

A case of Allen-Masters syndrome in an early pregnant woman: laparoscopic barbed suture repair of an internal small bowel obstruction due to a broad ligament hernia

Chiara Cassani¹, Giulia Musicò¹, Andrea Peri², Luigi Pugliese², Rossella E. Nappi¹, Arsenio Spinillo¹

¹ Departments of Gynecology & Obstetrics, Foundation IRCCS Policlinico San Matteo, Pavia, Italy

² Department of Surgery, Foundation IRCCS Policlinico San Matteo, Pavia, Italy

ABSTRACT

We here report a case of small bowel obstruction due to a broad ligament hernia treated successfully by laparoscopy in a very early stage of pregnancy. A 33-year-old woman with a previous laparoscopic appendectomy at age 23 presented to the emergency room with acute abdominal pain, non-responsive to analgesic therapy, and without inflammatory signs. After 12 hours, the pain increased and a CT scan revealed an occlusive small bowel syndrome. Laparoscopic exploration revealed a 30 cm loop of small bowel herniated into a left broad ligament defect, and collaterally, a similar, unobstructed, defect on the right side. We performed a successful surgical treatment, without bowel resection, and discharged the patient on day 4, with no postoperative complications. She had her dating scan 5 weeks later and delivered spontaneously following a physiological term labor. CT scan and rapid exploratory laparoscopy enabled both correct diagnosis and prompt treatment in this case of bowel herniation into a broad ligament defect in a pregnant woman.

KEYWORDS

Internal herniation, Allen-Masters syndrome, laparoscopy, pregnancy.

Introduction

Allen-Masters syndrome is a very rare condition due to a defect of the broad and/or utero-sacral ligaments. In general, it is diagnosed only as a result of complications such as acute abdominal pain or intestinal occlusion. In here, we report a case of small bowel obstruction due to a broad ligament hernia treated by laparoscopy in a very early pregnant woman.

Methods

A 33-year-old woman presented to the emergency room with analgesic-resistant acute pelvic pain, associated with nausea and vomiting. The pain had started 5-6 hours earlier. She was on day 28 of her last menstrual period, and had a positive urinary beta-HCG test. The only relevant aspect of her prior medical history was a laparoscopic appendectomy at the age of 23. She had a BMI of 16.8 kg/m² (43 kg, 160 cm) and all vital signs were within the normal limits. She reported regular urination and normal bowel movements. On admission, routine blood tests were normal, including normal white blood count (WBC 7.58 x 10³/ul). Serum beta-HCG was 61.7 mU/mL. Given the low beta-HCG titer, we excluded a possible ectopic pregnancy as a cause of the acute abdomen and diagnosed a very early stage pregnancy.

Physical examination revealed a soft, flat abdomen with pain located in the right iliac fossa and in the hypogastrium. The

Article history

Received 2 Mar 2019 - Accepted 5 Apr 2019

Contact

Chiara Cassani; ch.cassani@smatteo.pv.it
Departments of Gynecology & Obstetrics at Foundation IRCCS Policlinico
San Matteo, Piazzale Golgi 19, 27100 Pavia
Phone number +39 0382/503720, Fax Number +39 0382/503146

Blumberg, Murphy and Giordano signs were negative. A transvaginal ultrasound showed a normal endometrial pattern in the secretive phase with 11 mm thickness, and a corpus luteum located in the right ovary. Vascularization was normal in both ovaries with no evidence of ischemia.

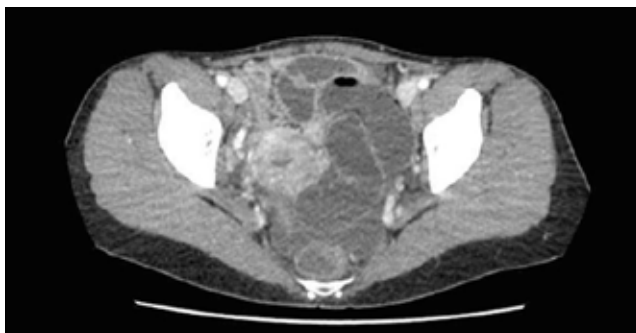
The patient was hospitalized for observation. Over the following 12h period, her condition deteriorated with further episodes of vomiting and the appearance of abdominal rigidity. WBC increased (13 x 10³/ul) with no fever. Serum beta-HCG rose to 100 mU/mL. We performed abdominal CT scans, both with and without iodinated contrast (Figs. 1-2), which documented a partial obstruction of the distal duodenum and proximal ileum with significant dilation of a large section of the preceding bowel.

Most of the occluded tract was located in the left hemipelvis. Imaging showed multiple air-fluid levels. There was no evidence of pneumoperitoneum. In the perihepatic region, we documented a peritoneal exudate with a depth of 13 mm collecting in the paracolic gutters and associated spaces.

Figure 1 CT scan coronal section (late arterial phase) showing duodenum and proximal ileum obstruction, bowel dilatation, air-fluid levels, minimum peri-hepatic exudate.



Figure 2 CT scan axial section (early arterial phase) showing the majority of the occlusion located in the left hemipelvis.



Results

We agreed to perform an urgent laparoscopic exploration. We found a loop of small intestine, which was herniated into a defect in the fascia between the round ligament and the left fallopian tube. The defect measured 3 cm in diameter. A similar defect was found on the opposite side measuring 2 cm in diameter, which thus confirmed the diagnosis of Allen-Masters syndrome. A section of approximately 30 cm of the bowel was extracted from the defective fascial wall, and it did not appear significantly ischemic. No bowel resection was indicated. Then we performed a bilateral surgical repair of the fascial layer with a 3.0 barbed suture, followed by an abdominal lavage. Prior to closure, we reconfirmed that the extracted bowel was in good condition. We did not observe any other anatomical defects.

The patient recovered well following the procedure. On day 4 she was discharged without any postoperative complications, and with a serum beta-HCG of 538 mU/mL.

Five weeks later, she performed her first prenatal ultrasound dating, revealing an intrauterine pregnancy with vital embryo of 7 weeks. The patient delivered spontaneously at full-term pregnancy.

Discussion

Internal hernia is a rare cause of intestinal obstruction, reported in less than 1% of cases. Broad ligament herniation is an even more rare condition, occurring in approximately 0.05% of all hernias.^[1] Although the ileum is the most common section of the intestines to herniate, colonic herniation is also reported.^[2,3] The etiology of this kind of hernia is still under discussion. Congenital and iatrogenic factors, as well as pelvic inflammatory disease, delivery trauma, underweight status and endometriosis seem implicated. The present case is in line with the report by Garcia-Oria et al., who suggested that very low BMI is a risk factor for spontaneous rupture of the broad ligament due to thinness of the meso-ovarium and mesosalpinx.^[4] Guillem et al.^[5] described the first laparoscopic repair of a small bowel incarceration in a broad ligament defect. They closed the broad ligament defect with an endoscopic clip, whereas we agreed on a 3.0 running suture, as recommended by Higa et al., in order to avoid possible subsequent internal hernias.^[6] We decided to perform a barbed suture because its evenly spaced barbs throughout the strand provide secure closure of the ligament incision by distributing tension across the wound.^[3] Considering that the uterus and bilateral broad ligaments would have to endure all the physiological modifications induced by pregnancy, a barbed suture seemed the best approach. We preferred a laparoscopic procedure to ensure a faster and painless postoperative recovery with better functional and esthetic results.^[3,6] The laparoscopic approach is safe and feasible in every trimester of pregnancy without differences in perinatal outcomes.^[7] To our knowledge, this is the first description of the use of barbed sutures during laparoscopy to repair a bilateral broad ligament defect in a pregnant woman. We consider this method safe, fast and effective. In the present case of bowel herniation into a broad ligament defect very early during pregnancy, CT scan followed by immediate exploratory laparoscopy allowed both correct diagnosis and prompt treatment.

References

1. Maillieux P, Ramboux A. Small bowel obstruction due to an internal herniation through a defect of the broad ligament. *JBR-BTR*. 2010;93:201-3.
2. Takayama S, Hirokawa T, Sakamoto M, et al. Laparoscopic management of small bowel incarceration caused by a broad ligament defect: report of a case. *Surg Today*. 2007;37:437-9.
3. Mazzetti CH, Hock N, Taylor S, Lemaitre J, Crener K, Lebrun E. Acute abdominal pain due to internal herniation of the sigmoid colon, fallopian tube and left ovary, a rare presentation of Allen Masters syndrome. *Acta Chir Belg*. 2018;1-3.
4. Garcia-Oria M, Inglada J, Domingo J, Biescas J, Ching C. Small bowel obstruction due to broad ligament hernia successfully treated by laparoscopy. *J Laparoendosc Adv Surg Tech A*. 2007;17:666-8.
5. Guillem P, Cordonnier C, Bounoua F, Adams P, Duval G. Small bowel incarceration in a broad ligament defect. *Surg Endosc*. 2003;17:161-2.
6. Higa KD, Ho T, Boone KB. Internal hernias after laparoscopic Roux-en-Y gastric bypass: Incidence, treatment, and prevention. *Obes Surg*. 2003;13:350-4.
7. Sajid MS, Khawaja AH, Sains P, Singh KK, Baig MK. A systematic review comparing laparoscopic vs open adhesiolysis in patients with adhesional small bowel obstruction. *Am J Surg*. 2016;212:138-50.
8. Chohan L, Kilpatrick C. Laparoscopy in pregnancy: a literature review. *Clin Obstet Gynecol*. 2009;52:557-69.