A Case of a Wrapped-Up Bowel

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Case introduction

Patient:

- 59-years-old female
- PMH:
  - orthoptic liver transplant for paracetamol overdose 1994
    - Transplant cirrhosis on a recent biopsy
  - Rapidly progressive chronic kidney disease (CKD) on haemodialysis, being worked-up for a renal transplant

Presentation:

- Progressive abdominal pain, abdominal distension and constipation
- Admission 6/12 ago with infection of unknown source and *E. coli* bacteraemia, treated with antibiotics

CT at presentation

- Circumferentially thickened and enhancing peritoneum (arrowed) with large volume ascites encasing and displacing the small bowel posteriorly and centrally, and mildly distended jejunal loops (arrowed) demonstrated on Figures 1 and 2.

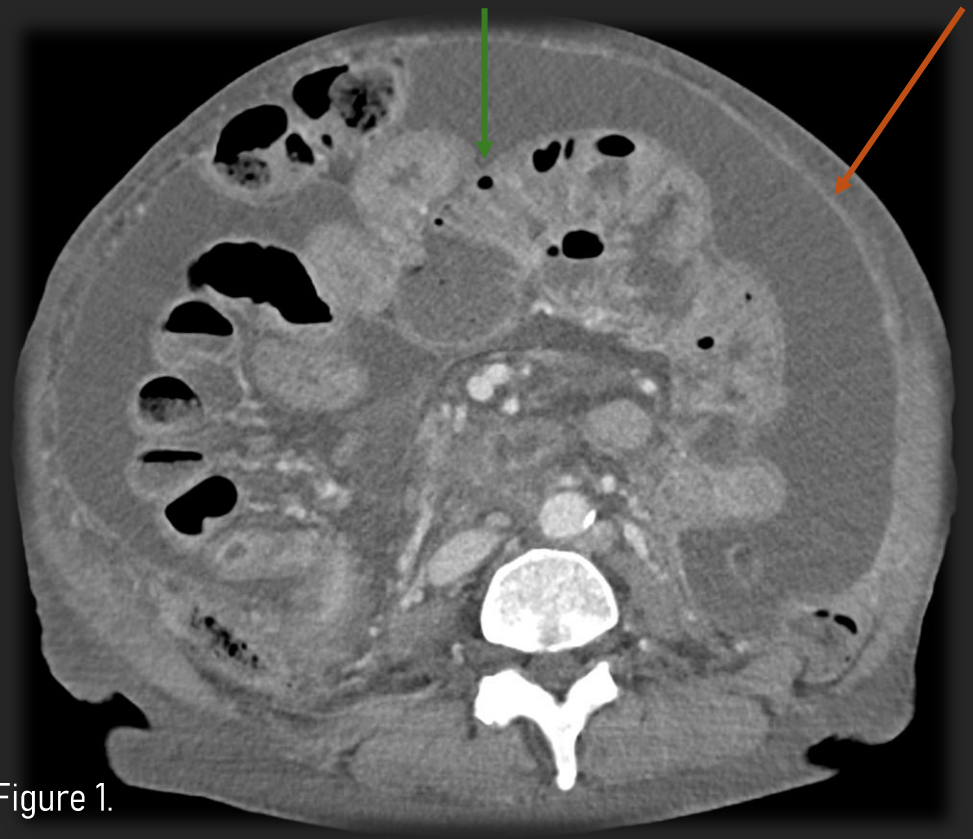


Figure 1.

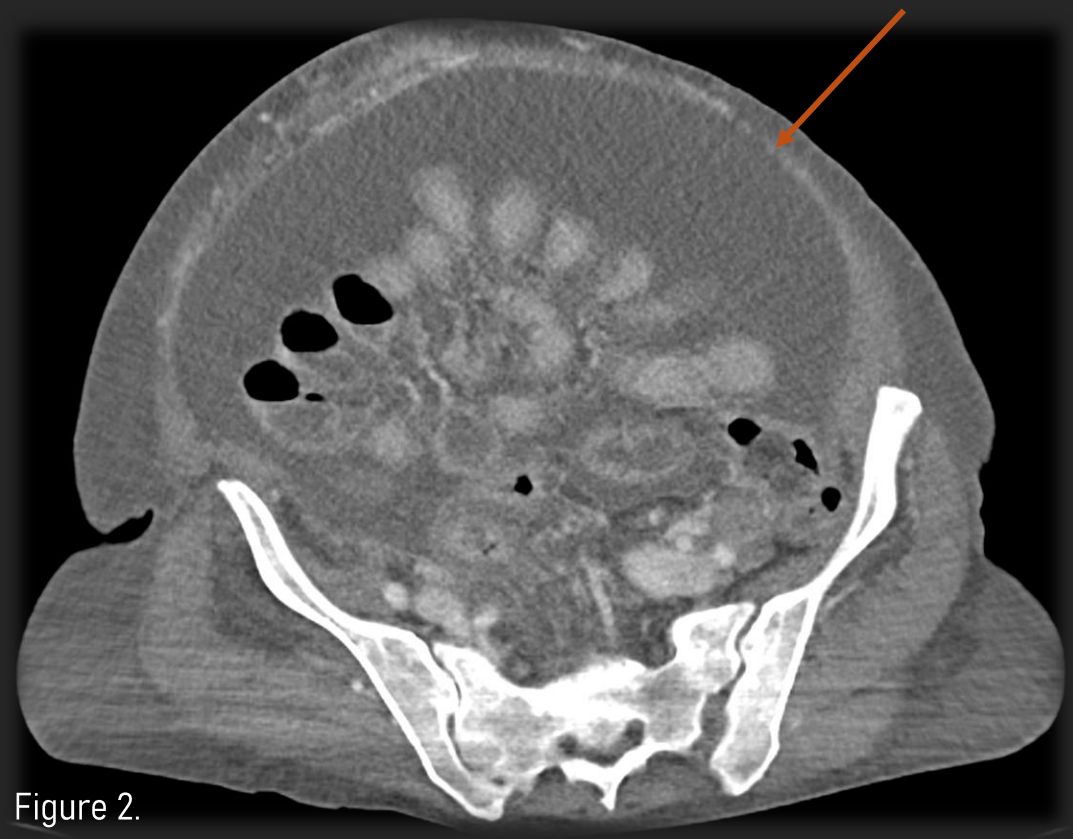


Figure 2.

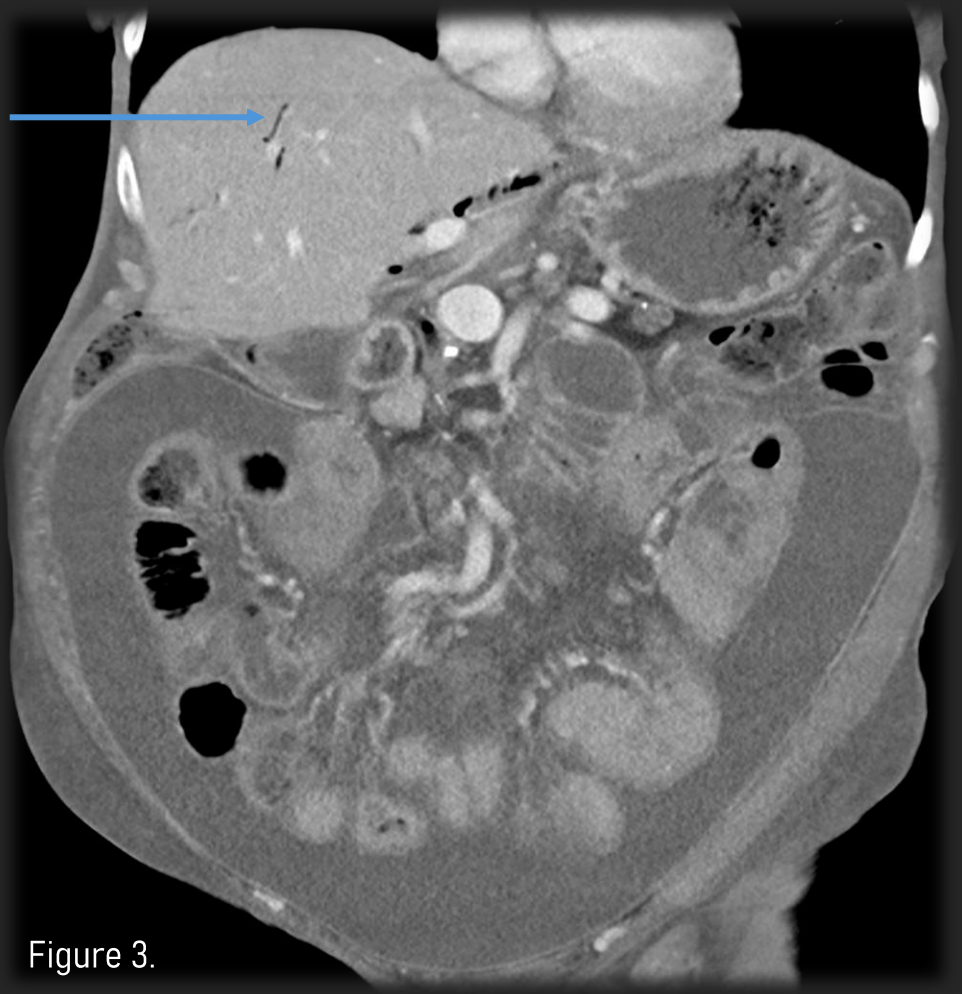


Figure 3.

- Peritoneal enhancement and thickening, ascites and small bowel displacement redemonstrated on coronal (Figure 3) and sagittal planes (Figure 4).

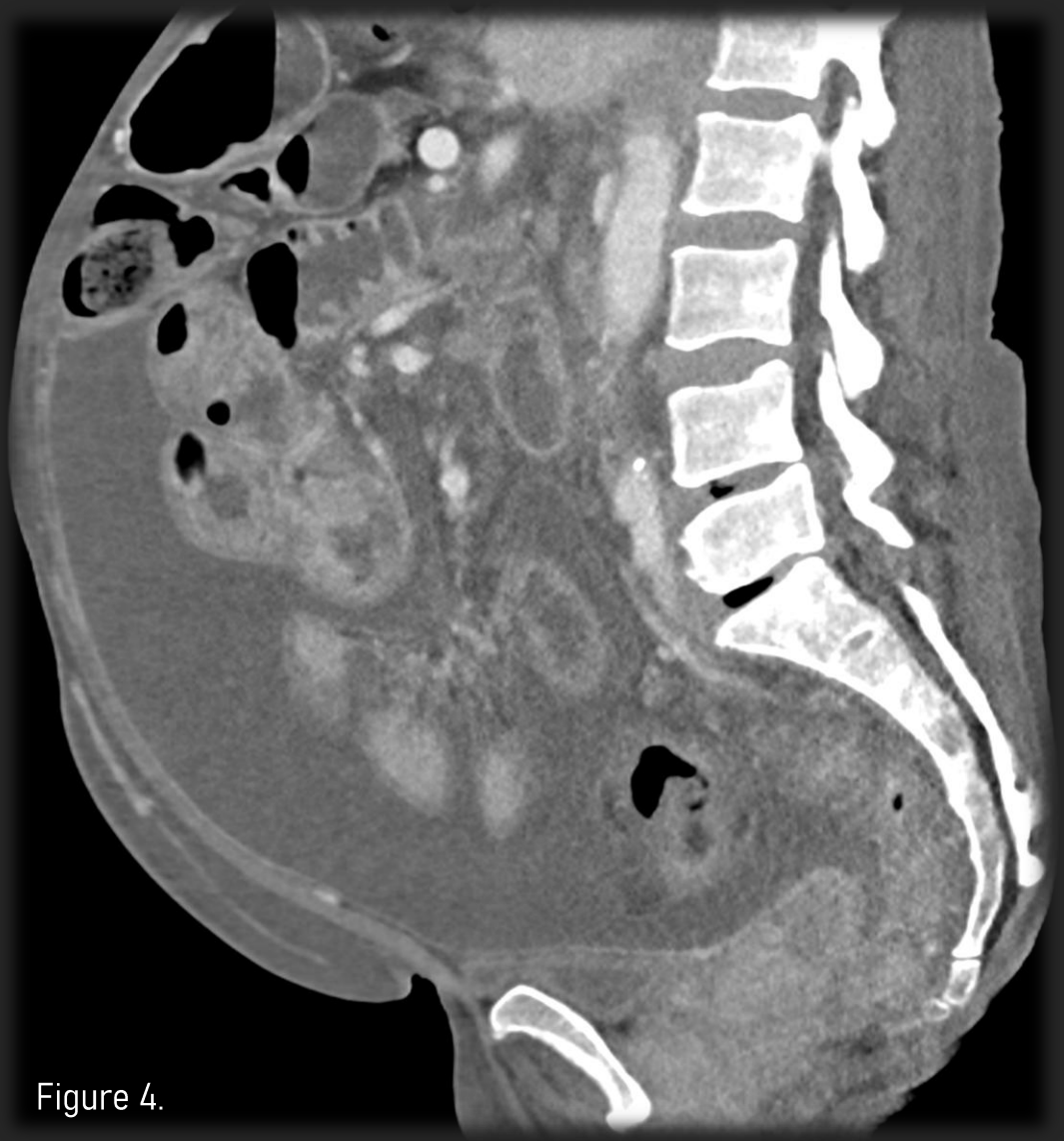


Figure 4.

- Pneumobilia (arrowed) associated with hepaticojejunostomy following a liver transplant (Figure 3).

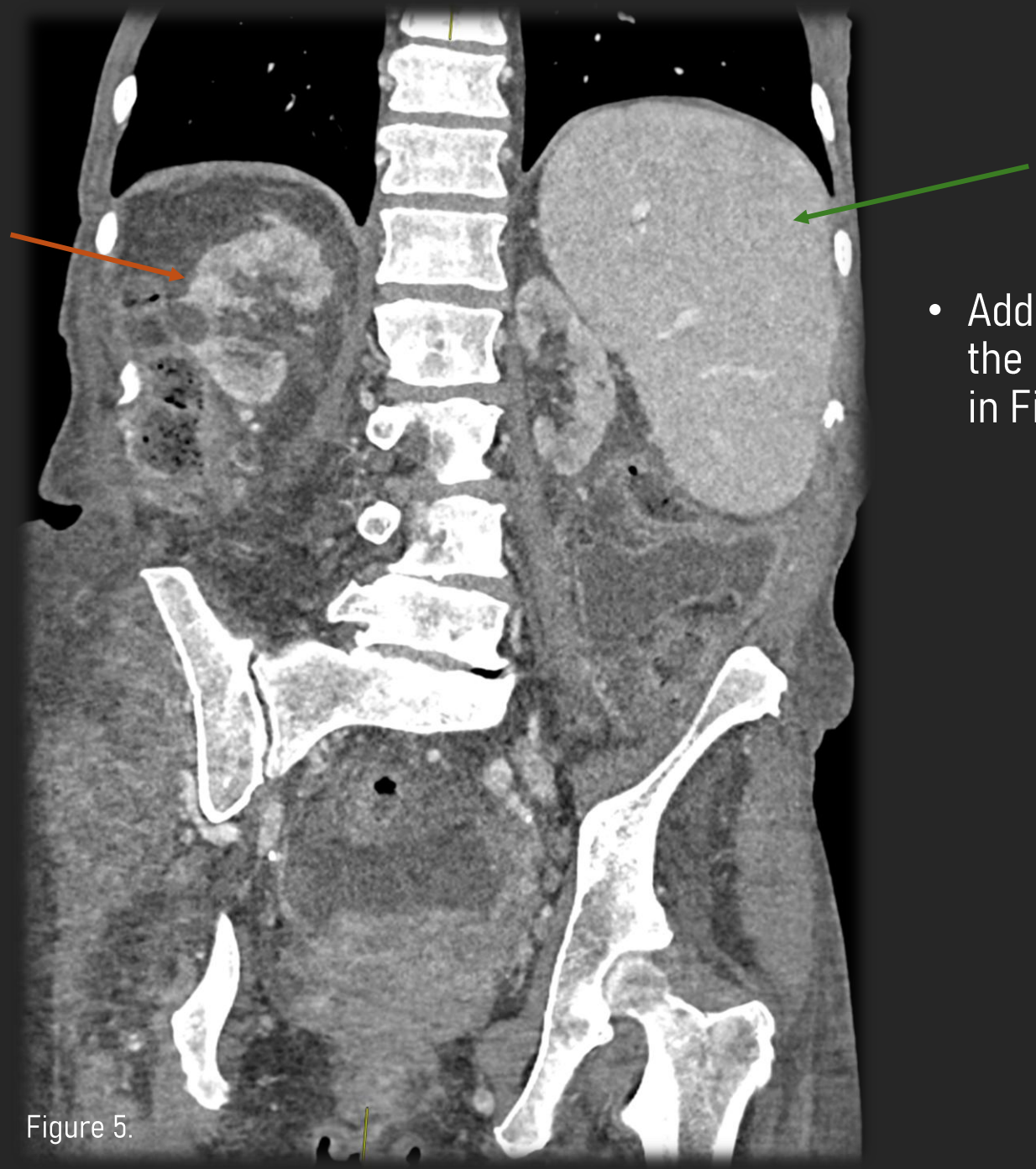


Figure 5.

- Additional long-standing findings of bilateral renal atrophy on the background of CKD (arrowed), and splenomegaly (arrowed) in Figure 5.

…compared to a CT 4 months earlier

- Previous CT demonstrates simple ascites but no peritoneal thickening or enhancement (Figure 6)

- The findings on the current CT have developed within a relatively short period of time

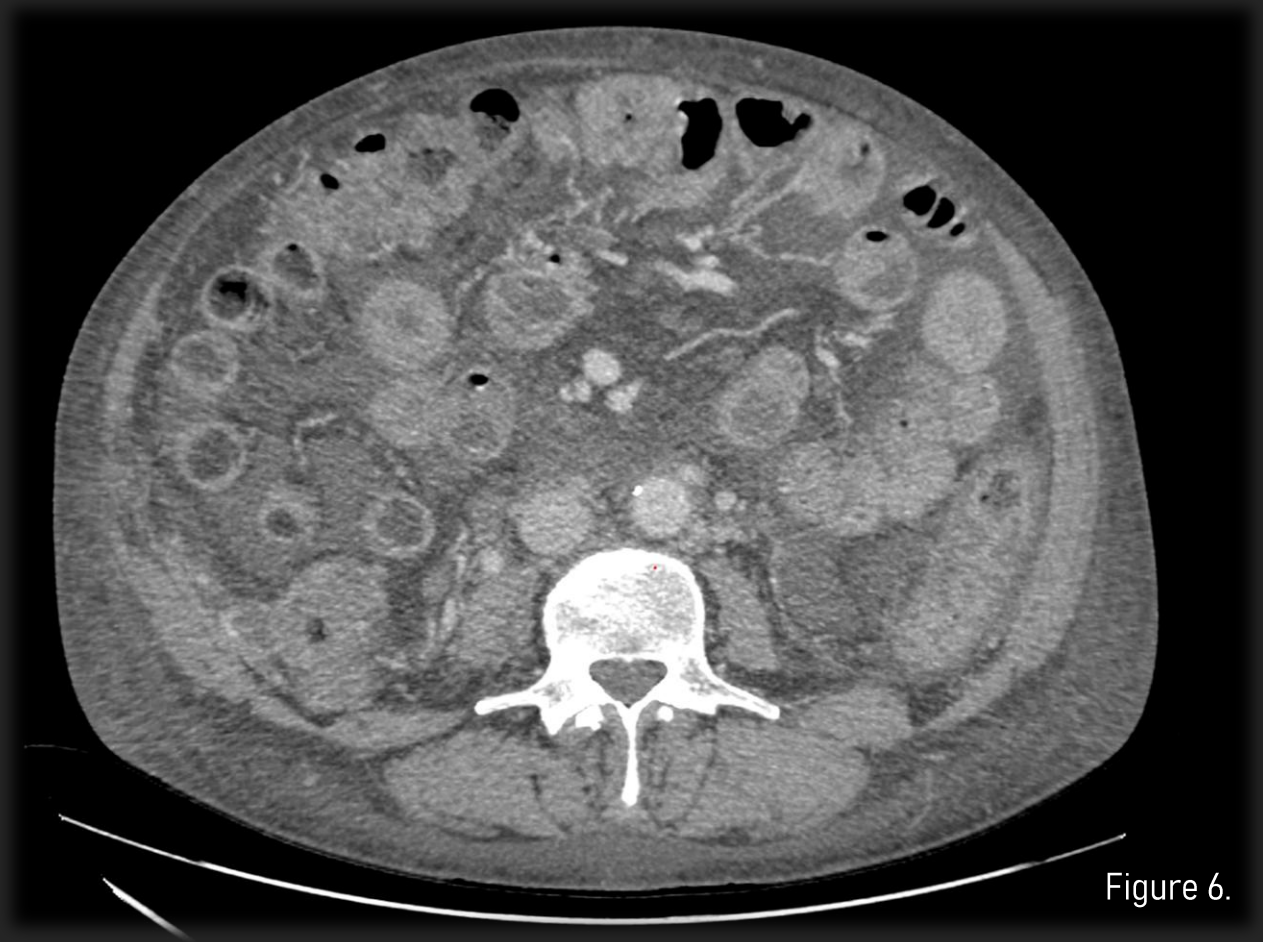
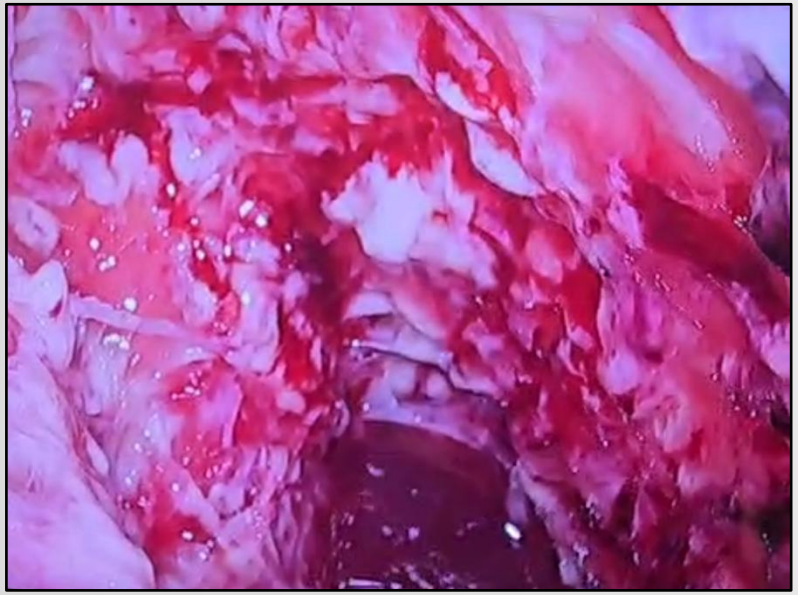


Figure 6.

Management

- Laparoscopy
  - Extensive purulent peritonitis with thickened fibrous peritoneum
  - Large volume of pus washed out from the peritoneal cavity



- Symptomatic improvement following the surgery observed
- Postoperative CT demonstrated significant reduction in the peritoneal collection

Figure 7. Laparoscopic image demonstrating thickened fibrous peritoneum after the washout had been performed.

Final diagnosis: Encapsulating peritoneal sclerosis

Encapsulating peritoneal sclerosis

- Encapsulating peritoneal sclerosis (EPS), also referred to as 'abdominal cocoon', is a rare and potentially life-threatening condition characterised by encapsulation of the bowel within a thickened fibro-collagenous peritoneal membrane often leading to bowel obstruction and necessitating surgical intervention.
- The aetiology is multifactorial, and recognised predisposing factors include peritoneal dialysis, intra-abdominal infection and organ transplantation. The underlying cause, however, is often not found.

- Patients commonly present with symptoms of bowel obstruction, with the CT findings of smoothly thickened (>2mm) and enhancing peritoneum, congregation of small bowel loops centrally within the abdominal cavity with or without mechanical obstruction, often of the background of ascites.
- Differential diagnosis includes malignant peritoneal disease (where peritoneal thickening is more often nodular) and internal herniae.
- Treatment largely depends on the aetiology but is commonly surgical involving the dissection of the fibrous peritoneal membrane and is associated with high morbidity and mortality.

Case discussion

- This case highlights two recognised EPS risk factors: bacterial peritonitis and history of liver transplant. Notably, despite the history of CKD, the patient had never undergone peritoneal dialysis which is the most widely recognised predisposing factor.

- In this case, encapsulating peritoneal sclerosis has likely developed secondary to spontaneous bacterial peritonitis on the background of long-term large volume ascites, and history of recent infection with *E.coli* bacteremia.

- Continued complex multidisciplinary input required:
  - High risk of ascites reaccumulation and re-infection
  - Long-term plan for renal replacement therapy as the patient is no longer suitable for peritoneal dialysis or renal transplant

Conclusion

Although a rare diagnosis, encapsulating sclerosing peritonitis carries significant morbidity and mortality, making a high index of suspicion and familiarity with its characteristic radiological features essential for prompt diagnosis and timely surgical intervention.

CT is the mainstay for diagnosis of EPS, typically demonstrating thickened and enhancing peritoneum encapsulating the entirety of small bowel with or without small bowel obstruction.

References

1. Singhal, M. et al. Encapsulating peritoneal sclerosis: the abdominal cocoon. *Radiographics* 39, 62–77 (2019).
2. Upponi, S. et al. Encapsulating peritoneal sclerosis – Correlation of radiological findings at CT with underlying pathogenesis. *Clinical Radiology*, Vol 69, Issue 1, 103 – 109 (2014).