Emergency Triage in the Colic, Recumbency, and Decision-Making Geriatric Horse

Barbara Delvescovo DVM ACVIM ACVECC

Why this matters

- Aging equine population → increasing geriatric emergency presentations
- Colic and lameness are common contributors to mortality/euthanasia in geriatric cohorts
- Triage requires rapid differentiation of reversible disease vs end-stage pathology

J Equine Vet Sci. 2022 Mar:110:103824. doi: 10.1016/j.jevs.2021.103824. Epub 2021 Nov 27.

Retrospective Analysis of Cause-of-Death at an Equine Retirement Center in the Netherlands Over an Eight-Year Period

Rick van Proosdij [1], Sjoerd Frietman [2]

What “triage” means

Three questions to answer early:

1) Can the horse survive transport?
    Stability, pain control, cardiopulmonary status, owner logistics

2) Is a time-critical surgical lesion likely?
    Pain pattern, perfusion, reflux, rectal, POCUS patterns

3) Is the likely outcome consistent with owner goals and welfare?
    Prognosis, cost, aftercare, quality-of-life

Define the problem in the recumbent horse

- Recumbent vs unable to rise vs choosing to lie
- Time down matters: secondary injury risk (myopathy/neuropathy, trauma, eye injury)
- Immediate focus: stabilization + prevent secondary injury

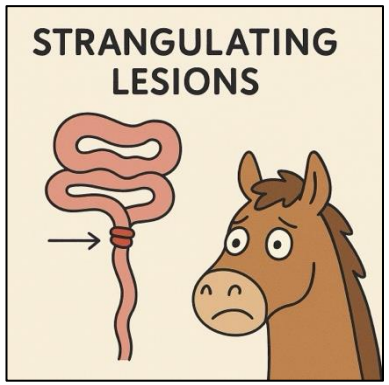
Geriatric modifiers (clinical impact)

- Reduced physiologic reserve and increased comorbidity burden
- Endocrinopathies (e.g., PPID/EMS) → infection/laminitis risk and altered healing
- Sarcopenia, dental disease, chronic pain → baseline frailty and poorer tolerance of stress
- Administration of long-term medications

Pictures Courtesy of Dr Alexa Wright

Colic in older horses: what's different?

- Outcomes depend strongly on lesion type and physiologic status (not age alone)
- Older horses may have higher prevalence of certain lesions (e.g., strangulating lipoma obstruction)
- Counseling should be individualized: lesion likelihood + transport/anesthesia risk + owner goals



Strangulating lipoma : triage relevance

- Classic older-horse lesion: can deteriorate rapidly and requires timely surgery
- Discuss risk modifiers and urgency of referral once suspected
- Use POCUS + clinical progression to support early recommendation

Management strategies to maintain optimal weight and address equine metabolic syndrome protective!

> Equine Vet J. 2025 Oct 8. doi: 10.1111/evj.70104. Online ahead of print.

Risk factors for equine strangulating lipoma colic: An international, case-control study

Alexandra Gillen [1], Diana Hassel [2], Sam Gonzalez [2], Victoria Savage [3], Anje Bauck [4], David Freeman [4], Debra C Archer [1]

> J Am Vet Med Assoc. 2005 May 1;226(9):1529-37. doi: 10.2460/javma.2005.226.1529.

Prevalence and risk factors associated with outcome of surgical removal of pedunculated lipomas in horses: 102 cases (1987-2002)

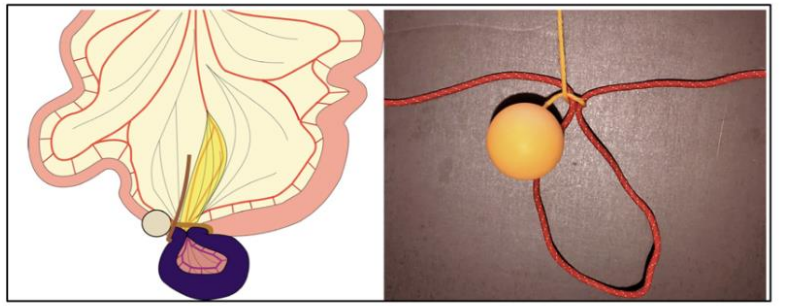
Elena Garcia-Seco [1], David A Wilson, Joanne Kramer, Kevin G Keegan, Keith R Branson, Philip J Johnson, Jeff W Tyler

> Equine Vet J. 1994 Jan;26(1):18-21. doi: 10.1111/j.2042-3306.1994.tb04324.x.

An analysis of 75 cases of intestinal obstruction caused by pedunculated lipomas

G B Edwards [1], C J Proudman

Gandini et al, 2022



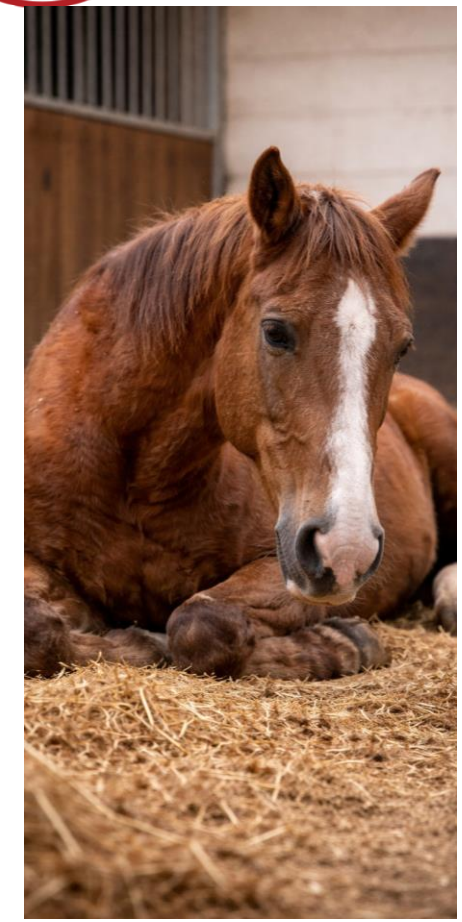
Decision fatigue + welfare reality

- Owners: long bond, financial thresholds, transport constraints, emotional pressure
- Clinicians: avoid ‘one more test’ spiral: set decision points and endpoints early
- Goal: clear, defensible recommendations that reduce delay-related morbidity

First 10 minutes (field): Primary survey + pain

- Primary survey (ABCD)
  - A: airway/mentation
  - B: respiratory effort
  - C: perfusion (HR, CRT, pulses, temp)
  - D: disability (neuro/weakness)
- Treat pain as a vital sign (severity, persistence, recurrence after analgesia)
- Assess safety for transport early

Pain



- Altered pain expression likely due to age-related changes in nociceptive processing, chronic comorbidities, and behavioral adaptation.
- Older or stoic horses may demonstrate depression or reduced responsiveness rather than overt signs of severe visceral pain.
- Administration of analgesics can attenuate behavioral indicators, making recurrence of pain and objective perfusion parameters more reliable indicators of disease progression than initial behavioral response alone.
- Clinical decision-making should therefore prioritize serial assessment of cardiovascular variables and hemodynamic trends over the apparent intensity of observable pain behaviors

Immediate stabilization priorities

- IV access (if feasible) + analgesia
- Gastric decompression (reflux can be diagnostic + therapeutic)
- Fluids: choose based on perfusion status; reassess frequently
- Plan diagnostics in parallel with stabilization

Fluid choice

- **Initial choice:** Isotonic balanced crystalloids (e.g., Plasma-Lyte)
- **Dose:** ~20 mL/kg IV bolus if dehydrated/hypovolemic
- **Reassess after bolus:** HR, pulse quality, mucous membranes/CRT, lactate, mentation
- **If hypovolemia (<48 hrs) with cardiovascular compromise:**
- Hypertonic saline 4–5 mL/kg IV
- Follow immediately with isotonic crystalloids at fast rate 20 ml/kg
- **Avoid oral fluids** in recumbent, compromised, or hypoperfused horses (poor motility + aspiration risk)
- **Down, older, hypovolemic horse → IV fluids are indicated** to restore perfusion and limit secondary organ injury

General Article

Continuous fluid infusion per rectum compared with intravenous and nasogastric fluid administration in horses

A. Khan, G. D. Hallowell, C. Underwood, A. W. van Eps

First published: 22 March 2019 | https://doi.org/10.1111/evj.13113 | VIEW METRICS

- **Tolerance:** Rectal administration of plain water was well tolerated with no adverse clinical effects.
- **Physiologic effect:** Rectal fluids caused significant haemodilution (↓PCV, ↓total solids), similar to IV and NGT fluids, indicating effective absorption and intravascular volume expansion.
- **Clinical implication:** Rectal fluid therapy may be a safe, inexpensive alternative or adjunct to IV fluids, particularly when NGT administration is not feasible though findings are limited by small sample size and use of healthy horses.

High-risk features suggesting surgical disease

- Persistent severe pain or recurrent pain after analgesia
- Worsening perfusion: tachycardia, toxic mucous membranes, rising lactate
- Significant reflux (volume or repeated refluxing)
- Marked distension, abnormal rectal findings, progressive deterioration

Abdominocentesis

Parameter	Normals
Color	Clear, straw yellow
Total protein	< 2.0 g/dl
Lactate	< 2 mmol/L
WBC	< 2000/ul

Abdominal fluid normals, think < 2

Minimum database that changes decisions

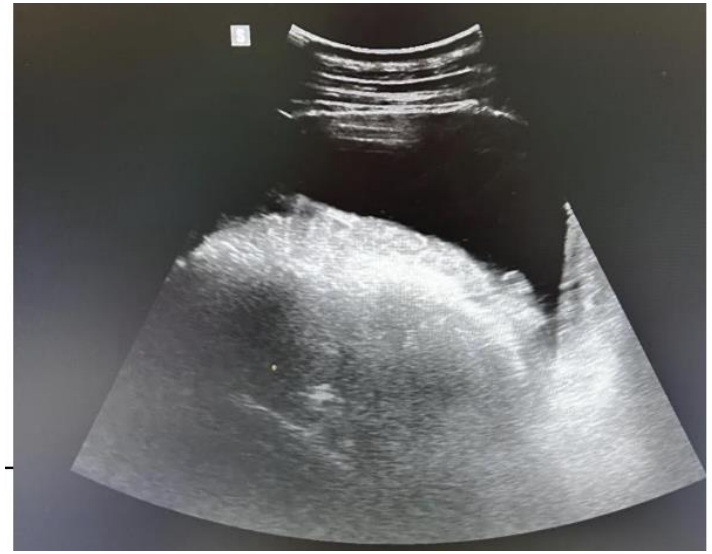
- PCV/TP and trend
- Blood lactate (and peritoneal lactate when available)
- Glucose, electrolytes, creatinine; inflammatory markers as available
- Trend-based interpretation beats single timepoint

Why POCUS changes referral timing

- Earlier identification of ‘surgery-likely’ patterns
- More objective explanation to owners and referral centers
- Can improve decision speed and reduce ischemia time

FLASH overview (what it is / what it isn't)

- Fast Localised Abdominal Sonography of Horses (FLASH)
- Goal: rapid pattern recognition in ~10 minutes
- Not a full abdominal ultrasound; complements PE, NG decompression, rectal exam, labs



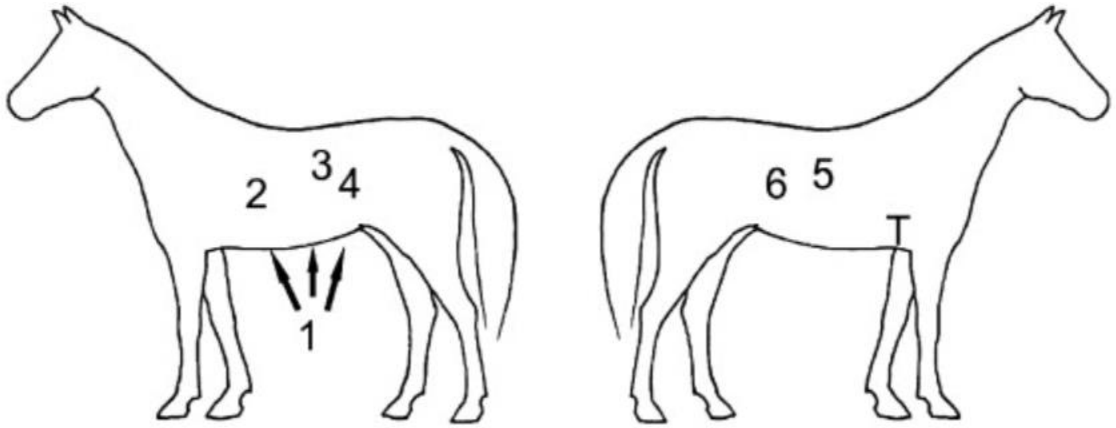
> Vet J. 2011 Apr;188(1):77-82. doi: 10.1016/j.tvjl.2010.02.017. Epub 2010 Mar 26.

Evaluation of a protocol for fast localised abdominal sonography of horses (FLASH) admitted for colic

Valeria Busoni [1], Virginie De Busscher, Diego Lopez, Denis Verwilghen, Dominique Cassart

Side	Site	Scanning procedure
Left	1. Ventral abdomen	Place the probe just caudal to the sternum and move caudally to assess the most gravity dependent area of the abdomen
	2. Gastric window	Visualise the stomach at the level of the 10th left ICS in the middle third (dorso-ventrally) of the abdomen and then move the probe in the 2–3 ICSs cranial and caudal to the 10th
	3. Spleno-renal window	Place the probe between dorsal and middle third of the abdomen at the level of the 17th ICS
	4. Left middle third of the abdomen	Freely move the probe around in the middle third of the abdomen
Right	5. Duodenal window	Place the probe in the 14–15th right ICS in the dorsal part of the middle third (dorso-ventrally) of the abdomen
	6. Right middle third of the abdomen	Freely move the probe around in the middle third of the abdomen
	7. Cranial ventral thorax	Place the probe on the cranial ventral thorax just caudal to the triceps muscle

ICS – intercostal space.



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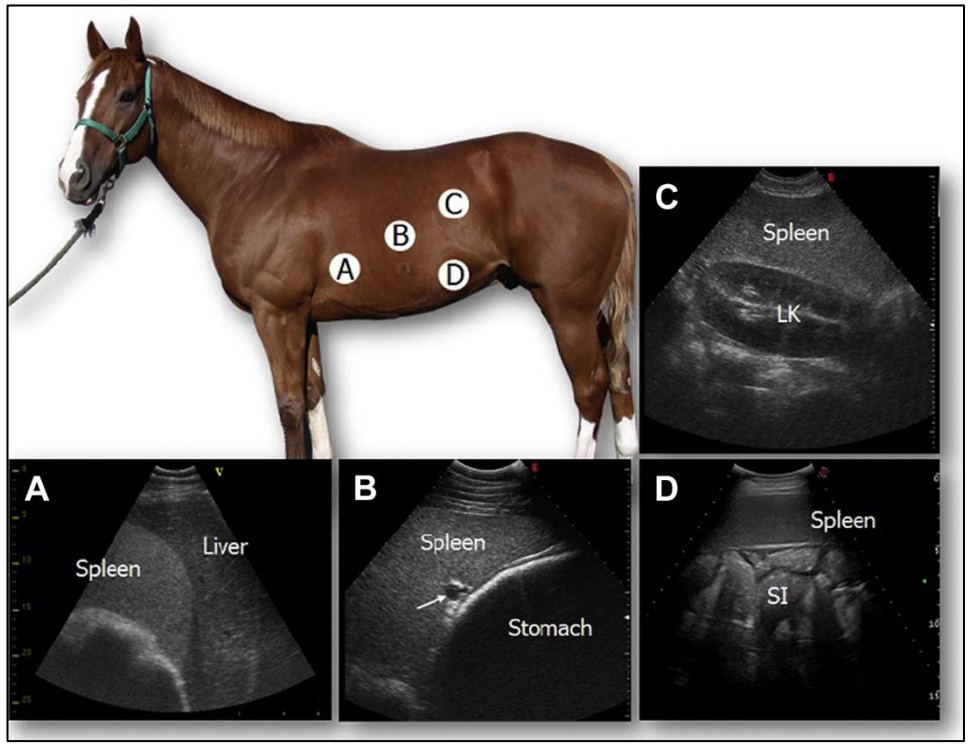
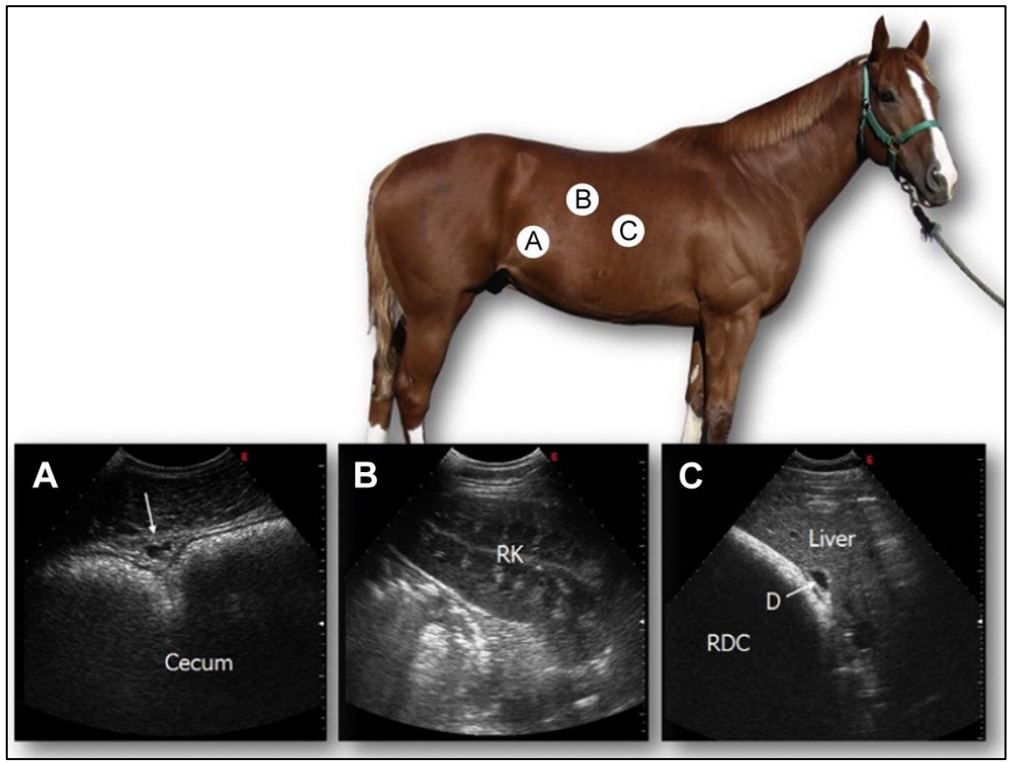
Veterinary Clinics of North America: Equine Practice
Volume 30, Issue 2, August 2014, Pages 353-381

Ultrasound of the Equine Acute Abdomen

Sarah le Jeune DVM, Mary Beth Whitcomb DVM, MBA



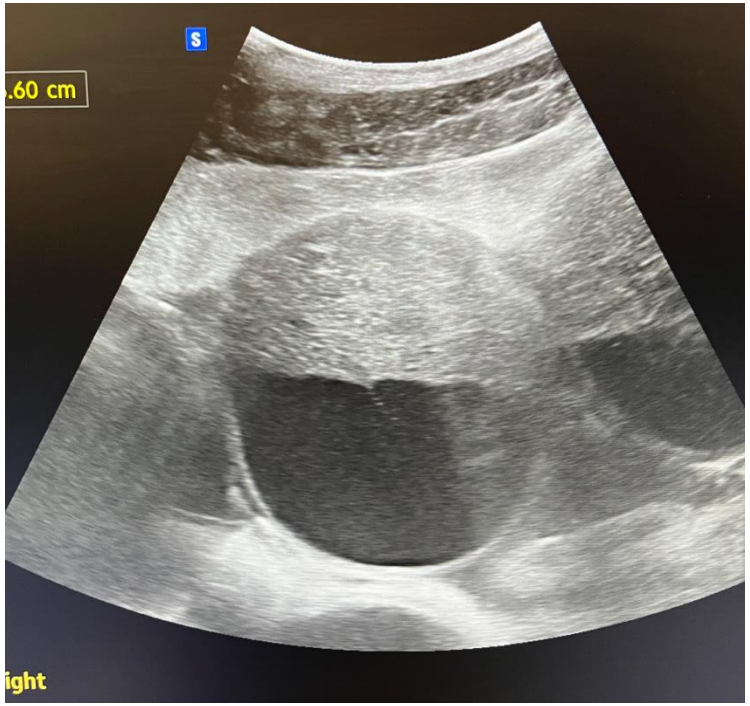


FLASH: findings that matter most

- Peritoneal fluid
  - Amount, echogenicity, location
- Small intestine
  - Diameter, wall thickness, motility
- Large colon patterns
  - Displacement patterns when identifiable
- Stomach
  - Distension supportive of reflux/outflow issues

‘Surgery-likely’ POCUS patterns

- Distended, turgid small-intestinal loops + two populations?
- Increased free peritoneal fluid, especially abnormal/echogenic
- Mass appearance on scan
- Progressive change on serial scans
- Combine with clinical progression



Colic in geriatric compared to mature nongeriatric horses. Part 1: Retrospective review of clinical and laboratory data

L. L. SOUTHWOOD, T. GASSERT, S. LINDBORG

First published: 14 September 2010 | https://doi.org/10.1111/j.2042-3306.2010.00092.x |

This retrospective study compared admission clinical and laboratory findings in geriatric (≥16 yrs) and mature (4–15 yrs) horses presenting with colic.

Geriatric horses were not more cardiovascularly or metabolically compromised on admission than mature horses.

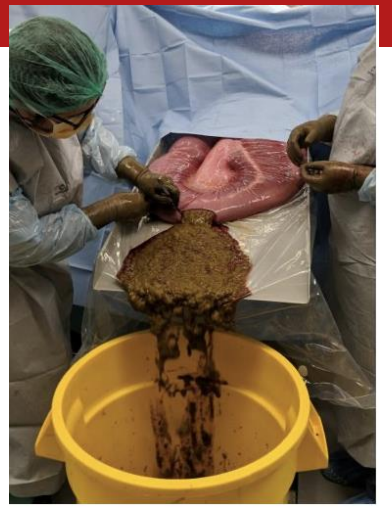
They were more likely to exhibit moderate pain, decreased intestinal borborygmi, and increased peritoneal fluid protein, suggesting a higher likelihood of significant intra-abdominal pathology.

Clinical takeaway: Older horses may not appear systemically worse on presentation, but subtle clinical findings may indicate more serious disease

Colic in geriatric compared to mature nongeriatric horses. Part 2: Treatment, diagnosis and short-term survival

L. L. SOUTHWOOD, T. GASSERT, S. LINDBORG

First published: 14 September 2010 | https://doi.org/10.1111/j.2042-3306.2010.00085.x |



- Geriatric horses (≥16 years) with colic had lower overall short-term survival than mature horses (59% vs 76%), largely due to lower survival with medical management and higher rates of euthanasia without surgery.

- Survival following surgery for strangulating lesions or jejunojejunostomy was similar between geriatric and mature horses, except in those ≥20 years old. Notably, geriatric horses undergoing surgery for large colon simple obstruction had lower survival than mature counterparts.

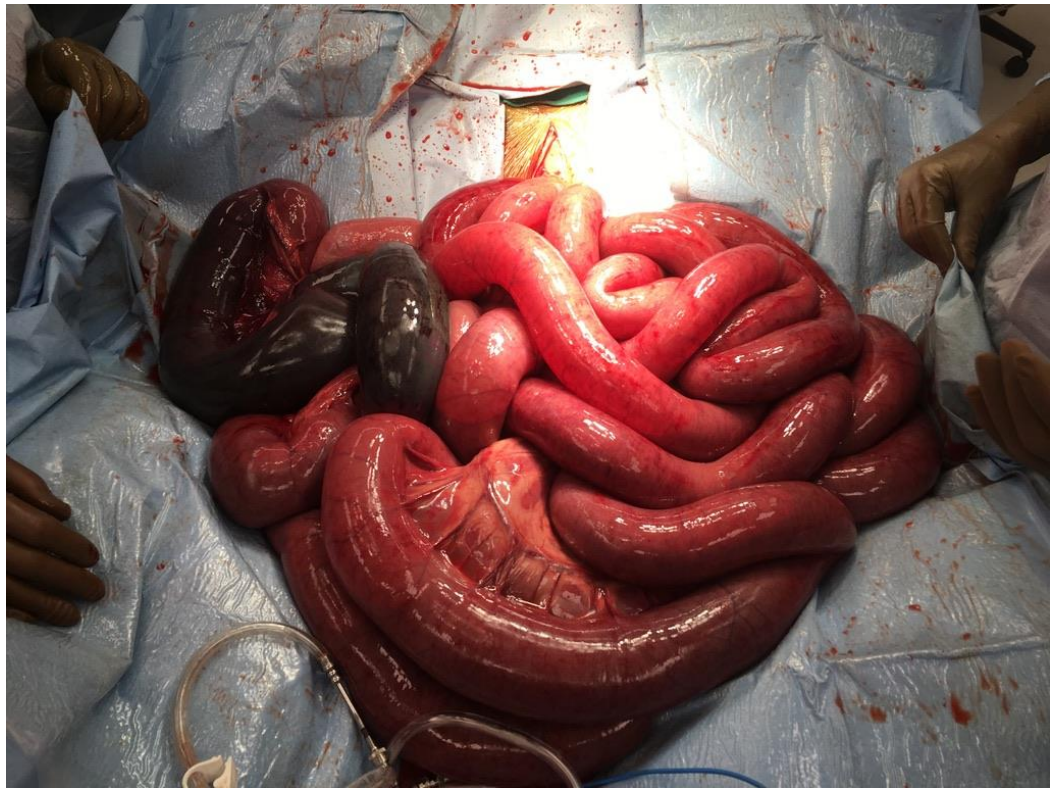
- These findings suggest age alone should not preclude surgical intervention, particularly for strangulating lesions.

What to capture for referral

- 3–5 short clips: SI diameter, wall thickness, free fluid pocket, motility
- If large colon displacement suspected: representative images of key windows
- Send a concise summary: vitals trends + analgesia response + reflux volumes + POCUS impression

Flank Laparoscopy for Colic

- Doesn't replace an exploratory celiotomy!
- Acute, severe, emergent colic: not candidates



Martens & Haardt, Vet Clin Equine 2023

Flank Laparoscopy for Colic

Indications:

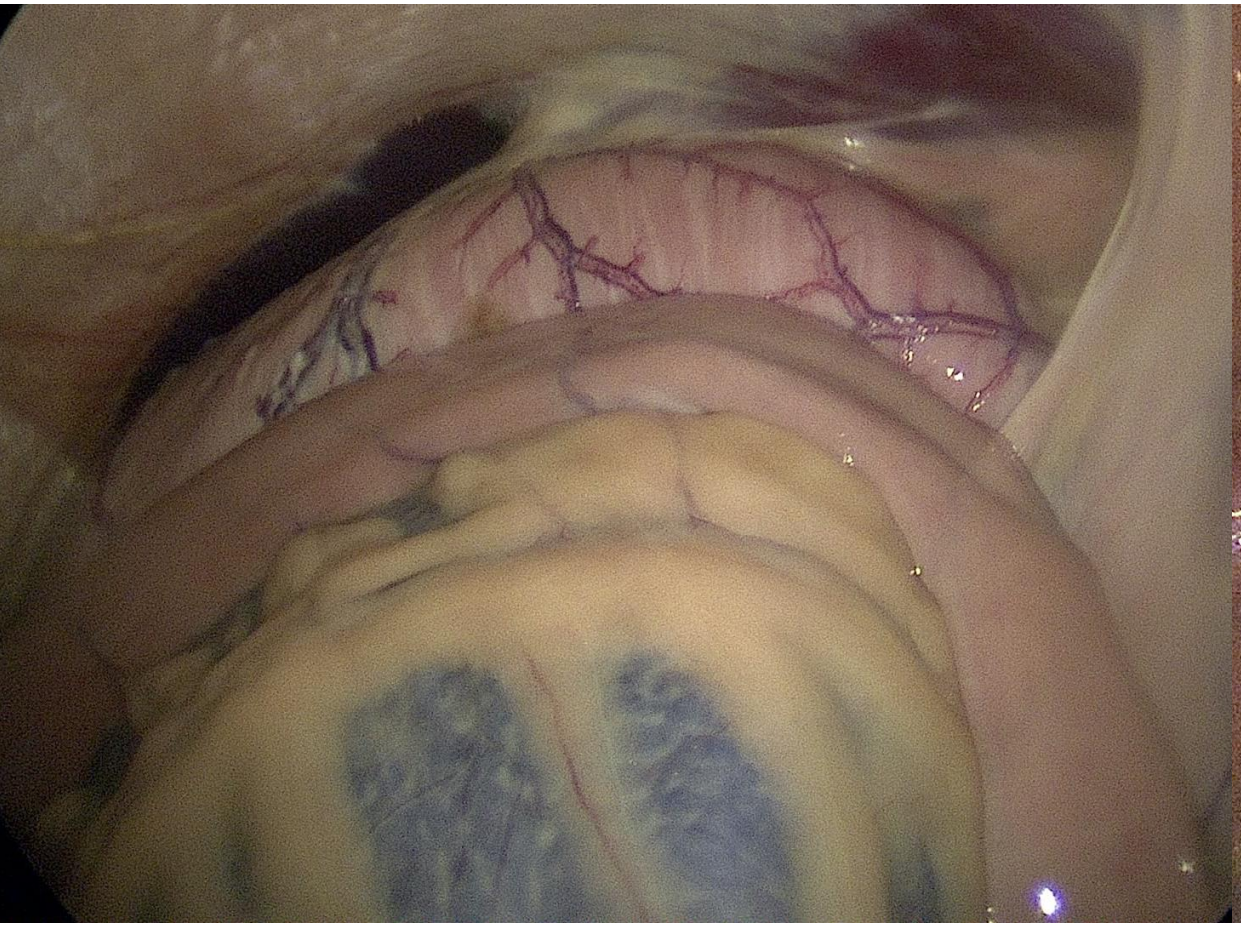
- *Chronic* colic, esp. post-op
- Suspect *dorsal* lesion
- Goal of *limiting recurrence*
- Systemic contra-indication for GA

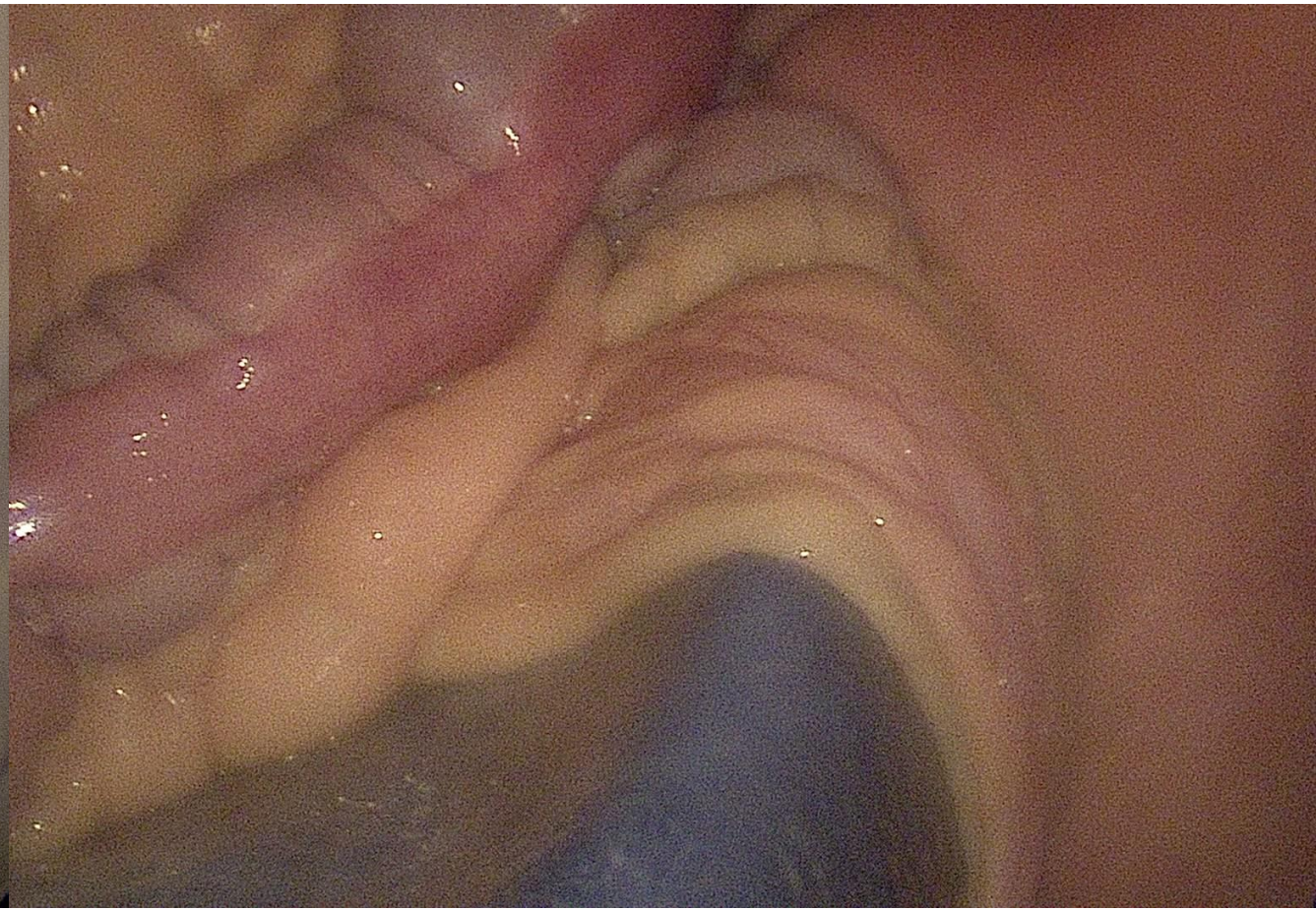
Martens & Haardt, Vet Clin Equine 2023

Flank Laparoscopy for Colic

Requirements:

- Horse to stay standing – stable
- Decompressed GIT – visualization, viscus injury





Thoracic ultrasound add-on (when to do it)

- It is always indicated!
- Consider if more : tachypnea, abnormal lung sounds, fever, poor oxygenation, or transport/anesthesia concerns
- Rule in/out pleural effusion, pneumothorax, pneumonia pattern
- Supports safer transport and realistic risk counseling

Referral decision:

- Refer now
  - Persistent pain, deteriorating perfusion, significant reflux, surgery-likely POCUS
- Treat + reassess
  - Stable perfusion, pain responsive to therapy, benign/unchanged POCUS
- Humane consideration
  - Non-transportable, multi-system failure, end-stage comorbidity, owner constraints

Primary survey + immediate risks

- Perfusion and oxygenation: shock/hypoxemia may be present
- Hyperkalemia/electrolyte derangements (esp. prolonged down time)
- Pressure myopathy/neuropathy; fractures or catastrophic orthopedic injury
- Protect: padding, repositioning, eye lubrication/protection

Review > Vet Clin North Am Equine Pract. 2025 Dec;41(3):619-632.
doi: 10.1016/j.cveq.2025.08.009. Epub 2025 Sep 30.

Complications of the Recumbent Horse: Diagnosis and Management

Barbara Delvescovo [1], Jessica Bouton [2]

Minimum database (for recumbency) that might change action

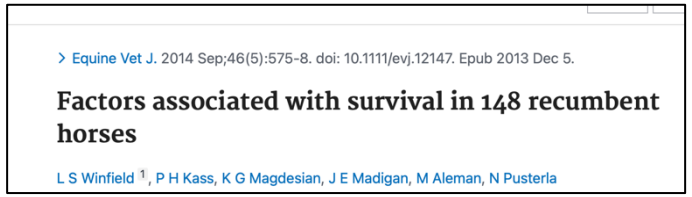
- PCV/TP, lactate
- CBC
- CK/AST (myopathy) + serial trend
- Electrolytes, glucose, creatinine
- Consider ultrasound

Reversible Disease vs End-Stage Pathology (Geriatric Horse)

- **Trajectory matters:** Improving with treatment → potentially reversible; persistent decline → concern for end-stage
- **Physiologic reserve:** Stable perfusion and normalizing lactate → favorable; refractory shock or repeated decompensation → poor prognosis
- **Functional status:** Able to stand, eat, and interact → better outlook; persistent recumbency or inability to maintain basic functions → grave
- **Pain response:** Controlled with appropriate analgesia → treatable; recurrent or refractory pain → suspect irreversible pathology
- **Diagnostics:** Improving laboratory trends → favorable; progressive organ dysfunction or irreversible structural lesions → guarded to poor

Prognosis: what predicts survival?

- Recumbency ≠ automatically hopeless—cause and response drive prognosis
- Time down, severity of secondary injury, and ability to stand/maintain sternal are key
- Use structured re-evaluation timepoints (e.g., 1–2 hours post-stabilization)



> Equine Vet J. 2014 Sep;46(5):575-8. doi: 10.1111/evj.12147. Epub 2013 Dec 5.

Factors associated with survival in 148 recumbent horses

L S Winfield [1], P H Kass, K G Magdesian, J E Madigan, M Aleman, N Pusterla

Survival outcome:
39 horses survived to discharge; **109 did not**.
Factors associated with *increased odds of death* within the first 3 days:
•**Duration of clinical signs > 24 h** before presentation (OR ~4.16)
•**Presence of band neutrophils** on bloodwork (OR ~7.94)
•**Inability to use a sling** effectively (OR ~4.22)
•**Failure to stand after treatment** (very high OR ~231)
Protective factor:
•**Higher hospital cost** was associated with lower odds of death- interpreted as greater intensity of care correlating with survival

Controlled lifting vs transport vs euthanasia

- Clarify objective: stand safely? allow diagnostics? transport?
- Contraindications: suspected fracture, severe instability, uncontrolled pain, severe shock
- If lifting attempted: plan endpoints, staffing, equipment, and reassessment criteria

Geriatric welfare thread: recumbency and chronic compromise

- Distinguish acute collapse from chronic inability to lie down/REM sleep deficiency

- Chronic recumbency patterns can reflect compromised welfare and influence decision-making

https://www.sloheet.net/about-us/equipment/anderson-sling/

Evaluation of a new full-body animal rescue and transportation sling in horses: 181 horses (1998–2006)

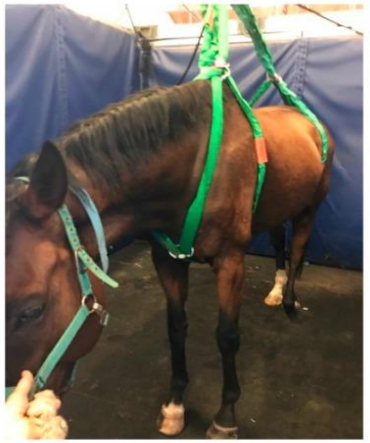
Anton E. Fürst Dr med vet, DECVS, 1 Ruedi Keller, 2 Martin Kummer Dr med vet, DECVS, 1 Celine Manera Dr med vet, 1 Björn Von Salis Dr med vet, 3 Jörg Auer Dr med vet, DECVS, DACVS, 1 Regula Bettschart-Wolfensberger Dr med vet, PhD, DECVA 1

First published: 18 December 2008 | https://doi.org/10.1111/j.1476-4431.2008.00366.x |

Animals (Basel). 2019 Jul 31;9(8):511. doi: 10.3390/ani9080511

Evaluation of a Simplified Loops System for Emergency Rescue Lifting of the Stranded or Recumbent Horse

John Madigan [1,*], Lais Costa [1], Samantha Nieves [1], Molly Horgan [1], Kirsten Weberg [1], Monica Aleman [1,*]



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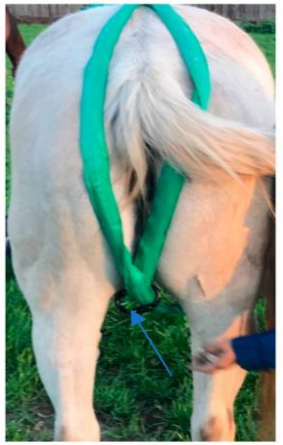


(b)

(c)

(d)

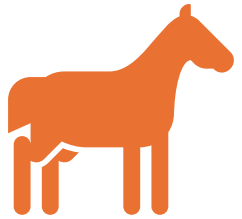
‘When is it time?’: clinician-led framework

- Comfort at rest and response to analgesia
- Ability to rise/ambulate safely
- Hydration/nutrition maintenance
- Trajectory: improving vs static vs deteriorating
- Plan A / Plan B / ‘stop rules’

The triad: feasibility • owner capacity • welfare

Medical feasibility: likelihood of meaningful recovery

Owner capacity: finances, transport, aftercare ability (legitimate welfare constraint)



Horse welfare: pain control, dignity, probability of suffering

Avoiding a catastrophic end

- Planned euthanasia can be kinder than crisis euthanasia
- Discuss transport/anesthesia and post-op realities early in frail geriatrics
- Set explicit decision points to prevent prolonged suffering

Take-home tools

Colic triage + FLASH checklist

Recumbency database + decision points

Referral call template: what data/clips to send

Take-home messages

- Pattern recognition + early referral when indicated improves outcomes
- POCUS (FLASH ± thoracic) adds speed and confidence to decision-making
- Explicit endpoints reduce delay-related morbidity and moral distress