



Pseudoembryo associated with pseudogestational sac: A novel sonographic finding in ectopic pregnancy

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ABSTRACT

In this case report, we present a case of a hitherto undescribed "pseudoembryo" appearance in a fluid-filled endometrial cavity in ectopic pregnancy.

Knowledge of this sonographic finding is clinically important, since the presence of a "pseudoembryo" could lead to the misidentification of a pseudogestational sac as an intrauterine pregnancy in the setting of ectopic pregnancy.

This paper discusses reviews the pseudogestational sac and imaging findings which differentiate it from a true intrauterine gestation.

1. Introduction

Ectopic pregnancy incidence has been shown to be climbing in recent decades, especially in those patients who are bleeding [1–3]. Unfortunately, it also remains a significant potential cause for mortality within the first trimester period. The majority of ectopic implantations are located in the fallopian tube [2,3]. Hemorrhage from an ectopic pregnancy, if undetected and untreated, can be fatal.

Approximately half of all patients with ectopic pregnancy present with the classical symptoms of pain, amenorrhea, and vaginal bleeding. Only 40% of patients present with a palpable mass, making ultrasound (US) assessment crucial [1,2].

In this case report, we present a case of US diagnosed and surgically treated ruptured ectopic pregnancy with some classic US findings and discuss some potential imaging pitfalls. In particular, we discuss the pseudo-embryo sign, review the pseudogestational sac and discuss its differences from a true intrauterine gestation.

2. Case report

A 34 year old female presented to the emergency room with left flank abdominal pain and vaginal spotting. A Beta HCG blood test was positive at 2000 mIU/mL. An abdominal and pelvic ultrasound (US)

was therefore requested to rule out ectopic pregnancy and its complications.

On transabdominal (TA) and transvaginal (TV) US, the endometrial double layer thickness was noted to measure up to 11 mm, suggesting decidual reaction, although there was no intradecidual or double decidual sac sign. Complex fluid with low-level echoes was present, measuring up to 7 mm AP. The fluid had an elongated shape conforming to the shape of the endometrial canal, rather than a rounded sac-like configuration. An echogenic rounded focus measuring up to 4 mm was also present within the endometrial canal, without evidence of a yolk sac (Fig. 1).

Within both adnexa and the inferior pelvis, a moderate amount of free fluid was demonstrated, along with heterogeneous avascular material concerning for hemorrhagic material, favored to be clotted (Figs. 2 and 3). No obvious collapsed or ruptured ovarian cyst was identified, although there was a small complex structure at the periphery of the left ovary, query corpus luteum or ectopic (Fig. 2).

The report was urgently discussed and conveyed to the ER staff. The interpretation and recommended management plan, at this point, was considered to be as follows: 1) No convincing intrauterine gestation. The echogenic focus within the endometrial canal with complex fluid was favoured to represent a pseudogestational sac and hemorrhagic content, although a heterotopic pregnancy could not be entirely ex-

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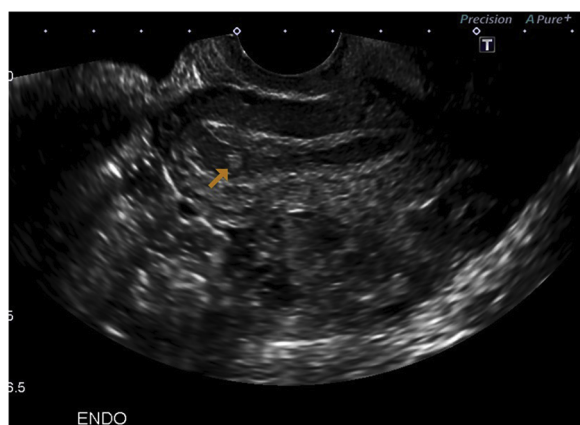


Fig. 1. Transvaginal sagittal ultrasound of the uterus demonstrates a small echogenic focus (arrow) within the endometrial canal, which is distended with complex fluid. There is also heterogeneous material in the posterior cul-de-sac, suspicious for blood clot.

cluded. 2) Abnormal free pelvic fluid and hematoma. An ectopic pregnancy needs excluding. 3) Urgent Obstetrics and Gynecology (OG) team input recommended.

The OG team took her to surgery that same day with operative laparoscopic findings of pelvic hematomas, tubal congestion on the left with an area of rupture in keeping with ruptured ectopic.

3. Discussion

In this paper, we present a case of an intrauterine echogenic focus mimicking an embryo within a fluid-filled endometrial canal in the setting of ectopic pregnancy. To the authors' best knowledge, this "pseudoembryo" appearance has not been previously reported in the English language literature. The cause of this finding is presumed to relate to echogenic focal blood clot within fluid/hemorrhage filling the endometrial canal, likely secondary to the presence of a ruptured ectopic pregnancy in this case.

Knowledge of this sonographic finding is clinically important, since the presence of a "pseudoembryo" could lead to the misidentification of a pseudogestational sac as a normal intrauterine pregnancy in the setting of ectopic pregnancy. This would have drastic consequences given the well documented morbidity from ruptured ectopic pregnancy [1–8].

There is extensive description within the sonographic literature of normal first trimester findings. This includes the embryo being visible at 6 weeks as a 2 mm structure [9,10]. An embryo is typically visualised

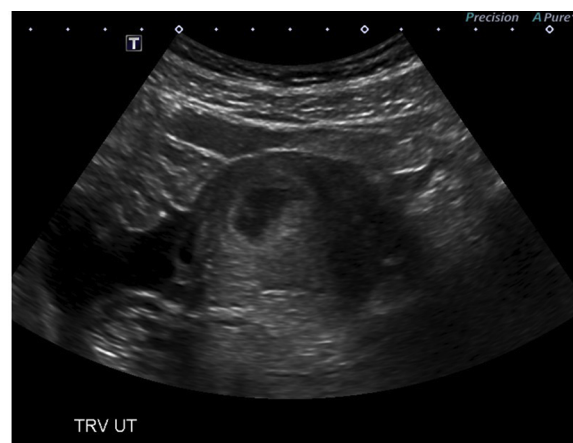


Fig. 3. Transabdominal axial ultrasound image of the pelvis demonstrates free fluid in the pelvis, as well as a sac-like structure within the uterus.

when the mean sac diameter is up to 25 mm [9].

The pseudogestational sac sign is a well described entity in the literature in the setting of ectopic gestation, and represents a decidual reaction surrounding intrauterine fluid/hemorrhage without a yolk sac or fetal pole [3,5,8]. As many as 1 in 10 ectopic pregnancies present with a pseudogestational sac.

The comparative main sonographic findings in a genuine gestational sac and pseudogestational sac are summarised in Table 1 [3,7,8]. Careful attention should be taken when considering the presence of a genuine gestational sac versus a pseudogestational sac, as misinterpretation could lead to erroneous diagnosis of an ectopic pregnancy as an intrauterine gestation. In this case, although there was an echogenic focus mimicking the appearance of an embryo, there was no yolk sac, and the fluid within the endometrial canal was elongated with tapered margins, rather than sac-like in shape.

Additional findings of ectopic pregnancy depend on its location, which is most commonly tubal as in the case. Some extrauterine sonographic findings of ectopic pregnancy are summarized in Table 2 [3,7,8].

In our case, the presence of complex free fluid within the pelvis and avascular soft tissue echogenicity in the adnexal regions, combined with a positive BHCG and lack of a definite intrauterine pregnancy (IUP), raised diagnostic suspicions for ectopic pregnancy, and safe expectant laparoscopic management was expedited.

Overall, a high index of suspicion for ectopic pregnancy is essential in women of reproductive age who present with vaginal bleeding, pain,

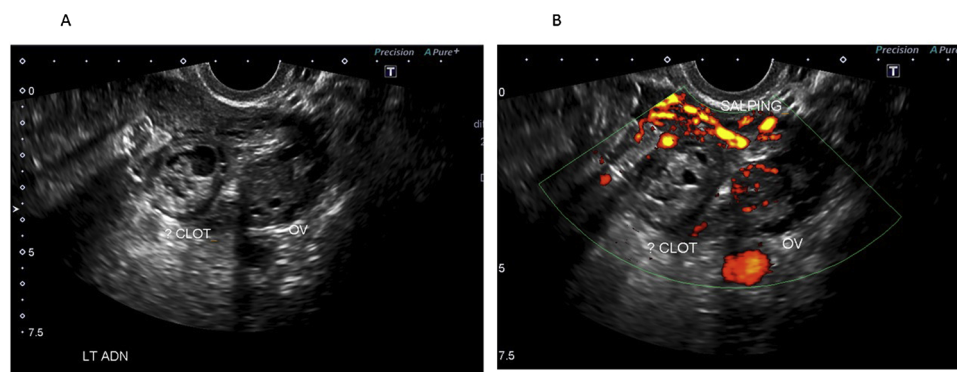


Fig. 2. A and B—Transvaginal axial images of the left adnexal region without and with power Doppler demonstrate a small complex lesion with peripheral vascularity at the medial aspect of the left ovary (OV). There is also heterogeneous avascular material adjacent to the left ovary, concerning for blood clot.

Table 1

Sonographic findings in intrauterine gestational sac versus pseudogestational sac in ectopic pregnancy.

Characteristic	Yolk sac or fetal pole	Double decidual sac sign	Location within the endometrial canal	Shape	Low-resistance arterial flow on color Doppler
Gestational sac	yes	yes	eccentric	rounded	yes
Pseudogestational sac	no	no	central	elongated with tapered margins	no

Table 2

Extrauterine findings of ectopic pregnancy [3,7,8].

Free pelvic fluid in the rectouterine space
Pelvic hematoma
Complex adnexal cyst
Tubal ring sign (tubal and ovarian)
Ring of fire sign (tubal and ovarian)

and a positive BHCG without a definite IUP [6]. In this case, the clinical presentation and US adnexal findings suggested a hemorrhagic process and ectopic pregnancy was recognised as the most likely possibility, despite the presence of an echogenic structure within the fluid-filled endometrial canal mimicking an embryo within a pseudogestational sac. By describing the pseudoembryo sign, the authors hope to raise educational awareness of this finding which may be misidentified as an intrauterine gestation.

Conflict of interest

The authors have no conflicts of interest to declare for this manuscript.

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