

Gastrointestinal linear foreign body with serosal migration in a dog

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Abstract : A two-year-old intact male Miniature Schnauzer was presented with signs of anorexia and abdominal pain with six-week duration. An exploratory ventral midline laparotomy was performed for a confirmative diagnostic and therapeutic purpose, and the presence of a string gastrointestinal linear foreign body was observed originating in the stomach, extending to the ileum. In the small intestine, the linear foreign body was located in the serosal layer. A partial enterotomy was performed on the mesenteric border of the intestine and the string was removed. After the surgical correction, the dog recovered completely from the clinical signs of anorexia and abdominal pain.

Key words : enterotomy, gastrointestinal linear foreign body, serosal migration

Gastrointestinal linear foreign bodies have been reported more frequently in cats than in dogs [4]. The most common clinical signs include vomiting, anorexia, and depression for both species [1, 4]. Linear foreign bodies (LFB) typically anchor themselves around the base of the tongue or at the pylorus [4, 5]. As peristalsis continues, the foreign bodies become taut and embedded into the mesenteric side of the gastrointestinal lumen [2]. However, LFBs rarely embed in the small intestinal layers.

The purpose of this report is to describe the surgical, radiographic and ultrasonographic evaluation, treatment, and outcome of gastrointestinal LFBs with serosal migration in a Miniature Schnauzer dog.

A two-year-old, intact male Miniature Schnauzer was referred with a six-week history of anorexia and abdominal pain. The owner reported that the dog had eaten a piece of string the day prior to becoming sick, and that piece of string had been observed in the dog's feces. The physical examination revealed the dog to be cachexia, depressed, and approximately 5% dehydrated. The temperature, pulse, and respiratory rate were within the reference ranges. The dog responded painfully to abdominal palpation, and the distended bowel loops were palpable. A complete blood count was performed, and all the values were within the reference ranges. The serum biochemistry analysis

demonstrated decreased gamma-glutamyl transpeptidase (1 IU/l; reference range, 2 to 8 IU/l), and creatine kinase (46 IU/l, reference range, 51 to 529 IU/l).

Abdominal radiographs revealed decreased abdominal details, small bowel distention with gas and fluid, and plication of the small bowel (Fig. 1A). In addition, barium contrast studies did not show any barium retention in the small intestines around the linear foreign bodies. The abdominal ultrasonographic findings showed fluid in the lumen of the stomach. There was decreased peristalsis continuing to most of the small intestine. The small intestine followed a tortuous scalloped path along the right cranial abdominal wall (Fig. 1B). Based on these results, the tentative diagnosis of gastrointestinal LFBs was made. An exploratory ventral midline laparotomy was performed for a confirmative diagnostic and for therapeutic purpose, and the presence of a string gastrointestinal LFB was found.

Prior to surgery, the patient received 25 mg/kg intramuscular cephalexin (Methilexin; Union Korea Pharm, Korea) for prophylaxis. The patient was premedicated with 0.02 mg/kg subcutaneous atropine sulfate (Atropine Sulfate Daewon; Dae Won Pharm, Korea), induced with 5 mg/kg intravenous propofol (Anepol IN; Ha Na Pharm, Korea) and maintained with enflurane in oxygen.

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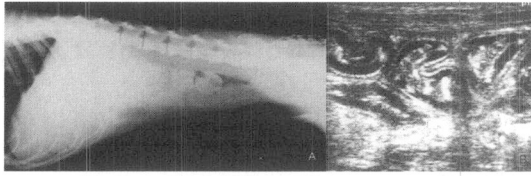


Fig. 1. Right lateral abdominal radiographs of the dog (A). The small intestines show distention, plication of the cranial part, and loss of serosal details. Ultrasonographic examination of the small intestine of a dog (B). The small intestine segments showed plication.

A cranioventral midline celiotomy was performed and the presence of string gastrointestinal linear foreign body that originated in the stomach and extended to the ileum was confirmed. The small bowel was mildly plicated. The intestine appeared viable, and there were no areas of perforation or peritonitis found. Gastrotomy was performed in the gastric body, and the string was removed. The string of the pylorus was tagged with haemostatic forceps to cut and a LFB was removed. The second enterotomy was performed on the antimesenteric border of the duodenum for removal of a string linear foreign body. However, a LFB was found in the small intestinal lumen. The body was located in the serosal layer of the mesenteric border (Fig. 2). Therefore, a partial enterotomy was performed on the mesenteric border of the intestine and the string was removed. The stomach and small intestine incision were closed in two layers. After surgery, the dog was treated for 3 days with lactated ringer solution (40 ml/kg body weight, i.v., per day). Cephalexin (Methilexin; Union Korea Pharm, Korea) 25 mg/kg body weight, intravenous for 8 h, and ranitidine (Gatiring TAB; Al Pha Pharm, Korea) 2 mg/kg body weight, intravenous for 8 h.

The dog recovered completely after surgery and no complications were observed over a one-year follow-up.

Gastrointestinal linear foreign bodies have been reported more frequently in cats than in dogs but can be found in either cats or dogs. When ingested string is caught in its passage through the gastrointestinal tract, the common location of attachment is either the base of the tongue or the pylorus [1, 4]. In a retrospective evaluation of 32 dogs, 87% of the linear foreign bodies were located at the pylorus [4]. Next, the peristaltic movements carry the remainder of the anchors site, and the intestines progressively gather into accordion-like pleats along the object. During

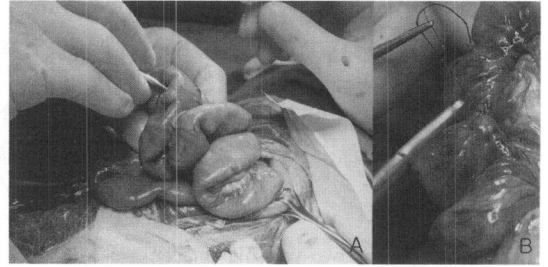


Fig. 2. The surgical treatment and findings. (A) The descending duodenum segment was plicated. (B) A string LFB was present in the serosal layer of the small intestine.

peristalsis movement, the string foreign body becomes taut and embedded into the mesenteric side of the gastrointestinal layers [6]. In this study, the gastrointestinal LFB was presented in the serosal layer of the entire small intestines. There are few reports of a string linear foreign body with serosal migration.

Gastrointestinal LFBs are surgical emergencies. Successful treatment depends on an early diagnosis by a physical examination and radiography, as well as the appropriate surgery without delay [3]. The duration of the clinical signs ranged from 12 h to two months and did not affect the prognosis. The initial signs were not specific, which makes a diagnosis difficult and might result in a delay of surgical therapy.

String LFBs are found at many sites of an intestinal resection, and occur in the greater probability of perforations or peritonitis [7]. In a retrospective study on LFBs in 32 dogs, perforation or peritonitis were not detected in any of the dogs with linear string foreign bodies such as string, cassette tape or woven cord. Thereby decreasing the amount of plication, and trauma along the mesenteric border [4].

Gastrointestinal LFBs are less common in dogs. LFBs with serosal migration and lodgment are rarely diagnosed. The characteristic feature in this case is that string was embedded in the intestinal wall because of continuous peristalsis. It was more difficult to identify and remove string rather than to perform the surgical procedure of usual LFBs during surgery. The surgical procedure was no differences in comparison with the surgery in acute LFBs. Therefore, in the case of the chronic LFBs without several complications such as peritonitis and perforations, Urgent enterotomy can be efficient to solve chronic problems including anorexia and abdominal pain.

Acknowledgments

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