

Navigating Equine Colic: Pre-Operative Assessment, Diagnosis and Prognosis

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Equine colic, defined broadly as abdominal pain, represents the primary medical emergency and leading cause of mortality in horses. Approximately 4% of the equine population experiences a colic episode annually, with 7% to 10% of evaluated cases requiring emergency surgical intervention. Intestinal ischemia and strangulation rapidly compromise mucosal barrier integrity, predisposing the patient to systemic inflammation and catastrophic circulatory collapse. Early diagnostic assessment and prompt surgical intervention remain vital to optimizing survival outcomes.

Pre-operative clinical assessment:

The initial clinical evaluation combines signalment, medical history and physical examination to assess pain severity and cardiovascular stability.

- History of onset duration, water intake, previous colic history and recent dietary shifts is recorded. Feeding coarse, low-digestibility roughage (such as wheat straw) or excessive concentrates (>2 kg daily) significantly raises the risk of impaction or gas displacement.
- Physical examination includes heart rate, respiratory rate, rectal temperature, mucous membrane color, capillary refill time and auscultation of intestinal borborygmi (bowel sounds). Marked elevation in heart rate (>60 bpm), hypovolemic perfusion indices and absent borborygmi strongly signal severe pain or circulatory compromise.
- Transrectal palpation is the primary physical diagnostic tool for identifying obstruction locations. Common palpable anomalies include small colon fecoliths, pelvic flexure



impactions, cecal impactions, large colon displacements and gas-distended small intestinal loops.

- Nasogastric intubation should be performed to decompress the stomach and prevent rupture. Retrieving more than 4 L of gastric reflux or fluid with a pH >5 indicates small intestinal obstruction or proximal enteritis.

Diagnosis:

When physical examination alone cannot pinpoint the lesion, advanced point-of-care diagnostics help differentiate medical conditions from surgical lesions:

- Rapid protocols such as FLASH (Fast Localised Abdominal Sonography of Horses) allow targeted abdominal visualization. Key ultrasonographic observations include,
 1. Large colon wall thickness ≥ 9 mm is specific for large colon volvulus.
 2. Small intestinal wall thickness > 4 mm is suggestive of enteritis.
 3. Small intestinal diameter > 5 cm indicates strangulating obstruction.
- Blood lactate levels > 3 mmol/L reflect tissue ischemia. Furthermore, a peritoneal fluid lactate higher than blood lactate (ratio > 1) or serial increases over time strongly point to strangulating intestinal lesions.
- Hyperglycemia (> 135 to 180 mg/dL) is common in severe colic due to endotoxin induced insulin resistance. In abdominocentesis samples, a peritoneal fluid glucose < 30 mg/dL (or > 50 mg/dL lower than blood glucose) is 100% specific for septic peritonitis.
- Elevated Lactate Dehydrogenase in abdominal fluid serves as an indicator of abdominal sepsis or intra-abdominal neoplasia.
- Inflammatory & endocrine biomarkers like Serum Amyloid A (SAA) rises significantly in surgical and inflammatory colic compared to non-inflammatory medical cases. Elevated Serum Total Cortisol Concentration (≥ 200 nmol/L) reflects severe physiological stress, higher pain scores and elevated heart rates (> 45 bpm). Serum Alcohol Dehydrogenase (ADH) activity serves as a critical prognostic indicator with levels > 20 U/L pointing towards strangulation, while values > 80 U/L suggest a poor prognosis.



Surgical Outcomes and Prognosis:

- The decision to perform exploratory celiotomy (ventral midline laparotomy) is guided by unmanageable pain, severe distension, absent intestinal motility, or clear signs of strangulation.
- Medical lesions including spasmodic or flatulent colic and simple impactions respond well to conservative therapy and carry a high overall survival rate. In contrast, surgical lesions are flagged by severe, unresponsive abdominal pain, significant gastric reflux (>4 L), or structural obstructions requiring exploratory celiotomy.
- Favourable Prognosis: Simple obstructions, pelvic flexure impactions, and small colon fecolith impactions carry high surgical success and discharge rates.
- Guarded to Poor Prognosis: Small intestinal strangulations (e.g., volvulus, strangulating lipomas) and right dorsal displacement of the large colon (RDDLC) carry higher morbidity and lower survival.
- High body weight (horses ≥ 500 kg), older age, longer duration of anaesthesia, preoperative gastric reflux, intraoperative tachycardia (>55 bpm) and metabolic acidosis are a few risk factors significantly increasing perianesthetic mortality.
- Overall survival rates (both short- and long-term) for horses receiving emergency colic surgery at referral institutions range between 50% and 65%, with surviving horses typically returning to normal functionality.

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