CASE REPORT

Multiple intestinal perforations due to blister pill pack ingestion

Francesc Simo Alari, Israel Gutierrez

Chirurgie gynécologique et
viscérale, Centre hospitalier du
val d'Ariège, Pamiers, France

Correspondence to
Francesc Simo Alari,
f.simo.alari@gmail.com

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SUMMARY

A 72-year-old woman with morbid obesity and history of psychosis attended the emergency room due to abdominal pain. CT scan revealed a mesenteric infiltration surrounding a thickened wall bowel agglomeration; inside, a dense 2 cm foreign body with no pneumoperitoneum or peritoneal effusion. Surgery revealed four contained bowel perforations due to a blister pill pack inside the ileum; consequently, a 30 cm bowel resection was performed. Ingestion was restarted on day 2, a superficial wound infection was evacuated on day 4 and the patient was discharged 6 days after surgery. Foreign body ingestion is relatively common in paediatric patients. Adult cases are usually related to vision problems, intellectual disability and psychiatric or cognitive disorders. Mostly, no consequences are reported, but some cases (<1%) can lead to complications such as perforations or gastrointestinal (GI) bleeding. Endoscopic extraction may be considered when placed in the upper GI tract, but surgery remains imperative if perforation is established.

BACKGROUND

Our case highlights the principle that clinical exploration and the patient's clinical status may not match imaging tests. Special care needs to be provided considering that sometimes diagnosis from clinical suspicion can prevail over complementary tests.

In our patient's case, the CT scan revealed no pneumoperitoneum or peritoneal effusion. Surgery was indicated due to high clinical suspicion, emphasising on the difficulty of exploring a patient with morbid obesity (body mass index (BMI) 46 kg/m²). A prompt surgery demonstrated several perforations not previously visualised on the CT scan which were surgically repaired. This prevented potential major complications and lead to a fast recovery and rapid discharge.

Most foreign body (FB) ingestion cases have no reported consequences and surgery is only indicated in cases where a perforation is demonstrated.

Emergency physicians and surgeons must decide whether or not to perform immediate surgery versus conservative management in the case of FB ingestion, especially when there is no evidence of bowel perforation on the CT scan.

The principle 'You operate patients, not images' reaches its highest meaning in cases like ours.

CASE PRESENTATION

A 72-year-old woman attended the ER after spending 15 days with a constant diffuse abdominal pain with no irradiation, that had intensified in the last 48 hours with vomiting but no haematemesis. She presented a medical history of morbid obesity (BMI 46 kg/m²), hypertension, dyslipidaemia, chronic obstructive pulmonary disease and a maniac-depressive psychosis under treatment with mirtazapine. She had undergone appendectomy during her adolescence and had bilateral hip prosthesis surgery.

Abdominal examination showed distension, guarding and diffuse tenderness which was more pronounced in the right lower quadrant. Laboratory blood test showed a high white cell count of $20\,000 \times 10^9/L$, C reactive protein 80 mg/L and prothrombine time 56%. Additionally, an abdominopelvic CT scan with intravenous but no oral contrast revealed an important mesenteric infiltration surrounding a bowel agglomeration with thickened walls; inside one of them, a dense 2 cm long quadrangular image evoking an FB (figures 1 and 2) with no pneumoperitoneum nor peritoneal effusion.

A prompt surgery revealed an 8 m bowel tract with four contained 5 mm bowel perforations through a 30 cm path in the ileum, the most distal one located 1 m proximal to the ileocaecal valve. No Meckel's diverticulum was identified. Bowel resection with an end-to-end hand-sewn anastomosis with absorbable stitches was performed. No intraperitoneal drain was placed.

When examining the resected bowel, a sharp-edged plastic FB (figure 3) was identified, compatible with an Atarax blister pill pack foil (hydroxyzine dihydrochloride).

Ingestion was restarted on day 2 with good tolerance. The only reported complication was a superficial wound infection that was evacuated and cultured on day 4 (*Escherichia coli* with no antibiotic resistance) presenting good evolution. The patient was dismissed on day 6 after surgery.

DIFFERENTIAL DIAGNOSIS

Acute gastritis or pancreatitis, appendicitis, inflammatory bowel disease, intra-abdominal abscess, upper or lower gastrointestinal (GI) bleeding.

OUTCOME AND FOLLOW-UP

No complications were registered in the following control in the outpatient area 15 days after surgery.

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Figure 1 Angled coronal CT scan reconstruction showing a hyperdense 2 cm long quadrangular image inside the bowel lumen.

DISCUSSION

FB ingestion is a relatively common problem in the ER in paediatric patients due to inadvertent ingestion. When present in adults, it is usually related to vision problems, intellectual disability or cognitive disorders. Intentional ingestion is usually seen in patients with psychiatric disorders, suicide attempts or in penitentiary population who are trying to temporarily abandon their confinement.¹

The most common FBs accidentally ingested are dental prosthetics or orthodontic pieces. Other common sharp objects, such as paperclips, fish bones, toothpicks or sewing needles, can usually be seen in the ER. The vast majority of cases (80%–90%) are evacuated through the digestive tract with no remarkable consequences. Few cases (<1%) can lead to associated complications such as perforations or GI bleeding.^{1,2} When a FB perforation occurs, it is due to a gradual erosion of the bowel wall, so large pneumoperitoneum is unlikely to be seen.³ Patients may consult the ER with a diffuse abdominal pain, GI bleeding,

Figure 2 Transverse CT scan showing the presence of a foreign body inside the bowel lumen with no pneumoperitoneum (arrow).

Figure 3 Foreign body (drug blister pack) after surgical extraction.

intestinal obstruction, intra-abdominal inflammatory mass or sepsis and acute peritonitis depending on the evolution.⁴

Blister pill packs, widely used by pharmaceutical companies, are usually presented in a plastic shell enclosed by an aluminium sheet. Once divided, individual portions have sharp rigid edges that constitute a risk object if swallowed. They have been described as causative agents of digestive perforations, especially in areas of anatomical narrowing such as the oesophagus, duodenojejunal junction, ileocaecal valve and Meckel's diverticulum as well as in areas with acquired stenosis due to strictures, fibrosis or adhesions.^{5,6}

Blister pack imaging is very characteristic and typically radiopaque due to the aluminium foil behind the vinyl chloride plastic support, a thin air rim surrounding the tablet or pill that it contains. They can be visible through simple X-rays and on the CT scan. Nevertheless, some cases can be challenging due to their flat shape, that can be difficult to identify depending on its orientation. A CT scan is shown to be superior to sonography or a plain X-ray when identifying metallic, gas or calcic content of a FB.⁷ They appear as a very dense opacity with an oval gas cap,⁸ but in morbidly obese or bedridden patients, the images can be easily masked due to the large amount of soft tissue. An 'in vitro' experiment done by Coulier *et al*⁹ after scanning blister packs inside ultrasound transmission gel showed that the pill density could be extremely variable, in some cases even radiolucent. A high index of suspicion should

Learning points

- ▶ Foreign body (FB) ingestion is a relatively common problem in paediatric and elderly patients, usually related to cognitive or visual disorders.
- ▶ Accidental ingestion still remains the major cause of FB ingestion, so many patients will not remember the incident.
- ▶ One per cent of cases can lead to complications such as perforation or gastrointestinal (GI) bleeding.
- ▶ Endoscopic extraction may be considered when an FB is located in the upper GI tract.
- ▶ FFB perforation can lead to peritonitis and septicaemia which can be related to an associated increased morbidity and mortality, being surgery imperative.

be maintained as well as adequate communication to orientate the radiologist, which can be very helpful when identifying images that can otherwise go easily unnoticed.

Endoscopic extraction may be considered when they are found in the upper GI tract, and surgery will remain imperative when perforation occurs.¹⁰ A complete clinical history is crucial when a high index of suspicion over true accidental ingestion of an FB is present, being this the main focus point when dealing with these cases.

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REFERENCES

- Goh BK, Chow PK, Quah HM, *et al.* Perforation of the gastrointestinal tract secondary to ingestion of foreign bodies. *World J Surg* 2006;30:372–7.
- McPherson RC, Karlan M, Williams RD. Foreign body perforation of the intestinal tract. *Am J Surg* 1957;94:564–6.
- McCanse DE, Kurchin A, Hinshaw JR, *et al.* Gastrointestinal foreign bodies. *Am J Surg* 1981;142:335–7.
- Pinero Madrona A, Fernández Hernández JA, Carrasco Prats M, *et al.* Intestinal perforation by foreign bodies. *Eur J Surg* 2000;166:307–9.
- Brinster CJ, Singhal S, Lee L, *et al.* Evolving options in the management of esophageal perforation. *Ann Thorac Surg* 2004;77:1475–83.
- Digoy GP. Diagnosis and management of upper aerodigestive tract foreign bodies. *Otolaryngol Clin North Am* 2008;41:485–96.
- Coulier B. [Diagnostic ultrasonography of perforating foreign bodies of the digestive tract]. *J Belge Radiol* 1997;80:1–5.
- Coulier B, Tancredi MH, Ramboux A. Spiral CT and multidetector-row CT diagnosis of perforation of the small intestine caused by ingested foreign bodies. *Eur Radiol* 2004;14:1918–25.
- Coulier B, Rubay R, Van den Broeck S, *et al.* Perforation of the gastrointestinal tract caused by inadvertent ingestion of blister pill packs: report of two cases diagnosed by MDCT with emphasis on maximal intensity and volume rendering reformations. *Abdom Imaging* 2014;166:685–93.
- Domen H, Ohara M, Noguchi M, *et al.* Inadvertent ingestion of a press-through package causing perforation of the small intestine within an incisional hernia and panperitonitis. *Case Rep Gastroenterol* 2011;5:391–5.

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