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ALIMENTARY TRACT FOREIGN BODIES IN DOGS AND CATS

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SUMMARY

Twelve cats and nine dogs suffering incidental swallowing of foreign bodies were included in this study. Various foreign bodies were detected in their mouth, oesophagus, stomach and intestines. The most common and obvious clinical signs were persistent vomiting, anorexia and depression. Diagnosis was based on case history, clinical examination and radiography. Surgery was successfully adopted in most of cases.

INTRODUCTION

Swallowing of foreign bodies into gastrointestinal tract is common in dogs and cats. The most encountered foreign bodies are bones, small toys, plastic and rubber materials in dogs and strings, needles and fishhooks in cats (Birchard and Sherding, 1994 and Bojrab et al, 1998). Linear foreign objects could be found in the mouth, esophagus, stomach and intestines of dogs and cats (Root and Lord, 1971 and Felts et al, 1984). Diagnosis of gastrointestinal foreign bodies was based on the clinical signs, radiological examination (Felt et al, 1984; Spielman et al, 1992; Birchard and Sherding, 1994; Bojrab et al, 1998 and Barber and Mahaffey, 1998) and endoscopy (Guilford, 1990 and Gualtieri, 2001). Successful treatment depended on the ability to identify the animals likely to ingest a foreign body, to confirm the diagnosis by physical and radiological examinations and to perform the appropriate surgery without delay (Reed, 1975).

The purpose of the present study is to focus on the diagnosis and the common sites for location of foreign bodies as well as treatment trials in dogs and cats.

MATERIAL AND METHODS

Twelve cats and nine dogs of both sexes, less than 5-years old were admitted to the Surgery Clinic, Faculty of Veterinary Medicine, Cairo University during the period between 1997-2002, with history of swallowing foreign bodies. The clinical data were obtained through history, clinical signs and physical examination. Each case received 1mg/kg of xylazine ® intra-muscularly for tranquilization. The animals were subjected to radiographic examination using either survey or contrast radiography. Contrast radiography was undertaken using barium sulfate 20% as a meal in small doses after Barber and Mahaffey (1998). Surgery was performed in all cases under general anesthesia after Schmidt-Oechtering and Alef (1995). Dogs' anaesthesia involved intravenous cocktail of atropine sulfate (0.05 mg/kg) diazepam (0.5mg/kg), xylazine HCL (1mg/kg) and ketamine HCL (10mg/kg). Cats were anaesthetized using intramuscular protocol of atropine sulfate (0.1mg/kg), xylazine HCL (1mg/kg) and ketamine HCL (20 mg/kg). Fluid therapy was administered in the venous line along the operative procedure.

RESULTS

The location, number, nature and fate of the swallowed foreign objects in dogs and cats were recorded (Table-1). The obtained result revealed that, in both dogs and cats; the oesophagus was the most common site for lodgment of foreign bodies particularly at its cervical portion. Oesophageal foreign bodies were more encountered in cats than in dogs. Most of foreign bodies in cats were linear in natures. Animals with foreign bodies such as sewing needles or bone spicules lodging in the mouth or the pharyngeal region showed salivation and off food. These objects were diagnosed through clinical examination and removed by gentle withdrawal through the mouth using hemostat. The clinical signs accompanying oesophageal foreign objects included salivation, depression, anorexia, and in long standing cases progressive emaciation. In one case of a dog having foreign body (piece of bone) in the thoracic esophagus (Fig 1), there was regurgitation of solid food materials, but there was incomplete obstruction reflected by passing the contrast media into the stomach. Linear foreign bodies as needles in esophagus of dogs (Fig 2) were rare. Most of foreign objects in cats were needles (Fig. 3, 4) or piece of fish bones (Fig 5). None of the objects caused complete oesophageal obstruction either in cats or in dogs.

Gastric and intestinal foreign bodies were more encountered in dogs than in cats. The clinical signs accompanying foreign objects in the stomach were not remarkable. These included frequent vomiting as the only hallmark sign, which may be intermittent, and with or without depression.

Table-1: Alimentary tract foreign bodies in dogs and cats

Digestive Tract	Number of Animals		Nature	Location	Fate
	Dog	Cat			
Mouth	1		Bone	Between teeth	Recovery
		2	Needle	Between teeth	Recovery
Pharynx	1		Needle	Base of tongue	Recovery
		3	Needle	Base of tongue	Recovery
Oesophagus Cervical part	1		Needle	Migrate S/C	Recovery
		1	Needle	Migrate S/C	Recovery
		1	Fish bone		Died 3 days post surgery
Thoracic part	1		Bone	Cranial to esophageal hiatus	Euthanasia
		1	Needle	Migrate S/C	Recovery
Stomach	1		Soft drink bottle lid	Pyloric antrum	Recovery
	2		Ball	Pyloric antrum	Recovery
	1		Needle	Pyloric antrum	Recovery
		1	Needle	Pyloric antrum	Recovery
Intestine	1		Needle	Migrate into the abdomen	Peritonitis and euthanasia
		3	Plastic materials	Duodenum	Complete obstruction, surgery and recovery

Radiopaque objects were confirmed through survey radiographs (Fig 6), and radiolucent objects were diagnosed using barium gastrogram (Fig 7A&B).

Intestinal foreign objects were commonly seen in the descending duodenum. The clinical signs encountered were vomiting, depression, anorexia and abdominal tenderness. In some cases the foreign objects were palpated via the abdominal wall. Cases of complete obstruction (Fig 8& 9) showed acute onset of severe vomiting, dehydration, weakness and decrease defecation frequency. A dog with migrating needle in the abdomen (Fig 10) showed also fever due to severe septic peritonitis. Surgery was adopted in 13 cases to remove the foreign materials present in the gastrointestinal tract. Needles perforating the oesophagus were successfully removed surgically in a dog

and two cats. A cat that had fish bones in the cervical oesophagus died three days after surgery. In the case of cervical oesophageal foreign body of dog that came in a moribund state, euthanasia was recommended and in post mortum examination a piece of bone was found causing pressure necrosis in the oesophageal wall. Cases of gastric and intestinal foreign bodies were successfully removed after laparo-gastrotomy (6 cases) or laparo-enterotomy (3 cases). The dog that had floating needle in the abdomen with severe septic peritonitis was euthanatized during surgery.

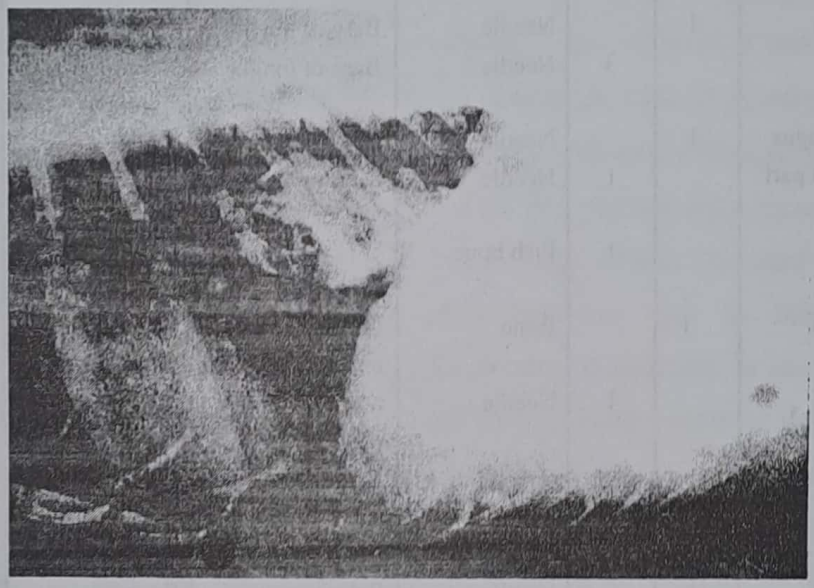

Fig. (1): Lateral radiograph of the thorax showing a radiopaque foreign body outlined with barium, cranial to the oesophageal hiatus in a dog. Note: The foreign body produced incomplete obstruction, as there is flow of contrast medium into the stomach.

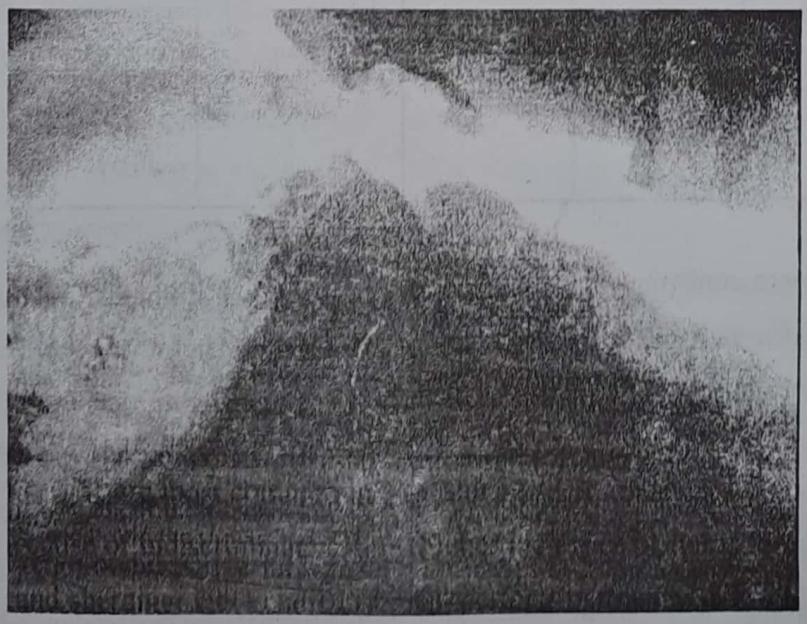

Fig (2): Lateral radiograph of the cervical region of a dog. Note the presence of curved needle perforating the oesophagus with swelling in the ventral aspect of the cranial cervical region.

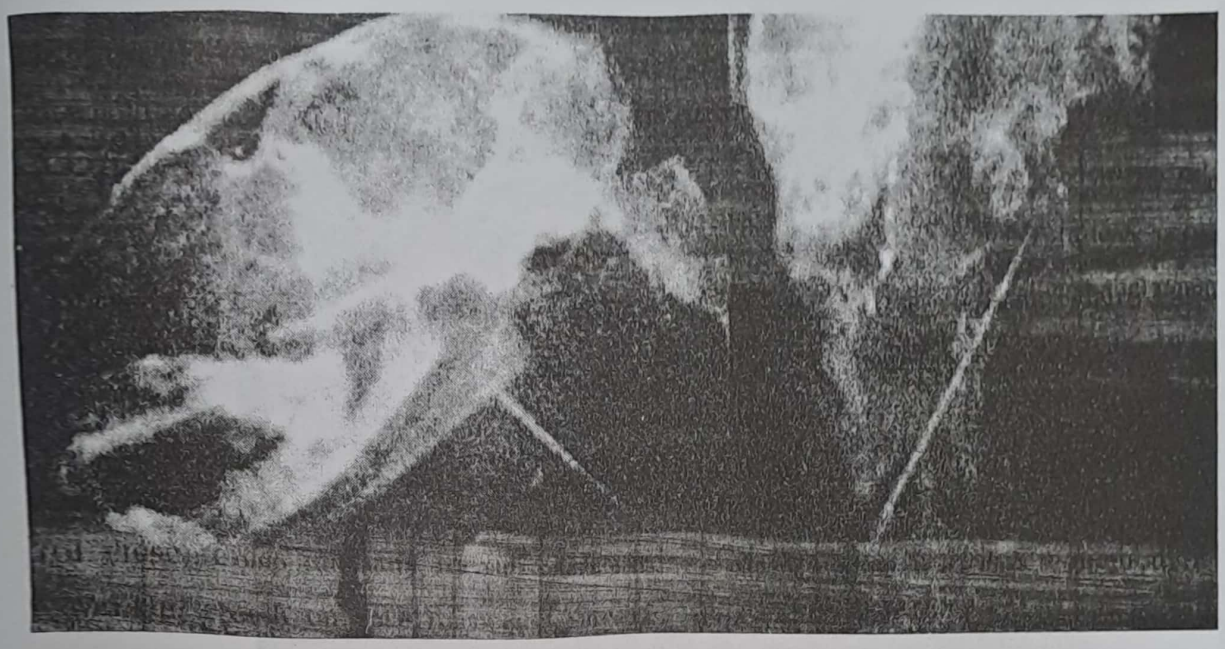

Fig (3): Lateral (A) and ventrodorsal (B) radiographs showing migrating needle at the cervical oesophagus in a cat.

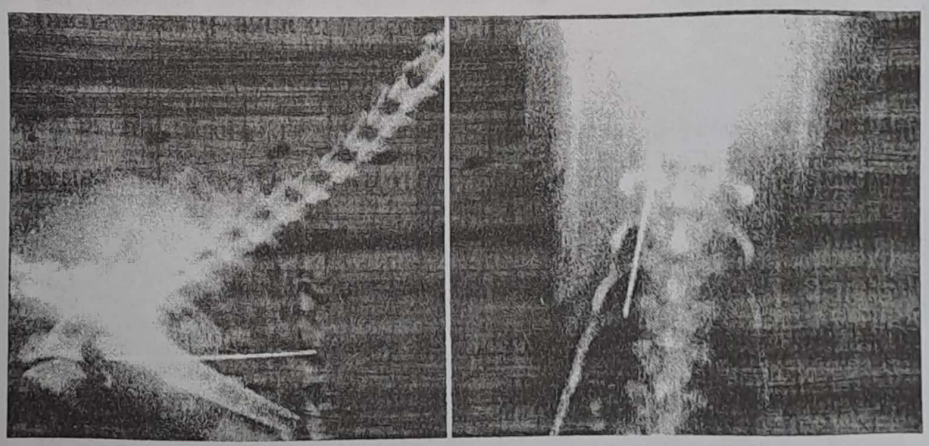

Fig (4): Lateral (A) and ventrodorsal (B) radiographs showing perforating needle of the oesophagus and migrating to the subcutaneous tissues at the thoracic wall in a cat.

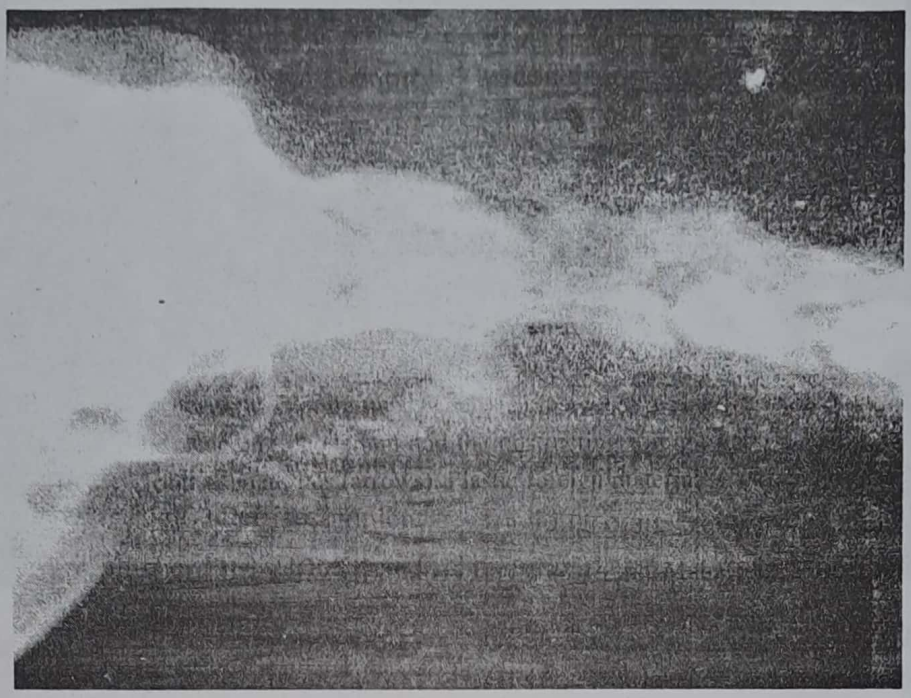

Fig (5): Lateral radiograph of the cervical region, showing piece of fish bone in the oesophagus of a cat.

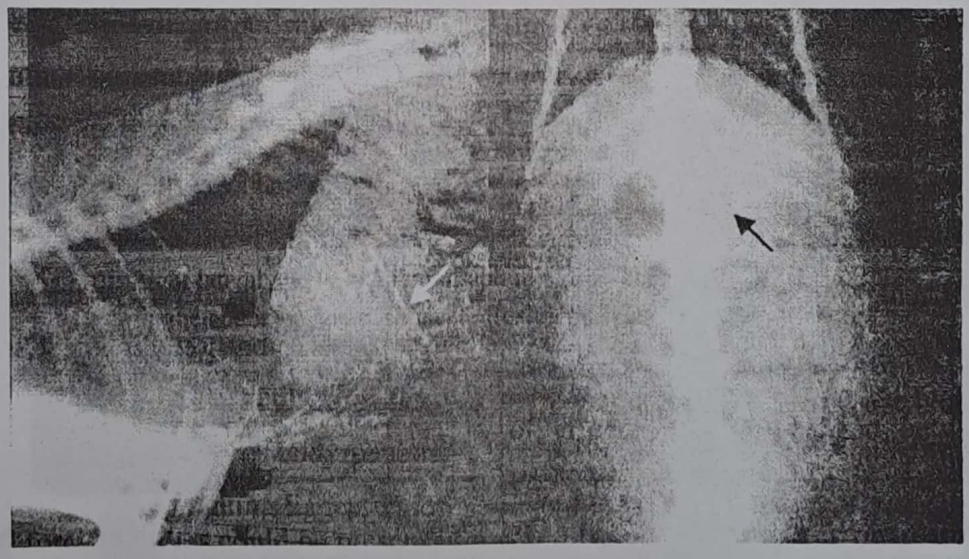

Fig (6): Right lateral (A) and ventrodorsal (B) radiographs of a cat with foreign object (needle) in the stomach.

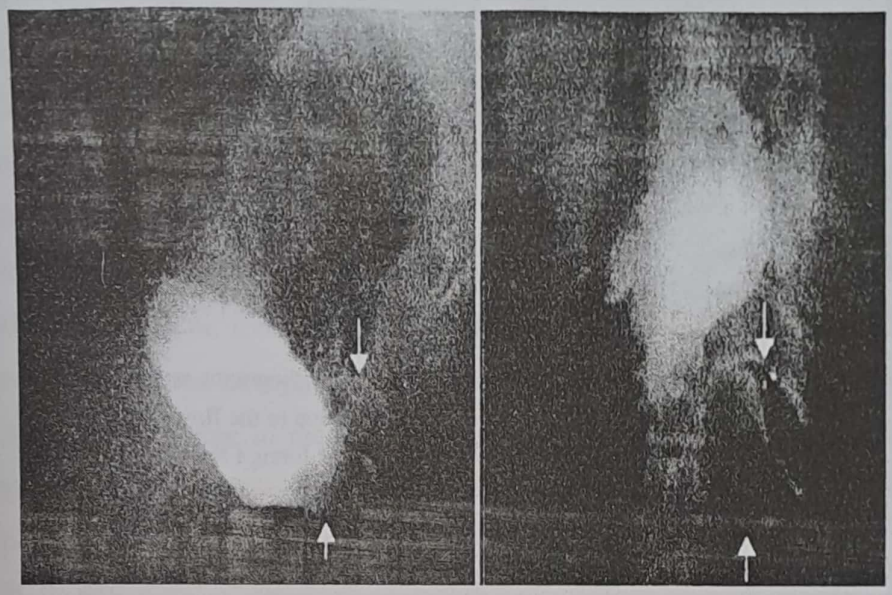

Fig (7): Right lateral (A) and ventrodorsal (B) barium gastrograms of a dog showing gastric foreign body (ball). Note: the foreign body produced a round intraluminal filling defect at the pylorus.

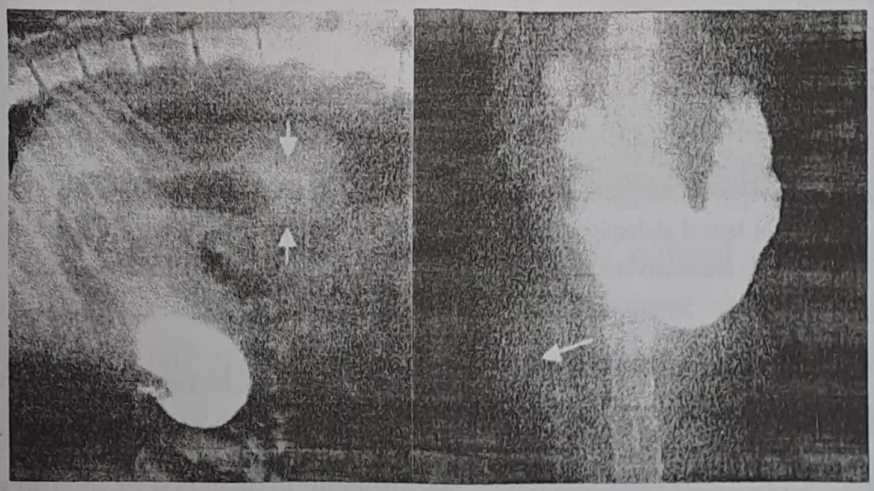

Fig (8): Right lateral (A) and ventrodorsal (B) abdominal radiographs in a cat. Note: The contrast medium settled at the pyloric antrum of the stomach with a gas filled descending duodenum cranial to the obstructing foreign body (arrows).

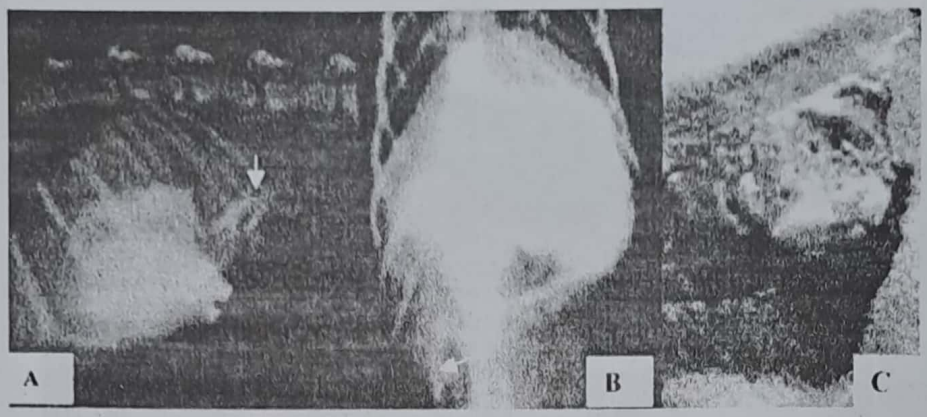

Fig (9): Right lateral (A) and ventrodorsal (B) abdominal radiographs in a cat after administration of barium meal. There is obstruction to the flow of contrast at the descending duodenum and the obstructing foreign body is outlined with contrast materials (arrows). Plastic foreign material (C) after surgical removal.

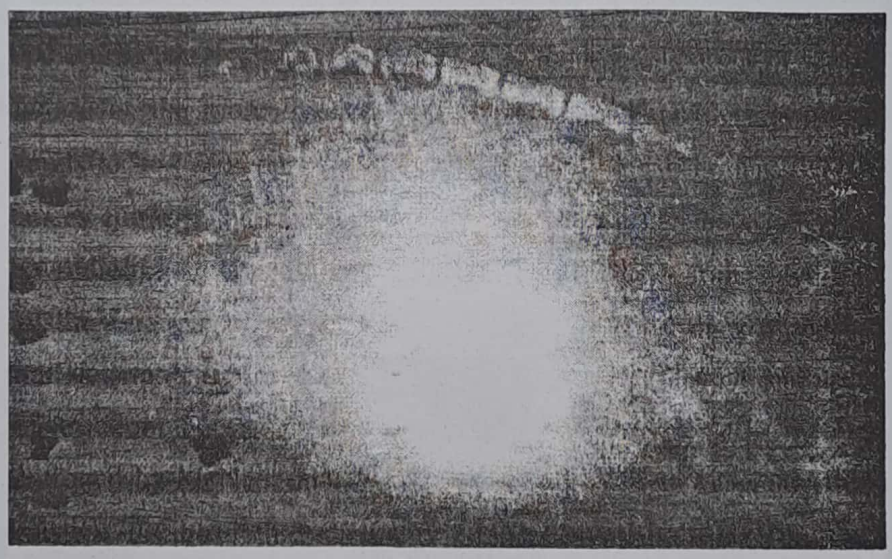

Fig (10): Right lateral abdominal radiograph in a dog. There is a migrating needle in the abdomen and peritoneal effusion masking the detail of abdominal viscera.

DISCUSSION

Gastrointestinal foreign bodies could be present in animals of any age, but they are most common in puppies and kittens because of indiscriminate eating habit's (Birchard and sherding, 1994 and Bojrab et al, 1998). However, in our studies the age of affected animals ranged between 2-5 years. Foreign bodies of the mouth and tongue presented no difficulty in diagnosis or treatment. Cats as a result of their tendency to play and hunt showed higher incidence of linear foreign bodies resulting in perforation rather than obstruction (Birchard and Sherding, 1994). In this study, most of cases

of oesophageal foreign bodies in cats were needles that perforate the oesophagus and migrate subcutaneously. The oesophagus of dogs has four areas of physiologic narrowing: just caudal to the pharynx, at the thoracic inlet, over the base of the heart, and at the oesophageal hiatus (Ryan and Greene, 1975 and Spielman et al, 1992). Although some authors have reported that oesophageal foreign bodies are most likely lodge in the esophageal hiatus (Deppe et al, 1986 and Spielman et al, 1992), others reported that the cervical portion of the oesophagus is the most common site for foreign body entrapment, particularly for objects bearing points or spicules (Ryan and Greene, 1975). In this study most of small and sharp foreign bodies were lodged in the cervical region of the oesophagus in dogs and cats. However larger foreign body was lodged at the esophageal hiatus in a dog. None of the cases in our study created complete oesophageal obstruction. The initial signs of oesophageal foreign bodies were salivation, depression, vomiting, weight loss and regurgitation of solid food substances, a result similar to those described by Deppe et al, 1986; Spielman et al, 1992 and Gualtieri, 2001. Diagnosis of such cases was confirmed by plain or contrast radiography (Root and Lord, 1971; Deppe et al, 1986; Spielman et al, 1992) and endoscopy (Guilford, 1990 and Gualtieri, 2001). Oesophageal foreign bodies should be considered an emergency situation as complications might take place by time (Spielman, 1992 and Birchard and Sherding, 1994). Complications resulting from esophageal foreign bodies have been reviewed elsewhere (Ryan and Greene, 1975; Leighton and Felts, 1981; Houlton et al, 1985 and Guilford, 1990).

The obstructing foreign object could be either removed directly from the mouth or via esophagotomy or pushed to the stomach (Birchard and Sherding, 1994 and Bojrab et al, 1998). However, nowadays esophagotomy is only performed when endoscopy fails (Michels et al, 1995 and Gualtieri, 2001).

Acute onset of vomiting and anorexia are common signs for gastric foreign bodies, however it is non-specific (Felts et al, 1984; Willard, 1998 and Birchard and Sherding, 1994). Vomiting is intermittent because the vomiting reflex is only triggered when the foreign body is located in the pyloric antrum (Borison and Wang, 1953). Diagnosis of the presented cases of gastric foreign body was only confirmed with radiography. It is worthy to mention that radiopaque foreign bodies were easily detected in the survey radiograph, while radiolucent objects necessitated contrast gastrogram using small amount of barium. Lamb and Hanson (1994) and Barber and Mahaffey (1998) were also used small amount of barium or double contrast gastrogram to make better visualization of foreign objects. Foreign body like a ball created a round, discreet filling defect within the barium in contrast gastrogram. This was concomitant with the result reported by Barber and Mahaffey (1998). In the present study, lateral radio-

graphs were more beneficial than ventrodorsal radiographs in diagnosing foreign bodies in the stomach and the intestines. Although contrast radiography and endoscopy are the most reliable means of diagnosis, it could be difficult if the stomach filled with food (Willard, 1998). Large and sharp foreign bodies must be removed from the stomach once diagnosed to avoid ulceration or obstruction (Birchard and Sherding, 1994). Animals with intestinal foreign bodies showed vomiting, anorexia, depression and abdominal tenderness. Vomiting was severe in complete obstruction. Birchard and sherding (1994) and Willard (1998) reported the same signs. The more cranial the obstruction is, the more frequent and severe vomiting tends to be (Willard, 1998). The obstructing substances could be palpated in some of the cases. The radiographic examination revealed presence of the foreign body with dilated intestinal lumen and accumulation of gases cranial to the site of obstruction. These findings were similar to that mentioned by McNeel and Riesdesel, 1998. A persistent decrease in radiopacity within the bowel lumen may be indicative of radiolucent foreign object (Lamb and Hanson, 1994 and McNeel and Riesdesel, 1998. In this study, the reported case of linear foreign body penetrating the intestinal wall and resulting in septic peritonitis was similar to the cases reported by Rao (1979), Strombeck (1979) and Felts et al (1984). Lodgment of sharp foreign bodies in the intestinal lumen would irritate and devitalize the intestinal mucosa and eventually, full-thickness lacerations of bowel would develop (Root and Lord, 1971; and Felt et al., 1984).

In conclusion: The clinical signs of gastrointestinal foreign bodies were non-specific. Diagnosis was mainly relied upon radiography. Early surgical intervention should be considered to ensure satisfactory results.

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