

In the Wrong Place at the Wrong Time: A Primer of Ectopic Pregnancies for Trainees

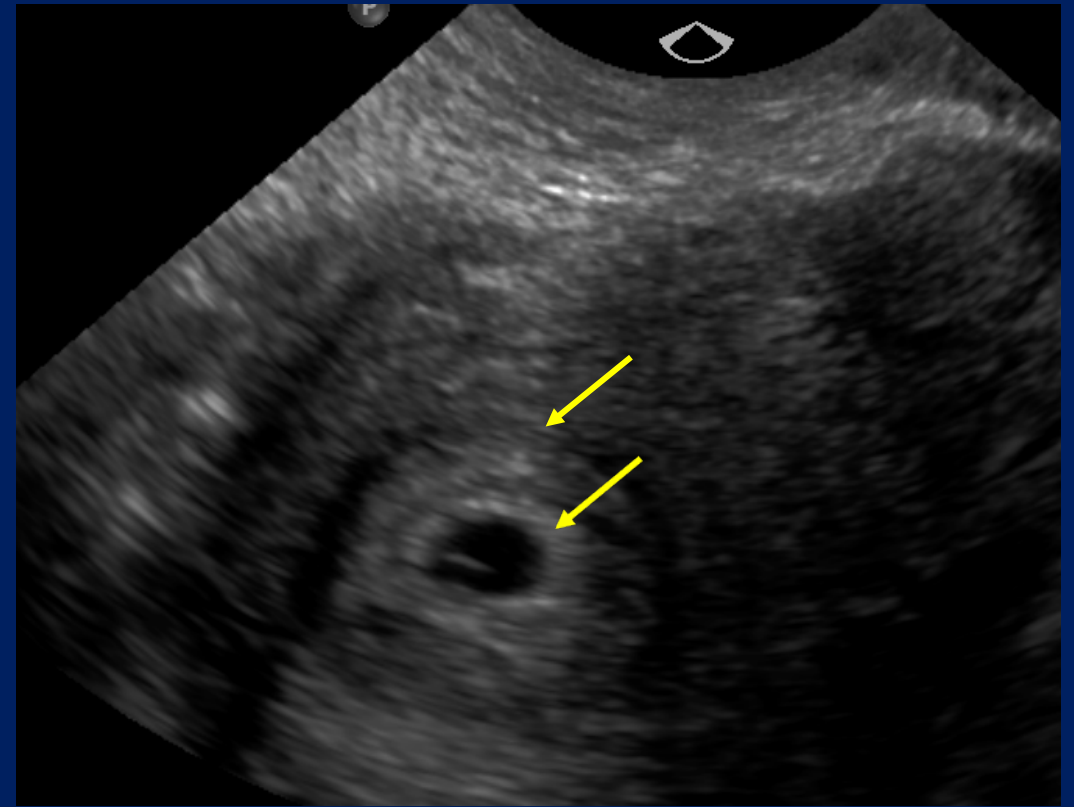
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After reviewing this presentation, radiology residents should recognize sonographic imaging features of ectopic pregnancies in order to quickly and confidently communicate this high risk condition to ordering providers

No disclosures

Ectopic pregnancies

- 1-2% of pregnancies implanting outside normal uterine endometrium
- Remains leading cause of 1st trimester mortality
- Early diagnosis key as rupture risk increases with enlargement/gestational age
- Gestational sac / early IUP typically visualized on transvaginal US with β HCG 2000 mIU/mL
- Imaging features of early IUP
 - Gestational sac - 5 weeks gestational age
 - Yolk sac ~ 5.5 weeks gestational age
 - Embryo ~ 6 weeks
 - Decidual reaction / **Double decidual sign**



Normal intrauterine pregnancy. Note the presence of the double decidual sac sign: two hyperechoic rings (arrows) surrounding an anechoic gestational sac

Ectopic pregnancies

95% occur in fallopian tubes

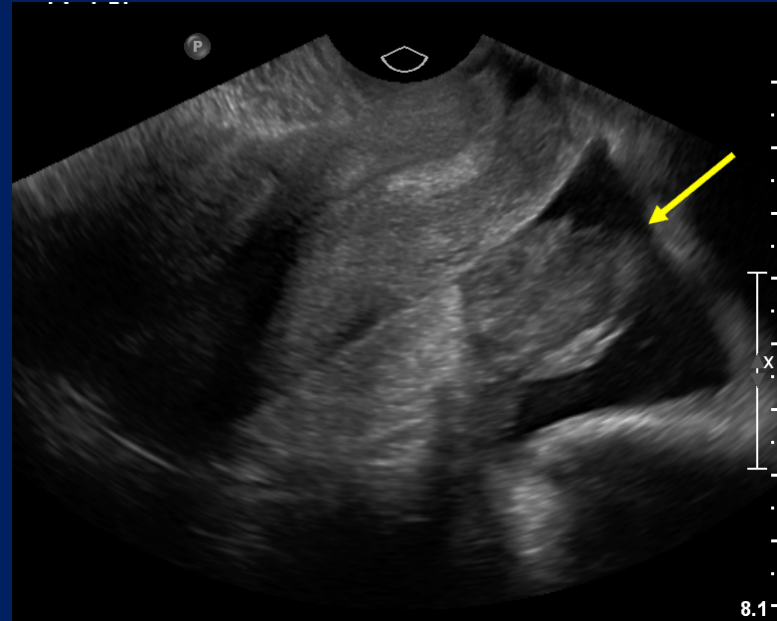
- Majority in ampulla
- Interstitial segment rare but with unique imaging appearance

Rarely outside fallopian tubes

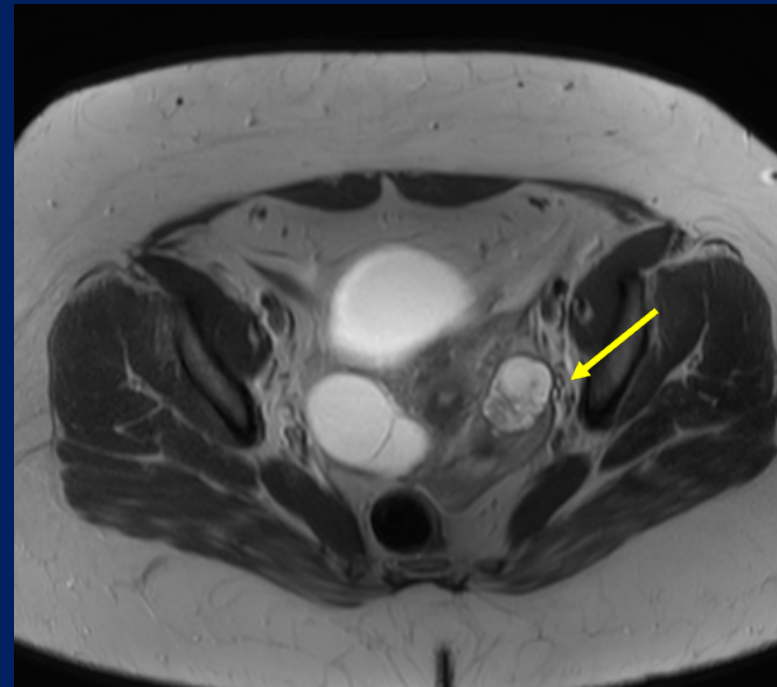
- e.g. ovaries, C-section scars, peritoneal cavity

Imaging features

- **Adnexal mass**
- **Complex free fluid**
- Pseudo-gestational sac
- Hyperechoic tubal ring sign
- Ectopic embryo/heart activity



Echogenic mass posterior to the uterus (arrow) with complex free pelvic fluid.

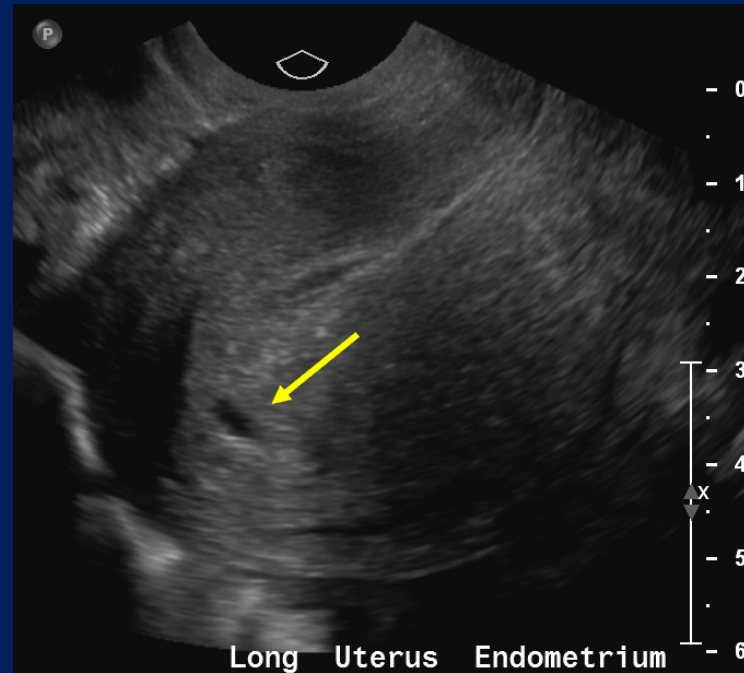


T2 MR from same patient. Left tubal cystic mass (arrow) confirmed as ectopic pregnancy. Associated right corpus luteum cyst.

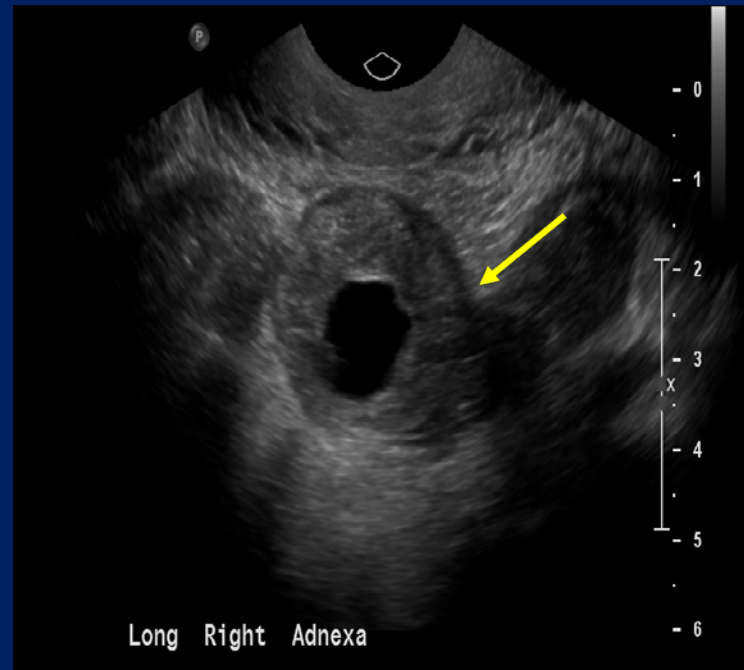
Ectopic Pregnancies

Imaging features

- Adnexal mass
- Complex free fluid
- **Pseudo-gestational sac**
- **Hyperchoic tubal ring sign**
- Ectopic embryo/heart activity



Pseudo-gestational sac:
Small anechoic cystic lesion within the endometrium (arrow) without decidual reaction. Differential includes early gestational sac.

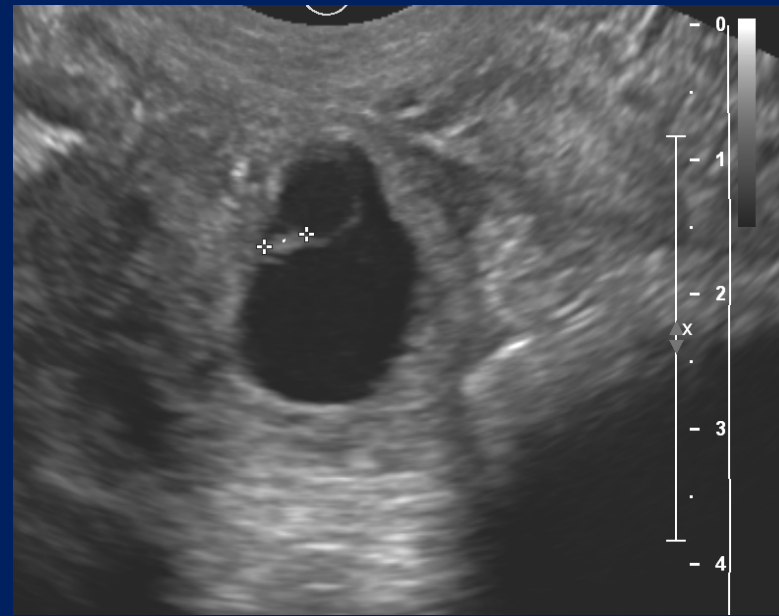


Tubal ring sign:
Right adnexal cystic lesion with thick surrounding echogenic tubal tissue (arrow).

Ectopic Pregnancies

Imaging features

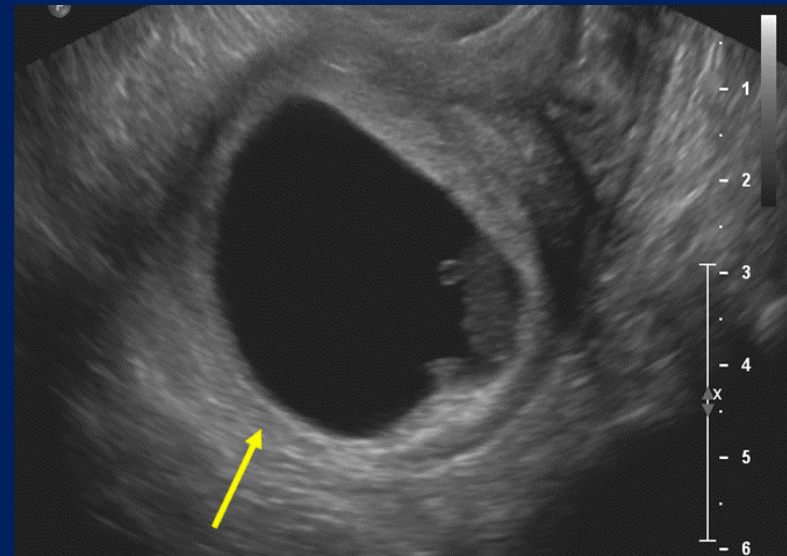
- Adnexal mass
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- **Ectopic embryo/heart activity**



Ectopic embryo: Right adnexal ectopic embryo (calipers), which demonstrated heartbeat on cine images (not pictured).

Interstitial ectopic pregnancy

- Interstitial tubal segment
- Risk for significant hemorrhage
- **'IUP' eccentric at fundus**
- **<5mm surrounding myometrium**



Interstitial ectopic: Fundal gestational sac with thin (<5mm) surrounding myometrium (arrow)

Diagnosing ectopic pregnancy in the emergency setting. Lee et al. Ultrasonography. 2018; 37(1):p78-87

Normal and Abnormal US Findings in Early First-Trimester Pregnancy. Rodgers et al. RadioGraphics. 2015; 35:p2135

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