

## Case report

## Perforation of midpart of ileum caused by entrapment of a large, wide foreign body

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### SUMMARY

We report the case of a 54-year old male patient with a long history of irritable bowel syndrome who unknowingly swallowed a foreign body (wire) while having roast, lamb as a meal. The wire body ultimately perforated the midpart of the ileum over a period of one month. Gastroenteritis and irritable bowel dysfunction were sequentially considered as possible diagnoses. A plain radiograph of the abdomen in the erect position revealed the foreign body, a metal curved wire about 6-8 cm long, and 2-3 cm wide located in the upper-midpart of the abdomen, with no signs of gastrointestinal perforation. Upper GI endoscopy until the third portion of the duodenum did not reveal the foreign object. Surgical intervention revealed free perforation of the midpart of the ileum in two sites caused by the points of the curved wire, which was removed. In the case reported, the long, wide object passed through the stomach and the bowel perforation clinical signs were mild, starting over a period of long time after the initial event of the accidental swallowing of the wire object.

**Key words:** foreign body, small-bowel perforation, endoscopy, x-rays, surgical exploration.

### INTRODUCTION

Foreign bodies, longer than 5 cm and wider than 2 cm, that are accidentally or intentionally swallowed rarely pass through the stomach.<sup>1,2</sup> Most of the shorter than 2 cm objects usually pass through the gastrointestinal tract with no incident,<sup>3</sup> with less than 1% resulting in bowel perforation;<sup>2</sup> those that cause bowel perforation are usually elongated or sharp.<sup>4,5</sup> Although injury may occur at any level from mouth to anus, perforation is more likely at certain anatomic sites where foreign objects may become arrested due to acute angulations or narrowing of the lumen of the bowel.<sup>6</sup> The duodenum and terminal ileum are the most frequent sites of perforation beyond the esophagus.<sup>6</sup> Clinical presentation is variable, and symptoms and signs include pain of the abdomen, nausea, vomiting, mechanical obstruction of the bowel, fever, peritonitis, abscess formation or gastrointestinal hemorrhage from an enterovascular fistula.<sup>5,6</sup> Many adult subjects who ingest foreign bodies are edentulous and often do not recall ingesting the object,<sup>5,6</sup> which makes the clinical diagnosis challenging, and the diagnosis is frequently delayed. In particular, when the foreign bodies cause bowel obstruction or perforation, this condition represents a major management challenge to the clinician in determining whether to wait or proceed to immediate intervention. The present case is interesting for the following reasons: the patient was unaware of swallowing the wire object, the long and wide object passed through the stomach, the diagnosis was initially missed, and the diagnosis was established by a plain radiograph of the abdomen that showed the object located in the upper-midpart of the abdomen without signs of gastrointestinal perforation, therefore, making the management more challenging.

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## CASE REPORT

A 54-year old male patient with long history of irritable bowel syndrome was admitted to the emergency room of the hospital with symptoms of recurrent pain in the abdomen and the back. His history had begun 28 days previously when he experienced recurrent abdominal pain and a few diarrhea episodes without visible presence of blood and without fever. He went to the family doctor who suspected gastroenteritis, prescribed an antibiotic therapy and ordered an echogram of the abdomen that did not reveal anything noteworthy. Eleven days before his final admission to the emergency room, the patient was referred to our department and was evaluated clinically. Physical examination revealed abdominal pain upon palpation and normal bowel sounds without fever or peritoneal signs and the rectal examination was normal. The patient was advised to take mebeverine and come back after a few days for further evaluation. After this period of eleven days no improvement was evident. On the new physical examination, he was afebrile and his vital signs were normal. There was tenderness, and rebound was elicited in the right abdomen with questionable rebound in the left abdomen. The remainder of the physical examination was normal. Chest x-ray was normal. A plain abdominal radiograph in the erect position revealed a linear radiopaque structure at the level of O4 vertebra that, from the profile x-ray, proved to be a foreign curved body (wire) and absence of typical air-fluid levels or free intraperitoneal gas (Figure 1).

The patient recalled that one month before he noticed pain in the pharynx after having roast, lamb as a meal and since that time the pain had transferred to the abdomen. Apparently the patient had ingested the wire object during an unchewed bite when eating lamb roasted on a spit, which is a traditional Greek dish. The patient underwent an upper GI-tract endoscopy, which did not reveal the wire object until the third part of the duodenum and immediately, thereafter, surgical intervention (Figure 2).

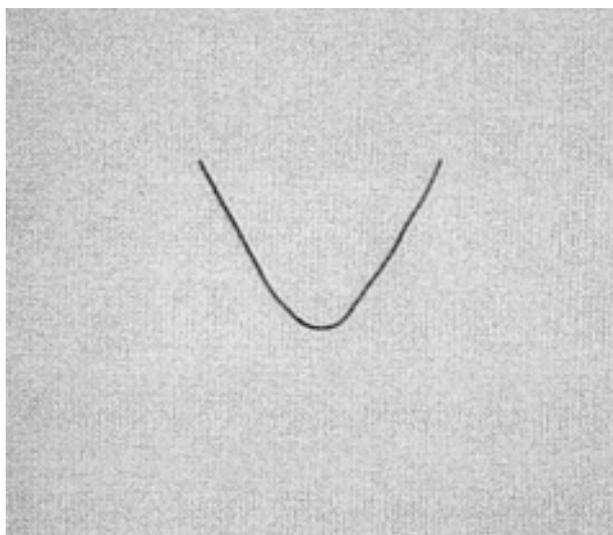
## OPERATION

After general anesthesia a midline incision revealed a U-shaped wire loop impacted in the midpart of the ileum. Both ends of U-shaped wire were found edged through the intestinal wall and with no signs of peritonitis. The wire (1mm in diameter) was easily removed and the perforated intestine was stitched with 3/0 absorbent sutures.

Having an uneventful course, he was discharged on the



**Figure 1.** A plain radiograph of the abdomen in the erect position shows the radiopaque curved foreign body about 6-8 cm long and 2-3 cm wide, with no signs of gut perforation.



**Figure 2.** The flogging wire body removed by surgical intervention.

6<sup>th</sup> postoperative day and has remained asymptomatic.

## DISCUSSION

Gastrointestinal foreign bodies represent a significant problem, causing a surprising percentage of morbidity and mortality.<sup>6</sup> The complications related to the ingestion of foreign bodies may include localized mucosal ulceration, thickening, and edema of the bowel wall and also infarction of the small bowel due to aortic atherosclerosis<sup>7</sup>, intestinal obstruction,<sup>8,9</sup> or perforation.<sup>3</sup> It is estimated that 1000-2000 people in the USA die each year from such complications related to the ingestion of foreign objects.<sup>7,10</sup>

Individuals most susceptible to foreign body ingestion are considered who wear dentures to be those as in our case, since the tactile sensitivity of the soft palate that is vital for the detection and recognition of intraoral foreign bodies is diminished. Other risk groups include children, psychiatric and alcoholic patients.<sup>5</sup>

Foreign body series differ by geographical area. In Greece the common use of wire material to prepare meals of lamb roast on a spit, which is a traditional Greek dish, seems to provide pointed foreign objects of peculiar shape that may carry a significant risk of intestinal perforation after ingestion, as in our case. Unfortunately, most sharp or pointed foreign bodies such as toothpicks, bones, needles, nails, dental prostheses, razor blades, and safety pins are ingested unknowingly by many adult individuals,<sup>5,6</sup> and are associated with high morbidity and mortality, mostly due to delayed diagnosis.<sup>6,11</sup>

Foreign bodies longer than 5 cm and wider than 2 cm rarely pass through the stomach.<sup>12</sup> Therefore, it was a surprising to us that such a long and wide object was ingested by our patient, passed through the stomach and become arrested in the midpart of the ileum, an uncommon site for foreign body impaction. Anatomic areas where foreign objects have a tendency to become impacted and perforate GI-tract are usually the terminal ileum, appendix, duodenum or colon. The duodenum and ileocecal valve are accessible to the potential removal by endoscopic procedures. Although less than one percent of all foreign objects perforate the intestine, all pointed and sharp foreign bodies should be removed before they pass through the stomach since 15%-35% of them cause gut perforation.<sup>2</sup>

Symptoms resulting from foreign object impaction and perforation are variable and they mimic other intra-

abdominal conditions so closely that the diagnosis is seldom made preoperatively.<sup>2</sup> Our patient had a long history of irritable bowel syndrome and the recent symptoms were similar to those of such a condition. Moreover, he did not recall the event of the painful meal, thereby making the clinical diagnosis challenging.

When foreign body impaction and/or perforation are suspected, plain abdominal films, sonography, and CT scanning may all be helpful.<sup>6</sup> The effectiveness of the abdominal radiograph in detecting an ingested foreign object depends on the size and radiodensity of the foreign body.<sup>7</sup> In our patient, the physical sign of rebound tenderness on his final admission, prompted us to perform a plain abdominal radiograph that detected the wire. However, it must be emphasized that failure to locate an object on radiographs does not preclude its presence.<sup>6</sup> Ultrasonography may identify objects (such as toothpicks) in the abdomen as a hyperechoic straight line or as a bright hyperechoic dot with sharp posterior shadowing when viewed on end. Gastroenterologists and ultrasonographers should be aware of this possibility, particularly in patients with unexplained pain of the abdomen.<sup>6</sup> On CT scans, foreign objects including metal, wood, and bone are more readily detected. CT is also more sensitive in detecting small amounts of free gas, and better for localizing the site of perforation.<sup>5</sup>

The management of foreign bodies in the gastrointestinal tract is based on collected experience and not on controlled clinical trials. The use of the therapeutic flexible endoscope has substantially changed the management of foreign objects in the upper gastrointestinal tract.<sup>2</sup> Flexible endoscopy allows the retrieval of many ingested foreign bodies and is considered to be the procedure of choice.<sup>6</sup> However, the treatment for bowel perforation by a foreign object is surgical exploration and repair. In particular, if a sharp foreign body does not progress for three consecutive days, surgical intervention should be considered and, if the patient becomes symptomatic, surgical intervention will be necessary.<sup>2</sup> The surgical revolution that followed the successful introduction of laparoscopic cholecystectomy encouraged surgeons to try to apply this minimally invasive technique instead of other procedures. The laparoscopic removal of foreign bodies from the peritoneal cavity (translocated intrauterine contraceptive devices) and a needle from the pelvis have been reported previously,<sup>12</sup> but the laparoscopic removal of a foreign body from within the gut has not been tried yet due to unsolved technical problems.

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