

OB-Gyn

EMERGENCY MEDICINE COURSES

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Objectives

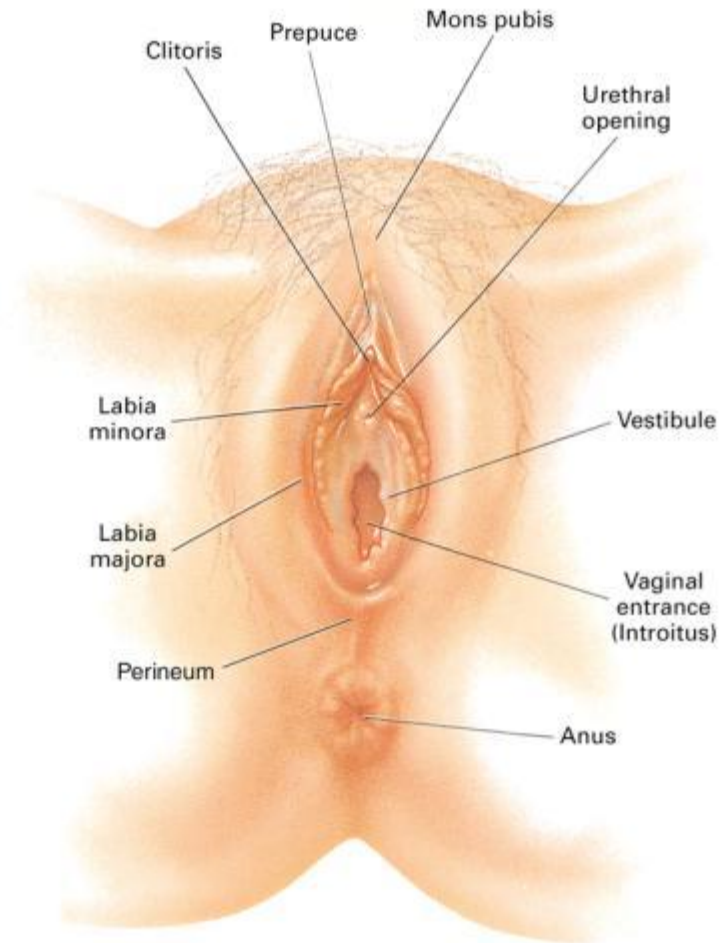
- ▶ Recognize some different types of OB–Gyn emergency issues
- ▶ Recognize the different presentations of OB–Gyn emergency issues
- ▶ Discuss their management and treatment in the Pre–Hospital and Emergency Room settings

Anatomy and Physiology

Anatomy and Physiology of the Female Reproductive Organs

- ▶ **External Genitalia**
- ▶ **Internal Genitalia**

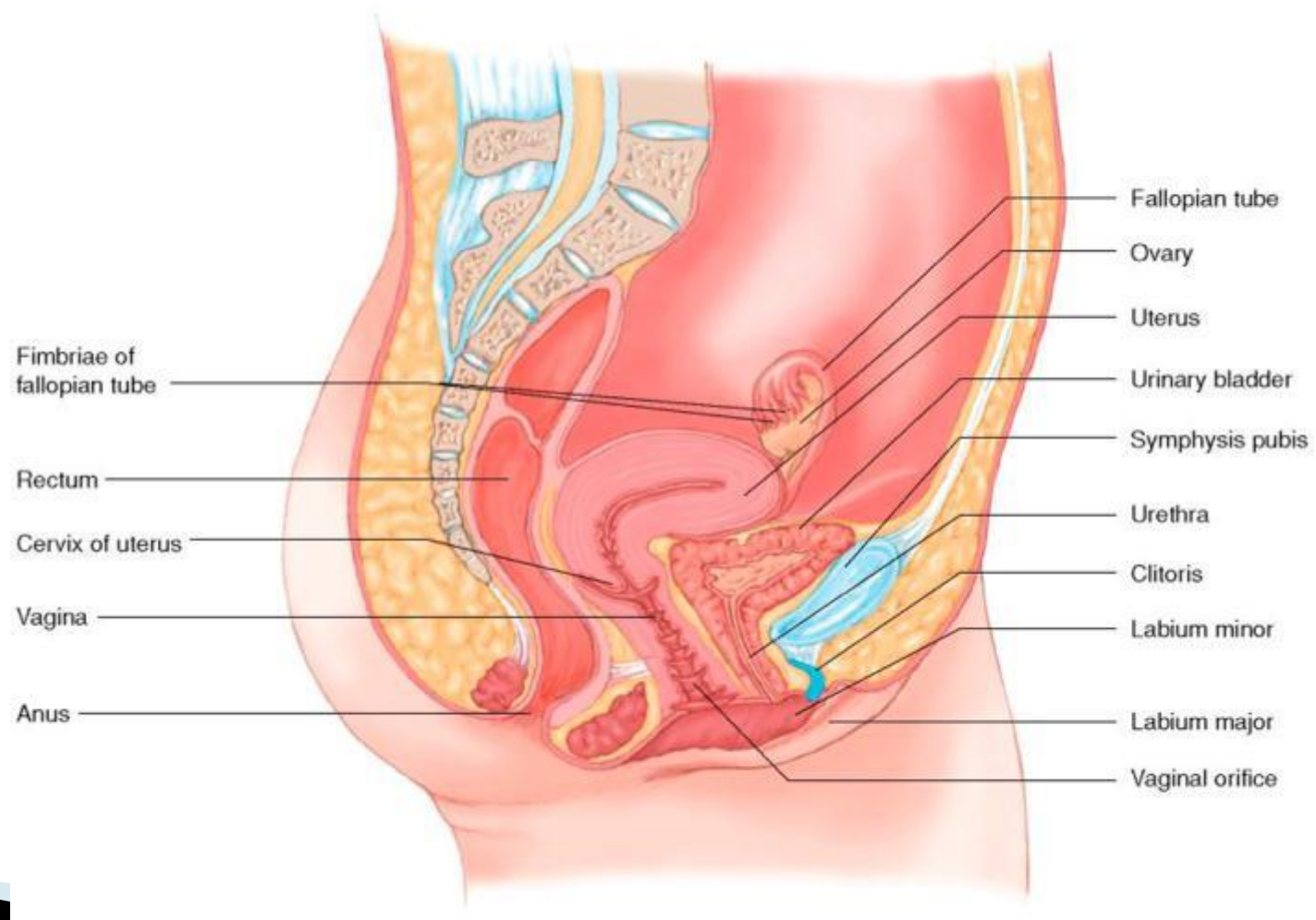
External Genitalia



External Genitalia

- ▶ **Perineum:**
 - Muscular tissue that separates the vagina and the anus.
- ▶ **Mons Pubis:**
 - Fatty layer of tissue over the pubic symphysis.
- ▶ **Labia:**
 - Structures that protect the vagina and the urethra.
- ▶ **Clitoris:**
 - Vascular erectile tissue that lies anterior to the labia minora.
- ▶ **Urethra:**
 - Drains the urinary bladder.

Internal Genitalia



Internal Genitalia

- ▶ Vagina
 - Female organ of copulation.
 - Birth canal.
 - Outlet for menstruation.
- ▶ Uterus
 - Site of fetal development.
- ▶ Fallopian Tubes
 - Transports the egg from the ovary to the uterus.
 - Fertilization usually occurs here.
- ▶ Ovaries
 - Primary female gonads.

The Menstrual Cycle

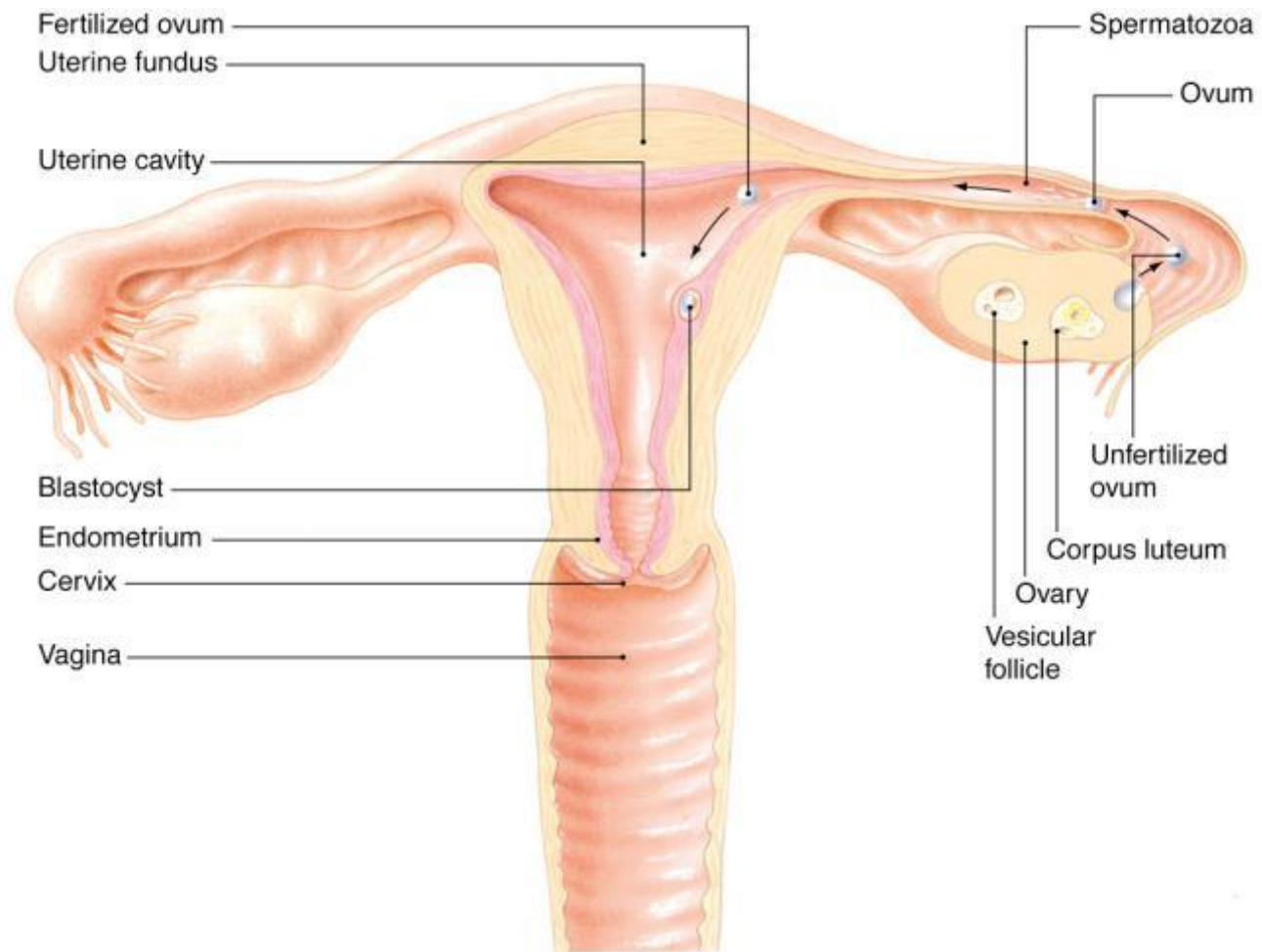
- ▶ Monthly hormonal cycle, usually 28 days.
- ▶ Prepares the uterus to receive a fertilized egg.
- ▶ The onset of menses, known as menarche, usually occurs between the ages of 10 and 14.

Table B-1 **CONTRACEPTIVES**

Type of Contraceptive	Method of Action	Effectiveness
Rhythm Method	Abstinence during fertile phase—follows 6 to 8 months of monitoring the menstrual cycle to determine fertile phase	Effective if abstinent during fertile phase; however, this is difficult to judge with precision
Coitus interruptus (withdrawal)	Penis withdrawn prior to ejaculation	Oldest and least reliable form of contraception
Condom	Barrier prevents transport of sperm	Reliable if used consistently and properly; additional benefit is that latex condoms prevent disease transmission.
Diaphragm	Barrier covers cervix to prevent entry of sperm	Reliable if proper fit and used consistently.
Spermicide	Destroys sperm or neutralizes vaginal secretions to immobilize sperm	Limited effectiveness, but increases when used with a barrier device
Intrauterine device (IUD)	Unclear; either prevents implantation of fertilized egg or affects sperm motility through cervix	Highly effective
Oral contraceptives (birth control pill)	Combination of estrogen and progesterone inhibits release of egg	Highly effective
Norplant	Progestin-containing capsules cause changes in cervical mucus to inhibit sperm penetration	Highly effective and continuous (up to six years) but requires surgical implantation
Depo-Provera	Suppresses ovulation	Highly effective and continuous (3 months)
Tubal ligation	Prevents egg from being fertilized by blocking tube	Highly effective but requires surgery

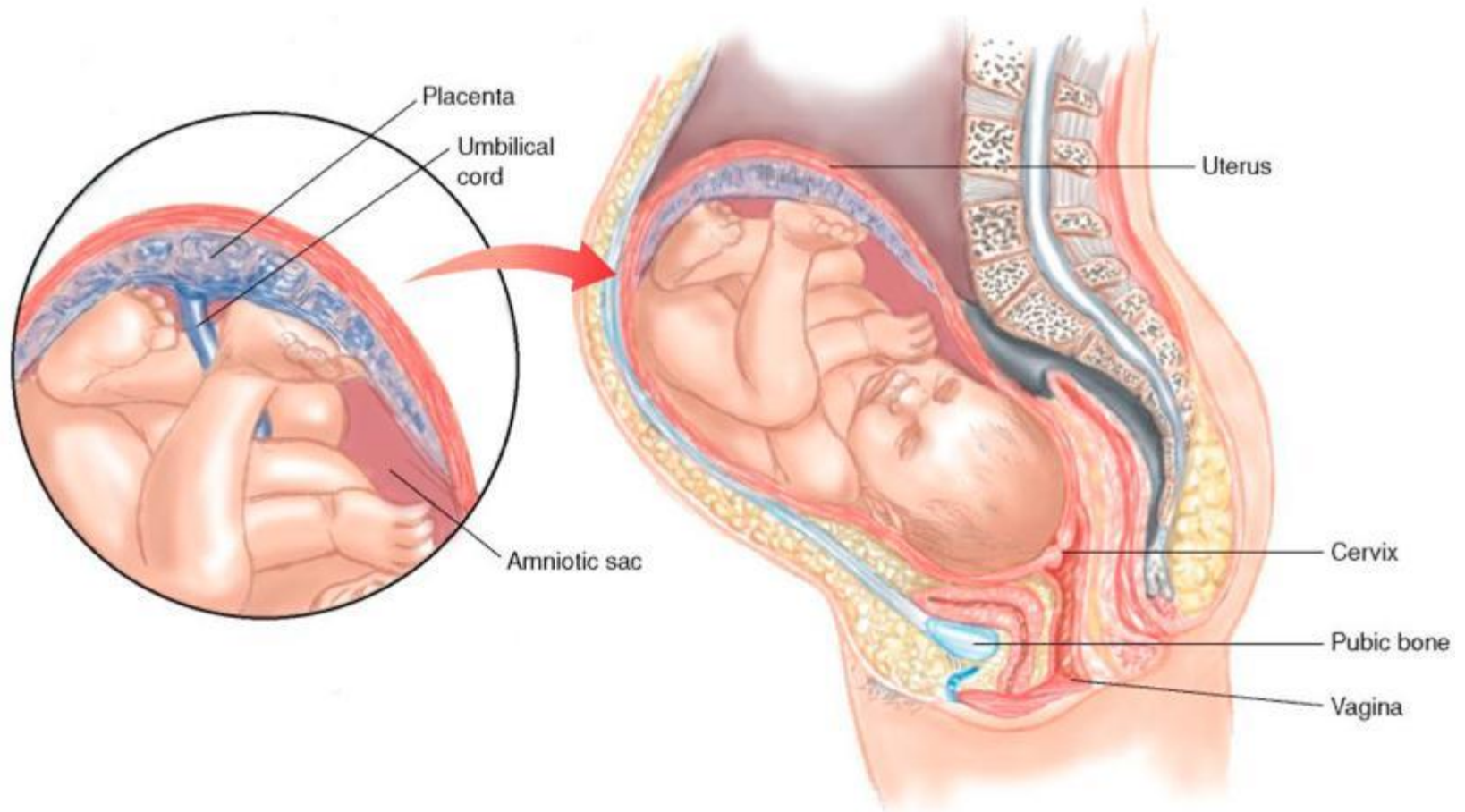
Physical Exam

- ▶ Respect patient's privacy
- ▶ Be professional
- ▶ Explain procedures
- ▶ Observe patient
- ▶ Check vital signs
- ▶ Assess bleeding or discharge: *Do not perform an internal vaginal exam alone*
- ▶ Abdominal examination



Anatomy and Physiology of the Obstetric Patient

- ▶ **Ovulation**—the release of an egg from the ovary
- ▶ **Placenta**—organ of pregnancy
- ▶ **Afterbirth**—placenta and membranes that are expelled from uterus after the birth of a child
- ▶ **Umbilical cord**—structure that connects fetus and placenta
- ▶ **Amniotic sac**—membranes that surround and protect the developing fetus
- ▶ **Amniotic fluid**—clear watery fluid that surrounds and protects the developing fetus



Physiologic Changes of Pregnancy

▶ Reproductive System

- Uterus increases in size.
- Vascular system.
- Formation of mucous plug in cervix.
- Estrogen causes vaginal mucosa to thicken.
- Breast enlargement.

▶ Respiratory System

- Progesterone causes a decrease in airway resistance.
- Increase in oxygen consumption.
- Increase in tidal volume.
- Slight increase in respiratory rate.

Physiologic Changes of Pregnancy

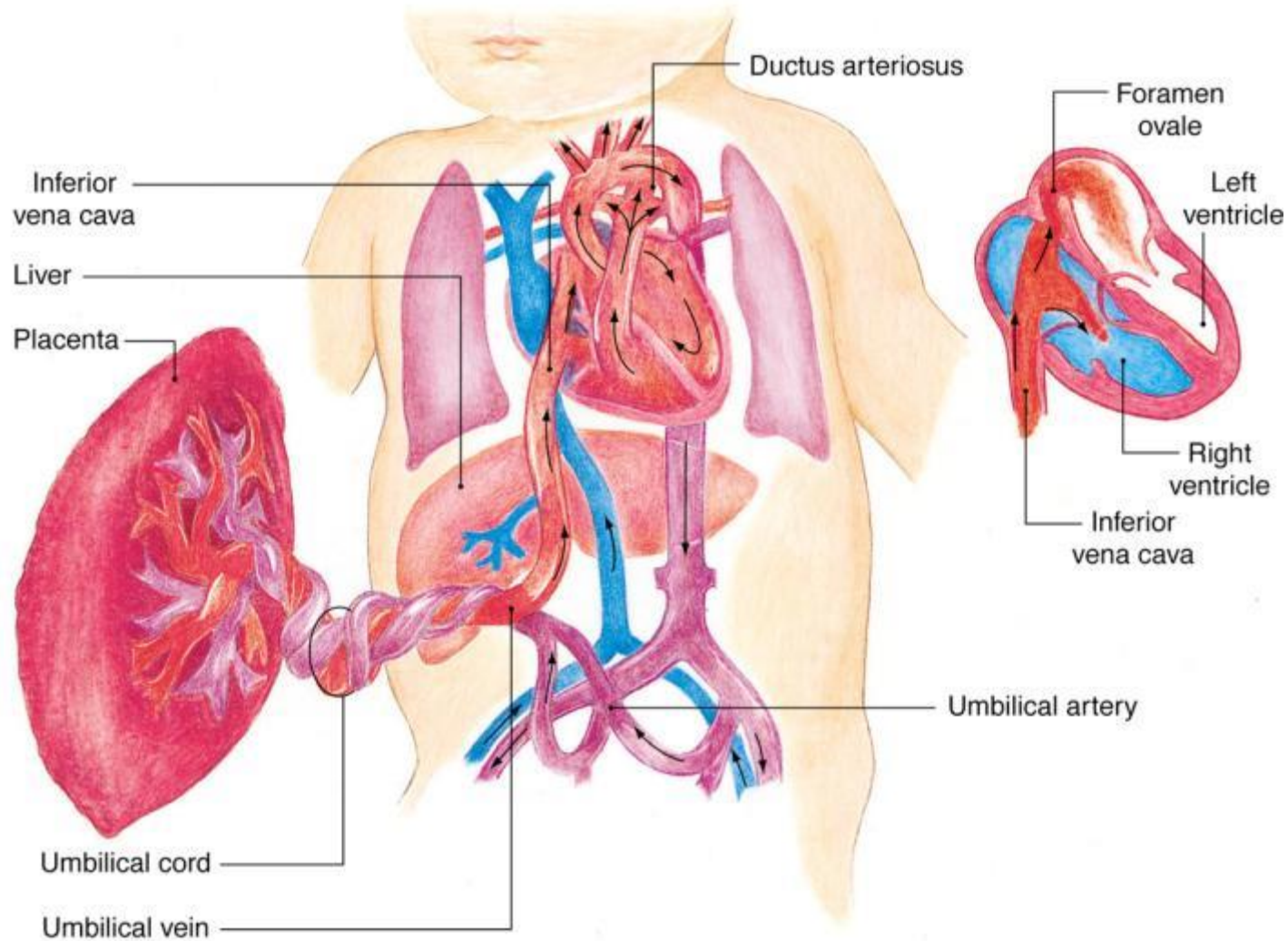
- ▶ **Cardiovascular System**
 - ◊ Cardiac output increases.
 - ◊ Blood volume increases.
 - ◊ Supine hypotension.
- ▶ **Gastrointestinal System**
 - ◊ Hormone levels.
 - ◊ Peristalsis is slowed.
- ▶ **Urinary System**
 - ◊ Urinary frequency is common.
- ▶ **Musculoskeletal System**
 - ◊ Loosened pelvic joints.

The Menstrual Cycle

Table 14-1 SIGNIFICANT FETAL DEVELOPMENTAL MILESTONES

Pre-embryonic Stage	
2 weeks	Rapid cellular multiplication and differentiation
Embryonic Stage	
4 weeks	Fetal heart begins to beat
8 weeks	All body systems and external structures are formed Size: approximately 3 centimeters (1.2 inches)
Fetal Stage	
8-12 weeks	Fetal heart tones audible with Doppler Kidneys begin to produce urine Size: 8 centimeters (3.2 inches), weight about 1.6 ounces Fetus most vulnerable to toxins
16 weeks	Sex can be determined visually Swallowing amniotic fluid and producing meconium Looks like a baby, although thin
20 weeks	Fetal heart tones audible with stethoscope Mother able to feel fetal movement Baby develops schedule of sucking, kicking, and sleeping Hair, eyebrows, and eyelashes present Size: 19 centimeters (8 inches), weight approximately 16 ounces
24 weeks	Increased activity Begins respiratory movement Size: 28 centimeters (11.2 inches), weight 1 pound 10 ounces.
28 weeks	Surfactant necessary for lung function is formed Eyes begin to open and close Weighs 2 to 3 pounds
32 weeks	Bones are fully developed but soft and flexible Subcutaneous fat being deposited Fingernails and toenails present
38-40 weeks	Considered to be full-term Baby fills uterine cavity Baby receives maternal antibodies

Fetal Circulation



Ultrasound

- ▶ Abdominal US you can see
 - Gestational sac at 5th week
 - Fetal pole at 6th week
 - Embryonic mass with cardiac motion at 7th week

IUP



Causes of Bleeding During Pregnancy

- ▶ **Abortion**
 - ▶ **Ectopic pregnancy**
 - ▶ **Placenta previa**
 - ▶ **Abruptio placenta**
 - ▶ **Molar pregnancy**
- } < 20 weeks
- } > 20 Weeks

Spontaneous abortion

- ▶ Most common presentation
 - Pain followed by bleeding

Abortion

- ▶ Termination of pregnancy before the 20th week of gestation
- ▶ Different classifications
- ▶ Signs and symptoms include cramping, abdominal pain, backache, and vaginal bleeding
- ▶ Treat for shock
- ▶ Provide emotional support

Abortion

- ▶ **Complete**
 - All product of conception (POC) is out
- ▶ **Incomplete**
 - Some POC is still in the uterus
- ▶ **Missed**
 - Fetus without fetal heart activity and less than 20 weeks (if above 20 weeks is called fetal demised/still birth)
- ▶ **Blighted ovum**
 - Fertilized egg that does not develop an embryo
- ▶ **Threatened**
 - Bleeding but still with IUP, subchorionic hemorrhage

- ▶ A seventeen y/o pregnant patient presents with the recent onset of lower abdominal pain, but no vaginal bleeding. She has a BHCG of 5700 mIU/mL and has a transvaginal ultrasound which shows an empty sac in the uterus. This is consistent with which of the following?
 - ▶ a. Normal pregnancy
 - ▶ b. Ectopic pregnancy
 - ▶ c. Completed miscarriage
 - ▶ d. Incomplete miscarriage

Ectopic Pregnancy

- ▶ Assume that any female of childbearing age with lower abdominal pain is experiencing an ectopic pregnancy.
- ▶ Ectopic pregnancy is life-threatening. Transport the patient immediately.

Ectopic pregnancies

- ▶ Most common presentation
 - Amenorrhea followed by pain
- ▶ Most common finding on pelvic exam
 - Unilateral adnexal tenderness

US

Ectopic pregnancy



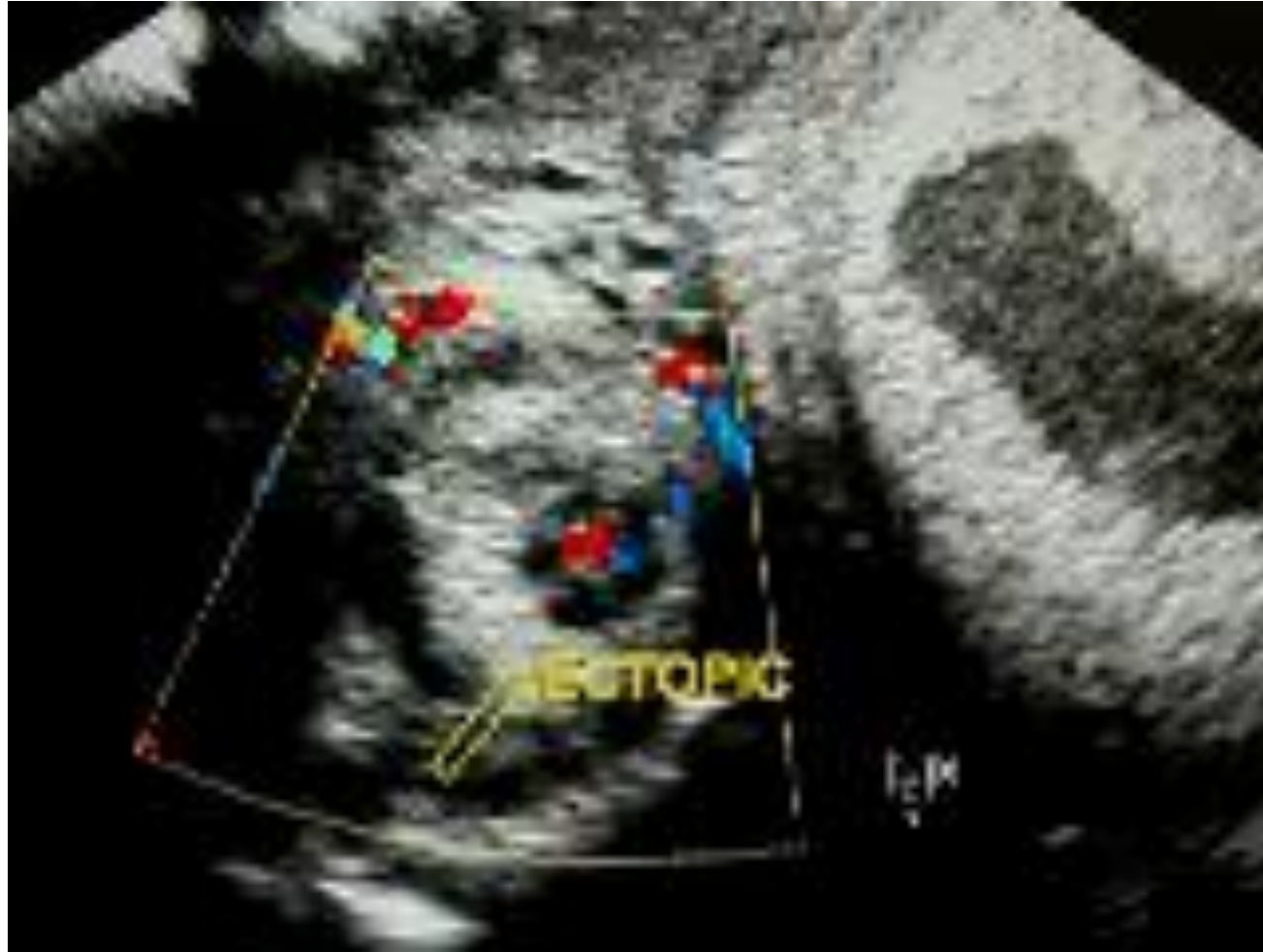
Empty gestational sac



Free fluid in cul-de-sac



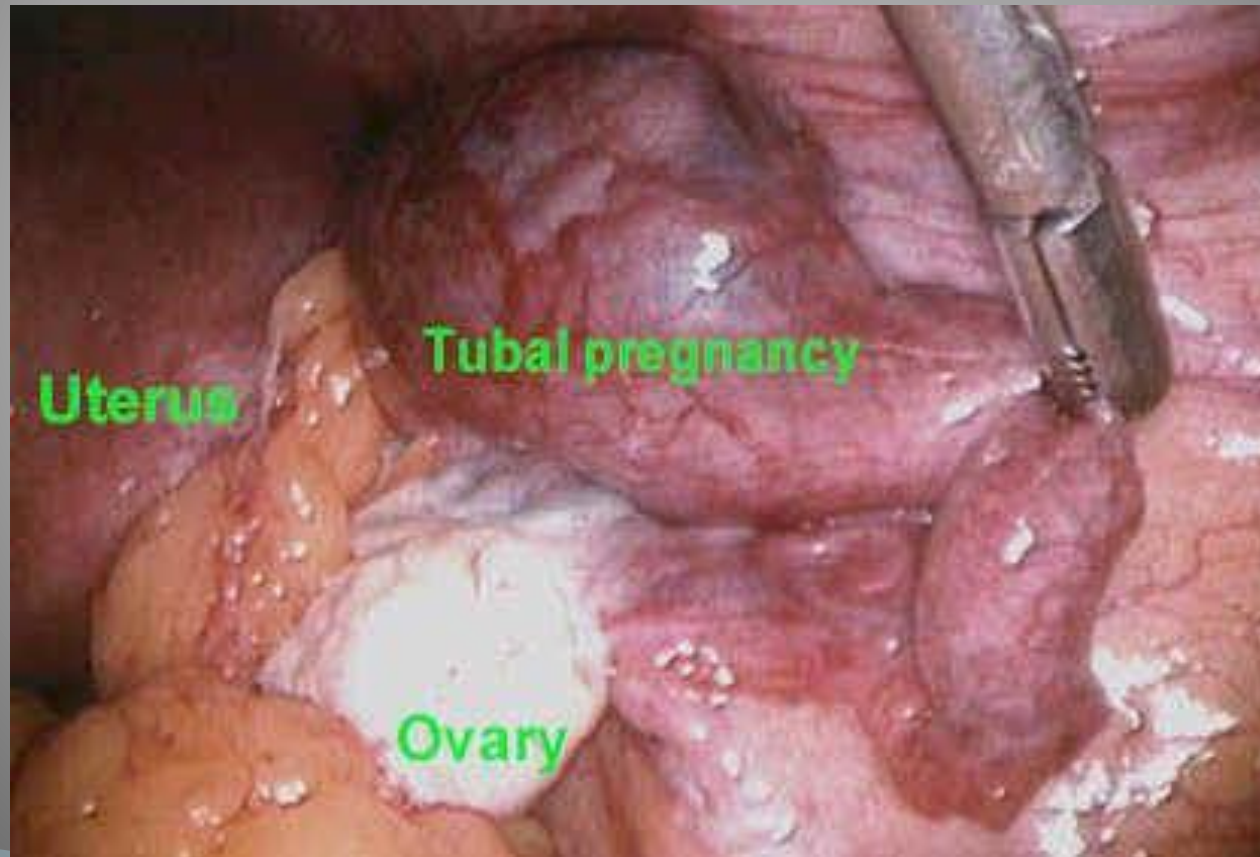




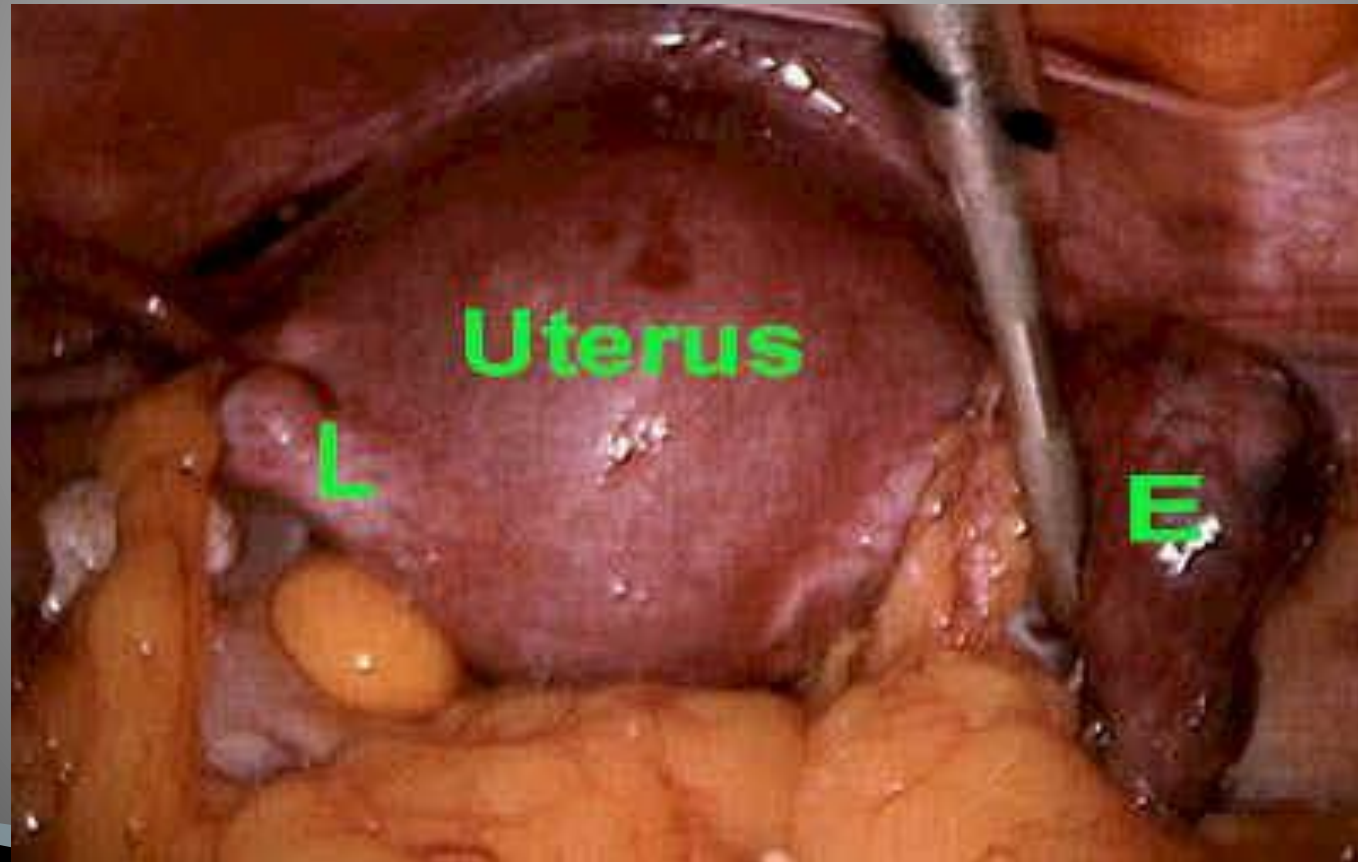
Ruptured Ectopic With Free Fluid and Clots
Long Axis / Saggital View



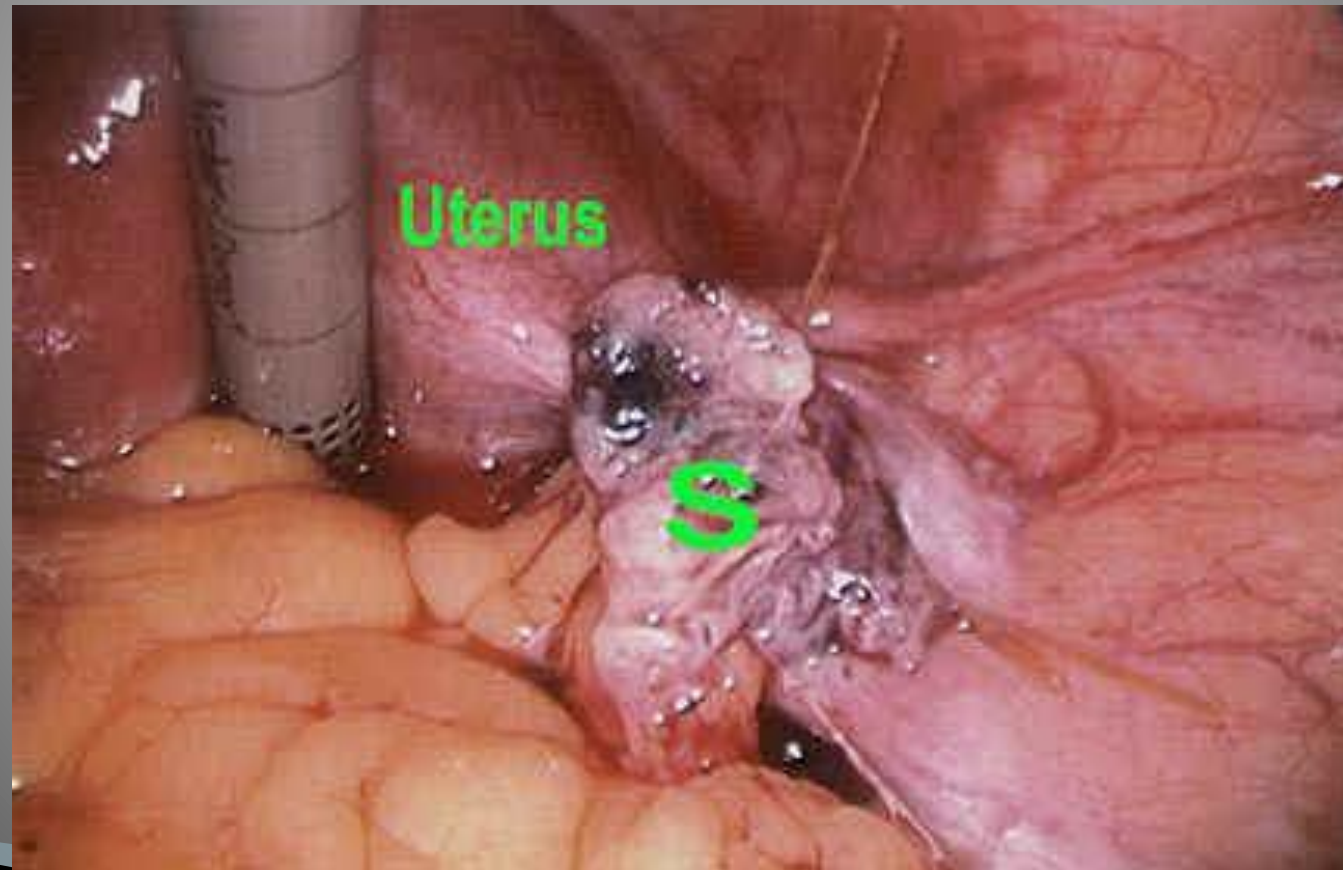
Ectopic pregnancy



Ectopic pregnancy



Ectopic pregnancy





Placenta Previa

- ▶ Usually presents with painless bright, red bleeding
- ▶ Never attempt vaginal exam
- ▶ Treat for shock
- ▶ Transport immediately—treatment is delivery by c-section



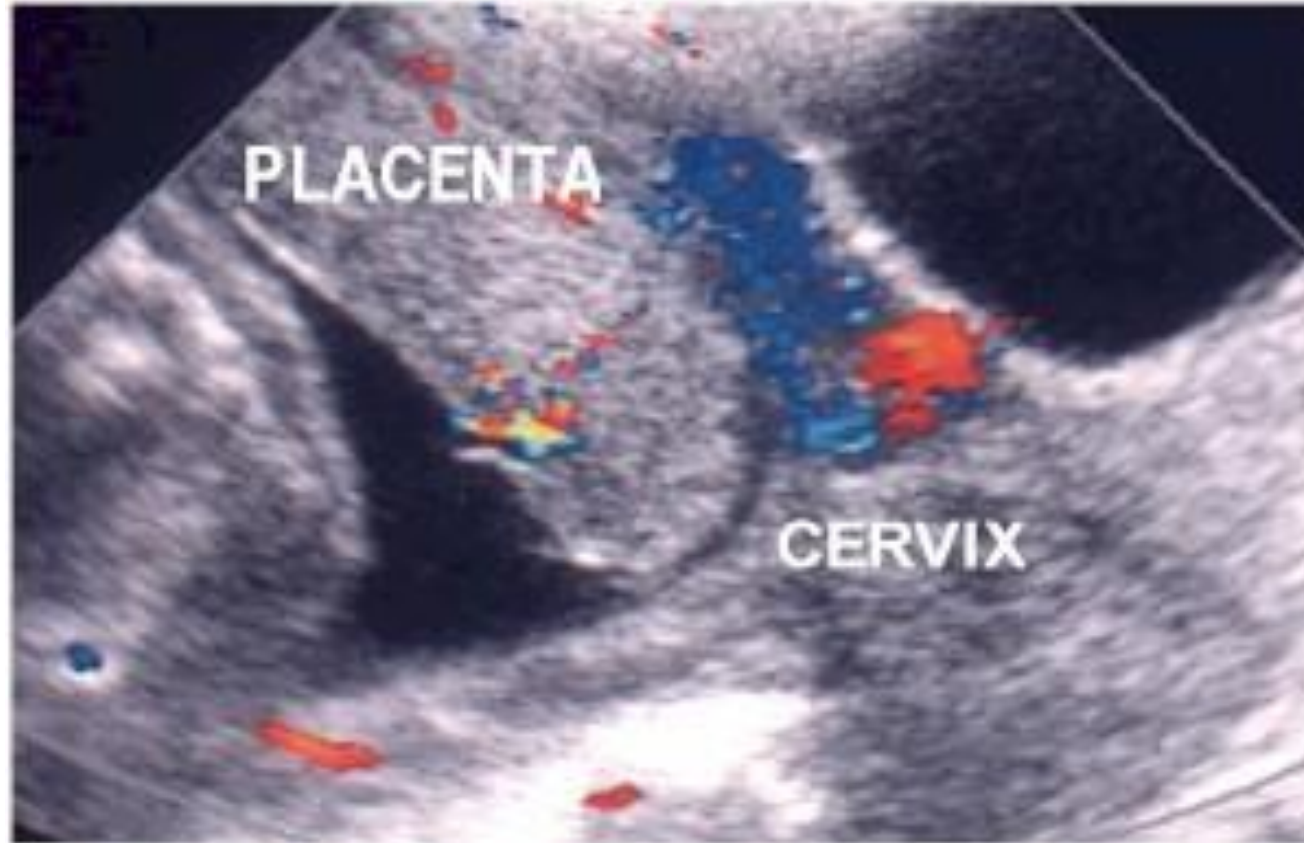
Total placenta
previa



Partial placenta
previa



Figure 1: Ultrasound (sagittal view) shows placenta previa.



Abruption Placenta

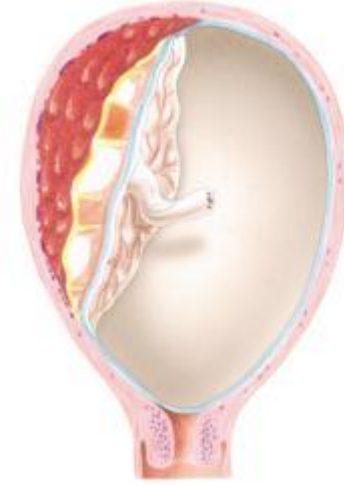
- ▶ Signs and symptoms vary; dark, brown bleeding; painful
- ▶ Classified as partial severe, or complete
- ▶ Life-threatening, D
- ▶ Treat for shock, fluids, resuscitation
- ▶ Transport left later: recumbent position



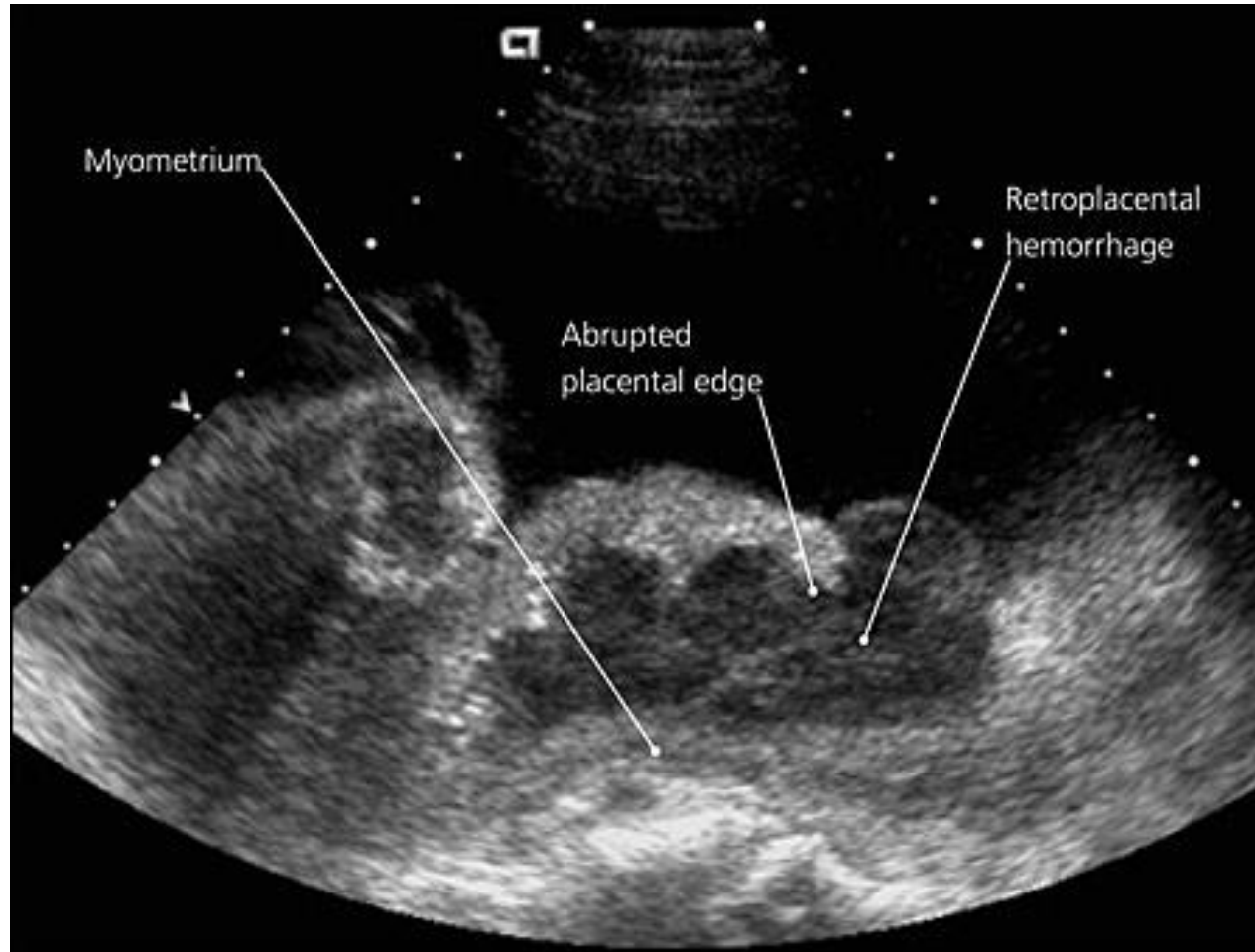
Partial separation
(concealed hemorrhage)



Partial separation
(apparent hemorrhage)



Complete separation
(concealed hemorrhage)



Molar pregnancy (Hydatiform moles)







- ▶ A 39 y/o pregnant patient of her last trimester c/o headache, and swelling of her face, hands, and feet. BP 160/100. BUN=15, Creat=1.1, Urine protein is 3+ on dipstick. What will not be part of the treatment for this patient?
- ▶ a. Magnesium drip
- ▶ b. Labetalol
- ▶ c. Enalapril
- ▶ d. C-section
- ▶ e. Hydralazine

Medical Complications of Pregnancy

- ▶ **Hypertensive Disorders**
- ▶ **Supine Hypotensive Syndrome**
- ▶ **Gestational Diabetes**

Hypertensive Disorders

- ▶ Pre-eclampsia and Eclampsia
- ▶ Chronic Hypertension
- ▶ Chronic Hypertension Superimposed with Preeclampsia
- ▶ Transient Hypertension

Pregnancy and HTN

- ▶ PIH (pregnancy induced HTN)
- ▶ Pre-eclampsia
 - HTN after 20 wk EGA with generalized edema or proteinuria
- ▶ Eclampsia
 - Pre-eclampsia plus grand mal seizures or coma

Pregnancy and HTN

- ▶ Decreased BP slowly with hydralazine, Ca channel blocker, or propranolol (do not use ACEI's)
- ▶ MgSO₄ to prevent or treat seizures
- ▶ Definitive treatment for pre-eclampsia and eclampsia is delivery

Supine Hypotensive Syndrome

- ▶ Treat by placing patient in the left lateral recumbent position, or elevate right hip
- ▶ Monitor fetal heart tones and maternal vital signs
- ▶ If volume is depleted, initiate an IV of normal saline

Gestational Diabetes

- ▶ Consider hypoglycemia when encountering a pregnant patient with altered mental status
- ▶ Signs include diaphoresis and tachycardia
- ▶ If blood glucose is below 60 mg/dl, draw a red top tube of blood, start IV-NS, give 25 grams of D50
- ▶ If blood glucose is above 200 mg/dl, draw a red top tube of blood, administer 1-2 liters NS by IV per protocol

HELLP Syndrome

- ▶ Hemolysis
- ▶ Elevated
- ▶ Liver enzymes
- ▶ Low
- ▶ Platelets

Braxton-Hicks Contractions

- ▶ False labor that increases in intensity and frequency but does not cause cervical changes

Preterm Labor

- ▶ Maternal Factors
 - Cardiovascular disease, renal disease, diabetes, uterine and cervical abnormalities, maternal infection, trauma, contributory factors
- ▶ Placental Factors
 - Placenta previa
 - Abruptio placenta
- ▶ Fetal Factors
 - Multiple gestation
 - Excessive amniotic fluid
 - Fetal infection

Medications in Pregnancy

- ▶ Betamethasone
- ▶ Magnesium SO₄
- ▶ Terbutaline (Brethine)
- ▶ Procardia
- ▶ Rhogam

The Puerperium

- ▶ Puerperium—the time period surrounding the birth of the fetus

Labor

- ▶ Stage One (Dilation)
- ▶ Stage Two (Expulsion)
- ▶ Stage Three (Placental Stage)

First stage: beginning of contractions to full cervical dilation



Second stage: baby enters birth canal and is born



Third stage: delivery of the placenta



Management of a Patient in Labor

- ▶ **Transport the patient in labor unless delivery is imminent**
- ▶ **Maternal urge to push or the presence of crowning indicates imminent delivery**
- ▶ **Delivery at the scene or in the ambulance will be necessary**

Apgar Scoring

Table 14-2 THE APGAR SCORE

Element	0	1	2	Score
Appearance (skin color)	Body and extremities blue, pale	Body pink, extremities blue	Completely pink	
Pulse rate	Absent	Below 100/min	100/min or above	
Grimace (Irritability)	No response	Grimace	Cough, sneeze, cry	
Activity (Muscle tone)	Limp	Some flexion of extremities	Active motion	
Respiratory effort	Absent	Slow and irregular	Strong cry	
			TOTAL SCORE =	

Neonatal Resuscitation

- ▶ If the infant's respirations are below 30 per minute and tactile stimulation does not increase rate to normal range, assist ventilations using bag valve mask with high-flow oxygen
- ▶ If the heart rate is below 80 and does not respond to ventilations, initiate chest compressions
- ▶ Transport to a facility with neonatal intensive care capabilities

Abnormal Delivery Situations

Breech Presentation

- ▶ The buttocks or both feet present first
- ▶ If the infant starts to breath with its face pressed against the vaginal wall, form a “V” and push the vaginal wall away from infant’s face
- ▶ Continue during transport

Prolapsed Cord

- ▶ The umbilical cord precedes the fetal presenting part.
- ▶ Elevate the hips, administer oxygen, and keep warm.
- ▶ If the umbilical cord is seen in the vagina, insert two gloved fingers to raise the fetus off the cord. Do not push cord back.
- ▶ Wrap cord in sterile moist towel.
- ▶ Transport immediately; do not attempt delivery.

Limb Presentation

- ▶ With limb presentation, place the mother in knee–chest position, administer oxygen, and transport immediately.
- ▶ Do not attempt delivery.

Other Abnormal Presentations

- ▶ Whenever an abnormal presentation or position of the fetus makes normal delivery impossible, reassure the mother.
- ▶ Administer oxygen.
- ▶ Transport immediately.
- ▶ Do not attempt field delivery in these circumstances.

Multiple Births

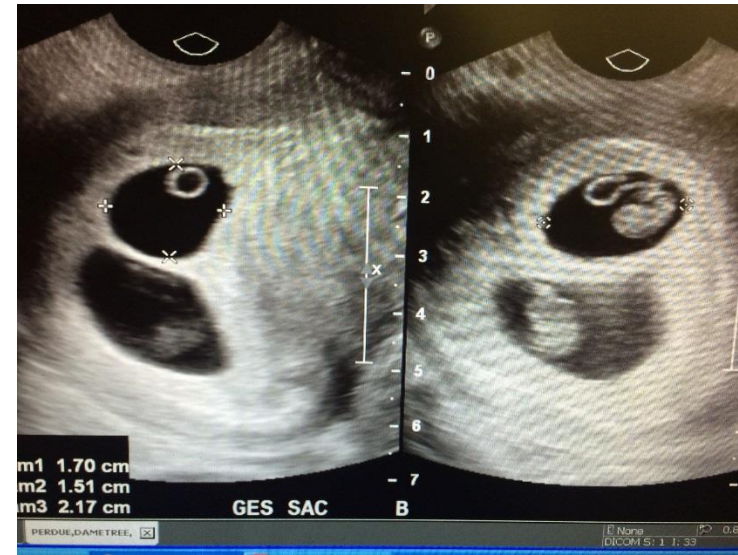
- ▶ Follow normal guidelines, but have additional personnel and equipment.
- ▶ In twin births, labor starts earlier and babies are smaller.
- ▶ Prevent hypothermia.

Twin pregnancy



Twin pregnancy





Cephalopelvic Disproportion

- ▶ Infant's head is too big to pass through pelvis easily.
- ▶ Causes include oversized fetus, hydrocephalus, conjoined twins, or fetal tumors.
- ▶ If not recognized, can cause uterine rupture.
- ▶ Usually requires cesarean section.
- ▶ Give oxygen to mother and start IV.
- ▶ Rapid transport .

Precipitous Delivery

- ▶ Occurs in less than 3 hours of labor.
- ▶ Usually in patients in grand multipara, fetal trauma, tearing of cord, or maternal lacerations.
- ▶ Be ready for rapid delivery , and attempt to control the head.
- ▶ Keep the baby warm.

Shoulder Dystocia

- ▶ Infant's shoulders are larger than its head.
- ▶ Turtle sign.
- ▶ Do not pull on the infant's head.
- ▶ If baby does not deliver, transport the patient immediately.

Meconium Staining

- ▶ Fetus passes feces into the amniotic fluid.
- ▶ If meconium is thick, suction the hypopharynx and trachea using an endotracheal tube until all meconium has been cleared from the airway.

Maternal Complications of Labor and Delivery

Postpartum Hemorrhage

- ▶ Defined as a loss of more than 500 cc of blood following delivery.
- ▶ Establish two large-bore IVs of normal saline.
- ▶ Treat for shock as necessary.
- ▶ Follow protocols if applying antishock trousers.

Uterine Rupture

- ▶ Tearing, or rupture, of the uterus.
- ▶ Patient complains of severe abdominal pain and will often be in shock. Abdomen is often tender and rigid.
- ▶ Fetal heart tones are absent.
- ▶ Treat for shock.
- ▶ Give high-flow oxygen and start two large-bore IVs of normal saline.
- ▶ Transport patient rapidly.

Uterine Inversion

- ▶ Uterus turns inside out after delivery and extends through the cervix.
- ▶ Blood loss ranges from 800 to 1,800 cc.
- ▶ Begin fluid resuscitation.
- ▶ Make one attempt to replace the uterus. If this fails, cover the uterus with towels moistened with saline and transport immediately.

Retained POC

- ▶ Bleeding, pain, fever
- ▶ Thickening of endometrium
- ▶ May need D+C

Endometritis

- ▶ Uterine infection post partum
- ▶ Fever, high WBC, tenderness
- ▶ Antibiotics, fluids

Pulmonary Embolism

- ▶ Presents with sudden severe dyspnea and sharp chest pain.
- ▶ Administer high-flow oxygen and support ventilations as needed.
- ▶ Establish an IV of normal saline.
- ▶ Transport immediately, monitoring the heart, vital signs, and oxygen saturation.

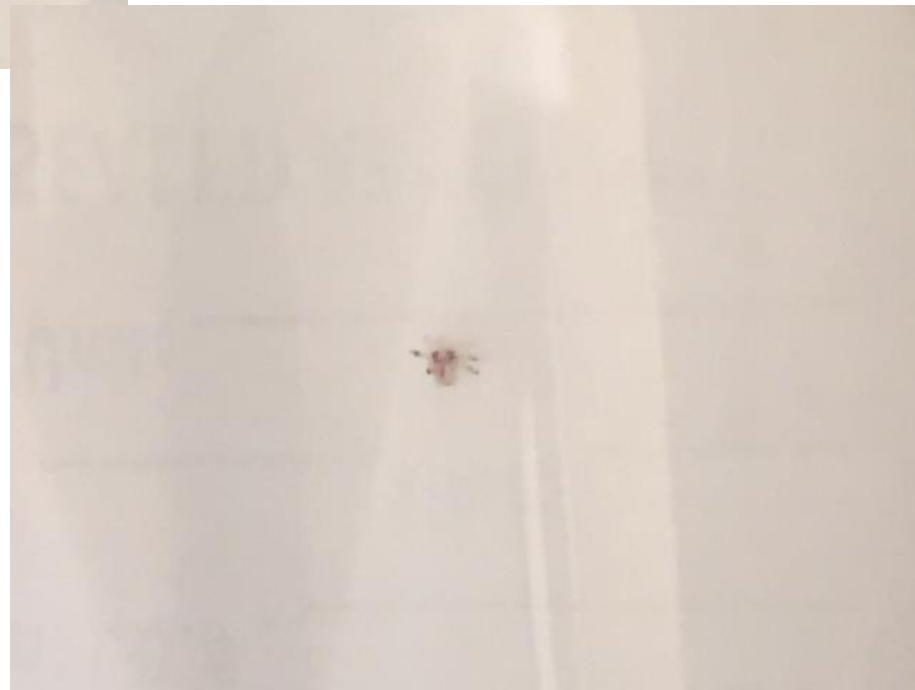
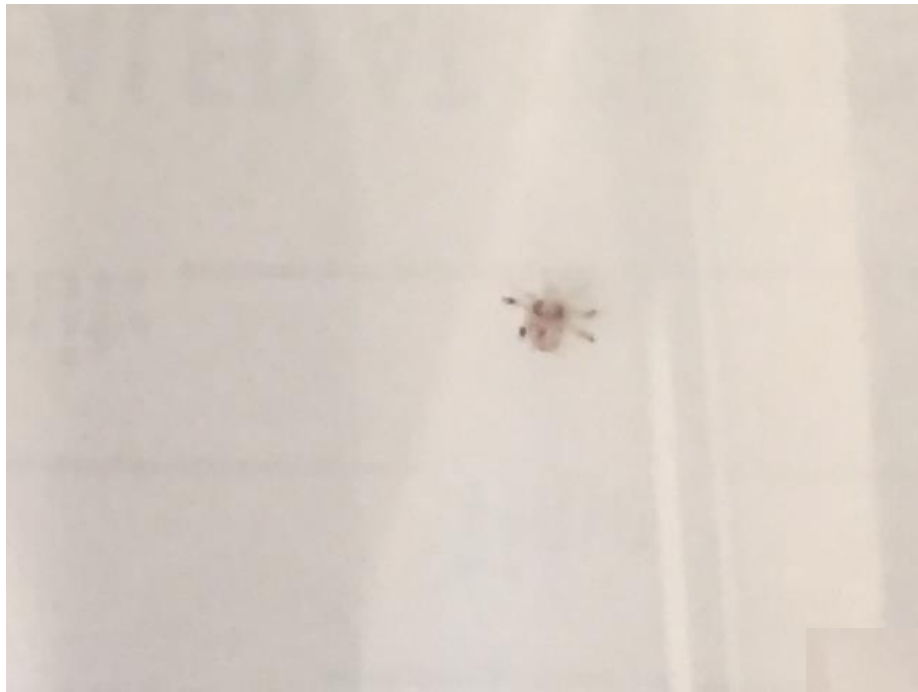
Pregnancy and PE

- ▶ High risk in pregnancy
- ▶ If hypotension, patient should be positioned on her left side
- ▶ V/Q scan and CTA of chest are the diagnostic studies
 - If negative but, still, suspecting PE, do Doppler
- ▶ Heparin or Lovenox is the treatment of choice

Pregnancy and radiation

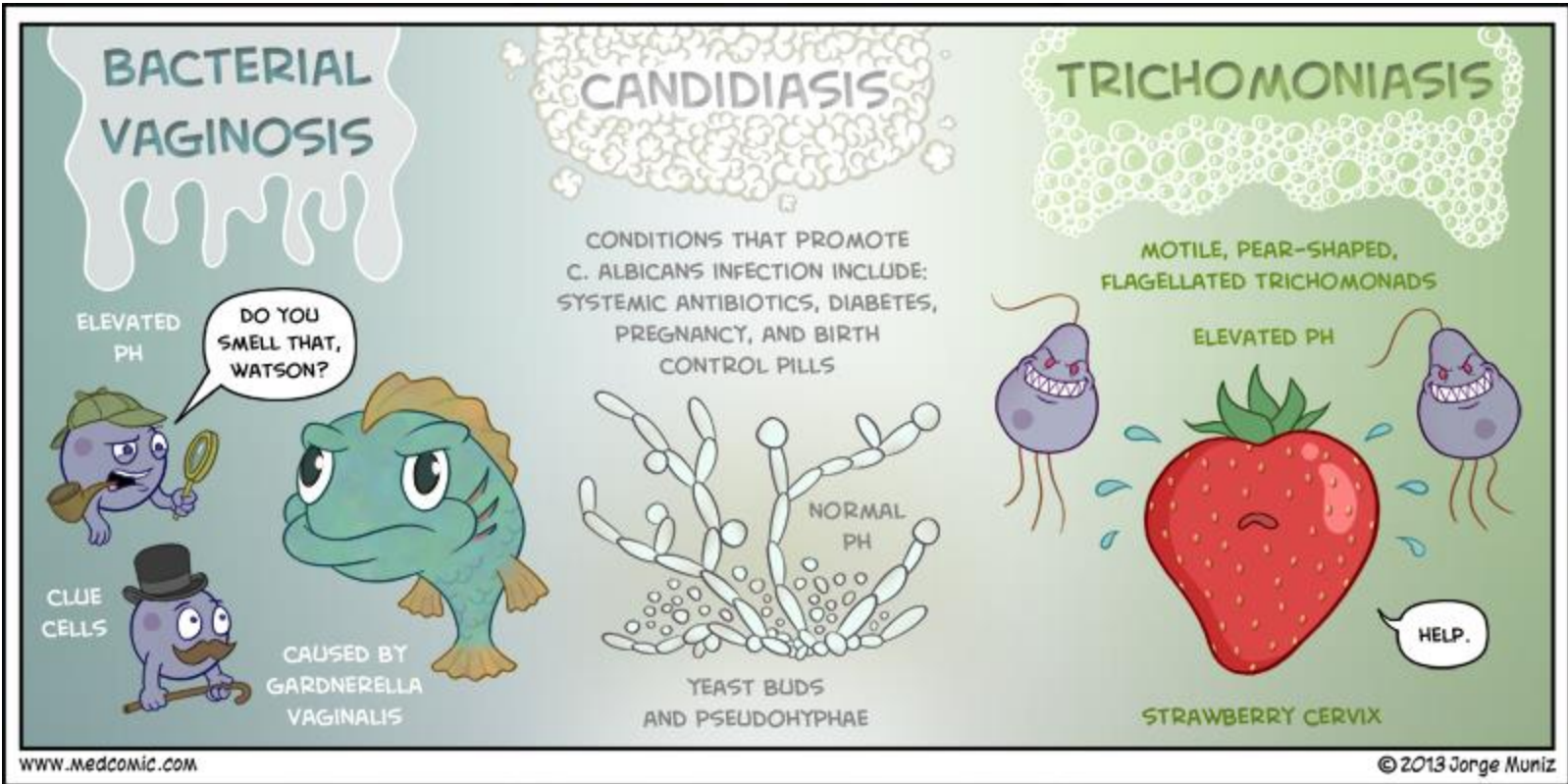
- ▶ Increased risk if radiation is > 10 rad
- ▶ Abdominal/pelvic x-rays delivers 100 to 350 mrad
- ▶ Shield chest x-rays deliver < 10 mrad

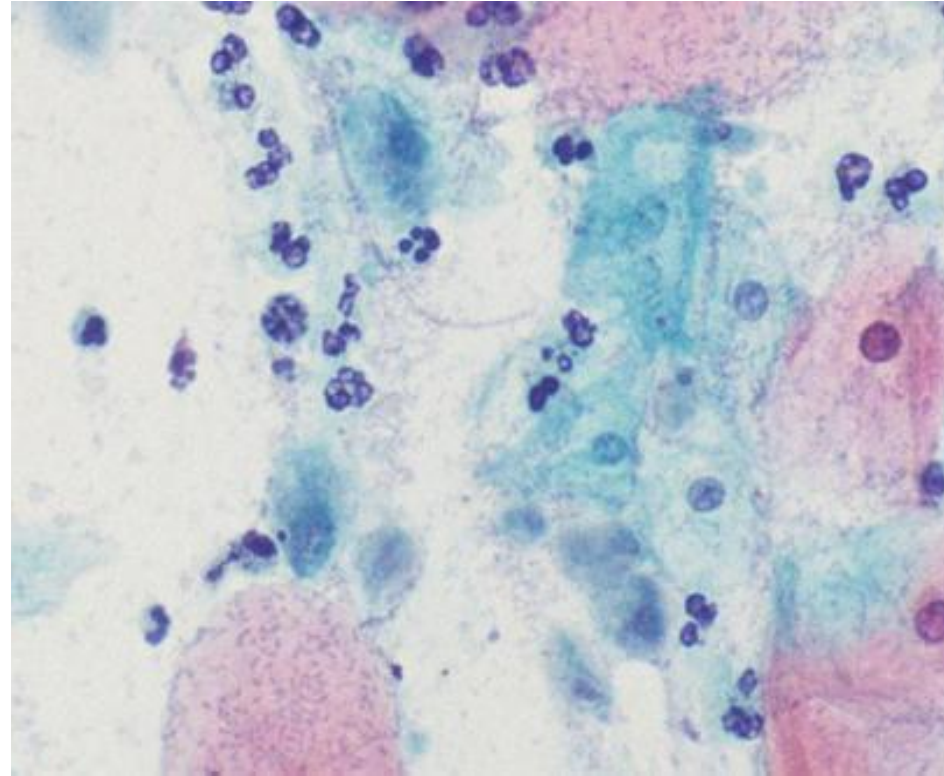
- ▶ A young woman has vaginal itching with a small amount of a white vaginal discharge. On examination, patient has some cervical motion tenderness. Thinking on the most common reasons for STD'd, what will be the best treatment?
- ▶ a. Ceftriaxone and azithromycin
- ▶ b. Metronidazole 2 gms PO
- ▶ c. Clindamycin and gentamicin
- ▶ d. Monistat vaginal cream



PID

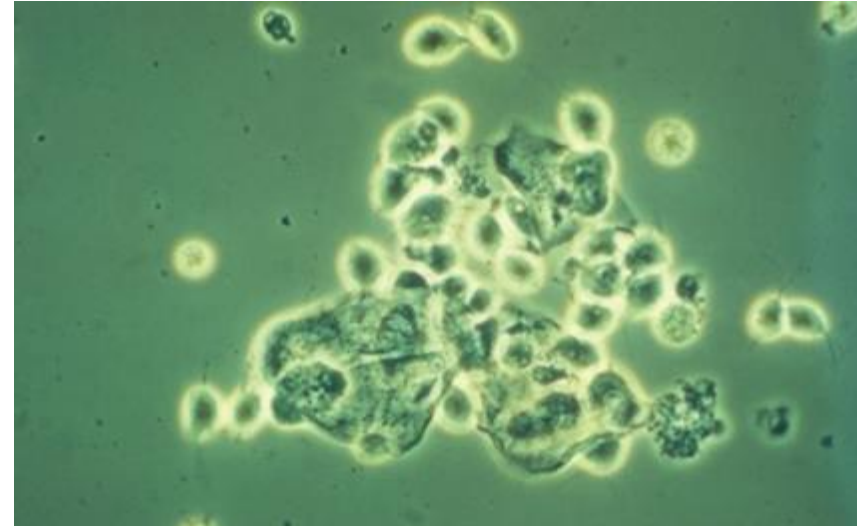
- ▶ Physical examination
 - Discharge with gram negative intracellular diplococci, leukocytosis
 - Adnexal tenderness
 - Cervical and uterine tenderness
 - Abdominal tenderness



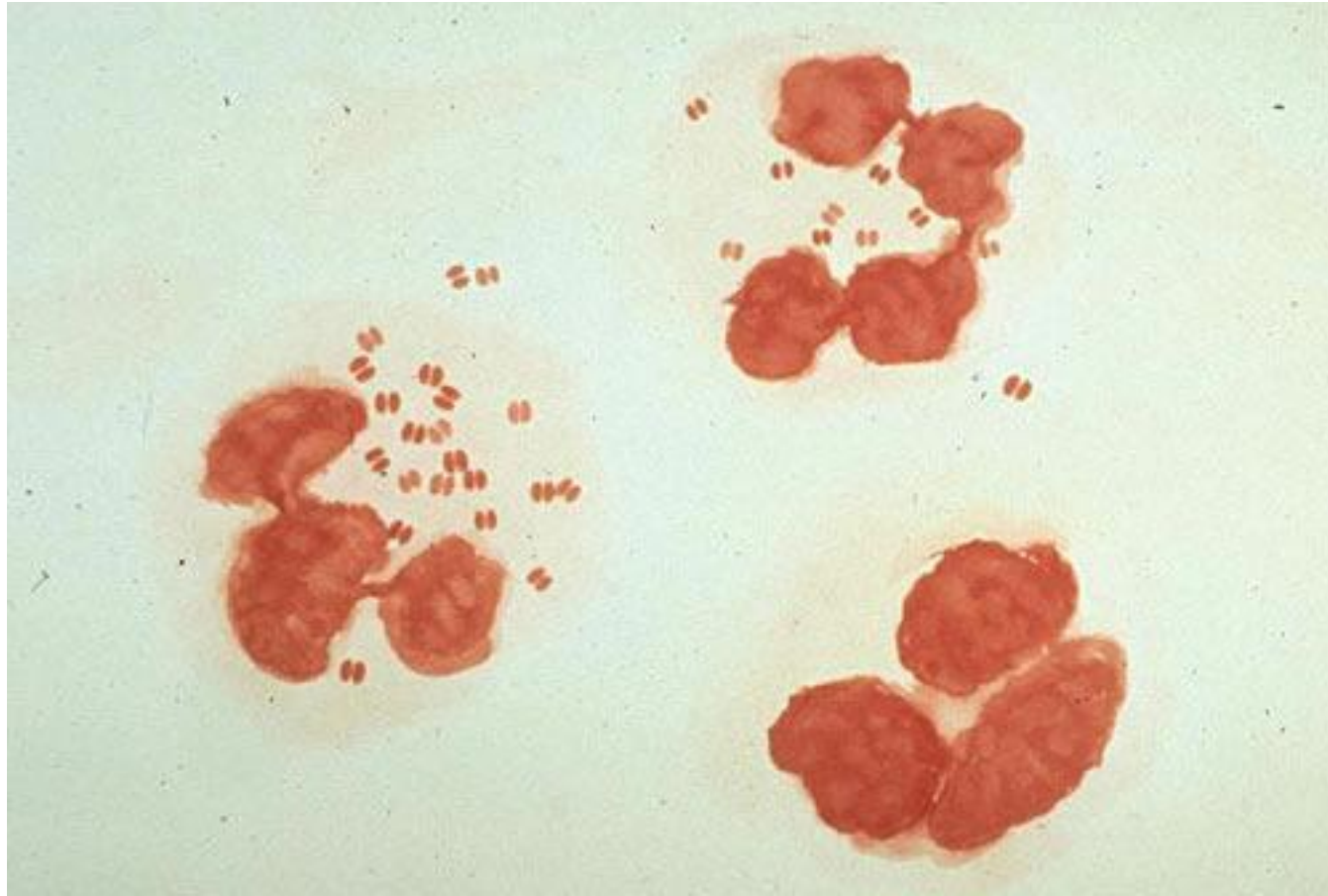


Clue cells:

- ▶ Gardnerella

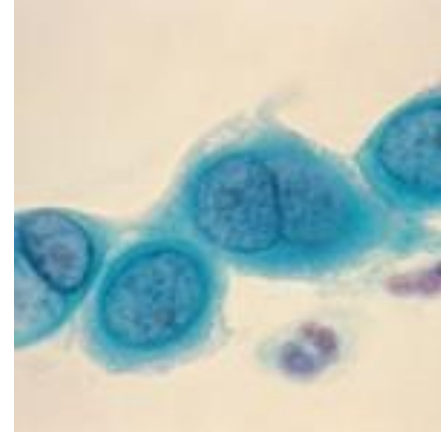


Trichomonas



Gram negative diplococci:

- ▶ *Gonorrhoea*

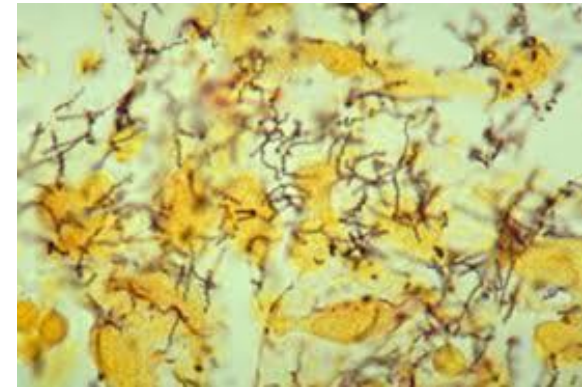


Chlamydia



Chancroid:

- ▶ *H. ducreii*



No painful

secondary



Chancre:

▶ *Syphilis*

Painful vesicles:

- ▶ Herpes





Calymmatobacterium granulomatis

STD's

- ▶ Clue cells: *Gardenella*
 - Metronidazole
- ▶ *Trichomonas*
 - Foul smelling, fishy odor; strawberry cervix
 - Metronidazole
- ▶ Gram negative diplococci: *Gonorrhea*
 - Ceftriaxone, quinolone
- ▶ *Chlamydia* most common STD's in male and females
 - Azithromycin, doxycycline

STD'S

- ▶ Chancre: *Syphilis*
 - PCN
- ▶ Candidiasis
 - Fluconazole, creams
- ▶ Genital warts: HPV
 - resection
- ▶ Painful vesicles: herpes
 - acyclovir
- ▶ Chancroid: *H. ducreii*
 - Ceftriaxone, quinolone, azithromycin

PID

- ▶ Admission
 - Pregnant
 - Fever
 - N/V
 - TOA
 - Peritoneal signs
 - IUD's

PID

- ▶ Rocephin
- ▶ Quinolones
- ▶ Zithromax
- ▶ Doxycycline
- ▶ Flagyl

TOA

- ▶ Symptoms
 - Pelvic pain
 - Fever
 - N/V
- ▶ PE
 - CMT
 - Adnexal mass / tenderness
 - D/C
- ▶ Treatment
 - Antibiotics
 - Surgery







Toxic shock syndrome

- ▶ Diagnosis
 - Fever > 102 F
 - Rash (blanching erythroderma)
 - SBP < 90 ; orthostasis
 - Involvement of three organ systems
- ▶ Most common cause
 - *S. aureus*
- ▶ Treatment
 - IVF; antibiotics; pressors

TORCH

- ▶ Toxoplasma
- ▶ Others
- ▶ Rubella
- ▶ CMV
- ▶ Herpes

Assessment of the Gynecological Patient

Management of Gynecological Emergencies

- ▶ **General management of gynecological emergencies is focused on supportive care.**
- ▶ **Do not pack dressings in the vagina.**

Specific Gynecological Emergencies

Medical Gynecological Emergencies

- ▶ **Gynecological Abdominal Pain**
 - **Pelvic Inflammatory Disease**
 - **Ruptured Ovarian Cyst**
 - **Cystitis**
 - **Mittelschmerz**
 - **Endometriosis**
 - **Ectopic Pregnancy**

Vaginal Bleeding

- ▶ Nontraumatic
 - Menorrhagia
 - Spontaneous abortion

Treatment for Vaginal Bleeding

- ▶ Do not pack vagina
- ▶ Initiate oxygen and IV access based on patient condition

Traumatic Gynecological Emergencies

- ▶ **Causes of Gynecological Trauma**
 - Blunt trauma.
 - Sexual assault.
 - Blunt force to lower abdomen.
 - Foreign bodies inserted in vagina.
 - Abortion attempts.

Management of Gynecological Trauma

- ▶ Apply direct pressure over laceration
- ▶ Apply cold pack to hematoma
- ▶ Establish IV if patient is severe

Sexual Assault

- ▶ Do not ask specific details of a sexual assault.
- ▶ Do not examine the external genitalia of a sexual assault victim unless there is a life-threatening hemorrhage.