SVC

Equine Reproduction Embryo Recovery Embryo Transfer

ERS is the longest, continually in existence
Equine Embryo Transfer Company
in the United States

*** CLICK HERE ***

Current Articles & Research

Reproduction
Foal Disorders
Lameness

Check back often for new additions

Equine Postoperative Ileus Insights

When an owner sends a horse under the knife for colic surgery, he or she is first and foremost hoping the horse survives the operation. But just because he makes it through the procedure doesn't mean he's out of the woods: Many horses develop a dangerous complication called postoperative ileus—a lack of gut motility after surgery.

At the 2013 American College of Veterinary Internal Medicine Forum, held June 12-15 in Seattle, Wash., Neil P.H. Hudson, MA, VetMB, PhD, DEIM, DipVetClinStud, MRCVS, a senior lecturer at the University of Edinburgh's Royal (Dick) School of Veterinary Studies, provided insight on what we know, what we're still trying to learn, and what controversies surround postoperative ileus.

Equine Colic and Ileus

"Colic is reported by insurance companies and universities as the single greatest killer of horses," Hudson said.

Study results indicate four to 10 out of every 100 horses will colic each year. And while not all of those colics are surgical cases—meaning veterinarians can successfully manage some cases medically—Hudson noted that "all horses undergoing a laparotomy (i.e., exploratory colic surgery) for an acute abdominal crisis are at risk of developing postoperative ileus."

Researchers still aren't sure exactly what causes postoperative ileus in horses; however, studies have estimated that it occurs in 10-50% of surgical colic cases, Hudson said.

"Postoperative ileus has been described as being responsible for between around 9% and 40% of postoperative deaths," he explained. "Indeed, the fatality rate of postoperative ileus cases sadly can be high—ranges of 13-86% are described (in the literature)."

Researchers have frequently explored parameters for diagnosing postoperative ileus, and many have included the amount of nasogastric reflux (the horse's stomach contents being removed via a nasogastric tube) upon intubation (or the insertion of the tube through the horse's nasal passages and into the stomach) as an important criterion for confirming the condition, he said. A research editorial from the *Equine Veterinary Journal* recently suggested the following clinical criteria for confirming postoperative ileus:

- Four or more liters of nasogastric reflux on any one intubation, or more than two liters of reflux on repeated intubations;
- The horse's heart rate remaining above 40 beats per minute (a normal heart rate ranges from 28 to 44 beats per minute);
- Signs of mild to severe colic; and - Evidence of a fluid-distended small intestine on rectal examination or ultrasound.

Hudson cautioned that there is a school of thought that not all apparent cases are actually postoperative ileus. He cited one editorial that suggested some cases initially diagnosed as postoperative ileus might actually be due to mechanical obstructions or other surgical complications.

Possible Causes

As previously mentioned, researchers still don't know exactly what causes postoperative ileus. However, scientists are exploring the disorder in a variety of species, trying to better understand its pathophysiology.

Traditionally, Hudson said, researchers believed ileus resulted from inhibited intestinal motor activity. More recent research suggests there is a significant inflammatory component to postoperative ileus, he said, possibly triggered by the surgeon's manual manipulation of the horse's intestines. And researchers have also learned that intestinal macrophages (specialized white blood cells that kill and "clean up" damaged tissue and cells) and mast cells likely play a role in developing and maintaining ileus, he said.

Treating and Managing Postoperative Ileus

Although postoperative ileus treatment generally involves one or more mainstays—including nasogastric decompression, fluid and electrolyte therapy, endotoxemia control, infection control, pain management, prokinetic therapy (administering drugs that make the bowel move contents faster), and inflammation reduction—Hudson said individual clinicians have their own treatment preferences.

Treatment methods most practitioners do agree upon include:

- **Fluid therapy**—Hudson said many clinicians supplement calcium, in addition to other elements, via fluid therapy. Some study results suggest calcium supplementation might help improve colic outcomes; other research from experimental laboratory mammals, he said, suggests supplementing calcium in animals with endotoxemia could lead to death due to endotoxic shock. Fluid therapy is largely postoperative, but is initiated on the operating table or even before the operation if the horse is cardiovascularly compromised.
- **Anti-inflammatory therapy**—Hudson said research continues to indicate inflammation plays a significant role in postoperative ileus development and maintenance, so many veterinarians administer non-steroidal anti-inflammatory drugs (NSAIDs) in these cases. He noted that different NSAIDs have significantly different methods of action: Some specifically inhibit an enzyme called COX-2—which causes inflammation and pain in the body—while others are nonselective and target both COX-2 and another enzyme called COX-1, which is associated with beneficial functions such as protecting the stomach's mucous lining. Additionally, he said, different NSAIDs might impact intestinal motility in different fashions: Some tend to slow it down, while others don't appear to affect it as much. Practitioners will consider these factors before selecting an NSAID to use pre-, intra-, and postoperatively.
- **Early feeding and movement**—Hudson said that in humans with postoperative ileus, doctors often use food to encourage intestinal motility. Likewise, some veterinarians use feeding as early as clinically feasible after surgery to try to counteract the effects of postoperative ileus. "If feeding is not feasible, even measures such as tying a hay net outside the stall appear to have some merit," Hudson said. He also indicated that hand walking horses after colic surgery, if possible, might help.
- **Carboxymethylcellulose administration**—Researchers have found that when surgery is performed on the small intestine, administering carboxymethylcellulose—an intestinal lubricant—during the operation could help "improve survival, potentially by reducing adhesion formation," Hudson said. However, he cautioned, another research group found that intraoperative carboxymethylcellulose administration was associated with a higher adhesion (or, adhering of the resected intestine to nearby tissues) rate.
- **Second surgery**—When dealing with postoperative ileus, Hudson said there is controversy surrounding whether and when taking the horse to a second surgery is beneficial. "On one side, there is the argument that an early decision to go back in and ... potentially correct a mechanical obstruction or a surgical complication may be warranted," he said. "Counterbalancing that is the evidence that the survival rate for horses requiring relaparotomy is reduced and the complication rate is high."
- **Prokinetic therapy**—As mentioned, prokinetic therapy is a mainstay for postoperative ileus cases, and veterinarians' therapeutic drug of choice is most commonly lidocaine (sometimes referred to as lignocaine). Hudson said there are some conflicting reports in the literature about lidocaine's actions, benefits, and drawbacks in treating postoperative ileus; still, many veterinarians opt to use it for its possible benefits, which are now largely thought to be anti-inflammatory. Other prokinetic drugs practitioners can use include metoclopramide, erythromycin, and bethanecol, Hudson said.

Take-Home Message

Although veterinarians have made strides in understanding and managing postoperative ileus, Hudson said, "there is still much we have to learn." He said questions still remain about the differences between healthy and diseased tissue behavior, inflammation's role in the disorder, and lidocaine's effects on postoperative ileus.