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Diagnostic Dilemma of Subacute Intestinal Obstruction: Tubercular Abdominal Cocoon Mimicking Paraduodenal Hernia — A Case Report

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ABSTRACT:

Subacute intestinal obstruction represents a common surgical condition with diverse etiologies, ranging from adhesions and hernias to neoplasms and inflammatory diseases. Among the rare causes of small bowel obstruction, internal hernias account for less than 1% of cases, with left paraduodenal hernia representing the most common subtype. Left paraduodenal hernia results from an embryological malrotation anomaly that permits herniation of small bowel loops through Landzert's fossa and may remain asymptomatic until adulthood. [8]

In contrast, abdominal cocoon, also known as sclerosing encapsulating peritonitis, is an uncommon acquired disorder characterized by partial or complete encapsulation of the small intestine within a fibrocollagenous membrane. Tuberculosis remains an important secondary cause in developing countries. [1,3,5,7] Both entities can present with similar clinical and radiological features, particularly clustering of bowel loops. Thereby, posing a significant diagnostic dilemma. [4,6,8] Accurate differentiation is essential as management strategies differ considerably. [2,4,6] This report describes a case where preoperative imaging suggested a paraduodenal hernia, but intraoperative findings and histopathology confirmed tubercular abdominal cocoon.

CASE PRESENTATION"

A 34-year-old male presented with abdominal pain and obstipation for 1 weeks associated with obstipation since two days. There was no history of vomiting, fever, abdominal trauma. The patient had undergone percutaneous nephrolithotomy for renal stones 3 years before. The patient had no known comorbidities like hypertension, diabetes mellitus or cardiovascular disease. No history of tuberculosis. Sputum for CBNAAT was negative for mycobacterium tuberculosis.

Clinical Examination:
Abdominal examination revealed mild distension and generalized tenderness without signs of peritonitis. Bowel sounds were sluggish on auscultation, suggestive of subacute intestinal obstruction.

RADIOLOGICAL INVESTIGATIONS:
Ultrasound abdomen was suggestive of dilated and clumped bowel loops with circumferential wall thickening (? Infective), moderate and ectopic right kidney with mild to moderate right sided hydroureteronephrosis, bilateral renal calculi.

Contrast enhanced CT abdomen was suggestive of left paraduodenal hernia with obstruction, ectopic and malrotated right kidney with duplex pelvicalyceal system with right renal and right ureteric calculi with assymetrical hydronephrosis, left renal calculi with left hydroureteronephrosis.

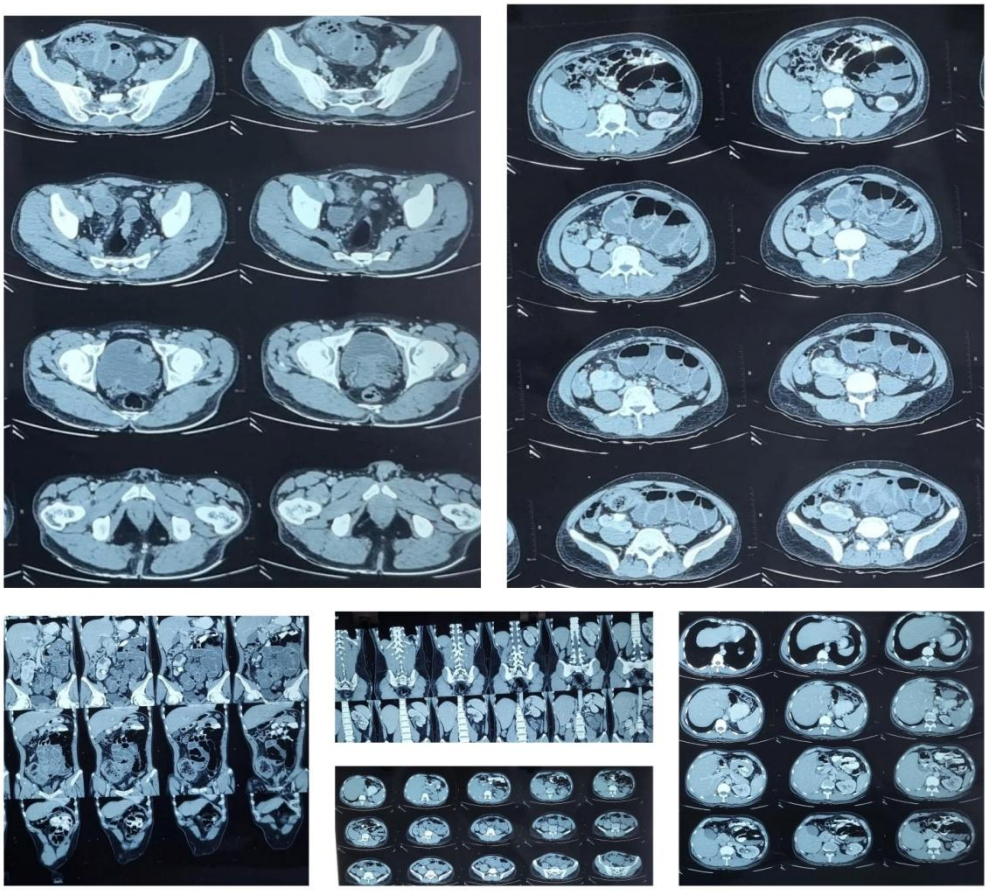

Figure 1 : CECT suggestive of encapsulated bowel with interbowel adhesions and ectoicmalrotated right kidney.

The characteristic clustering of bowel loops within a sac-like configuration in the left upper abdomen, together with features of bowel obstruction, favored a radiological diagnosis of left paraduodenal hernia. Similar CT findings have been described in internal hernias, where encapsulated clusters of jejunal loops, crowding of mesenteric vessels, and abnormal bowel positioning may be observed. [8]

SURGICAL MANAGEMENT

The patient underwent exploratory laparotomy with adhesiolysis with bilateral pyelolithotomy with right ureterolithotomy with bilateral double J stenting under general anesthesia.

OPERATIVE PROCEDURE

The patient was placed in the supine position. General anesthesia with endotracheal intubation was administered, and all standard aseptic precautions were followed. The abdomen was painted and draped. A midline exploratory laparotomy incision was made and the peritoneal cavity was entered carefully. The small intestine was densely adherent and clustered predominantly over the left side of the abdominal cavity. Contrary to the preoperative diagnosis of left paraduodenal hernia, no identifiable mesenteric defect or hernial orifice was noted. Instead, the bowel loops were densely adherent and found to be encased within a thick, fibrous, cocoon-like membrane suggestive of sclerosing encapsulating peritonitis. The membrane was carefully incised using sharp and blunt dissection, taking utmost care to avoid serosal injury. Meticulous adhesiolysis was then performed to release the interbowel adhesions. Hemostasis was achieved throughout the surgery using bipolar cautery. The entire small bowel was systematically examined from the duodenojejunal flexure to the ileocecal junction to ensure complete release of adhesions and to assess bowel viability. No areas of gangrene or ischemia were identified. Omental biopsy was sent for frozen section examination which suggested necrotizing granulomatous inflammation.

The right kidney was identified in an ectopic and malrotated position in the lower lumbar region. The renal pelvis was exposed, and a longitudinal pyelotomy was performed. A large calculus was identified and extracted using stone forceps. The renal pelvis was irrigated with saline to ensure complete clearance. Similarly, the left kidney was approached, and a left pyelolithotomy was performed with removal of calculi from the pelvicalyceal system. the right ureter was identified, and a longitudinal ureterotomy was made over the palpable ureteric stone. The stone was extracted carefully, and ureteral patency was confirmed. The ureterotomy was closed over a stent using fine absorbable sutures.

After completion of stone removal procedures, all operative fields were thoroughly irrigated with warm saline. Hemostasis was meticulously secured. The bowel loops were placed back in anatomical position without tension. A pelvic drain and a subhepatic drain were placed to monitor postoperative collections. The abdominal wall was closed in layers, with the fascia approximated using non-absorbable sutures and the skin closed with interrupted sutures. The patient tolerated the procedure well and was extubated on table. He was subsequently shifted to the recovery ICU in stable condition.

POSTOPERATIVE COURSE

Postoperative recovery was uneventful. Patient was started oral intake on postoperative day six. Anti-tubercular treatment was started immediately along with oral feeds.Early ambulation was encouraged. No surgical site infection had occurred post-operatively. Patient was discharged in stable condition.

On Follow-up visit after 3 months, Per-Abdomen examination revealed: Well-healed surgical scar, No complaints of symptoms related to SAIO.

HISTOPATHOLOGY FINDINGS

Omental biopsy revealed necrotizing granulomatous inflammation suggestive of tuberculosis. No malignancy was seen.

DISCUSSION:

Subacute intestinal obstruction remains a diagnostic challenge, particularly when uncommon pathologies present with overlapping clinical and radiological findings. [1,4,6] Internal hernias constitute a rare cause of bowel obstruction, accounting for less than 1% of all cases, although paraduodenal hernias represent approximately 50% of internal hernias. Left paraduodenal hernia develops due to abnormal midgut rotation and entrapment of bowel loops within Landzert's fossa. Characteristic CT findings include clustering of small bowel loops, crowding and stretching of mesenteric vessels, and displacement of adjacent structures. [8]

Abdominal cocoon, or sclerosing encapsulating peritonitis, is characterized by fibrocollagenous encapsulation of the bowel and may be idiopathic or secondary to conditions such as tuberculosis, prior surgery, peritoneal dialysis, or chronic peritoneal inflammation. [1,3,5]In endemic regions, tuberculosis remains a major etiological factor. [7]

In this case, the preoperative CECT showed clustering of small bowel loops within a sac-like configuration in the left abdomen, with associated proximal dilatation and features of subacute intestinal obstruction. These findings were initially interpreted as suggestive of left paraduodenal hernia. However, abdominal cocoon can closely mimic this appearance, thereby causing diagnostic dilemma. [4,6]

The present case is noteworthy because the radiological diagnosis differed significantly from the operative findings. Martin et al. emphasized that although CT is the imaging modality of choice for internal hernias, accurate diagnosis remains challenging because several conditions may mimic the characteristic appearance of clustered bowel loops. [8] In our patient, the CT appearance of clustered bowel loops within a confined sac-like region strongly suggested left paraduodenal hernia. However, exploratory laparotomy demonstrated dense fibrocollagenous encapsulation and extensive interbowel adhesions without any mesenteric defect, establishing the diagnosis of abdominal cocoon. This radiological-surgical discordance highlights an important limitation of imaging and reinforces the importance of operative assessment in ambiguous cases.

The intra-operative findings in our patient revealed dense interbowel adhesions of small intestine without any identifiable mesenteric defect or hernia orifice, ruling out internal hernia. These findings were consistent with abdominal cocoon. This discordance between radiological and surgical findings highlights the limitations of CT imaging in differentiating these two entities. [4,6]

Histopathological findings further added to diagnosis by showing necrotizing granulomatous inflammation which is highly suggestive of a tubercular etiology. [7] Tuberculosis remains a leading cause of secondary abdominal cocoon in developing countries, where chronic peritoneal inflammation leads to fibrocollagenous membrane formation and subsequent bowel encapsulation. [7]

Management of abdominal cocoon primarily involves meticulous adhesiolysis and release of encapsulated bowel loops. Bowel resection is generally avoided unless there is evidence of ischemia or non-viability. [2,3,5] In this case, careful adhesiolysis resulted in complete release of the bowel without the need for resection, and the patient had uneventful postoperative recovery. [2]

Additionally, in this case there is coexistence of bilateral renal calculi with ectopic malrotated right kidney, which necessitated simultaneous urological intervention. Such dual pathology further adds to the complexity of management and highlights the need for comprehensive intraoperative planning.

CONCLUSION:

Subacute intestinal obstruction remains a diagnostic challenge, particularly when rare entities such as internal hernias and abdominal cocoon present with overlapping radiological features. [1,4,6,8] Although CT imaging remains the cornerstone for diagnosing internal hernias, differentiation from abdominal cocoon may not always be possible preoperatively when clustered bowel loops are present in a sac-like configuration. [8]

In tuberculosis-endemic regions, abdominal cocoon secondary to tubercular peritonitis must be strongly considered, even when imaging favors an internal hernia.[7] The presence of clustered bowel loops within a sac-like configuration, although suggestive of paraduodenal hernia, should prompt careful evaluation for subtle indicators of diffuse encapsulation.

Definitive diagnosis often remains intraoperative, emphasizing the importance of surgical exploration in unresolved or ambiguous cases. [2,4,6] Furthermore, histopathological confirmation is crucial, as it not only establishes the diagnosis but also guides postoperative management, particularly the initiation of anti-tubercular therapy.

Timely surgical intervention with meticulous adhesiolysis, combined with appropriate medical therapy, results in excellent outcomes. [2,5] This case underscores the need for a high index of suspicion, radiological vigilance, and readiness to revise the diagnosis intraoperatively, which are essential for optimal patient management.

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