

Peritoneal encapsulation: a preoperative diagnosis is possible

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Abstract

Peritoneal encapsulation is an exceedingly rare developmental abnormality in which the small intestine is encased in an accessory peritoneal sac between the omentum and mesocolon. Two clinical signs associated with the dense fibrous layer encapsulating the intestine are described. The first is a fixed, asymmetrical distension of the abdomen, which does not vary with peristaltic activity due to the unvarying position of the fibrous capsule. The second is the difference in the consistency of the abdominal wall to palpation. The flat area is firm, due to the dense fibrous capsule and the distended area soft, due to the thin walled distended small intestine with no overlying fibrous layer.

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Keywords: peritoneal encapsulation; developmental abnormality

Peritoneal encapsulation is an exceedingly rare condition and is almost never diagnosed or even suspected preoperatively. We report a case demonstrating two clinical features that should assist in the early diagnosis of this condition.

Case report

A 64 year old man presented with a history of colicky abdominal pain, vomiting, abdominal distension, and absolute constipation for two days. He had two previous episodes in the last 20 years. These were of lesser severity and settled without hospitalisation. There was no history of practolol usage. Examination revealed obvious, fixed distension in the left anterior abdominal wall (fig 1), which was "softer" to

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Figure 1 Preoperative photograph showing localised distension of the left anterior abdominal wall (reproduced with patient's permission).



Figure 2 Intraoperative photograph showing the small bowel encapsulated by a thick fibrous membrane.

palpation than the rest of the "flat" anterior abdominal wall, which was "firm" in consistency.

At surgery the small bowel under the "flat" area was covered and bound down by a thick fibrous membrane, which prevented it from distending, as well as lending it the firm consistency on palpation (fig 2), whereas the distended area consisted of distended loops of small intestine. The membrane was excised and the obstruction relieved.

Discussion

The terms peritoneal encapsulation, abdominal cocoon, and sclerosing encapsulating peritonitis, while erroneously used interchangeably, are three distinct pathological entities. Abdominal cocoon presents in young girls in tropical regions with acute or chronic bowel obstruction.¹

Sclerosing encapsulating peritonitis characterised by a thick, white, fibrous membrane covering the small bowel; is a rare complication of chronic ambulatory peritoneal dialysis² and use of the β -blocker practolol.^{3,4} Practolol has been withdrawn from the approved drug formulary for the past 15 years because of this complication. Patients develop widespread peritoneal fibrosis (encapsulating peritonitis) and present with ascites or intestinal obstruction. On the other hand, peritoneal encapsulation is a developmental abnormality that is generally asymptomatic, but rarely has been associated with intestinal obstruction^{5,6} and acute aortic occlusion.⁷

Peritoneal encapsulation is an exceedingly rare developmental abnormality in which the small intestine is encased in an accessory peritoneal sac between the omentum and mesocolon.⁵ It is thought to develop in the 12th embryological week when the peritoneum of the physiological umbilical hernia is drawn into the abdominal cavity along with the midgut. The condition is usually asymptomatic and found at laparotomy for intestinal obstruction.⁸

Radiographic studies are usually normal or show non-specific features of intestinal obstruction.⁹ Findings on computed tomography may be suggestive of peritoneal encapsulation when small bowel is enveloped in a thin membrane.⁵

Although these entities have been described and are rare, no clinical features have been described to enable one to arrive at the diagnosis preoperatively in a patient presenting with non-strangulating, small intestinal obstruction. Because of the dense fibrous layer encapsulating the intestine, only the bowel proximal to and therefore outside of it can distend. This provides two clinical signs. The first sign is *fixed, asymmetrical distension of the abdomen*, which does not vary with peristaltic activity due to the unvarying position of the fibrous capsule. The second is the *difference in the consistency of the abdominal wall to palpation*. The flat area is firm, due to the dense fibrous capsule and the distended area soft, due to the thin walled distended small intestine with no overlying fibrous layer.

Peritoneal encapsulation is a rare cause of intestinal obstruction, which is only diagnosed at laparotomy. The presence of the above described signs should aid in suspecting the diagnosis preoperatively for clinicians who encounter similar problems in the future.

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