

# MEDICAL MANAGEMENT VS SURGICAL TREATMENT

**Mild colic:** The majority of horses with colic show mild signs that will respond to medical treatment. These signs are usually attributed to gas accumulation or a mild impaction for which there are several predisposing factors. Horses with mild colic are cardiovascularly stable, have a normal heart rate or only mild tachycardia, pink mucous membranes that are moist or may be slightly tachy, normal capillary and jugular vein refill time, normal or only slightly increased respiratory rate, and rectal temperature <102°F (38.9°C). Intestinal borborygmi should be present although may be reduced and should improve with initiation of treatment. There should be no net nasogastric reflux.

**Severe colic:** Although the majority of cases of colic resolve either spontaneously or with simple medical treatment, a minority (up to 10%) prove fatal unless treated surgically. Acute severe colic may simply be gas related, but if the pain continues and does not respond to analgesic administration, it is an indicator for surgery. Surgery is also indicated when there is a lack of response to medical management, strangulated tissue, volvulus, complete intestinal obstruction (Signs of complete obstruction include pain, reduced appetite, nasogastric reflux (NGR), worsening abdominal distention, lack of fecal output, and deteriorating intestinal borborygmic).

**Table 1: Indications for Surgical and Medical Treatment of Colic\***

## Indications for Surgical Intervention of the Equine Acute Abdomen

Pain	-Uncontrollable and/or severe -Does not completely respond to flunixin meglumine or detomidine or requires a second treatment.
Gastric reflux	Alkaline yellow fluid >4 L
Rectal examination	-Distended small intestine -Distended and displaced large colon -Distention that cannot be treated medically -Palpable foreign body
Auscultation	-Intestinal sounds absent
Peritoneal fluid	-Increased protein with RBC and degenerate neutrophils

## Contraindications for Surgical Intervention of the Equine Acute Abdomen

Pain	-No pain or pain changed to depression
Temperature	>102.5°F
CBC	-Neutrophilia (WBC>15,000/μl or neutropenia (WBC<3000/μl)
Auscultation	-Progressive intestinal sounds

\*These signs are generalizations and may not fit individual cases.

## Indications for Surgical and Medical Treatment of Colic:

Exploratory celiotomy should be strongly considered in horses with colic that have any of the following conditions:

- Persistent or recurrent pain despite the administration of analgesics
- Presence of an enterolith on abdominal radiography
- Presence of distended edematous small intestine without motility on ultrasonography
- Physiologic deterioration despite attempted stabilization with intravenous fluids and other supportive treatments
- Progressive abdominal distention
- Persistent gastric reflux
- Abdominal palpation findings of small intestinal distention, colonic displacement, or very firm intraluminal mass (enterolith or foreign body)
- Serosanguineous abdominal fluid with elevated protein

## Sonographic examination

Sonography can be used to evaluate the volume and character of the peritoneal fluid, intestinal distention and thickness, and anatomical aberrations. Diagnosis of the cause of colic can direct medical versus surgical treatment. Some lesions for which sonography can be as useful for diagnosing include the following:

- |   |                                      |
|---|--------------------------------------|
| (1) Peritonitis   | (5) Right dorsal displacement        |
| (2) Hemoperitoneum                                      | (6) Large colon volvulus             |
| (3) Small intestinal distention                         | (7) Cecal versus colonic impaction   |
| (a) Proximal enteritis versus strangulating obstruction | (8) Sand colic                       |
| (4) Nephrosplenic ligament entrapment                   | (9) Typhlocolitis                    |
|   | (10) Abdominal and perirectal masses |

## Abdominocentesis and peritoneal fluid analysis

Peritoneal fluid analysis is most useful for distinguishing strangulating from nonstrangulating obstructions, diagnosing peritonitis and hemoabdomen, and rarely identifying neoplastic cells. Peritoneal fluid color, total protein concentration, nucleated cell count, and lactate concentration (initial and change over time) are used to help distinguish between some types of lesions and the need for surgical treatment. Surgery is indicated for horses with serosanguinous fluid. The ratio of total protein concentration and nucleated cell count can be used to differentiate strangulating from inflammatory lesions. High ratio of peritoneal fluid to plasma lactate concentration or increase in peritoneal fluid lactate concentration with serial measurement is an indication for surgery.

## Types of Colic lesions that was treated with Surgery:

Other causes associated with the need for surgery includes proximal enteritis, ileal impaction, large colon impaction, cecal impaction, small colon impaction, colitis (A typical presentation of a horse with colitis is colic signs progressing to dull mentation, fever, leukopenia/neutropenia, hypoproteinemia/hypoalbuminemia, hyponatremia, and diarrhea.), peritonitis (which can also be caused by ischemic intestine, which requires surgical resection and anastomosis for the patient to survive; the earlier the surgery is undertaken the more likely a better the outcome), and post-partum haemorrhage. Partial obstruction can include intramural hematoma, colonic displacement, foreign body obstruction, and neoplasia.

TABLE 2: Lesions and short-term survival rates identified at initial surgery in 300 horses

Lesion	No.	%	STSR%
<b>Small intestine</b>			
Strangulation by pedunculated lipoma	39	13.0	64.1
Simple obstruction by mesenteric lipoma	2	0.7	100
Volvulus	12	4.0	83.3
Incarceration in mesenteric rent/band	8	2.7	37.5
Incarceration in epiploic foramen	15	5.0	20.0
Incarceration in inguinal hernia/rupture	5	1.7	80.0
Incarceration in umbilical hernia	1	0.3	100
Incarceration in diaphragmatic hernia	1	0.3	0
Incarceration in gastrosplenic ligament rent	1	0.3	100
Incarceration in ventral hernia	1	0.3	0
Obstruction by omental adhesions	5	1.7	80.0
Obstruction by mesenteric adhesions	6	2.0	83.3
Jejunal intussusception	1	0.3	0
Ileocaecal intussusception	4	1.3	100
Other ileocaecal obstructions	9	3.0	77.8
Ileal hypertrophy	1	0.3	0
Ileal impaction	6	2.0	100
Jejunal impaction	5	1.7	80.0
Obstruction by mesenteric abscess	2	0.7	50.0
Anterior enteritis	7	2.3	100
Diffuse enteritis	2	0.7	0
Perforated jejunal ulcer	1	0.3	0
Focal obstruction by inflammatory bowel disease	5	1.7	80.0
Focal obstruction by lymphoma	1	0.3	100
Ileus without discrete/physical obstruction*	7	2.3	28.6
<b>Caecum</b>			
Acute dysfunction	7	2.3	85.7
Torsion†	1	0.3	0
Caecocolic intussusception	2	0.7	100
Caecocolic intussusception	4	1.3	0
<b>Large colon</b>			
Right dorsal displacement	42	14.0	93.0
Volvulus	51	17.0	64.7
Left dorsal displacement	8	2.7	75.0
Colonic impaction‡	3	1.0	66.7
Colonic sand impaction	5	1.7	100
Retroflexion on pelvic flexure‡	7	2.3	85.7
Nonstrangulating intestinal infarction	3	1.0	33.3
Faecalith obstruction	2	0.7	100
Colitis	3	1.0	66.7
Obstruction by omental adhesions	1	0.3	100
Focal obstruction by eosinophilic colitis	1	0.3	100
<b>Small colon</b>			
Impaction	4	1.3	100
Foreign body obstruction	1	0.3	0
Faecalith obstruction	3	1.0	66.7
Strangulation by pedunculated lipoma	1	0.3	100
Obstruction by ovarian pedicle	1	0.3	100
Obstruction by omental adhesions	1	0.3	100
<b>Peritoneal cavity</b>			
Peritonitis (no gastrointestinal lesion identified)	2	0.7	100

\*Includes 4 cases of grass sickness; †Includes one case of grass sickness; ‡STSR = short-term survival rate.

## Association between the site and pathological nature of the intestinal lesion and short-term survival:

**TABLE 5: Association between the site and pathological nature of the intestinal lesion and short-term survival**

	Total no.	No. (%) surviving	95% CI
<b>Site</b>			
Small intestine	125	94 (75.2%)	0.67–0.82
Caecum	12	8 (66.7%)	0.35–0.90
Large colon	109	98 (89.9%)	0.83–0.95
Small colon	9	9 (100%)	0.72–1.00
<b>Pathological lesion</b>			
Simple obstruction	148	134 (90.5%)	0.85–0.95
Strangulating obstruction/ nonstrangulating infarction	103	71 (68.9%)	0.59–0.78

## Types of colic Surgeries:

**TABLE 1: Primary surgical procedures performed in 257 horses**

Surgical procedure	No.	%	95% CI
Abdominal exploration and lavage only	1	0.4	0.00–0.02
Intestinal manipulation only	87	33.8	0.28–0.40
Small intestinal decompression only	29	11.3	0.08–0.16
Enterotomy only*	5	1.9	0.01–0.04
Large colon evacuation and lavage	18	7.0	0.04–0.11
Caecal decompression/evacuation	9	3.5	0.01–0.06
Small intestine resection and end-to-end jejunojejunostomy	30	11.7	0.08–0.16
Small intestine resection and side-to-side jejunojejunostomy	13	5.1	0.03–0.08
Small intestine resection and end-to-end jejunoileostomy	12	4.7	0.02–0.08
Side-to-side jejunocaecostomy (hand-sewed)	3	1.2	0.00–0.03
Side-to-side jejunocaecostomy (stapled)	33	12.8	0.09–0.17
Side-to-side ileocolostomy	2	0.8	0.00–0.03
Large colon resection and side-to-side anastomosis	4	1.6	0.00–0.04
Caecal apical resection	2	0.8	0.00–0.03
Small colon resection and end-to-end anastomosis	1	0.4	0.00–0.02
Small colon lavage	5	1.9	0.01–0.04
Small colon colotomy	3	1.2	0.00–0.03

\*E.g. faecalith or foreign body removal.