CASE REPORT

Obstruction and perforation of the small bowel caused by inadvertent ingestion of a blister pill pack in an elderly patient

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SUMMARY

Perforation of the small bowel due to foreign body ingestion is a rare instance that occurs in less than 1% of all ingestions. Although rare, ingestion of blister pill packaging is becoming more recognised as a causative agent for intestinal perforation, but is very rarely reported to cause intestinal obstruction. This is a report of a 66-year-old woman who presented with intestinal obstruction and underwent laparotomy, revealing small bowel perforation by a piece of blister pill pack foil. The patient was incognisant of the ingestion.

BACKGROUND

Ingestion of foreign bodies is commonly seen in emergency departments, and is usually in children, the elderly, the mentally impaired, alcoholics, prisoners and psychiatric patients. Perforation of small bowel due to foreign body ingestion remains as low as 1%, even with sharp objects.¹ About 80–90% of ingested foreign bodies pass through the gastrointestinal (GI) tract without complication leaving only 10–20% that fail to progress.² Dentures and small orthodontic appliances account for 73% of sharp objects accidentally ingested by adults. Other common sharp objects include sewing needles, tooth picks, chicken and fish bones, straightened paper clips and razor blades.³ Ingestion of a blister pill pack is unusual, but its sharp and pointed edges make perforation a possible complication. Sharp, thin, stiff, pointed or long foreign bodies are more prone to cause perforation due to direct penetration, as well as due to arrest within the lumen, initiating necrosis of the bowel wall.⁴ Arrest tends to occur in areas of anatomical narrowing such as the duodenal loop, duodenojejunal junction, ileocaecal junction, or the appendix, but can also occur in areas of acquired narrowing due to strictures or adhesions.⁵ Morbidity and mortality of foreign body ingestion is variable, and depends on patient population, nature of the object, and management modality.

CASE PRESENTATION

A 66-year-old woman presented to the emergency department with severe, colicky abdominal pain and bloating of 1-week duration. The pain was initially localised to the epigastrium, then spread diffusely and was associated with nausea and absent bowel movement for 3–4 days prior to presentation. There was no vomiting, diarrhoea or fever. The patient denied any history of foreign body

ingestion or previous similar symptoms. Medical history was irrelevant. Surgical history consisted of cholecystectomy, total abdominal hysterectomy with bilateral salpingo-oophorectomy, and hernia repair.

On examination, the patient was in painful distress. Vital signs revealed tachycardia at 120 bpm, fever at 38.5°C, with a blood pressure of 136/74 mm Hg and respiratory rate of 19 breaths/min. Abdominal examination revealed distension, mild, diffuse tenderness, tympany and normal bowel sounds without peritoneal signs. Laboratory investigations included complete blood count, basic metabolic panel and basic GI panels and were normal. Three-view plain abdominal X-rays were performed, revealing large air/fluid levels and prominent dilated loops of small bowel likely representing high-grade distal small bowel obstruction (figure 1). CT of the abdomen and pelvis with oral contrast was performed, revealing dilated small bowel loops with collapse of the distal ileum and colon, and a transition point at the mid-to-distal ileal level within the right lower quadrant (figure 2).

The patient was provisionally diagnosed with small bowel obstruction and admitted for conservative management. Surgical consultation was obtained the next day and examination revealed worsening abdominal pain, diffuse rebound

Figure 1 Plain X-ray of the abdomen (erect) showing multiple air/fluid levels.

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Figure 2 CT of the abdomen (axial view) showing distended small bowel (white arrow), luminal narrowing of the small bowel (red arrow) corresponding to transition zone, and fat stranding (yellow arrow).

tenderness and no clinical improvement. The decision was made to perform an exploratory laparotomy. Bowel inspection revealed adherence of a portion of the terminal ileum to the sigmoid mesentery. Dissection revealed a 1 cm sealed ileal perforation surrounded by abscess formation approximately 25 cm proximal to the ileocaecal junction. Approximately 20 cm of small bowel was resected. Examination of the resected segment revealed a small, sharp, angled portion of foil, apparently from a blister pill pack, which perforated the ileum (figures 3 and 4). Repair of the remaining bowel was carried out by side-to-side anastomosis. On revision of the CT scan images postoperatively, the piece of foil initially missed on CT was identified (figures 5 and 6). The postoperative course was uneventful. Histopathological examination of the resected segment did not reveal additional findings. The patient was discharged on postoperative day 12, is doing well, and continues to follow-up on an outpatient basis.

Figure 3 Resected segment of small bowel showing obstructed portion with pus formation, piece of a blister pill pack (white arrow) and perforation (green arrow).

DISCUSSION

Foreign body ingestion is a fairly common incident that usually occurs accidentally in children (80%), the elderly, the mentally impaired, or in alcoholics, and intentionally in prisoners and psychiatric patients.⁶ Dentures and small orthodontic appliances (73%) account for the majority of accidental sharp object ingestions in normal adults. Other common sharp objects include sewing needles, tooth picks, chicken and fish bones, straightened paper clips and razor blades.^{3–6} About 80–90% of ingested foreign bodies spontaneously pass through the GI tract without causing complications.² Of the remaining 10–20% that do have complications, less than 1% cause intestinal perforation.¹

Complications usually occur with sharp, thin, stiff, pointed and long ingested objects due to arrested movement that initiates necrosis of the bowel wall.⁴ Patients may present with perforation, obstruction, bleeding, peritonitis, localised abscess formation, inflammatory masses or sepsis.^{7–8} Arrest tends to occur in areas of anatomical narrowing such as the duodenal loop, duodenojejunal junction, ileocaecal junction, or the appendix, but can also occur in areas of acquired narrowing due to strictures or adhesions.⁵

Accidental ingestion of blister pill packs most frequently occurs in the elderly population due to a culmination of many risk factors including poor vision, the presence of dentures and polypharmacy.⁹ Potentially, lack of normal palatal and gingival sensation plays an important role in accidental ingestion.¹⁰ Unfortunately, blister pill packs usually have sharp, rigid edges that constitute high-risk objects. Blister pill packs have been known to be causative agents of GI perforation.¹¹ A review of the literature on GI perforation caused by unnoticed swallowing of blister packs was recently published. Using a PubMed database search for their results, this review revealed 17 reported cases of perforations since 1988; 12 to the ileum, 3 to the oesophagus, 1 to the stomach and 1 to the duodenum.¹¹ Most of these cases were in elderly patients. At the time of writing this report, we were able to identify an additional case of ileal

Figure 4 Close-up of resected segment of small bowel showing perforation (green arrow) and piece of blister pill pack (white arrow).

Figure 5 CT of the abdomen and pelvis (sagittal view) showing piece of blister pill pack foil in the small intestine (red arrow).

perforation reported by Chiu *et al.*¹² All reported cases of ileal perforations caused by blister packs were not associated with intestinal obstruction, except for one case by Coulier *et al.*,⁹ where obstruction preceded perforation. Tai and Sodickson¹³ reported a case of intestinal obstruction without perforation,

Figure 6 CT of the abdomen and pelvis (coronal view) showing piece of blister pill pack foil in the small intestine (red arrow).

caused by ingestion of a blister pill pack. Perforation of intestinal structures by ingested foreign bodies is a challenging diagnosis. Blister pill packs are typically radiolucent on plain radiographs but may potentially be seen on CT scans of the chest and abdomen.⁹ A high index of suspicion for perforation should be maintained. Clinical history and careful physical examination must be combined with radiological studies to identify foreign bodies and diagnose complications. It must be remembered that the definite diagnosis of perforated intestinal structures by ingested foreign bodies is optimally achieved by using multidetector CT with demonstration of the responsible foreign body and its nature through the possibilities of high-quality multiplanar three-dimensional reconstructions and maximum intensity projection.^{14 15}

Learning points

- ▶ Ingestion of blister pill packaging is a very rare cause of intestinal obstruction.
- ▶ Ingestion of blister pill packaging presents significant potential for perforation due to its sharp edges. Perforations may be initially sealed-off and may create complications by obstruction.
- ▶ Elderly patients are often not cognisant of ingestion due to a number of confounding factors.
- ▶ Blister pill packaging is typically radiolucent, but may potentially be detected on CT scan.
- ▶ Ingestion of foreign bodies, including blister pill packaging, should be considered in patients who present with intestinal perforation or obstruction despite lacking history of foreign body ingestion, especially among the elderly.

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