CASE REPORT

# Abdominal cocoon: A rare presentation of abdominal distension in a young adult male—A case report

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## Abstract

This case report outlines the presentation, evaluation, and management of a 35-year-old male patient with a history of subacute intestinal obstruction, who presented with generalised abdominal pain and distension. Clinical evaluation revealed a tender supraumbilical mass, and imaging confirmed abdominal cocoon—a rare condition where small bowel loops are encapsulated by a thin peritoneal layer. Initially managed conservatively, the patient's condition improved and he was discharged from the hospital but later returned with recurrent intestinal obstruction. Subsequently, he underwent exploratory laparotomy with open adhesiolysis, which was successful without any post-operative complications. The patient has since been stable during the follow-up period, showing good tolerance to treatment.


**Keywords:** Abdominal cocoon, Abdominal distension, Peritoneal encapsulation, Conservative management.

**DOI: https://doi.org/10.47391/JPMA.22928**

## Introduction

Abdominal Cocoon Syndrome (ACS), a rare and enigmatic condition characterised by the encapsulation of the small bowel by a fibrous membrane, poses a diagnostic challenge to clinicians worldwide.[1] First described by Foo et al. in 1978,[2] this condition remains a seldom-reported entity with an unclear aetiology and variable clinical presentations. The encapsulation of the small bowel within a dense fibrous cocoon-like sac can lead to intestinal obstruction, chronic abdominal pain, and nutritional compromise.

The prevalence of ACS is relatively low, making it an infrequent diagnosis in clinical practice. It predominantly affects young to middle-aged individuals, with a slight male predominance. However, due to its rarity and limited documentation in medical literature, precise prevalence rate remains uncertain.

ACS presents with symptoms such as abdominal pain, nausea, vomiting, bloating, and sometimes small bowel obstruction or peritonitis. Diagnosis relies on imaging, with abdominal X-rays suggesting obstruction and contrast-enhanced Computed Tomography (CT) scans revealing a dilated small bowel encased in a fibrocollagenous membrane, characteristic of sclerosing encapsulating peritonitis. While the exact pathogenesis of ACS remains elusive, it is frequently associated with a variety of predisposing factors, including peritoneal dialysis, abdominal surgery, or chronic inflammatory conditions.[3] Timely and accurate diagnosis is vital for effective intervention and management of ACS. Management approaches remain contentious, with most literature favouring a conservative strategy led by a multidisciplinary team to optimise outcomes. However, emerging case reports advocate for surgical intervention to release encapsulated bowel loops and address the mechanical constraints caused by the cocoon. Post-operative care typically involves nutritional support, pain control, and careful monitoring for recurrence or complications.[4]

In this case report, we present a unique instance of Abdominal Cocoon Syndrome in a 35-year-old male with no apparent predisposing factors.

## Case Report

A 35-year-old male presented to the emergency department of Aga Khan University Hospital, Karachi, Pakistan, on February 14, 2024, with a one-day history of generalised abdominal pain and distension. The patient reported passing stool in the morning but was currently not passing flatus. He had no significant medical history, chronic diseases, or prior surgeries but had a history of conservatively managed subacute intestinal obstruction in the previous year. On examination, he was alert and stable, with no signs of pallor, jaundice, or oedema. Abdominal examination revealed distension, mild tenderness, a firm supraumbilical mass, hyperactive bowel sounds, and an empty rectum on digital rectal examination. Imaging showed a non-specific bowel gas pattern without pneumoperitoneum.

A CT scan of the abdomen with contrast revealed clustered

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**Submission completed:** 18-01-2025 **1st Revision received:** 07-03-2025
**Acceptance:** 01-10-2025 **Last Revision received:** 30-09-2025

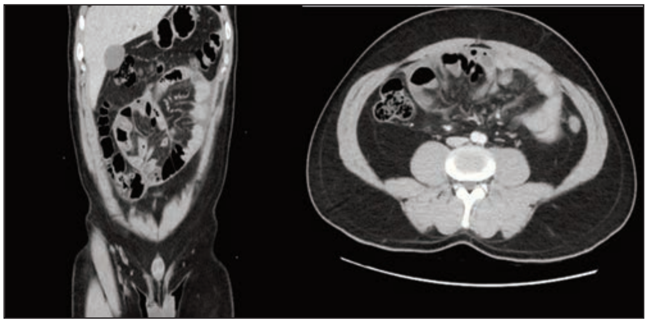

**Figure:** The image depicts clustered small bowel loops, including the jejunal and ileal segments, encapsulated by a thin layer of peritoneum, giving the appearance of a cocoon. Mild inter-bowel free fluid is observed anteriorly within the abdominal cavity. No calcifications are noted. The terminal ileum and large bowel appear normal. The liver demonstrates diffuse fatty infiltration with regular margins and normal parenchymal enhancement, without any focal lesions or biliary dilatation. No pneumoperitoneum is evident, and the pelvic viscera appear unremarkable. The major abdominal vessels demonstrate normal enhancement, and there is no significant lymphadenopathy in the mesenteric, retroperitoneal, or pelvic regions.

small bowel loops encapsulated by a thin peritoneal layer, characteristic of an abdominal cocoon, along with mild inter-bowel fluid and subtle right lung infiltrates. (Figure) The patient was initially managed conservatively and discharged. He was subsequently readmitted with recurrent episodes of intestinal obstruction without hernia. Given the persistence of symptoms, he underwent exploratory laparotomy, adhesiolysis, and open appendectomy. Intra-operative findings were suggestive of a double-layer fibrous cocoon encapsulating the small bowel with no omentum.

The patient tolerated the procedure well and experienced resolution of symptoms post-operatively He remained stable throughout the hospital course and was discharged home with close follow-up. At subsequent follow-up appointments, the patient reported no recurrence of symptoms and continued to do well.

Written informed consent was obtained from the patient prior to the writing of the manuscript.

## Discussion

Abdominal cocoon, also known as sclerosing encapsulating peritonitis, is a rarely reported pathology characterised by the encapsulation of intra-abdominal organs within a fibrocollagenous membrane.[5] A total of 50 cases have been reported in the medical literature.[6] This encapsulation often leads to intestinal obstruction and presents a diagnostic challenge due to its infrequency and the vague nature of its symptoms.[7]

Clinical signs of abdominal cocoon syndrome (ACS) include unexplained small bowel obstruction, a history of similar episodes, irregular abdominal swelling, and a soft, non-tender mass. In sclerosing encapsulating peritonitis (SEP), symptoms include abdominal pain (72%), distension (44%), and a palpable mass (30%).[8] It primarily affects young to middle-aged individuals, with a slight male predominance, and manifests as acute, subacute, or chronic abdominal pain, often with an-- abdominal mass.[9]

This case highlights a rare instance of recurrent subacute intestinal obstruction diagnosed as abdominal cocoon syndrome through CT imaging and successfully treated with adhesiolysis. Diagnostic imaging, particularly abdominal X-ray and contrast-enhanced CT, was pivotal in identifying the hallmark encapsulation of small bowel loops by the peritoneum. While uncommon, abdominal cocoon syndrome can lead to severe complications such as recurrent obstruction and intestinal ischaemia if untreated, emphasising the importance of early diagnosis and timely intervention to prevent morbidity.

Despite advancements in radiological imaging, pre-operative diagnosis remains challenging, as evidenced by a retrospective study of 24 patients where only 16% received a pre-operative diagnosis. Typically, diagnoses are made during surgery.[10] Surgeons must adopt a comprehensive approach that integrates clinical history, physical examination, and imaging studies to include internal hernias and congenital peritoneal encapsulation in the differential diagnosis, thereby preventing misdiagnosis. Debates persist regarding the optimal management of patients with symptomatic, non-obstructive sclerosing encapsulating peritonitis. Surgical intervention, particularly exploratory laparotomy with membrane excision and adhesiolysis, is commonly favoured by surgeons and has shown satisfactory results as demonstrated in the present case.[8]

Nonetheless, individualised treatment decisions are essentially based on the severity of symptoms and clinical status. Conservative management may be considered in selected cases, especially in haemodynamically stable patients with minimal symptoms. Surgical intervention was opted for due to the patient's recurrent episodes of subacute intestinal obstruction, as conservative management proved ineffective.

While this case illustrates successful management of abdominal cocoon, several challenges remain. A multidisciplinary approach involving surgeons, radiologists, and clinicians is essential for accurate diagnosis and optimal management, ultimately leading to favourable patient outcomes. Further research is warranted to elucidate the underlying mechanisms and improve diagnostic and therapeutic strategies for this uncommon yet potentially severe condition.

## Conclusion

Abdominal cocoon, a rare cause of intestinal obstruction, necessitates timely diagnosis and management, whether conservative or surgical. This case emphasises considering abdominal cocoon in subacute intestinal obstruction with relevant history, highlighting the need for further research to enhance understanding and care.

**Disclaimer:** None.

**Conflict of Interest:** None.

**Funding disclosure:** None.

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**Author Contribution:**
**NH:** Concept, data collection, drafting and critical review.
**SH:** Drafting.
**BAK:** Critical review.
**NUS:** Concept and drafting.