

Sonographic Appearance of Heterotopic Pregnancy with Ruptured Ectopic Tubal Pregnancy

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ABSTRACT: Heterotopic pregnancy, ie, combined intrauterine and extrauterine (ectopic) pregnancy, is a rare clinical entity that may present with acute abdominal catastrophe. Most of cases reported in literature are a consequence of medical or surgical interventions like assisted reproductive techniques, tubal surgeries, intrauterine contraceptive devices, or pelvic inflammatory disease. Heterotopic pregnancy occurring spontaneously is extremely uncommon. We describe the sonographic appearance of spontaneous heterotopic pregnancy with ruptured ectopic tubal pregnancy. © 2010 Wiley Periodicals, Inc. *J Clin Ultrasound* 00:000–000, 2010; Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/jcu.20715

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Heterotopic pregnancy, ie, combined intrauterine and extrauterine (ectopic) pregnancy, is a rare clinical entity presenting as a potential life-threatening condition to both the mother and the intrauterine fetus. Many predisposing factors include assisted reproductive techniques (ARTs), tubal surgeries, intrauterine contraceptive devices, and pelvic inflammatory disease. Spontaneous occurrence of heterotopic pregnancy is an extremely rare event accounting for up to 1 in 30,000 pregnancies.^{1–3} An increasing incidence of

heterotopia has been seen lately due to rising use of ARTs.⁴ Urgent diagnosis of the condition is required for instituting immediate surgical management if required. We describe a case of spontaneous heterotopic pregnancy presenting with severe abdominal pain in the emergency room promptly diagnosed by sonography leading to good results in terms of patient management.

CASE REPORT

A 29-year-old female, gravida 2, presented to the emergency room with 10 weeks of amenorrhea and chief complaints of severe abdominal pain for the last 48 hours. There was no history of vaginal bleeding or any syncopal episode. The patient had undergone a diagnostic sonography at 6 weeks of amenorrhea at another institution that had revealed a single live intrauterine pregnancy. The urine pregnancy test was also suggestive at that time. The details of the previous sonographic examination, however, were unknown and she presented to us for the first time with the current symptoms. She had a previous history of miscarriage at 10 weeks of gestation for which a therapeutic dilatation and curettage was performed about 1 year back. She was being followed up as a case of secondary infertility. Appropriate investigations had been noncontributory for the etiology of infertility and no hormonal treatment had been initiated for ovulation as yet.

On examination, she was afebrile with a pulse rate of 78/minute, supine blood pressure

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of 104/80 mm Hg, and hemoglobin of 10.1 g/dL. There was mild abdominal distension with tenderness in the lower abdomen. Vaginal examination revealed 10 weeks size uterus along with cervical tenderness and clinically there was a doubt regarding ectopic pregnancy as well. Transabdominal sonography using a HDI 5000 scanner (Philips Ultrasound, Bothell, WA) showed a single live intrauterine fetus with an approximate gestational age of 10 weeks and a moderate amount of free fluid in the peritoneal cavity with internal echoes. A complex left adnexal mass was also appreciated which, however, could not be characterized due to the presence of overlying bowel gas. With a diagnosis of heterotopic pregnancy in mind and a hemorrhagic corpus luteal cyst in the differential, we decided to perform a transvaginal sonographic (TVUS) examination. The patient was asked to empty her bladder for TVUS during which she suffered a syncopal attack. TVUS confirmed the intrauterine pregnancy with the presence of an anechoic lesion in the left adnexa having an echogenic eccentric mural nodule representing a fetal pole in a gestational sac (Figure 1A). However, Doppler evaluation did not reveal increased peripheral vascularity in the adnexal lesion or the presence of cardiac activity (Figure 1B). With the diagnosis of heterotopic pregnancy confirmed on sonographic examination, she was immediately taken to the operating room. Because there was hemoperitoneum and the patient was hypotensive, a laparotomy was performed. Intraoperative findings revealed a leaking left tubal pregnancy with a moderate amount of peritoneal blood (approximately 1 liter). Left salpingectomy was performed along with peritoneal lavage. The uterus was left untouched so the intrauterine pregnancy could continue. Follow-up transabdominal sonography showed normal intrauterine fetus with cardiac activity. The patient delivered a healthy female child at 39 weeks of gestation by emergency cesarean section, which was done because of nonprogression of labor. The neonate weighed 2.9 kg with good Apgar score at birth. The mother and child were discharged in good health on postoperative day 6.

DISCUSSION

Heterotopic pregnancy refers to a combination of one or more intrauterine pregnancies in association with an extrauterine (ectopic) pregnancy, which may be tubal (most common), ovarian, cervical, or cornual. It is rare, with an incidence of 1

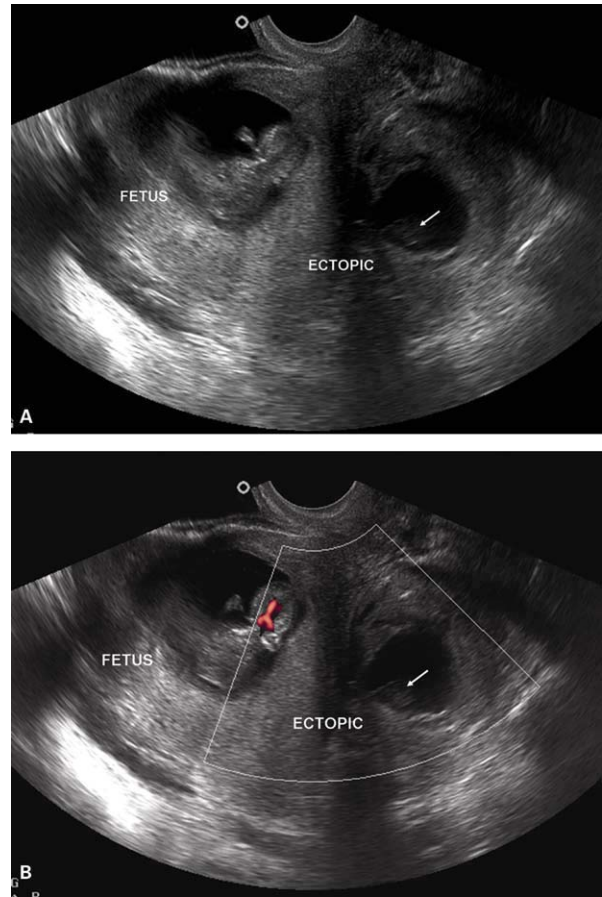


FIGURE 1. (A) Transvaginal sonogram shows intrauterine fetus and an anechoic lesion in the left adnexa with an echogenic eccentric mural nodule (arrow) representing a fetal pole in a gestational sac. (B) Transvaginal color Doppler sonogram shows fetal cardiac activity in intrauterine gestation but no increased peripheral vascularity or presence of cardiac activity in the adnexal lesion (arrow).

in 30,000 pregnancies as spontaneous occurrence and 0.9 to 2.9% in association with ART.^{1,3} Predisposing factors include the increasing use of ART like ovulation induction and artificial insemination,⁴ tubal surgery, intrauterine contraceptive devices insertion, and pelvic inflammatory disease. Rarely it is a spontaneous event. Heterotopic pregnancy results from simultaneous fertilization of two or more ova. Release of multiple ova commonly results with ovulation-inducing drugs like clomifene, which also alters the myoelectric potential of the fallopian tubes, thus increasing the risk of multiple zygote formation. The hydrostatic forces generated during embryo transfer may also contribute to the increased risk.⁴

Most cases of heterotopic pregnancy occur in women who are being followed regularly after ovulation induction/artificial insemination regimens and are detected incidentally. These account for 54% of all cases and are therefore

asymptomatic.⁵ However, a large number of patients present with signs of peritoneal rupture of the ectopic pregnancy, which is usually detected on laparoscopy/laparotomy² and less commonly on sonography.⁶ Seventy percent of heterotopic pregnancies are diagnosed between 5 and 8 weeks of pregnancy, 20% at the 9th to 10th week, and 10% after the 11th week.⁷

Sonography, especially TVUS, and beta hCG levels are crucial in the early detection of ectopic pregnancy. A dedicated sonographic examination in the appropriate clinical setup with strong suspicion of ectopic pregnancy can often save the patient from a catastrophe. On occasion, the adnexal sac can be mistaken for a hemorrhagic corpus luteum or ovarian cyst, especially in the case of hyperstimulated ovaries in patients undergoing ART.⁸ Rarely an ectopic pregnancy can go unnoticed in the presence of a normal intrauterine pregnancy. A high index of suspicion should thus be kept not only in patients undergoing ovulation induction but also in spontaneous pregnancy where a normal intrauterine pregnancy is associated with significant hemodynamic instability and acute abdomen.

TVUS may reveal an adnexal mass coexisting with an intrauterine pregnancy. Cardiac activity, if present, in the adnexal lesion is a certain sign of a heterotopic pregnancy. This is a relatively rare finding and the differential usually remains between a heterotopic gestation and a corpus luteum cyst, and even acute appendicitis. A combination of a live intrauterine pregnancy, an adnexal mass, and free intraperitoneal fluid with internal echoes in the present case prompted a diagnosis of heterotopic pregnancy with ruptured ectopic.

The management of heterotopic pregnancy with an unruptured ectopic still remains contro-

versial. The vast array of medical techniques that are often used successfully for an ectopic gestation has a limited role in the management of heterotopic pregnancy as the intrauterine pregnancy needs to be preserved.⁹ The management of a ruptured ectopic, however, in a heterotopic pregnancy is often surgical with minimal handling of the pregnant uterus as was done in our case.

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