

Complete intraluminal Parietex™ mesh erosion and migration resulting in small bowel obstruction

A 78-year-old gentleman presented to the emergency department with 1 day history of paraumbilical pain, associated with obstipation. He underwent a Hartmann's procedure for an obstructing sigmoid cancer in 2010, followed by reversal of colostomy and closure of stoma site with intraperitoneal Parietex™ composite mesh 6 months later. The patient had been admitted 3 months earlier with similar abdominal pain, associated with per rectal bleeding. A computed tomography (CT) scan (Fig. 1a) at the

time showed a possible mesh material in close proximity with small bowel loops, which is thought to be extraluminal in location. There was no evidence of complicating features from the foreign body. The haemoglobin was 120 g/L and the bleeding self-ceased without active intervention. He was discharged with a plan for out-patient colonoscopy to further investigate the bleeding.

On clinical examination at re-presentation, the abdomen was mildly distended with tender right iliac fossa without peritonism.

Fig 1. Computed tomography scans demonstrating mesh migration in 3-month interval (a) with picture (b) confirming its intraluminal position causing enteritis and small bowel obstruction.

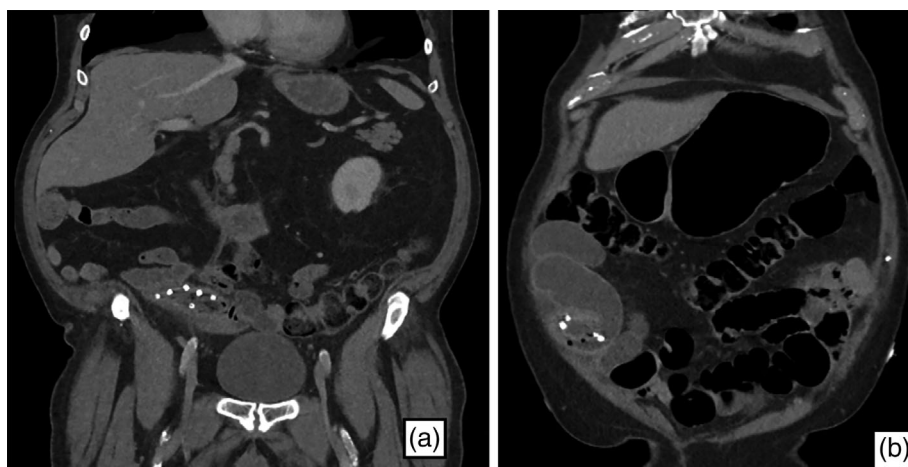
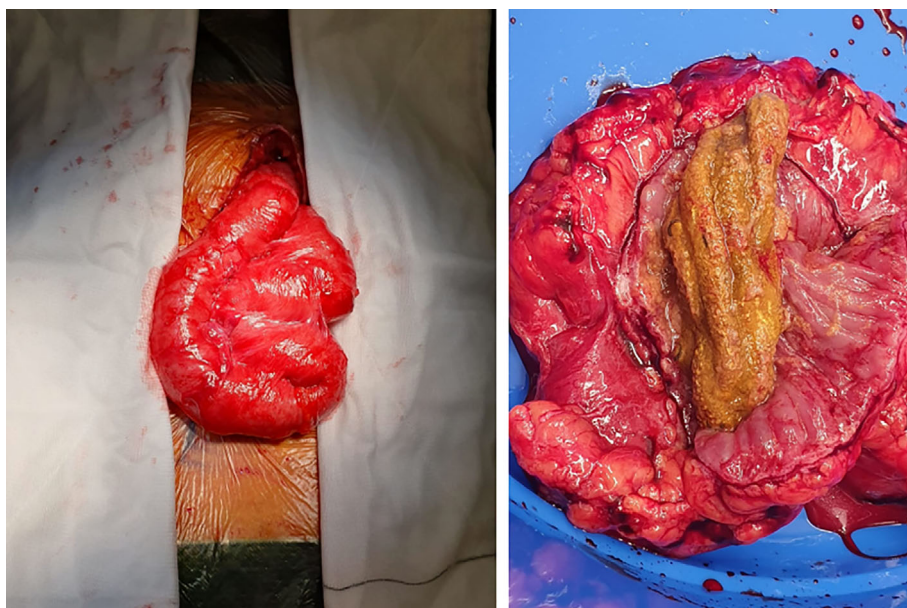


Fig 2. Intraoperative photographs of small bowel loops and cut specimen showing dense interloop adhesions and a mesh in situ.



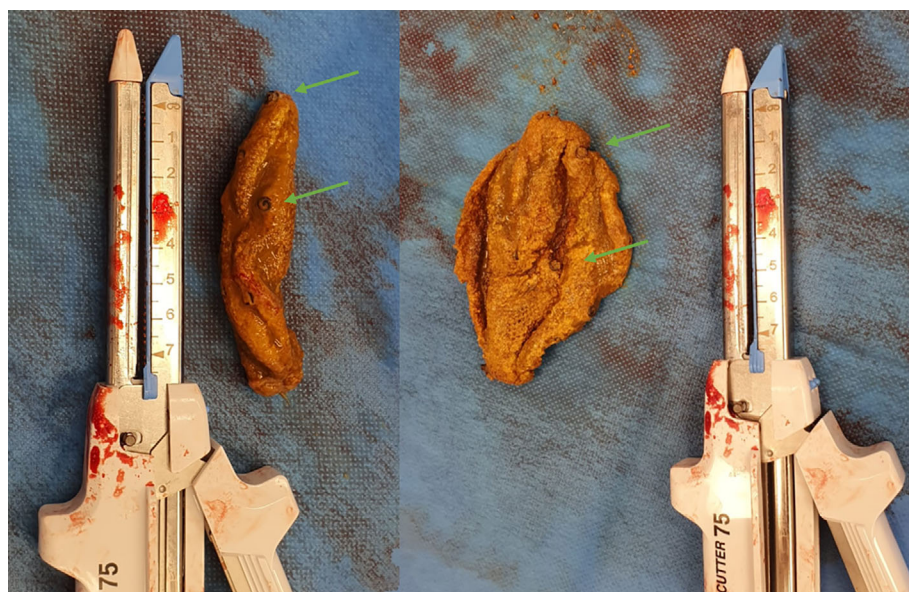


Fig 3. Closer inspection of the mesh with Stat Tacks (arrows) measuring 7 cm in length.

The vitals were within the normal range. The laboratory work-up showed normal white cell count ($7.4 \times 10^9/L$) and lactate (1.3 mmol/L) with unremarkable electrolytes. A CT scan (Fig. 1b) was suggestive of an uncomplicated small bowel obstruction (SBO). On closer scrutiny, a serious concern was raised for intraluminal migration of mesh material with titanium tacks within the distended loops of small bowel.

After adequate resuscitation and decompression of SBO with nasogastric tube, the patient underwent an exploratory laparotomy. Extensive adhesiolysis was performed to mobilise the entire small bowel from duodenojejunal flexure (DJ) flexure to terminal ileum. A palpable mass was identified in the distal ileum within 40 cm of the inflamed and distended small bowel loops with dense adhesions (Fig. 2), all of which were resected en bloc due to the concern about a possible underlying fistula. The remaining small bowel was examined to be healthy, and its continuity was restored with linear cutting stapler. A 7 cm rolled-up Parietex™ (Medtronic) mesh with Stat Tacks™ (Medtronic) (Fig. 3) was found on the cut specimen without macroscopic evidence of fistula, perforation or abscess cavity. The patient had an uneventful post-operative recovery.

In recent advancement in surgery, surgical mesh products have gained popularity and have been extensively used in the treatment of hernia repair due to its well-established benefit of reducing recurrence. Although mesh erosion into visceral organs is a known complication, it is rare with only a handful of case reports published in literature, where the majority of cases have occurred following rectopexy and trans-abdominal pre-peritoneal repair with non-absorbable mesh, involving large bowel and bladder.^{1,2} To our knowledge, this is the first case report of a complete mesh erosion into the small bowel lumen with subsequent migration causing SBO.

Although colonoscopic removal has been reported in case of complete erosion into the large bowel,³ this was not possible in this patient due to its extraordinary location in distal ileum. Consequently, laparotomy was pursued as it allowed both removal of foreign body and inspection of the remaining small bowel loops. If the

intraluminal position of the mesh material was confirmed earlier by authors and reporting radiologist with a repeat CT scan with oral contrast, the definitive intervention could have been implemented earlier, avoiding SBO. CT is useful in defining the location of mesh, involved organs and extent of complications such as perforation and abscess,³ but it is worth noting the pitfalls of CT identifying intraluminal versus extraluminal location of a foreign body in the absence of oral contrast.

This case highlights the importance of careful history-taking with detailed review of previous operation reports and a high index of suspicion of a rare but morbid complication of mesh erosion and migration following hernia repair, particularly in high-risk patients with peritoneal breach, inadequate fixation and infection of the mesh following surgery. Those risk factors lead to direct contact between mesh and intra-abdominal organs, resulting in a slow process of foreign body reaction with dense adhesion and fibrosis formation. This eventually leads to fistulation and erosion of the mesh.^{3,4} In this particular case, it is peculiar how the complete erosion and migration of mesh occurred without any abdominal symptoms until recent presentations. When faced with a complete erosion and migration of mesh into small bowel, we recommend an early surgical intervention to avoid abscess or fistula formation and rarely bowel obstruction.

AUTHOR CONTRIBUTIONS

Sean SW Park: Conceptualization; project administration; writing - original draft; writing-review & editing. **Hock Cheah:** Investigation; visualization; writing-review & editing. **Rita Poon:** Resources; supervision; validation; writing-review & editing.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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