EVALUATION OF 1ST TRIMESTER VAGINAL BLEEDING

FLAME LECTURE: 81

BURNS 1.7.18

LEARNING OBJECTIVES

- Develop a differential diagnosis for bleeding and abdominal pain in the 1st trimester
- Discuss the workup for a patient presenting with 1st trimester vaginal bleeding
- Prerequisites:
  - NONE
- See also – for closely related topics
  - FLAME LECTURE 82 – Diagnosis of Ectopic Pregnancies
  - FLAME LECTURE 83-84 – Management of Ectopic Pregnancies
  - FLAME LECTURE 85 – Causes of Spontaneous Abortions
  - FLAME LECTURE 86 – Management of Spontaneous Abortions

DIFFERENTIAL DIAGNOSIS

- 1st trimester vaginal bleeding is never “normal” but extremely common
  - In fact, it affects 20-40% of all pregnancies
- The bleeding is almost always of maternal origin
- Causes range from benign to emergent:
  - Implantation bleeding (benign)
  - Spontaneous abortion (most common)
  - Ectopic pregnancy (most concerning)
  - Structural anomalies along reproductive tract

IMPLANTATION BLEEDING

- Caused by implantation of the embryo into the decidua
- Usually occurs at the time of a missed period (as below), but is characterized by a small amount of spotting (volume < than menses) +/- cramping
- Self-resolves after 1-2 days

CERVICAL, VAGINAL, UTERINE PATHOLOGY

- Trauma (including intercourse)
- Infection (i.e vaginitis/cervicitis)
- Ectropion (eversion of the endocervix where columnar epithelium is exposed to vagina)
- Cervical Polyps
- Malignancy or pre-malignancy

HISTORY

- PREGNANCY DATING:
  - When was your last menstrual period (LMP)? Dating is extremely important when patient presents with spotting and a positive pregnancy test!
- BLEEDING CLARIFICATIONS:
  - How much bleeding?
  - How often are you changing pad? Are the pads soaked, or have small streaks, or just a small spot? How big are the spots?
  - Color? Clots? Tissue?
- ASSOCIATED SYMPTOMS:
  - Pain? Nausea/vomiting? Vaginal discharge, burning, itching?
- HISTORY QUESTIONS:
  - Recent intercourse? Trauma?
  - Previous STDs? Previous miscarriages? Last pap?

PHYSICAL EXAM

- VITALS
  - Tachycardia may be a sign infection or anemia
- PHYSICAL EXAM
  - Abdominal exam: evaluate for peritoneal signs like involuntary guarding or rebound tenderness which may be a sign of ectopic pregnancy, tenderness over the uterus or adnexa may also be indicative of pelvic inflammatory disease during pregnancy
  - Sterile speculum exam: to evaluate for exactly where the bleeding is coming from and how active it is; are there any vaginal or cervical lesions? Are clots or POC coming from cervix ? Is there any vaginal discharge or sign of cervicitis?
  - Sterile vaginal exam/bimanual exam: evaluating for size of uterus, adnexal masses, any uterine/adnexal pain and cervical dilation

CLINICAL EVALUATION – LABS

SERUM BETA HCG (mIU/ml)

Single draw:

- Confirmation of pregnancy
- Provides context for TVUS findings and for assessing pregnancy viability
  - One-time hCG <1500-2000: difficult to draw any conclusions
  - One-time hCG 2000-3000: "discriminatory zone"
    - Point at which IUP should be seen on TVUS
    - If no IUP visualized, there is a 98% chance it is an abnormal pregnancy
  - One-time hCG >3000 AND no IUP, there is a 99.5% chance it is an abnormal preg[1]
    - *ABNORMAL: Ectopic (62%) or SAB (38%)*[1]

CLINICAL EVALUATION – LABS

SERUM BETA HCG (mIU/ml)

Trending Beta's

- While helpful, it's often difficult to make a diagnosis off of one ß-hCG value in isolation
- Thus, a repeat ß-hCG should be completed 48 hours later to look for an appropriate rise
  - We used to say that it should "double", however this has changed
  - We now know the expected rise depends upon the initial value
    - If initial hCG <1500, it should rise by **49%** at 48 hours
    - If initial hCG 1500-3000, it should rise by **40%** at 48 hours
    - If initial hCG >3000, it should rise by **33%** at 48 hours
  - The above study also found that we should not adjust these thresholds by race (Barnhart 2016)

CLINICAL EVALUATION – LABS

OTHER LABS TO CONSIDER

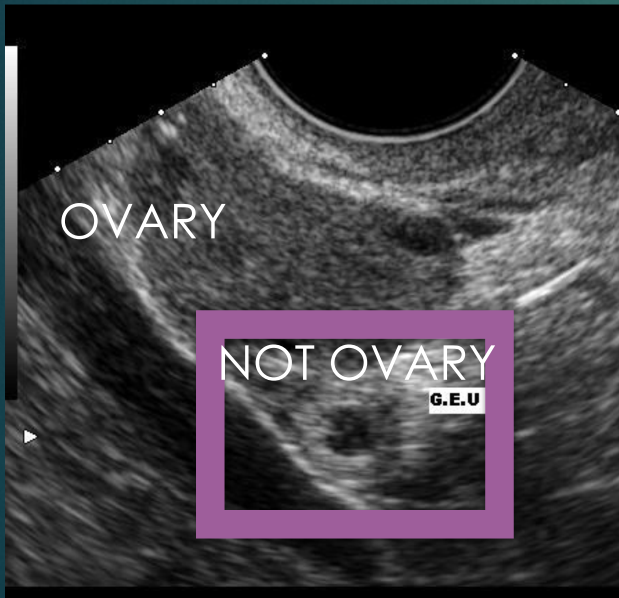
- CBC: To check for anemia
- Blood type and screen: If Rh negative, will need Rhogam anytime bleeding occurs or is suspected
- Serum progesterone:
    - >20 ng/mL: normal IUP
    - 5-20: equiv
    - <5: abnormal
  - MUCH less specific and rarely used anymore, however if truly <5 ng/mL, there is a 100% chance of abnormal pregnancy[2]

CLINICAL EVALUATION – ULTRASOUND

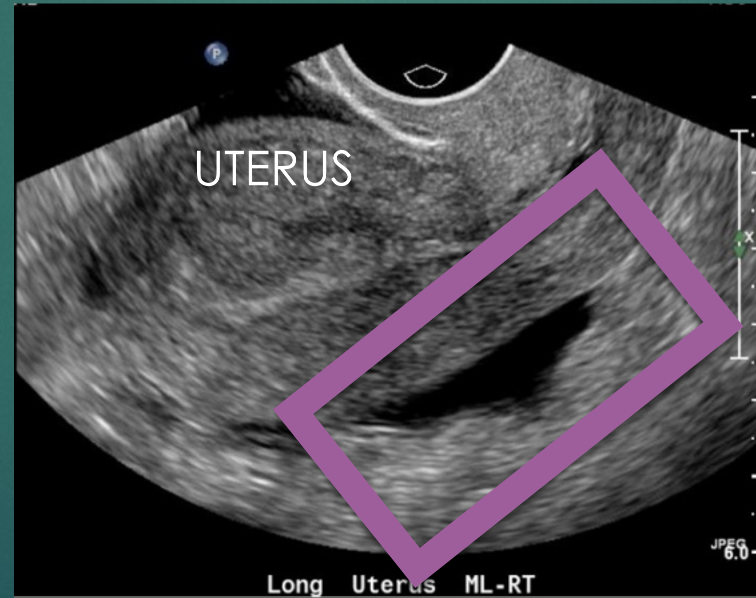
- Ultrasound is important assessment tool for evaluating:
  - Pregnancy location (ectopic vs intrauterine)
  - Pregnancy viability
- Concerning signs to support ectopic include:
  - Complex adnexal mass +/- rim enhancement (blood flow around it)
    - However, an adnexal mass is only seen in ~1/3 of patients w/ clinical signs of an ectopic, thus the absence of a mass DOES NOT rule out ectopic
    - Do not confuse the "adnexal mass" with a corpus luteal cyst expected in a normal pregnancy
  - Free fluid in the pelvis
  - Pseudo-sac in the uterus
- Not seeing these signs does not rule-out ectopic
  - If no IUP is seen and trending beta's do not rise or fall appropriately over 48hrs, ectopic pregnancy is likeliest cause

CLINICAL EVALUATION – ULTRASOUND

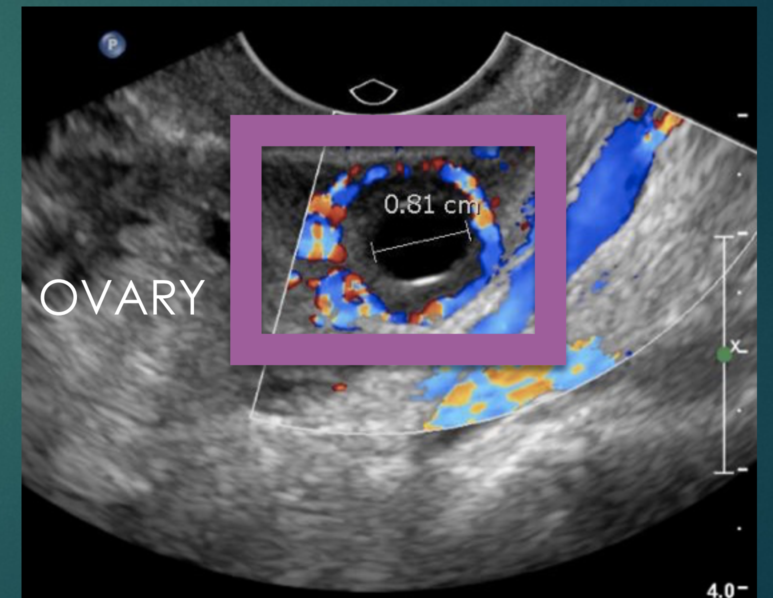
- Ultrasound is important for assessing
  - Pregnancy location (ectopic vs intrauterine)
  - Pregnancy viability
- Ectopic pregnancy, what would you see?



Ectopic in the adnexa



Free fluid in posterior cul-de-sac



Ring of fire

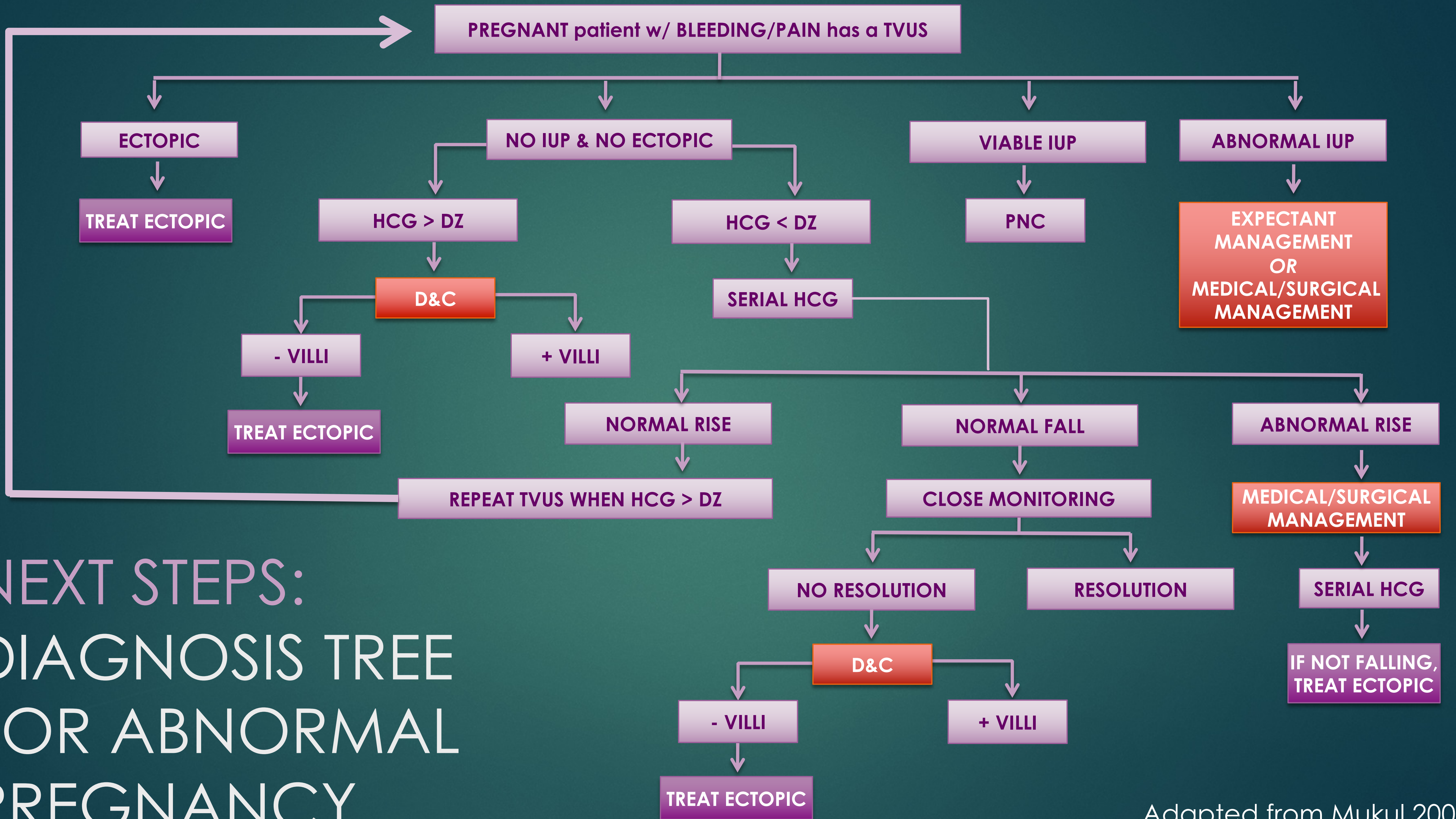
CLINICAL EVALUATION – ULTRASOUND

- Ultrasound is important for assessing
  - Pregnancy location (ectopic vs intrauterine)
  - Pregnancy viability
- Depending upon assumed gestational age at the time of US, certain findings are expected to be seen on a viable ultrasound (distinguishable embryo, heartbeat, etc)
  - If these findings aren't seen, our differential is back to an early gestation, non-viable gestation, or ectopic

CLINICAL EVALUATION – ULTRASOUND

- Ultrasound is important for assessing
  - Pregnancy location (ectopic vs intrauterine)
  - Pregnancy viability

Diagnostic of 1st Trimester Pregnancy Loss	Suggestive of 1st Trimester Pregnancy Loss
CRL **≥7mm**, no heartbeat	CRL **<7mm**, no heartbeat
Mean sac diameter (MSD) **≥25mm**, no embryo	MSD **16-24mm**, no embryo
No embryo w/ heartbeat **≥14 days** after U/S showed gestational sac <u>without</u> yolk sac	No embryo w/ heartbeat **7-13 days** after U/S showed gestational sac without yolk sac
No embryo with heartbeat ≥**11 days** after U/S showed gestational sac <u>with</u> yolk sac	No embryo w/ heartbeat **7-10 days** after U/S showed gestational sac w/ yolk sac
	Absence of embryo ≥6 wks after LMP
	Empty amnion
	Yolk sac >7mm
	<5mm difference between MSD and CRL



PREGNANT patient w/ BLEEDING/PAIN has a TVUS
ECTOPIC
TREAT ECTOPIC
NO IUP & NO ECTOPIC
HCG > DZ
D&C
- VILLI
TREAT ECTOPIC
+ VILLI
HCG < DZ
SERIAL HCG
NORMAL RISE
REPEAT TVUS WHEN HCG > DZ
NORMAL FALL
CLOSE MONITORING
NO RESOLUTION
D&C
- VILLI
TREAT ECTOPIC
+ VILLI
RESOLUTION
ABNORMAL RISE
MEDICAL/SURGICAL MANAGEMENT
SERIAL HCG
IF NOT FALLING, TREAT ECTOPIC
VIABLE IUP
PNC
ABNORMAL IUP
EXPECTANT MANAGEMENT OR MEDICAL/SURGICAL MANAGEMENT
NEXT STEPS:
DIAGNOSIS TREE FOR ABNORMAL PREGNANCY
Adapted from Mukul 2007

OTHER REFERENCES

1. Doubilet et al. Diagnostic criteria for nonviable pregnancy in the early first trimester. N Engl J Med 2013;369:1443-51. DOI: 10.1056/NEJMra1302417
2. Stovall TG, Ling FW, Carson SA, Buster JE. Serum pro- gesterone and uterine curettage in differential diagnosis of ectopic pregnancy. Fertil Steril 1992;57:456–7.
3. Barnhart KT, Sammel MD, Rinaudo PF, Zhou L, Hummel AC, Guo W. Symptomatic patients with an early viable intrauterine pregnancy: HCG curves redefined. Obstet Gynecol 2004;104:50–5
4. Mukul LV, Teal SB. *Current management of ectopic pregnancy*. Obstet gynecol Clin North Am. 2007
5. ACOG Practice Bulletin No. 150, *Early Pregnancy Loss.* May 2015
6. UpToDate: Spontaneous abortion: Risk factors, etiology, clinical manifestations, and diagnostic evaluation
7. Barnhart KT, et al. Differences in serum human chorionic gonadotropin rise in early pregnancy by race and value at presentation. Obstet Gynecol 2016. 128(3): 504-511.