

Correction of thoracic choking by laparo-gastrotomy approach in puppy

M. Sharma^{1*}, B. K. Singh², K. K. Buragohain², K. Roy², K. Keot² and A. Bhattarai²

¹Department of Surgery and Radiology, Lakhimpur College of Veterinary Science, Assam Agricultural University, Joyhing, North Lakhimpur - 787 051, Assam, India; ²Intern Student, Lakhimpur College of Veterinary Science, Assam Agricultural University, Joyhing, North Lakhimpur - 787 051, Assam, India

Abstract

This article described a successful case of caudal thoracic esophageal foreign body retrieval through laparo-gastrotomy in a 3-month-old male Spitz puppy presented with a history of eating a bone chew treat on the previous night of presentation day. The exact position of the foreign body was ascertained by both plain and positive contrast radiography. On confirmation of the position, the foreign body was removed via laparo-gastrotomy under total intravenous anaesthesia (TIVA) protocol. The animal recovered uneventfully and returned to normalcy following careful post-operative within 10-15 days of management.

Keywords: Contrast radiography, Esophagus, Foreign body, Laparo-gastrotomy, Puppy

Highlights

- Caudal thoracic choking can be surgically approached via laparo-gastrotomy
- Diagnostic imaging plays a key role in the accurate assessment of the choking site
- TIVA protocol with Propofol is safe in a puppy
- Careful post-operative cares play a vital role in successful recovery
- The surgical technique described here can be used in field conditions

Gastrointestinal foreign bodies (GIFB) are frequently encountered in pets that may obstruct any part of the tract. Esophageal foreign bodies are equally common in pets (Yoon *et al.*, 2009; Sen *et al.*, 2013; Kachwaha *et al.*, 2017). Esophageal foreign body obstruction may appear as a life-threatening emergency, otherwise clinically may lead to lethargy, salivation, anorexia, retching, vomiting, dehydration, etc., or may lead to even death to the patient (Gianella *et al.*, 2009; Kachwaha *et al.*, 2017; Sharma *et al.*, 2021a). Varieties of retrieval techniques like endoscopy, esophagotomy, thoracic esophagotomy, and even gastrotomy approach have been reported so far based on the type and size of the material as well as the location of obstruction (Sen *et al.*, 2013). In this communication, successful trans-diaphragmatic removal via the gastrotomy approach of a caudal thoracic esophageal foreign body is presented.

A 3-month-old male Spitz puppy, weighing 3.3 kg, with a history of eating a bone chew treat on the previous night, was presented. The owner noticed that, a few hours later to the incident, the puppy exhibited signs like reduced alertness, lethargy, salivation, and vomiting immediately after a meal. No abnormalities could be observed in vital parameters on clinical evaluation except mild dehydration. To determine the

exact location of the foreign material, plain and positive contrast lateral thoracic and abdominal radiographs were done which revealed the presence of the foreign materials in the caudal thoracic esophagus (Fig. 1a and 1b). On confirmation of the foreign material, the animal was subjected to cranial mid-ventral laparo-gastrotomy on the next day. A dose of Ceftriaxone and Pantoprazole @ 25 mg/kg and 1 mg/kg body weight (b. wt.) via intravenous (i/v) route as an antibiotic umbrella and to protect gastrointestinal tract mucosa, respectively, were administered on the day of presentation. To counteract dehydration 40 mL Ringer's lactate via IV route slowly twice daily was also administered on the day of presentation. Following 8 hours of fasting before the surgery, the animal was subjected to TIVA protocol as reported by Sharma *et al.* (2021a) and Sharma *et al.* (2021b) for anaesthetic management. Once the desired anaesthetic effect was achieved, the surgical site was prepared aseptically (Fig. 2a) and a laparo-gastrotomy wound was created via the crania mid-ventral region through linea-alba. After removing all gastric fluid, a 10-inch toothed thumb forceps was advanced towards the thoracic esophagus via gastro-esophageal opening, and simultaneously a sterile Artificial Insemination (AI) sheath was also introduced via esophagus to push the

*Corresponding Author, E-mail: manav.sharma@aau.ac.in

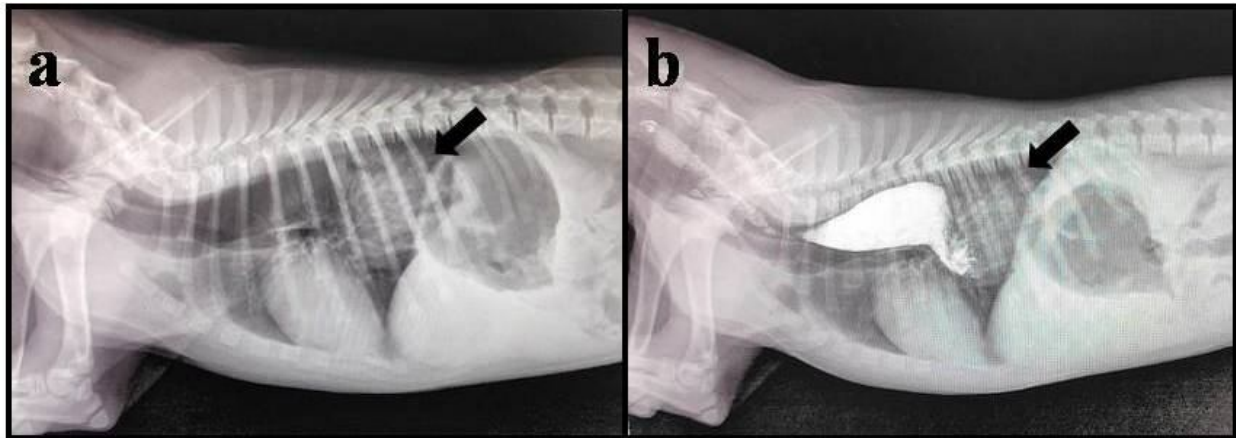


Fig. 1. Radiographs (a. plain and b. positive contrast) representing presence of foreign body in caudal thoracic region (black arrow)

foreign material towards the stomach. Subsequently, the choked item was grabbed with the forceps and removed successfully with subtle rotatory traction force (Fig. 2b). Next to removal, gastric lavage was done and the gastrotomy wound was closed by a simple continuous suture using 4-0 chromic catgut between the sub mucosa and muscularis layer followed by a layer of Cushing suture using 3-0 catgut over the serosa (Slatter, 2003; Iqbal *et al.*, 2020) using 4-0 chromic catgut. The laparotomy wound was closed by a simple continuous suture in linea-alba and cross mattress in the skin using 2-0 polyglactin 910 and 1-0 black braided silk, respectively (Fig. 2c). Following post-surgical antiseptic bandaging, the regular antiseptic dressing was done using 5% povidone-iodine solution and Mupirocin ointment from 3rd post-operative day till 3 to 5 days post suture removal (sutures removed on 10th day). Post-operatively, parenteral feeding was continued for 5 days with 40 mL of Ringer's lactate in the morning and 40 mL of dextrose normal saline (DNS) in the evening. Along with this, Ceftriaxone, Pheniramine maleate, Pantoprazole, Tramadol and vitamin B-complex @ 25 mg/kg, 0.5 mg/kg, 1 mg/kg, 2 mg/kg b. wt. and 1 mL/day, respectively were administered for 7 days. Pheniramine maleate was continued from 72 hours post-surgery. Light feeding with vegetable soup, rice gruel and oats was started from the 6th post-operative day onwards for 2-3 days, an uneventful gradual progression in appetite and activities was seen on the



Fig. 2. Retrieval procedure; a) Aseptic preparation of surgical site, b) Removal of foreign body by toothed thumb forceps, c) Cross matters skin suture (immediately after surgery), d) After one month of surgery

10th-12th post-surgical day. Fig. 2d represents the dog after one month of post-surgery.

Since the canine esophagus is uniform, choking may occur at any part of it (Venugopalan, 2005). Similar to previous reports, a foreign body was lodged in the caudal thoracic esophagus just cranial to the diaphragm in this puppy too, (Gianella *et al.*, 2009; Yoon *et al.*, 2009; Luthi and Neiger *et al.*, 1998). Puppies usually have frisky, nosiness behavior as well as gluttonous feeding habits; which makes them suffer from GIFB obstruction (Sharma *et al.*, 2021b), as evidenced in this case also. The appearance of clinical signs depends on the type and size of material, location and duration of construction (Gianella *et al.*, 2009; Yoon *et al.*, 2009). Esophageal obstruction leads to the appearance of clinical signs within one to two days, as observed in the previous cases (Gianella *et al.*, 2009; Yoon *et al.*, 2009; Luthi and Neiger *et al.*, 1998; Sen *et al.*, 2013). Both plain and contrast (if the object is radiolucent) radiographic examination is highly indicative and plays a very important role in precise diagnosis and consequently invasive procedures to be done (Gianella *et al.*, 2009; Sen *et al.*, 2013; Kachwaha *et al.*, 2017). However, the absence of endoscopy and facilities for thoracic surgery compels the authors to opt for the gastrotomy approach under the TIVA protocol. A similar TIVA protocol for gastrointestinal surgery was also used by Sharma *et al.* (2021a) and Sharma *et al.* (2021b). In this case, gastrotomy through cranial mid-ventral incision makes easy trans-diaphragmatic retrieval of the foreign body, since obstruction was on the caudal thoracic esophagus as well as it provides a better surgical window and the same was also referred in the clinical handbook (Kyles, 1998; Yoon *et al.*, 2009).

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The success of surgical management of GIFB obstruction or gastro-intestinal surgery or any surgery also depends on well-managed post-surgical care (Sharma *et al.*, 2021a; Sharma *et al.*, 2021b); which was carefully done in this case as well.

Finally, it was concluded that reporting on time, precise diagnosis, aseptic surgical intervention, and careful postoperative management could bring a successful outcome and these factors could be referred as the prime criterion for the success of GIFB obstruction cases. The case was presented on record so that in the absence of an endoscopy and thoracic surgery facility, this case can be managed under the TIVA protocol in field conditions.

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Author's contribution: MS: Performed the surgery and drafted the manuscript; BKS, KKB, KR, KK, AB: Assisted during the surgery and verified the manuscript.

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