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Sigmoid Colon Perforation Caused by an Ingested Fish Bone: A Case Report

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Abstract The accidental ingestion of a foreign body is common, and the majority of ingested foreign bodies pass through the gastrointestinal tract without complication. Perforation is one of the rarest complications and commonly occurs in the terminal ileum and recto-sigmoid junction. The sigmoid colon is an extremely rare site of perforation because of its anatomical features of a thick wall, large diameter, and non-angulation. Here, we present a case of sigmoid colon perforation caused by an ingested fish bone. A 56-year-old male patient presented with left lower abdominal pain. The patient had no past medical history and had eaten a steamed cod dish the day before presentation. His abdomen was slightly distended and the left lower abdomen was tender, with no signs of generalized peritoneal irritation. Computed tomography revealed a linear radio-dense foreign body protruding from the sigmoid colon lumen accompanied by infiltration and a small amount of free air. An emergency operation was performed. During the operation, a 4-cm-long fish bone (a portion of a fish head bone) was found protruding from the sigmoid colon. Intraoperative colonic lavage, primary resection, and anastomosis were performed. The postoperative course was uneventful, and the patient was discharged on the ninth postoperative day. The case represents an unusual case of sigmoid colon perforation caused by an ingested fish bone. Because colon perforation by ingested fish bone is extremely rare, and its preoperative diagnosis is difficult, meticulous history taking is crucial for the correct diagnosis and prompt management in the emergency setting.

Keywords: *fish bone, foreign body, colon, perforation, history taking*

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1. Introduction

Ingestion of a foreign body is not uncommon, but rarely results in perforation of the gastrointestinal tract. The majority of ingested foreign bodies pass through the gastrointestinal tract without complication. Only less than 1% may cause bowel perforation, depending on the size and the shape of the foreign body. [1] *Common sites of perforation are the narrow parts of the bowel. Perforation of the colon other than at recto-sigmoid junction is rare.* [2] Here, we present a case of sigmoid colon perforation caused by an ingested fish bone.

2. Case Report

A 56-year-old male patient was referred to the emergency department after presenting with left lower quadrant abdominal pain. The pain had started acutely approximately 7 hours prior to presentation and had intensified gradually over time. There were no aggravating or relieving factors for the pain. The patient had no specific past medical history, but recalled that he had eaten a steamed fish dish made from cod for dinner 1 day previously. The vital signs at admission were body temperature, 38.0°C; blood pressure, 116/89 mmHg; heart rate, 85 beats/minute; and respiratory rate, 18 breaths/minute. The abdomen was slightly distended and the left lower abdomen was tender, with no signs of generalized peritoneal irritation. Laboratory results were within the normal range, except for a white blood cell count of 15,580/μL. There were no specific findings on chest or abdominal radiography. A clinical diagnosis of sigmoid colonic diverticulitis was made based on the results of physical examination, simple abdomen radiography, and laboratory examination. However, an urgent computed tomography (CT) scan revealed a linear radio-dense foreign body protruding from the sigmoid colon lumen accompanied by infiltration and a small amount of free air (Figure 1).

With a new diagnosis of perforation of the sigmoid colon caused by a fish bone, an emergency operation was performed. During the operation, an approximately 4-cm-long fish bone (a portion of the fish head bone) was found protruding from the sigmoid colon with severe inflammation (Figure 2, Figure 3).

After removing the fish bone, primary repair of the colon was not feasible owing to inflammation and fragility of the bowel. As the degree of intraperitoneal soiling was not severe, intraoperative colonic lavage and primary resection of the sigmoid colon, including the affected

segment, with anastomosis were performed. *Postoperative period was uneventful, patient rapidly recovered.*

Figure 1. Coronal computed tomography image shows a linear radiodense foreign body, a fish bone, protruding from the sigmoid colon with infiltration and a small amount of free air

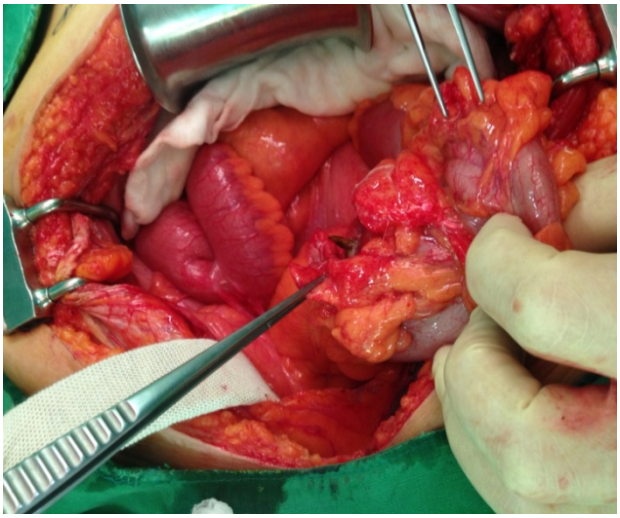

Figure 2. Operative findings. The forceps indicate the fish bone protruding from the sigmoid colon

Figure 3. Fish bone (a portion of a cod head bone) after removal from the sigmoid colon (centimeter scale)

3. Discussion

Ingestion of a foreign body in the general population can often be encountered in an emergency setting. A fish bone is a common and representative foreign body ingested while consuming dietary fish. The amount of fish dishes that are consumed and a dietary habit that includes eating unfilleted fish may have an effect on the incidence of ingestion of a fish bone. In general, ingested foreign bodies become encased within a food bolus, pass through the gastrointestinal tract, and are excreted in the stool by the peristaltic movement of the bowel, with complications, such as perforation, occurring very rarely. [3] Thus, among patients who visit the emergency room for the ingestion of a foreign body, a very small proportion of the patients require surgical intervention. The terminal ileum has been reported to be the most common site of perforation caused by an ingested foreign body, followed by the rectosigmoid colon because of the anatomic features of having an acute angle and narrow lumen. [2] Thus, from an anatomic point of view, the sigmoid colon is an extremely rare site for perforation by an ingested foreign body.

Ingested foreign body-induced bowel perforation can present with various clinical manifestations including peritonitis, localized abscess formation, inflammatory mass, obstruction, and hemorrhage. Depending on the location of perforation, the clinical manifestation may be similar to those of surgical conditions such as appendicitis, diverticulitis, and peptic ulcer perforation, which makes the diagnosis difficult prior to imaging studies. [4, 5] Thus, with varied clinical manifestations, it is hard to make a diagnosis without asking about foreign body ingestion in the history. In the present case, the clinical diagnosis based on physical examination, simple abdominal radiography, and laboratory examination results was diverticulitis. After obtaining the CT findings, we took a more detailed history from the patient, particularly including dietary history. Thus, we could make a final diagnosis, which led us to perform emergency surgery. The symptoms of foreign body-induced bowel perforation may be acute or chronic depending on the involved bowel segment. [6] Unlike the present case with acute perforation of the sigmoid colon, Goh et al. reported that chronic perforation occurred more frequently in the duodenum, stomach, and colon than the jejunum and ileum because a thicker gut wall may cause the foreign body to perforate more gradually, and the close proximity of the omentum and adjacent organs, such as the liver, may keep the perforation site sealed.

Among imaging studies, simple abdominal radiography is usually the first study that is performed in the emergency settings when screening for abdominal disease. However, in a patient with fish bone-induced bowel perforation, simple abdomen radiography is not useful in detecting the fish bone in the abdomen because the detection rate is low and the degree of radiopacity of the bone is different depending on the species of fish. [7] In contrast, CT scans are obtained for the diagnosis of intraperitoneal lesions as well as retroperitoneal lesions, and foreign bodies. The detection rate of an intraperitoneal fish bone is high; accordingly, CT is the most helpful tool for evaluation. [5,7] CT findings that are related to fish bone-induced perforation include a thickened intestinal

segment, localized pneumoperitoneum, regional fatty infiltration, and associated intestinal obstruction. [6] However, Coulier et al. reported that these findings are non-specific; therefore, a definitive diagnosis is made only by identifying the calcified foreign body. [8] In the present case, a history of recently having eaten steamed fish along with the CT findings, including a linear calcified foreign body and localized pneumoperitoneum, were the most important clues for the preoperative diagnosis.

Even though non-surgical management for the treatment of fish bone-induced bowel perforation, such as fasting, antibiotics, and treatment with/without endoscopic removal, has been reported in stable patients [9], surgery is the main treatment option. It may be emergency or elective depending on condition of the patient. Surgical treatment consists of foreign body removal, abscess drainage, and any necessary bowel resection. For chronic cases, Yamamoto et al. suggested that antibiotic treatment is initiated to reduce inflammation, potentially facilitating surgical treatment, followed by drainage of the abscess and removal of the foreign body. Thus, they could avoid bowel resection without morbidity. [10] Although elective drainage using antibiotics may be an effective option for chronic cases, in patients with peritoneal signs, emergency surgery is inevitable, and may be accompanied by bowel resection, similar to the present case. *In the present case, perforation leaded to severe inflammatory changes of the colonic wall made sigmoid resection mandatory.*

4. Conclusions

The case represents an unusual case of sigmoid colon perforation caused by an ingested fish bone. Because colon perforation by an ingested foreign body is extremely rare, and its preoperative diagnosis prior to CT is difficult, meticulous history taking is crucial for the correct diagnosis and prompt management in emergency settings.

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