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Linear foreign body in the small intestine of a Persian cat-a case report

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Abstract

Foreign body in gastrointestinal tract is a common problem in small animal practice, especially in domestic cats. A case report of recurrent ingested thread as a linear foreign body with the thread held back by the tongue and stuck causing further complications is presented in this case report. Interestingly, the radiographic results did not indicate the paisley shaped gas pattern which is characteristic of a linear foreign body. The final diagnosis was made by exploratory laparotomy which confirmed the presence of several threads in the small intestine. Therefore, this complex case was diagnosed based on history, clinical signs and results of radiography and confirmed by exploratory laparotomy. This is the first ever published case report of successful clinical management of a linear foreign body in UAE according to the authors' knowledge.

Keywords: *Linear foreign body, obstruction, cat, radiograph, exploratory laparotomy*

Gastrointestinal foreign bodies are common in cats due to their high tendency to explore and consume wide variety of material. Linear foreign bodies such as thread or string are most often passed along with the stools, though it is also possible that a small object might rattle around inside the stomach without passing for weeks. If the object does not pass and causes obstruction or partial obstruction, surgery is warranted remove it. Early diagnosis allows early removal of the foreign body before the bowel gets damaged (Brooks, 2014). Timely intervention will allow preventing complications such as peritonitis due to gastric or intestinal perforation (Burk, 1996). However, some of these episodes might end up in fatal consequences. Linear foreign body obstruction could result in chronic, intermittent, gastrointestinal disease in cats (Saundra and Charles, 1991). Acute or chronic obstruction may be combined with varying phases of dyspnoea, persistent coughing, haemoptysis, halitosis and similar symptoms associated with possible migration like pneumonia, pneumothorax, pulmonary abscess or pyothorax (Levitt *et al*., 1993; Tenwolde *et al*., 2010). Tracheal and bronchial foreign bodies in the cat have been infrequently reported in the veterinary literature (Levitt *et al*., 1993; Agudelo *et al*., 2018). The most common clinical signs of such a condition described in this communication were persistent vomiting, lethargy, anorexia, depression, diarrhea, dehydration, painful abdomen, uncomfortable and an unusual hiding behaviour. This

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report describes the diagnosis and surgical intervention which led to an uneventful recovery of a Persian cat presented with gastrointestinal obstruction due to linear foreign body. This is the first ever published case report of linear foreign body in cats in the UAE according to the authors' knowledge.

A three year-old female Persian cat named Guccie was presented at the Paws and Claws Veterinary Clinic Al Ain with a history of swallowing threads, vomiting and anorexia. The owner described the cat as always being playful, active, living with many cats, very social and an obsession to eating threads which is usually expelled either by vomiting or by defecating. The vaccination and deworming was routine. During the physical examination the patient appeared lethargic, her body weight was recorded as 3.5kg with a normal body condition scoreShe was dehydrated and with a pale mucus membrane. The rectal temperature was 39.5°, evincing pain upon abdominal palpation, injured and swollen mouth. Complete blood count and serum blood chemistry was analysed as it is important to exclude any suspected differential diagnosis that cause vomiting and to allow for quick assessment of the major organ systems of the body before surgery. Differential diagnosis of intestinal obstruction should be included in a patient with acute vomiting, chronic diarrhea, acute abdomen, and weight loss (Papazoglou *et al*., 2003). Parvovirus was excluded based on history, physical examination and by SNAP® Dx Parvo Test. In case of pancreatitis the cat would have clinical signs include nausea, vomiting, fever, lethargy, abdominal pain which was excluded by physical examination and imaging. Serum biochemistry parameters were within the reference range but the phosphorus was lower (2.4 mg/dL) than normal due to long term starvation, malnutrition. Regarding the complete blood count, most of the parameters were within the reference range. However, both mean corpuscular haemoglobin concentration (29.3g/dl) and platelet counts ($281x10^9$/L) were lower than the normal range. The patient was anaesthetised immediately by an inhalation anesthetic, mouth was opened, and a thread was found one end tied around the tongue and the other end progressing into the oesophagus. The end of the thread around the tongue was identified and released. Unfortunately, when we tried to pull out the other end gently, it was found stuck somewhere inside. Radiographic examination indicated foreign bodies in the stomach (Fig. 1). After five minutes the cat was awake, vomited and tried to get rid of the thread. Later, a positive contrast gastrography was taken, for which the patient preparation was very important because the food could mimic a gastric lesion and therefore the patient should be fasted for 12-24 hour (Thrall, 2017).

In this case the patient was anorectic for the past two days. The cat was sedated with isoflurane inhalation anesthetic and then barium sulfate was administered orally as a contrast agent. After that the patient was gently turned to achieve uniform coating of the gastric mucosa. Immediately following barium sulfate administration, imaging of left lateral, right lateral, ventrodorsal and dorsoventral views of the stomach were made, followed by left recumbent lateral and ventrodorsal views of the abdomen after 15 min, 30 min, 45 min and 1 h, 2 h, 3 h, 4 h , until complete emptying of the stomach content was ascertained (Thrall, 2017). It was presumed that the linear foreign body formed as an obstruction in the stomach as the barium sulfate failed to pass by the stomach. However, later during surgery the obstruction was detected in the intestine (Fig. 2). The diagnosis of this case as a linear foreign

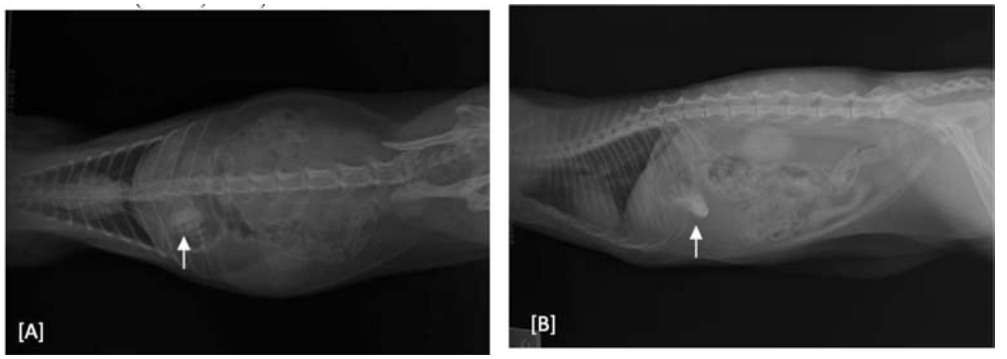

Fig. 1. Abdominal radiographs of the cat. **[A]** Dorsoventral view : Obstruction found in the stomach (white arrow). **[B]** Latero-lateral view: Obstruction found in the stomach (white arrows).

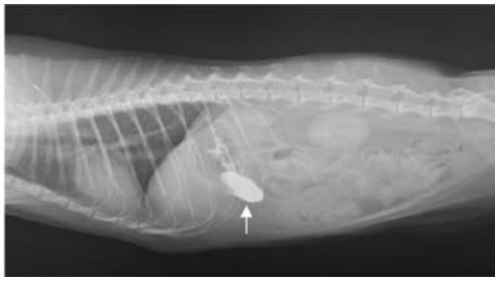

Fig. 2. Barium sulfate contrast radiograph indicating obstruction

body obstruction was based on history, clinical sign, and physical examination, including abdominal palpation, diagnostic imaging and exploratory surgery. The cat was hospitalised for follow up, but next day onwards vomiting aggravated.

Exploratory laparotomy was performed to explore and to remove the linear foreign body. Medetomidine hydrochloride was used as pre-medication with ketamine for inducing general anaesthesia. Medetomidine hydrochloride was administered as intramuscular injection at a dose of 0.10 ml per kg body weight. Ketamine was administered at a dosage of 5 mg per kg body weight Intra Muscular. After induction, the trachea was intubated and anaesthesia was maintained with 1.5% isoflurane in oxygen. Then the ventral abdomen was prepared aseptically for surgery. A linear foreign body that was wrapped around the tongue was identified and released before laparotomy,. Further abdominal incision was made, the abdominal cavity was accessed through the ventral midline of the abdomen incision, the stomach was bloated due to barium and gases which were unable to pass. The intestine was in place and clear view of linear pattern was found in ileum to duodenum (Fig.3).The knot caused obstruction in proximal part of ileum. After locating the foreign body, it was pulled gently and gradually until the more distal point of fixation was reached.

The linear FB may be localized by identifying intestinal complication (Evans *et al.,* 1994). Multiple enterotomies spaced along the intestine, are required to minimize excessive traction and avoid subsequent intestinal perforation and to remove the foreign body completely (Ellison, 1998). However due to chronic ingestion of the threads in the present case , the threads were all over the small intestine and these had to be removed (Fig. 4).The intestinal incision was sutured

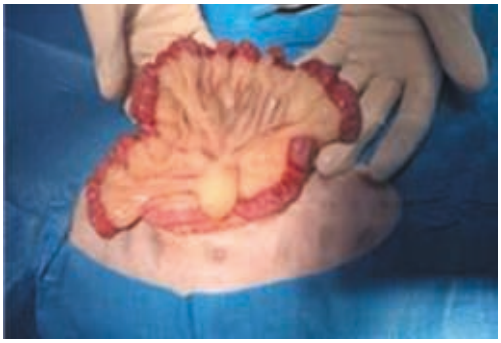

Fig. 3. Exposed view of linear pattern found in ileum to duodenum during surgery

Fig. 4. Surgical removal of the linear foreign body

by Cushing pattern, abdomen was sprayed several times with saline, complete closure of the abdomen, muscle and subcutis were done by simple continuous suture pattern and the skin sutured by simple cross-mattress pattern. Silver sulfadiazine spray was applied topically above the surgical wound for antimicrobial or antibacterial action to help in healing process. In post operative care, metoclopramide hydrochloride was administered by intramuscular injection route at a dose of 0.2 mg per kg every six to eight hours to treat and prevent vomiting , and to stimulate stomach and intestinal motility. Meloxicam was given subcutaneously and at a dose of 0.3 mg per kg body weight to reduce inflammation and relieve the pain. Besides, sodium chloride (0.6% w/v) intravenous infusion therapy was also administered.

In the first 24 hours after surgery, the cat was fed with small amounts of a bland and canned diet to help the gastrointestinal tract resume normal motility. The patient was observed closely to ensure that there is no sign of leakage at the intestinal incisions. Based on the response to this introduction of feed, the size of her meals was gradually increased until the appetite was normal. After the abdominal exploratory surgery, the animal was rested and advised to have a limited activity for at

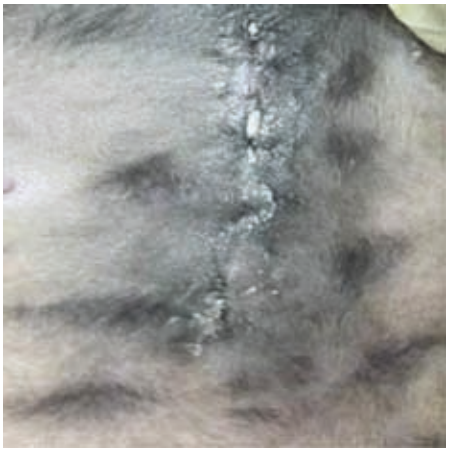

Fig. 5. Surgical wound one week post operative

least 14 days to allow the surgical wound to heal. Elizabethan collar was used to prevent the cat from licking, opening, or infecting the surgical wound to allow better healing and to prevent any further complications such as infection or break down of the wound. We also recommended the owner to prevent the cat from access to threads. The surgery had positive impact and an uneventful recovery, the animal was presented to the clinic for follow up and to remove the suture (Fig.5). She was in good health status, vomiting had stopped, the appetite recovered gradually and the bowel movements were proper.

Summary

Linear foreign body is difficult to diagnose as the strings are too small to visualize on a radiograph. Though examining under the tongue for a string is important it might not always be successful as it could be invisible despite its presence. The presence of plication on the radiograph or the paisley shaped gas patterns may help in the diagnosis. However, in most of the cases it need not be definitive. Hence, based on animal health status, exploratory laparotomy should be performed as treatment and diagnostic procedure. The final diagnosis of this case is linear foreign body based on history, clinical signs, physical examination, and diagnostic tests and confirmed by exploratory laparotomy. Successful management of the case is also placed on record.

Acknowledgment

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Ethical considerations

The owner consent was taken prior to undertaking the treatment protocol following the standard procedures.

Conflict of interest

The authors declare that they have no conflict of interest.

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