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Drain Site Herniation of the Vermiform Appendix: A Rare Complication Following Laparotomy

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ABSTRACT

A 65-year-old woman presented with an exceptionally rare complication of appendiceal herniation through a previous surgical drain site, occurring two years after a radical distal gastrectomy performed for gastric adenocarcinoma. To date, only four similar cases have been reported in the literature. The patient initially developed an asymptomatic, reducible hernia at the drain site two years postoperatively. Subsequently, she presented acutely with features of intestinal obstruction, including localized tenderness, nausea, and vomiting. Ultrasonography revealed bowel obstruction within a hernia sac protruding through an 8.9-mm fascial defect corresponding to the former drain site. At laparotomy, the incarcerated vermiform appendix was identified within the hernia sac, demonstrating luminal obstruction and serosal inflammation without evidence of gangrene. An appendicectomy was performed, followed by anatomical repair of the fascial defect. This case underscores the necessity of meticulous fascial closure at drain sites specially when using bigger drain and highlights the diagnostic challenges associated with atypical incisional hernias presenting long after major abdominal surgery.

INTRODUCTION

Port site and drain site hernias represent recognised complications following abdominal surgery, with reported incidences varying between 0.5% and 2% in contemporary literature [1,2]. The aetiology is multifactorial, encompassing technical factors during closure, patient-specific wound healing characteristics, bigger drain tube and the mechanical stress imposed on fascial defects. However, herniation of the vermiform appendix through a drain site remains extraordinarily rare, with only four cases documented in the published literature to date [3].

Whilst the utility of prophylactic intra-abdominal drainage following abdominal surgery remains contentious, with accumulating evidence suggesting complications including ascending infection, drain site infection and visceral erosion often outweigh purported benefits, drains continue to be employed routinely in clinical practice, particularly following complex visceral resections [4,5]. We present a unique case of delayed appendiceal herniation through a previous drain site following gastrectomy, highlighting diagnostic challenges and emphasizing the importance of maintaining clinical vigilance for this uncommon but potentially serious sequela.

CASE PRESENTATION

A 65-year-old woman with a history of radical distal gastrectomy, omentectomy, and D2 lymphadenectomy for gastric adenocarcinoma two years previously, presented with a progressively enlarging lump at the drain placement site. Her initial oncological treatment had been uncomplicated. She had received adjuvant chemotherapy and remained disease-free on surveillance imaging.

The lump she first noted two years post-operatively was initially reducible and asymptomatic. Over subsequent months, it had become persistently irreducible but remained non-tender. She presented acutely to the emergency department with a one day history of constant, progressively worsening localised pain at the previously explained lump site, accompanied by nausea and vomiting. There were no constitutional symptoms, and bowel function remained normal until the day of presentation.

On examination, she was hemodynamically stable and afebrile. Abdominal examination revealed a tender, irreducible mass at the right lower abdominal region, corresponding to the previous drain site rather than the midline laparotomy incision. There were no features of peritonism. Laboratory investigations demonstrated leucocytosis (10.2 × 10^9/L) with neutrophilia and normal C-reactive protein (1 mg/L).

Ultrasonography demonstrated dilated, fluid-filled small bowel loops within the hernia sac, which appeared to emerge through the previous surgical site at the right lower abdomen. The fascial defect measured approximately 8.9mm by 8.4mm. A provisional diagnosis of incarcerated hernia with bowel obstruction was made, and emergency laparotomy was undertaken following appropriate resuscitation.

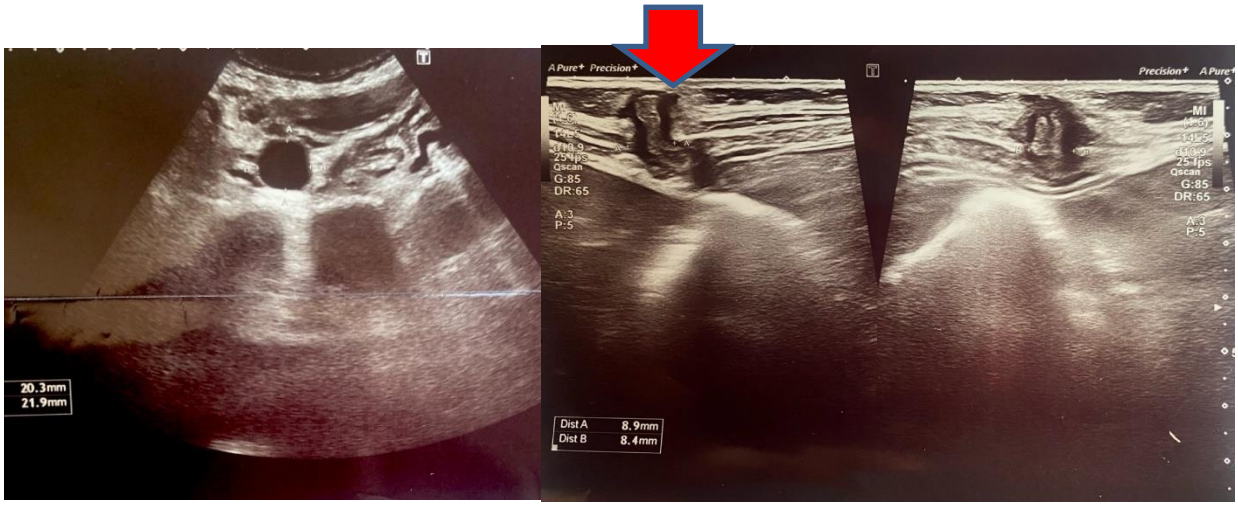

Figure 1&2. USS scan showing a herniated appendix

Intraoperatively, the hernia defect was confirmed to arise through the previous drain site. The hernial sac contained the vermiform appendix, which was adherent to the peritoneum at the neck of the sac. The appendix demonstrated luminal obstruction at the point of incarceration with localised serosal inflammation at the tip of the appendix but no gangrenous changes, perforation, or purulent collection. The caecum demonstrated normal viability. The remainder of the abdominal cavity was examined and revealed no macroscopic evidence of disease recurrence, adhesions, or other pathology.

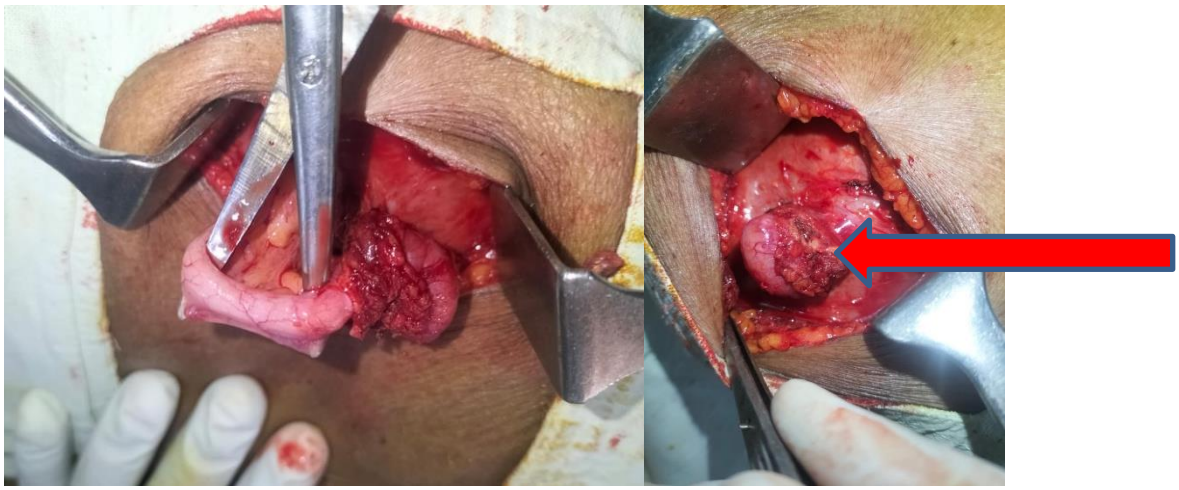

Figure 3 and 4. Showing intraoperative herniated appendix through drain site

Appendicectomy was performed using standard technique. The hernia site repaired anatomically. The patient recovered without complications.

DISCUSSION

Appendiceal herniation through abdominal wall defects, whilst well-documented in inguinal and femoral hernias (Amyand's and de Garengeot's hernias respectively)(6–8), but exceptionally rare at drain sites [4,9]. The pathophysiology remains incompletely understood, though several mechanisms have been proposed. Caecal hypermobility may predispose to appendiceal migration towards potential fascial defects [1,10]. Progressive adhesion formation at the drain tract, secondary to local inflammatory responses and tissue trauma during drain manipulation, may create a tethering point for the appendix [10]. Additionally, the negative pressure gradient created during drain removal or active suction may theoretically draw mobile intra-abdominal structures toward the defect.

This case illustrates several important clinical considerations. Firstly, the delayed presentation occurring two years post-operatively underscores the need for long-term surveillance of drain sites, particularly following major oncological resections where tissue quality may be compromised by malnutrition, chemotherapy, or altered healing responses. Secondly, the diagnostic challenge is highlighted: whilst ultrasonography suggested bowel obstruction within the hernia, specific identification of the appendix was only achieved intraoperatively.

Cross-sectional imaging with contrast-enhanced computed tomography may have facilitated pre-operative diagnosis, potentially allowing for optimised surgical planning, informed patient counselling regarding the rare pathology encountered, and appropriate antibiotic selection.

The risk of delayed or missed diagnosis carries significant clinical implications, as incarcerated appendices may progress rapidly to ischaemia, gangrene, or perforation, substantially increasing morbidity, mortality, and the complexity of surgical management. Standard management comprises herniotomy, appendicectomy, and hernia repair either primary or mesh-based depending on tissue quality, degree of contamination, and defect size.

CONCLUSION

Drain site herniation of the vermiform appendix represents an exceedingly rare but recognised complication requiring heightened clinical awareness. Pre-operative cross-sectional imaging should be strongly considered when evaluating atypical incisional hernias to exclude unusual pathology. This case reinforces the importance of meticulous fascial closure at all drain sites and supports the ongoing debate regarding judicious, evidence-based use of abdominal drainage.

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