



Intraperitoneal foreign body following repeated self-mutilation: a case report

Hamzah Sukiman^{1^}, Mat Salleh Sarif^d, Intan Bazilah Abu Bakar²

¹Department of Surgery, International Islamic University Malaysia, Kuantan, Malaysia; ²Department of Radiology, International Islamic University Malaysia, Kuantan, Malaysia

Contributions: (I) Conception and design: H Sukiman; (II) Administrative support: MS Sarif, IBA Bakar; (III) Provision of study materials or patients: H Sukiman, MS Sarif; (IV) Collection and assembly of data: H Sukiman, IBA Bakar; (V) Data analysis and interpretation: None; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Hamzah Sukiman, MBBS. Department of Surgery, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, 25200 Kuantan, Malaysia. Email: hamzahsukiman@iiu.edu.my.

Background: A foreign body found incidentally on abdominal X-ray is commonly secondary to ingestion, either intentional or accidental. It can also lodge within the peritoneal cavity following a definite history of an incident of penetrating injury to the abdomen by a sharp penetrating object. It is a rare instance where a blunt object penetrates the abdominal wall following chronic, repeated self-inflicted trauma to the umbilicus.

Case Description: We report a case of a young man with a history of repeated habitual self-mutilation to his umbilicus using a blunt object, with no intention of self-harm. This led to the lodgment of the object within the peritoneal cavity. An initial diagnostic challenge arose due to the absence of abdominal symptom as well as physical sign of injury on the abdomen. Computed tomography (CT) scan was unable to distinguish between intra- *vs.* extra-luminal location of the object, due to the presence of significant artifacts. The exact location of the object was successfully determined by laparoscopic examination. The patient was treated by laparoscopic extraction of the foreign body. He was discharged well following surgery.

Conclusions: Laparoscopic surgery is invaluable in the diagnosis and management of intraperitoneal foreign object whose location cannot be ascertained by CT scan.

Keywords: Case report; intraperitoneal foreign body; laparoscopic examination and extraction; penetrating injury; self-mutilation

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Introduction

Chronic self-mutilation resulting in penetrating injury by a blunt object is rare. Stable patients presenting with a foreign body seen on radiograph are likely to be misdiagnosed as having ingested the foreign body. They are mostly managed conservatively until spontaneous passage of the object. Computed tomography (CT) scan may have difficulty distinguishing an intraluminal object from an extraluminal one, due to the presence of streak artifacts. Laparoscopy

can confirm the object's location, as well as safely extract the foreign body. We present this article in accordance with the CARE reporting checklist (available at <https://ls.amegroups.com/article/view/10.21037/ls-24-14/rc>).

Case presentation

A 17-year-old boy presented with a 3-month history of persistent back and hip pain, following an episode of fall at

[^] ORCID: 0009-0004-3609-2522.

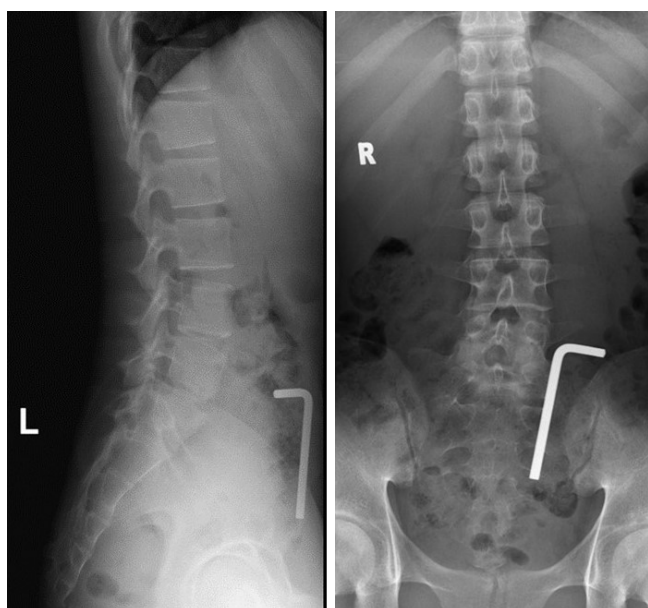


Figure 1 Initial anteroposterior and lateral lumbosacral radiographs showing a radio-opaque L-shaped foreign body on the left side of the abdomen.

school. An abdominal radiograph, ordered by his general practitioner, revealed a radiopaque L-shaped foreign body in the left lower quadrant of the abdomen (*Figure 1*).

The history was revisited, and the patient denied having either ingested or inserted the foreign body through his anus. He confessed to having multiple episodes of minor self-harm during the preceding six months, in large part due to stress from his studies, whereby he used an Allen key to poke rather forcefully on his umbilicus. On one of those occasions, the key was irretrievably lodged inside his



Figure 2 Contrast-enhanced computed tomography abdomen in axial and coronal views showing a dense L-shape metallic foreign body at the right side of abdomen casting streak artifact.

abdomen through the umbilicus. He kept this history from his parents as he did not experience any abdominal pain. He has no prior psychiatric or surgical history.

Physical examination revealed a scaphoid abdomen with no visible external injury or scar at or around the umbilicus. There was no peritonitis, and his blood results were normal.

There was initial skepticism regarding this piece of history, and a CT of the abdomen was arranged. It showed an L-shaped hyperdensity with streak artifact at the right side of the abdomen. The foreign object was suspected to be within the hepatic flexure (*Figure 2*).

Due to the suspicion that the foreign body had lodged in the colon, a colonoscopy was performed, which found no foreign body within the colonic lumen.

He subsequently underwent a diagnostic laparoscopy. Initial attempts to insert a port through an infraumbilical incision proved difficult due to extensive scarring noted at the umbilicus with obliteration of the cicatrix.

Highlight box

Key findings

- Repeated, self-inflicted blunt trauma to the abdominal wall can cause penetrating injury and lodgement of foreign body in the peritoneal cavity.

What is known and what is new?

- A foreign body found on x-ray in an asymptomatic patient with no sign of abdominal trauma raises suspicion of ingestion.
- Penetrating injury must be considered in cases of self-mutilation.

What is the implication, and what should change now?

- Laparoscopic examination is a valid treatment option, especially in cases where imaging findings are equivocal.

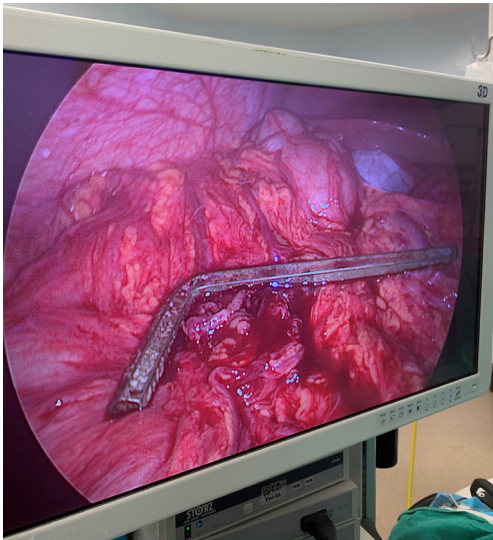


Figure 3 Laparoscopic view showing the Allen key lying within the peritoneal cavity, wrapped by omentum. Image showing the key after omentum has been dissected off.



Figure 4 The Allen key after laparoscopic extraction.

Pneumoperitoneum was created using a Veress needle instead. A metallic foreign body (an Allen key) was found lying free in the peritoneal cavity, covered by the greater omentum (*Figures 3,4*). The key was removed laparoscopically, and additional inspection of the surrounding viscera revealed no abnormalities or injuries.

The postsurgical period was uneventful, and he completed a 5-day course of IV cefoperazone and metronidazole. He was discharged well on the second day. His parents and he were satisfied with the manner his problem was resolved. He was well with no active complaints on subsequent follow-up visit 1 month post-discharge.

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient's legal guardian for publication of this case report and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

Discussion

Intentional self-harm by inflicting penetrating injury to the abdomen is commonly reported among those with suicidal intent. They are predominantly seen among the

incarcerated as well as those with psychotic or personality disorders (1). The presentation is acute, with a concordant history of self-harm and physical findings of stab wounds. Diagnosis is not a challenge, and the patient typically undergoes urgent laparotomy.

Cases of chronic, repeated self-mutilation leading to penetrating injury to the abdomen are rare. Paulino reported a case involving an inmate with a personality disorder who hanged himself in his prison cells (2). There were multiple scars of various stages of healing on his abdomen. An autopsy revealed four metallic foreign objects lodged in his liver and paraduodenal region. Another more recent case involved a psychiatric patient who presented 3 months following an episode of attempted suicide by stab wound to his lower abdomen (3). He underwent laparotomy to remove the foreign body. These two cases are similar in that they demonstrate a clear suicidal intent in a psychiatric patient. They also have an obvious physical sign of abdominal injury in the form of stab wounds.

Self-mutilation, however, can also occur without a conscious suicidal intent. As in this boy's case, it seemed to have become a behavioral habit that may have first arisen due to stress, experimentation or reckless behavior. Such repeated episodes of trauma to the umbilicus over months has likely caused enough tissue damage to the umbilical cicatrix and created a small perforation, through which the object passed. Such perforation is small enough to have

subsequently healed with no visible external scar.

When a stable patient presents with a foreign body seen on radiograph with no physical sign on the abdomen, the route is most commonly by ingestion, either accidental or intentional. Although ingested objects typically pass unimpeded within a few days, about 1% of foreign bodies can cause impalement injury and lead to perforation anywhere along the gastrointestinal tract (4). Patients typically present with peritonitis, and diagnosis is confirmed by CT scan or during operation. Additionally, insertion of foreign bodies into other body orifices such as the anus, urethra and vagina are also common and widely reported among psychiatric patients (5).

In this case, diagnosis is a challenge, as foreign body ingestion is a far more plausible explanation than penetrating abdominal injury in an asymptomatic boy with no clinical findings on the abdomen. If ingestion is suspected, then either an upper gastrointestinal endoscopy or colonoscopy is warranted (6). A CT scan of the abdomen was arranged due to the uncertainty of the site of the foreign body. However, streak artifacts cast by the foreign body made it difficult to ascertain the exact location of the object, whether it is intraluminal or extraluminal.

Conclusions

Laparoscopic examination and extraction is a safe and effective alternative to open surgery for foreign bodies that lie freely in the peritoneal cavity. It enables a complete visualization of the whole abdomen and examination of its contents. For narrow-caliber objects such as an Allen key, a 5-mm laparoscopic port is adequate for extraction. Laparoscopic surgery also spares the patient from the pain from a large incision of a full laparotomy, with its resultant complications such as opioid overuse, pulmonary complications, and delayed return to work and normal activities (7).

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Footnote

Reporting Checklist: The authors have completed the CARE reporting checklist. Available at <https://ls.amegroups.com/>

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient's legal guardian for publication of this case report and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

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