Migration of a Fish bone to the Mesentery with Perforation of the Jejunum and Transverse Colon

JUN-PING SHIAU1  KWOK-WAN YEUNG2

Division of Surgery1, Department of Radiology2, Fooyin University Hospital, Pingtung, Taiwan

ABSTRACT

Gastrointestinal perforation caused by an ingested foreign body is rare, occurring in less than 1% of cases. A fish bone perforation of a small bowel loop and colon with migration back into the mesentery has not previously been reported. We present the case of a 42-year-old female patient with severe abdominal pain for 3 days. Multidetector-row computed tomography (MDCT) of the abdomen revealed a hyperdense and linear foreign body at the mesentery between the wall-thickened jejunum and transverse colon. Exploratory laparotomy disclosed a fish bone in the inflamed mesentery, with perforations in the jejunum and transverse colon. Adhesiolysis, removal of the fish bone, segmental resection of the jejunum and transverse colon, and primary anastomosis were performed. The patient had an uneventful hospitalization and was discharged on the 7th postoperative day.

Keywords: fish bone perforation; migration; jejunum; transverse colon

INTRODUCTION

Accidental dietary foreign body ingestion is common in clinical practice. Most ingested foreign bodies are excreted without any complication within 1 week [1]. Perforation of the gastrointestinal (GI) tract caused by the ingested foreign body is rare, occurring in less than 1% of cases. Migration of the foreign body to adjacent or distant organs after perforating the GI tract is even rarer [2]. We present a case of fish bone perforation of the jejunum with migration to the mesentery to cause further perforation of the transverse colon. To the best of our knowledge, this is the first case report of a fish bone perforation of a small bowel loop and colon, followed by migration back into the mesentery.

CASE REPORT

A 42-year-old female had severe abdominal pain for 3 days, with chills and fever for 1 day. She went to a hospital, and peritonitis was diagnosed. She was then transferred to our emergency department. Tenderness and rebound pain were present in the abdomen. Low-grade fever (38°C) was found. No nausea, vomiting, diarrhea, or constipation was noted. She had a history of multiple sclerosis and appendectomy in childhood. The patient did not recall ingestion of a foreign body (e.g., fish bone). Blood examination showed leukocytosis (white blood cell count: 15,080/μL) and elevated C-reactive protein (16.8 mg/dL; normal, <0.5 mg/dL). Multidetector-row computed tomography (MDCT) of the abdomen with and without intravenous contrast administration revealed a 1.4 cm linear hyperdensity in the mesentery of the left peritoneal cavity between the wall-thickened jejunum and transverse colon. Exploratory laparotomy disclosed a fish bone in the inflamed mesentery, with perforations in the jejunum and transverse colon. Adhesiolysis, removal of the fish bone, segmental resection of the jejunum and transverse colon, and primary anastomosis were performed. The patient had an uneventful hospitalization and was discharged on the 7th postoperative day.

Keywords: fish bone perforation; migration; jejunum; transverse colon

Correspondence Author to: Kwok-Wan Yeung
Department of Radiology, Fooyin University Hospital, Pingtung, Taiwan
No. 5, Chung-Shan Road, Tung-Kang, Pingtung 928, Taiwan
Figure 1. MDCT with pre- a. and post-contrast-enhanced b. axial images reveals wall thickening of the jejunum (open arrow) and the distal portion of the transverse colon (ladder arrow). A hyperdense spot (short arrow) indicating the transverse section of the fish bone is seen at the mesentery, sandwiched between the jejunum and colon. Adjacent mesenteric infiltration and fluid are identified. The contrast-enhanced image with coronal reformation c. shows the longitudinal axis of a 1.4-cm hyperdense fish bone (between the short arrows) between the thickened wall of the jejunum (lower open arrow) and transverse colon (right ladder arrow), associated with focal mesenteric infiltration and fluid (curved arrow). The proximal jejunum is mildly distended (upper open arrow), and the proximal transverse colon has normal wall thickness (left ladder arrow).

Figure 2. After adhesiolysis and exposure of the transverse colon and jejunum during laparotomy, the fibrin coating on the jejunum (white arrow) and transverse colon (open arrow) is demonstrated, indicating the perforations.
perforation was seen in the jejunum 40 cm from the ligament of Treitz; another perforation was found in the distal portion of the transverse colon. Segmental resection of the jejunum and transverse colon was performed with primary jejuno-jejunal and colo-colic anastomoses. Pathological examination showed a perforation of the jejunum and transverse colon respectively, with acute suppurative inflammation surrounding the perforation sites. Acute superimposed on chronic inflammation of the perilesional soft tissue was present, indicating peritonitis. Culture of the infected ascites identified *Enterobacter cloacae*. The patient had an uneventful recovery and was discharged on the 7th postoperative day.

**DISCUSSION**

Accidental dietary foreign body ingestion is a common clinical problem. Most ingested foreign bodies pass through the gastrointestinal tract uneventfully within 1 week [1]. However, gastrointestinal (GI) perforation is rare, occurring in less than 1% of cases. Migration of the foreign body to adjacent or distant organs after perforating the GI tract is even rarer [2]. Among all foreign bodies, fish bones are most commonly ingested and cause perforations most frequently. The perforations may occur anywhere in the GI tract, but tend to occur at areas of acute angulation, such as the ileocecal and rectosigmoid junctions [2], and are usually caused by a sharp, pointed, and elongated object such as a fish bone, toothpick, or chicken bone [3].

The diagnosis of accidental and ingested foreign body perforation is difficult because the patient may forget the incident [3], and a history of foreign body is seldom obtained preoperatively. The patient may present with widespread and nonspecific clinical manifestations, which may be mistaken for diverticulitis and acute appendicitis.

In the general population, accidental and unconscious ingestion is the most likely cause of nonmetallic and dietary foreign bodies, such as fish bones [2]. On the other hand, children, psychiatric patients, prisoners, alcohol and drug abusers, and persons who eat rapidly are at high risks of ingestion of nondietary and metallic foreign bodies [1, 2]. Patients wearing dentures are particularly prone to ingestion of a foreign body due to elimination of the tactile sensation of the palatal surface, thus decreasing the recognition of small intraoral objects.

A foreign body may perforate the bowel wall in several ways: (1) it may lie in the lumen, near or at the perforation site; (2) it may transfix the bowel wall in the peritoneal cavity or migrate into adjacent or distant organs; or (3) it may fall back into the lumen and migrate to perforate a more distal bowel loop, or be excreted uneventfully [2, 4, 5]. The present case followed the second route, by transfixing the jejunum with migration to the mesentery, followed by perforation of the adjacent transverse colon; perforation may have followed a proposed fourth route, by migrating from the perforated transverse colon back into the peritoneal cavity and remaining at the mesentery. This was shown by MDCT images, in which a hyperdense and linear fish bone is seen with surrounding mesenteric inflammation between the wall-thickened jejunum and transverse colon. This is understandable because both ends of the fish bone may be sharp and pointed (not shown), causing it to make a to-and-fro (or in-and-out) migration through the transverse colon and back into the peritoneal cavity. The surgeon confirmed that the fish bone caused the perforation.

Perforations of the jejunum and colon are rather uncommon, with reported incidences of 14% [1] and 9% [2] respectively, and can cause regional abscess formation [6]. Only a few reports showed that ingested fish bones caused multiple GI perforations, including one patient with 2 fish bones causing 3 perforations (but the locations of the perforations were not recorded) [2], another patient with a fish bone causing 2 ileal perforations [3], and a third patient with 1 fish bone leading to 2 colonic perforations [4]. To the best of our knowledge, a fish bone causing perforation of a small bowel loop and colon, followed by migration back into the mesentery, has not previously been reported.

Abdominal radiography is ineffective for foreign body detection, and has low sensitivity (32%) [7]. In contrast, CT has a sensitivity of 100% and is the modality of choice for examination of patients with an acute abdomen [1, 8]. On CT, the location of bowel perforation is suggested by a segmental and thickened bowel wall, focal pneumoperitoneum, localized fatty infiltration, and associated bowel obstruction. Definitive diagnosis of fish bone perforation is made by direct visualization of a linear calcified foreign body surrounded by a region of inflammation; the detection of the calcified fish bone is enhanced with the help of thin collimation and multi-planar reconstructions of MDCT images. The GI tract is affected as the injected fish bone progressively erodes through the bowel wall, and the perforation site is sealed by a fibrin coating, omentum, and adjacent bowel loops. In the case reported here, the fibrin coating of the outer walls of the jejunum and transverse colon observed during exploratory laparotomy identified the perforation sites, and the migrated fish bone was inside the inflamed mesenteric region. Surgical intervention including simple suture of the defect or partial resection of the bowel loop is indicated, depending on the severity of complications related to the perforation.

In conclusion, accidental and unconscious ingestion of fish bones and the nonspecific clinical presentation may make an accurate preoperative diagnosis very difficult. A fish bone perforation of the jejunum and colon can cause acute symptoms mimicking other surgical conditions. A high index of suspicion and observer awareness of the CT interpretation should be maintained for a prompt and accurate diagnosis and appropriate patient management.
REFERENCES