

Role of ultrasound features in the conservative management of adnexal torsion followed by spontaneous detorsion in pregnancy

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ABSTRACT

Adnexal torsion is one of the few real gynecologic emergencies. It consists of partial or complete rotation of the ovary (on its vascular pedicle) and/or fallopian tube around the infundibulo-pelvic ligament, leading to stromal edema, hemorrhagic infarction and necrosis of the adnexal structures. The incidence of adnexal torsion reported in the literature is 0.3–3.5 cases per year. Up to 20% of torsion cases are diagnosed in pregnant women, with the majority occurring in the first trimester. The clinical presentation is similar in pregnant and non-pregnant women. We report a case of spontaneous adnexal detorsion in a pregnant woman with ovarian torsion in the absence of any underlying functional cyst or previous hormonal stimulation. This is the first case of spontaneous adnexal detorsion in a pregnant woman who has not previously undergone hormonal stimulation.

Not only clinical presentation and laboratory tests, but also specific ultrasound features are essential in the diagnosis and subsequent management of adnexal torsion, especially in pregnancy.

KEYWORDS

Ultrasound, adnexal torsion, pregnancy.

Adnexal torsion is one of the few real gynecologic emergencies. It consists of partial or complete rotation of the ovary (on its vascular pedicle) and/or fallopian tube around the infundibulo-pelvic ligament, leading to stromal edema, hemorrhagic infarction and necrosis of the adnexal structures^[1]. Using specific criteria, twisted adnexa can be detected during ultrasound evaluation. Stromal edema of the ovary is present, with or without peripherally displaced antral follicles^[2], and in many cases the “follicular ring sign” can be observed: a hyperechoic ring around the antral follicles, which seems to be an early sign of torsion^[3]. Twisted adnexa are often anterior or posterior to the uterus and tenderness can be evoked by the pressure of the transvaginal ultrasound probe^[1]. Free fluid in the Douglas pouch is often present^[2]. On Doppler evaluation, twisted adnexa may or may not be vascularized, depending on the severity of vascular impairment, and this aspect may be evaluated on the basis of the presence or absence of central or peripheral arterial and venous flow^[4]. Finally, the pathognomonic ultrasonographic sign of adnexal torsion is the “whirlpool sign”, a term that refers to the appearance of the vascular peduncle rolled up on its axis, lateral or medial to the adnexa, resembling a whirlpool inside an oval structure^[5]. Torsion occurs more commonly on the right side, due to the proximity of the left ovary to the sigmoid colon, which is relatively fixed compared with the hypermobility of the cecum and ileum on the right. The incidence of adnexal torsion, as currently reported in the literature, is 0.3–3.5 cases per year. While it most commonly occurs in women of reproductive age, it can also occur in children, post-menopausal women, and during pregnancy.

Article history

Received 11 May 2021 - Accepted 25 May 2021

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Indeed, up to 20% of torsion cases are diagnosed in pregnant women, with the majority occurring in the first trimester^[1].

Apart from nausea, which is more common during pregnancy, the clinical presentation is similar in pregnant and non-pregnant women. On the contrary, the underlying adnexal pathologies are different. Indeed, neoplastic ovarian enlargement as a cause of ovarian torsion is more common in non-pregnant women. On the other hand, in most cases in pregnant women there is an underlying functional cyst of the ovary, a large corpus luteum, or an enlarged ovary following ovarian stimulation or ovarian hyperstimulation syndrome^[6].

The surgical management of adnexal torsion in pregnancy has evolved from laparotomy to laparoscopy. Several studies have shown the benefits of laparoscopy, in terms of reduced postoperative pain and faster recovery. Despite its potential risks (fetal hypoxia caused by decreased uteroplacental blood flow following pneumoperitoneum, fetal acidosis caused by the absorption of carbon dioxide, fetal injury caused by insertion of the Veress needle or the trocars, and preterm delivery), laparoscopy is usually safe and associated with favorable obstetric

outcomes^[7], but if performed in the first trimester, the risk of miscarriage is considerable (5.6% in the second trimester compared with 12% in the first trimester).

We report a case of spontaneous adnexal detorsion in a pregnant woman with ovarian torsion in the absence of any underlying functional cyst or previous hormonal stimulation.

A 29-year-old, 6-weeks-pregnant woman was referred from the emergency room for ultrasonographic evaluation one day after a sudden episode of acute pain in the right iliac fossa.

Transvaginal sonography showed a normal intrauterine pregnancy, consistent with the reported amenorrhea. The left ovary was normal in size, morphology and location. The right ovary, containing the corpus luteum, was enlarged (59x53x21 cm), located in the Douglas pouch, and posterior to the uterus. Stromal edema was present with follicles displaced peripherally (Figure 1) and the “whirlpool sign” characteristic of ovarian torsion was detected, with concomitant central arterial and venous flow present on color Doppler (Figure 2). Free fluid was observed in the pelvis (Figure 3) and the pressure of the ultrasound probe in the posterior cul-de-sac generated mild tenderness.

Following this examination, the patient was hospitalized with suspected ovarian torsion. Blood tests, body temperature and vital signs were normal, and neither vomiting nor nausea

were reported. The patient was informed about the increased risk of miscarriage, linked not only to the early gestational age itself, but also to surgical removal of the twisted ovary, which contained the corpus luteum (responsible for progesterone production in first trimester of pregnancy), and also about the possibility of observational management (given the observation of normal vascularization on color Doppler despite the presence of the whirlpool sign) in the absence of symptoms. A consensus was reached for conservative management.

The following day a second ultrasound examination was performed showing an identical picture.

Over five days of observation, during which blood chemistry tests were normal, the right iliac fossa tenderness progressively subsided and the patient was discharged, with a schedule for close clinical and ultrasound follow up.

Transvaginal ultrasound scans and blood tests were performed every week for 8 weeks, until the right ovary appeared untwisted and normal in size, morphology, location and flow, without any sign of torsion (Figure 4). The patient was completely asymptomatic. At this point we concluded that the ovarian torsion had spontaneously regressed. The evolution of the pregnancy was thereafter uneventful, and the patient delivered a healthy newborn at term.

Figure 1 Right adnexal torsion: enlarged ovary located in the Douglas’ pouch, with stromal edema, follicles peripherally displaced giving rise to the “follicular ring sign”.

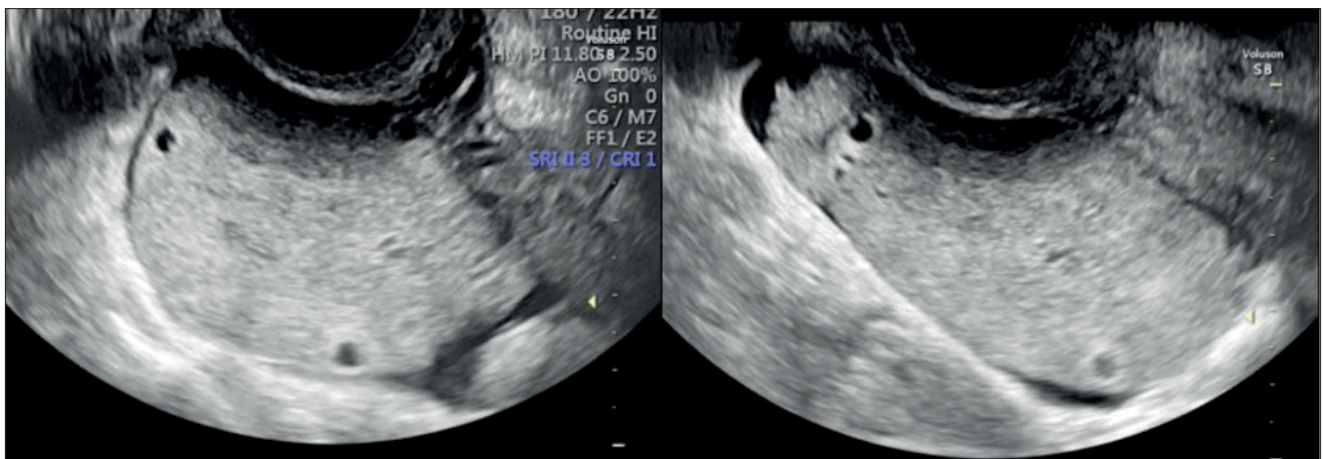


Figure 2 The “whirlpool sign” of the twisted adnexa, with central arterial and venous flow on color Doppler.

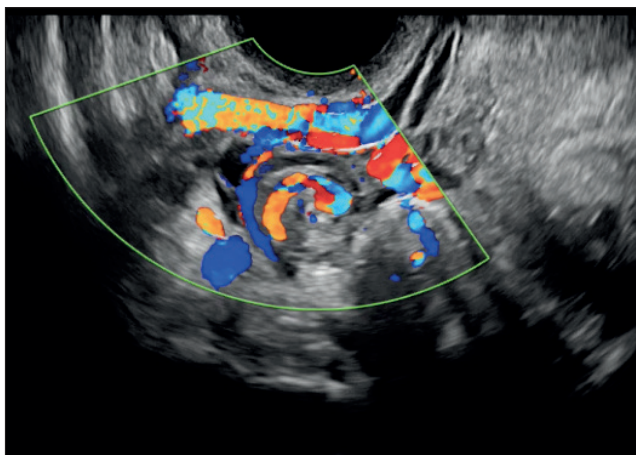


Figure 3 Free fluid in the Douglas pouch.

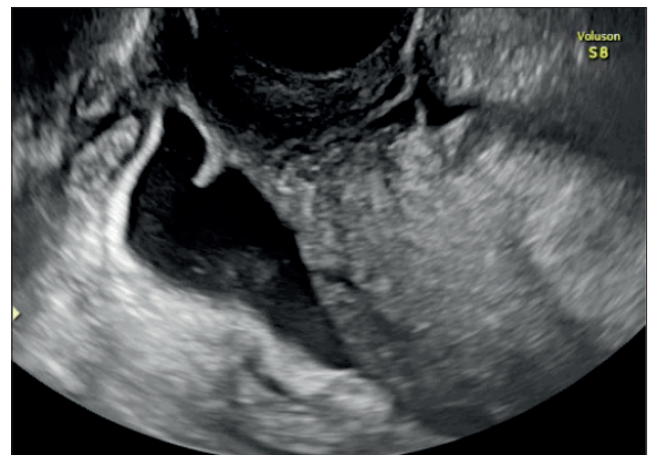
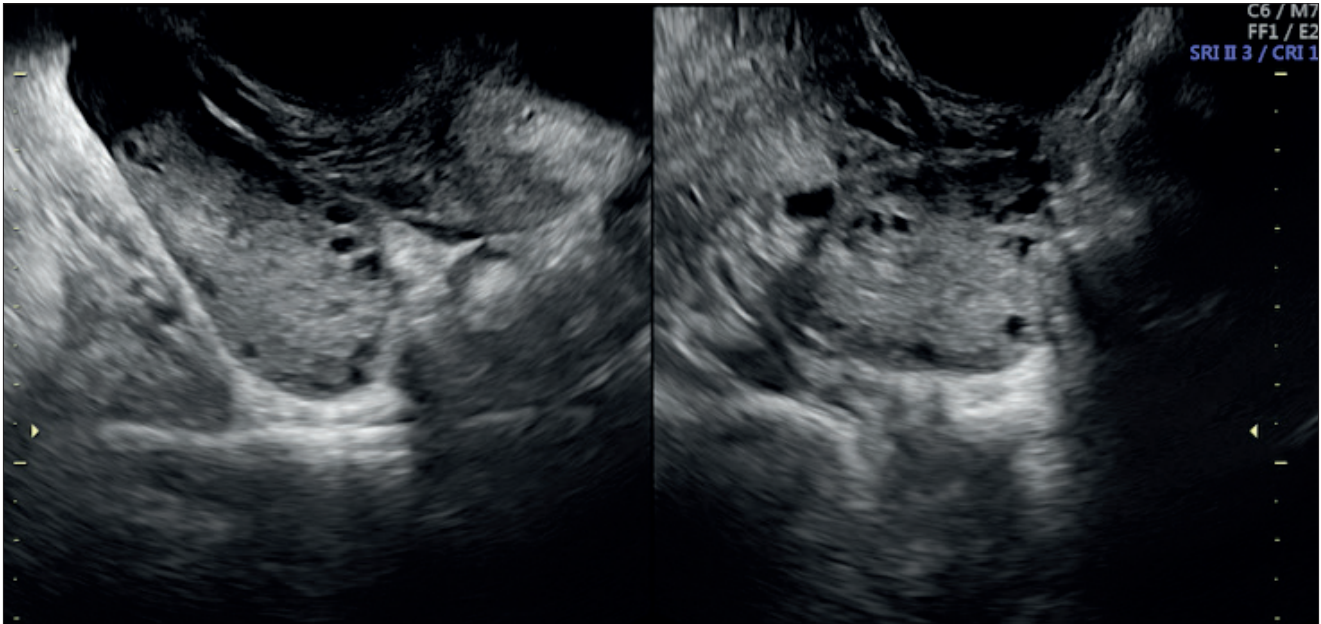


Figure 4 Ultrasound after adnexal detorsion: the ovary shows normal size, morphology, location and vascular flow.



The patient has given written consent to the inclusion, in this article, of material pertaining to herself, aware that it would be completely anonymized.

Previous reports of torsion followed by spontaneous detorsion of the ovary in pregnancy are limited. The cases of a 33-year-old woman, 9 weeks pregnant^[8], and a 36-year-old pregnant woman^[9] have been reported. Both these patients had undergone hormonal stimulation to achieve pregnancy: clomiphene citrate-induced ovulation in the first case and an antagonist protocol for IVF in the second.

To date, there is only one study in the literature describing criteria for the diagnosis of detorsion, namely spontaneous disappearance of pain; return of the ovarian stroma (in the absence of any treatment) to a normal size on follow-up US and/or MRI; and, in the case of a thickened tube, return of the tube (in the absence of any treatment) to a normal size on follow-up examination^[10].

This is the first case of spontaneous detorsion of adnexa in a pregnant woman without previous hormonal stimulation.

Not only clinical presentation and laboratory tests, but also specific ultrasound features are essential in the diagnosis and subsequent management of adnexal torsion, especially in pregnant women with a corpus luteum in the twisted adnexa. In such cases, preservation of the ovary, when possible, is mandatory in the first trimester for maintenance of pregnancy.

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Declarations of interest: none.

Financial support: No financial support was received for this study.