



Equine abdominal surgery

By Professor Tim Greet

Abdominal surgery is now accepted as a routine part of equine practice. Statistics show that surgical conditions occur in less than 10% of all horses with abdominal pain (colic), but this still represents a significant number of cases. In our hospital, we perform approximately 150 laparotomies every year.

Although colic can be caused by other abdominal structures (e.g. ovary or bladder), most commonly it is the result of a gastro-intestinal obstruction. While most horses and ponies with colic can be treated by simple medical means, some require more intensive treatment or even surgery.

Diagnosing the problem

Differentiating between medical and surgical problems can be difficult, especially in younger patients. Foals and yearlings often show quite severe pain even when the underlying cause is medical. The examining veterinary surgeon's duty is to relieve pain, but it is equally important to make an early and accurate diagnosis to ensure the correct treatment is administered.

Diagnostic techniques include obtaining an accurate history, careful observation of the patient's demeanour, assessing the cardiovascular status (heart rate, mucous membrane colour, hydration), carrying out a manual examination per rectum (an internal examination to feel for intestinal distension, displacement or pain), passing a stomach tube (gastric reflux is often a sign of a surgical obstruction), other tests such as transabdominal ultrasound (to image the intestine which can not be palpated because it is too far forward, or in patients too small to perform a rectal exam) and collecting samples of blood, or peritoneal fluid from within the abdominal cavity. By these means, and equally importantly by assessing the patient's response to the administration of analgesics (painkillers), it is usually possible to determine whether or not the horse requires surgical treatment. Most horses are treated with analgesics and with drugs which relieve intestinal spasm. Strong analgesics can mask the early signs of a surgical problem and it is therefore essential that appropriate drug use is based upon a thorough assessment of the patient. It is also very common to



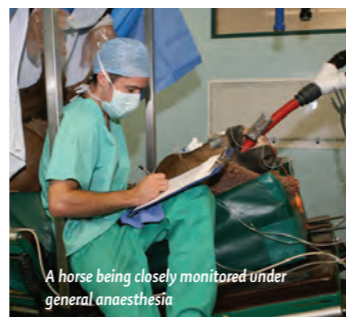
A section of necrotic small intestine in an older horse, strangulated by a pedunculated lipoma (fatty tumour).

administer an electrolyte solution or liquid paraffin via a stomach tube. Causes of intestinal obstruction are often dynamic so it is important that patients are monitored regularly until the problem has resolved. In some patients the degree of pain is such, or the rectal or ultrasound findings are typical, or the horse refluxes (regurgitates) the contents of its stomach and small intestine, or there is evidence of cardiovascular impairment, to indicate that surgical exploration and treatment or euthanasia is necessary. It is always best to make the decision to operate as early as

possible before life-threatening endotoxaemia (poisoning from within the diseased intestine) has become established. This requires a serious discussion with the owner regarding the cost of treatment and the likely prognosis. If appropriate therapy is not instituted, such patients will die usually within hours.

The surgical approach

Although these days colic surgery is often successful (about 80% of our patients survive to discharge from the hospital), surgery coupled with the intensive aftercare necessary to give the patient its best chance is a significant and an expensive undertaking.



A horse being closely monitored under general anaesthesia

Carried out under general anaesthesia, the surgical approach to the abdomen is almost always via a ventral midline incision (i.e. on the underside of the abdomen). All cases are given intravenous fluids, antibiotics, non-steroidal anti-inflammatory drugs and often intestinal stimulants. At surgery a variety of problems may be encountered, including classical 'twists', entrapment of intestine through a natural or acquired space in the mesentery or body wall, intussusceptions (literally 'telescoping' of one length of intestine into another), displacements, physical obstruction, or functional obstruction, as in so-called 'grass sickness'. Most of these are amenable to correction, although some require removal of diseased intestine and joining ends of healthy intestine together. Sadly in grass sickness, which is usually fatal, we can only



A horse in intensive care after colic surgery with its incision protected by an abdominal bandage

take a small intestinal biopsy to confirm the disease and allow early euthanasia to prevent further suffering.

Post-surgery intensive care

After surgery, patients are allowed to recover from anaesthesia and then moved to a heated intensive care box where constant monitoring and intensive support is administered. Most patients are not fed until normal intestinal function has returned (usually within 48 hours), although a small handful of grass often acts as an appetite stimulator and trigger to intestinal motility. It is necessary to encourage motility by medication, exercise, gastric decompression (passing a stomach tube to remove any fluid build up) and by controlling electrolyte levels, assessed by post-operative blood samples. Post-operative intestinal paralysis (ileus) is relatively common and our nursing and veterinary staff are proactive in tackling ileus whenever it occurs.

Surgical team on call 24/7

Colic patients often arrive in the middle of the night and from far away; we serve a large area of the East of England and sometimes further afield. A surgical team is on call 24/7 and quite often seven or eight people are involved with surgery when the rest of the world is soundly asleep! This type of critical care can be very rewarding; patients are usually facing certain death unless prompt therapy is instigated. An amazing number of grateful clients write



A surgical team is on call 24/7 at Rossdale Equine Hospital

letters thanking the nursing staff and veterinary surgeons who deal so professionally with these difficult cases, often during anti-social hours, weekends, or Bank Holidays. When I graduated almost 35 years ago, most surgical colic patients died. Arguably no area of surgical practice has evolved so encouragingly as that of equine abdominal surgery.

Simple instructions for horse owners

- All horses with abdominal pain should be examined by a veterinary surgeon as a matter of urgency. Although most cases will not require surgery or even intensive therapy, some patients deteriorate rapidly and it is important they be seen to allow a prompt diagnosis.
- Horses with low grade abdominal pain may be walked out to their benefit, but not to exhaustion! If the horse is showing signs of violent pain, leave it alone. Horses in such pain are potentially a serious cause of injury to their owners; do not get hurt!
- Worm horses regularly and appropriately following veterinary advice.
- Above all, establish a close relationship with your local veterinary practice. These are the people who may save your horse's life in an emergency.



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Year of qualification: 1976
Qualifications: Awarded a Master of Veterinary Medicine by the University of Glasgow. Awarded a Certificate in Equine Orthopaedics and a Diploma in Equine Soft Tissue Surgery and the Diploma of Fellowship by the Royal College of Veterinary Surgeons (RCVS).
A Diplomate of the European College of Veterinary Surgeons (ECVS).
Recognised as a Specialist in Equine Surgery by the RCVS and the ECVS.
Main interests: General and minimally invasive equine surgery – my surgical caseload includes both orthopaedic and soft tissue patients.
In 1976 I graduated from the University of Glasgow, from which I was awarded a Master's Degree in 1977. I subsequently worked at the Equine Research Station (ERS) of the Animal Health Trust, Newmarket and in 1982 was awarded a Fellowship of the Royal College of Veterinary Surgeons (RCVS) for a dissertation on work I carried out at the ERS. In the same year, I joined the Newmarket private equine practice of Dr Peter Rossdale, becoming a partner in 1984.
Since that time, I have been responsible for the surgery department at Rossdale & Partners and in 1997 we developed our purpose-built equine hospital where I am senior surgeon.
I have lectured around the world on a variety of equine surgical topics, have published papers in veterinary journals, and have contributed several chapters to veterinary textbooks. I am proud to have been awarded prizes by the British Veterinary Association (BVA) and the British Equine Veterinary Association (BEVA).
I am an Honorary Professor in the Clinical Department of the Veterinary School at the University of Glasgow, and an Associate Lecturer in the Clinical Department of the Veterinary School at the University of Cambridge.
I was President of BEVA in 2000, President of the BVA in 2003/4, and am currently President of the World Equine Veterinary Association.



A week in brief...

Monday

A procedure known as a 'laryngeal tieforward' is performed on two young racehorses to rectify dorsal displacement of the soft palate, a disabling cause of upper airway obstruction. This operation attempts to stabilise the soft palate by bringing the larynx and hyoid apparatus more closely together. After recovery from general anaesthesia, the soft palate is treated using a diode laser under endoscopic view.



Closing the nephrosplenic space under laparoscopic guidance

A horse with recurrent sinusitis is treated by enlarging the sinus drainage hole using a diode laser under endoscopic control, with the horse standing, sedated and under a



Laser surgery of upper airway under endoscopic control

local anaesthetic. Laser surgery is a very useful means of carrying out a variety of treatments for upper airway obstruction. The next patient is a mare with a large granulosa cell tumour of her ovary. Most ovariectomy procedures are now carried out in standing, sedated patients, using laparoscopy. This tumour is not particularly large but rather unusually it has become adherent to a uterine horn. That, combined with her difficult temperament, resulted in my abandoning standing surgery and rescheduling the patient for a general anaesthetic tomorrow. Finally, an emergency colic patient is

admitted. For almost 24 hours, this horse had been treated by the referring practice using painkillers but now surgery under general anaesthesia is the only option. This reveals massive distension of the small intestine, which is emptied and a biopsy collected from the thickened portion. Having recovered from anaesthesia, the mare is moved into intensive care where she can be monitored closely overnight.

Tuesday

The first patient is the mare with a granulosa cell tumour. Under general anaesthesia, the ovary was removed, dissecting it carefully away from the adherent uterine horn. The mare recovered uneventfully from general anaesthesia and I was able to ring the relieved mare owner to say that everything had gone well. Next a valuable pregnant brood mare is admitted with a discharging wound on her pastern. She had suddenly become very lame and we are suspicious that there is an infection in her coffin joint. A sample of synovial fluid reveals a very high white cell count indicating the joint

to be infected. The mare is given a general anaesthetic and the joint is flushed out with an antibiotic solution. Immediately after surgery I leave for Tattersalls Sales. This week, the most expensive Thoroughbred yearlings are sold and I am on a panel of experts examining horses 'returned' due to an abnormal respiratory noise at exercise. On this occasion the vendor is relieved to hear that the horse is fine, as it had been sold for 200,000 guineas!

Wednesday

One of my other partners does his elective operating on Wednesdays so this is when I try to catch up on other work, including several legal cases on which I am currently giving expert opinion. I also carried out another laser treatment on the nose of the horse with sinusitis.

Thursday

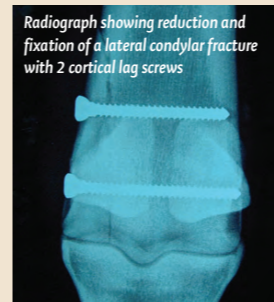
Another sales panel early morning. Afterwards, I operate on a valuable foal with a benign tumour of its mandible (lower jaw). First stage in the treatment is to remove the bony

tumour from the front of its jaw. Everything goes smoothly and the foal recovers uneventfully from the anaesthetic. Once the mouth has healed, the foal will be referred to Cambridge Veterinary School for a course of radiotherapy. Today we are under some pressure because the electric hoist which lifts patients onto the operating table is being serviced and this will take much of the day. However, the engineers allow me some time to re-anaesthetise the mare with the infected coffin joint and flush the joint using the arthroscope. Two further meetings of the Tattersalls' panel take place during the afternoon and early evening.

Friday

The horse with sinusitis has its final laser treatment and I have now created a hole between its sinus and nose which is sufficiently large to remain patent. The jaw of the foal operated on yesterday looks almost normal today and he is suckling quite happily from the mare. My next patient sustained a cannon

bone fracture whilst galloping this morning. Lateral condylar fracture is one of the more common injuries we see in racehorses. It is repaired under general anaesthesia with two screws. Finally, there is a similar, but more severely displaced, fracture in an older racehorse which has been referred here four days after the original injury. The owners understand that the horse is only ever going to be pasture sound. With an arthroscope in the joint, it is possible to assess the complete reduction of the fracture, which is repaired with two screws and the horse recovers uneventfully from the anaesthetic.



Radiograph showing reduction and fixation of a lateral condylar fracture with 2 cortical lag screws