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Equine esophagotomy: a case report

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Abstract. Esophageal obstruction is a common clinical emergency in horses, most frequently associated with feed impaction. This case report describes a male horse admitted to the Veterinary Hospital of the University Center of Jaguariúna (UniFAJ) presenting with dysphagia, a reduced body condition score, and an inability to ingest food or water for 48 hours. Diagnostic evaluation, including cervical radiography and endoscopy, confirmed the presence of a foreign body (mango seed) lodged in the cervical esophagus. Considering the animal's clinical condition and the location of the obstruction, surgical intervention via left ventrolateral esophagotomy was selected, as this approach allows optimal visualization of the esophagus. The procedure involved a cervical muscle incision, removal of the foreign body, and subsequent closure of the esophageal incision using a two-layer esophagorrhaphy technique. Postoperative management included antibiotic therapy and parenteral nutritional support. The animal was discharged at the owner's request but later returned due to suture dehiscence. Healing by second intention was subsequently instituted. This case highlights the effectiveness of ventrolateral esophagotomy for the removal of esophageal foreign bodies while emphasizing potential postoperative complications.

Keywords: Esophageal obstruction, esophagotomy, horse, suture dehiscence.

Esofagotomia em equino: relato de caso

Resumo. A obstrução esofágica é uma emergência clínica comum em equinos, estando mais frequentemente associada à impactação alimentar. Este relato de caso descreve um cavalo macho admitido no Hospital Veterinário do Centro Universitário de Jaguariúna (UniFAJ), apresentando disfagia, escore de condição corporal reduzido e incapacidade de ingerir alimento ou água por 48 horas. A avaliação diagnóstica, incluindo radiografia cervical e endoscopia, confirmou a presença de um corpo estranho (semente de manga) alojado no esôfago cervical. Considerando a condição clínica do animal e a localização da obstrução, optou-se pela intervenção cirúrgica por meio de esofagotomia ventrolateral esquerda, uma vez que essa abordagem permite visualização ideal do esôfago. O procedimento envolveu incisão da musculatura cervical, remoção do corpo estranho e posterior fechamento da incisão esofágica utilizando a técnica de esofagorrafia em dois planos. O manejo pós-operatório incluiu antibioticoterapia e suporte nutricional parenteral. O animal recebeu alta a pedido do proprietário, porém retornou posteriormente devido à deiscência de sutura. O processo de cicatrização por segunda intenção foi então instituído. Este caso destaca a eficácia da esofagotomia ventrolateral para a remoção de corpos estranhos esofágicos, ao mesmo tempo em que enfatiza potenciais complicações pós-operatórias.

Palavras-chave: Obstrução esofágica, esofagotomia, equino, deiscência de sutura.

Introduction

The equine esophagus is a muscular tubular organ divided into three segments: cervical, thoracic, and abdominal ([Figure 1](#)). In the cervical region, the esophagus originates dorsal to the larynx and trachea and gradually shifts to the left side of the neck, where it becomes more superficial and accessible ([Constable et al., 2021](#); [Radostits et al., 2010](#)). This anatomical deviation justifies the preference for a left-sided surgical approach, particularly for the ventrolateral esophagotomy technique. During its thoracic course, the esophagus traverses the mediastinum dorsal to the heart, passing through the diaphragm to reach the stomach at an acute angle – a characteristic that prevents horses from regurgitating or vomiting ([Camacho-Luna & Andrews, 2015](#)). Structurally, the esophagus comprises four layers: mucosa, submucosa, muscularis, and adventitia. Notably, the cranial two-thirds of the esophagus consist of striated muscle, whereas the distal third is composed of smooth muscle ([Figure 2](#)).

Esophageal innervation primarily depends on structures such as the vagus nerve, which plays a critical role in transmitting afferent and efferent impulses to the enteric nervous system (ENS), enabling adaptive responses to mechanical and chemical stimuli ([Camacho-Luna & Andrews, 2015](#); [Reed et al., 2009](#)). Additionally, the sympathetic trunk modulates vascular tone and coordinates esophageal motility ([Auer & Stick, 2018](#); [Radostits et al., 2010](#)). The esophagus contains two main neural plexuses: the myenteric (Auerbach's) plexus, located between the circular and longitudinal muscle layers, and the submucosal (Meissner's) plexus, situated within the submucosa. In the esophagus, the myenteric plexus predominates, regulating coordinated muscular contractions during peristalsis, which are essential for effective bolus transit ([Camacho-Luna & Andrews, 2015](#); [Reed et al., 2009](#)). Dysfunction of autonomic innervation or localized lesions may impair esophageal motility, predisposing the organ to stasis or obstruction, particularly in anatomical transition regions or areas where smooth muscle predominates ([Camacho-Luna, 2019](#); [Fubini & Ducharme, 2016](#)).

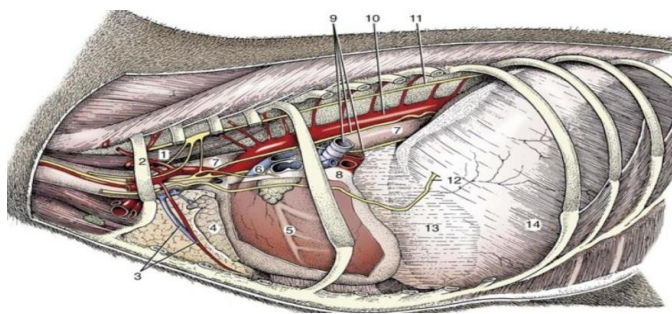


Figure 1. Lateral view of the equine thoracic cavity showing the anatomy of the thoracic esophagus (1).
Source: Adapted from [Dyce et al. \(2010\)](#)

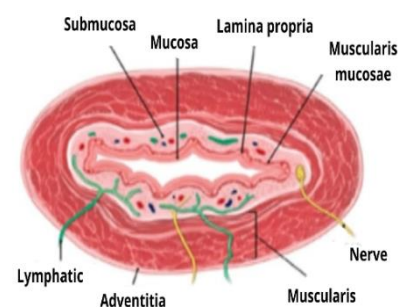


Figure 2. Transverse histological representation of the esophagus, highlighting the layers: mucosa, submucosa, muscular, and adventitia. **Source:** Adapted from [Dyce et al. \(2010\)](#).

Among diseases affecting the equine digestive system, esophageal obstruction is a relatively common clinical emergency characterized by interruption of the intraluminal transit of ingested material ([Reed et al., 2009](#)). This condition may be classified as primary, typically associated with rapid feed intake, low-quality diets, or poorly digestible materials, or as secondary, resulting from anatomical abnormalities such as strictures, diverticula, or neoplasms that impede esophageal passage ([Camacho-Luna & Andrews, 2015](#)).

The most frequently observed clinical signs include ptyalism, nasal reflux, and dysphagia; however, chronic cases may present diagnostic challenges ([Radostits et al., 2010](#)). Various therapeutic approaches for the treatment of esophageal obstruction in horses are described in the literature, depending on the severity of the condition and the animal's response to initial interventions. In cases of feed-related obstruction, esophageal lavage via a nasogastric tube is one of the first-line treatments used to dissolve or remove the obstructive material. However, in more severe cases or those involving foreign bodies, surgical intervention may be required ([Radostits et al., 2010](#); [Reed et al., 2022](#)).

This study aims to describe the application of the left ventrolateral esophagotomy technique used to treat a case of esophageal obstruction in a horse, detailing the clinical management and surgical procedure performed.

Case history

A male crossbreed horse weighing 380 kg was referred to the Veterinary Hospital of the University Center of Jaguariúna (UniFAJ), São Paulo, Brazil. According to the owner, the animal had been unable to eat or drink for two days.

Clinical Findings

Upon hospital admission, clinical examination revealed dysphagia and a low body condition score. No evident signs of pain, discomfort, or respiratory alterations were observed; however, esophageal obstruction was palpable during physical examination.

Diagnosis

A latero-lateral cervical radiograph ([Figure 3](#)) identified an obstructive mass in the middle third of the cervical esophagus, consistent with a foreign body. Endoscopy confirmed the diagnosis, revealing a foreign body suspected to be a mango seed.



Figure 3. Lateral-lateral radiographic image of the cervical region showing a foreign body compatible with a mango seed in the esophagus.

Treatment

Based on the clinical presentation and the lack of response to initial conservative management, surgical removal via left ventrolateral cervical esophagotomy was performed, as illustrated below.

Surgical technique

The left ventrolateral esophagotomy technique provides wide exposure of the cervical esophagus, with a reduced risk of tracheal injury and improved drainage of the surgical incision. Prior to surgery, nasoesophageal intubation was performed to help identify the esophageal pathway and ensure anatomical accuracy during dissection. This approach is suitable for both standing and recumbent positions under general anesthesia ([Radostits et al., 2010](#)).

For the surgical procedure, the animal was maintained in a standing position. The anesthetic protocol consisted of xylazine (1 mg/kg IV) and butorphanol (0.01 mg/kg IV), combined with local infiltration of 2% lidocaine (4 mg/kg) as adjunctive local anesthesia. After achieving adequate anesthesia and analgesia, a 10 cm skin incision was made in the middle third of the neck, ventral to the jugular vein. The sternocephalicus and brachiocephalicus muscles were bluntly separated, and the deep cervical fascia was incised to expose the esophagus. In some cases, incision of the cutaneous colli muscle in the caudal cervical region may be necessary ([Auer & Stick, 2018](#)). The left carotid sheath, containing the carotid artery, vagus nerve, and recurrent laryngeal nerve, was carefully retracted laterally using Balfour retractors, providing adequate exposure of the esophagus ([Auer & Stick, 2018](#)).

After exposure of the cervical esophagus via left ventrolateral access ([Figure 4](#)) and removal of the foreign body from the esophageal lumen ([Figure 5](#)), esophagorrhaphy was performed in two layers. The mucosal layer was sutured using a Swift pattern with absorbable polydioxanone (PDS) 3-0, and the muscular layer was closed with a simple interrupted pattern using PDS 2-0. The subcutaneous tissue and skin were closed with a simple continuous pattern using PDS 2-0 and nylon 0, respectively ([Fossum, 2021](#)).



Figure 4. Left ventrolateral access to the cervical esophagus during esophagotomy, showing adjacent anatomical structures.



Figure 5. Removal of the foreign body (mango seed) from the esophageal lumen during surgery.

Result

Postoperative treatment included penicillin (22,000 IU/kg) and parenteral nutritional support using Aminoven[®], glucose, and Sorofarm. Recent studies suggest that total parenteral nutrition combined with amino acids such as glutamine, along with appropriate enteral fluid therapy, can positively influence metabolic parameters, including lipid profiles, thereby improving recovery in horses undergoing surgery or prolonged nutritional stress ([Melo et al., 2022](#)). Early implementation of nutritional support, whether parenteral or enteral (via esophagogastric or nasogastric tube), helps maintain intestinal mucosal integrity, prevent muscle catabolism, and reduce the risk of infectious complications ([Auer & Stick, 2018](#); [Camacho-Luna, 2019](#); [Melo et al., 2008](#)). Additionally, fluid therapy plays a critical role in correcting electrolyte imbalances and maintaining tissue perfusion, serving as an essential component of clinical support in gastrointestinal interventions ([Kretschmer & Scheidemann, 2018](#); [Radostits et al., 2010](#)).

The animal remained hospitalized for three days, during which it received dipyrone (once daily), flunixin meglumine (once daily), penicillin (22,000 IU/kg), and parenteral nutritional support administered three times daily. Discharge was granted at the owner's request after this period. However, the animal was subsequently readmitted due to local infection and surgical suture dehiscence. Healing by second intention of the incision was then pursued ([Figures 6 and 7](#)), with daily clinical monitoring. A new therapeutic regimen was instituted, consisting of a nonsteroidal anti-inflammatory drug (Flunexim[®]), ceftiofur sodium (Minoxel[®]; once daily) for seven days, and local wound hygiene performed three times daily.



Figure 6. Cervical incision aspect immediately after completion of the surgical procedure.



Figure 7. Evolution of second-intention healing in the cervical region observed during postoperative follow-up.

Discussion

Esophageal obstruction is a relatively common condition in equine medicine and must be treated as an emergency due to the risk of extensive mucosal damage caused by pressure from a foreign body against the esophageal wall, potentially leading to perforation or abscess formation ([Auer & Stick, 2018](#); [Orozco et al., 2011](#); [Reed et al., 2009](#)). In this case, although the animal did not show overt signs of pain during clinical evaluation, external cervical palpation revealed a firm structure on the left side consistent with esophageal obstruction ([Radostits et al., 2010](#)).

Diagnosis was supported by imaging findings, with cervical radiography assisting in identifying the etiology of the obstruction. Additionally, contrast esophagography is recommended in cases in which lesion delineation is challenging, as it allows precise localization of the obstruction and evaluation of potential esophageal wall lesions, perforations, or extraluminal compressions ([Fubini & Ducharme, 2016](#); [Orozco et al., 2011](#); [Radostits et al., 2010](#); [Reed et al., 2009](#); [Sykes et al., 2015](#)). Radiographic techniques are considered essential components of the diagnostic evaluation of esophageal obstruction ([Fubini & Ducharme, 2016](#)). Contrast radiography enables visualization of intraluminal interruptions and, in some cases, extramural masses compressing the esophagus. As described by [Fubini & Ducharme \(2016\)](#), esophagography is a fundamental diagnostic tool in esophageal assessment, providing evidence of pathological alterations.

Upper gastrointestinal endoscopy allows more accurate assessment of the foreign body's location and the presence of associated mucosal lesions ([Fubini & Ducharme, 2016](#)). However, this technique has limitations, including restricted visualization of the distal esophagus in some cases ([Radostits et al., 2010](#)). In the present case, endoscopy clearly identified the foreign body, thereby assisting therapeutic planning.

Given the animal's clinical condition and the location of the foreign body within the esophageal lumen, surgical removal was performed using the ventrolateral esophagotomy technique, with nasoesophageal tube assistance to improve visualization during the procedure. This approach provides excellent access to the middle and distal portions of the cervical esophagus, where the ventral cervical musculature is thicker, rendering a purely ventral approach less feasible ([Auer & Stick, 2018](#)). The ventrolateral approach minimizes the risk of tracheal injury and facilitates incision drainage, making it suitable for both standing and anesthetized animals ([Radostits et al., 2010](#)). Although widely described in the literature, this surgical technique requires meticulous care to avoid injury to vascular structures adjacent to the esophagus ([Fubini & Ducharme, 2016](#)).

Accurate selection and marking of the incision site are critical and can be facilitated by jugular vein catheterization at the surgical site. The esophagus deviates laterally to the left of the midline, which justifies the preference for a left ventrolateral approach. However, imprecise anatomical localization may result in injury to adjacent structures, such as blood vessels and nerves, compromising access and visualization during surgery ([Auer & Stick, 2018](#); [Camacho-Luna, 2019](#); [Radostits et al., 2010](#)). Inaccurate demarcation may also increase surgical trauma due to the need for incision extension to reach the correct site. Considering the risks associated with esophageal manipulation and the importance of appropriate tissue healing, postoperative management is crucial for successful treatment and functional recovery.

Despite its effectiveness, the technique is not exempt from complications, as suture dehiscence occurred in the present case. This complication may be associated with excessive tension on the suture line, local infection, excessive postoperative neck movement, or significant tissue edema. The esophageal mucosa has limited primary healing capacity, and the constant presence of saliva and ingesta promotes wound contamination, significantly contributing to healing failure ([Auer & Stick, 2018](#); [Camacho-Luna, 2019](#); [Fossum, 2021](#)). Notably, the cervical esophagus, unlike other gastrointestinal segments, lacks a serosal layer and is externally covered by connective tissue adventitia, which compromises repair capacity and resistance to infection, thereby increasing the risk of postoperative complications such as fistula formation and suture dehiscence ([Bezdekova, 2012](#); [Fossum, 2021](#); [Fubini & Ducharme, 2016](#); [Radostits et al., 2010](#)). These complications are commonly observed in emergency digestive surgeries, as discussed in *Equine Acute Abdomen* ([Melo et al., 2022](#)).

Following the diagnosis of suture dehiscence, antibiotic therapy with ceftiofur sodium (Minoxel®) was instituted as a preventive measure against aspiration pneumonia, a potential postoperative complication (Camacho-Luna, 2019; Camacho-Luna & Andrews, 2015). This treatment was combined with wound irrigation using ozonized saline and hypertonic saline solution until complete closure by second intention was achieved. These measures aimed to reduce the local microbial load, promote an optimal healing environment, and accelerate tissue granulation. The implementation of a therapeutic protocol focused on infection control, combined with adequate nutritional support, may improve postoperative prognosis (Melo et al., 2008). Mechanical and chemical stress at the esophagotomy site should be avoided; therefore, feeding via nasogastric or esophagogastric tube (distal esophagotomy) is recommended for at least 72 hours postoperatively, in association with parenteral nutritional support (Auer & Stick, 2018; Melo et al., 2022). This approach is widely recommended for infectious and postoperative conditions, as described by White et al. (2017).

This case report emphasizes the importance of early diagnosis, careful selection of the therapeutic approach, and meticulous postoperative management as essential factors for achieving a favorable prognosis. It also underscores the relevance of comprehensive clinical evaluation to accurately identify the location and nature of the foreign body, enabling safe and well-planned surgical intervention. In this context, cervical esophagotomy via a ventrolateral approach is established as an effective surgical technique in large animal clinical practice, contributing significantly to the restoration of esophageal function (Auer & Stick, 2018; Fubini & Ducharme, 2016).

In the present case, the patient demonstrated satisfactory clinical progression during the postoperative period, showing good adaptation to the instituted therapeutic protocol and a gradual return to normal activities.

Conclusions

Left ventrolateral esophagotomy proved to be an effective and safe surgical approach for the treatment of cervical esophageal obstructions in horses, particularly when conservative management fails to achieve satisfactory clinical resolution. The surgical technique, involving two-layer esophagorrhaphy combined with broad-spectrum antibiotic therapy and parenteral nutritional support, was essential for therapeutic success and clinical recovery.

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