Jejunoileal Anastomosis Technique in Six Horses

Dawn A. Loesch, DVM; Dwayne H. Rodgerson, DVM, MS, Diplomate ACVS; Gregory R. Haines, DVM; and Bruce C. Watt, DVM, Diplomate ACVS

A two-layer, hand-sewn, end-to-end jejunoileal anastomosis technique can result in few postoperative complications. Advantages to this technique include maintaining the normal ileocecal valve, shorter surgical time, and a generally uncomplicated postoperative recovery in the majority of horses. Author's address: Department of Large Animal Clinical Sciences, College of Veterinary Medicine, University of Florida, Gainesville, FL 32610-0136. © 2001 AAEP.

1. Introduction
Strangulating small intestinal lesions represent a significant cause of equine colic requiring surgical correction. Various methods of anastomosis following resection of affected bowel have been described, depending on the portion of bowel affected by the primary lesion. When any portion of the ileum is resected following involvement in a strangulating lesion, creation of a jejunocecostomy has been recommended.1,2,3 When sufficient healthy ileum remains for adequate exteriorization from the abdomen following resection, jejunoileal anastomosis may be performed; however, this procedure has been reported to have a greater tendency for postoperative complications.1,4 Based on recent clinical experience, we suggest that jejunoileal anastomosis is not followed by significant postoperative complications. Numerous techniques for performing small intestinal anastomoses are available, including end-to-end, side-to-side, end-to-side, and hand-sewn or stapled procedures, depending on the location and extent of affected bowel. Hand-sewn end-to-end small intestinal anastomoses have most often been performed with a one- or two-layer inverting suture pattern.1,4 A technique creating a hand-sewn end-to-end anastomosis of the jejunum to the ileum with a simple continuous mucosal layer followed by a simple continuous seromuscular layer has not been reported in the literature. The purpose of this report is to describe six horses undergoing hand-sewn, end-to-end jejunoileal anastomosis in two simple continuous layers following resection of strangulated small intestine and to evaluate the short-term complications.

2. Materials and Methods
Six horses (1 Thoroughbred, 2 Warmblood breeds, 1 American Quarter Horse, 1 Belgian, 1 Arabian) aged 10 months to 27 years and weighing 250 to 750 kg were presented for emergency examination for colic (5 horses) or umbilical swelling (1 horse). Exploratory ventral midline celiotomy was performed on all horses. Strangulation of the proximal ileum and distal jejunum was diagnosed in all horses. Causes of the strangulation included Richter’s hernia (only part of the small intestine wall circumference was within the hernia), lipoma, epiploic foramen entrapment, rent in the ileocecal fold, and inguinal hernia (2 horses). Length of resected small intestine varied from 2 to 25 feet and the
length of ileum resected ranged from 10% to 70%. Following reduction of the strangulation, affected bowel was prepared for resection routinely. Briefly, mesenteric vasculature supplying the affected segment of bowel was ligated, and the mesentery was resected along the length of the affected bowel. Contents of the ileum were manually decompressed into the cecum prior to occlusion of the bowel distant from the proposed distal resection site. The ileum was then resected and the stump covered by a moistened gauze sponge during manipulation of the proximal bowel. Contents of the proximal small intestine were then decompressed through the open bowel, held away from the surgical field by an assistant. Following decompression, the proximal bowel was occluded distant to the proposed resection site and affected bowel was transected and discarded. A hand-sewn end-to-end jejunoileal anastomosis was then performed in all horses. All anastomoses were accomplished using a 2-layer hemicircumferential simple continuous suture pattern in the mucosa and seromuscular layers with 2-0 or 3-0 braided or monofilament absorbable suture material. Minimal to no abdominal contamination was encountered during all procedures. All ventral midline incisions were closed routinely. One horse with inguinal hernia was hemicautered on the affected side only, with the scrotal incision closed primarily; the other horse was bilaterally castrated and scrotal incisions were left open to drain.

3. Results

Postoperative complications directly attributable to the small intestinal anastomosis were minimal in all horses. Mild postoperative depression in the hemicastrated stallion with inguinal herniation was attributed to inguinal pain following closure of the superficial inguinal ring, as no gastric reflux was obtained, normal intestinal borborygmi were present and the horse demonstrated a good appetite. Mild to moderate tachycardia developed postoperatively in 3 horses, continuing for 24 to 72 hours following surgery, which resolved without specific medical therapy beyond routine postoperative colic management. Mild postoperative ileus developed in the bilaterally castrated stallion with inguinal herniation, requiring regular gastric decompression via nasogastric intubation for the first 72 hours postoperatively. Following this time period, the horse demonstrated a good appetite and mild colic pain was attributed to scrotal swelling secondary to castration and enforced stall confinement. In two other horses, mild to moderate abdominal pain, which responded to analgesic administration, occurred 3 to 5 days postoperatively. Duration of hospitalization ranged from 5 to 12 days. After discharge, follow-up interviews (at 1 to 6 months) with the owners revealed all horses to be recovering satisfactorily, without complications.

4. Discussion

Jejunoileal anastomoses have been suggested to result in frequent short-term postoperative complications, primarily due to stricture at the anastomosis site, resulting from the differences in intestinal lumen size and wall thickness of the jejunum and ileum. Additionally, the single ileal blood supply has been suggested to be insufficient to support anastomotic healing in this section of the intestinal tract, increasing the risk of anastomotic failure.2,3,5 Alternatively, jejunocecostomy to bypass the ileum has been commonly performed. Short-term results of the six horses reported here suggest that jejunoileal anastomosis is a viable alternative to ileal bypass that does not seem to be subject to significant postoperative complications. Additionally, the jejunoileal anastomosis may be technically easier to perform, as compared to the jejunocecostomy procedure. We believe that the hand-sewn end-to-end technique used in these cases offers several advantages when compared to the bypass procedure. Using remaining ileum in the anastomosis maintains more normal distal small intestinal anatomy, especially the ileocecal valve.6 Preparation for and performance of a hand-sewn end-to-end anastomosis may also offer the advantage of shorter surgical time and may decrease the need for intestinal stapling devices, which results in less cost to the owner. A quick, uncomplicated postoperative recovery should occur in the majority of horses, as evidenced by the horses of this report. Small intestinal anastomoses are often associated with formation of adhesions, which may be life-threatening in some cases. Efforts to reduce adhesion formation at the anastomosis site include the use of an inverting suture pattern in the seromuscular closure.1,2,4 However, this technique may predispose to obstruction or stricture at the anastomosis site due to the limited lumen size present in the small intestine. The use of a hemicircumferential simple continuous suture pattern in the seromuscular layer has not been previously reported. Based on the horses described in this report, this technique does not appear to result in significant short-term postoperative complications secondary to anastomotic obstruction, stricture, or adhesion formation. In conclusion, provided that viable ileum can be exteriorized from the abdomen following resection, we feel the handsewn, end-to-end jejunoileal anastomosis technique utilizing a two-layer hemicircumferential simple continuous suture pattern, as described in this report, can result in few postoperative complications.

References