DIAGNOSIS AND MANAGEMENT OF GASTROINTESTINAL FOREIGN BODY OBSTRUCTION IN THREE DOGS

Tarunbir Singh[1], M. Raghunath[4], J. Mohindroo[3], Pallavi Verma[2], Navdeep Singh[3] and V. Sangwan[2]
Department of Veterinary Surgery and Radiology, College of Veterinary Science
Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana- 141 004, India

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Introduction

Foreign body obstruction is a common cause of mechanical gastrointestinal obstruction in dogs. Indiscriminate eating habits or tendency of dogs to play with foreign objects may result in blockage of GIT. GIT obstruction is an emergency, any delay in treatment can be fatal (Kumar *et al*., 2000). Diagnosis of foreign body obstruction can be made from clinical presentation, radiographic, ultrasonographic and endoscopic examination. Abdominal pain, vomition, anorexia, melena and absence of defaecation are the common clinical signs (Dunn, 1999). Radio-opaque foreign bodies can be detected on plain radiographs (Penninck and Mitchell, 2003). Foreign bodies lodged in intestines and stomach are removed surgically by antimesenteric enterotomy and gastrotomy procedures (Fossum, 2002). Time delay in diagnosis, correction of primary disorder and associated haematobiochemical complications, have a significant impact on the postoperative recovery and survivability of the animal. Present report includes haematobiochemical changes, diagnosis and surgical treatment in canine patients suffering from gastrointestinal foreign body obstruction.

Case history and observations

Study includes 3 dogs (two male and one female) presented to the university teaching hospital for gastrointestinal obstruction with symptoms of abdominal pain, anorexia and absence of defaecation. The animals were having age varying between 1-2 years. Diagnosis was made from history, clinical presentation and radiography. Animals were having moderate to severe dehydration, graded as per Levitt and Bauer (1992). GIT obstruction was identified on lateral radiographs. Lateral radiograph of case 1 showed radiopaque foreign body in the intestinal loops with grossly distended intestinal loops proximal to the obstruction (Fig. 1). In second animal radiograph showed a circular density in mid abdominal region, which was later, found to be a crazy ball. Involvement of urinary bladder calculus was ruled out with the help of pneumocystography (Fig. 2). In third animal radiograph showing heterogeneous density in the cranial and mid abdomen suggested the foreign body to be lodged in gastric area (Fig. 3). Haematological examination of the animals showed lower levels of Hb (6.33±0.60 g/dL) and PCV (17.67±1.20%), marked leukocytosis (17.27±1.41 thousands/µL), neutrophilia (87.00±1.00) and lymphocytopoenia (12.50±0.50). Hypoproteinaemia (4.83±0.17 g/dL), hypoalbuminaemia (2.53±0.13 g/dL), hyperglobulin aemia (2.30±0.15 g/dL) and hypoglycaemia (66.00±4.62 g/dL) were the major biochemical alterations. Values of AKP (176.67±27.09 U/L), BUN (27.33±2.40 g/dL) and creatinine (1.13±0.15 g/dL) were within normal physiological limits.

Treatment and Discussion

After establishing the condition, animals were stabilized by administration of intravenous fluids, broad spectrum antibiotics and multivitamins. Surgical management was done using anaesthetic protocol comprising of a preanaesthetic combination of Glycopyrrolate (Pyrolate®, Neon laboratory limited) @ 0.01 mg/kg bwt s/c followed by Diazepam @ 0.5 mg/kg bwt (Lori®, Neon Vet) intravenously. Induction was achieved by thiopental sodium (Thiosol®, Neon Vet) @10 mg/kg bwt., followed by maintenance with Isofluorane (Isorane®; Piramal Healthcare) mixed with oxygen. Surgical procedure included midline laparotomy in dorsal recumbency. In two animals intestinal foreign bodies were removed by performing antimesenteric enterotomy (Fig. 4 and 5). In third animal gastrotomy and antimesenteric enterotomy (Fig. 6) were performed to clear the impaction of intestine and stomach. Standard methods of enterotomy and gastrotomy were followed taking care to prevent abdominal contamination by spillage of GIT contents in the abdomen. Polyglactin No. 3/0 (Vicryl ®; Johnson and Johnson Ltd) was used for closure of gastrotomy and enterotomy incisions by double layer of Lambert and Cushing inversion suture patterns. Intestinal defect was covered by a layer of omentum. Linea alba incision was closed in routine manner by simple interrupted suture pattern followed by subcuticular suture pattern using no. 2/0 Vicryl. Skin was closed by simple interrupted pattern with nylon No. 1/0. Postoperatively animals were managed by intravenous fluids for 1-5 days, parentral broad spectrum antibiotics for 5 days and analgesics for 3 days. Oral feeding with liquid diet like rice water and milk was started after 3 days. Normal feeding was started after 5-7 days.

Anorexia, depression, dehydration, lack of defaecation and abdominal pain, the most commonly recorded complaints at the time of presentation, have earlier also been reported by, Levitt and Bauer (1992), Tyrrell and Beck (2006) and Papazoglou *et al*. (2010) in dogs with gastrointestinal disorders. Moderate to severe dehydration recorded made the role of intravenous fluid administration during the peri-operative period very important as it might have helped in correcting dehydration and fluid imbalances consequent to mechanical obstruction. GIT obstruction in present study was caused due to ingestion of foreign objects like stones, ball and coir of sofa. Radiography was found useful for the diagnosis. Habit of eating unusual objects like stones, bones, coins, balls, clothes, rags, metallic spoons, rubber nipples and magnets has been reported in young dogs (Mohindroo *et al*., 2006; Hayes, 2009; Rossmeissl *et al*., 2011). More activity and playful habit of young dogs are responsible for ingestion and subsequent lodgment of foreign body in GIT (Koike *et al.,* 1981; Applewhite *et al.,* 2002; Han *et al.,* 2008).

[1]Assistant Scientist and corresponding author email: tarunbir@gmail.com; [2]Assistant Professor, [3]Professor, [4]Associate Professor

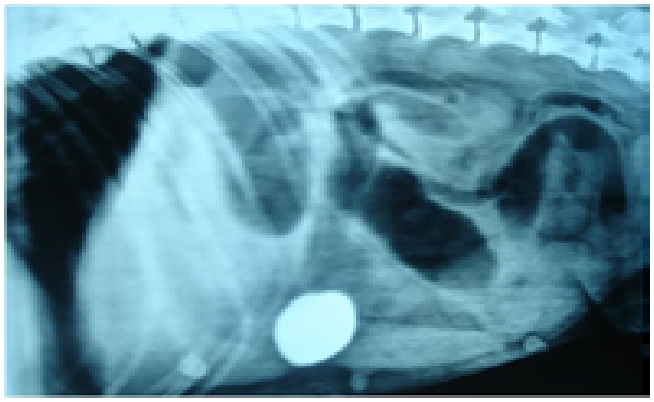

Fig. 1: Lateral radiograph showing radiopaque foreign body in cranial abdomen with grossly distended intestinal loops proximal to the foreign body obstruction suggestive of gastrointestinal obstruction

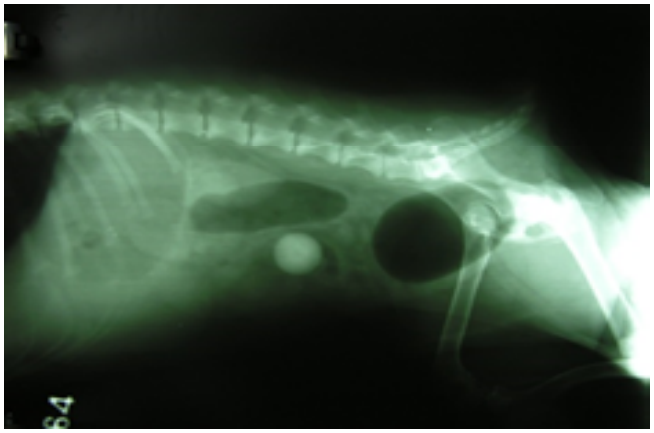

Fig. 2: Lateral radiograph showing radiopaque foreign body in mid abdomen and gas filled intestinal segment proximal to it, indicating mechanical obstruction of intestinal loops. Involvement of urinary bladder was ruled out with the help of pneumocystography

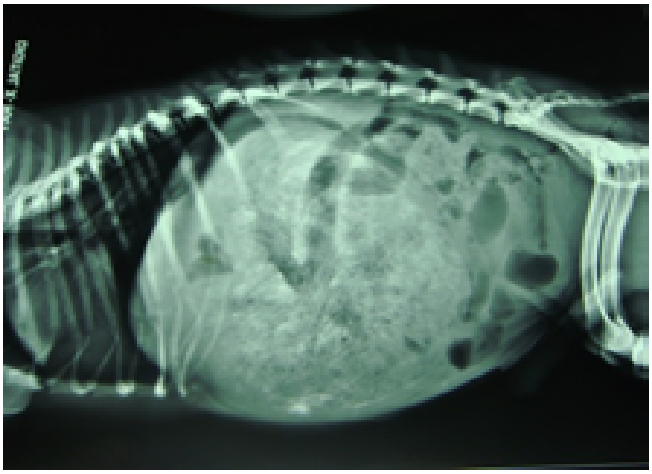

Fig. 3: Lateral radiograph showing heterogeneous soft tissue density in the cranial mid abdomen with gross dilatation of gastric region; suggestive of foreign body in the stomach

Haematological alterations like anaemia; depicted by lower levels of Hb and PCV, neutrophillic leukocytosis and lymphocytopoenia may be due to blood loss owing to haemorrhage at the site of obstruction, long duration of anorexia and response of the body towards inflammation. Similar haematological findings in animals suffering from gastrointestinal problems have been reported by Wilson and Burt (1974) and Gal *et al*. (2007). Biochemical changes like hypoproteinaemia, hypoalbuminaemia and hyperglobulinaemia indicate the response of body to inflammatory reaction and increased secretion of albumin into the intestine. Hypoglycaemia indicate anorexia. Strombeck and Guilford (1990), Willis and Farrow (1991) and Kahn (2005) attributed hypoproteinaemia and hypoalbuminaemia to GIT blood loss in chronic cases of intussusception, extravasation of plasma proteins from mucosal vasculature and interstitial spaces due to mucosal damage by the foreign body. Degradation of protein and reduced nitrogen absorption due to bacterial overgrowth in stagnant intestinal loops may further aggravate the problem.

Animals suffering from complete obstruction of GIT are medicinal and surgical emergencies. Early diagnosis and surgical intervention are important as the chance of intestinal perforation and peritonitis increase with delay in surgery. Antimesnteric enterotomy and gastrotomy are the standard techniques for removal of foreign bodies lodged in intestine and stomach. Different suture patterns have been used by various workers. Inversion sutures have been reported to cause reduction in the lumen diameter while eversion sutures increase adhesion formation (Weisman *et al*, 1999; Brown 2003; Holt and Brockman 2003). In present study intestine and stomach were closed by double layer of Lambert and Cushing suture patterns using number 3/0 Vicryl. Omentalization of the intestinal defect helped in providing additional blood supply to the area and protection from leakage. Postoperative mortality was recorded in one animal which was having multiple sites of obstruction. Other animals recovered uneventfully. The animal who could not survive was having compromised haematobiochemical profile and was presented late for surgery. Other two animals regained their normal appetite within one week of surgery. Haematobiochemical parameters returned within normal range during a period of 1-2 weeks postoperatively. Postoperative complications like recurrence, suture dehiscence and peritonitis which have been reported by earlier workers (Wilson and Burt, 1974; Weaver, 1977) were not noticed in the present study during a follow up period of 1 year. Peri-operative antibiotic therapy helped in reducing bacterial growth and thereby circumventing the chances of peritonitis secondary to peritoneal contamination which may occur during intestinal surgery (Walshaw, 1985).

In the present study, radiography was found useful for diagnosis of the GIT foreign bodies. Early presentation, diagnosis and surgical intervention improved the outcome of gastrointestinal affections. Good surgical technique followed by adequate postoperative care and fluid therapy are useful in saving lives of many canine patients

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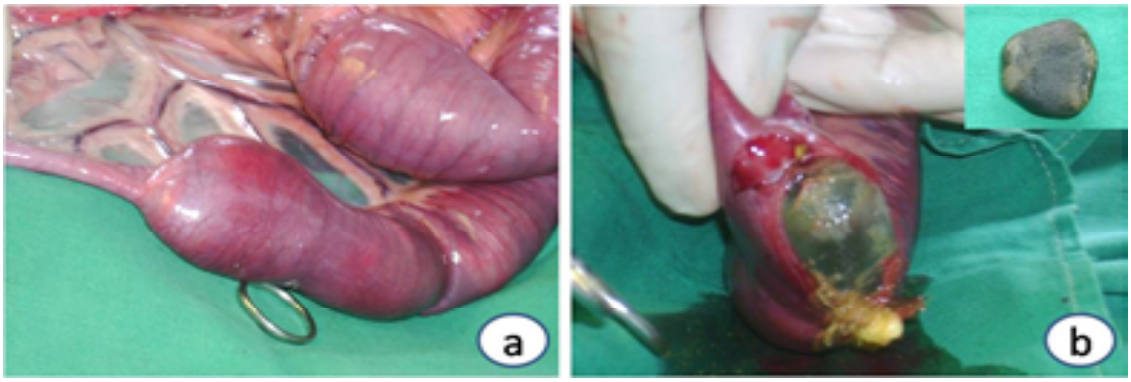

Fig.4: Intra-operative photograph showing mechanical obstruction of intestinal loops with foreign body. Observe the difference in size of affected jejunal loops in comparison to healthy loop (a). Retrieval of stone from jejunal loops (b).

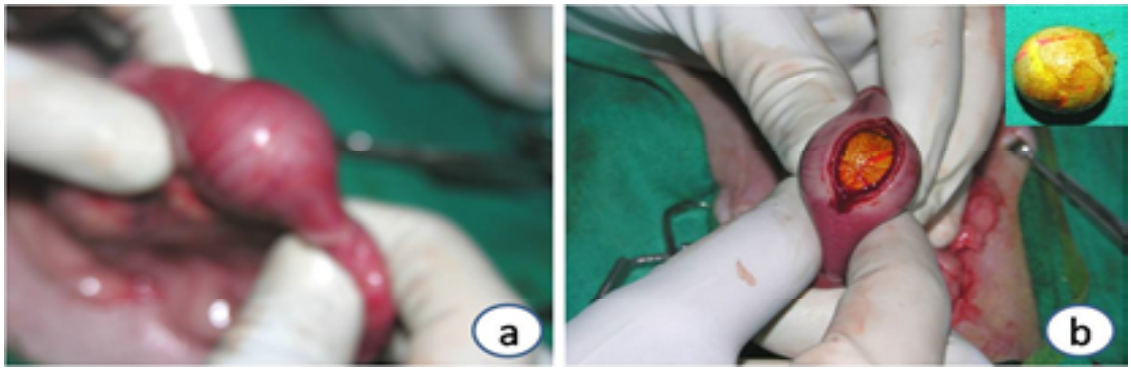

Fig. 5: Intra-operative photograph showing mechanical obstruction of intestinal loops with a foreign body (a). Crazy ball retrieved from jejunal loops (b).

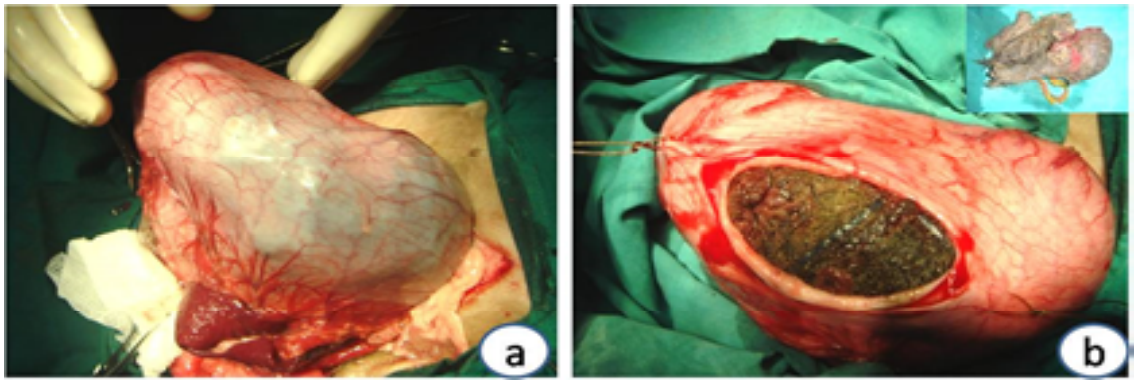

Fig. 6: Intra-operative photograph showing impacted foreign material lodged in the stomach (a). Obstructing material/coir of sofa retrieved from the jejunal loops (b).

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