

92

NEW DEVICE FOR ELECTIVE INVERSION OF THE NECROTIC ILEAL STUMP

Gandini M. and Giusto G.

Department of Veterinary Sciences, University of Turin, L.go Paolo Braccini 2-5, Grugliasco (TO), Italy.

Email: marco.gandini@unito.it

Background: Leaving a necrotic ileal stump has been blamed as a cause of poor prognosis in jejunocaecal anastomosis. Elective inversion of the necrotic stump has been described by means of a nasogastric tube, although this procedure can be cumbersome and has been reported to cause caecocolic orifice occlusion.

Objectives: To describe a new device and its use for elective inversion of necrotic ileal stump.

Methods: The device was constructed securing 0.5 m of hemp tape to a 0.7 m of electrical cable puller. The device is inserted in the ileum and passed into the caecum. A TA90 stapler or USP 2 PDS suture is used to occlude the ileal lumen and simultaneously secure the tape to the intestine. The ileum is then resected. A small tiplotomy is made at the proposed site for the jejunocaecal anastomosis. The device, protected by an arthroscopy sleeve, is retrieved by an assistant. The hemp tape is cut flush to the ileal mucosa. The tiplotomy is closed. The device was tested ex-vivo for pullout force with a digital dynamometer and used in three clinical cases.

Results: The device was easily secured to the intestine. Small enterotomies were sufficient both to insert and remove the device. Securing of the device to the intestine resulted effective both with TA stapler and sutures.

Conclusions: The device resulted effective in inverting the ileal stump in clinical cases. Leaving a short, inverted stump, this method could help improving prognosis for jejunocaecal anastomosis, possibly avoiding undesired side effects of the procedure.

Ethical animal research: No ethical approval required.

Source of funding: None.

Competing interests: None.

References

- Ekert, R.S., Crowson, L.C., Moll, D., Bentz, B.G., Confer, A.W. and Blaik, M.A. (2003) Obstruction of the caecocolic orifice by ileocecolic intussusception following jejunocostomy in a horse. *J. Am. Vet. Med. Ass.* **12**, 1743-1745.
- Vasey, J.R. and Julian, R.J. (1987) Elective inversion of the distal ileal stump into the caecum of the horse. *Equine Vet. J.* **19**, 223-225.

93

VOLVULUS NODOSUS OF THE SMALL INTESTINE: DIFFERENCES IN FOALS AND ADULTS (5 CASES)

Gandini M. and Giusto G.

Department of Veterinary Sciences, University of Turin, L.go Paolo Braccini 2-5, Grugliasco (TO), Italy.

Email: marco.gandini@unito.it

Background: Volvulus nodosus is a strangulating lesion of the small intestine described only in foals and in just one case in older horses. Huskamp (1982) described the pathophysiology of volvulus nodosus in foals, but to date there is no

description of the pathophysiology of volvulus nodosus in adults.

Objectives: To describe the different features of volvulus nodosus in adult horses and in foals

Methods: Analysis of the clinical and anatomical features of two foals and three adults presenting with volvulus nodosus.

Results: Clinical presentation between foals and adults differed mainly for the mild or absent pain showed by older horses. Clinical and ultrasonography findings were similar. At surgery or necropsy we found anatomical differences between adults and foals. In adults, the volvulus didn't involve the mesentery that instead forms a hernia sac in foals. Further, in adults, there wasn't involvement of the ileum but two loops of jejunum resulted one wrapped around another in all three cases. After accurate analysis of one case at necropsy, we found that in adults one loop act as a 'post' around which another loop turns around. The weight of this loop causes then the formation of a half-hitch formed by the two loops and their mesentery. This cause strangulation and necrosis of two separate tract of jejunum.

Conclusions: Volvulus nodosus may occur in adult horses with significant differences compared to foals. Knowing the presentation and pathophysiology of volvulus nodosus may help equine surgeons to resolve selected cases of small intestinal strangulation in adult horses.

Ethical animal research: Not required.

Source of funding: None.

Competing interests: None.

References

- Dorges, F., Vornberger, K. and Stadler, P. (1993) Sonographische Darstellung eines indolenten Volvulus nodosus bei einer Kleinpferdstute. *Pferdeheilkunde*, **9**, 369-372.
- Huskamp, B., Daniels, H. and Kopf, N. (1982) Magen- und Darmkrankheiten für wissenschaft und Praxis. VEB Gustav Fischer Verlag. Jena. 557-559.

94

WHY IS THE ILEUM INVOLVED IN THE MAJORITY OF CASES OF INTERNAL HERNIAS? A BIOMECHANICAL HYPOTHESIS

Gandini M. and Giusto G.

Department of Veterinary Sciences, University of Turin, L.go Paolo Braccini 2-5, Grugliasco (TO), Italy

Email: marco.gandini@unito.it

Background: Ileum is involved in 64–81% of cases of epiploic foramen entrapment and 49–53% of inguinal hernias. To date no explanation for this occurrence has been proposed.

Objectives: To offer a possible explanation of the high rate of ileal involvement in internal hernias

Methods: Analysis of the surgical and anatomical features of 21 cases of strangulation of the small intestine in internal hernia in horses.

Results: In 6/13 cases involving the ileum, the incarcerated segment presented less severe pathological features proceeding proximal to distal. These suggest a different, progressive involvement of the distal bowel along with the duration of the pathology. We hypothesised that the relative movement between bowel and ingesta may cause this. Once a portion of intestine enters the hernial port, its luminal content cannot proceed aborally due to the external luminal

occlusion caused by the port itself. At this stage, peristalsis, that cannot push the luminal content aborally, will instead pull the intestinal segment orally. This can eventually lead to the exit of the proximal intestine until the luminal content in the herniated portion will block this progression. Distally, being the intestine empty, it is easily and progressively brought into the hernia. This progression ends only when the ileum is involved and traction on the ileocaecal valve prevents this phenomenon.

Conclusions: This hypothesis can explain why the ileum is involved in the majority of cases of internal hernias. Eventually, antiperistaltic drugs administered early in the course of the disease, may reduce the length of intestine affected.

Ethical animal research: No ethical approval required.

Source of funding: None.

Competing interests: None.

95

STANDARDISATION OF CRITICAL DECISIONS AND COSTS TO REDUCE EUTHANASIA IN COLIC SURGERY. A SINGLE-CENTRE PROSPECTIVE STUDY IN ITALY

Gandini M. and Giusto G.

Department of Veterinary Sciences, University of Turin, L.go Paolo Braccini 2-5, Grugliasco (TO), Italy.

Email: marco.gandini@unito.it

Background: Pre- or intra-operative euthanasia is often chosen for financial constraints or presumed poor prognosis. This can reduce the total number of horses potentially saved with colic surgery, despite the actual condition of the horse.

Objectives: To reduce pre- and intra-operative euthanasia of colic cases due to financial constraints and presumptive 'poor prognosis'.

Methods: For cases admitted for colic surgery, a standard protocol for critical decisions was used. To eliminate the financial factors, owners were offered a standard range of price for colic surgery, regardless of the eventual need for resection and anastomosis.

Results: Price quotation for colic surgery was 4800-5800 euros and was well accepted by owners and sustainable by the hospital. Two-hundred and eleven cases were admitted (66 medical, 145 surgical). Consent to surgery was given in 132/145 horses. Euthanasia for decision of the surgeon were 2/132 before surgery (viscera rupture), and 8/130 intraoperatively (5 because of viscera rupture, 2 for excessive length of necrotic small intestine, 1 for unresectable large colon). Two horses died during anaesthesia and 4 were euthanised in the recovery stall. This led to 115 horses that stood after anaesthesia. Twelve horses were euthanised because of post-operative complications. Seventy-nine percent of operated and 89.5% of recovered horses were discharged from the hospital.

Conclusions: Standardisation of procedures and costs resulted sustainable, while reducing biases due to the surgeon choice or owner decision, and with survival rates comparable to other studies. One of the main causes of death was the owner not giving consent to surgery.

Ethical animal research: No ethical approval required.

Source of funding: None.

Competing interests: None.

96

CLINICAL COMPARISON BETWEEN A SKIN-STAPLED AND A CONTINUOUS LEMBERT PATTERN FOR JEJUNOJEJUNAL END-TO-END ANASTOMOSIS IN HORSES

Giusto G. and Gandini M.

Department of Veterinary Sciences, University of Turin, L.go Paolo Braccini 2-5, Grugliasco (TO), Italy.

Email: gessica.giusto@unito.it

Background: One-layer jejunojejunal anastomosis is considered effective in horses. Several patterns have been proposed but rarely compared clinically.

Objectives: The objective of the study was to compare outcome and complications of a modified skin stapled and a continuous Lembert pattern in jejunojejunal anastomosis in horses

Methods: Data from clinical records of 24 horses that underwent jejunojejunostomy between January 2018 and January 2021 at the University of Turin VTH were retrieved. Short-term complications, short- and long-term survival (>9 months) were compared after a modified skin stapled (12 horses with strangulating lesions, 1 with non-strangulating lesion), and a continuous Lembert pattern (10 horses with strangulating lesions, 1 with non-strangulating lesion).

Results: Post-operative reflux (POR) developed in 9 horses, 6 with the continuous Lembert and 3 with the skin stapled anastomosis. POR in the continuous Lembert group was caused by obstructive adhesions found at necropsy (2 cases), obstruction of the anastomotic site confirmed at relaparotomy (1 case). In the skin stapled group, one of the horses that developed POR was found having obstructive adhesions at necropsy but not involving the anastomosis. Short-term survival was 85% (11/13) for skin stapled anastomosis, and 72% (8/11) for the continuous Lembert pattern. Long-term survival (>9 months) was 100% for skin stapled anastomosis, and 90.9% for continuous Lembert pattern.

Conclusions: Both patterns performed well in clinical use, although the Lembert continuous pattern has a higher risk of developing POR.

Ethical animal research: No ethical approval required.

Source of funding: None.

Competing interests: None.

97

EX VIVO COMPARISON OF LIGATURES AND HAEMOSTATIC CLIPS FOR MESENTERIC VESSELS OCCLUSION IN SMALL INTESTINAL RESECTION AND ANASTOMOSIS

Giusto G., Guercilena C. and Gandini M.

Department of Veterinary Sciences, University of Turin, L.go Paolo Braccini 2-5, Grugliasco (TO), Italy

Email: gessica.giusto@unito.it

Background: In equine abdominal surgery extensive resection and anastomosis of small intestine is a commonly performed procedure. To provide haemostasis, absorbable ligatures, surgical staplers and vessel sealing devices have been proposed in horses.