



ISSN: 2456-2912

VET 2024; 9(5): 733-736

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www.veterinarypaper.com

Received: 05-08-2024

Accepted: 06-09-2024

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Esophageal osseous foreign body in dogs: A review of six cases

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Abstract

The most common esophageal foreign bodies in dogs are bones. They may cause partial or complete obstruction of the oesophageal lumen. Six dogs were presented to the Veterinary Clinical Complex, VC&RI, Tirunelveli aged between 8 months - 2.5 years with the history of salivation, retching, regurgitation, inappetence, dehydration and restlessness. Physical examination of three animals revealed a foreign body in the cervical esophagus. Survey radiography was taken for all the six cases which revealed radioopaque bone pieces in different parts of the esophagus. Manual retrieval through oral cavity was attempted in three cases out of which two were successfully retrieved under general anaesthesia. Four dogs were subjected to surgery of which esophagotomy was performed in two dogs and gastrotomy in two cases under Isoflurane anaesthesia. Post-operative fluid therapy, antibiotics, antihistamine, and analgesics were administered to all the dogs. All the dogs made an uneventful recovery.

Keywords: Foreign body, bone, dog, gastrotomy, oesophagotomy

Introduction

Esophageal foreign body obstruction (EFB) is a common condition in dogs. Obstruction was most commonly caused by osseous material (81 %), followed by fish hooks (6.8%) and others (12.2%) (Burton *et al.* 2017) [2]. Bone is more likely to induce pressure necrosis than other objects, such as fishhooks, chews and could be associated with a greater risk of complications and death if esophageal necrosis occurs. Classical signs in cases with EFB include dysphagia, salivation, retching, gagging, regurgitation and effort to swallow. Prolonged entrapment of foreign body within the esophagus increases the risk of developing moderate to severe esophagitis which may result in other complications such as esophageal stricture, perforation of the esophagus and aspiration pneumonia. (Rousseau *et al.* 2007) [7]. Due to the potential risk and often life-threatening complications, EFB obstruction is considered an emergency condition.

Case history and observation

Six animals of age ranging from 8 months to 2.5 years (Table 1) were presented to VCC, Veterinary College and Research Institute, Tirunelveli with the history of salivation, retching, regurgitation, vomiting, inappetence, dehydration and restlessness. Physical examination of four animals revealed a foreign body obstruction in the cervical esophagus. Survey radiography was taken for all the six cases which revealed radioopaque bone pieces in different parts of the esophagus ranging from cranial, caudal cervical and thoracic esophagus (Figure 1, 2, 3, 4). Preoperative hematology and serum biochemical analysis were within normal physiological range except for hypoglycemia in four cases (Table 2).

Table 1: Anamnesis of the cases

Case no.	Breed	Age	Sex	Body Wt (kg)	Site of obstruction	Foreign body	Retrieval of foreign body
1.	Non-descript	1.5 Y	M	14	Post pharyngeal cervical esophagus	Chevon bone	Manual retrieval
2.	Non-descript	8 month	M	10	Post pharyngeal cervical esophagus	Mutton bone	Oesophagotomy
3.	Spitz	3 month	M	3	Post pharyngeal cervical esophagus	Fish bone	Oesophagotomy
4.	Non-descript	2.5 Y	M	16	Thoracic esophagus	Mutton bone	Gastrotomy
5.	Lhasapso	9 month	M	6	Cranial Cervical esophagus	Chicken bone	Manual retrieval
6.	Non-descript	2.5 Y	M	15	Thoracic esophagus	Chicken bone	Gastrotomy

Table 2: Hematobiochemical parameters

Parameters	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Hb (g/dL)	12	9.5	11	10	10	11
PCV (%)	40	44	51	39	54	48
RBC ($10^6/\mu\text{l}$)	5.5	7.0	7.2	6.1	7.5	6.5
WBC ($10^3/\mu\text{l}$)	9000	12500	8500	9500	11000	11500
Platelet count ($10^3/\mu\text{l}$)	4.0	3.2	5.0	3.9	4.3	4.8
Neutrophils (%)	62	68	70	79	63	66
Eosinophils (%)	2	1	0	1	2	0
Basophils (%)	0	0	1	0	1	0
Monocytes (%)	3	2	3	4	2	5
Lymphocytes (%)	18	20	16	21	19	20
BUN (mg/dL)	20	18	11	10	17	20
Creatinine mg/dL)	0.6	0.5	0.8	0.9	0.5	0.8
ALP (U/L)	63	75	82	100	94	98
Glucose (mg/dL)	55	52	50	69	60	82

Treatment

Manual retrieval through oral cavity was attempted in four cases using 6' Allis tissue forceps of which two were successfully retrieved under general anaesthesia. Excessive force was not attempted in the two failed cases of manual retrieval because of the possibility of oesophageal perforation. Cervical oesophagotomy was performed under preanaesthetics Atropine sulphate 0.04 mg/kg, Diazepam @ 0.5mg/kg and Ketamine (5mg/kg body weight I/V) induction and maintenance. A mid ventral skin incision was made in the cervical region approximately at the site of obstruction. Sternohyoid muscles at the midline were separated and retracted to expose the trachea. Trachea was then retracted to expose the esophagus. Stomach tube was passed till proximal to the site of obstruction to facilitate the identification of esophagus and site of incision to be made on the esophagus. One fishbone and mutton bone was retrieved from cervical esophagus (Figure 5). Esophagus was closed in a single layer pattern using PGA 3-0 with intraluminal knots in a simple interrupted pattern.

Gastrotomy was performed for two dogs in which the bone piece was present in thoracic esophagus cranial to diaphragm. Under Ketamine (5mg/kg) induction and maintenance with Isoflurane variable vapour pressure setting. A mid ventral skin incision was made behind the xiphoid and extended caudally. Gastrotomy incision was made between the lesser and greater curvature at the fundus region where the vasculature is less prominent. Then 8'' tissue forceps was inserted through the lower esophageal sphincter to grasp the foreign body. The bone piece was retrieved from distal esophagus (Figure 6). Stomach was closed using PGA 2-0 in an inversion two layer Cushing pattern. Omentalisations was done.

Post-operative fluid therapy for three days, Amoxicillin @ 15mg/kg for five days and Tramadol @1 mg/kg for two days were administered to all the dogs. Surgical site dressing was done once in two days. Sutures were removed on 10th - 12th postoperative day. All the four animals that underwent surgery made an uneventful recovery without any complication.

Discussion

The frequently encountered oesophageal foreign bodies in dogs include bones, fish hook, wooden sticks and plastic toys (Beer *et al.*, 2022) [1]. In the six cases reported, all were bone pieces (fish bone, chevon bone, chicken bone). The EFBs have been frequently reported in small breed dogs including terriers and poodles and younger dogs were more predisposed (Deroy *et al.*, 2015) [4]. This coincides with the present report as three dogs were below one year of age and two were toy breeds. Palpation of the neck region revealed presence of foreign body in three cases. All animals were subjected to survey radiography. Four cases showed clear view of radiopaque foreign body (bone) at different levels of esophagus. Two cases showed varying degree of soft tissue density around the foreign body at the level of diaphragm.

The 3 main regions where the foreign bodies can get lodged in the esophagus are thoracic inlet, base of the heart, at the level of the diaphragm as these locations the esophagus is somewhat narrower than other regions (Fossum, 2018) [5]. Among six cases two were at the level of diaphragm whereas others were post pharyngeal or mid cervical esophagus. The predominant sign of oesophageal foreign body is regurgitation, retching, salivation (Leib and Sorter, 2008) [6]. The foreign body lodged in cervical esophagus showed retching whereas in thoracic esophagus showed regurgitation.

Manual retrieval of foreign body was attempted for four cases and successfully retrieved for two cases. For the two failed cases oesophagotomy was performed. The esophagus, has a segmental blood supply and due to its continuous peristaltic movements, its healing is prolonged and post-surgical complications are high (Fossum, 2018) [5]. But there were no post-operative complications in the two cases that underwent oesophagotomy. Gastrotomy was done for the foreign body present at the level of diaphragm and pulled using 8 inch Allis tissue forceps. (Davoodi *et al.*, 2021) [3] used Covault hook to remove a foreign body (fish hook) from the esophagus through gastrotomy incision without postoperative complications. The animals that underwent surgery was

maintained with intensive fluid therapy for 3 days with postoperative antibiotic and analgesic coverage.



Fig 1: Post pharyngeal obstruction in cervical esophagus



Fig 2: Bone in the cervical esophagus



Fig 3: Bone in the thoracic esophagus



Fig 4: Bone piece near the cardia

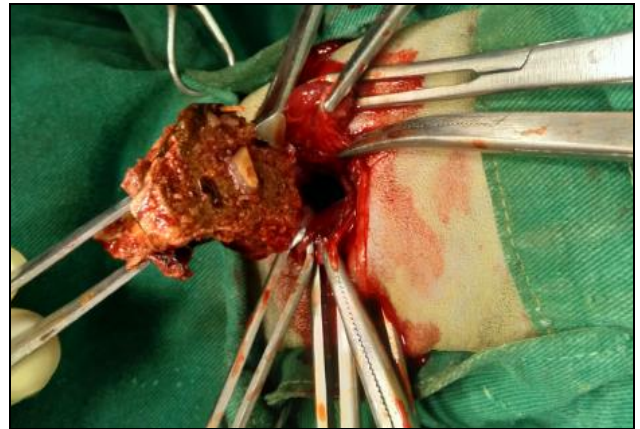


Fig 5: Bone piece removed from cervical Oesophagotomy



Fig 6: Bone piece removed through gastrotomy

Conclusion

Early diagnosis and surgical intervention are the critical factors that paved for uneventful recovery without any complications.

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How to Cite This Article

Kokila S, Ninu AR, Bharathidasan M, Vishnugurubaran D, Dharmaceelan S. Esophageal osseous foreign body in dogs: A review of six cases. *International Journal of Veterinary Sciences and Animal Husbandry*. 2024;9(5):733-736.

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