Ruptured Ectopic Pregnancy

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Diagnostic Radiology, RAD 4001

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McGovern
Medical School

Clinical History

- 30 yo female with no PMH, presents to ED with sharp abdominal pain + vaginal bleeding. 6 weeks pregnant.
  - Was seen at OSH around Christmas and went to ED for vaginal spotting and elevated HCG with no IUP and was told to follow up.
  - Sharp abdominal pain began last night. Tylenol with no relief. Denies fevers, chills, N/V.

Vitals

ER Triage vitals:

- Temp 98.3F
- **HR 113**
- BP 100/63
- RR 99
- SpO2 99%

Patient is deemed stable.

Physical Exam

Gen: Alert, NAD

CV: Regular rate and rhythm

Resp: CTAB

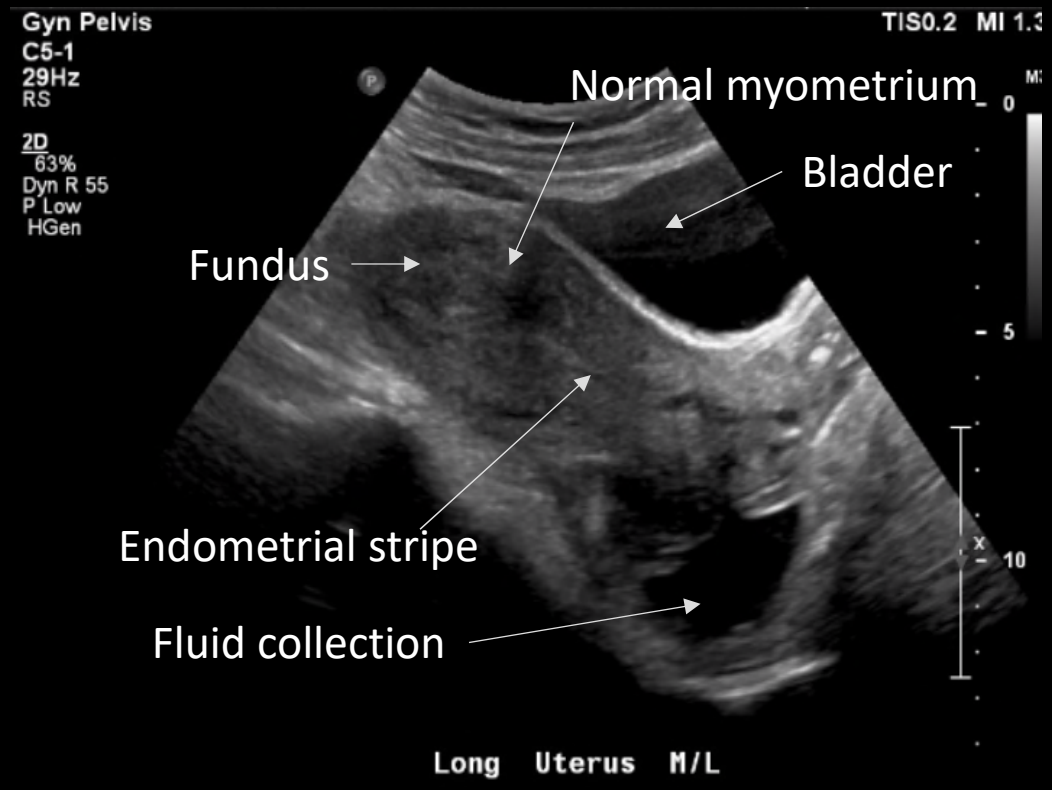
GI: soft, diffusely tender to exam mostly to the suprapubic and RUQ

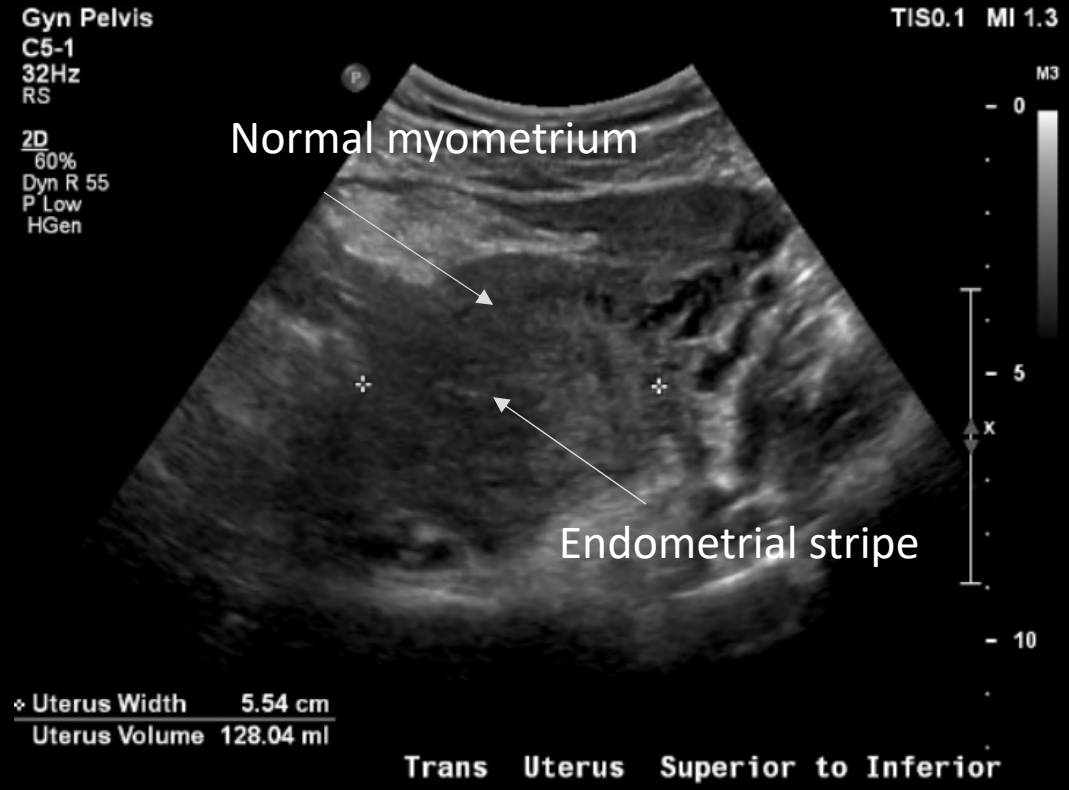
GU: No external lesions, mild bleeding from cervix. Os is closed. No adnexal masses or tenderness elicited.

Initial Management

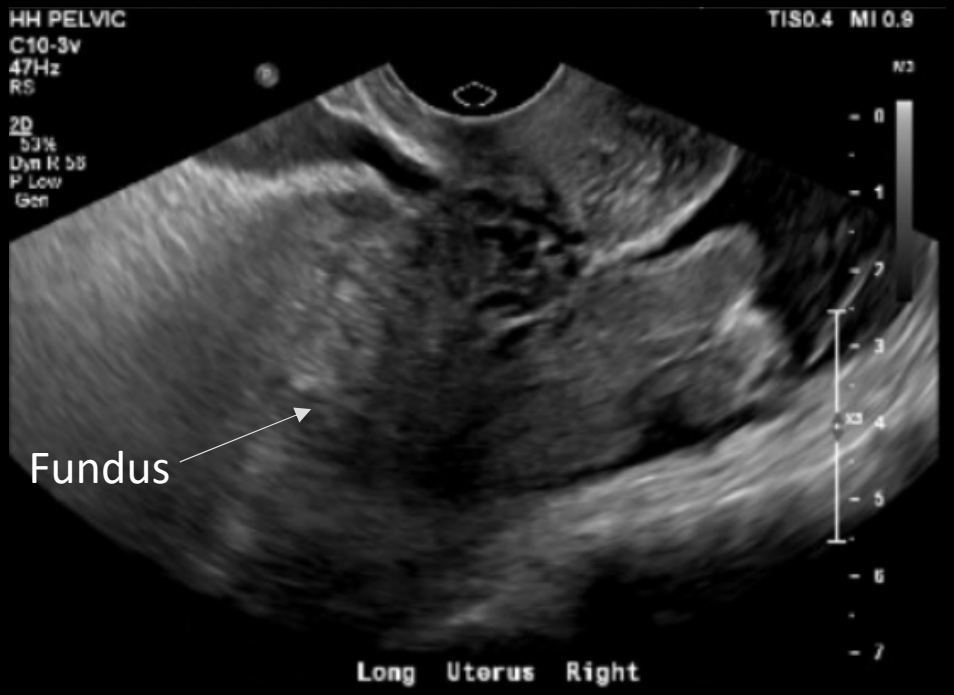
- B-hCG 31052
- H/H 10.2/29.9
- FAST exam performed
  - Sonographic views: Morrison's pouch, retrovesical, no free fluid seen to the abdomen or pelvis.
- Pelvis US Transvaginal/transabdominal w/ Doppler ordered

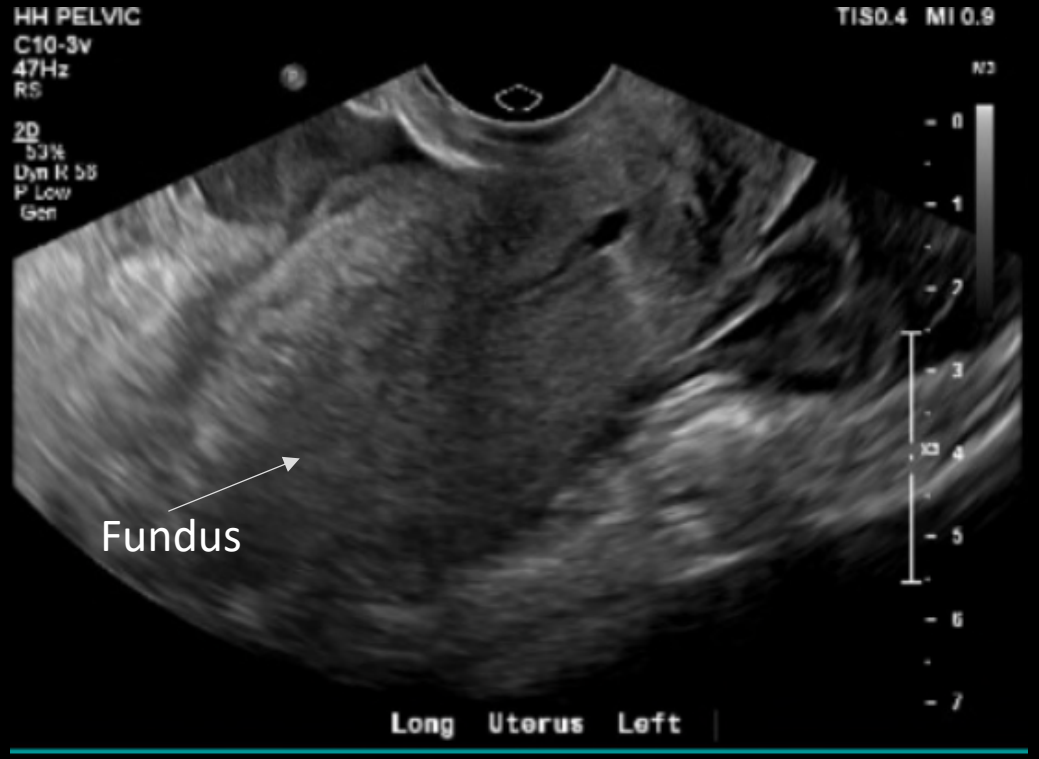
Uterus – Transabdominal US



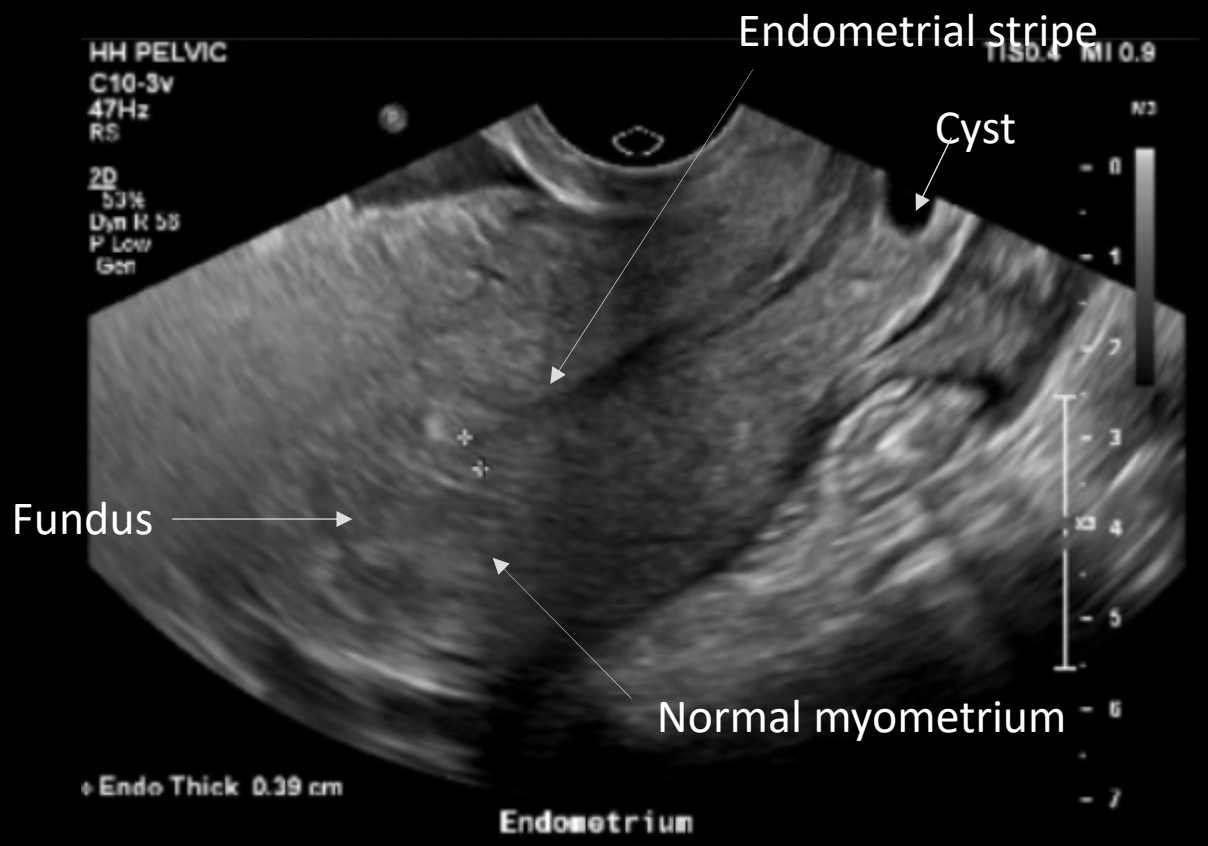


Uterus – Transvaginal US





Endometrium

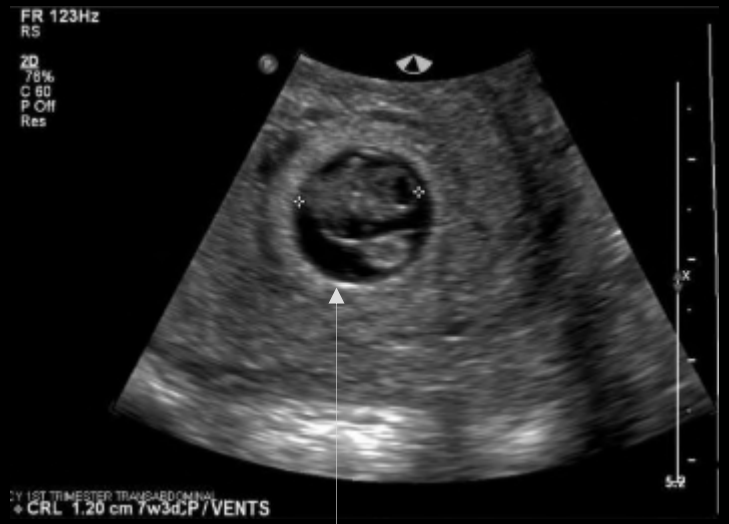


Research shows that endometrial thickness can be a useful predictor for normal IUP in the setting of vaginal bleeding in pregnancy of unknown location.

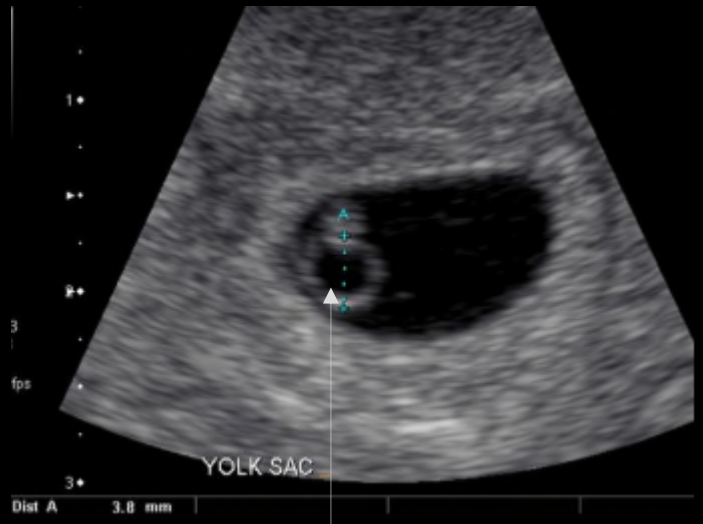
No IUP had an endometrial thickness <8mm.

Our patient had an endometrial thickness of 0.39mm.

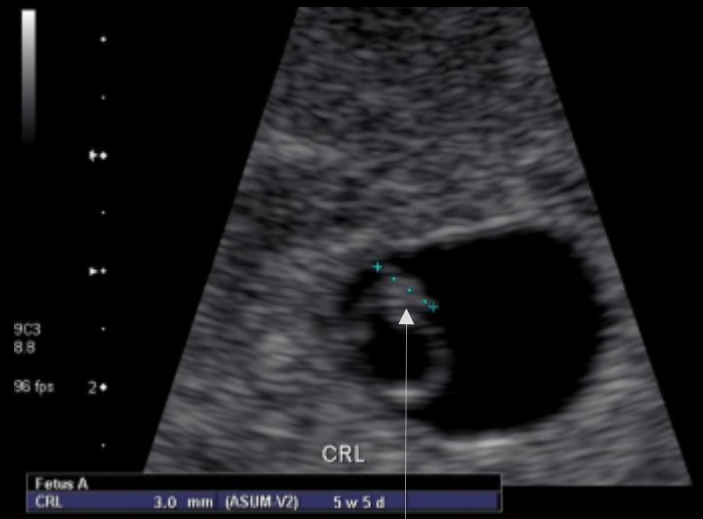
Ultrasound findings in early pregnancy



Gestational sac



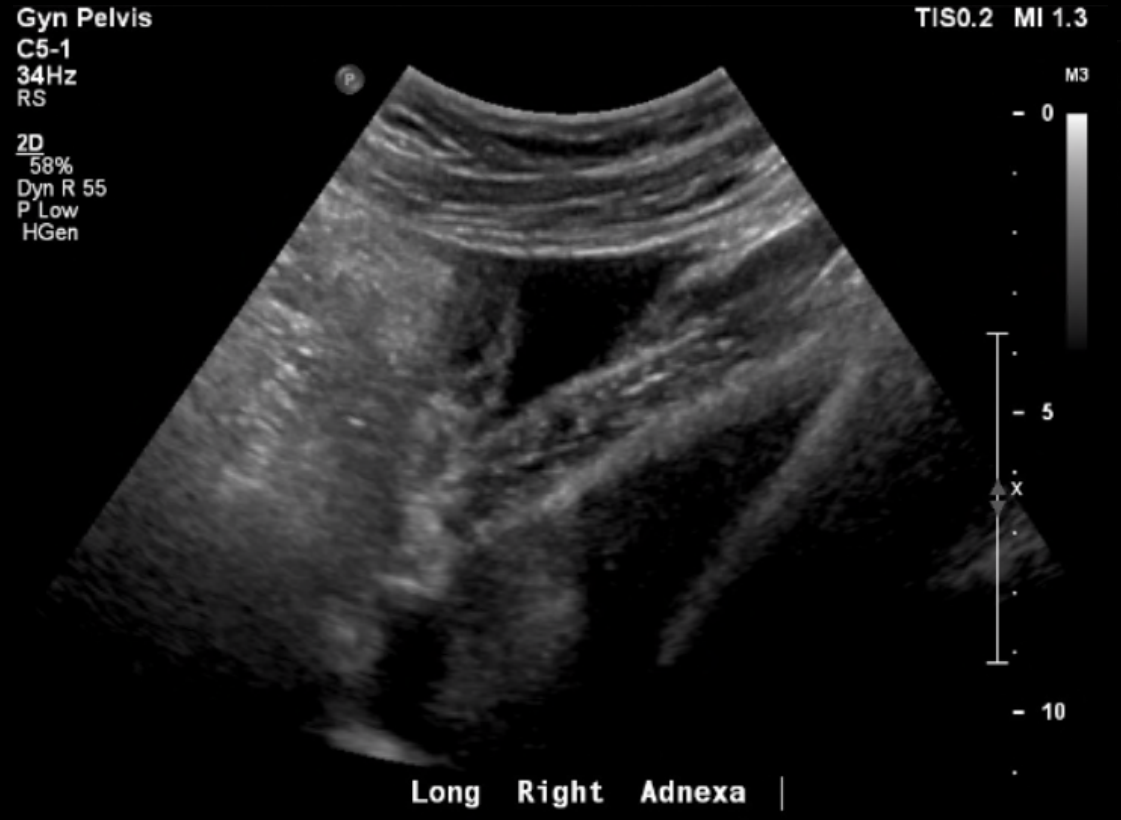
Yolk sac

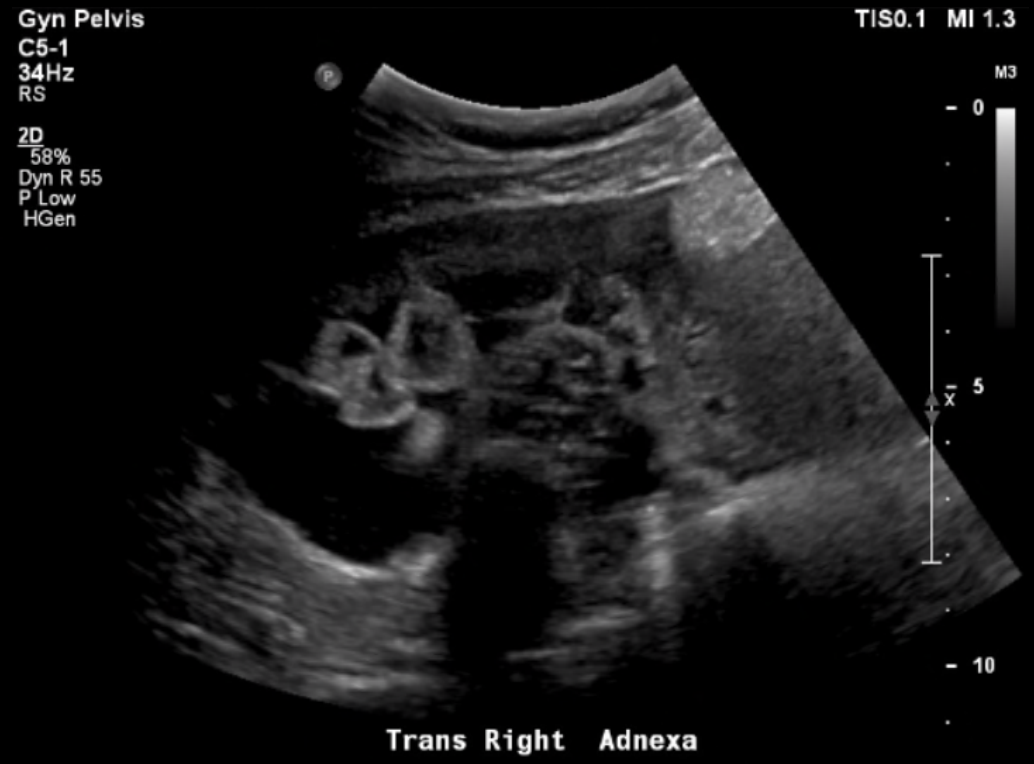


Fetal pole

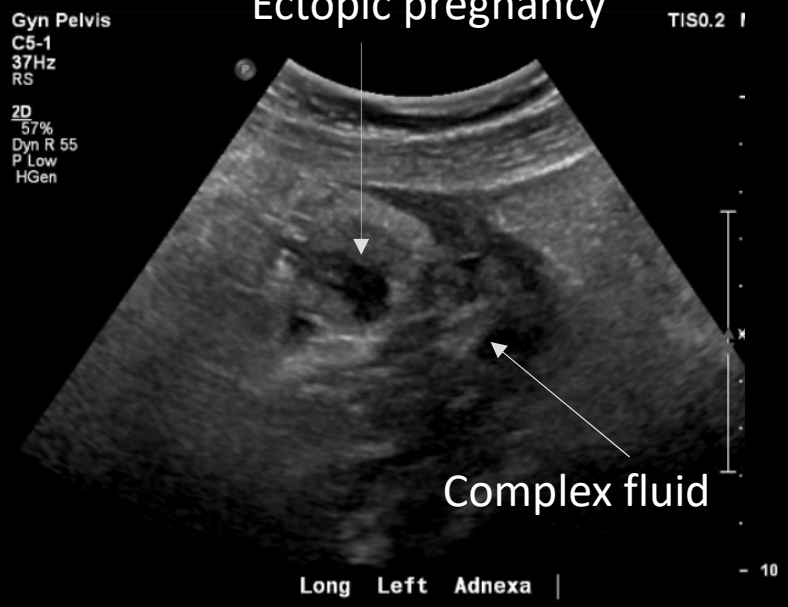
These are images from a transvaginal ultrasound

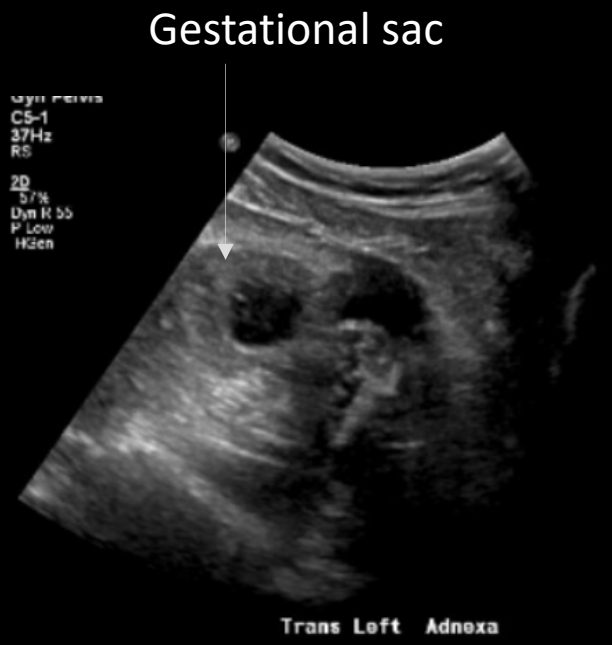
Right adnexa

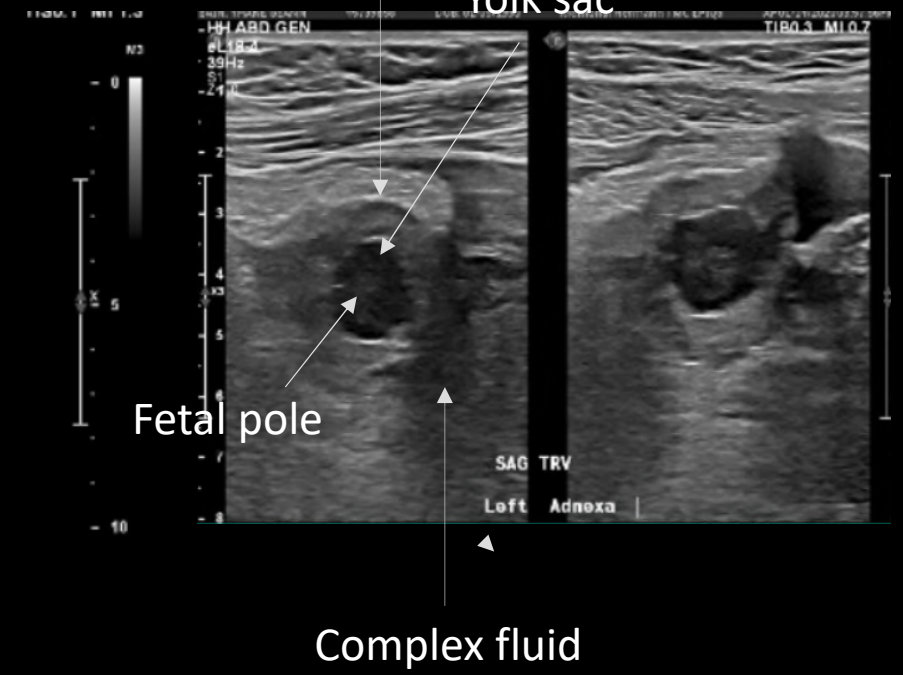




Left Adnexa


Ectopic pregnancy
Complex fluid
Gyn Pelvis
C5-1
37Hz
RS
2D
57%
Dyn R 55
P Low
HGen
TIS0.2
Long Left Adnexa


Gestational sac
C5-1
37Hz
RS
2D
Trans Left Adnexa


Ectopic pregnancy
Yolk sac
Fetal pole
Complex fluid
HH ABD GEN
SAG TRV
Left Adnexa

Differential Diagnosis

- **Ruptured ectopic pregnancy**
- Ruptured corpus luteum cyst
  - Identical radiological appearance as ruptured ectopic pregnancy except negative beta hCG
- Pregnancy of unknown location
  - Very early pregnancy – not yet detected w/ US
  - Completed abortion
  - Unidentified ectopic pregnancy
  - Nonviable intrauterine pregnancy not detected w/ US

Discussion

- In this case, the patient had an elevated B-hCG of 31,052, presented with abdominal pain and vaginal bleeding, and confirmed US findings of left ectopic pregnancy, no IUP.
  - Patient's risk factors: h/o of chlamydia
- Clinical picture matches diagnosis of ruptured ectopic pregnancy!

Final Diagnosis

Ruptured ectopic pregnancy

Discussion

- Pathophysiology of ruptured ectopic pregnancy
  - Ectopic pregnancy – implantation occurs in a site other than the endometrial lining of uterine cavity (fallopian tube, uterine cornua, cervix, ovary, abdominal/pelvic cavity)
  - Cannot be carried to term – eventually rupture (at 6-16wks) or involute
  - Early symptoms/signs = pelvic pain, vaginal bleeding, cervical motion tenderness
  - Syncope or hemorrhagic shock can occur with rupture
- Diagnosis = measurement of B-hCG and US
- Treatment = laparoscopic/open surgical resection w/ salpingectomy

Continued discussion

- **Surgical management** is the gold standard
- In select patients who are hemodynamically stable w/ US evidence of no ongoing bleeding, expectant management (NPO, close observation of vitals, Hgb, sx of ongoing bleeding, IV fluids, tranexamic acid to prevent bleeding).
- If the ectopic pregnancy is small and unruptured, **methotrexate** may be given.

Treatment

- For this patient: Diagnostic laparoscopy with excision of ectopic pregnancy and left salpingectomy
  - Findings: Left ectopic pregnancy near the interstitial area, 300 cc of hemoperitoneum
  - Patient tolerated the procedure well and was sent to PACU.
- No post-op or intervention imaging

ACR appropriateness Criteria

- First trimester vaginal bleeding.
  - Both the US pelvis transvaginal and US pelvic transabdominal were **appropriate**.

American College of Radiology
ACR Appropriateness Criteria®
First Trimester Vaginal Bleeding

Variant 1: **First trimester vaginal bleeding. Positive urine or serum pregnancy test.**

Procedure	Appropriateness Category	Relative Radiation Level
US pelvis transvaginal	Usually Appropriate	O
US pelvis transabdominal	Usually Appropriate	O
US duplex Doppler uterus	May Be Appropriate	O
MRI pelvis without IV contrast	May Be Appropriate	O
MRI pelvis without and with IV contrast	Usually Not Appropriate	O
CT pelvis without IV contrast	Usually Not Appropriate	☢☢☢
CT pelvis with IV contrast	Usually Not Appropriate	☢☢☢
CT pelvis without and with IV contrast	Usually Not Appropriate	☢☢☢☢

Cost at Memorial Herman

FAST exam $215
U/S pelvis transabdominal $1386
U/S pelvis transvaginal $1136

TOTAL (imaging): **$2737**

Avg. cost for ectopic pregnancy: $28,682

Case Summary

- 30 yo female, 6 weeks pregnant, presents with abdominal pain + vaginal bleeding
- Beta-hCG 31,052
- US transvaginal/transabdominal showed left ectopic pregnancy, hemoperitoneum
- Patient underwent diagnostic laparoscopy with excision of ectopic pregnancy and salpingectomy

Take Home Points

- In first trimester patients presenting for vaginal bleeding +/- abdominal pain, US pelvic transvaginal and US pelvic transabdominal are the first steps in initial imaging.
- Ruptured ectopic pregnancy is considered a gynecologic emergency due to risk for hemorrhagic shock.
- Gold standard is surgery for excision of ectopic pregnancy.

References

- https://acsearch.acr.org/docs/69460/Narrative/
- Dalsgaard Jensen T, Penninga L. Non-operative treatment of ruptured ectopic pregnancy. *BMJ Case Rep*. 2016;2016:bcr2016215311. Published 2016 Jun 13. doi:10.1136/bcr-2016-215311
- Moschos E, Twickler DM. Endometrial thickness predicts intrauterine pregnancy in with pregnancy of unknown location. Ultrasound Obstet Gynecol. 2008;32:929–34. doi: 10.1002/uog.6248.


Questions?