

Standing Diagnostic and Therapeutic Equine Abdominal Surgery

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KEYWORDS

• Standing • Abdomen • Colic • Urolith • Laparoscopy • Uterus • Rectum

KEY POINTS

- The widespread use of laparoscopy in equine surgery has increased interest in the standing approach to a wide range of procedures typically regarded as feasible only through a ventral midline incision.
- Although a commonly cited benefit of standing surgery relates to avoiding costs of general anesthesia and risks associated with it, some procedures and horses are not suitable candidates for standing abdominal procedures.
- Some procedures, such as nephrectomy, colostomy, and closure of the nephrosplenic space, are not only suitable for standing surgery but are performed more easily and more safely through this approach than with general anesthesia.

STANDING FLANK LAPAROTOMY

Indications

A surgical approach to the abdomen via flank laparotomy in the standing horse is a useful technique under specific conditions. Historically, the most common indications for a standing flank approach are ovariectomy in the mare and correction of uterine torsion. Other indications that have been described include abdominal exploration, biopsy procedures, nephrosplenic entrapment of the large colon, closure of the nephrosplenic space (NSS), colostomy procedure for treatment of a rectal tear, nephrectomy, and ureterotomy. The standing flank approach in a horse with acute onset colic or anything greater than mild colic pain is not recommended because of limited exposure of the gastrointestinal tract and increased probability that the horse will be unable to remain standing for the entire procedure. Left, right, or bilateral approaches are feasible, and choice of laterality depends on the suspected diagnosis and desired exposure.

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Anatomy/Landmarks

The lateral wall of the abdomen is made up of the abdominal tunic (tunica flava abdominis), the external abdominal oblique muscle, the internal abdominal oblique muscle, the transverse abdominus muscle, transverse fascia, and peritoneum.¹ The paralumbar fossa in the horse is a triangular depression on the dorsolateral aspect of the abdomen. The boundaries of the fossa are the aponeurosis of the internal abdominal oblique muscle, the eighteenth rib, and the longissimus dorsi muscle. Surgical access to the abdomen through the paralumbar fossa is limited by its relatively small size (compared with cattle, which have a larger fossa and bigger space between the last rib and the tuber coxae).²

Patient Preparation

The horse is brought to the stocks area for surgery. The horse should be given a bath before surgery if it has a long and dirty hair coat. An intravenous (IV) catheter is placed in the jugular vein to allow rapid and easy access for administration of sedation or to allow administration of a continuous rate infusion (CRI). The stocks should be in a clean, quiet area with nonslip footing. The sides of the stocks should be removable in case the horse goes down. If possible, the sidebar that is on the side of the operator should be lowered to expose the entire flank region. A knowledgeable handler should be positioned at the head of the horse and should have access to the catheter and sedation. The flank region is clipped from the 15th rib to 10 cm caudal to the tuber coxae and from the fold of the flank to the dorsal midline. The tail is wrapped and secured so that it cannot be swished and contaminate the surgical site. A standard surgical preparation of the skin is performed. Local anesthesia is performed using sterile technique. An inverted L block may be performed; however, we find that local infiltration (superficially and deep) tends to provide more reliable anesthesia. Draping of the flank can be problematic, depending on the size of the horse and the configuration of the stocks. Generally, we place a large iodophor incise drape (Ioban, 3M) over the area of the intended incision. The iodophor drape provides a good surface for the adhesive backing on the large laparotomy drape, which is placed next. This large drape is passed over the dorsum of the horse and should cover the sidebar of the stocks. The closest vertical bar of the stocks can also be covered with a drape to prevent inadvertent contamination of the surgeon or assistant surgeon. We have found that with this draping technique, towel clamps are not generally required. If a towel clamp is needed to secure the drape, local infiltration of anesthetic should be performed before placement of the clamp.

Abdominal Exploration Through Standing Flank Approach

Exploration of the abdomen through a flank incision is performed largely through manual examination, because visibility is relatively poor. Exploration on the left side includes systematic palpation of the stomach, spleen, left kidney, nephrosplenic ligament, jejunum, left dorsal and ventral colons, mesenteric root, the pelvic flexure, small colon, rectum, uterus, bladder, and the left inguinal ring. For a right flank incision, palpation of the liver, duodenum, right kidney, jejunum, cecum, right dorsal and ventral colons, small colon, rectum, uterus, bladder, and the right inguinal ring should be performed. If the cecum is full of ingesta, exploration of the abdomen on the right side may be impossible.² Only a few structures may be safely brought to or exteriorized through the incision, and these include the jejunum, proximal ileum, left or right uterine horns, midsection of the small colon, pelvic flexure, and the apex of the cecum.

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