



437 Team: Obstetrics and Gynecology

Bleeding in Early Pregnancy (Ectopic)

Objectives:

- Develop a differential diagnosis for vaginal bleeding and abdominal pain in the first trimester
- Perform a physical exam to assess for acute abdomen
- List risk factors for ectopic pregnancy
- Discuss diagnostic protocols for ectopic pregnancy
- Describe treatment options for patients with ectopic pregnancy

References:

- Kaplan USMLE step 2 CK - Obstetrics and Gynecology
- Online Meded videos
- Team 435

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Ectopic Pregnancy :

Ectopic pregnancy (1% of pregnancies; 15% if patient has had one ectopic pregnancy) is pregnancy in which implantation has occurred **outside of the uterine cavity**.

The **most common location is an oviduct**; within the oviduct, the most common location is the **distal ampulla**. Other locations : ovaries, cervix, abdomen.

It is one of the leading cause of maternal morbidity and mortality ; early diagnosis and management may prevent adverse outcomes and preserve future fertility.

DDx of Bleeding in the first trimester (first 12 wks) + abdominal pain

Viable intrauterine pregnancy		Non-viable intrauterine pregnancy		Ectopic pregnancy	
<u>Physiologic</u> implantation bleeding	Sub-chorionic Hemorrhage threatened abortion	Spontaneous abortion	Molar pregnancy (hydatidiform mole)	Ruptured ectopic pregnancy	Unruptured ectopic pregnancy

In a reproductive-age woman with abnormal vaginal bleeding, always consider the possibility of pregnancy or complication of pregnancy.

Risk Factors :

Risk is increased from any obstruction of normal zygote migration to the uterine cavity from tubal scarring or adhesions from any origin:

- **50%** of patients have no risk factors (**idiopathic**)
- Pelvic Inflammatory Diseases PID: **most common** (the ratio of ectopic to intrauterine pregnancy in case of 3 episodes of PID is 1:3)
- Intrauterine devices IUD
- **Personal history of Ectopic pregnancy**. (incidence jumps to 15% in these patients).
- History of tubal surgery e.g. Tubal ligation.
- History of chlamydial infection : cause tubal scarring, inflammation, and fibrin deposition.
- History of infertility: which often caused by tubal abnormalities,
- Diethylstilbestrol [DES] exposure (Congenital).
- Smoking : decrease cilia in fallopian tube.

Signs & Symptoms :

	Unruptured ectopic pregnancy	Ruptured ectopic pregnancy
Symptoms	Classic triad: <ul style="list-style-type: none"> - Amenorrhea - Vaginal bleeding - Unilateral pelvic-abdominal pain 	Symptoms will vary with the extent of intraperitoneal bleeding and irritation. Pain usually occurs after 6–8 menstrual weeks.
Signs	Classic findings: <ul style="list-style-type: none"> - Unilateral adnexal tenderness - Cervical motion tenderness - Uterine enlargement and fever are usually absent. 	<ul style="list-style-type: none"> - Peritoneal irritation: abdominal guarding and rigidity. - Guarding and rigidity - Hypovolemia - Hypotension and tachycardia

Diagnosis :

Diagnosis rests on the results of:

Quantitative serum β -hCG titer ≥ 1500 mIU (done every 2-3 days)



Results of a vaginal sonogram shows **no IUP**, may show adnexal mass.

Sonography	
Vaginal sonogram	Abdominal sonogram
IUP can be seen on 5 weeks' gestation	IUP will not consistently be seen until 6 weeks' gestation.
β -hCG will exceed 1500 mIU	β -hCG threshold is 6500 mIU

- Failure to see a normal intrauterine gestational sac when β -hCG titer $>1,500$ mIU is presumptive diagnosis of an unruptured ectopic pregnancy. No intrauterine pregnancy is seen with vaginal sonogram.

Management :

Possible ectopic :

Repeat the quantitative β -hCG and vaginal sonogram every 2–3 days until the β -hCG level exceeds 1,500 mIU. With that information an ectopic pregnancy can be distinguished from an IUP.

Ruptured ectopic :

Immediate surgical intervention to stop the bleeding is vital, usually by laparotomy.

Unruptured ectopic :

1- Medical:

—**Methotrexate**. This folate antagonist attacks rapidly proliferating tissues including trophoblastic villi. Criteria for methotrexate include:

- 1- pregnancy mass <3.5 cm diameter
- 2- absence of fetal heart motion
- 3- β -hCG level <6,000 mIU
- 4- no history of folic supplementation

Hemodynamically stable , no intra-abdominal bleeding and she present early.

MTX absolute contraindication

- Hemodynamic instability
- Liver or kidney abnormalities
- Active lung disease
- Breast feeding
- Inability to comply with β -HCG follow up testing.

She has to come every 48h, If not it may rupture at home.

MTX relative contraindication: late presentation

- Fetal cardiac activity
- High β -hCG level (>5000 mIU)
- Large ectopic size (>3.5cm)
- History of folic supplementation.

In these cases you can't expect high rate of success. She still may rupture and you have to take her to emergency . After explaining everything to the pt consider the pt's choice.

2- Surgical:

— **Laparoscopy**. If criteria for methotrexate are not met, surgical evaluation is performed through a laparoscopy or through a laparotomy incision.

-**Salpingostomy**: in which the trophoblastic villi (ectopic pregnancy) are dissected free preserving the oviduct. Preferred for unruptured.

-**Segmental resection**: in which the tubal segment containing the pregnancy is resected. In case of Isthmic tubal pregnancies.

-**Salpingectomy** is reserved for the patient with a **ruptured ectopic pregnancy** or those with no desire for further fertility. No need for β -hCG follow-up

—**Laparotomy** : preserved for ruptured ectopic pregnancy to **stop the bleeding**.

3-Follow-up:

Patients who are treated with **methotrexate** or **salpingostomy** should be followed up with β -hCG titers to ensure there has been complete destruction of the ectopic trophoblastic villi.

Rh-negative women should be administered RhoGAM.

Teaching case (video case)

A 36-year-old G1P0010 (G2P0+1) woman presents to the office with onset of **light vaginal bleeding**, which she feels is not her menstrual period, and **mild right lower quadrant pain**, which she rates as 2/10. The pain is intermittent and crampy, and is not associated with urination. There is no nausea or vomiting (R/O:UTI,appendicitis). The patient's last bowel movement was yesterday and was normal in consistency without blood or black color.

Her past medical history is notable for no allergies, no medications, and two hospitalizations. The first was eight years ago for lower abdominal pain which was thought to be **due to pelvic inflammatory disease** and which resolved with antibiotics. The second was for a **left ectopic pregnancy** that required surgical removal of her left tube.

Review of systems and family history are unremarkable. Social history reveals that she is mutually monogamous with a male partner without contraception.

Physical examination shows an anxious appearing female with a temperature of 99.2 ° F, orally, a BP of 105/62, and a pulse of 95 (not febrile and hemodynamically stable). Examination of her abdomen reveals normal bowel sounds.

There are no masses, organomegaly, distention, or rebound tenderness. She has mild **discomfort in the right lower quadrant**. Pelvic examination reveals **right adnexal tenderness** without adnexal masses. Uterus is of normal size and there is **discomfort on cervical motion**. The rectal exam is negative with heme negative stool.

1- G "gravida" : Number of all previous pregnancies irrespective of the outcome including the current preg.

In case she isn't preg, at the moment we don't put (G)

2- P "para" : Number of previous pregnancies which reached **24wks** (20wks in some books) -> (fetus is **viable**)

If the baby is expelled before 24wks(20wks in some books) -> we call it abortion , if after we call it delivery.

3- plus after para ; what does it include : **abortion ,ectopic preg., and molar preg.** "cause of bleeding in early preg".

Para+ the plus +1 = gravida

Viability :if the baby is delivered in 24wks(20wks in some books)(GA) or fetal weight 500 gm (US), it has a high chance of successful resuscitation.

Questions

1- What is the differential diagnosis for this patient? What aspects of her history and physical examination might lead you to be suspicious of an ectopic pregnancy? (*indicates signs or symptoms for teaching case)

DDx		
Ob	Gyn	Others
1- Threatened abortion 2- Incomplete abortion 3- Ectopic pregnancy 4- Hydatidiform mole (very high HCG, whole lower abdominal pain / suprapubic area, <u>bad N/V</u> , pass something like grapes;so not high in my DDx list)	1- Ovarian cyst 2- Adnexal torsion 3- Pelvic inflammatory disease 4- Endometriosis	1-Appendicitis 2-Inflammatory bowel disease 3-Urinary tract infection 4- Bladder stone 5- pancreatitis. (not down in the lower iliac fossa)

	Sign	Symptoms
For Teaching case (video case)	1-Normal sized uterus 2-Adnexal tenderness 3- Discomfort on cervical motion	1-Vaginal bleeding 2-Mild right lower quadrant pain 3- Amenorrhea 4-Hx of pelvic inflammatory disease 5-Hx of ectopic pregnancy
In general	Abdominal tenderness (80-90%) Adnexal tenderness (75-90%) Normal uterine size (70%) Adnexal mass (30-50%) Hypotension and tachycardia. Abdominal guarding and rigidity.	Abdominal pain (95-100%) Abnormal uterine bleeding (65-85%) Amenorrhea (75-95%)

2- What are the risk factors for ectopic pregnancy and which of these risk factors does the patient have (* indicate patient risk factors for teaching case)?

- Previous ectopic pregnancy (approx 10 times increase)
- History of pelvic inflammatory disease, gonorrhea (lives inside the tubes), or chlamydia (adhesions)
Why gonorrhea, or chlamydia and not HPV? Each pathogen prefers certain organ/part
- History of previous gyn or abdominal surgery
- Sterilization failure
- Endometriosis
- Congenital uterine malformation
- Assisted reproductive technology (IVF)
- Older age (35-44 y/o are 3 times higher risk than younger women)
TB can damage the endometrium

3- Where can ectopic pregnancies occur and how frequently does this happen?

Most common site : fallopian tube 90% ; no need to memorize the % just know the most common part (ampulla)

- Fallopian tube: Ampullary, 80%
- Isthmic, 12%
- Fimbrial, 5%
- Cornual/Interstitial, 2%
- Abdominal, 1.4%
- Ovarian, 0.2%
- Cervical, 0.2%

4- What initial test would you order for this patient to assist you in narrowing down your diagnosis?

- **Quantitative** β -hCG (in order to rule in or rule out an intrauterine pregnancy with transvaginal ultrasound, the β -hCG needs to be greater than 1500 mIU/ml)
- Key Learning Point: Confirming pregnancy is critical in the diagnosis of ectopic pregnancy. If this test is not ordered in a timely manner it can lead to significant morbidity and mortality.

5- If this patient's test is positive, what tests could be helpful in making a more definitive diagnosis?

- STAT CBC (to check for anemia that may indicate intra-abdominal bleeding)
- Transvaginal ultrasound to look for intrauterine pregnancy or extrauterine pregnancy (assuming that the quantitative β - hCG > 1500mIU/ml an ectopic pregnancy can be diagnosed if there is no evidence of an intrauterine pregnancy on transvaginal ultrasound)
 - Serial Quantitative β -hCG levels: If the level is equivocal and the ultrasound is not helpful, monitoring the β -hCG level rise in 48 hours can aid in distinguishing between a viable intrauterine pregnancy and non-viable intrauterine pregnancy (increase by 5% , same level, or decreased) or ectopic pregnancy. In viable early intrauterine pregnancy, hCG levels will usually rise by at least 66% in 48 hours (it should double or increase at least by 60%) . A β -hCG level less than 66% should cause suspicion of ectopic or non-viable intrauterine pregnancy. Patients who are stable where the diagnosis is unclear can be followed by serial β -hCG levels and, when levels have reached high enough for ultrasound to be effective, can have repeat ultrasounds
 - Serum progesterone level may be helpful in some situations.

6- What options are available for the management of ectopic pregnancy?

- Check for Rh status and give Rh negative women Rho-GAM to prevent isoimmunization
- Medical treatment: methotrexate
 - Hemodynamically stable patient
 - Quantitative β -hCG (higher failure rate if β -hCG is greater than 5,000 mIU/ml thus multiple doses may be required)
 - No fetal heartbeat seen outside of the uterus
 - Ectopic gestation that is not too big (usually <3.5cm)
 - Cooperative patient who will be sure to return for appropriate follow up and blood work
- Surgical treatment: Laparoscopy or Laparotomy with or without conservation of the Fallopian tube
- Expectant management is an option if β -hCG is low and decreasing and patient is willing to take the risk of tubal rupture and hemorrhage.

When to choose :

- 1- Salpingostomy : Pt w/ no children or one child and you want to preserve her fertility . Or like in our case, she had removed one tube + has HX of PID , by removing the other one she only can get preg. by IVF (she can't afford IVF) -> in both cases tell her it is a good news for another ectopic (next time you are preg. come early to make sure its not ectopic again)
- 2- Salpingectomy :Pt w/ 9 children , removing one tube wouldn't make any difference .

MedEd Notes :

1. Ectopic pregnancy:

- It could be due to salpingitis creating a structure where the fertilized egg cannot pass, or early fertilization and subsequent implantation in the peritoneum.
- Symptoms: Amenorrhea, spotting, lower abdominal pain and other signs of pregnancy
- Dx: Positive β -hCG followed by U/S to determine if it's ectopic or intrauterine. U/S will show an adnexal mass and free fluid.
- Tx:
 - If not ruptured \rightarrow Salpingostomy
 - If ruptured \rightarrow Salpingectomy
 - Methotrexate is used when there are no fetal heart tones, patient not on folate, β -hCG < 5000, size < 3.5 cm.

2. Intrauterine pregnancy includes the following:

- Abortion (discussed in a previous lecture)
- Normal pregnancy
- Molar pregnancy (snowstorm appearance, managed by **suction curettage**, **OCP** to prevent pregnancy, **β -hCG** measurement every week to make sure she doesn't develop **choriocarcinoma**)

