Case Report: Sigmoid volvulus associated with a torsion of an ovarian cyst [version 1; peer review: awaiting peer review]

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Abstract
Sigmoid volvulus is a life-threatening condition rarely seen in young adults. However, adnexal torsion is one of the top causes of gynecological emergencies, with prevalence increasing with the presence of an ovarian cyst. The association of sigmoid volvulus and adnexal torsion is exceptional. We report the case of a 33-year-old woman who presented to the emergency department for abdominal pain evolving for six hours, associated with gas and fecal matter obstruction. Clinical examination showed a restless patient with tachycardia and distended abdomen with severe tenderness in the left iliac fossa. A contrast-enhanced computed tomography (CT) scan of the abdomen revealed dilated large bowel loops showing bird beak-like narrowing of the sigmoid colon and whirl sign, suggestive of sigmoid volvulus with bowel wall compromise associated with left adnexal torsion secondary to a large pelvic mass. The patient underwent an emergency laparotomy. Exploration showed a torsion of the left adnexa secondary to a large cyst of the left ovary, carrying the sigmoid colon with it, which produces a volvulus of the sigmoid colon with 720° anticlockwise rotation. A sigmoid colectomy and Hartmann’s procedure associated with a left adnexectomy were performed. Although rare, the occurrence of a volvulus of the sigmoid in the young woman must be suggestive of torsion of the adnexa. Surgical management must be prompt, allowing both the ovary and the sigmoid to be saved.

Keywords
Sigmoid volvulus, ovarian cyst, ovarian torsion, laparotomy
Introduction
Sigmoid volvulus usually affects elderly patients, often those between the fifth and eighth decades of life. It occurs more commonly in men, with a sex ratio ranging from 2/1 to 10/1.

On the other hand, adnexal torsion is one of the top causes of gynecological emergencies, with a prevalence ranging from 3% to 5%. It may affect women at any age, but it mostly occurs during the reproductive age. The risk of torsion increases with the presence of an ovarian cyst and especially if the latter exceeds 5 cm.

The association of sigmoid volvulus and adnexal torsion is exceptional, and was reported for the first time in 1937; since then only three cases have been reported.

We present here a case of sigmoid volvulus associated with torsion of a left ovarian cyst. A review of the diagnosis and management is subsequently carried out.

Case report
A 33-year-old north African woman, nulligravida, without any medical history, presented to our emergency department with complaints of generalized abdominal pain evolving for six hours, associated with gas and fecal matter obstruction. Clinical examination showed a restless patient with tachycardia and normal blood pressure. The abdomen was distended with severe tenderness in the left iliac fossa. Furthermore, no mass was palpable, no hernias were noted, there were no signs of peritonitis, and rectal examination revealed an empty rectal vault. Complete blood count was normal except for microcytic, hypochromic anemia of 7 g/dl and C-reactive protein was within the normal range. A contrast-enhanced computed tomography (CT) scan of the abdomen revealed dilated large bowel loops showing bird beak-like narrowing of the sigmoid colon and whirl sign suggestive of sigmoid volvulus with bowel wall compromise associated with left adnexal torsion secondary to a large pelvic mass (Figure 1).

After initial resuscitation with intravenous fluids and antibiotics (cefotaxime 1g × 3/day, metronidazole 500 mg × 3/day and gentamycin 240 mg/day), the patient was directly taken to the operating room and an emergency laparotomy was performed by the clinical lecturer. Exploration showed a torsion of the left adnexa secondary to a large cyst of the left ovary measuring 15 cm along its longer axis, carrying the sigmoid colon with it, which produced a volvulus of the sigmoid colon with 720° anticlockwise rotation. As both the left adnexa and the sigmoid colon were necrotic (Figure 2), a sigmoid colectomy and Hartmann’s procedure associated with a left adnexectomy were performed. The postoperative course was uneventful, and the patient was discharged on the fifth postoperative day on analgesic treatment and low-molecular-weight heparin for five days. Pathological examination revealed mucinous cystadenoma of the ovary, with no signs of malignancy (Figure 3). The resected colon was inflammatory with necrotic hemorrhagic tissue.

Discussion
Sigmoid volvulus is a life-threatening condition, originating from rotation of the sigmoid colon around its mesenteric axis, leading to obstruction of the intestinal lumen and impairment of vascular perfusion, precipitating ischemia, necrosis and perforation of the twisted bowel.

This disease is rare among young adults and usually seen in elderly males. Many factors may predispose to sigmoid volvulus, including redundant sigmoid loop with narrow and elongated mesentery and colonic motility problems such as constipation. Nevertheless, in young adults, sigmoid volvulus is more commonly secondary to neurologic diseases and megacolon.
Pregnancy, and especially the third trimester of gestation, seems to increase the risk of occurrence of sigmoid volvulus. The expansion of the volume of the uterus uplifts the sigmoid colon and creates an obstruction of the intestinal lumen by extrinsic compression. The elongated sigmoid loop will then twist around its axis. Similarly, an enlarged adnexal cyst may cause an abnormally elongated sigmoid colon, thus promoting the occurrence of sigmoid volvulus. In our case, the ovarian cyst was responsible for the sigmoid volvulus. The left tube was carried with the sigmoid’s movement, which worsened the strangulation and led to ovarian ischemia.

A review of the literature revealed only four cases of sigmoid volvulus associated with ovarian cyst torsion since it was first reported in 1937. The second case was reported in 1955 and the third in 1962. In 1963, Buckle reported the last case and suggested that the long and redundant sigmoid colon favored the occurrence of volvulus and that the precipitating cause was torsion of the left-sided ovarian cyst, which was lying adjacent to the mesocolon and covered by the redundant loop of bowel. For nearly 60 years, there have been no observations associating adnexal torsion on an ovarian cyst with volvulus of the sigmoid colon in adults. In 2010, Al-Rshoud et al. reported the case of sigmoid colon volvulus after aspiration of an ovarian cyst without any adnexal torsion.

Currently, the positive diagnosis of sigmoid volvulus is based on a CT scan of the abdomen, which is considered the best diagnostic modality of choice with a specificity exceeding 90% and a sensitivity of almost 100%. The most specific radiological findings are the ‘bird’s beak’ sign and the ‘whirl sign’. Furthermore, CT scans facilitate the diagnosis of...
complications, such as perforation and peritonitis, as in our case, where it showed severity signs such as lack of parietal enhancement of the colon and intra-peritoneal effusion indicating colonic necrosis.

Given these findings, surgical management was the only therapeutic option, since it enables the treatment of both the complication (sigmoid volvulus) and the cause (ovarian cyst torsion).

In our case, since both the sigmoid and the ovary were necrotic, a sigmoidectomy associated with a left adnexectomy was then performed. The question was then whether or not to perform an anastomosis. Restoring intestinal continuity depends on local conditions and the patient’s hemodynamic status. According to Oren et al., there was no significant difference in mortality after the Hartmann procedure (22%) versus resection-anastomosis (19%) among patients operated on for complicated volvulus. More recent studies recommend a Hartmann’s procedure in the setting of bowel gangrene, as a primary anastomosis may be associated with a high rate of leaks in such cases. In our case we found it wiser to perform a Hartmann’s procedure with proximal end colostomy.

Conclusion
Although rare, the occurrence of a volvulus of the sigmoid in a young woman must be suggestive of torsion of the adnexa. Surgical management must be prompt, allowing both the ovary and the sigmoid to be saved.

Data availability
All data underlying the results are available as part of the article and no additional source data are required.

Consent
Written informed consent for publication of their clinical details and clinical images was obtained from the patient.

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