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A laparoscopic approach to an enigmatic case of subacute intestinal obstruction

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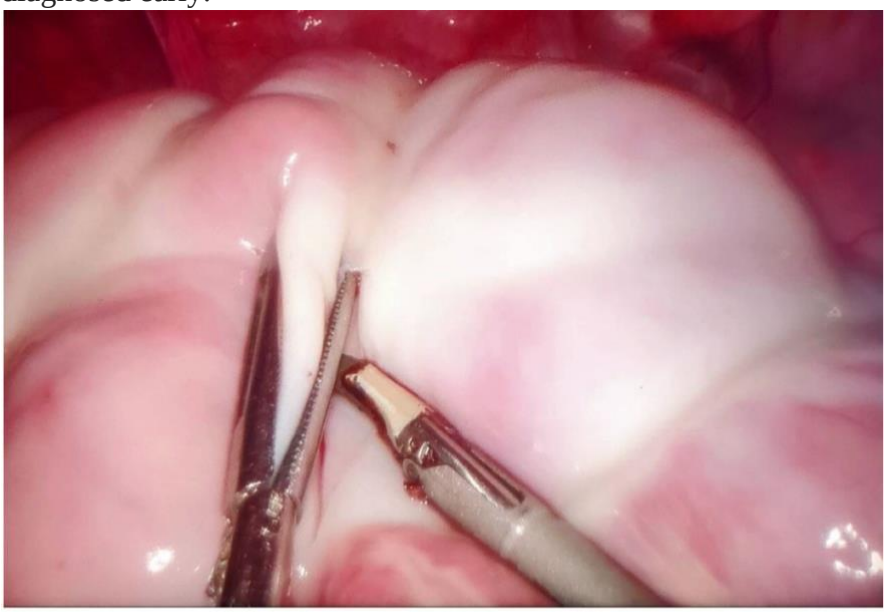
Abstract:
Background: Abdominal cocoon is a condition in which the bowel is encapsulated with a fibrous exudate which gradually leads to bowel obstruction. A 45y/o otherwise healthy male presented to our OPD with complaints of intractable vomiting and significant weight loss since February 2023.His primary diagnosis were group B Esophagitis but later he was diagnosed with Internal Hernia by his earlier physicians. Our preoperative diagnosis for the patient was the same. We planned a diagnostic laparoscopy with repair of internal hernia but the Intraoperative diagnosis was abdominal cocoon.
Methods: Physical examination showed mild fullness of left upper abdomen ,there were no signs of rashes,skin nor joint problems.
Results: CT sagittal section shows 'cauliflower sign': lumping of the small bowel in the abdomen which is a typical sign for SEP. The coronal section shows dilated D2 and D4, with feathery appearance of jejunum. The specimens: fibrous exudate and lymph node shows negative results for HPE.
Conclusion: SEP should be a differential diagnosis if a patient presents with a gradual increase in signs and symptoms of intestinal obstruction. We should keenly correlate the clinical history with the radiological findings before planning the management. SEP can easily be managed with the least invasive surgical procedure i.e 'Laparoscopic adhesiolysis'.

key-words: Abdominal cocoon, fibrous exudate, laparoscopic,SEP,small bowel obstruction

Introduction: Sclerosing encapsulating peritonitis (SEP), commonly known as abdominal cocoon, is a rather rare finding mostly seen in tropical and subtropical regions[1,2].Earlier, it was known to occur in young females, but currently we see reported cases in males too[1,3]. In abdominal cocoon, the small bowel is encapsulated with sclerosed tissue that is loosely or densely adhered to the small bowel, depending on the etiology and type: idiopathic and secondary forms of SEP[3]. The secondary form is mostly due to tuberculosis, long term propranolol use, SLE, liver cirrhosis, peritoneal dialysis, sarcoidosis etc[4,3].There are reported cases and gross evidence provided for tuberculosis bacilli being the causative

agent, but there have been multiple idiopathic cases too[2,3]. The complaint varies from patient to patient, but the most common complaints are nausea, vomiting, defecation difficulties, abdominal distension, and abdominal pain[4].It's very commonly misdiagnosed due to its nonspecific symptoms, signs, and radiological findings. Today we present to you our case, which was preoperatively diagnosed as an internal hernia but intraoperative diagnosis was abdominal cocoon, or SEP. Surgical excision can be done both by laparoscopy and laparotomy[5,3]. We managed it laparoscopically as it being a less invasive procedure between the two. We removed the densely adhered encapsulation around the small bowel without causing any injury to the bowel. SEP has very good prognosis if diagnosed early.



Small bowel encapsulated in Fibrous capsule

Case presentation

In August 2023, a 45-year-old male, otherwise healthy, presented to our OPD with complaints of nausea, intractable vomiting (green colored) 4-5 times/hour since the last few days, weight loss, defecation difficulties, no abdominal pain, and no abdominal distension. He presented to our OPD after several consultations failed to relieve him of uncontrollable vomiting.

The first episode of the same occurred in May 2021 with complaints of vomiting 2-3 times per month. The patient was prescribed PPIS and antacids for 2 weeks by physician

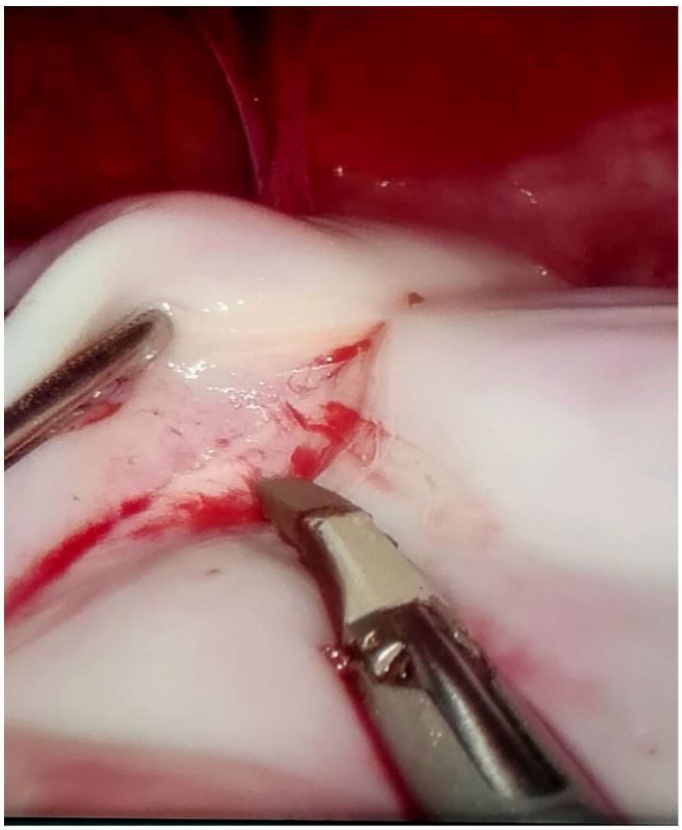
A second episode of the same has occurred since February 3, 2023, with an increase in the frequency of symptoms. This time the patient complained of vomiting 6-7 times per day for 4-5 days every month, with difficulty in defecation, no acute abdomen, no abdominal distension, unremarkable vitals, but deranged LFTs. He underwent UGIE, followed by a diagnosis of Grade B esophagitis. He was advised *prokinetics and antacids for 10 days; UDCA BD*,review after 3 months.

The patient was unremarkable until July 2023. This time he underwent a detailed checkup:CBC,PT/INR,RFT,LFT,TSH,FBG,HB1AC, anti-HCV,HIV P24, CXR (PA), ecg, and echo.

Alkaline Phosphatase 161U/L, AST: 45, CT report suggesting internal hernia: dilated duodenum, proximal jejunal loop, multiple clumped-up jejunal loops within the hernial sac seen in the left lumbar region extending inferiorly into the pelvis. Other tests were unremarkable. His doctor advised him to have an open repair of the internal hernia. His

condition worsened with time and he visited our OPD. On his history, he had the same complaints with a significant weight loss of around 23kg since February 2023. Our patient had no history of any underlying diseases, drug history, skin or joint problems,no known allergies, and an unremarkable family history or contact with tuberculosis . Two years ago, the patient had a white-collar job and is currently working in sales.

The physical examination was localised fullness at left upper abdomen. Correlating the patient's complaint and CT report with the primary diagnosis from the earlier consulted physician, we suspected an internal hernia with intermittent small bowel obstruction. We planned a diagnostic laparoscopy with the repair of any internal hernia. The postoperative diagnosis was partial intestinal obstruction secondary to abdominal cocoon, peritonitis chronicafibrosaincapsulata, or schlerosing encapsulating peritonitis (SEP).



Adhesiolysis of the densely adhered fibrous exudate

Discussion: Sclerosing encapsulated peritonitis (SEP) or abdominal cocoon is a rare finding that was earlier reported only in young females validated by retrograde menstruation theory and accompanied by viral infections but currently there is an increasing incidence in males with no postulated etiology[2,3].SEP is mainly of two types: idiopathic and secondary abdominal cocoon. A thin,easily separable capsule around the small bowel is the intraoperative finding in idiopathic abdominal cocoon, whereas a densely adhered fibrous capsule that is difficult to separate is reported in the latter[3,2]. The etiology of the idiopathic form is still unknown, but for the secondary form, the most common etiologies are peritoneal dialysis-related, long-term usage of beta-blockers (e.g., propranolol), tuberculosis, sarcoidosis, liver cirrhosis,SLE, and generalized peritonitis (bacterial,eosinophilic). The uncommon causes are cirrhosis,HIV, Whipple's disease, endometriosis, etc[4].In our patient there weren't signs of Malar rash, ANA test results

negative therefore ruling out SLE, likewise Sarcoidosis and other common etiologies were ruled out by history taking, physical examination, and initial diagnostic tests. SEP differs in each patient depending on their etiology, but a study reports a set of clinical signs to suspect SEP preoperatively. They are as follows: idiopathic intestinal obstruction; history of spontaneously resolving episodes of obstruction; presenting with a soft, non-tender abdominal lump[4].They might not be true in all patients, irrespective of the SEP type. In our patient, we witnessed a gradual increase in signs of vomiting and defecation difficulties over a period of years with no additional complaints.Preoperatively,CT abdomen is most sensitive. Typically, abdominal cocoon findings are sectional or complete bowel lumps in the center of the abdomen encased in fibrous tissue and peritoneal thickening,bowel wall thickening,calcification in peritoneum or bowel wall[6;2].In our case, we clearly see concentrated lumps of small bowel presenting the 'cauliflower sign' with diffuse mesenteric strands and mesenteric nodes suggesting dry peritonitis[6].

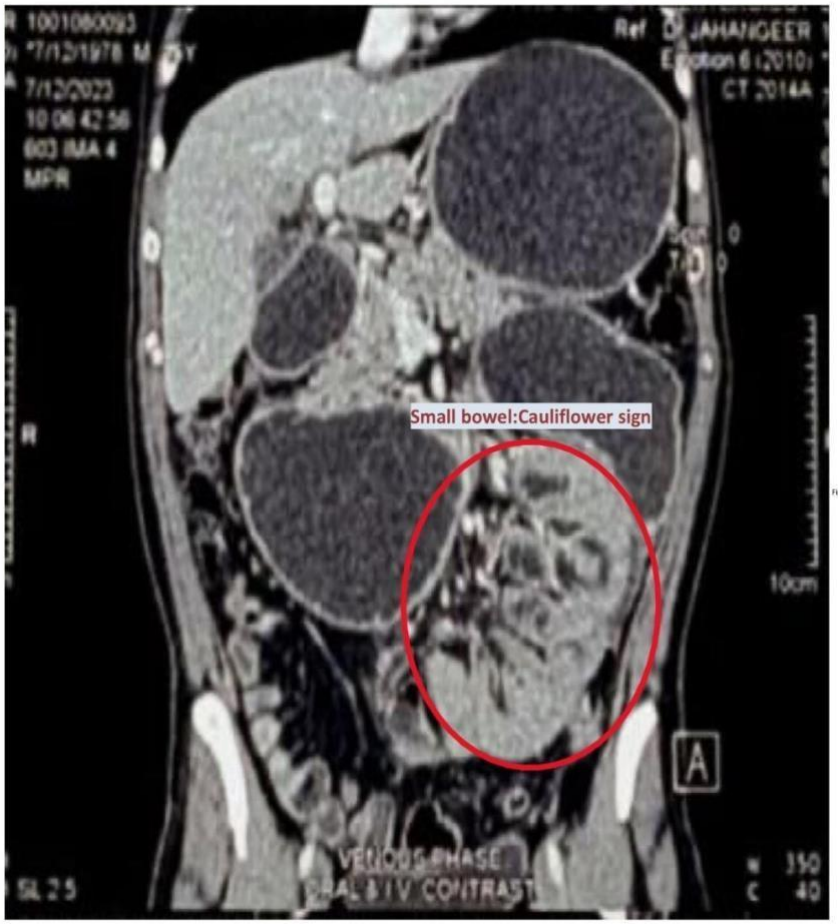
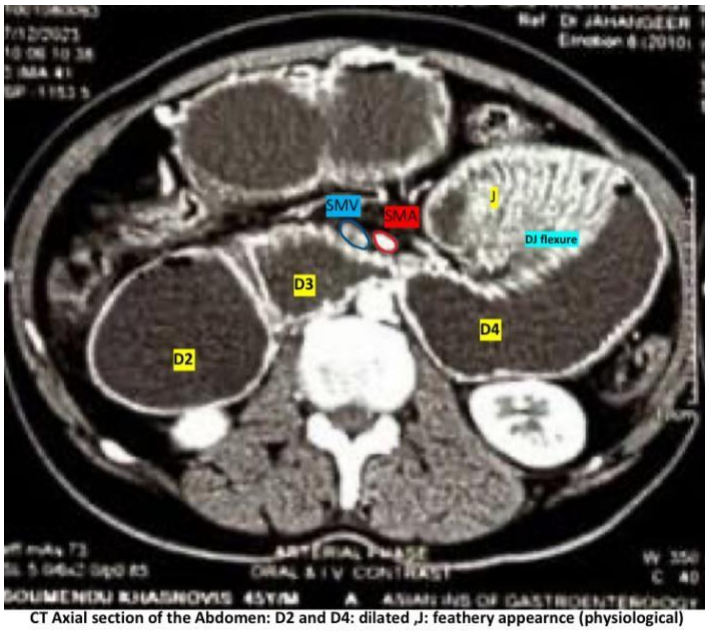


Fig 2:CT Coronal section of the abdomen presenting 'Cauliflower sign' of the small bowel



CT Axial section of the Abdomen: D2 and D4: dilated ,J: feathery appearnce (physiological)
Ilium: characterless

Diagnostic laparoscopy was performed,intraoperative findings led us to the abdominal cocoon of the small bowel, including the proximal jejunum. In our case, the encapsulation was dense and fibrous ,very closely adhered to the small bowel indicating a secondary form of SEP over the idiopathic form[3].We further proceeded with extensive adhesiolysis to relieve partial intestinal obstruction and harvested lymph nodes from the retroperitoneum.The small gut was traced from DJ to IC, and the hemostasis of the patient was checked.The four ports:two 5mm ports and two 10mm ports closed.Operative time was 2 hours 40mins. Perioperative blood loss ~10ml .

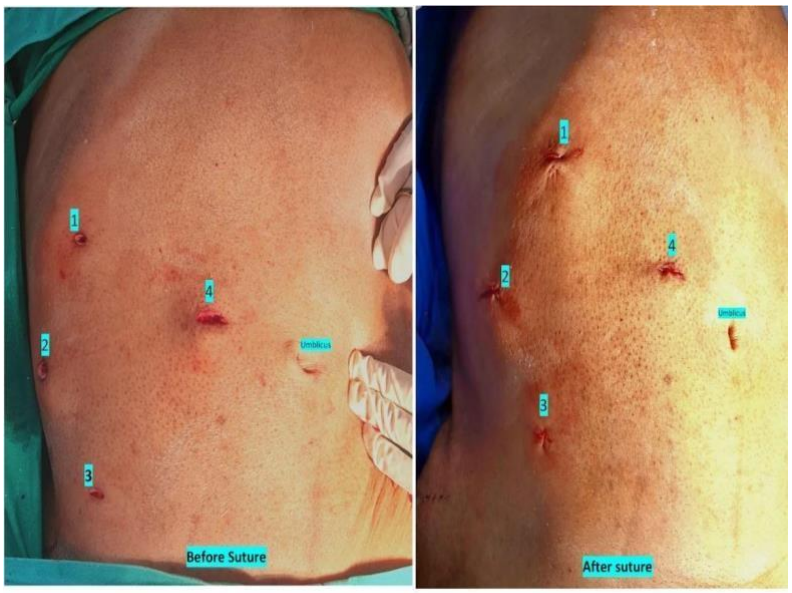
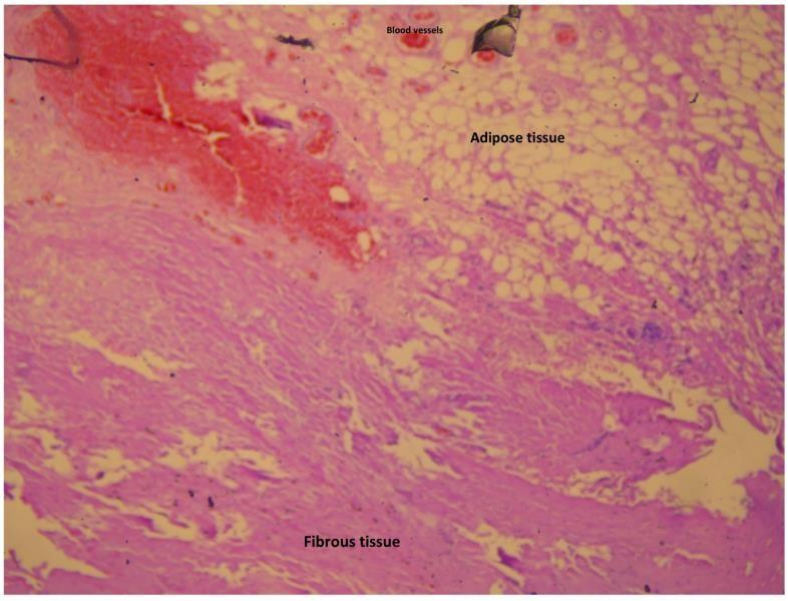
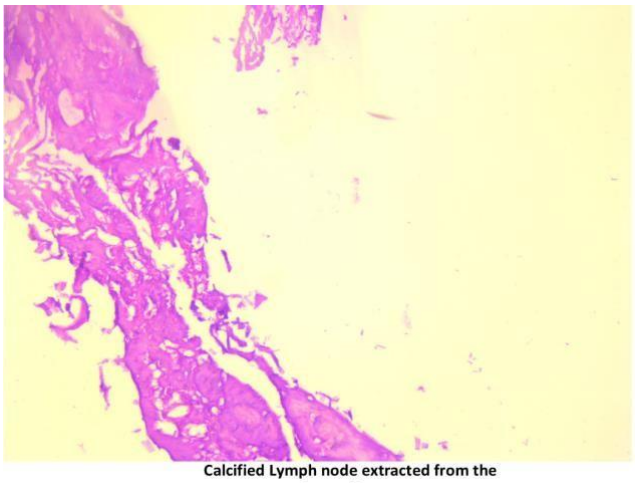


Fig3: Port Placement
1 and 3:Working ports
2 and 4 :Camera ports

Postoperative specimens: fibrous exudate sent for HPE; lymph node sent for Gene Xpert and HPE.TB PCR was negative. Patient uneventfully recovered and discharged on third POD



Section of the slide showing the fibrinous exudate



Calcified Lymph node extracted from the retroperitoneum

Conclusion:SEP is a rare disease but recently it has shown increase in incidence as there have been multiple reports of several cases in both male and female[2,7].It is difficult to diagnose preoperative but we surely have to keep SEP as differential diagnosis specially if a patient presents with signs and symptoms of intestinal obstruction[4].We should be very keen on clinical history as long term use of propranolol, sarcoidosis,peritoneal dialysis ,tuberculosis are common causes of SEP[3,4].The management of abdominal cocoon can be done laparoscopicallydecapsulating the small bowel without opting for laparotomy which is a much invasive procedure which also has a longer recovery period than laparoscopic surgery.SEP has good prognosis if diagnosed and treated on time. In our case the patient was discharged on the third day of surgery and has successfully returned back to his normal life with no restrictions.

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Materials: Dr. Rahul Dhar

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Article editing: Dr. Rahul Dhar

Final approval: Dr. Udipta Ray

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