

Needle in a Haystack. A Silent Foreign Body Perforating into Abdominal Cavity, Case Report and Literature Review

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Abstract

Foreign body (FB) ingestion is common; however, the exact incidence is difficult to identify as most are asymptomatic. It is not uncommon that patients do not recall ingesting the FB. The incidence of those requiring surgical removal were reported to be around 1-14%. Treatment options for ingested foreign bodies continue to evolve. Previously, patients were subjected to emergent laparotomy to remove the object and prevent perforation. This approach is no longer recommended with the advent of endoscopic and laparoscopic techniques. In this report, we present a 76years old male who presented a metallic foreign body that silently perforated through bowel and got lodged in the peritoneal lining of the anterior abdominal wall. We also review the published literature around this subject.

Keywords: Foreign Body Ingestion; Laparoscopic Foreign Body Extraction; Silent Small Bowel Perforation; Delayed FB Perforation; Foreign Body Migration

Introduction

Ingested foreign bodies (FBs) are frequently encountered in daily clinical practice. Commonly ingested materials include metal objects such as pins and wires; chicken or fish bones; wooden splinters, buttons; and batteries. The majority of these FBs do not cause symptoms and pass quickly without incident; however, 1% will cause perforation. The incidence of FBs requiring operative removal varies from 1% to 14% [1].

Unless there are concerning features or clinical signs such as abdominal pain, patients are often observed by means of repeated clinical examinations and plain abdominal radiographs [2,3]. Endoscopic or surgical interventions may also be performed to facilitate removal. The laparoscopic approach is particularly advantageous in situations such as obstruction, bleeding, or perforation [1-3]. We presented a delayed presentation of an accidentally ingested wire fragment that had perforated the bowel and migrated to the peritoneal lining of the anterior abdominal wall, requiring laparoscopic removal.

Case Presentation

A seventy-six-year-old male presented to the emergency department with a history of right-sided abdominal pain that had persisted for several months. It was intermittent, but in the two days preceding, it had reached a crescendo and became constant and relentless. There were no other associated abdominal symptoms such as altered bowel habits, bleeding, weight loss, or dyspepsia. There were no urinary symptoms. The patient had been otherwise well, with no systemic features of illness or features suspicious of malignancy. He had a significant history of ischemic heart disease and mild renal impairment. Significantly prior to this, he had been on holiday in Australia, where he had several barbecue parties. As far as he remembers, he does not recall ingesting a foreign body, nor did he feel unwell in any way until the symptoms above started a few weeks after his return.

The patient was clinically stable and afebrile; however, examination revealed tenderness in the periumbilical region of the abdomen, particularly to the right of the umbilicus. There were no

palpable masses at that region, and his hernial orifices were intact. The overlying skin was completely normal and healthy-looking. His abdomen was soft otherwise, with no evidence of peritonitis.

Investigations

Laboratory

WCC: $5 \times 10^9/L$ (4-10)

CRP: 26mg/L (<5)

Renal function mildly impaired

Liver function normal

Amylase Normal.

Radiology

An abdomen-pelvis CT scan revealed a linear structure deep to the musculature of the right anterior abdominal wall, with mild fat stranding (Figure 1). This structure could be consistent with a history of penetrating injury or may represent an ingested foreign body such as a chicken or fishbone, which previously perforated through the bowel wall, although there was no evidence of recent perforation

Figure 1: Sagittal and axial slice of CT Abdomen showing the foreign body breaching the posterior abdominal wall.

Differential diagnosis

Given his age and the chronicity of the pain, along with mildly raised inflammatory markers, bowel pathology such as right-sided diverticulitis, diverticulosis, inflammatory bowel disease, and right colonic cancer are differentials. There was no known history of foreign body ingestion or penetrating injury, so this was not initially expected.

Treatment

The patient was admitted, and a trial of expectant non-operative management commenced. He was started on intravenous antibiotics and managed expectantly. Unfortunately, he remained symptomatic and so a decision was made the following day to perform a diagnostic laparoscopy in the first instance, with possible conversion to mini-laparotomy.

During the laparoscopy, it was noted that the omentum in the right upper quadrant appeared inflamed and tethered to the anterior abdominal wall; the same site of tenderness (Figure 2). It was dissected free and released. And, on further inspection, there was a small wire fragment that appeared to be embedded in the posterior abdominal wall. This 20mm fragment of metal wire was retrieved with the endodissector (Figure 3). The abdomen was thoroughly inspected. There was no other peritoneal inflammation, abscess, or intestinal injury or inflammation evident. After removal of the fragment, the bowel was again, thoroughly inspected, and there was no evidence of perforation. The procedure was uneventful, and the patient was discharged home the following day.

Figure 2: Screenshots captured during laparoscopy showing the inflammation of the omentum adjacent to the foreign body.

Figure 3: The wire fragment, during laparoscopic retrieval.

Outcome and follow-up

The 20 mm metal wire fragment appeared to be a part of a steel wire brush used to clean barbecues. As it transpires, the patient had been overseas in Australia some months prior and so probably ingested the particle unknowingly. The patient was discharged home the following day. At clinic follow up two weeks later, his symptoms had entirely resolved, and he was pain-free.

Discussion

In the majority of cases, ingested foreign bodies will become encased within a food bolus and pass safely through the alimentary canal [4]. As such, the majority of cases are suitable for a watchful waiting approach, with serial imaging to ensure the foreign body has passed. Approximately 20% of cases require endoscopic intervention, while less than 1% of cases require surgical intervention, usually due to complications [5]. The site of perforation is often at an angle in the GI tract, or at a narrow lumen. For this reason, the ileocaecal valve is the most common site for foreign body perforation of the bowel. Other common areas include the lower oesophageal sphincter, pylorus, duodenal curve, ligament of Treitz, and rectosigmoid junction.

Abdominal FBs don't usually come to clinical attention unless they cause a complication. As there are no pathognomonic symptoms, the diagnosis will remain challenging. Perforating foreign bodies may present in a wide variety of ways, from completely asymptomatic to intraabdominal sepsis. Depending on the site of perforation, they may mimic other more common conditions such as diverticulitis or appendicitis. The risk of a complication caused

by a sharp-pointed object, such as with our patient, is as high as 35% [4]. In this case, the patient was unaware of any foreign body ingestion. The lack of an accurate history may lead to an incorrect or delayed diagnosis, highlighting the critical role of radiological imaging. Plain film radiography can often be of limited value as radiopaque objects may be concealed by fluid or soft tissue, as described by Coulier, *et al.* [6]. CT is the imaging modality of choice, as there is no risk of aspiration as with barium swallow, and avoids the risk associated with invasive procedures as with endoscopy and has been shown to have a sensitivity of 100% and specificity of 91% [7].

Conclusion

After breaching the lumen of the gastrointestinal tract, the chance of a foreign body passing through the anus is unlikely, and removal can only be achieved by surgical means. The presence of clinical symptoms, such as pain, fever, or bloody stools, requires early operative intervention to eliminate the risk of further complications [1-4].

Laparoscopy is suitable for the removal of foreign bodies that perforated the gastrointestinal tract and are in the peritoneal cavity. It has the advantages of avoidance of laparotomy, reduced morbidity, reduced postoperative pain, and rapid recovery and discharge [2].

Learning Points/Take Home Messages

- Patients can sometimes be unaware of the foreign body ingestion, and there is no pathognomonic symptom to suggest ingestion.
- CT is the imaging modality of choice in these cases
- Laparoscopy is an appropriate management strategy if patients are symptomatic.

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