CLOSURE OF THE NEPHROSPLENIC SPACE
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- Laparoscopy
- Nephrospenic closure
- Horse

Left dorsal displacement of the large colon (LDDLC) is reputed to be one of the most common colon displacements in the horse, with resultant non-strangulating or strangulating obstruction of the colon. Geldings seem to be predisposed as well as horses with a special anatomic shape of the nephrosplenic space. Reported recurrence rate is 3.2% to 20.7%. To prevent recurrency, different conventional surgical techniques are described in literature, but because of invasiveness and perioperative morbidity none of these surgical methods have often been recommended in the past. Since laparoscopic procedures have been published, this surgical technique is well established in appropriate clinical cases.

Surgical Technique: The laparoscopic surgery is performed left-sided in the standing sedated horse, requiring three portal sites. The optic trocar is placed in the 17th intercostal space, and the two instrumental portals for a valve-less 25 mm diameter trocar and a 5 mm trocar are created in the paralumbar fossa caudal to the 18th rib. The large-diameter cannula allows insertion and retrieval of the 30 mm needle, in an appropriate position in the jaws of the needle holder. After visualization of the nephrosplenic region, a ½ circular cutting needle, attached to a 240 cm long, size 1 USP monofilament absorbable suture (Biosyn), is grasped with the needle holder and introduced dorsally, and the second needle holder is inserted ventrally. The nephrosplenic space is closed by a continuous suture of the perirenal fascia to the dorso-medial splenic capsule in a cranial to caudal direction. At the caudal border of the nephrosplenic space a surgeon’s knot followed by a square knot is performed and tightened. Skin incisions are closed routinely.

Postoperative Care: The horses are reintroduced to feed 6 hours postoperative. Horses are discharged with recommendation of stall rest for 14 days followed by another period of 14 days stall rest with hand-walking twice daily. A control rectal examination is performed at 4 weeks, before starting training.

Complications: Pneumothorax may occur during trocar placement in the 17th intercostal space. Hemorrhage from instrumental portals in the paralumbar fossa may occur as well as spleen or bowel puncture. Recurrent or spontaneous nephrosplenic entrapment can be observed or can happen at the beginning or during the surgical procedure. Spontaneous repositioning can occur while insufflating the abdomen. Otherwise repositioning can be attempted either by rectal manipulation after intrasplenic epinephrine injection or by using laparoscopic instruments. In an unsuccessful case, surgery has to be postponed. Tearing of the suture out of the fascia or splenic capsule is a minor problem.

Discussion: Since a minimal-invasive laparoscopic technique has been published, this surgical procedure is recommended. It is the author’s opinion, that after one surgical correction or two conservative treatments, laparoscopic closure of the nephrosplenic space is indicated as a preventive surgery. Intraabdominal suture technique can be technically demanding but is facilitated by using a circular cutting needle attached to monofilament absorbable suture. In case of an extremely large angled nephrosplenic space, injecting the spleen with 1 mg epinephrine diluted in 10 ml of sterile saline solution leads to spleen
contraction, resulting in a decrease of the distance between the spleen and the perirenal fascia. In comparison to conventional open procedures, the advantages of the laparoscopic technique are avoidance of general anesthesia, rib resection and large incisions, excellent visualisation of the surgical field, less postoperative pain and a shorter recovery. In the meantime, laparoscopic closure of the nephroplenic space is an established surgical method and is recommended for horses that are predisposed for left dorsal displacement of the large colon.