



Diagnostic Exercise
From the Latin Comparative Pathology Group and the Davis-Thompson Foundation

Small intestinal entrapment through a mesovarium ligament rent in a mare

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History:

An 18-year-old, American Paint mare presented for acute colic for a suspected colon torsion. On presentation, the blood and abdominal lactate were 1.3 mmol/L (normal range 0-2 mmol/L) and 5.3 mmol/L (normal range <2 mmol/L), respectively. In the following morning, her blood and abdominal lactate increased to 7.3 mmol/L and 9.9 mmol/L. Due to uncontrollable pain, lack of a surgical option due to financial limitations, and increasing suspicion for a strangulating lesion, euthanasia was elected.

Necropsy findings:

An approximately 2.4 m segment of ileum and distal jejunum was diffusely dark red and dilated, starting at the ileocecal junction, and extending orally. The oral jejunal loops were diffusely dilated up to 8 cm (Figure 1). The dark red intestinal loops were entrapped by a thin band of tissue formed by a 6 cm in diameter in the mesovarium ligament (Figures 2 and 3). The entrapped segment contained hemorrhagic, watery contents, and the mucosa was roughened and covered by fibrin. The mesenteric vessels were also congested and had marked venous thrombosis.

Follow-up questions:

- *Morphologic diagnosis*
- *Differential diagnoses (Figure 1)*

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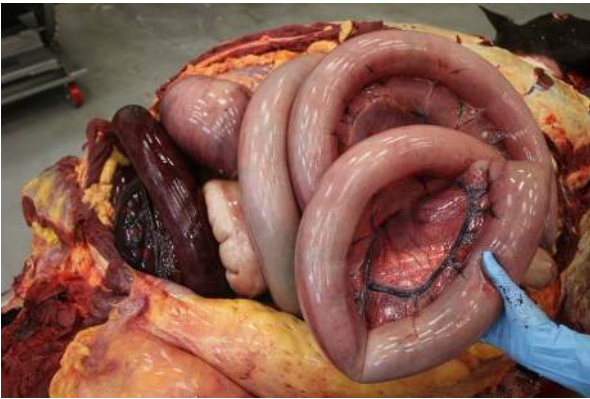


Figure 1. Entrapped congested jejunal segments with venous thrombosis.

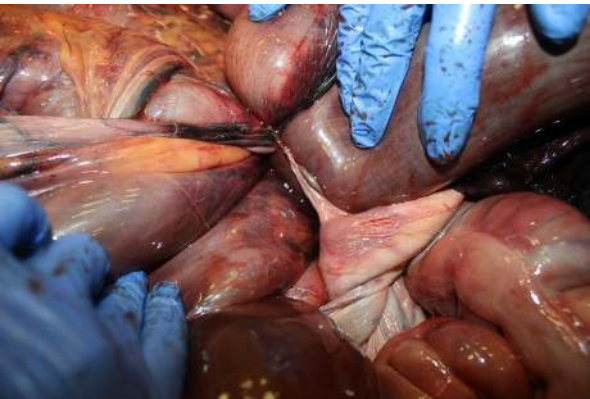


Figure 2. Close up view of the segment of distal jejunum entrapped by a thin band of tissue (rent).

ANSWERS

Morphologic diagnosis:

Ileal-jejunal incarceration through a right mesovarium ligament rent with acute venous congestion and thrombosis.

Differential diagnoses (Figure 1):

Other possible causes for segmental small intestinal strangulation in horses include pedunculated mesenteric lipoma, epiploic foramen entrapment, mesenteric rent, gastrosplenic ligament entrapment, volvulus/torsion, and inguinal/scrotal/umbilical/diaphragmatic hernias, mesodiverticular band entrapment, rents in proximal aspect of the cecocolic fold, and mesometrial tears.

Comments:

Colic is one of the most common emergencies in equine practice, and a frequent cause is small intestinal

strangulation. Strangulating obstruction results from occlusion of the intestinal lumen and its blood supply causing not only intraluminal distention, but also ischemic injury. The degree of injury can be highly variable and is dependent on the nature of the vascular occlusion. Veins have thinner, more compliant walls, and lower hydrostatic pressure than arteries and consequently are typically occluded first. In the early stages, there is an absence of patent outflow due to the venous occlusion but continued delivery of arterial blood, resulting in a hemorrhagic strangulating obstruction, characterized by ischemic injury and tissue congestion. If the strangulating obstruction exerts enough pressure and occludes both the veins and arteries, it is termed an ischemic strangulating obstruction, resulting in rapid degeneration of the mucosa (3). The ischemic injury eventually leads to devitalization of the tissue and is associated with a poor prognosis, especially without surgical treatment.

Common causes of small intestinal strangulation include pedunculated lipoma, epiploic foramen entrapment, mesenteric rents, volvulus/torsion, gastrosplenic ligament entrapment, and inguinal/scrotal/umbilical hernias. Rare causes of intestinal strangulation are mesodiverticular bands (1), rents in proximal aspect of the cecocolic fold (7), which is the result of a persistent vitelline artery (1), and mesometrial rents (8). The mesometrium is the mesentery of the uterus that forms the broad ligament of the uterus, which is a peritoneal fold that attaches the uterus to the abdominal and pelvic walls. The broad ligament is subdivided into the mesosalpinx, mesovarium and mesometrium (4). To date, there have been two reports of small intestinal strangulation through a rent in the mesometrium in pregnant mares (2,6), one in a nonpregnant mare (9) and one in a mare that did not disclose pregnancy status (10). In women, defects in the broad ligament leading to intestinal incarceration are exceedingly rare. It usually presents as right-sided rents, with the most common herniating organ being the ileum, although cases involving the colon or ovary have been reported. There is an increase in reports in multiparous women, patients who have undergone the Webster-Baldy operation, and patients with a history of salpingitis or endometriosis. A congenital etiology should be considered in women that are nulliparous or who never underwent an abdominal surgical procedure (5).

The etiology of the mesovarium rent in this case is unknown, but highest priority is given to previous trauma (acquired) or a congenital defect. Possible traumatic causes of an acquired defect in the ligament include past surgery (iatrogenic), previous foaling especially if there were complications (dystocia), any manipulation of the uterus, a direct tear secondary to trauma to the area, or weakened tissues. Unfortunately, a complete medical history of this mare was not provided. This case aims to demonstrate that although rare, a mesovarium ligament rent should be a differential for strangulating obstructions in mares.

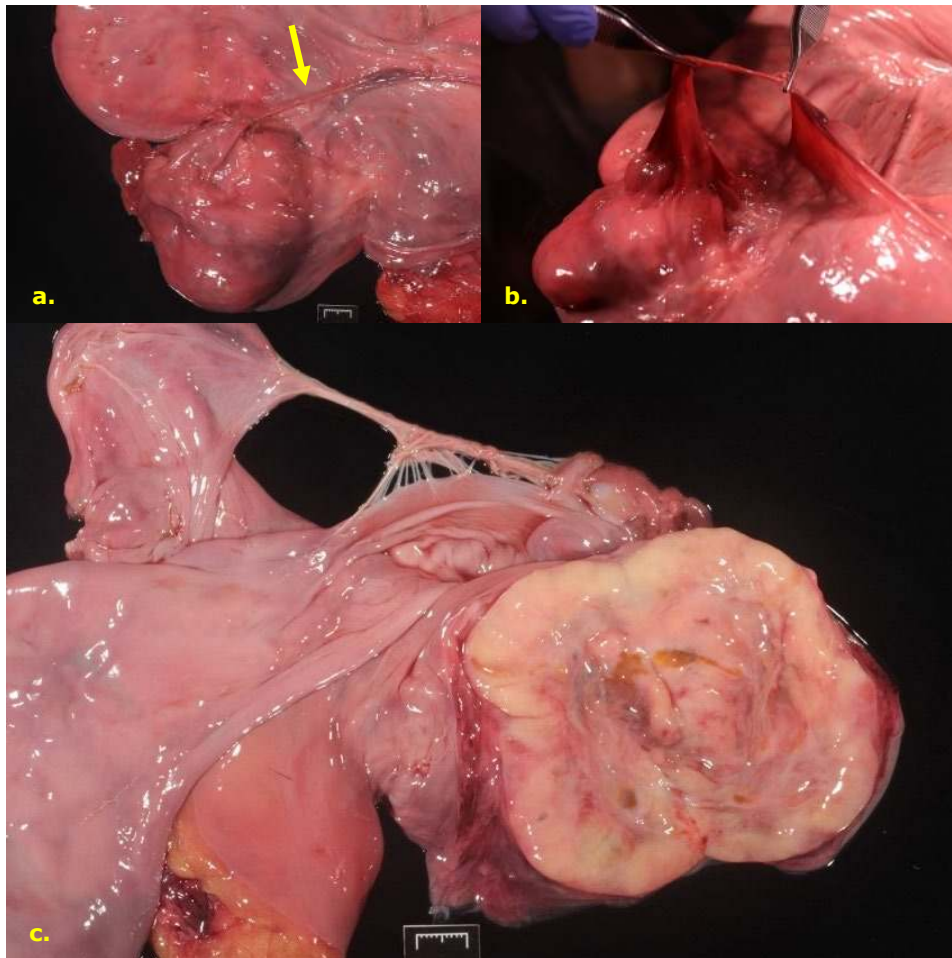


Figure 3a-c. The thin band of tissue is close to the right ovary (arrow) (a) that creates a 6 cm in diameter defect (b) in the mesovarium ligament (c).

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