

Laparoscopic Approaches to the Abdomen in Standing Horses

To safely perform a standing laparoscopic surgery in a horse, an optimal protocol for sedation is needed. My preference is to sedate the patient with a bolus of 0.005 mg/kg (0.002 to 0.01 mg/kg) IV detomidine hydrochloride (Dormosedan) and 0.1 mg/kg (0.02 mg/kg) IV butorphanol tartrate (Torbugesic). This is followed by a continuous infusion of 12 mg detomidine in 250 mL 0.9% saline administered at a rate of 2 drops per second. The infusion rate is adapted to the depth of sedation. The horse is placed in stocks with its head supported either with a padded stand or by a well-padded special halter that is tied to a solid contraption above its head (see Figure 30-2). Also, it is prudent to tie the tail to a crossbar of the stocks. Before starting surgery, all the feces accumulated in the rectum are manually removed and the positions of abdominal organs are checked to ensure that none are in direct contact with the abdominal wall of the flank region. After aseptic preparation of the whole flank region, each of the planned insertion sites for the trocars is locally desensitized with 10 to 15 mL of 2% mepivacaine, 2% lidocaine, or carbocaine. Linear cutaneous infiltration (line blocks) or local anesthesia also can be used for standing laparoscopic procedures in the paralumbar fossa. However, an epidural analgesia technique (combination of xylazine at 0.17 mg/kg and lidocaine at 0.2 mg/kg) only partially anesthetizes the paralumbar fossa and has the potential risk of inducing ataxia and falls.

It is beneficial to place the initial laparoscopic portal in the left flank without prior insufflation, because presence of the base of the cecum on the right side presents an increased risk for injury to the viscera. A 1.5-cm incision is made through the skin and the superficial fascia at the level of the proximal border of the internal abdominal oblique muscle, equidistant between the last rib and the tuber coxae (Figure 34-4). The laparoscopic



Figure 30-2. This horse is having a dental examination while being restrained in stocks equipped with an overhead extension to allow a dental head collar to be attached. Note the use of the Hausmann speculum and headlight for this examination.

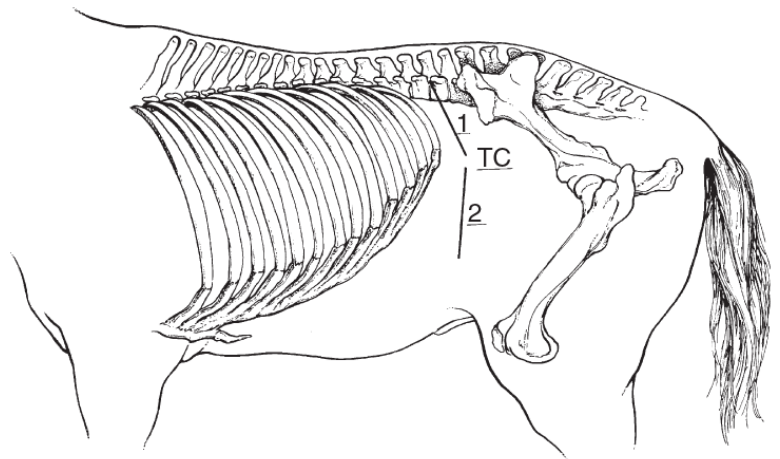


Figure 34-4. Portals for standing laparoscopic procedures: standard laparoscopic portal (1), two instrumental portals (2 and 3), and optional laparoscopic portal for closure of the nephrosplenic space (4).

cannula with a blunt obturator is carefully inserted horizontally and in a slightly caudad to distad direction through the skin and muscle layers. A mild resistance is felt when reaching the peritoneum, which is perforated with a quick, short thrust. After entering the abdominal cavity, a rush of room air will enter the trocar because of the negative pressure normally found within the abdominal cavity. To reduce the risk of inadvertent traumatization of intra-abdominal organs during insertion of the first cannula, an initial pneumoperitoneum can be induced by insufflation via a Veress cannula. An open approach or the use of an Endopath Optiview surgical trocar are other options.

Secondary portals are always established under direct visualization. The vessels of the abdominal wall are protected by fat and can usually be avoided when inserting the trochar for the instrument portal. Standard instrument portals are created 3 to 10 cm dorsal and ventral to the initial portal containing the laparoscope to provide a triangulation approach. Modifications of the instrumental portals are described for laparoscopic ovariectomy. For closure of the nephrosplenic space, the portal for the laparoscope is selected between the 17th and 18th ribs. The two instrument portals are located caudal to the 18th rib.

[Auer, J. and Stick, J. \(2012\). Equine surgery. St. Louis, Mo: Elsevier, pp. 409 -410](#)