

Rectal Tears: Emergency Procedures and Diagnostics

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CLINICAL SIGNS

Most rectal tears occur in association with rectal palpation and should be suspected when a sudden decrease in the resistance to palpation is felt or when fresh blood is observed on the palpation sleeve. With grade three or four tears the horse will begin to sweat, develop an increased heart rate, fever, abdominal pain and splinted abdomen in 2-3 hours consistent with signs characteristic of septicemia, endotoxic shock, and peritonitis. Most rectal tears occur dorsally, in a longitudinal direction 25 to 30 cm cranial to the anus in the intra peritoneal portion of the rectum and dissect obliquely for a variable distance along the lateral wall. In this region there is a decrease in the circular muscle thickness that corresponds with the increase in thickness of the mesenteric taenial band of the small colon. The decrease in circular muscle thickness along with a lack of serosal surface of the bowel enclosed in the mesorectum could contribute to the inherent weakness at this site. Rectal tears that occur caudal to the peritoneal reflection may lead to a retroperitoneal abscess that could extend into the abdominal cavity or require draining into the rectum, vagina, or perineum.

DIAGNOSIS

Rectal tears have been classified on a four-grade system. Grade one tears are restricted to the mucosa and submucosa and palpate as a small roughening or defect in the rectal wall associated with bleeding. Grade two tears involve only the muscular layers of the rectal wall while the mucosa and serosa remain intact. No blood is seen on the rectal sleeve and these are considered to be incidental findings. Grade three lesions involve all tissue layers except the serosa or mesorectum. There are deep defects that are often filled with feces. Grade 3A tears have the serosal covering of the intact bowel, whereas Grade 3B tears occur dorsally into the fat filled mesorectum. Grade four tears involve a perforation of all layers of the rectal wall which permit direct communication between bowel contents and the abdominal cavity. Palpation of the abdominal organs directly is possible through a Grade 4 tear. Circumferential retroperitoneal rectal tears have been reported but are infrequent.

When a rectal tear occurs, prompt action will often improve the patient's chance of survival and the veterinarian's defense against litigation. An epidural anesthetic and sedation (xylazine 0.4 mg/kg intravenously and butorphanol tartrate 0.05 mg/kg IV) will help facilitate a careful examination of the rectum. Careful determination of the extent and exact location of the tear can be facilitated by bare arm palpation or cutting the fingers off a normal rectal sleeve and using a latex exam glove over the exposed fingers. The feces should be carefully removed from the rectum before beginning the rectal examination. The tear may then be located by sequentially inserting a hand into the rectum further each time until blood is observed. A vaginal speculum can help to visualize the tear; however the rectal mucosa usually folds around the speculum, making direct visualization difficult. Careful palpation will determine the severity of the tear once it is located. The tear should be very gently felt for position, distance from the anal sphincter, size and depth. Any feces in or around the tear should be very carefully removed. The improper healing of grade one or two rectal tears can lead to abscess

and/or fistula formation. Grade two tears may be felt upon subsequent rectal palpations as a variable-sized diverticulum that is more accurately described as a mucosal-submucosal hernia. These tears are usually incidental findings, as luminal bleeding is not associated with these tears. Grade 3A tears usually form a diverticulum lined by serosa, which fills with feces shortly after the injury. The 3B tears allow fecal contamination of the mesocolon. Fecal contamination of Grade 3 tears may progress to a Grade 4 tear. Grade four tears are easily detected with direct palpation of abdominal organs. Peritoneal fluid changes occur quickly in horses with Grade 3 and 4 rectal tears with nucleated cell counts exceeding 50,000 cells/ μ l in 30 minutes.

TREATMENT

Accurate and early treatment has a marked influence on case survival. Horses with Grade 1 tears are amenable to either medical treatment alone or can be treated using epidural anesthesia with direct suturing techniques in the standing animal. Broad-spectrum antibiotics should be administered with serial hemograms and peritoneal fluid analysis to aid in monitoring the patient. The horse should be monitored closely for one week and fed a laxative diet such as water-soaked alfalfa pellets, combined with regular administration of mineral oil by nasogastric tube. Oral or intravenous fluid replacement may be required to restore circulating volume, ensure tissue perfusion, and prevent bowel stasis and possible colon impaction.

Grade two tears are discovered as an incidental finding on subsequent rectal palpations as a variable-sized diverticulum that is commonly described as a mucosal-submucosal hernia. Horses with Grade 2 tears may present with signs of tenesmus or with rectal impactions. The hernia or diverticulum is usually detected after manual evaluation of the rectum. These tears occasionally lead to the formation of a pararectal abscess. These tears are frequently manageable with conservative measures such as dietary control aimed at keeping the feces soft. Horses with Grade 3 rectal tears require prompt and aggressive medical and surgical intervention. Early recognition of the condition, along with aggressive precautionary measures to arrest the further development of the tear are indicated. Surgical intervention should be instituted immediately, for delaying repair only increases the mortality rate associated with the disease.

The immediate goal is to prevent enlargement and development of a Grade 4 tear. This is accomplished by tranquilizing the horse, providing epidural anesthesia to eliminate straining, manually removing feces from the rectum, and packing the rectum to prevent fecal contamination and diverticulum formation. Epidural anesthesia should be maintained to prevent the horse from straining against the pack. A combination of xylazine and carbocaine may be useful to provide a long-acting effect. All feces within reach are removed from the rectum and small colon, and the rectum is packed with moist cotton inside a well lubricated 3 inch stockinette. The purpose of the packing is to fill, but not distend, the rectum. The pack should extend from the anus to approximately 10 cm cranial to the site of the tear. No material should be packed into the tear itself. The anus is then closed with towel clamps or a purse string suture to prevent the packing from exiting. Vigorous medical management should be instituted. Atropine, a parasympatholytic drug, has been recommended by some clinicians to depress intestinal motility. When used correctly as a single dose (0.044 mg/kg IM or subcutaneously [20 mg for a 450-kg horse]), atropine will decrease intestinal motility for up to 12 hours. This can be a safe and excellent way to depress intestinal motility. Broad-spectrum systemic antimicrobials, tetanus toxoid, and fecal laxatives such as mineral oil should also be administered. Balanced polyionic fluids should be administered to rehydrate the

horse in anticipation of an extensive surgical procedure and to counter the hemodynamic effects of endotoxins.

Several surgical techniques have been described to repair rectal tears. These include direct surgical repair via a rectal approach, partial prolapse of the rectum, placement of a temporary diverting colostomy, placement of a temporary rectal liner and direct surgical approach and repair via a celiotomy. The technique chosen to repair the rectal injury depends largely on the location of the tear, the preference and expertise of the surgeon, and the availability of specialized surgical equipment.

Techniques used to repair Grade 3 tears also apply for Grade 4 tears. Because there is more direct contamination of the abdomen in Grade 4 tears, there is an increased expense due to the likelihood of multiple postoperative complications. As a result, a poorer prognosis is associated with Grade 4 tears so the value of the animal in perspective to the expense incurred should be taken into consideration.

Direct closure of Grade 3 tears can be done in the standing animal if the tear is less than 15 cm from the anus. The horse must be cooperative and have a rectum that is easily dilated. The surgeon must have good patience and the manual dexterity to close the wound without further damaging the edges of the tear or incorporating nearby mucosal folds into the tear that would reduce the rectal diameter.

An interrupted cruciate pattern utilizing size 0 or 1 absorbable suture material with a swaged-on taper point, half-circle needle incorporating all layers is the method of choice. The tear can be repaired blindly with the sewing hand inserted into the rectum. Incomplete suturing of the tear, however, will allow for continual packing of the defect with feces and eventual breakdown or submucosal dissection. The use of an expandable rectal speculum or wire basket (Robert A. Roland, Davis, CA) and long-handled instruments can facilitate closure of these tears for individuals inexperienced with the blind suturing method. Transection of the anus will improve access to the tear and facilitate defecation after surgery. Contraction of the wide muscular bands and circular smooth muscle increases the risk of dehiscence of the sutured tears. With proper patient selection (Grade 3-A tears), primary closure of the tear with sutures has yielded excellent results in six of 7 patients.

Direct suturing of the tear can also be achieved by prolapsing the small colon until the tear is exposed outside the anus. A hand is passed through the rectum to grasp the colon wall with a gauze sponge placed by an assistant through a laparotomy incision. Surgical stapling equipment (TA 90 premium, United States Surgical Corporation, Norwalk, CN) has been successfully used to repair rectal tears exteriorized via suture traction of the rectum and wound edges. This procedure is more easily accomplished in thin horses as less pressure is applied on the mesenteric vessels during traction of the small colon.

Placement of a temporary rectal liner via a ventral midline celiotomy has been described for the treatment of Grade 3 or 4 tears. Each end of a 5 x 10 cm plastic rectal ring (Rectal Ring, Regal Plastic Co, Detroit Lakes, MN) is trimmed to form a 5 x 7-cm ring. Holes are drilled 1.5 cm apart in one edge of the central groove around the circumference of the ring and #5 Dacron suture material is laced through the holes, forming a continuous anchor suture. The rectal ring is inserted into the small end of an arthroscopy camera sleeve (Video Camera Cover, Surgical Resources, Inc. Darlington, MD). Modern rectal palpation sleeves have proven too unreliable creating the need to use the more durable

camera sleeve. A rubber band is placed around the sleeve and over the center groove in the ring at the opposite end from the anchor suture. The sleeve is fastened to the end of the ring with cyanoacrylic and the sleeve is inverted over the ring and fastened to itself. Inversion of the sleeve protects the intestine against irritation by the rubber band, the cut edges of the sleeve, and the cyanoacrylic. An assistant passes the plastic rectal ring and sleeve through the anus and small colon until it can be surgically placed oral to the tear. Number 3 surgical catgut is passed around the colon and over the groove on the ring and is tied to constrict the serosal surface. Four interrupted retention sutures are placed equidistant through the colon wall to include the circumferential catgut suture and the Dacron suture in the rectal ring. Absorbable retention sutures (2-0) in a Lembert pattern are then oversewn over all previous sutures so as to infold the wall.

The large colon should be evacuated by a pelvic flexure enterotomy, and a stomach tube is passed retrograde from the anus up the sleeve to thoroughly flush the small colon with water and to infuse 4 L of mineral oil into the right dorsal colon. Feces that enter the ring are contained within the liner until passed through the anus. The anastomosis maintains continuity of the intestinal tract until the ring and circumferential suture slough nine to 12 days after surgery. The temporary indwelling liner effectively protects Grade 3 tears during healing, unless the tear converts to a Grade 4 tear. The horse is kept standing until the rectal tear heals because the sleeve could retract into the rectum if the horse becomes recumbent. Mineral oil and a pelleted ration are fed until the ring and liner detach.

Diverting colostomies can be performed with the horse standing, using sedation and local anesthesia or with the horse under general anesthesia. Advantages of the standing procedure include the elimination of risk of damage to the stoma during recovery from anesthesia, less expense and the elimination of possible complications incurred during general anesthesia. Advantages of performing the colostomy with the horse under general anesthesia include the greater ease of tissue handling with the horse in lateral or dorsal recumbency. In the presence of peritoneal inflammation, the un-anesthetized horse may be reluctant and unwilling to permit any traction and manipulation of the bowel.

Ileus is a common complication after repair of a rectal tear. Peritonitis from the tear and surgical manipulation of the small colon, as well as postoperative anesthetic depression of bowel motility contribute to this complication. Although these concerns will subside with time, neostigmine can be administered early to prevent ileus and decrease patient morbidity and mortality. It is generally administered intravenously via a slow-drip system (Travenol infusor, Deerfield, IL) at 2 ml per hour (0.01 mg/kg/hour) connected to the IV catheter. If the horse shows signs of discomfort, the rate of neostigmine administration can be decreased. Neostigmine administration is stopped in horses that continue to be painful. The drip is used for 48-96 hours postoperatively to enhance propulsive activity of the large colon. Metaclopramide, which enhances gastroduodenal motor activity, may be used separately or in combination to prevent or treat ileus. Correcting all electrolyte disturbances, walking the horse routinely, feeding a diet of lush green grass, administration of analgesics and control of peritonitis all play equally critical roles in minimizing occurrence of ileus. Waiting for the bowel to become severely distended or for other metabolic problems to arise impairs the intestinal motility and jeopardizes survival of the patient.

A warm water enema to keep the lumen open and to prevent reimpaction may be necessary as the colostomy site becomes edematous within the first 24 hours after surgery. It is important to treat local abscesses as they arise at the stoma by drainage and lavage so as to allow the tissues to heal before it is time for the reanastomosis procedure. Serial peritoneal fluid analysis can be used to assess the abdominal response to the tear, and peritoneal lavage can be performed as an adjunct to control inflammation. Serious consideration should be given to the treatment of peritonitis if the patient is febrile, depressed, anorectic, or has ileus. Further evidence of peritonitis would be indicated by increased quantities of peritoneal fluid with a nucleated cell count exceeding 150,000 cells per mm³, karyolysis of the neutrophils or the presence of bacteria and a high total protein concentration in the fluid. A large bore (30 French) mushroom catheter may be inserted through the linea alba into the cranial abdomen and used to infuse three to 10 L of warmed lactated Ringers solution into the abdomen. After an hour, the fluid is allowed to drain out the same catheter.

The method of closure for the loop colostomy involves taking down the stoma. The attachments to the skin and external abdominal oblique muscles are carefully dissected free from the edge of the small colon. The antimesenteric band is closed with double-inverting layers, utilizing 2-0 absorbable suture, and the small colon is vigorously cleaned and replaced in the abdomen. If the small colon is excessively traumatized in this dissection, the effected small colon should be brought through the incision and a resection and end-to-end anastomosis performed. The flank incision is then closed in a routine manner.

Loop colostomy may be of benefit to horses with rectal tears provided it is done soon after the tear occurs. In two retrospective studies of 13 horses with grade 3 rectal tears, seven survived. Complications after loop colostomy include septic peritonitis, laminitis, incisional infections of the colostomy site, peristomal hernia and prolapse. Complications associated with colostomy include stoma abscesses, prolapse, dehiscence, disuse atrophy of the distal portion of the small colon and intra-abdominal adhesion formation.

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