CASE REPORT
JIVA 22 (3) December 2024
https://doi.org/10.55296/JIVA/22.3.2024.137-140

Received on 13.09.2024
Accepted on 30.09.2024

ENDOSCOPIC RETRIEVAL OF THE ENDOTRACHEAL TUBE AFTER OESOPHAGEAL INTUBATION

P. T. Dinesh,[1*] Navya P. Shibu[2], Blesson K. Jose[2], S. Sooryadas[3], N. S. Jinesh Kumar[1], V. Remya[1], K. Promod[4], K. Krishnakath[2] and R.C. Sarath[5]

[1] Assistant Professor, [2]M.V.Sc., Scholar, [3] Associate Professor and Head,
Department of Veterinary Surgery and Radiology
[4] Professor and Head, [5] M.V.Sc. Scholar
Department of Animal Reproduction, Gynaecology and Obstetrics,
College of Veterinary and Animal Sciences, Pookode, Wayanad, Kerala, India
Kerala Veterinary and Animal Sciences University

*Corresponding author: dineshpt@kvasu.ac.in

ABSTRACT

An endotracheal tube is a semi-rigid medical device used to secure the airway during surgical procedures and in critical care situations. A 1.5-year-old intact female dog weighing 14 kg was presented to Teaching Veterinary Clinical Complex, Pookode, Wayanad, for elective ovariohysterectomy. The dog was premedicated with intramuscular atropine and xylazine and anaesthesia was induced with intravenous midazolam and ketamine. During intubation with a 6-mm cuffed endotracheal tube, the tube was accidentally displaced into the pharynx and could not be retrieved manually. A lateral thoracic radiograph showed the tube lodged in the oesophagus, with its cuff inflated. General anaesthesia was then induced with propofol and maintained with an infusion, allowing for successful endoscopic retrieval of the tube without further complications.

Key words: Endoscopic retrieval, Endotracheal tube, Oesophagus

INTRODUCTION

Endotracheal tubes are essential for maintaining a secure airway, preventing aspiration of gastric contents, delivering oxygen and anaesthetics directly to the lungs and enabling positive-pressure ventilation during surgeries and in critical care. Accidental ingestion of an endotracheal tube can severely compromise airway management and increase the risk of aspiration and pneumonia, necessitating urgent interventions like endoscopy or surgery. This rare but serious complication highlights the importance of precise technique and vigilance during intubation to ensure correct tube placement. Quick recognition and intervention are crucial in managing such incidents, underscoring the need for healthcare providers to be

prepared to ensure patient safety and effective outcomes.

CASE HISTORY AND OBSERVATION

A 1.5 year old intact female non-descript dog weighing 14 kg presented to TVCC, Pookode for elective ovariohysterectomy. The dog was premedicated with intramuscular atropine sulphate and xylazine at a rate of 0.045mg per kg and 0.5 mg per kg respectively. Anaesthesia was induced by intravenous (IV) co-administration of 0.2 mg/kg midazolam and 3mg/kg ketamine. The procedure aimed to intubate the dog's trachea with a 6.5-mm cuffed endotracheal tube to administer isoflurane in 100 percent oxygen for anaesthesia. Intubation was carried out using a laryngoscope and the cuff of the endotracheal tube was inflated. However, before the tube could be secured to the anaesthetic circuit, the animal awoke suddenly and bit the tube resulting in part of tube being lost in the pharynx. Attempts to manually retrieve the part of the tube were unsuccessful.

A lateral thoracic radiograph was urgently performed to determine the location of the missing endotracheal tube. The radiograph indicated that a segment of the tube, with its cuff inflated, was lodged in the middle section of the oesophagus (Fig.1). To address this, general anaesthesia was swiftly induced with propofol at a dosage of 2 mg/kg. Anaesthesia was then sustained through an intravenous infusion of propofol at a rate of 0.2 mg/kg/min. Following the induction and maintenance of anaesthesia, an immediate endoscopic procedure (Fig. 2) was conducted. The endoscopic retrieval was successful, and the endotracheal tube was effectively removed from the oesophagus without further complications (Fig. 3 and 4).

TREATMENT AND DISCUSSION

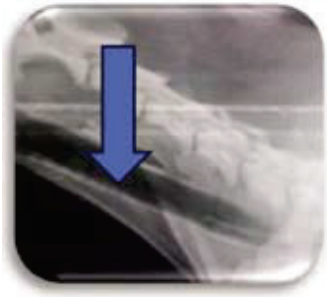

Fig. 1. Radiograph with tube inside the oesophagus

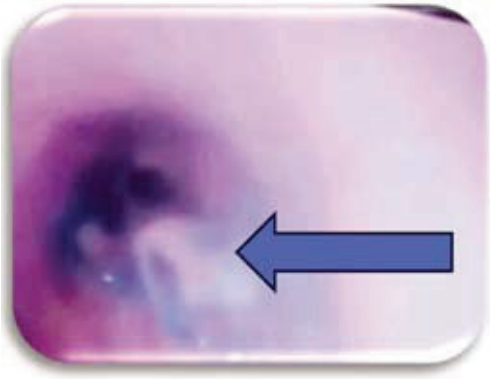

Fig. 2. Endoscopic view of the tube insitu

Accidental intubation of the oesophagus is a common occurrence. While this itself is usually not harmful if identified and corrected quickly to establish a proper airway, a delayed diagnosis can

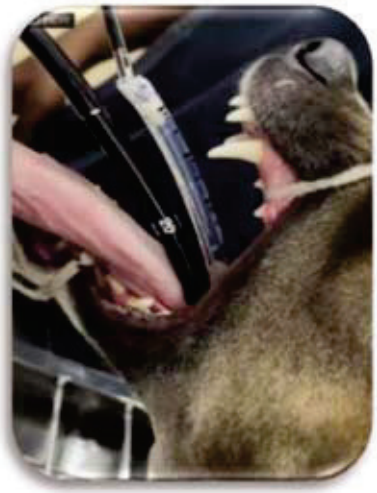

Fig. 3. Retrieval of the tube

Fig. 4. The retrieved endotracheal tube

lead to severe hypoxia and significant morbidity and mortality (Dittrich, 2002). However, swallowing an endotracheal tube is an uncommon complication of tracheal intubation. Several cases have been reported where an endotracheal tube was swallowed following accidental oesophageal intubation in humans (Abrahams *et al*., 1970; Johr and Schubiger,1995). Swallowing of an endotracheal tube can happen if the tube is accidentally inserted into the oesophagus and not properly secured. In the current case, the tracheal tube was lost shortly after intubation.

Several clinical methods used by clinicians to verify proper tube placement, including direct visualization of the endotracheal tube passing through the vocal cords, condensation of water vapour inside the endotracheal tube during expiration, auscultation of the chest, and reservoir bag compliance, are not always reliable (Birmingham *et al.,* 1986; Dittrich, 2002). Pulse oximetry may be a useful indicator of oesophageal intubation; however, preoxygenation prior to intubation will delay detection of arterial desaturation (Dittrich, 2002). Capnography and negative pressure testing have been used as reliable tests to differentiate between tracheal and oesophageal intubation (Birmingham *et al.,* 1986).

Precautions against tube-swallowing include firm attachment between the adaptor and endotracheal tube before inserting the tube, attaching a piece of rolled gauze or suture to pull the tube out in the event that it gets swallowed and immediate fixation of the tube to the patient after intubation. This case report emphasizes the importance of maintaining control of the endotracheal tube at all times until it is secured to the patient. Proper tube fixation can reduce the possibility

of displacement, inadvertent extubation, and aspiration or ingestion of the tube during anaesthesia. The selection of the endoscopic technique and the necessary equipment for retrieving ingested foreign bodies typically depends on both the nature and the position of the objects. Factors such as the size, shape, and material of the foreign bodies, as well as their location within the gastrointestinal tract, influence the choice of method. For instance, flexible endoscopes may be preferred for objects in the upper gastrointestinal tract, while more rigid instruments would be necessary for items lodged deeper or for those with sharp edges. Additionally, specialized tools like retrieval forceps, snares, or nets may be used based on the specific characteristics of the foreign body. Endoscopic retrieval of foreign bodies in the upper gastrointestinal (UGI) tract is a safe and effective method. Early intervention by a skilled endoscopist leads to successful retrieval with minimal complications (Sude and Karanam, 2021).

SUMMARY

A 1.5-year-old intact female dog weighing 14 kg was presented to Teaching Veterinary Clinical Complex, Pookode, Kerala Veterinary and Animal Sciences University, for elective ovariohysterectomy. The dog was premedicated with intramuscular atropine and xylazine, and anaesthesia was induced with intravenous midazolam and ketamine. During intubation with a 6-mm cuffed endotracheal tube, the tube was accidentally displaced into the pharynx and could not be retrieved manually. A lateral thoracic radiograph showed the tube lodged in the oesophagus, with its cuff inflated. General anaesthesia was then induced with propofol and maintained with an infusion, allowing for successful endoscopic retrieval of the tube without further complications.

REFERENCES

Abrahams, N., Goldacre, M. and Reynolds, E. O. R. 1970. Removal of swallowed neonatal endotracheal tube. *Lancet*. **2**: 135–136.

Birmingham, P. K., Cheney, F. W. and Ward, R.J. 1986. Oesophageal intubation, a review of detection techniques. *Anesth*. *Analg*. **65**: 886–891.

Dittrich, K. C. 2002. Delayed recognition of oesophageal intubation. *Can*. *J*. *Emerg*. *Med*. **4**: 41– 43.

Johr, M. and Schubiger, G. 1995. The lost tracheal tube: a rare complication of failed intubation. *Paediatr*. *Anaesth*. **5**: 397–398.

Sude, N.S. and Karanam, V.P.K. 2021. Endoscopic retrieval of ingested foreign bodies: a single surgeon experience. *Cureus*. **13**(11). doi: 10.7759/cureus.19293.