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Dealing with Postoperative Complications in the Field (Incisional Infection, Hernia, Thrombophlebitis, and Laminitis): The Importance of the Veterinarian-Specialist-Client Communication Triad

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Take Home Message

Complications of colic surgery are common, and include postoperative ileus, incisional infection, incisional hernias, thrombophlebitis, diarrhoea, adhesions and laminitis. The management of these complications is highly dependant on a team approach involving the surgeon/specialist, the primary veterinarian and the client. In most cases these complications will resolve given time and appropriate treatment.

Communication

Good communication between the primary veterinarian, the owner and the surgeon/specialist is vitally important. Most owners faced with looking after a horse that has had colic surgery will have no previous experience of the care required or the problems that can occur. Likewise, many primary veterinarians will have limited experience of dealing with post-operative complications after colic surgery, and are therefore working outside of their “comfort zone”. It is the responsibility of the specialist/surgeon to ensure that the horse receives appropriate treatment after it has returned home – the recuperation period should be considered a continuation of the surgery and immediate postoperative care that was provided in the hospital. The specialist/surgeon will usually have experience and knowledge about the normal postoperative progress after colic surgery, as well as problems that can arise and how they should be dealt with. It is essential that this information is somehow communicated to the primary veterinarian and the owner. Three-way communication is difficult to achieve, and in most cases it is preferable for the primary veterinarian to be the point of contact for both the owner and the specialist/surgeon.

Acute Incisional Dehiscence

Acute incisional disruption generally occurs within 8 days of surgery and, fortunately, is very rare. Early clinical signs are a serosanguinous discharge with a progressive increase in drainage from the incision. Observation of omentum at the incision site is a sign of impending dehiscence. In most cases, physical examination identifies the diagnosis and extent of the problem. In some cases ultrasound examination will assist in defining the extent of the lesion.

Incisional Infection

The prevalence of incisional complications after gastrointestinal surgery in horses ranges from about 5 to 40%. Any incisional drainage at an incision is suggestive of abnormal wound healing.
Drainage delays wound healing and weakens abdominal fascia, and can predispose to hernia formation.

The use of abdominal bandages or “belly bands” has been associated with a reduced risk of incisional infections. However, once an infection has occurred, a decision needs to be made as to whether to maintain an abdominal bandage in place or whether it should be removed to promote drainage.

Any incisional drainage, except for mild bleeding for a few hours postoperatively, should be considered abnormal and may represent an impending incisional infection. The presence of serosanguinous fluid or purulent drainage should be evaluated carefully, and one should closely monitor the degree of peri-incisional swelling and tenderness. If a large quantity of fluid drips from the incision, the possibility of peritonitis and partial dehiscence of the incision should be considered. After sterile preparation at the drainage site, a sample should be obtained for cytological and/or bacteriological evaluation.

Incisional infections are treated with appropriate drainage, removal of selected skin sutures/staples, and topical cleaning and lavage of the incision. Systemic antibiotics usually have already been administered at the time infections occur but may need to be changed according to bacterial culture results. It is important to remember that incisional infections significantly increase the risk of incisional herniation, therefore, the period of restricted exercise after surgery should be increased to at least 8-10 weeks after the infection has resolved.

**Incisional Hernia**

Incisional hernias may be secondary to:

- suture or abdominal wall failure in the postoperative period
- incisional infection
- early return to exercise

The strength of the abdominal wall does not return to normal until many months after surgery. Therefore, horses should be restricted to a box stall for 6-8 weeks postoperatively, although daily hand walking should be allowed. The abdominal incision should be evaluated prior to turning the animal out to pasture for an additional 6 weeks. After 3 months the risk of incisional hernia is negligible.

Two types of incisional hernias may be seen postoperatively.

1. A traditional hernia within the incision with a reducible hernial sac.
2. Herniation due to a thinning of selected areas of the incision.

In the latter, the incision and herniation site may undergo variable changes in shape, size, and degree during the 4-6 month period after surgery. In these cases, significant improvement in the strength and cosmetics of the site may occur and preempt the need for surgical correction. Therefore, surgical treatment may not always be necessary. In many cases, an incisional hernia is considered to be a cosmetic blemish only. Support using a hernia belt can result in significant
reduction in the size of hernias. Surgical repair of a hernia is made either by primary repair or placement of a mesh. Prior to surgical repair all signs of inflammation and infection must be resolved. This generally entitles the surgeon to wait 1–2 months before attempting repair so that a firm and defined hernia ring is present.

**Thrombophlebitis**

Thrombophlebitis is defined as thrombosis of a vein associated with inflammation of the vessel wall. Thrombosis rarely occurs without the presence of inflammation. Septic thrombophlebitis is the term used when the thrombus becomes infected.

Horses that have had colic surgery are at high risk of developing thrombophlebitis because of the use of indwelling intravenous catheters, the frequent administration of irritant drugs, and the presence in some cases of a hypercoagulable state as a result of their primary disease. The jugular vein is the most frequently affected site.

Thrombophlebitis usually occurs while the horse is in hospital and when an indwelling intravenous catheter is present. Clinical signs include:

1. A hard and cord-like vein on palpation.
2. Septic thrombophlebitis should be suspected if the affected vein is hot, swollen, or painful on palpation. Suppuration or exudation from sites of skin puncture may be seen.
3. Septic thrombophlebitis should also be suspected in any horse with unexplained pyrexia postoperatively.
4. Bilateral jugular thrombophlebitis may result in edema of the soft tissues of the head causing dysphagia and dyspnea.

Ultrasonography can be useful to confirm the presence of thrombophlebitis and to detect early changes indicative of impending thrombosis. Ultrasonography can also be useful in monitoring the response to therapy.

Once thrombophlebitis has been recognized, symptomatic treatment is generally started in the hospital, and some may be continued when the horse returns home. Treatment options include some or all of the following:

1. The catheter (if present) is removed and a culture of the tip performed.
2. The affected vein is not used for venipuncture.
3. Hot packing may help by increasing blood flow to the area.
4. Non-steroidal anti-inflammatory drugs are administered (preferably orally to spare the remaining jugular vein) to reduce inflammation.
5. Antibiotics (broad spectrum or as dictated by culture and sensitivity) are administered (again, orally if possible) in septic thrombophlebitis.
6. If bilateral thrombophlebitis is present, the head should be maintained level or elevated.
7. Tracheostomy may be necessary in bilateral thrombophlebitis if dyspnea is severe.
8. Surgical drainage may be necessary if suppuration is present.
9. Vein resection may be indicated in severe cases that do not respond to medical management.
In uncomplicated cases of thrombophlebitis, recanalization of the vein commonly occurs, with resultant return of function. In more severe cases the thrombus may undergo organization without recanalization.

**Diarrhea**

Colitis and diarrhea are potential complications following colic surgery, especially following large intestinal surgery. This condition is often associated with overgrowth of pathogenic organisms such as *Salmonella* spp. or *Clostridium difficile* (these organisms often infect the environment of intensive care facilities and are difficult to eradicate). Approximately 10% of normal horses are positive for *Salmonella* spp. when tested by polymerase chain reaction (PCR) yet more than 40% of horses with abdominal disorders are positive indicating that changes in motility and/or normal flora are important to the proliferation and/or shedding of the organisms.

This complication usually occurs in the immediate post-operative period (ie while the horse is still in the hospital), and in most cases treatment and resolution of the condition will take place before the horse is discharged home. However, in horses infected by *Salmonella* spp., long-term shedding of the organism may sometimes occur, in which case isolating the horse from the rest of the herd and sampling of the horse’s feces should be performed after it has returned home, and the client advised on the potential health risks associated with the condition.

**Laminitis**

Horses recovering from any gastrointestinal disease that caused endotoxemia are at risk of developing laminitis. There are several theories as to the etiology of laminitis in horses with endotoxemia, although experimental administration of endotoxin in horses has not resulted in laminitis.

If laminitis occurs it usually develops in the immediate post-operative period. Treatments will be administered while the horse is in the hospital, but in cases that recover, stabilization of the hoof-pedal bone relationship and continued medical and farriery treatments for chronic laminitis will be required after the horse returns home.