

Sigmoid colon perforation caused by three living loaches inserted into anus: a case report

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Case report

Keywords: colorectal perforation, living animal, loaches, allergic shock, ileostomy

Posted Date: November 13th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-106445/v1>

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Abstract

BACKGROUND Colorectal perforation are common surgical emergencies. Yet perforation caused by living animals has not been reported with no record found on Medline.

CASE PRESENTATION A 47-year-old male arrived at our surgical emergency room for "severe abdominal pain with itchy rash for 5 hours", who explained that "three big living loaches" had been squeezed into the anus 1 hour before the onset of symptoms. Thorough physical and auxiliary examinations suggested lower gastrointestinal perforation. After prompt anti-shock, anti-allergy, analgesia and gastrointestinal decompression, we performed exploratory laparotomy, sigmoid colon repair and double-lacuna ileostomy. The patient underwent uneventful postoperative recovery and was discharged on the 10th day after surgery.

CONCLUSIONS CT examination is critical for diagnosing colorectal perforation caused by living animals (3 loaches as reported in our case). Specifically, due attention should be given to the serious allergic reaction induced by exogenous organisms entering the abdominal cavity. Surgery should be performed as soon as possible to fundamentally address the allergic shock. As to colorectal perforation caused by multiple living organisms, considering the restricted condition for thorough exploration during emergency surgery (particularly the exploration of the posterior wall of the colon), colostomy should be selected with caution.

1. Background

Colon perforation are common surgical emergencies, with its primary cause being diverticulitis and carcinoma, whereas iatrogenic events, penetrating abdominal trauma, and ingestion of foreign bodies are less frequently seen [1]. In recent years, reports on foreign body perforation of the colon has increased [2–5]. But such perforation caused by living animals has not been reported and no such record can be found on Medline. This article reports a case of sigmoid colon perforation caused by *paramisgurnus dabryanus* (a specific kind of loach) [6], concurrent with diffuse peritonitis, allergic shock and allergic dermatitis.

2. Case Presentation

2.1. Case files and diagnosis

2.1.1. Major complaint

A 47-year-old male arrived at our surgical emergency room on February 10, 2019 for "severe abdominal pain with itchy rash for 5 hours". He explained that one hour earlier before the onset of symptoms, "three big living loaches" were squeezed into the anus.

2.1.2. History

Debridement surgery in 2012 due to right knee injury, no history of food/drug allergy, no history of urticaria, not married and with no children.

2.1.3. Physical examination

Acute appearance, bending down and bending knees. Vital signs: temperature 37.0 ° C, pulse 120 times/min, breathing 20 times/min, blood pressure 110/75 mmHg. BMI 24.6 kg/m², ASA grade V, Karnofsky 20 points. There were multiple patchy papules around his entire body, which were red in color and faded when pressing. The skin between rashes was normal. His most prominent symptoms were abdominal tenderness and rebound pain, especially in the lower abdomen. Digital rectal examination: finger in for 6 cm, rectal mucosa intact, no palpable tumor or foreign body, no blood stain upon withdrawal.

2.1.4. Auxiliary examinations

Blood routine test: WBC $17.36 \times 10^9/L$, neutrophil percentage 88.8%, HGB 170 g/L, PLT $323 \times 10^9/L$. Electrolyte: K⁺ 3.52 mmol/L, Na⁺ 144.9 mmol/L, ALB 42.5 g/L, ALT 16 U/L, AST 17. U/L Abdominal and pelvic CT scan: abnormal density outside the intestinal cavity, combined with history of foreign body ingestion, evident breach of intestinal wall by foreign body, ascites and free gas in abdominal cavity, suggesting lower gastrointestinal perforation (Fig. 1).

2.2. Interventions

2.2.1. Pre-surgery treatment

Anti-shock (i.e. fluid infusion), anti-allergy (i.e. diphenhydramine, for the patient has systemic allergic dermatitis), analgesia (i.e. pethidine hydrochloride analgesia, for severe abdominal pain) and gastrointestinal decompression.

2.2.2. Surgery

The first part of surgery was exploratory laparotomy. Abdominal cavity was entered through right paramedian incision. Inside abdominal cavity was large amount of yellow turbid ascites with mucus (approximately 1000 ml), fecal residue and nasty odor. Upon removal of ascites by aspiration, three foreign bodies (i.e. the 3 paramisgurnus dabryanuses) with a length of about 20 cm each can be seen in the pelvic cavity (Fig. 2B, 2C). After extraction of the foreign bodies, no signs were found that indicated they were still alive. No abnormality was found by gastroduodenal exploration; Surface of jejunum and ileum was edematous with bright red color; No perforation and additional foreign body were found; The seromuscular layer was damaged and bite marks were visible on the ileum wall about 100 cm away from ileocecal junction (Fig. 2D). Seromuscular layer was sutured to embed the damaged intestinal wall. By further exploration, no lump or foreign body was palpated in ileocecal junction, ascending colon, transverse colon or descending colon. A perforation about 2 cm in diameter was seen on the intestinal wall opposite to the mesenteric margin of the sigmoid colon approximately 10 cm away from the peritoneal reflexes (Fig. 2E). Feces overflowed out of the perforation. No tumor or perforation was found in the upper segment of the rectum.

The second part of surgery was sigmoid colon repair and double-lacuna ileostomy. The perforation of sigmoid colon was embedded with full-thickness interrupted eversion suture and subsequent seromuscular suture. A circular incision of 3 cm in diameter was made at the upper 1/3 intersection of the connecting line between bellybutton and the right anterior superior iliac crest. A crisscross incision was made on the aponeurosis of the external oblique muscle. A part of the external oblique muscle fibers was cut. The peritoneum was also incised in a crisscross manner. The small intestine approximately 40 cm away from ileocecal junction was lifted through the stoma, and 2 cm of intestine was reserved outside the stoma. One drainage tube was placed in the rectum bladder depression and one in the right para-colonic groove. 3 – 0 absorbable suture was used to suture and fixate the intestinal wall with peritoneum, extra-abdominal muscle fascia and skin respectively, and the stoma was opened (Fig. 2F).

2.3. Outcome

Gastric tube was removed and oral intake of water was allowed on the 2nd day after surgery. Liquid and semi-liquid food on 3rd and 4th day respectively. Re-examination by abdominal CT on the 9th day declared no positive findings. Abdominal drainage tube was removed and the patient was discharged on the 10th day (Fig. 2G).

3. Discussion And Conclusions

Colorectal foreign bodies are mostly caused by improper sexual behavior, which can cause low intestinal obstruction, colorectal perforation and even abdominal and pelvic organ damage [7–8]. A meta-analysis [9] systematically reviewed the articles on colorectal foreign bodies published from 1950 to 2009 and eventually included 193 patients (196 visits), among whom male/female ratio was 37:1, meanwhile 83 cases (42.2%) were caused by household items (e.g. bottles and glassware, with no record of living objects whatsoever), 76 cases (48.7%) were conducting sexual behavior, and 13 cases (6.6%) suffered colorectal perforation. In a cohort study with 30 cases of colorectal foreign bodies [10], the male/female ratio is 13:2, with an average age of 43 and 5 cases (16.7%) of intestinal perforation, meanwhile the foreign bodies involved were primarily glass, bottles and metal objects [10].

In this case, the perforation of sigmoid colon was caused by 3 big living loaches (*Paramisgurnus dabryanus*, to be exact). Severe abdominal pain occurred 1 hour after the insertion, accompanied by allergic shock and allergic dermatitis. The patient's abdominal pain was evidently more severe than that of regular lower digestive tract perforation, for which intramuscular injection of pethidine before operation brought little relief. The allergic dermatitis gradually aggravated, with skin rash distributed in both the trunk and limbs. Moreover, allergic shock was quite obvious, with a highest heart rate of 168 beats/min, a lowest blood pressure of 88/49mmhg, and sinus tachycardia (all before anesthesia). Timely usage of diphenhydramine and dexamethasone reduced the heart rate to 130–140 beats/min. Notably, the 3 loaches were speculated to be still alive when having penetrated the sigmoid colon, which must have swum in the abdominal cavity and eventually left a bite mark on the outer wall of the ileum (Fig. 2D), explaining the unusual abdominal pain and foreign body allergy.

When intestinal perforation was caused by inserted living creature, critical attention should be paid to possible serious allergy. Besides anti-allergy and anti-shock treatment, exploratory laparotomy should be performed as soon as possible. For accurate and timely diagnosis, history should be inquired thoroughly before operation. Spiral CT examination has important value in pinpointing the location and estimating the etiology of perforation [11]. As the perforation site is often located in the upper rectum and sigmoid colon, diffuse peritonitis and severe abdominal infection are usually inevitable, therefore emergency repair/resection of perforation and colostomy are usually required. In our case, preoperative abdominal CT scan was actually not able to pinpoint the perforation site (Fig. 1), mostly due to the causality of living animal as well as serious abdominal contamination. Hence, repeated exploration on entire small intestine was performed. However, due to the restricted condition and inexhaustive exploration, the possibility of additional perforation on ascending colon, transverse colon and descending colon could not be completely ruled out. All considered, we opted for sigmoid colon repair and preventive double-lacuna ileostomy. A large silica gel drainage tube was placed in the rectum bladder depression before the end of surgery. In the following days, no fever occurred and drainage volume decreased gradually.

In summary, CT examination is critical for diagnosing colorectal perforation caused by living animals (3 loaches as reported in our case). Specifically, due attention should be given to the serious allergic reaction induced by exogenous organisms entering abdominal cavity. Surgery should be performed as soon as possible to fundamentally address the allergic shock. As to colorectal perforation caused by multiple living organisms, considering the restricted condition for thorough exploration during emergency surgery (particularly the exploration of the posterior wall of the colon), colostomy should be selected with caution.

List Of Abbreviations

BMI body mass index, ASA American Society of Anesthesiologists.

Declarations

Ethics approval and consent to participate Not applicable.

Consent for publication Written consent for publication was obtained from the patient and documented with case files.

Availability of data and materials All related data are available via reasonable email request toward the correspondent author.

Competing interests None.

Funding National Key Technologies R&D Program of China (No. 2017 YFC0110904), Clinical Center for Colorectal Cancer affiliated to Capital Medical University (No. 1192070313), Beijing Friendship Hospital

(YYQDKT2019-23), Beijing Municipal Administration of Hospitals' Youth Program (No. QML20170104), Beijing Talents Fund (No. 2017000021469G237).

Authors' contributions Jun Li (chief) and Ning Zhao (assisting) performed the surgery, Kai Pang drafted manuscript and rendered language, Tingting Zhang helped with radiological diagnosis, Yadong Wu, Yongbo An, Guocong Wu, Yingchi Yang, Jie Yin, Jin Wang, Jun Zhang, Lan Jin participated in discussion and provided opinions, Hongwei Yao and Zhongtao Zhang supervised the surgery and critically reviewed the manuscript.

Acknowledgements Gratitude to the editors of World Journal of Emergency Surgery for their meticulous work.

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Figures

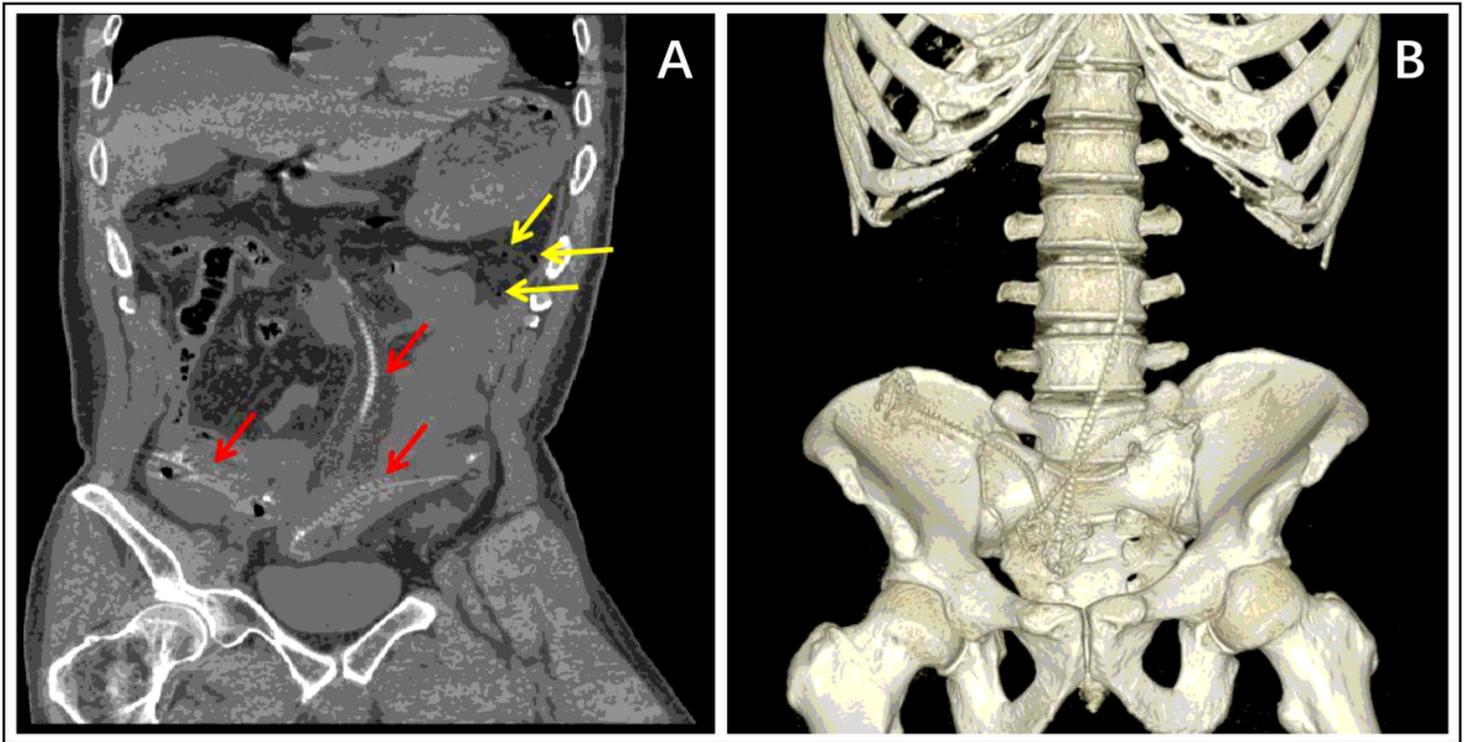


Figure 1

Radiological assessment suggests foreign bodies in abdomen. A. CT cross section. Red arrows indicate three foreign bodies, yellow arrows indicate free air. B. CT reconstruction, where 3 fish bones are distinct.

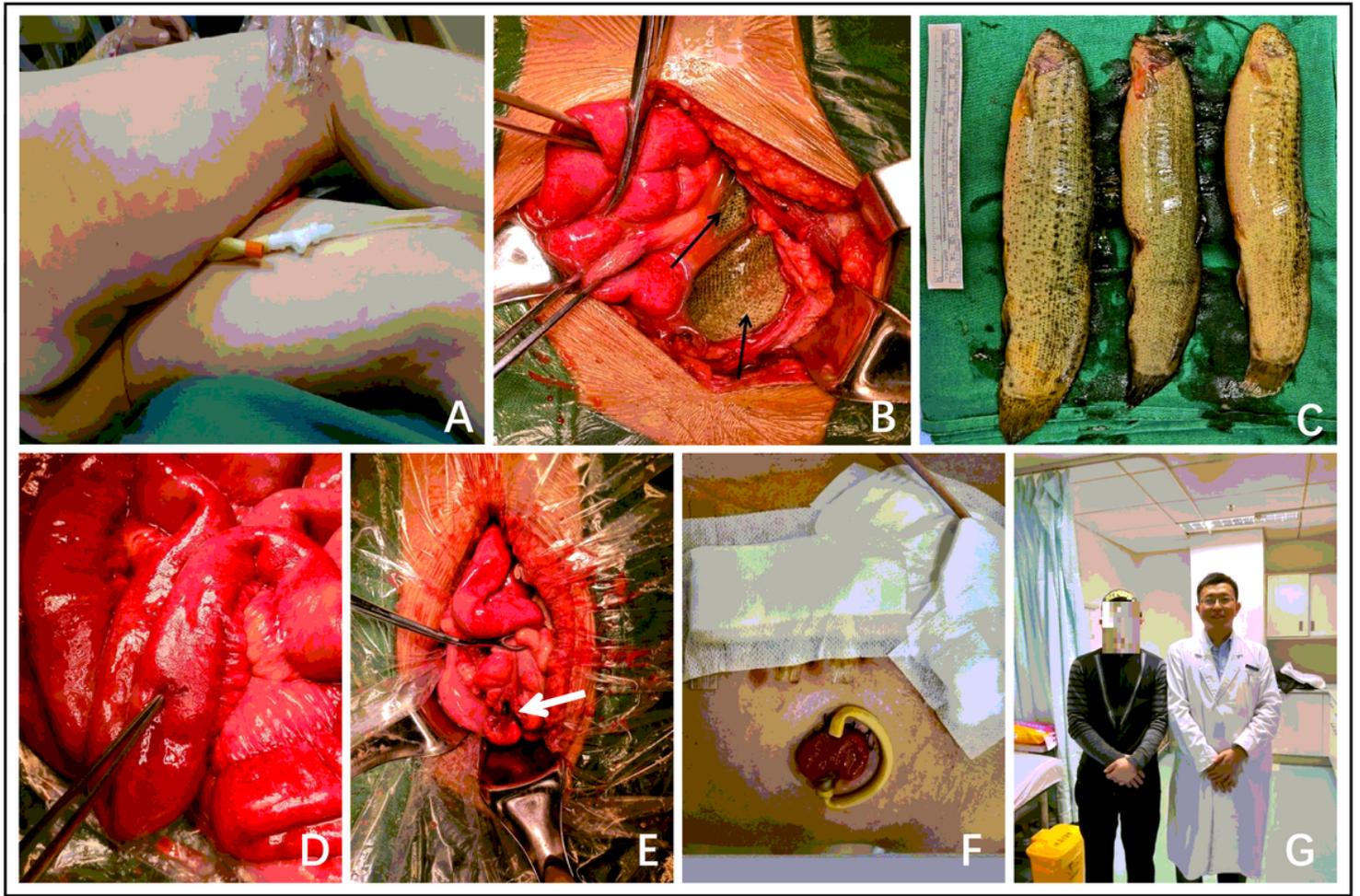


Figure 2

A. Red rashes all over the body. B. The loaches (*paramisgurnus dabryanuses*). C. Three loaches extracted. D. Bite marks on ileum. E. Perforation site on sigmoid colon. F. Double-spouted loop ileostomy. G. The patient (left) before discharge.