



Small bowel perforation due to fish bone: A case report



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ABSTRACT

Accidental ingestion of foreign bodies are a common condition in clinical practice. However, small bowel perforation which dues to ingestion foreign bodies has been rarely seen. In this article, we report a case of small bowel perforation which dues to ingestion foreign body. A 80-year-old female patient, presenting with complaints of acute abdomen, was admitted to the emergency department. She denied abdominal pain, nausea and vomiting. The patient had tenderness and defense on the right lower quadrant. Contrast enhanced abdominal computed tomography has been used on the patient's diagnosis. This revealed small bowel perforation due to the ingestion of foreign body. The patient was operated emergency. A microperforation due to fish bone was detected on the terminal ileum. The patient underwent debridement and primary repair. The patient was discharged postoperative 7th day without problem. Bowel perforation due to the ingestion of foreign bodies should be considered in the differential diagnosis of acute abdomen.

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1. Introduction

Admittance to the emergency room (ER) with signs of acute abdominal pain is a common scenario. Although, development of acute abdominal pain as a result of swallowed foreign bodies is quite rare. Most of the foreign bodies are disposed with stool without causing any problems and only 1.0% cause perforation of intestinal tract, usually at the ileum level.^{1,2} Foreign bodies may cause a clinical process involving perforation, obstruction, and fistula which may be fatal. Computerized tomography (CT) is the method of choice when diagnosing swallowed foreign bodies and their caused complications in the pre-operative period. Intestinal perforation should be considered, diagnosed, and intervened early in patients with acute abdomen findings associated with foreign bodies.^{3–6} In this article, we discuss the perforation of the small intestine in an elderly patient as a result of a swallowed foreign body and the approach we undertook to treat this rare case.

2. Case presentation

An eighty year old female patient was admitted to the ER with complaints of progressive right lower quadrant pain, nausea, and vomiting. The patient was cooperative and the general condition of the patient was fine. Physical examination revealed tenderness at the right lower quadrant, defense, and hypoactive bowel sounds. A normal digital rectal examination was reported. Laboratory results were as follows: white blood cell 89.0% (reference: 41–73), neutrophil dominance $17 \times 10^3/\mu\text{L}$ (reference: 5.2–12.4), and C-reactive protein 64.6 mg/L (reference: 0–10). Urinalysis results and other blood parameters were within normal limits. An erect abdominal X-ray revealed a few air-fluid levels at the ileum segments and no abdominal free air. Abdominal ultrasonography (US) revealed minimal free fluid in the pelvic region. Whole abdominal CT revealed diffuse edema-inflammation at the distal portion of the terminal ileum and inflammation of the surrounding fatty tissues. Strikingly, a linear image consistent with foreign body that penetrated through wall of terminal ileum into the surrounding fatty tissues was also discovered. This image was initially determined to be the foreign body causing perforation (Fig. 1). Minimal free fluid in pelvic region was also noted alongside with physiologic calibration of appendix.

Considering these findings, the patient was diagnosed with intestinal perforation caused by a foreign body. The patient was taken

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Fig. 1. Image of the linear foreign body penetrating through wall of terminal ileum into the surrounding fatty tissues as seen on the contrast CT.

to the operating room immediately. Laparotomy was performed using a midline incision. A thorough examination revealed a sharp, linear foreign body (fish bone) measuring 5 cm long at the 15 cm proximal of the terminal ileum, which penetrated through the wall of ileum (Fig. 2).

The fish bone was removed from the terminal ileum. A punctate perforation area was detected on the terminal ileum. Also, inflammation and edema were observed at the terminal ileum alongside with a small amount of reactive serous fluid. The area of perforation was debrided and sutured with primary repair. The patient received antibiotic treatment after the surgery. The patient had no complications during the post-operative period and was discharged after 7 days. Upon further questioning, the patient reported that she had a fish meal three days ago.

3. Discussion

Accidental swallowing of foreign bodies is common in clinical practice. Although, intestinal perforation associated with a swallowed foreign body is quite rare. Most of the foreign bodies are disposed through the stool without causing any problems and only

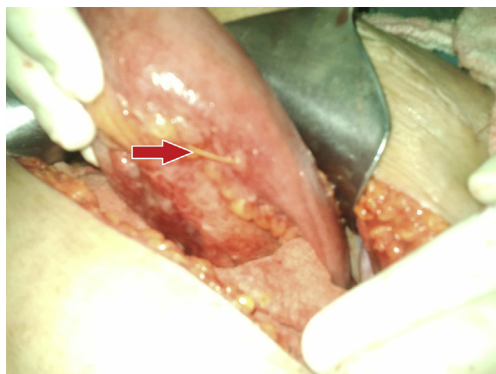


Fig. 2. Operative image of the fish bone in the wall of terminal ileum, pointed with arrow.

1.0% (the ones that are long with pointed tips) cause perforation of the intestinal tract, usually at the ileum level.^{1,2}

Materials that most often cause gastrointestinal system (GIS) perforation are pointed materials such as fish bones, chicken bones, and toothpicks.⁷ However, pens, nails, nail clippers, batteries, and pegs may also cause GIS perforation.⁸ There are reported cases of GIS perforation as a result of biliary stent migration in the literature.⁹ According to the study of Madrona et al, the most common cause of intestinal perforation associated with foreign bodies are chicken bones.² Chu et al report that swallowed fishbones are the most common cause of intestinal perforation associated with foreign bodies in Hong Kong.¹⁰ Goh et al also reported that swallowed fish bones are the most common cause of gastro-intestinal system perforation because of their pointed sharp tips and long bodies.⁴

While perforation of the gastrointestinal tract associated with swallowed foreign bodies tend to occur at the angulating regions such as ileocecal and rectosigmoid junctions, it can happen anywhere along the intestinal segments.¹¹ According to the study conducted by Goh et al, the most common region of perforation associated with fish bone is the terminal ileum (38.6%).¹² Coulier et al also reported that perforation is most commonly observed at the angular regions like the distal portion of the ileum where lumen is narrow.³ With our case, the perforation was at 15 cm proximal of the ileocecal valve. The perforation may seldom occur at regions like the hernia sac, Meckel diverticulum, and appendix.¹³

Acute abdominal pain can result from perforation associated with a foreign body as seen with our case. Although, different signs have also been reported in the literature including localized abdominal abscess, colorectal, colovesical and enterovesical fistula, inflammatory mass or omental pseudotumor, chronic or acute intestinal obstruction, bleeding, endocarditis, renal, and ureteral colic.^{3,5,13} On occasion, they may can remain asymptomatic.¹⁴

Increased fragility of the intestines because of inflammatory disease, advanced age as in our case, rushed eating habits, food preparation, and dental prosthesis (cause the loss of touching sensation) are some of the risk factors that increase the chances of swallowing of fish bone accidentally.³

Even with a detailed clinical presentation, diagnosis may be difficult and delayed since the ingestion fish bones or other foreign bodies may not be mentioned in the history of the patient.

Several different techniques can be used for determining foreign body blockage in the abdomen and each have their distinct advantages. An abdominal X-ray may reveal ingested metal foreign bodies, free air in the abdomen associated with perforation, or the obstruction, while the US may reveal intra-abdominal fluid and aid in excluding other differential diagnosis. The abdominal CT has its advantage as it can aid in the visualizing of any perforation caused by non-metallic foreign bodies such as fish bone.

Because of their high reflectivity and various background shadows, foreign bodies that are not radio-opaque such as fish bone or toothpick can be detected by US.¹⁵ By using US, changes in tissues surrounding perforations and luminal contents of superficial intestines could be evaluated. However, deeper tissues may be hard to visualize. The morphological properties of the patient, localization of the perforation, and the experience of the observer may limit the functionality of the ultrasonography. Multi detector CT may provide detailed examination of the whole GIS from all aspects with its high resolution, thin collimation, and multi-planed reconstruction abilities. Thus, it is the first method of choice for evaluating patients with acute abdominal pain and for detecting foreign bodies.³

US revealed minimal free fluid in the pelvic region of our case. Following this, abdominal CT with contrast agent revealed a typical image of the perforation caused by ingested fish bone. The typical

image of perforation caused by fish bone is, as seen in our case, the linear lesion with hyper density surrounded by inflamed tissues.

Surgery is the treatment of choice to repair any perforation caused by foreign body. Upon development of complications such as abscess, fistula, and ileus, the treatment plan includes observation, medical treatment, or radiological interventions. Surgical treatment of small intestine perforations require surgical repair or segmental resection.¹² Since our case had a micro-perforation we debrided the perforation and performed primary repair.

4. Conclusion

This case emphasizes the importance of considering intestinal perforations caused by foreign body ingestion in the differential diagnosis of acute abdomen cases. Appropriate imaging technique with a good history obtained from the patient will lead the physician to the correct diagnosis.

Conflicts of interest

The author(s) reported no conflict of interest.

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