
بسم الله الرحمن الرحيم

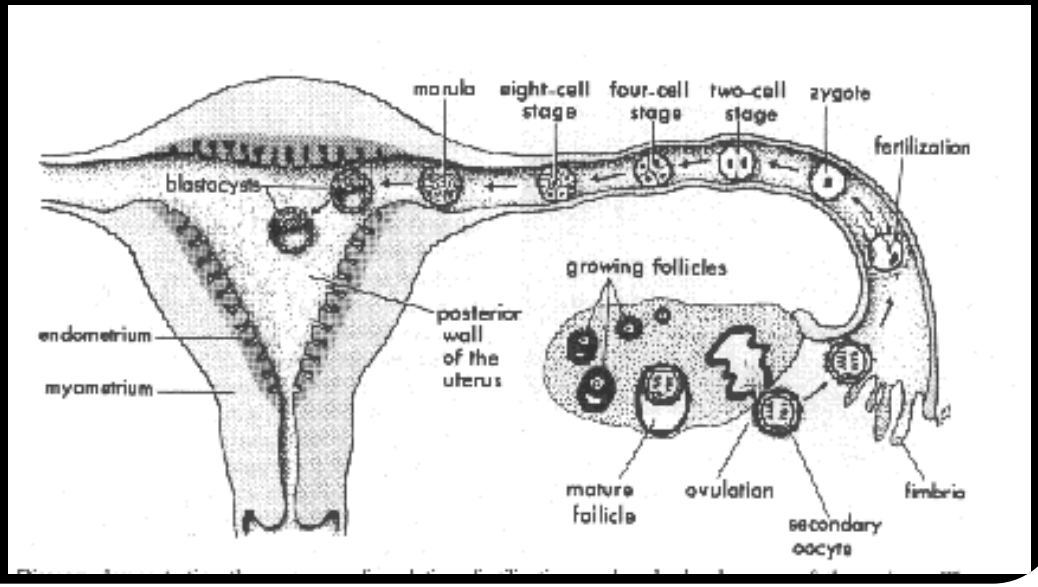
Ectopic pregnancy

Dr. F. Abbasalizadeh
perinatalogist

- Ectopic pregnancy is the leading cause of maternal death in the first trimester (4-10% of all pregnancy related deaths)
- Early detection can lead to successful management without surgery

Definition:

Any pregnancy where the fertilised ovum gets implanted & develops *in a site other than normal uterine cavity* (The most common location is the fallopian tube, 98% of all EPs)



Incidence:

- Increasing due to P.I.D./ infertility

  1-2% of all pregnancies

  9% after IVF-ET

- Recurrence rate: 8-15% after 1st

  25% after 2 ectopic

As many as 6-16% of women who present to a hospital emergency department with first-trimester bleeding, pain, or both have an EP

Seasonal variation (most common in June and December)

Site Of Implantation:

Ampullar (>70%)

Isthmus (12%)

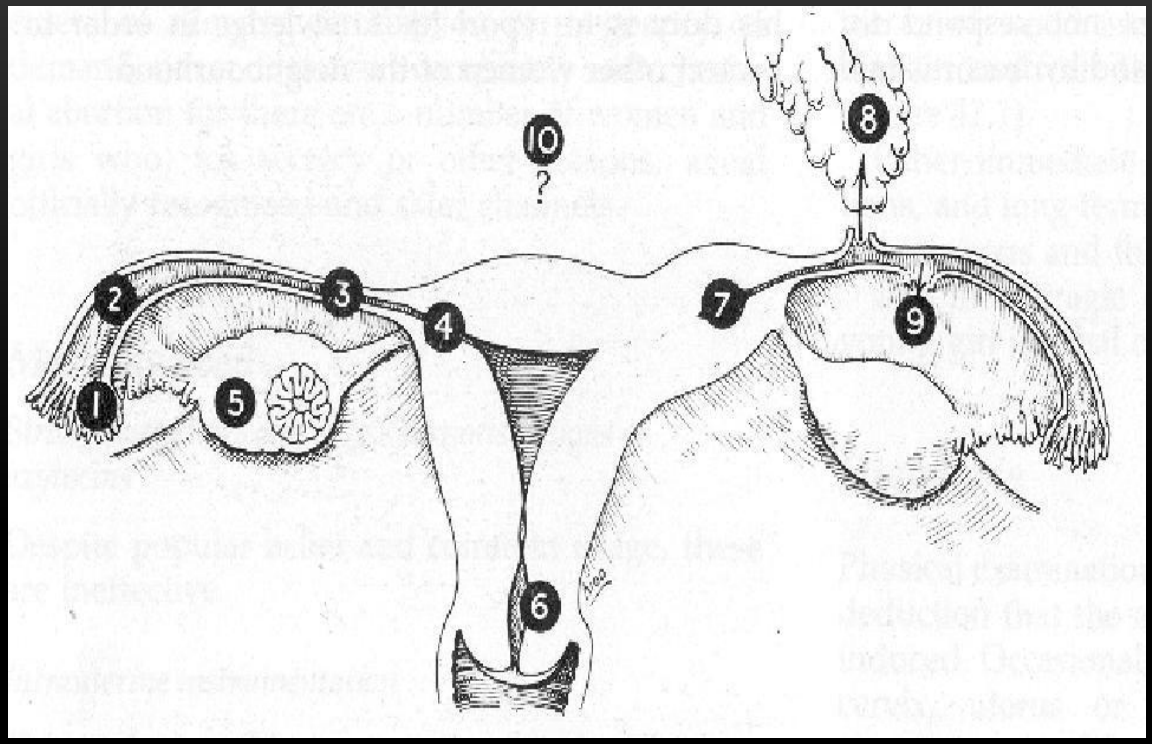
Fimbrial(11.1%)

Interstitial(2.4%)

Ovary (< 3.2%)

Abdomen (<1.3%)

Cervix (< 2%)



1)Fimbrial 2)Ampullary 3)Isthemic 4)Interstitial 5)Ovarian 6)Cervical 7)Cornual-Rudimentary horn 8)Secondary abdominal 9)Broad ligament 10)Primary abdominal

Risk Factors:

High risk factors:

- Previous ectopic pregnancy
- Tubal pathology and surgery
  - Reconstructive surgery
  - Sterilization
- In-utero DES exposure

Other risk factors

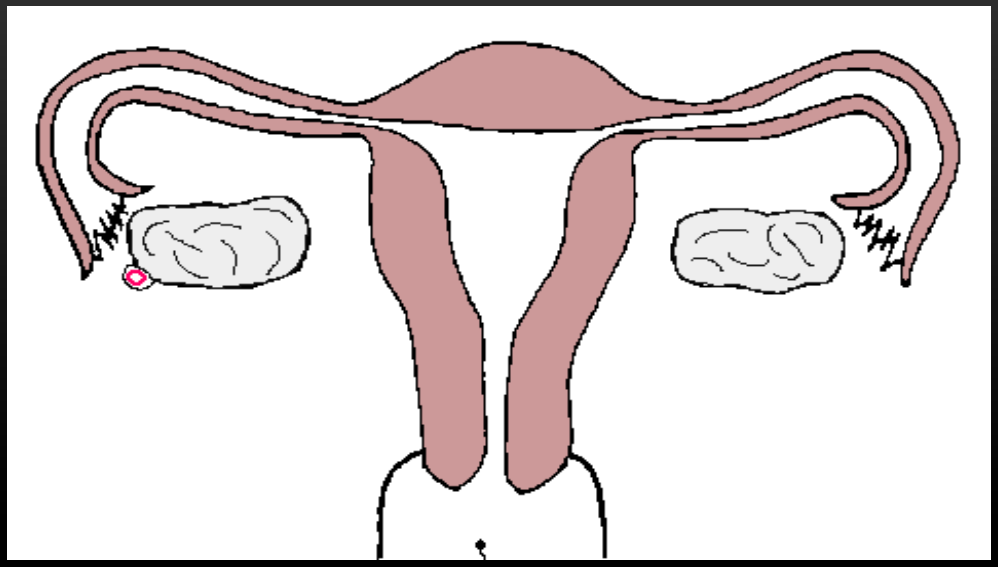
- Previous genital infections
- Intrauterine devices
- Infertility
- Multiple sexual partners
- Smoking
- In vitro fertilization
- Vaginal douching
- Age

Protective factors

Risk Factor	Risk That Subsequent Pregnancy Will Be Ectopic (%)
Ovulation induction (clomiphene)	3
In utero diethylstilbestrol (DES) exposure without	4
uterine abnormality	
Ovulation induction (gonadotropins)	5
In vitro fertilization (IVF) for non-tubal factor infertility	5
Gamete intrafallopian transfer	5
Current cigarette smoker of >1 pack per day	5
Salpingitis (proven laparoscopically)	6
Anti-Chlamydia titer {ewc MVIMG,	6
MVIMAGE,!greateq.bmp}1:64	
In utero DES exposure with uterine abnormality	13
IVF for tubal factor infertility	17

Contraceptive Method	Resultant Ectopic Pregnancies (%)
None (baseline rate)	2
Barrier method	2
Copper intrauterine device (IUD)	3
Inert IUD	4
Combination oral contraceptive	4
Progestin-only oral contraceptive	10
Pomeroy tubal ligation	12
Progestin IUD	16
Progestin subdermal implants	33
Falope ring sterilization	60
Bipolar tubal sterilization	67

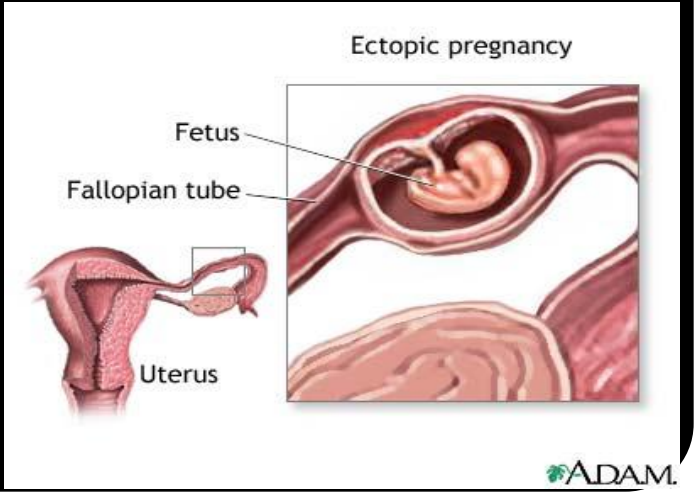
Pathology of Ectopic Pregnancy



- Fertilized ovum borrows through the epithelium
- Zygote reaches the muscular wall
- Trophoblastic cells at zygote periphery proliferate, invade, and erode adjacent muscularis
- Maternal blood vessels disrupted leading to hemorrhage
- Outcome: tubal abortion or rupture with hemorrhage

Tubal Pregnancy

- Commonest site of EP (98%)
- 70 % occur in the ampullary portion , with the remainder about equally divided between the fimbrial and isthmus ends), a very small proportion occur in the interstitial portion
- Clinical manifestations typically appear 6-8wk after the LMP



Symptoms:

The classic symptoms of ectopic pregnancy are :

- Abdominal pain (99%)
- Amenorrhea (74%)
- Vaginal bleeding (56%)

Normal pregnancy discomforts (breast tenderness, frequent urination, nausea)

Ectopic pregnancy should be suspected in any women of reproductive age with these symptoms

Symptoms:

- shoulder pain
- urge to defecate
- lightheadedness or shock

Physical examination :

- Vital signs: orthostatic changes & low grade fever
- Findings on physical examination: adnexal, cervical motion, abdominal tenderness, adnexal mass, mild uterine enlargement.

Signs:

- Abdominal tenderness (91%)
- 1st trimester bleeding (79%)

Common associated findings:

- Adnexal tenderness (54%)
- Amenorrhea
- Early pregnancy symptoms
- Cullen's sign (Periumbilical bruising)
- Nausea, vomiting, diarrhea, dizziness

Other Signs:

- Tachycardia
- Chadwick's sign (cervix and vaginal cyanosis)
- Hegar's sign (softened uterine isthmus)
- Hypoactive bowel sounds
- Cul-de-sac fullness
- Decidual cast (Passage of decidua in one piece)

Signs suggestive of ruptured ectopic pregnancy:

- Usually between 6 and 12 weeks gestation
- Severe abdominal tenderness with rebound, guarding
- Orthostatic hypotension

Differential Diagnosis

- Appendicitis
- Threatened Abortion
- Ruptured ovarian cyst
- PID
- Salpingitis
- Endometritis
- Nephrolithiasis
- Ovarian torsion
- Intrauterine pregnancy

Alternative diagnoses:

- Dysmenorrhea
- Dysfunctional uterine bleed
- UTI
- Diverticulitis
- Mesenteric lymphadenitis

Symptoms & Signs:

In a woman of child bearing age with pelvi-abdominal pain and/ or vaginal bleeding ……
ALWAYS….think

DIAGNOSIS

The diagnosis is usually made clinically, based upon results of the imaging studies (ultrasound) and laboratory tests (hCG) described below

DIAGNOSIS

- In recent years, inspite of an increase in the incidence of ectopic pregnancy there has been a fall in the case fatality rate.
- This is due to the widespread introduction of diagnostic tests and an increased awareness of the serious nature of this disease.
- This has resulted in early diagnosis and effective treatment.
- Now the rate of tubal rupture is as low as 20%.

METHODS OF EARLY DIAGNOSIS

- The combination of TVUS and hCG will permit a definitive diagnosis in almost all cases at a very early stage of pregnancy, thereby permitting treatment options less invasive than surgical excision
- Other diagnostic tests (eg, serum progesterone level, curettage, laparoscopy, culdocentesis) do not provide additional clinically useful information

A combination of these methods may have to be employed

Human chorionic gonadotropin

- Can be detected in serum and urine as early as eight days after the LH surge
- The hCG concentration in a normal intrauterine pregnancy rises in a curvilinear fashion until about 41 days of gestation, after which it rises more slowly until approximately 10 weeks, and then declines until reaching a plateau in the second and third trimesters
- The mean doubling time for the hormone ranges from 1.4 to 2.1 days in early pregnancy

In 85% of viable intrauterine pregnancies, the hCG concentration rises by at least 66% every 48 hours during the first 40 days of pregnancy

only 15% of viable pregnancies have a rate of rise less than this threshold.

The slowest recorded rise over 48 hours associated with a viable intrauterine pregnancy was 53%

only 21% of ectopic pregnancies were associated with hCG levels that followed the minimum doubling time of a viable intrauterine pregnancy

A falling hCG concentration is most consistent with a failed pregnancy (arrested pregnancy, anembryonic pregnancy, tubal abortion, spontaneously resolving EP, complete or incomplete abortion)

Discriminatory zone

The discriminatory zone is based upon the correlation between visibility of the gestational sac and the hCG concentration, and is of major diagnostic importance

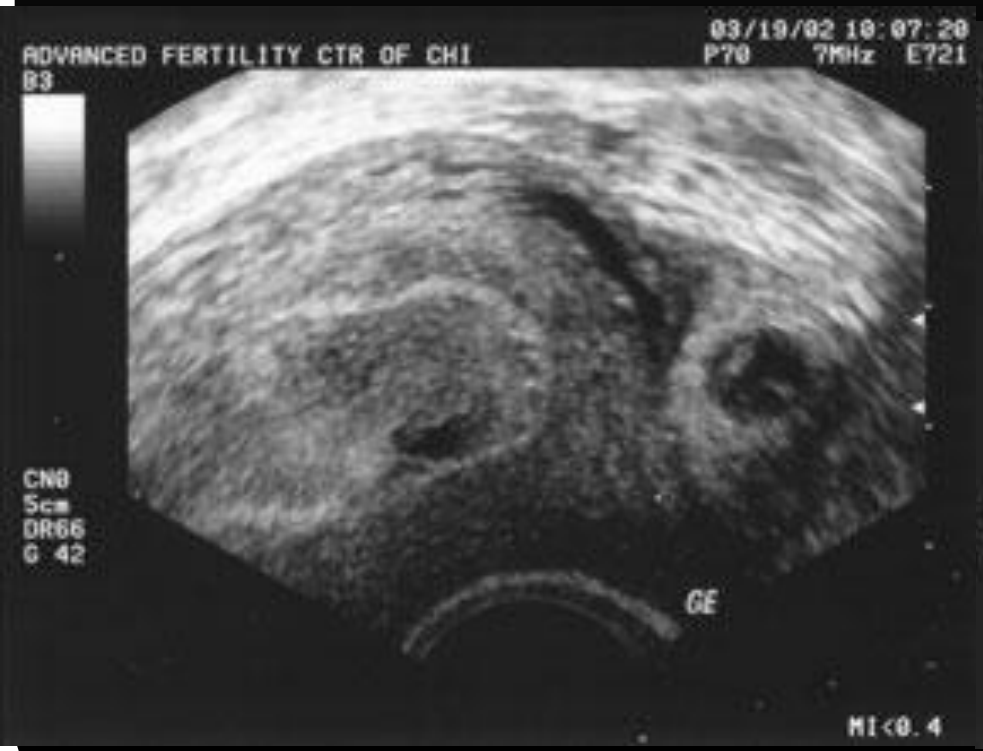
❖ The absence of an intrauterine gestational sac at hCG concentrations above the discriminatory zone strongly suggests an ectopic or nonviable intrauterine pregnancy, but is nondiagnostic with hCG values below the discriminatory zone.

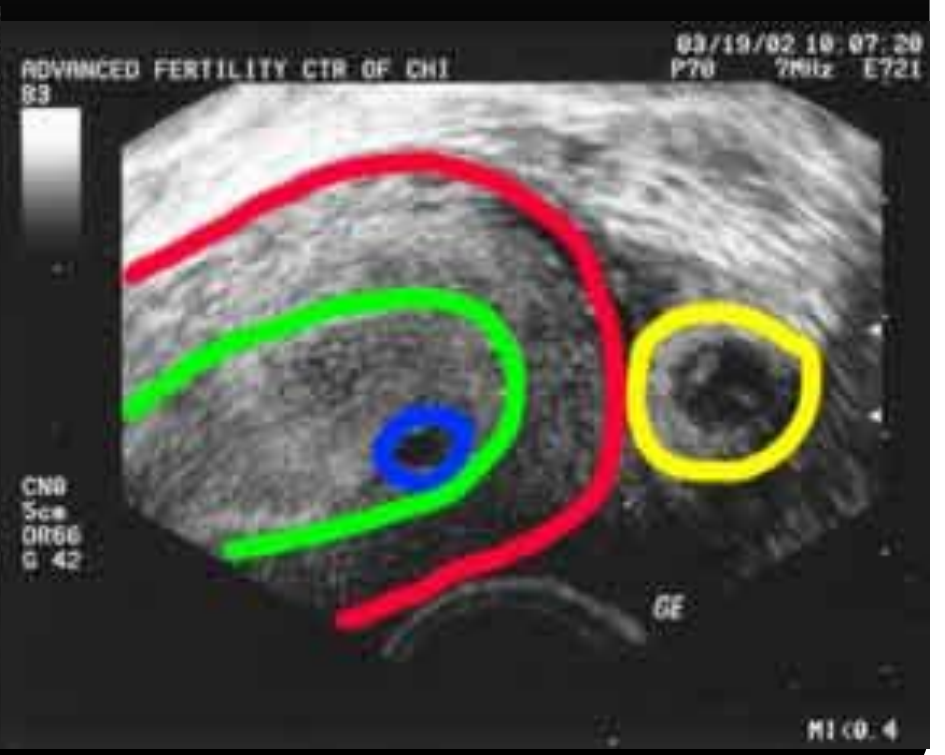
A negative ultrasound examination at hCG levels below the discriminatory zone is consistent with an early viable intrauterine pregnancy or an ectopic pregnancy or nonviable intrauterine pregnancy

Pelvic ultrasound scan

a) Abdominal. Sac at 5 wks F.H. at 7 wks.. Needs full bladder

b) Transvaginal. 1 wk earlier than abdo… empty bladder





- The evaluation of a woman with suspected ectopic gestation begins with a *transvaginal ultrasound examination and quantitative human chorionic gonadotropin (hCG) level*.

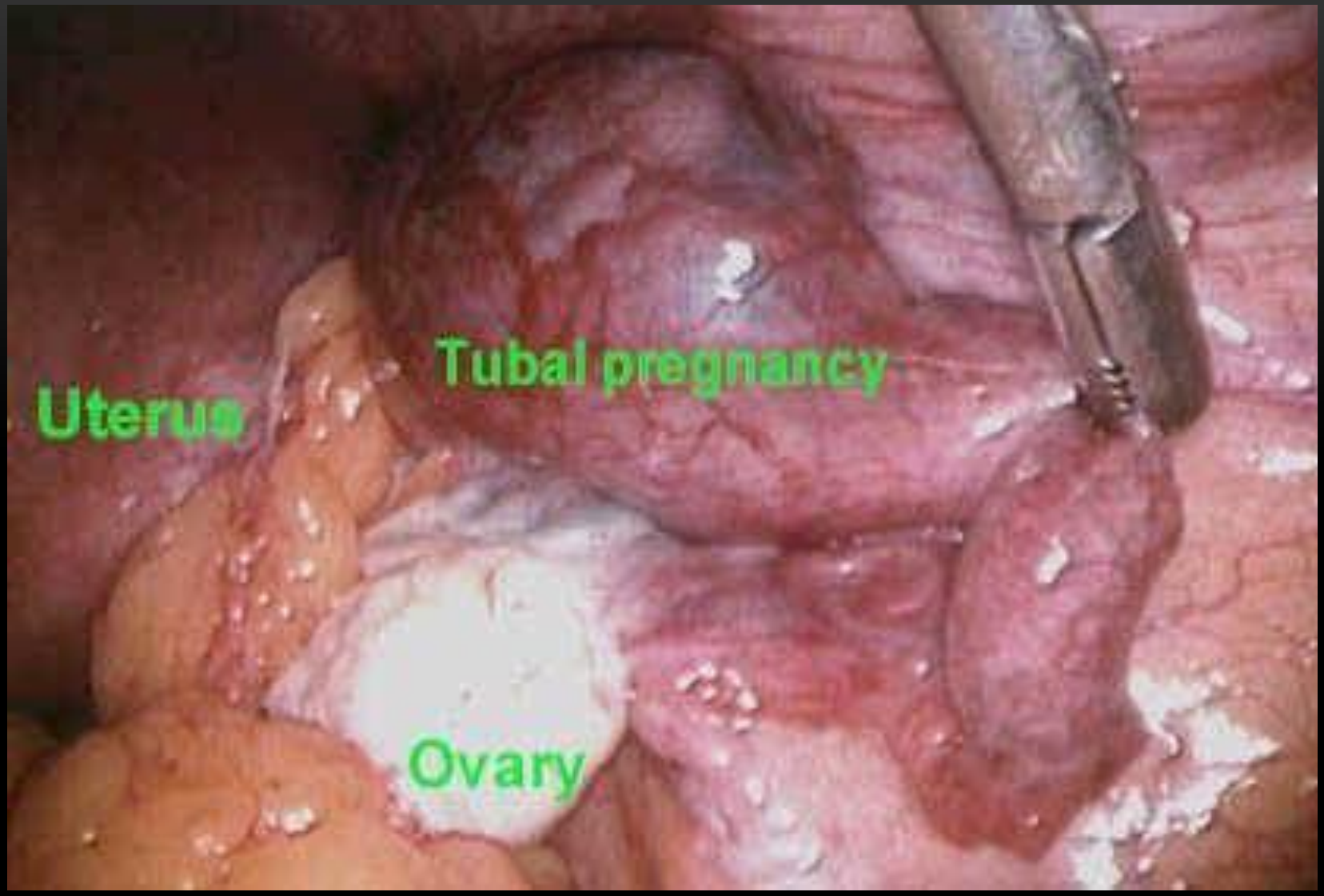
- Transvaginal ultrasound is diagnostic if a true gestational sac, yolk sac, embryo, or embryonic cardiac activity is demonstrable inside or outside of the uterus.

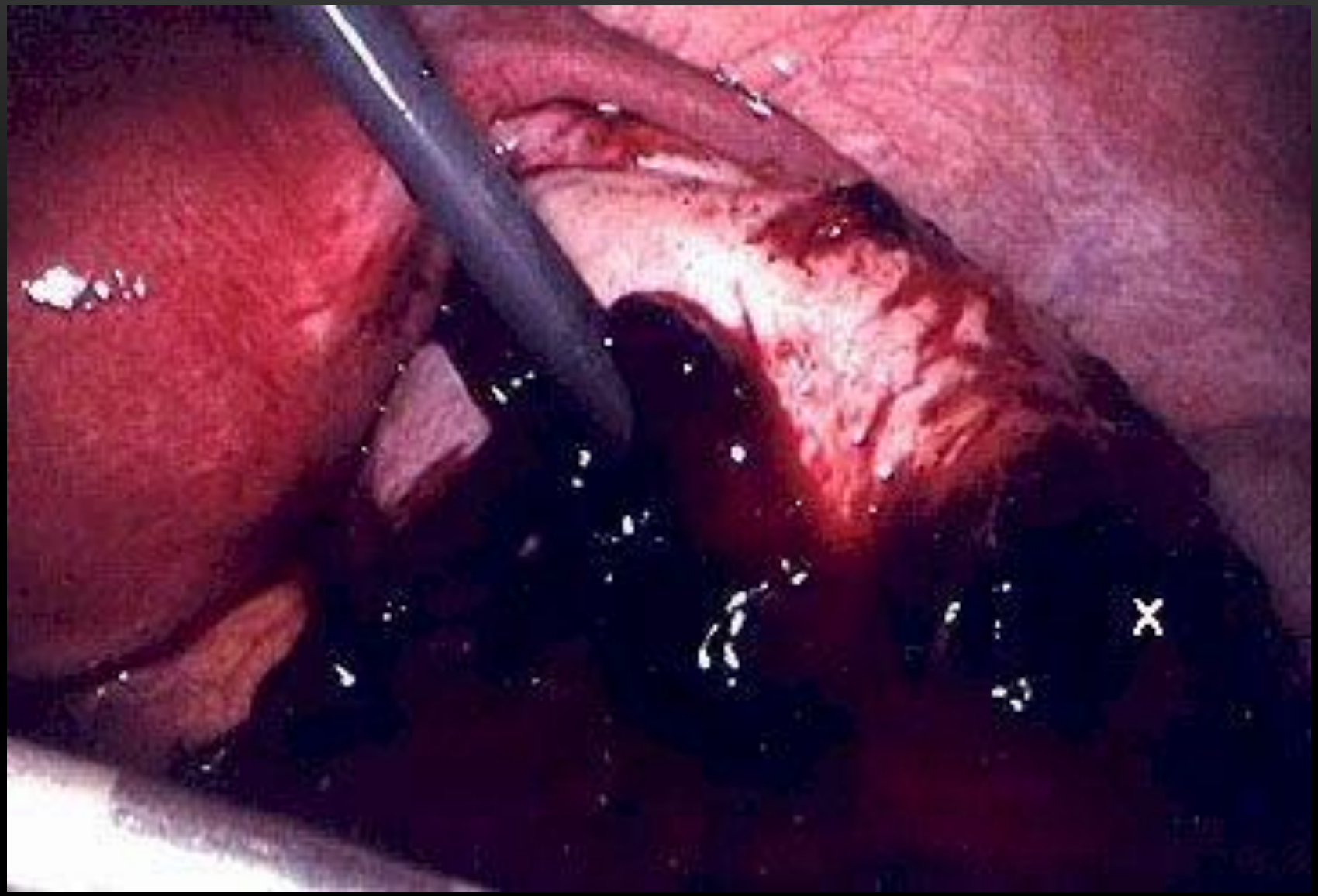
- An extrauterine pregnancy is almost certain when the hCG concentration is greater than 1500 IU/L (discriminatory zone threshold) and transvaginal ultrasound examination reveals a complex adnexal mass and no intrauterine pregnancy.

- A serum hCG concentration less than 1500 IU/L with a negative transvaginal ultrasound examination should be followed by repetition of both of these tests in three days to follow the rate of rise of the hCG.
- A normally rising hCG concentration should be evaluated with ultrasound examination when the hCG reaches the discriminatory zone. At that time, an intrauterine pregnancy or an ectopic pregnancy can be diagnosed.

• If the hCG concentration rises but does not double over 72 hours, then the pregnancy is abnormal (an ectopic gestation or intrauterine pregnancy that is destined to abort).

• A falling hCG concentration is most consistent with a failed pregnancy


Uterus
Tubal pregnancy
Ovary



MANAGEMENT

Depending on the presentation:

- ❖ Acute… with ruptured ectopic and intra-abdominal bleeding…. ABC,,, + surgical approach.
- ❖ Early stages, with intact ectopic:

1. **Expectant**… decreasing B-hCG …. Tubal abortion
2. **Medical**… Depending on size of ectopic and level of B-hCG….. Use methotrexate….. Not common approach
3. **Surgical**

EXPECTANT MANAGEMENT

CANDIDATES:

when we suspect ectopic pregnancy, but TVUS fails to reveal extrauterine findings suggestive of ectopic pregnancy and the beta-human chorionic gonadotropin (hCG) concentration is low (≤200 mIU/mL) and declining. Imaging and laboratory assessment do not clearly distinguish between a failed intrauterine pregnancy and a resolving ectopic pregnancy

CONTRAINDICATIONS :

known or suspected EP with the following characteristics:

- Hemodynamically unstable
- Signs of impending or ongoing ectopic mass rupture (severe or persistent abdominal pain or >300 mL of free peritoneal fluid outside the pelvic cavity)
- HCG that is greater than 200 mIU/mL, is increasing, or is not declining
- Unwilling or unable to comply with monitoring
- Does not have timely access to a medical institution

FOLLOW-UP :

following the hCG level every 48 hours for three measurements to confirm that it continues to decline, and then weekly until it is undetectable

Expectant treatment should be abandoned if a patient experiences significant increase in abdominal pain, serum hCG starts to increase or fails to decrease

Success rates for expectant management of ectopic pregnancy of 48 -100 %

SUBSEQUENT REPRODUCTIVE PERFORMANCE:

❖Tubal patency of the affected tube in 93 percent of cases

❖ Intrauterine pregnancy rates of 63-88% have been reported after expectant management of presumed ectopic pregnancy

MEDICAL MANAGEMENT

Optimal candidates :

- ✓ Hemodynamically stable
- ✓ Willing and able to comply with posttreatment follow-up
- ✓ Have a hCG beta-subunit concentration ≤5000 mIU/Ml
- ✓ No fetal cardiac activity
- ✓ Mass size less than 3 to 4 cm

Contraindications :

- Hemodynamically unstable
- Signs of impending or ongoing ectopic mass rupture (Severe or persistent abdominal pain or >300 mL of free peritoneal fluid outside the pelvic cavity)
- Clinically important abnormalities in baseline hematologic, renal or hepatic laboratory values
- Immunodeficiency, active pulmonary disease, peptic ulcer disease

Contraindications :

- Hypersensitivity to MTX
- Coexistent viable intrauterine pregnancy
- Breastfeeding
- Unwilling or unable to be compliant with post-therapeutic monitoring
- Do not have timely access to a medical institution

Pretreatment testing:

HCG, blood type, CBC, renal and liver function tests are drawn prior to starting therapy.

A transvaginal ultrasound is performed.

Rh(D) immune globulin should be administered if the woman is Rh(D)-negative

do not perform endometrial sampling in the management of ectopic pregnancy.

Precautions during therapy:

- Avoid vaginal intercourse and new conception until hCG is undetectable
- Avoid pelvic exams during surveillance of MTX therapy due to theoretical risk of tubal rupture
- Avoid sun exposure to limit risk of MTX dermatitis
- Avoid foods and vitamins containing folic acid
- Avoid NSAIDs, as the interaction with MTX may cause bone marrow suppression, aplastic anemia, or gastrointestinal toxicity

Treatment protocols

- In single dose protocols, IM MTX is given followed by a hCG level on treatment Day 4 & 7 , then weekly.

Additional doses of MTX are given if the hCG does not decline sufficiently.

The hCG is followed until the level is undetectable

• In multiple dose protocols, MTX is given on Days 1, 3, 5, and 7 and leucovorin on Days 2, 4, 6, and 8. If the serum hCG concentration plateaus or increases in two consecutive measurements, a second course may be given seven days after the previous dose.

HCG weekly until undetectable.

Treatment with MTX does not appear to compromise future fertility or pregnancy outcome, or increase the risk of recurrent ectopic pregnancy.

SURGICAL TREATMENT

INDICATIONS :

- Hemodynamic instability
- Impending or ongoing rupture of ectopic mass
- Contraindications to methotrexate
- Coexisting intrauterine pregnancy
- Not able or willing to comply with medical therapy

post-treatment follow-up

INDICATIONS :

- Lack of timely access to a medical institution for management of tubal rupture
- Desire for permanent contraception
- Known tubal disease with planned in vitro fertilization for future pregnancy (only in patients who are otherwise good candidates for surgical therapy)
- Failed medical therapy

• Persistent EP after salpingostomy occurs in 4-15% cases.

• perform a single serum beta-hCG measurement one week after surgery. A level that is less than 5 percent of the preoperative value is consistent with complete resolution of the ectopic pregnancy; a higher value calls for repeat measurement.

• After an ectopic pregnancy, 38-89% of women will achieve a subsequent intrauterine gestation.

- If the woman does not conceive in the first 12 to 18 months after surgical therapy of ectopic pregnancy, or her contralateral tube is damaged or absent, referral for in vitro fertilization is appropriate

REMEMBER

- EP is a life threatening condition & on the increase
- Not all cases present with a classical picture
- ALWAYS suspect EP in a woman of a child-bearing age c/o pain and/or abnormal bleeding
- Tailor your management on the patient presentation.+/_ Fallow up

Thanks for your attention