A case of abdominal wall abscess caused by fish bone strayed into umbilical hernia

Takuya Ishibe, Mitsuhide Hamaguchi, Tomohide Matsushima, Takaaki Kimura, Yoshinori Murao

Department of Emergency and Critical Care Medicine, Kindai University, Faculty of Medicine, Osakasayama, Osaka, Japan

Abstract

A woman who was 70's in age was hospitalized with a slow-growing abdominal mass for about one month. An abdominal CT scan showed 35 mm diameter abscess formation under the rectus abdominis muscle, and about 20 mm length high density linear shadow was identified within the abscess. Because she had mild abdominal tenderness, she was followed for a week. A week later, the abscess enlarged to 52 mm in size and an emergency laparotomy was performed. Intestinal perforation was not detected after removal of the fish bone, and abscess drainage was performed. She was discharged from the hospital on the 30th postoperative day without any postoperative complications. In cases of fish bone penetration with abdominal pain, it is important to determine treatment strategy according to abdominal symptoms and CT findings.

Key words : fish bone, umbilical hernia, abscess

Introduction

Most gastrointestinal foreign bodies are excreted spontaneously; however, some cases develop peritonitis or foreign body abscess due to gastrointestinal perforation or penetration[1]. According to a report in Japan, 43.6% of foreign bodies causing gastrointestinal perforation are caused by fish bones due to high consumption of fish in the diet. Although gastrointestinal perforations caused by fish bones often require emergency surgery if accompanied by symptoms of peritonitis, most of the cases have chronic courses such as abscess and granuloma formation. In such case, it is difficult to decide whether to use surgical intervention or conservative treatment. We describe here a case of intra-abdominal abscess caused by a fish bone straying into the umbilical hernia.

Case report

A woman in her 70's presented with a gradually growing mass below the umbilicus, which had been palpable a month before, when she visited the outpatient department of internal medicine. The patient has been taking leflunomide for chronic rheumatoid arthritis. The abdomen was generally soft, but a chicken egg-sized mass was palpable in the upper abdominal region with localized tenderness around it. There was no muscular defense. The patient had no fever, and blood examination showed WBC 9700/μl and CRP 5.03mg/dl, whereas other blood chemistry test results were normal. CT scan of the abdomen revealed a 35mm diameter mass under the rectus abdominis muscle, whereas no ascites or free air was observed. There was a 20 mm length high density shadow on the medial dorsal side of the mass with an umbilical hernia. Gastrointestinal perforation was not detected in the imaging examination. During the one-month clinical course, there was no accidental ingestion of foreign bodies such as fish bones. Despite the suspected abscess or granuloma formation with mild abdominal symptoms, we decided to observe the patient at home on her request. One week later, the patient was referred to our department due to an increase in size and tenderness of the mass. At that time, the abdomen was generally soft and the mass became 7cm in diameter. There was tenderness around the mass, but no muscular defense. Her body temperature was 36.8°C, but WBC count and CRP levels were increased to 10,200/μl and 4.40mg/dl,

Received June 2, 2021; Accepted February 18, 2022
DOI:10.15100/00022602

respectively. CT scan showed that the mass was enlarged to 52 mm in size without free air or ascites. As in the previous CT scan, a 20 mm high density shadow was detected on the dorsal side of the mass (Figure 1). Because of increased levels of inflammation markers and the significant enlargement of the mass, we suspected a connection between the intestinal tract and the mass cavity, and decided to perform laparotomy. The surgery was performed through a longitudinal incision just above the mass below the umbilicus. The mass wall was formed by the abdominal wall muscle, fascia from the large reticular fatty tissues and surrounding connective tissues. No connection was observed with small intestine. The mass was formed by abscess, and a fish bone of 20 mm in length was found (Figure 2). The mass was resected, and there was no gastrointestinal perforation. The wound was closed, and a drainage tube was inserted. The patient started eating on Day 2 postoperatively. On Day 11, negative-pressure wound therapy (NPWT) was performed for wound dehiscence. As granulation was accelerated by the therapy, the patient was discharged on Day 30.

Discussion

Most accidental ingestions of foreign bodies are usually excreted uneventfully. Less than 1% of cases reportedly lead to gastrointestinal perforation[2]. We perform CT scan routinely, except in cases of restrictions on the procedure such as pregnancy. We confirm the presence or absence of free air and ascites as well as the location and size of fish bones, abscesses and granulomas. The detection rate of fish bones is 15% in simple radiographs, whereas CT scan allowed a higher detection rate of 97%[3]. Particularly, MDCT has been reported to be able to identify almost 100% of fish bones by 3D image construction[4]. After imaging, we determine if the patient has acute or chronic inflammation based on physical and laboratory findings, and decide a treatment plan. Cases with acute inflammation signs often require urgent treatment. Treatment strategies for non-urgent cases with chronic inflammation vary by institution.

Otani et al. categorized the treatment strategies for the chronic inflammatory type into three methods:

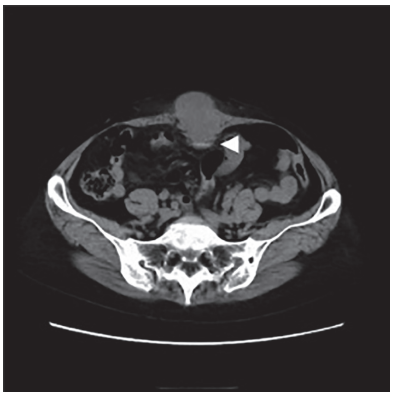

Figure 1A

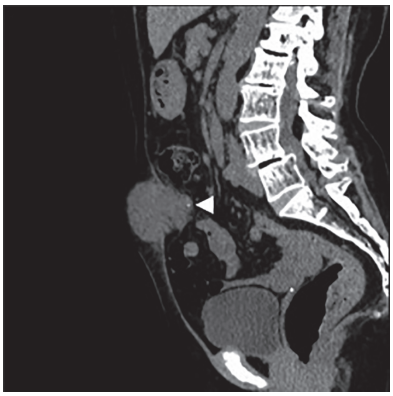

Figure 1B

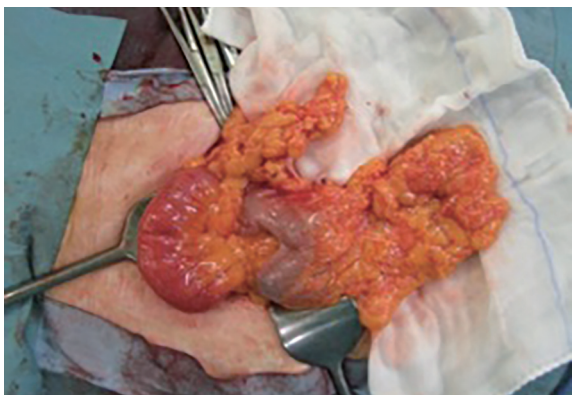

Figure 2A

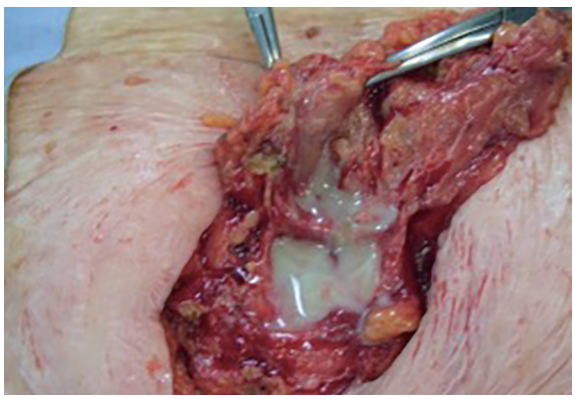

Figure 2B

(1) surgical removal or drainage of the fishbone, (2) conservative treatment after removal of the fishbone under endoscopic or direct vision, and (3) conservative treatment without removal of the fishbone by surgery or endoscopy[5]. The size and location of fish bone are also important factors in determining the treatment strategy. Fish bones with length of more than 30 mm more likely induce acute onset with perforations, because those are not covered with granulation[6]. As for the site of perforation, Yoh et al. reported that ileum, transverse colon, and sigmoid colon were the most common sites of perforation based on past literature. The reason for this is that the mesentery has a large peristaltic movement[7]. In addition to the risk of perforation associated with the site, there is the issue of whether it can be easily removed endoscopically or under direct vision. Further, the size of the abscess should be considered in determining whether drainage is necessary. In one case, an abscess formed during conservative treatment after endoscopic removal of a fish bone that required a drainage[8]. Regardless of the treatment choices, it is important to monitor patients carefully for infection and foreign body reaction.

In the present case, we selected conservative treatment, because there were no free air or ascites in the CT scan at the visit to the internal medicine. We suspected that the mass was connected to the intestinal tract, because the size of the mass increased from 35 mm to 52 mm in diameter within a week. We selected exploratory laparotomy to remove the foreign body and insert a wound drainage. The laparotomy showed that the intestine near the abscess was not perforated. According to Lau et al.[9], it is estimated that almost 1% of the population has an umbilical hernia. It is stated that the fish bone pierced the bent part of the prolapsed intestinal tract due to repeated prolapse of the intestinal tract in the umbilical hernia area. The fish bone had presumably perforated the intestinal tract near the umbilical hernia area and formed an abscess outside the intestinal tract. Because of the diverse chronic course of the disease, it is important to evaluate the location of the fish bone, the size of the abscess and the degree of inflammation of the mesentery by CT scan in addition to the temporal changes in the abdominal physical findings.

Conclusions

CT scan is useful in cases of suspected perforation of the gastrointestinal tract by fish bones. The presence of free air or ascites, size and location of the fish bone and abscess formation on CT scan are important in determining the treatment strategy, including conservative treatment.

Ethical approval

We have obtained written informed consent from the patient for publication of this case report. This manuscript is written according to Declaration of Helsinki.

Acknowledgment

We thank Moses Paul PhD for editing this manuscript.

References

1. Perelman H (1962) Toothpick perforation of the gastrointestinal tract. J Abdomen Surg. 4: 51-53
2. Bloom PR, et al. (1986) Foreign bodies of the gastrointestinal tract. Ann Surg:52: 618-621
3. Palme CR, Lowinger D, Petersen AJ (1999) Fish bones at the cricopharyngeus: A comparison of plain-film radiology and computed tomography. Laryngoscope: 109: 1955-1958
4. Takanori H, et al. (2008) Eight cases of perforation of the digestive tract by a fish bone.J Jpn Surg Assoc: 69: 399-404 Japanese
5. Hiroki O, et al. (2013) Clinical analysis of patients with gastrointestinal track perforation caused by fish bone. Journal of abdominal emergency medicine: 33: 803-808 Japanese
6. Kotaro N, et al. (1998) A case of intraabdominal inflammatory tumor caused by perforation of the transverse colon due to a fish bone which was preoperatively diagnosed. J Jpn Surg Assoc: 59: 423-427 Japanese
7. Kikuo Y, et al. (2001) Intestinal perforation by fish bone: case report and review of 271 cases in the Japanese literature. Jpn J Gastroenterol Surg: 34: 1640-1644 Japanese
8. Hidehiko O, et al. (2010) A case of an abdominal abscess caused by a fish bone penetrating the duodenum. Journal of abdominal emergency medicine: 30: 603-606 Japanese
9. Lau B, Kim H, Haigh PI, Tejirian T (2012) Obesity increases the odds of acquiring and incarcerating noninguinal abdominal wall hernians. Am Surg: 78: 1118-1121