CREOG Review
Gynecology

October 26, 2007
A 34-year-old nulligravid woman who is 1.73 m (68 in.) tall and who weighs 54.5 kg (120 lb) undergoes extensive laparoscopic dissection and fulguration of pelvic endometriosis for chronic pelvic pain. Several hours after surgery, she reports numbness, but no pain, on the left anteromedial thigh. As she attempts to stand, she falls to the floor when her leg buckles. A physical examination reveals weakness of the left musculus quadriceps femoris and complete absence of the knee jerk reflex. The most appropriate next step in management of this patient is:

(A) isometric and isotonic quadriceps exercises  
(B) consultation with a neurologist  
(C) observation  
(D) surgical exploration  
(E) galvanic muscle stimulation
Question 1

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# Nerve Injury During Surgery

<table>
<thead>
<tr>
<th>NERVE</th>
<th>INJURY</th>
<th>MOTOR LOSS</th>
<th>SENSORY LOSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Femoral L2-4</td>
<td>Deep retraction in abdominal incision touching psoas muscle; excessive hip flexion (esp candy canes)</td>
<td>Flexion of the hip, extension of the knee, knee DTR</td>
<td>Anteromedial thigh, anteromedial leg and foot</td>
</tr>
<tr>
<td>Lateral femoral cutaneous L2-3</td>
<td>Deep retraction on psoas muscle; excessive hip flexion (esp candy canes)</td>
<td>None</td>
<td>Anteroposterior thigh</td>
</tr>
<tr>
<td>Genitofemoral L1-2</td>
<td>Pelvic sidewall dissection</td>
<td>None</td>
<td>Ipsilateral mons and labia majora</td>
</tr>
<tr>
<td>Obturator</td>
<td>Retroperitoneal surgery, lymph node dissection, paravaginal repair</td>
<td>Loss of adductor longus</td>
<td>medial aspect of the thigh</td>
</tr>
<tr>
<td>NERVE</td>
<td>INJURY</td>
<td>MOTOR LOSS</td>
<td>SENSORY LOSS</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------------------</td>
<td>--------------------------------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Sciatic: Common peroneal</td>
<td>Extensive endopelvic resection compression from yellow fins on lateral calf</td>
<td>Foot dorsiflexion and eversion</td>
<td>Lateral calf/ Dorsimedial Foot</td>
</tr>
<tr>
<td>Ilioinguinal</td>
<td>Abdominal Incision</td>
<td>None</td>
<td>Groin/Pubic Symphysis</td>
</tr>
<tr>
<td>Iliohypogastric</td>
<td>Abdominal Incision</td>
<td>None</td>
<td>Mon, Labia, Inner Thigh</td>
</tr>
</tbody>
</table>
Nerve Injury During Surgery

Pfannenstiel Incision:

- Nerves most commonly injured – Iliohypogastric, ilioinguinal nerve, superior genitofemoral nerve
- Usually due to nerve entrapment
- Tx: Can inject lidocaine 2cm medial to ASIS, was neuropathy if pain is relieved
Nerve Injury During Surgery

- Nerves most commonly injured from retraction/positioning: femoral, lateral femoral cutaneous, common peroneal
- Risk Factors:
  - BMI <20kg/m2, In Lithotomy position >4 hours, Smoking within 30 days of the operation
- Diagnostic:
  - Radiologic Imaging to rule out hematoma/foreign body
- Treatment:
  - Neurology Consult
  - Radiologic
  - For nerve compression due to hematoma → surgical evacuation or percutaneous drainage
  - Early physical therapy (including galvanic stimulation) helps to retard atrophy
  - If with muscle atrophy → muscle exercises
You are performing operative laparoscopy to remove an ovarian cyst. After placement of the umbilical port camera, you are unable to visualize either the medial umbilical ligament or the inferior epigastric vessels. No adhesions are present. To avoid inferior epigastric vessel injury, you recommend placement of the lateral port.

(A) Through the middle of the rectus muscle halfway between the symphysis and umbilicus
(B) Medial to the rectus muscle at the level of the iliac crest
(C) 3cm superior to the symphysis and 12cm lateral to the midline
(D) 3cm superior to the symphysis and 5cm lateral to the midline
(E) 5cm superior to the pubis and 8cm lateral to the midline
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Laparoscopic Complications

- **Inferior Epigastric Injury:**
  - At a level of 5cm above the pubic symphysis, the epigastric vessels are usually within 7cm of the midline
  - Identify median umbilical ligament, place the trocar medial to this structure

- **If bleeding:**
  - Foley cathether (tamponade effect)
  - Fulgaration with electrocautery device
  - Suturing
A 37yo woman undergoes a hysteroscopic resection of a 5cm submucous leiomyoma which has caused menorrhagia. The distending medium used is a combination 3% sorbitol, 0.5% mannitol. One-half hour into the procedure, you are informed of a fluid deficit of 650mL. The most appropriate step in management of this patient is:

(A) Continue the procedure with close observation of the deficit
(B) Discontinue the procedure
(C) Determine the serum sodium level
(D) Administer Furosemide (Lasix)
(E) Change the distending medium to 32% Dextran 70 (Hyskon)
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Hysteroscopic Complications

- **Procedure:**
  - Nonpolar, Electrolyte-free Media: Sorbitol, Mannitol
  - Polar Media: Sodium Chloride, LR

- **Risk Factors for complications:**
  - Operative procedures, longer procedures
  - Use of Mannitol, Sorbitol

- **Complications:**
  - Bleeding, Infection, Air embolism, Anesthesia-related problems, Distention-related problems (if absorbed in large quantities, can lead to hyponatremia, hypervolemia)

- **Management:**
  - Strict track fluids (I/O), distention pressures should never exceed 100mmHg, with increasing deficit (>500cc) → check Na, consider terminating procedure with additional deficit

- **Treatment:**
  - Severe/Symptomatic Hyponatremia: water restriction, diuretics, hypertonic saline
## Managing Fluid Deficit

<table>
<thead>
<tr>
<th>Deficit (mL)</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>Stat serum Na+, continue procedure</td>
</tr>
<tr>
<td>1,000</td>
<td>Stat serum Na+, furosemide 20mg IV, interrupt procedure until reassured that Na+ &gt;125 mEq/mL</td>
</tr>
<tr>
<td>1,500</td>
<td>Same as with 1,000 mL Stop procedure</td>
</tr>
<tr>
<td>2,000</td>
<td>Stat serum Na+, furosemide 20mg IV, Stop procedure</td>
</tr>
</tbody>
</table>
Question 3

A 62-year-old woman requests surgery for symptoms of stress incontinence. She complains of severe leakage related to activity, coughing, and sneezing. She had an antiincontinence surgical procedure at the time of an abdominal hysterectomy 10 years ago. Your initial assessment includes a voiding diary, which reveals frequent, small voids. Her physical examination is normal with the exception of hypermobility of the bladder neck. A postvoid residual urine measurement is 3 mL, and urinalysis reveals no blood or inflammatory cells. Before making a recommendation regarding surgery, the single most appropriate diagnostic test is

(A) cystourethroscopy  
(B) a cough stress test  
(C) complex uroflowmetry  
(D) complex cystometry  
(E) a methylene blue test
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Urogyn Definitions

- **Stress incontinence** – involuntary leakage during effort, exertion, sneezing, coughing.

- **Urge incontinence** – leakage accompanied by or immediately preceded by urgency, results from involuntary detrusor contractions.

- **Mixed incontinence** – combination
Evaluation of Incontinence

History
--see yellow book pg 202

Physical Examination
--cough stress tests
--cotton swab test
--POPQ
--neurologic tests
--muscle strength test

Other
--PVR
--UA, renal function tests, glucose
--urodynamics
MANAGEMENT OF STRESS
URINARY INCONTINENCE

--- behavioral therapy – Kegels
--- pessary
--- surgery

**generally, antiincontinence surgery is reserved for women who have completed childbearing.**
When to do urodynamics

--prior anti-incontinence surgery/treatment failures
--known neurologic disease
--severe incontinence
--mixed picture

not necessary in initial evaluation and management of urinary incontinence
Question 4

The maximal normal straining angle by convention on q-tip test is

(A) 30 degrees
(B) 45 degrees
(C) 20 degrees
(D) 35 degrees
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Q tip test
Question 5

What are the therapeutic mainstays for treatment of detrusor instability?

(A) Anticholinergic drug therapy
(B) Behavioral modification
(C) Surgery
(D) A and B
(E) B and C
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(E) B and C
Overactive Bladder

Definition: urgency with or without frequency or incontinence, in the absence of pathologic conditions.
- Etiology: Inappropriate contraction of the strucor muscle (seen in urodynamic testing)
- Also referred to as: Idiopathic detrusor instability or unstable bladder

Treatment:
- Behavioral
  - Timed voids, Biofeedback +/- Kegels
  - Functional electrical stimulation and weighted vaginal cones
- Pharmacotherapy
  - Anticholinergic Agents: See next slide
  - Tricyclic antidepressants: Increases the tone of urethra and bladder neck (Imipramine, Doxepin)
    - Side Effects: Weakness, fatigue, fine tremors, orthostatic hypotension, arrhythmias
  - Vasopressin, Desmopressin (DDAVP)
    - Side Effects: Water retention, Hyponatremia
- Surgical
  - Only for intractable cases: sacral nerve root neuromodulation (Interstim)
Question 6

Common side effects of anticholinergic medications used to treat urinary incontinence include all of the following except:

(A) dry mouth
(B) blurred vision
(C) decreased heart rate
(D) constipation
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Overactive Bladder: Anticholinergics

Mechanism:
- Acetylcholine – primary neurotransmitter in detrusor contraction
- Goal of anticholinergics is to block detrusor contractions (so works for overactive bladder=idiopathic detrusor overactivity=detrusor instability)

Treatment:
- Oxybutinin chloride (Ditropan) 2.5 - 5mg po tid-qid; Ditropan XL 5-15 qd; patch
- Tolterodine tartrate (Detrol) 1-2 mg po BID; Detrol LA 2-4 mg po QD
- Side Effects: dry mouth, dry eyes, blurred vision, gastroparesis, constipation, GERD, somnolence. Contraindicated in narrow angle glaucoma.

Classic anticholinergic symptoms include
- "blind as a bat" = mydriasis
- “dry as a bone,” “red as a beet” = dry, flushed skin;
- “mad as a hatter” = hallucinations, agitation;
- “hot as a hare“ = hyperthermia;
- urinary retention; thus it works for urinary incontinence
- delayed intestinal motility
- tachycardia
- episodes of seizure
A 28-year-old primparous woman undergoes an uncomplicated vaginal delivery. At her 6-week postpartum visit, she reports frequent incontinence of stool. She explains that the incontinence bothers her a good deal, and she requests help with this problem. Examination reveals an intact rectovaginal septum but decreased anal sphincter tone. The most appropriate next step is:

(A) overlapping anal sphincteroplasty
(B) anal manometry
(C) electromyographic (EMG) biofeedback
(D) endoanal ultrasonography
(E) pudendal nerve terminal motor latency test
Question 7

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Fecal Incontinence

Etiology: Sphincter Injury, pudendal nerve injury, neurologic disease (eg. MS), Spinal Cord Injury, GI diseases (eg. IBS), drug effects, Episiotomy complications

Diagnosis:
- Endoanal Ultrasonography: most appropriate method, provides 30 degree view of the internal and external anal sphincter complex and notes any defects
- MRI: can evaluate anal sphincter as well, more expensive
- EMG biofeedback: most useful for woman with anal sphincter weakness without an anatomy sphincter defect (neuropathies)
- Anal Manometry: Can provide objective evidence of sphincter weakness
- Neurophysiologic Testing: Can identify neuropathies (pudendal stretch injuries occur in 75-80% of obstetric sphincter lacerations)

Treatment:
- Sphincter Injury \(\rightarrow\) Surgical Repair, Sphincteroplasty
A 26-year-old woman, gravida 2 para 0010, at 5 weeks' gestation requests evaluation because of acute left lower quadrant pain and vaginal spotting. She reports a history of chlamydial infection at age 17, as well as a left tubal ectopic pregnancy treated with methotrexate at age 23. On examination, cervical motion tenderness and bilateral adnexal tenderness are present. Pelvic ultrasonography demonstrates free fluid in the cul-de-sac and a left adnexal mass which appears separate from the ovary. No gestational sac is evident within the uterus. In view of these findings, the patient had an exploratory laparoscopy. The operative findings are shown in the figure.
1. Which of the following is the most likely diagnosis?
(A) Tubo-ovarian abscess
(B) Endometrioma
(C) Ruptured corpus luteal cyst
(D) Tubal ectopic pregnancy

2. Which of the following is the most appropriate treatment for this patient?
(A) Salpingo-oophorectomy
(B) Salpingectomy
(C) Salpingostomy
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   (D) Oophorectomy
Ectopic Pregnancy

- Signs/Symptoms: Abd pain and bleeding in the first trimester
- Risk Factors: Prior tubal surgery, previous pelvic infection, smoking, and conception using assisted reproduction. Ectopic gestations may occur in multiple sites; the most common site is the tube. Ovarian ectopic pregnancies are rare.

- Treatment:
  - Medical → Single-dose or Multi-dose methotrexate. Should be used in a stable patient with an early ectopic pregnancy
  - Surgical (laparoscopy or laparotomy).
    - Laparotomy is still the standard of care for a patient with tubal rupture who is hemodynamically unstable.
    - Laparoscopic resection of the tubal pregnancy may consist of salpingectomy or salpingostomy. Controversy still exists as to which of these procedures is superior. Studies have suggested slightly better reproductive outcomes with salpingostomy, at the cost of an increased risk of persistent trophoblastic tissue and future recurrence of ectopic pregnancy.
  - The choice of treatment depends on multiple factors such as the acuity of the situation, whether the patient is a candidate for medical therapy, the risk of surgery, and patient preference.
A 25-year-old woman, para 0-0-1-0, presented to the emergency room for evaluation of nausea, vomiting, palpitations and vaginal bleeding. Her last menstrual period was approximately nine weeks ago. Pelvic examination showed a 14 week-size uterus and bilateral adnexal masses. The urine pregnancy test was positive. The quantitative B-HCG was 140,965 mu/ml. A vaginal ultrasound showed the findings illustrated below.
1. What is the most likely genotype of this pregnancy?
   (A) 69, XXY
   (B) 46, XX
   (C) 46, XY
   (D) 46, X

2. What is the most likely etiology of the adnexal masses noted above?
   (A) Theca lutein cysts
   (B) Metastatic disease
   (C) Luteomas of pregnancy
   (D) Serous cystadenocarcinomas

3. What is the likelihood that this patient will have persistent disease following initial treatment?
   (A) <5%
   (B) 10-15%
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## Molar Pregnancy

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<tr>
<th>Feature</th>
<th>Partial Mole</th>
<th>Complete Mole</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Karyotype</strong></td>
<td>69, XXX or 69, XXY</td>
<td>46, XX or 46, XY</td>
</tr>
<tr>
<td><strong>Pathology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Fetus</td>
<td>Often present</td>
<td>Absent</td>
</tr>
<tr>
<td>- Amnion, Fetal RBCs</td>
<td>Usually present</td>
<td>Absent</td>
</tr>
<tr>
<td>- Villous Edema</td>
<td>Variable, Focal</td>
<td>Diffuse</td>
</tr>
<tr>
<td>- Trophoblastic Proliferation</td>
<td>Focal, slight to moderate</td>
<td>Diffuse, slight to severe</td>
</tr>
<tr>
<td><strong>Clinical Presentation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Diagnosis</td>
<td>Missed abortion</td>
<td>Molar gestation</td>
</tr>
<tr>
<td>- Uterine Size</td>
<td>Small for gestational Age</td>
<td>50% larger for gestational age</td>
</tr>
<tr>
<td>- Theca Lutein Cysts</td>
<td>Rare</td>
<td>15-25%</td>
</tr>
<tr>
<td>- Medical Complications</td>
<td>Rare</td>
<td>&lt;25%</td>
</tr>
<tr>
<td>- Postmolar Malignant Sequelae</td>
<td>&lt;5%</td>
<td>6-32%</td>
</tr>
</tbody>
</table>
Molar Pregnancy

**Workup:**
- bHCG quant, CXR, TFTs, CBC, PT/PTT, LFTs, T&C

**Treatment:**
- D&C (Run Pitocin, T&C x 4 units), Remember Rhogam prn
- Follow bHCG qweek until neg x 3, then qmonth x 6 months
- Advise birth control during this time
- If after treatment, bHCG increases over 2 weeks, plateaus x 3 wks, increases after reaching 0, suspect persistent GTT.
  - Workup: H&P, bHCG, LFTs, TFTs, Renal Assessment, CBC
  - Metastatic Workup: CT Chest/Abd/Pelvis, MRI or CT Head
- After all future pregnancies: Early U/S, Sent placenta to Path, Check 6wk PP BHCG (1% risk of molar pregnancies in future gestations after having a molar pregnancy)
A 54-year-old postmenopausal woman who has not used hormone therapy has had persistent spotting for the past 8 months. An endometrial biopsy performed 6 months ago revealed atrophic endometrium. She has continued to spot almost monthly. The most appropriate next step in the evaluation of this patient is

(A) dilation and curetage  
(B) von Willebrand’s factor study  
(C) sonohysterography  
(D) pelvic ultrasonography  
(E) MRI
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(C) **sonohysterography**  
(D) pelvic ultrasonography  
(E) MRI
Postmenopausal Bleeding

Etiology:
- Atrophy (59 percent)
- Polyps (12 percent)
- Endometrial cancer (10 percent)
- Endometrial hyperplasia (9.8 percent)
- Hormonal effect (7 percent)
- Cervical cancer (less than 1 percent)
- Other (eg, hydrometra, pyometra, hematometra: 2 percent)

Workup
- History (Eg. Tamoxifen, HRT)
- Sonogram, preferably a sonohysterography
  
  Sonohysterography: Sensitivity for detection of intrauterine pathology is greater than ultrasonography alone

  Ultrasonography: Specificity lower than sonohysterography, can diagnose with relative high sensitivity polyps, leiomyomata, endometrial hyperplasia, cancer

- Endometrial Sampling: Biopsy, D&C
History and physical examination, with or without CBC

- Normal findings; receiving HRT?
  - No
  - Yes

  - Genital tract lesion: Treat, perform biopsy or refer as appropriate
  - Uterine enlargement: Consider performing transvaginal ultrasonography or sonohysterography

  - Determine which HRT regimen (continuous-combined or sequential) and duration of HRT
    - Duration ≥ 6 months: Perform endometrial biopsy or transvaginal ultrasonography to exclude endometrial carcinoma
    - Duration < 6 months: Begin a period of observation
      - If early withdrawal bleeding, increase progesterone dosage

Endometrial biopsy performed

- Abnormal findings: Refer patient for treatment
- Normal findings: Bleeding stopped?
  - No: Perform transvaginal ultrasonography, sonohysterography or hysteroscopy, depending on clinical suspicion
  - Yes: Begin period of observation

Transvaginal ultrasonography performed

- Endometrial stripe < 5 mm: Atrophic endometrium
- Endometrial stripe ≥ 5 mm: Perform endometrial biopsy or hysteroscopy with biopsy

Uterine pathology identified

- Refer patient for treatment
A 38 yo healthy woman comes from prenatal care. Her PMH is unremarkable. General physical and pelvic examinations before conception were normal. She undergoes chorionic villus sampling, which shows a 46, XX karyotype. She has noticed progressive hirsutism during her pregnancy. She eventually delivers an infant with ambiguous genitalia. A maternal pelvic examine in the delivery room confirms a 6-cm left adnexal mass. The most like diagnosis is a:

(A) luteoma
(B) theca lutein cyst
(C) persistent corpus luteum
(D) luteinized unruptured follicle
(E) luteinized endometrioma
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Pelvic Masses, Reproductive Age

Differential Diagnosis: Physiologic/Functional, TOA/Infectious cause, PCOS, Benign Ovarian neoplasm, Malignant ovarian neoplasm, Fibroids

Workup: Physical Exam, Ultrasound, Tumor Markers (CA-125)

Management:
- If <10cm → Observe
- If >10cm, or suspicious for malignancy → Surgical Exploration
- OCPs (Prevents Ovulation, formation of new cysts)
Pelvic Masses, Reproductive Age

Adnexal mass

Size < 10 cm
- Mobile, cystic
- Unilateral
- No evidence of ascites
  
  Observe 4 to 6 weeks while attempting suppression with oral contraceptives
  
  Mass disappears or becomes smaller
  
  Follow clinically

Mass persists or increases in size
  
  Surgical exploration

Size < 10 cm
- Solid, fixed
- Bilateral
- Ascites present
Luteoma vs Theca-Lutein Cysts

**Luteoma**: nonneoplastic ovarian change associated with pregnancy that can simulate a neoplasm on clinical, gross, or microscopic examination.
- Signs/Symptoms: solid adnexal mass and maternal hirsutism or virilization, unilateral
- Treatment: Conservative surgical approach

**Theca lutein cysts** (also called lutein cysts, hyperreactio luteinalis)
- Definition: luteinized follicle cysts which form as a result of overstimulation from high hCG levels or hypersensitivity to hCG.
- They can also occur in a normal pregnancy due to hypersensitivity to normal levels of hCG.
- Predisposing factors: Gestational trophoblastic disease, multiple gestation, ovarian hyperstimulation, or a pregnancy complicated by fetal hydrops
- The cysts gradually resolve weeks to months after the source of hCG is eliminated.
The most common pelvic mass in a postmenopausal women is a

(A) follicular cyst
(B) corpus luteum cyst
(C) germ cell tumor
(D) leiomyoma
(E) endometrioma
Question 12

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(C) germ cell tumor
(D) leiomyoma
(E) endometrioma
Pelvic Masses, Postmenopausal

**Differential Diagnosis:** Fibroids, Benign Ovarian Cysts, Ovarian/Fallopian Tube/Metastatic Carcinoma,

**Workup:**
- History, Physical, Ultrasound, Tumor Markers

**Management:**
- If Mass <3cm, simple → Observation
- If Mass >3-5cm → Surgical Exploration
Pelvic Masses, Postmenopausal

Ovarian cyst

Asymptomatic
- Normal gynecologic examination
- Normal Papanicolaou smear
- Normal serum CA-125 level
- Simple, unilateral cyst on ultrasound

Symptomatic
- Clinical lesion
- Elevated serum CA-125 or
- Non-simple cyst on ultrasound

Laparotomy
- Bilateral oophorectomy
- Frozen section diagnosis
- Surgical staging, etc., if malignant

Cyst ≤ 3 cm
- Follow by ultrasound and serum CA-125 determinations

Cyst > 3 cm
- Laparoscopic inspection of pelvis and abdomen

No evidence of malignancy
- Bilateral oophorectomy
  - Peritoneal cytology
  - Frozen section diagnosis

Evidence of malignancy
- Frozen section diagnosis
  - Surgical staging, etc., if malignant
A 27-year-old woman underwent uterine artery embolization of multiple leiomyomata 3 days ago. Prophylactic antibiotics were prescribed. She now presents with uterine pain, tenderness, temperature of 39°C, and leukocytosis. The most appropriate management of this patient is

(A) observation
(B) a course of antibiotics
(C) hysterectomy
(D) anticoagulation
(E) exploratory laparotomy
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(C) hysterectomy
(D) anticoagulation
(E) exploratory laparotomy
Uterine Artery Embolization

- Pain for 4-5 days secondary to obstructed blood supply to leiomyomata
- Give post-op narcotics and NSAIDS, antiemetics, prophylactic antibiotics

Flu-like Post-Embolization Syndrome

- Incidence: 20%
- Signs & symptoms: pain, fever, malaise, myalgia, nausea
- Management: close observation with appropriate analgesic therapy, some people need hospitalization for IV hydration or parenteral narcotics
Question 14

A 27-year-old nulligravid woman requests evaluation because of two "strange spots" on her vulva (see illustration which is used with permission of Dr. Keith Stone, University of Florida). Her sexual partner has noted a similar "spot" on the glans of his penis. On examination, these lesions are shallow-based, painless ulcers.
Question 14

What is the most likely diagnosis?
(A) Syphilis
(B) HIV infection
(C) Chlamydial infection
(D) Molluscum contagiosum

Which of the following diagnostic tests is most appropriate in this patient?
(A) Biopsy of lesion
(B) Culture of lesion
(C) Gram stain of lesion
(D) Darkfield microscopy of scraping from lesion
(E) Serology

Which of the following treatments is most appropriate for this patient?
(A) Clindamycin
(B) Acyclovir
(C) Interferon
(D) Penicillin
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Syphilis

Microbiology: Syphilis is caused by the spirochete, *Treponema pallidum*. The organism may be transmitted by sexual contact and by hematogenous dissemination across the placenta.

Classification: primary, secondary, tertiary, latent, and neurosyphilis. Latent syphilis is further subdivided into early (< one year's duration), late (> one year's duration), or unknown duration.

Signs, Symptoms: The characteristic lesion of primary syphilis is the painless chancre. The most appropriate diagnostic test in this stage of the disease is darkfield microscopic examination of a scraping from the chancre.

Treatment:
- For primary syphilis → 2.4 million units of intramuscular benzathine penicillin.
- For patients who are allergic to penicillin, either oral tetracycline (500 mg QID X 14 d) or doxycycline (100 mg BID X 14 d) is an acceptable alternative regimen.
- Patients with syphilis should be tested for other STDs, particularly HIV infection.
An 18-year-old nulliparous woman has been sexually active for one year. She has had four partners during this time period. She requests evaluation because of increased vaginal discharge that began approximately 10 days after contact with her newest sexual partner. On physical examination, there is a profuse greenish-yellow discharge emanating from an obviously inflamed vaginal mucosa. Multiple punctate hemorrhages are present on the exocervix. The amine (whiff) test is negative.
Question 15

- Which of the following is the most likely diagnosis?
  - (A) Candidiasis
  - (B) Chancroid
  - (C) Bacterial vaginosis
  - (D) Trichomoniasis

- Which of the following is the most likely vaginal pH in this patient?
  - (A) 3.6
  - (B) 3.9
  - (C) 4.2
  - (D) >4.5

- Which of the following is the most cost-effective method for confirming the correct diagnosis?
  - (A) Culture of vaginal secretions
  - (B) Gram stain of vaginal secretions
  - (C) Potassium hydroxide microscopy
  - (D) Saline microscopy
  - (E) Pap smear

- Which of the following is the most appropriate treatment for this patient?
  - (A) Metronidazole
  - (B) Fluconazole
  - (C) Azithromycin
  - (D) Cefixime

- Which of the following tests is NOT indicated in this patient?
  - (A) HIV-EIA
  - (B) VDRL
  - (C) Hepatitis B surface antigen
  - (D) Herpes simplex 2-IgG and IgM
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Trichomoniasis

- Trichomoniasis is responsible for approximately 25% of cases of vaginitis. It is a sexually transmitted disease (STD) caused by the protozoan, *Trichomonas vaginalis.*

- **Signs/Symptoms:**
  - Yellowish-green, slightly malodorous discharge
  - An inflamed vaginal mucosa
  - Punctate hemorrhages on the exocervix ("strawberry cervix").

- **Tests/Diagnosis:**
  - The vaginal pH is >4.5.
  - Amine (whiff) test: usually negative
  - Wet Mount: motile, flagellated organisms

- **Treatment:**
  - Test for other STDs, including gonorrhea, chlamydia, syphilis, HIV, and hepatitis
  - Routine serologic testing for herpes simplex is not of value.
  - Metronidazole. Three oral dosing regimens are acceptable:
    - 2 grams in a single dose
    - 500 mg, twice daily for 7 days, or 250 mg
    - three times daily for 7 days
  - Sexual partner(s) should be counseled to seek evaluation and treatment from their health care provider.
## Vaginitis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Normal</th>
<th>Yeast</th>
<th>BV</th>
<th>Trich</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sxs</td>
<td>None, Mild/transient</td>
<td>Pruritis, soreness, change in discharge, dyspareunia</td>
<td>Malodorous discharge, no dyspareunia</td>
<td>Malodorous, Purulent discharge, dyspareunia</td>
</tr>
<tr>
<td>Signs</td>
<td>--</td>
<td>Vulvar erythema, edema, fissure</td>
<td>Adherent discharge</td>
<td>Purulent discharge, vulvovaginal erythema</td>
</tr>
<tr>
<td>pH</td>
<td>4.0-4.5</td>
<td>4.0-4.5</td>
<td>&gt;4.5</td>
<td>5.0-6.0</td>
</tr>
<tr>
<td>Amine Test</td>
<td>Negative</td>
<td>Negative</td>
<td>Positive (~70-80%)</td>
<td>Often positive</td>
</tr>
<tr>
<td>Wet Mount</td>
<td>PMN:EC ratio &lt;1; Rods dominate; Squames +++</td>
<td>PMN:EC ratio &lt;1; Rods dominate; squames +++; Pseudohyphae (about 40%)</td>
<td>PMN:EC &lt;1; loss of rods; increased coccobacilli; clue cells (&gt;90%)</td>
<td>PMN ++++; mixed flora; motile trichomonads (60%)</td>
</tr>
<tr>
<td>KOH</td>
<td>Negative</td>
<td>Pseudohyphae (about 70%)</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Misc</td>
<td>--</td>
<td>Culture if microscopy negative</td>
<td>Culture of no value</td>
<td>Culture if microscopy negative</td>
</tr>
<tr>
<td>DDx</td>
<td>Physiologic Leukorrhea</td>
<td>Contact irritant or allergic vulvitis, chemical irritation, focal vulvitis (vulvodynia)</td>
<td>--</td>
<td>Purulent vaginitis, desquamative inflammatory vaginitis, atrophic vaginitis plus secondary infection, erosive lichen planus</td>
</tr>
</tbody>
</table>
A 40-year-old woman, G3P2103, requests evaluation because of intense vulvar itching and dyspareunia. On examination, you see bright erythematous lesions with a white border, near the introitus and on the surface of the vaginal mucosa (see illustration)
Question 16

Which of the following is the most likely diagnosis?
(A) Lichen sclerosus
(B) HSV
(C) Lichen planus
(D) Contact dermatitis

What is the most appropriate treatment for this patient?
(A) Acyclovir
(B) Topical estrogen
(C) Topical steroids
(D) Vestibulectomy
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Lichen Planus

- Lichen planus is a chronic condition that may affect keratinized skin as well as mucosal surfaces. The disease is characterized by erythematous lesions that are surrounded by a white border, known as Wickham's striae. The vaginal mucosa may be involved, unlike lichen sclerosus, which affects only the vulva. The mucosal lesions may be friable or may be covered by a purulent exudate or pseudomembrane. In severe cases, adhesions may develop that narrow the vaginal introitus or obliterate normal vulvar anatomy. Lichen planus also may involve the mouth (vulvo-vaginal-gingival syndrome). Diagnosis of lichen planus is based on the characteristic clinical picture.

- Treatment includes attention to personal hygiene and avoidance of scratching. Lichen planus, unlike lichen sclerosus, has not definitively been associated with the development of a squamous cell malignancy. Potent topical steroids, such as clobetasol 0.05%, twice daily, for 3-6 weeks, should be used initially for treatment; patients should be switched to a less potent steroid to maintain remission. Patients with vaginal involvement may benefit from a vaginal steroid suppository. There have been some reports of successful treatment of refractory cases with tacrolimus, cyclosporine, and oral steroids.
A 47-year-old patient requests consultation for dyspareunia and persistent vulvar itching. Examination shows a stenotic introitus, flattened labia with synechial scarring, and thin, parchment-like skin over the vulva and around the anus.

Which of the following is the most likely diagnosis?

(A) Chronic monilial infection
(B) Squamous cell hyperplasia
(C) Lichen sclerosus
(D) Atrophic vulvitis

Which of the following is the most appropriate treatment for this condition?

(A) Fluconazole
(B) Topical corticosteroids
(C) Topical estrogen
Question 17

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(A) Fluconazole
(B) Topical corticosteroids
(C) Topical estrogen
Lichen Sclerosis

Definition:
- chronic condition of the vulvar skin characterized by thinning, distinctive skin changes, and inflammation
- characterized by intense itching, a thinned, atrophic-appearing skin, with linear scratch marks or fissures. The skin often has a "cigarette-paper" or parchment-like appearance. These changes frequently extend around the anus in a figure-of-eight configuration.
- Atrophic changes result in thinning, or even complete loss, of the labia minora and significant stenosis of the introitus. Fissures, scarring, and synechiae cause marked pain for some patients. Scarring and narrowing of the introitus may be sufficient to preclude intercourse. Excoriation with secondary infections may occur.
- Areas that become hyperplastic as a result of scratching are thought to be at increased risk for premalignant or malignant change (squamous cell carcinoma-lifetime risk of 3-5%).
- The cause of this condition is unknown.

Therapy consists of
- perineal hygiene, cool sitz baths, moist soaks, or the application of soothing solutions such as Burow’s solution.
- Patients should be advised to wear loose fitting clothing and keep the area dry and well ventilated.
- Emollients (such as petrolatum) may help to reduce local drying.
- High potency prednisolone analogs (clobetasol propionate, 0.05% bid for 30 days, then once daily) should be used initially
You are caring for a 24yo Sudanese woman who underwent female circumcision at age 10 years. A common gynecologic complication that accompanies this procedure is:

(A) Menometrorrhagia  
(B) Recurrent vaginitis  
(C) Vulvar cancer  
(D) Miscarriage
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Female Circumcision

WHO Classification
- Type I: Clitoridectomy
- Type II: Excision of clitoris with partial/total excision of labia minora
- Type III: Infibulation
- Type IV: Other

Health Complications
- Stem from the interference from the drainage of urine and menstrual blood
- Recurrent vaginitis, dysmenorrhea, chronic pelvic infections, chronic UTIs, urinary stones, slow urinary stream incontinence, dyspareunia
A 60-year-old healthy woman is considering combination hormone therapy (HT), .625 mg conjugated equine estrogen (CEE) plus 2.5 mg medroxyprogesterone acetate (MPA), for the next 5-6 years to prevent osteoporosis. Which of the following possible complications of her use of HT poses the highest absolute risk to her?

(A) coronary heart disease
(B) breast cancer
(C) colorectal cancer
(D) venous thromboembolism
(E) stroke
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A 60-year-old woman requests information about hormone therapy (HT). She is interested in the benefits of HT other than those that involve alleviation of vasomotor symptoms, bone preservation, and prevention of vaginal atrophy. You advise her that HT is likely to help protect her against development of:

(A) SLE
(B) rheumatoid arthritis
(C) migraine
(D) colon cancer
(E) gallbladder disease
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(D) colon cancer
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Women’s Health Initiative

- continuous use of .625 mg CEE plus 2.5 mg MPA daily
- 40% of study subjects in both the HT arm and the placebo arm stopped using their study drugs during the course of the study
## Women’s Health Initiative

<table>
<thead>
<tr>
<th>Health Event</th>
<th>Hazard Ratio (95% CI)</th>
<th>Absolute Risk-benefit per 10,000 woman-years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary artery disease</td>
<td>1.29 (1.02-1.63)</td>
<td>7</td>
</tr>
<tr>
<td>Stroke</td>
<td>1.41 (1.07 – 1.85)</td>
<td>8</td>
</tr>
<tr>
<td>Breast cancer</td>
<td>1.26 (1.00 – 1.59)</td>
<td>8</td>
</tr>
<tr>
<td>Pulmonary embolism</td>
<td>2.13 (1.39 – 3.25)</td>
<td>8</td>
</tr>
<tr>
<td>Venous thromboembolism</td>
<td>2.11 (1.58-2.82)</td>
<td>18</td>
</tr>
<tr>
<td><strong>Hip fracture</strong></td>
<td><strong>.66 (.45 -.98)</strong></td>
<td><strong>5</strong></td>
</tr>
<tr>
<td><strong>Colorectal cancer</strong></td>
<td><strong>.63 (.43 -.92)</strong></td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>
Question 21

A 55yo white woman has been menopausal for 5 years. She is 1.5m (5 ft) tall and weights 47.6kg (105lbs). Her mother had a TAH-BSO at age 45 years, never received hormonal therapy (HT), and now at age 75 years has demonstrated osteoporosis and vertebral fractures. The patient has some vasomotor symptoms and severe GERD. A recent dual-energy X-ray absorptiometry scan revealed T-Scores of -2.1 spine and -1.5 hip. She does not want to receive HT and, after counseling, elects to begin taking raloxifene Hydrochloride (Evista). Of the following choices, the most likely adverse effect associated with raloxifene hydrochloride is:

(A) Postmenopausal Bleeding
(B) A decrease in hot flushes and night sweats
(C) Increase low density lipoprotein (LDL) cholesterol level
(D) Increased risk of DVT
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SERMs
A 70yo woman is sent to you for consultation regarding positive results of several urine cultures over the past 8 months. During this time, she has not experienced urinary frequency, hematuria, or dysuria despite positive results of cultures. She is generally good health. The findings of her pelvic examination are normal. Review of laboratory records reveals 3 positive cultures for E. coli, 2 for Klebsiella pneumoniae, and 1 for Enterococcus. The most likely diagnosis is:

(A) Interstitial Cystitis
(B) Urethral Diverticulum
(C) Chronic Urethritis
(D) Asymptomatic Bacteruria
(E) Vesicovaginal Fistula
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(E) Vesicovaginal Fistula
Question 22

- **Asymptomatic Bacteriuria**: >100K CFU/mL in absence of symptoms
  - Observed in 20% of woman older than 65yo
  - Treatment: Not indicated in

- **Symptomatic Bacteriuria**
  - Treatment: Abxs

- **Interstitial Cystitis**
  - Sxs: Long term bladder pain, esp if pain exacerbated by bladder filling

- **Chronic Urethritis**
  - Sxs: Dysuria, Frequency, Urgency in absence of positive urine culture
A 37yo woman with diabetes mellitus undergoes an abdominal hysterectomy. Twenty-four hours postoperatively, you are asked to see the patient for what she describes as “chest discomfort and difficulty breathing.” Match the diagnosis (A-E) with each of the findings described.

(A) Pulmonary Embolism
(B) Septic Shock
(C) Musculoskeletal Disease
(D) Pneumothorax
(E) Myocardial Infarction
Question 23

1. The patient’s breathing is shallow, and she reports chest pain that is “like a knife” and is worse during inspiration. Vitals HR 110, RR 18, T 38°C, and pulse oximetry 80%. On physical exam, she appears anxious, pale, has coarse breath sounds at the lateral margin of the chest, on the right side only. The left side sounds clear.

(A) PE
(B) Septic Shock
(C) Musculoskeletal Dz
(D) PTX
(E) MI
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(A) PE
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(D) PTX
(E) MI
2. The patient tells you she “can’t take a breath” and reports pain in the middle of her back that radiates to her shoulder. The pain is constant. Vitals: HR 120, RR 12, T 37.6°C, pulse oximetry 91%. On physical examination, you note tachycardia and an S3 gallop rhythm. Her chest sounds clear.

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(A) PE
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3. The patient is breathing rapidly and is confused about where she is. Vitals HR 115, RR 16, T 36.1°C, pulse oximetry 95%. On physical examination, she appears disoriented and distressed secondary to involuntary shaking. Her skin is moist to the touch. Her lungs demonstrate bibasilar rales.

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(C) Musculoskeletal Dz
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# Acute Chest Discomfort

<table>
<thead>
<tr>
<th>Condition</th>
<th>Quality</th>
<th>Location</th>
<th>Association</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute MI</td>
<td>Pressure, tightness, heaviness, burning</td>
<td>Radiation to arms, shoulders, left side</td>
<td>Dyspnea</td>
</tr>
<tr>
<td>PE</td>
<td>Pleuritic</td>
<td>Lateral</td>
<td>Dyspnea, Tachypnea, Tachycardia, Hypotension</td>
</tr>
<tr>
<td>PTX</td>
<td>Pleuritic</td>
<td>Lateral</td>
<td>Dyspnea, Decreased breath sounds</td>
</tr>
<tr>
<td>Musculoskeletal Disease</td>
<td>Aching</td>
<td>Variable</td>
<td>Worse with movement</td>
</tr>
<tr>
<td>Septic Shock</td>
<td>Hyperventilation</td>
<td>Variable</td>
<td>Confusion, disorientation</td>
</tr>
</tbody>
</table>
Pulmonary Embolism

- Pleuritic Chest Pain
- Cough
- Dyspnea
- Edema
- Fever
- Gallop Rhythm
- Hemoptysis
- Phlebitis

- Pulmonary Rales
- Syncope
- Tachycardia
- Tachypnea