

## Partial abdominal cocoon in an elderly man

M Habibi<sup>1\*</sup>, S Ozdemir<sup>1</sup>, E Demirci<sup>2</sup>, H Calis<sup>3</sup>, N Bulbulla<sup>1</sup>

### Abstract

#### Introduction

Abdominal cocoon, an idiopathic form of sclerosing encapsulating peritonitis (SEP), is a rare fibrocollagenous membrane-forming process that results in total or partial encapsulation of the small intestine. Patients may present with signs of acute and subacute small bowel obstruction, the cause of which is a thick fibrous cap covering the small intestines. Abdominal cocoon is more commonly observed in young female patients. Here we present our identification and treatment of a case of partial abdominal cocoon in an elderly man after initial diagnosis of incarcerated inguinal hernia in which the cause of obstruction was a rotation between encapsulated intestinal segments.

#### Case report

An 81-year-old man admitted to emergency department with the clinical findings of bowel obstruction. Subsequent palpation of the inguinal hernia sac during physical examination revealed incarceration. Under spinal anaesthesia, right inguinal incision was performed and exploration at the level of the internal inguinal ring revealed adherent abdominal bowel loops that joined together to form a mass. Upon this observation, general anaesthesia was administered for full exploration by laparotomy. Rotation between two different intestinal segments resulting in the formation of a cocoon-like mass covered with stiff fibrotic tissue was identified as the cause of mechanical bowel obstruction. Dissection of the

adhesions on the level of rotation provided for continuity of the passage.

#### Conclusion

The main surgical approach for treating abdominal cocoon is lysis of adhesions and excision of the stiff membranes. Resection is only indicated in case of nonviable or perforated bowel.

#### Introduction

Abdominal cocoon, an idiopathic form of sclerosing encapsulating peritonitis (SEP), is a rare fibrocollagenous membrane-forming process that results in total or partial encapsulation of the small intestine. A rare cause of small bowel obstruction<sup>1,2</sup>, abdominal cocoon is more common in young females and is occasionally accompanied by ascites and small bowel thickening.

Preoperative diagnosis of this condition is challenging because the early clinical symptoms are non-specific. Clinical suspicion is raised when recurrent episodes of small bowel obstruction are experienced, supportive imaging findings are obtained, and/or other possible causes of small bowel obstruction are excluded.

Here we present a case initially diagnosed as incarcerated inguinal hernia but revealed to be abdominal cocoon during surgery.

#### Case report

An 81-year-old man was admitted to our emergency department with a 36-hour history of left groin pain, abdominal swelling, flatulence, constipation, nausea, and vomiting. Laboratory testing revealed normal full blood count and biochemistry values. Bowel sounds were hypoactive on auscultation and abdominal distension and sensitivity were apparent in all quadrants on palpation, but no rebound or guarding was observed. Observation of an irreducible right inguinal hernia and a

small intestinal air-fluid level on plain abdominal X-ray resulted in diagnosis of incarcerated right inguinal hernia and the decision to operate. The patient had no history of previous surgery.

Under spinal anaesthesia, right inguinal incision was performed and the indirect inguinal hernia sac, which was filled with serous fluid, was dissected. Viable small bowel segment within the hernia sac was easily reduced. Exploration at the level of the internal inguinal ring revealed adherent abdominal bowel loops that joined together to form a mass. Upon this observation, general anaesthesia was administered for full exploration by laparotomy.

Dilation of the jejunal loop was observed 50 cm distal from the ligament of Treitz. Rotation between two different intestinal segments on this level resulting in the formation of a cocoon-like mass covered with stiff fibrotic tissue was identified as the cause of mechanical bowel obstruction (Figure 1). Dissection of the adhesions on the level of rotation provided for continuity of the passage (Figure 2). As dissection of the areas causing obstruction appeared sufficient and difficulty in separating the stiff fibrous bands of the segments that had come together to form the mass was experienced, complete adhesiolysis was not performed to avoid bowel injury.

The patient and was able to feed orally first day postoperatively and was discharged 3 days postoperatively without any complications.

#### Discussion

Many hypotheses have been proposed regarding the development of abdominal cocoon, an idiopathic form of SEP characterized by covering of the small intestine with a stiff, fibrous wall.

Although immunological reaction against retrograde menstruation and gynaecological infection were once believed responsible, observation of the condition in men and premenopausal

\*Corresponding author  
Email: manihabibi@gmail.com

<sup>1</sup> Antalya Training and Research Hospital, Antalya, Turkey

<sup>2</sup> Antalya Memorial Hospital, Antalya, Turkey

<sup>3</sup> Patnos State Hospital, Agri, Turkey

women does not support this hypothesis<sup>3</sup>. Development of the secondary form of SEP may occur for various reasons, among which the more common are peritoneal dialysis, recurrent infectious peritonitis, treatment with beta-adrenergic blockers, use of ventriculoperitoneal and peritonovenous shunts, and primary abdominal surgery<sup>4</sup>.

Other rare causes are tuberculosis, sarcoidosis, systemic lupus eritomatozis, familial Mediterranean fever, liver transplantation, gastrointestinal malignancies, protein S deficiency, fibrogenic foreign material, and luteinizing overyal tekoma<sup>5,6</sup>.

Patients may present with signs of acute and subacute small bowel obstruction. Besides pain and weight loss, identification of a palpable mass on palpation is a possible clinical feature. Diagnosis before operation is often based solely on clinical suspicion. Although the existence of an abdominal cocoon regarding this entity may be obtained in the preoperative period with the use of computed tomography, doing so is not always possible because the radiological findings are not specific<sup>7,8</sup>.

The clinical findings of our case initially indicated bowel obstruction. Subsequent palpation of the inguinal hernia sac during physical examination revealed incarceration, which may explain the aetiology of obstruction. Upon this finding, no further imaging study was considered necessary. The primary difficulty in preoperative diagnosis in our case was acceptance of the ileus as incarcerated inguinal hernia, abetted by the fact that the patient was of an age and sex for which abdominal cocoon is rarely observed. In all patients with abdominal cocoon, the cause of small bowel obstruction is a thick fibrous cap that covers the small intestines. In our case, the cause of obstruction was rotation between the two separate small bowel segments involved in cocoon formation.

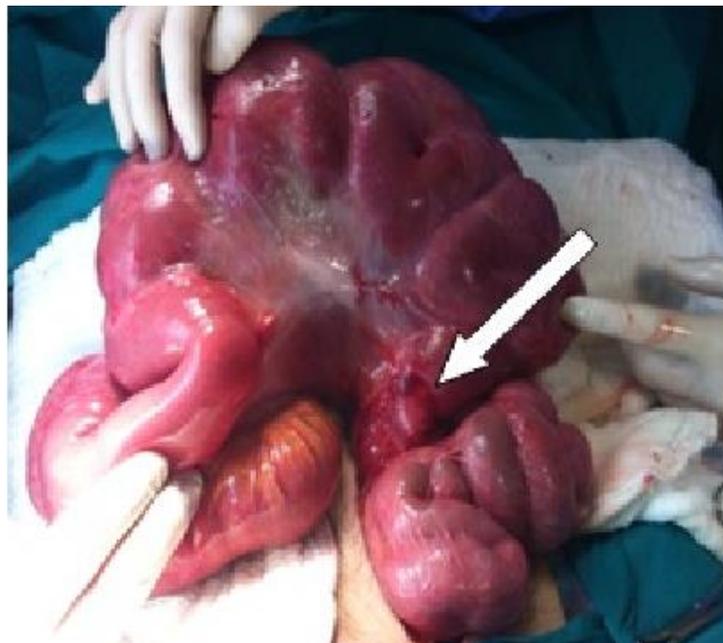
The main surgical approach for treating abdominal cocoon is lysis of adhesions and excision of the stiff membranes. Bowel resection should

not be performed unless the bowel is devitalized<sup>9,10</sup>.

### Conclusion

In our case, dissection of the fibrous bands at the area where the rotation had occurred seemed sufficient to resolve the mechanical obstruction caused by rotation of the bowel

segments by recovery (de-rotation) of the rotation. Despite the success of our treatment, the means of treating abdominal cocoon cases should be determined after evaluation on an individual basis, and dissection and resection performed carefully only after consideration of the benefits and drawbacks.



**Figure 1:** Rotation between two different intestinal segments that is encapsulated with stiff fibrotic tissue.



**Figure 2:** Intestinal segments after de-rotation.

### Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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