



International Journal of Veterinary Sciences and Animal Husbandry



ISSN: 2456-2912

NAAS Rating (2025): 4.61

VET 2025; 10(8): 362-364

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www.veterinarypaper.com

Received: 18-06-2025

Accepted: 22-07-2025

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Surgical management of enterolith-induced colic in a horse

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DOI: <https://www.doi.org/10.22271/veterinary.2025.v10.i8f.2507>

Abstract

A horse with severe colic of three days' duration, unresponsive to fluids and analgesics, was referred for surgical management. Clinical findings included tachycardia, pyrexia, tachypnoea, abdominal pain, reduced gut motility, and gastric reflux. Exploratory laparotomy revealed an enterolith obstructing the small colon. Enterotomy and intestinal closure with polyglycolic acid were performed, followed by routine abdominal closure. Anaesthesia was induced with xylazine and ketamine and maintained with intermittent doses of both drugs. The horse recovered uneventfully, highlighting the significance of timely surgical intervention in managing enterolith-associated colic.

Keywords: Colic, equine, enterolith, exploratory laparotomy

Introduction

Colic is one of the most common and potentially life-threatening emergencies in horses, arising mainly from the gastrointestinal tract ^[1]. Causes include gas accumulation, impaction, displacement, volvulus, and obstruction by foreign bodies or enteroliths. Among these, enterolithiasis is a significant cause of recurrent or severe colic in certain regions and management systems. Enteroliths are mineral concretions, mainly composed of struvite (magnesium ammonium phosphate), that develop around a nidus such as plant fiber, hair, or foreign material ^[2]. They are usually found in the large colon but may also occur in the small colon or transverse colon, with clinical signs varying according to size and location. Horses may show recurrent mild colic or acute severe colic due to complete obstruction. Risk factors include diets rich in alfalfa hay, limited pasture turnout, and high mineral intake ^[3, 4]. Diagnosis can be difficult due to nonspecific signs, though radiography or exploratory laparotomy aids confirmation. Surgical removal by enterotomy remains the treatment of choice and generally carries a favourable prognosis if performed promptly, whereas delayed intervention increases the risk of complications such as intestinal damage and endotoxemia ^[5, 6].

Case history and clinical observation

A horse was presented with a history of severe colic persisting for three days. The animal had been treated locally with intravenous fluids and analgesics, but the signs of abdominal pain continued, and the case was referred for further management. On presentation, the horse appeared restless and frequently exhibited signs of abdominal pain such as pawing and rolling. Clinical examination revealed a heart rate of 70 beats/min, rectal temperature of 103°F, and tachypnoea (18 breaths/min). Gastrointestinal motility was markedly reduced. Passage of a nasogastric tube resulted in gastric reflux. Due to poor cooperation of the animal, a complete rectal examination could not be performed. Based on the history of prolonged colic, unresponsiveness to medical therapy, and the clinical findings, surgical intervention was considered necessary.

Treatment and Discussion

Based on the history of persistent colic and unresponsiveness to medical therapy, an

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exploratory laparotomy was planned. The animal was prepared for surgery under general anaesthesia. Anaesthetic induction was achieved with xylazine hydrochloride at 1.1 mg/kg IV, followed 5 minutes later by ketamine hydrochloride at 2.2 mg/kg IV. Anaesthesia was maintained using a triple drip combination of xylazine, ketamine, and guaifenesin. The horse was placed in dorsal recumbency, and the ventral abdomen was aseptically prepared for surgery. A ventral midline incision was made through the *Linea Alba* to access the abdominal cavity. On exploration, an enterolith was identified in the small colon, causing complete obstruction of the intestinal lumen (Figure 1). An enterotomy was performed at the affected site, and the enterolith was carefully removed (Figure 2). The intestinal incision was closed using polyglycolic acid (PGA) No 1-0 in a simple continuous pattern, ensuring adequate apposition and minimal lumen narrowing (Figure 3). The abdominal cavity was lavaged, and closure was performed in layers. The *Linea Alba* was sutured with PGA No. 2 in a simple continuous pattern, followed by subcutaneous closure. The skin was apposed using staples to provide secure and rapid closure. Postoperatively, the horse was administered gentamicin at 6.6 mg/kg IV once daily for five days as an antibiotic, and flunixin meglumine at 0.25 mg/kg IV every 8 hours as an anti-endotoxin and anti-inflammatory drug, along with supportive fluid therapy. The horse recovered uneventfully from anaesthesia and showed progressive improvement in clinical condition during the postoperative period. The choice of enterotomy closure with PGA in a simple continuous pattern was appropriate, as it provides secure healing, minimal tissue reaction, and satisfactory strength during the critical postoperative period. Abdominal closure through the *Linea Alba* is standard practice, as it offers strong support and reduces the risk of herniation. Use of skin staples ensured rapid closure and reduced operative time, which is advantageous in compromised colic patients. The anaesthetic protocol using xylazine and ketamine is well established in equine abdominal surgeries. Xylazine provided sedation and analgesia, while ketamine ensured smooth induction and maintenance. Intermittent dosing allowed adequate depth of anaesthesia with minimal cardiopulmonary depression. The uneventful recovery of the horse in this case demonstrates the effectiveness of timely surgical intervention combined with appropriate perioperative management.



Fig 1: Enterolith obstruction in the colon identified during exploratory laparotomy



Fig 2: Enterolith retrieved from the colon



Fig 3: Intestinal apposition following enterotomy closure

Conclusion

This case highlights the critical importance of timely surgical intervention in equine colic associated with enterolithiasis. The horse, unresponsive to medical therapy, demonstrated clinical signs of severe obstruction that warranted exploratory laparotomy. Surgical removal of the enterolith through enterotomy, followed by secure closure with polyglycolic acid and routine abdominal closure, resulted in an uneventful recovery. The anaesthetic protocol combining xylazine and ketamine provided safe induction and maintenance, while appropriate postoperative antimicrobial and anti-inflammatory therapy supported recovery. This case emphasizes the practical relevance of early recognition and surgical management in improving prognosis. Future studies should focus on preventive strategies, including dietary modifications, mineral balance, and improved diagnostic approaches for early detection.

Conflict of Interest

Not available

Financial Support

Not available

Reference

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How to Cite This Article

Kumar AR, Balamurugan K, Senthilkumar S. Surgical management of enterolith-induced colic in a horse. *International Journal of Veterinary Sciences and Animal Husbandry.* 2025;10(8):362-364.

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