Intentional Ingestion of a Metallic Wire Causing Perforation and Retroperitoneal Abscess: A Case Report

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ABSTRACT: Foreign body ingestion is a frequent condition, with the majority of foreign bodies (FBs) tending to spontaneously proceed along the gastrointestinal tract without any major complications. A wide range of procedures are available to remove FBs; however, a real challenge exists in managing sharp, rigid, and long foreign objects, which are related to higher rates of complications. A 34-year-old man who intentionally swallowed a metallic wire of 20 cm length, presented to our ED with abdominal pain 2 weeks after the ingestion. The FB had migrated to the stomach and duodenum. Complications included perforation of the duodenum and ascending colon and a retroperitoneal abscess. FB removal was done via laparotomy, followed by the repair of perforations and damaged tissues. This case highlights the complications of a FB presence in the gastrointestinal tract for 14 days and emphasizes the importance of urgent and appropriate management of such conditions.

KEYWORDS: Foreign body ingestion, metallic wire, surgery, perforation, abscess

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Introduction

Ingested foreign bodies (FBs) can be passed through the gastrointestinal (GI) tract spontaneously or with minimal intervention but anatomical features of the GI tract and the type of foreign body (FB) may limit this passage.[1-5] In adults, FBs can be swallowed accidentally, intentionally, or in a state of mental alteration and vary in their potential for causing serious complications.[6] On the management of the FBs, in literature[1,4,7,8] only 0.4%, 4.8%, and 1% or less of patients needed surgery. Considering FBs ingestion to be among the most common medical conditions, the incidence rate for sharp, pointed, or elongated objects is very low,[1] but sharp-pointed objects carry a higher risk of complications (up to 35%),[5] and a great deal of them need interventional procedures. Some of the most common FBs of this kind are meat bones, toothpicks,[1,9,10] and pins.[11] Here, we report a case of intentional metallic wire ingestion (2 weeks before admission) in a 34-year-old man presenting with abdominal pain. This metallic wire of contorted and sharp-pointed shape measured 20 cm in length and caused a perforation in the duodenum and ascending colon and a peritoneal abscess. The condition was managed by surgical removal of the FB and repair of the perforations and damaged organs which lead to full recovery of the patient. The work has been reported in line with the CARE criteria.[12]

Case Presentation

The patient, a 34-year-old male, presented to our Emergency Department (ED) with abdominal pain and with an history of intentional ingestion of a 20-cm-long metallic wire 2 weeks prior to presentation. Anamnestic data revealed methadone (opium) use, while the past medical and surgical history was nonspecific. The patient complained of abdominal pain since 5 days earlier, accompanied by decreased oral intake of the regular diet, and denied any nausea or vomiting. He also noted night sweating and diarrhea.

On arrival, besides being cooperative, his general appearance was neither ill nor toxic and he was completely alert and oriented with no acute distress. He had a temperature of 37.6°C, a blood pressure of 120/80 mmHg, a respiratory rate of 16/min, and a pulse rate of 88/min. On heart auscultation, NL S1S2 was noted. Lung auscultation appeared normal. The abdomen was soft, with localized tenderness in the right upper quadrant but without rebound tenderness or guarding. At the rectal examination, non-bloody diarrhea was noted. No other notable abnormality was found on systemic examination. Blood tests revealed WBC 14 000/μL with 84% neutrophils. Other tests were within normal limits. An abdominal X-ray and computed tomography (CT) scan confirmed the presence and location of the FB, as is shown in Figure 1. The wire had seemingly found its way through the oesophagus into the stomach and duodenum, with no serious damage to the oesophagus.

A midline laparotomy was performed, followed by a 1 cm gastrotomy in the anterior wall of the stomach, which allowed the gentle removal of the wire. We inspected for pus, bile, other secretions, food particles, and stool; none of which were found in the field. Considering the severe adherence of viscera on the right side of the abdomen, this area was inspected, and a retroperitoneal abscess was observed posterior to the ascending colon on the psoas muscle. Abscess drainage was done and sent for culture. The posterior wall of the ascending colon was macerated to the presence of an adjacent abscess, and a small perforation was present, so we were obligated to do a right

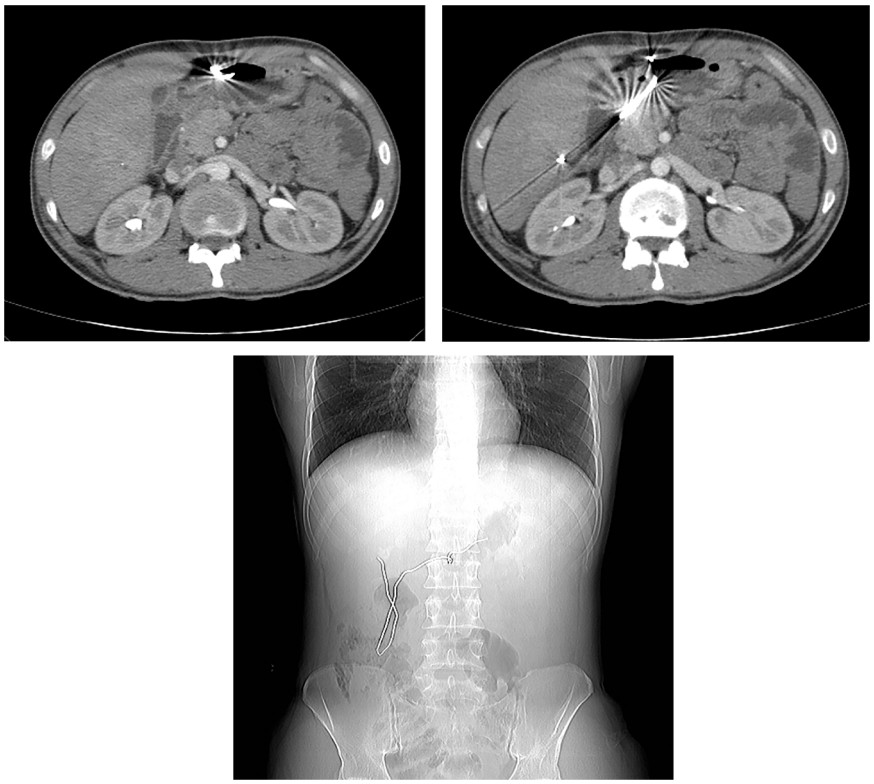

Figure 1. (A–C) CT scan before operation. Imaging revealed a part of the metallic wire lying in the stomach whilst the other half in the duodenum and the ascending colon.

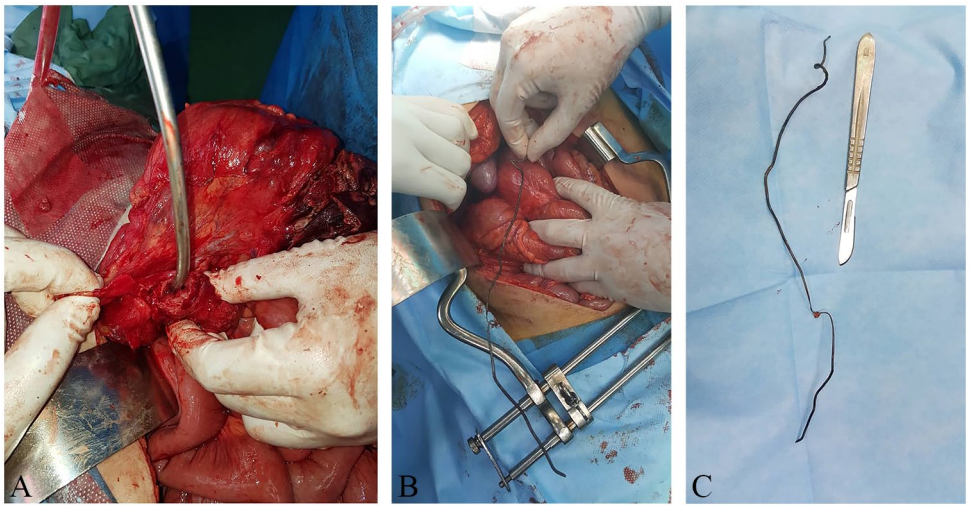

Figure 2. (A and B) Operation images and (C) FB after removal.

hemicolectomy. The kidney, ureter, and gonadal vessels were also found to be adherent to the surrounding tissues, which were gently and cautiously divided. The proximal part of the wire (with its twisted shape; marked red in Figure 2) had been lodged behind the pyloric valve. Due to the rigidity and overall structure of the wire, the distal end of it could not move further than the duodenal loop; thus, it had caused a tear in the duodenum and lead to the fistulization of the third part of the duodenum into the ascending colon. We resected the bowel containing the fistula during the operation. As a consequence of this, a 2-cm defect was left, and a Roux-en-Y duodenojejunostomy was done to repair it. Finally, an ileocolic anastomosis was performed and, the previously done gastrotomy was repaired. The operation ended by insertion of a peritoneal drain and placement of a feeding jejunostomy.

The patient stayed in the intensive care unit for 1 and 5 days in the general ward. The patient was given intravenous (IV) metronidazole with the first 500 mg dose in the emergency

department immediately after the determination of a requirement for laparotomy, followed by administration every 8 hours for a total of 3 doses. IV clindamycin (600 mg tds) on first day of surgery. IV ceftazidime (1 g qid) on the second day and IV cefazolin (1 g qid) on days 3 to 5. After a 6-day hospital stay, the patient was able to tolerate a semi-solid diet and was discharged home in good clinical condition. The postoperative course was uneventful.

Discussion

FB ingestion is a common problem, and strange objects could be found in different sites of the digestive tract. If safe passage or removal through the GI tract is not possible for the GI FBs, including a small number of cases,[1,8] symptoms can develop due to trauma, perforation, and the obstruction that follows this condition[11,13]; however, intestinal perforation is relatively rare.[6,14] This may be because the stomach and small intestine are uncommon locations for the FB to be trapped.[1] Patients of FB ingestion can be asymptomatic or show mild to severe symptoms. Complications such as perforation, obstruction, and GI bleeding should be managed by surgical procedures.[15] Besides, the presence of intraduodenal FB for more than 10 days and FBs which are longer than 15 cm and sharp are indications of surgery.[16] In the category of sharp objects, certain types of FBs (bones, straightened paperclips, toothpicks, needles, etc.) carry a higher risk of complications.[3]

We, in this article, reported the case of a 34-year-old patient who presented to the hospital 2 weeks after intentionally swallowing a metallic wire. He had stable vital signs and complained of abdominal pain. Evaluating the patient, we prepared him for the surgical removal of the FB and repaired the traumatized tissues.

Regardless of the type of the FBs, mortality and morbidity rate is very low,[1,17,18] but certain conditions like delay in surgical treatment (if surgery is needed) can aggravate an already existing condition.[6] This delay in the treatment, as in our case and as a study mentions, can cause a fistula between organs of the affected area and peritoneal abscess.[11] Specifically, sharp-pointed or long objects in the stomach or small bowel require urgent removal because of the risk of perforation[19]; the average time for the perforation to occur is 10.4 days since ingestion.[6] Our patient was aware of a foreign object in his body but probably misjudged the situation and presented to the hospital 2 weeks after FB ingestion (He had remained asymptomatic until after about 9 days). Current guidelines on how to manage different types of FBs are limited, as FBs vary enormously in the shape, structure, the location of lodging or causing damage, the extent of damage, the time from ingestion to presentation, and overall health of the patient; for instance, Guidelines give clear recommendations on sharp or long items but don't provide information on sharp and long objects. Imaging modalities can reveal the location of FB and provide the basis of our intervention; although, through the operation, the patient may appear to have more damaged organs than expected. A study of perforations caused by FBs (all treated surgically) indicated that 66% of perforations in the upper digestive tract presented with peritonitis, and 33% presented with abdominal pain.[6]

The presence of such sharp, rigid, and long foreign object inside the GI tract for several days should be considered a potentially serious condition even if the patient has few or no alerting symptoms after the ingestion. In 1 case, a lighter (8 cm long) was present in the GI tract for 17 months with no significant GI problem.[20] Besides, when FB ingestion is suspected, a clinician needs to take a detailed medical history, be aware of the patient's mental health condition, and take a complete diet history, as some patients won't recall swallowing items such as meat bones or dental hardware with a meal; also unwitnessed children may accidentally ingest a FB. Certain types of ingested FBs tend to be more common among different age groups; also, types of intentionally ingested FBs differ from accidentally ingested ones.[1,21] In a study[22] that showed the differences between accidental and intentional FB ingestions, almost all of the patients of intentional FB ingestion were prisoners or had a psychological condition, more than half of the FBs were metallic items, and 64% were found in the stomach. Similarly, our patient had a metallic FB in his GI tract, but to our knowledge he had no mental issues.

Conclusion

We reported an uncommon ingested FB complication, with the FB lodged in the GI tract for 2 weeks. Such sharp, long, and rigid metallic wire trapped inside the GI tract for a long time, can be challenging to manage due to the risk of perforation, obstruction, and damage to different organs. These complications make urgent exploration mandatory; clinicians should be aware of symptoms and management modalities of FB ingestion to prevent further complications.

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Author Contributions

Mehdi Tavallaei, MD, contributed to study concept and design, data Interpretation, supervising of study, and final approval of the submission; Mahsa Bahadorinia (medical student) contributed to the patient record, data interpretation, drafting the main article, and final approval of the submission; Arsh Haj Mohamad Ebrahim Ketabforoush (medical student) contributed to drafting the main article and final approval of the submission. The authors verify that the manuscript is original.

Informed Consent

A written consent form was obtained from the patient for publication of the images and the case report.

Disclaimer

The full article has not been submitted or published elsewhere.

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