SURGICAL CLERKSHIP OBJECTIVES

ABDOMINAL PAIN
VOMITING, DIARRHEA, CONSTIPATION
UPPER GASTROINTESTINAL TRACT
HEPATOBILIARY
SMALL AND LARGE BOWEL DISEASES
PERIANAL PAIN
ABDOMINAL WALL AND GROIN MASSES
BREAST
CHEST PAIN & SHORTNESS OF BREATH
EAR, NOSE THROAT
NECK MASSES
LEG PAIN
LUNG NODULE
FLUIDS AND ELECTROLYTES
POST OPERATIVE COMPLICATIONS
SHOCK
ALTERED NEUROLOGICAL STATUS
SCROTAL PAIN
GENITO-URINARY
SKIN/SOFT TISSUE
TRAUMA
PEDIATRIC SURGERY
OPHTALMOLOGY
Abdominal Pain

1. Emphasis will be placed on:
   A) Characterization of pain (location, severity, character, pattern)
   B) Temporal sequence (onset, frequency, duration, progression)
   C) Alleviating and exacerbating factors (position, food, activity, medications)
   D) Associated signs and symptoms (nausea vomiting, fever, chills, anorexia, wt. loss, cough, dysphagia, dysuria/frequency, altered bowel function diarrhea, constipation, obstipation, hematochezia, melena, etc.)
   E) Pertinent medical history: prior surgery or illness, associated conditions (pregnancy, menstrual cycle, diabetes, atrial fibrillation or cardiovascular disease, immunosuppression). Medications: anticoagulation, steroids etc.

2. Demonstrate the components of a complete abdominal examination including rectal, genital & pelvic examinations.
   A) Relate the significance of the various component examinations: observation, auscultation, percussion, palpation as they apply to common abdominal pathologic processes. Examples: distention, visible peristalsis, high pitched or absent bowel sounds, tympany, mass, localized vs. generalized guarding and/or rebound tenderness.
   B) Demonstrate and relate the significance of various maneuvers utilized in evaluating acute abdominal pain. Examples: iliopsoas sign, Rovsing’s sign, obturator sign, Murphy’s sign, cough tenderness, heel tap, cervical motion tenderness.
   C) Develop a differential diagnosis for various patients presenting with acute abdominal pain. Differentiate based on: location: RUQ, epigastric, LUQ, RLQ, LLQ symptom complex: examples: periumbilical pain localizing to RLQ, acute onset left flank pain with radiation to the testicle etc.

3) Explain the rationale for utilizing various diagnostic modalities in the evaluation of abdominal pain:
   A) Laboratory: CBC, amylase, electrolytes, BUN, creatinine, glucose, urinalysis, beta-HCG, liver profile.
   B) Diagnostic imaging: Flat and upright abdominal radiographs, upright chest X-ray, ultrasound, CT scan abdomen and pelvis, GI contrast radiography, angiography.
   C) Special diagnostic/Interventional techniques: upper endoscopy, procto-sigmoidoscopy,
colonoscopy, laparoscopy.

Vomiting, Diarrhea, Constipation

1. Vomiting
   B) Describe the clinical presentation and etiologies of gastric outlet obstruction.
   E) Discuss the diagnosis and management of obstructive ulcer disease.
   F) Describe the signs and symptoms of small bowel obstruction.
   G) Describe the common etiologies of mechanical small bowel obstruction.
   H) Discuss the potential complications and management of small bowel obstruction.
   I) Outline the initial management of a patient with mechanical small bowel obstruction, including laboratory tests and x-rays.
   Contrast the presentation and management of partial vs. complete small bowel obstruction.
   J) Differentiate the signs, symptoms and radiographic patterns of paralytic ileus and small bowel obstruction.

2. Diarrhea
   A) Discuss the differential diagnosis of diarrhea in adults. Consider chronicity, absence or presence of blood and associated pain. Consider infectious causes.
   B) Describe the presentation and potential complications of ulcerative colitis and Crohn’s disease.
   C) Contrast the pathology, anatomic location and pattern, cancer risk and diagnostic evaluation of ulcerative colitis and Crohn’s disease.
   E) Discuss the clinical manifestations, risk factors, diagnosis and management of pseudomembranous colitis.
   F) Outline the risk factors, presentation, diagnosis and management of ischemic colitis.

3. Constipation
   A) Discuss the potential etiologies of constipation in adults and children. Consider chronic vs. acute.
   B) Describe the clinical presentation and etiologies of large bowel obstruction.
   C) List the diagnostic methods utilized in the evaluation of potential large bowel obstruction, including contraindications and cost effectiveness.
   D) Outline the diagnosis and management of colonic volvulus, diverticular stricture, fecal impaction and obstructing colon cancer.

4. Prevention
   A) Indications for and methods of screening for colorectal carcinoma.
   B) Use of surveillance endoscopy in ulcerative colitis.
UPPER GASTRO-INTESTINAL TRACT:

ESOPHAGUS:

- Gastro-esophageal reflux:
  A) Describe the common presenting symptoms associated with gastro-esophageal reflux.
  B) Discuss the relationship of reflux to chronic asthma and aspiration.
  C) Discuss the appropriate diagnostic work-up of a patient with suspect reflux.
     What is the role of:
     - barium swallow
     - endoscopy
     - manometry
     - 24 hour pH testing
  D) Discuss the evaluation of dysphagia.
  E) Discuss the treatment of esophageal stricture.
  F) What are the risks of dilation?
  G) Discuss Barrett’s esophagus and its implications.
  H) What are the risks of malignancy?
  I) Who needs surgical management
  J) Discuss the pathophysiology and treatment of achalasia and diffuse esophageal spasm.

- Mallory-Weiss tear
- Achalasia
- Variceal Bleeding
- Zenker’s Diverticulum
- Perforation

STOMACH:

- Peptic Ulcer disease
- Perforation
- Gastritis
- Gastric outlet Obstruction
- Carcinoma
- Upper and Lower GI hemorrhage:
A) Outline the initial management of a patient with an acute GI hemorrhage.
B) Discuss indications for transfusion, fluid replacement, and choice of fluids.
C) Differentiate upper vs. lower GI hemorrhage. Discuss history and physical exam abnormalities. Discuss diagnostic studies.
D) Discuss the differences in evaluation and management of the patient presenting with:
   hematemesis, melena, hematochezia, guaiac positive stool.

HEPATOBIILIARY

- Gallstones
- Cholecystitis
- Biliary Colic
- Choledocolithiasis
- Colangitis
- Pancreatitis
- Pancreatic Pseudocyst
- Carcinoma of the Pancreas
- Hepatomegaly/Splenomegaly

Jaundice:

A) Describe the differential diagnosis of a patient with jaundice.
B) Discuss, prehepatic, intrahepatic (both non-obstructive) and posthepatic (obstructive) etiologies.
C) Discuss importance of the patient’s history: estimated duration of illness, associated symptoms (pain and its characteristics), and risk factors.
D) Discuss important physical exam findings:
   - hepatomegaly
   - palpable mass
   - Courvoisier’s sign
   - Murphy’s sign
   - scleral icterus
   - abdominal tenderness
   - lymphadenopathy
   - Charcot’s triad
   - Reynold’s pentad

E) Explain the rationale for using these diagnostic tests in the evaluation of a patient with jaundice: Liver function tests, including hepatitis profile, peripheral blood smear, Coombs tests, etc. Hepatobiliary imaging procedures (ultrasound, CT scan, ERCP, PTHC, .
HIDA.

**SMALL AND LARGE BOWEL DISEASES**

- Inflammatory Bowel Disease (Crohn’s Disease/ulcerative Colitis)
- Appendicitis
- Diverticulitis
- Enterocolitis
- Small Bowel Obstruction Partial/Complete
- Large Bowel Obstruction
- Carcinoma Bowel
- Volvulus
- Fecal Impaction

**PERIANAL PAIN**

A) Develop a differential diagnosis for a patient with perianal pain. (Be sure to include benign, malignant and inflammatory causes.)

B) Discuss the characteristic history findings for each of the above including: character and duration of complaint, presence or absence of associated bleeding, relationship of complaint to defecation.

C) Describe physical exam findings for each diagnosis. Indicate in which part of exam (external, digital, anoscopic or proctoscopic) these findings are identified.

D) Discuss treatment plan for each diagnosis listed in objective one, including non-operative interventions and role and timing of surgical interventions
Abdominal Wall & Groin Masses

A) Discuss the differential diagnosis of inguinal pain, mass or bulge. Consider hernia, adenopathy, muscular strain.
B) Describe the anatomic differences between indirect and direct hernias.
C) Discuss the relative frequency of indirect, direct and femoral hernias by age and gender.
D) Discuss the clinical conditions that may predispose to development of inguinal hernia.
E) Describe the potential sites for abdominal wall hernias. Consider incisional, umbilical, inguinal, femoral, Spigelian, and epigastric. Differentiate diastasis recti from abdominal hernia.

Breast Problems

A) Develop a differential diagnosis for a 20-year-old patient with breast mass and a 45-year-old patient with breast mass. Consider benign vs. malignant, abscess.
B) Describe the diagnostic work-up and sequence: Discuss importance of the patient’s history: estimated duration of illness, nipple discharge, breast cancer risk factor assessment.
C) Discuss physical findings to look for.
D) Discuss the importance of such breast imaging studies as ultrasound and mammography.
E) Discuss the diagnosis and management of the patient with an abnormal mammogram (consider microcalcifications).
F) Discuss the rationale for management with specific emphasis on:
   Clinical staging of breast CA.
G) The role of incision and drainage and antibiotics in breast abscess treatment.
H) Current recommendations for screening mammography.

Chest Pain & Shortness of Breath

A) Describe the causes, diagnosis, and treatment of spontaneous pneumothorax.
B) Discuss the risks of pneumothorax which could prove life-threatening.
C) Discuss the underlying pulmonary pathology you might expect to find.
D) Discuss the role of:
   - observation
   - tube thoracostomy
   - chemical sclerosis
   - surgical management of this condition

D) Describe the common etiologies for hemothorax.
E) Discuss an appropriate diagnostic evaluation for a patient with hemothorax.
F) Discuss the appropriate management of blood in the pleural cavity.
G) Which patients need an operation?
H) What are the risks in leaving the blood diagnostic in the chest?
I) Discuss the most common non-traumatic causes of hemothorax.

PULMONARY EMBOLUS

A) Describe the presentations, etiologies and management of pulmonary embolus.
B) Discuss the predisposing factors which may lead to PE.

C) Discuss the main points in the evaluation for PE.
D) Discuss management options:
   - Who needs anticoagulation with heparin?
   - Who needs lytic therapy?
   - Who needs vena caval filter protection?
   - Discuss the indication for open thoracotomy and pulmonary embolectomy to treat massive embolism.

EAR AND NOSE PROBLEMS

A) Discuss the differential diagnosis of ear pain (otalgia). Consider infection, trauma, neoplasm, inflammation, vascular contrast etiologies in children versus adults.
B) Discuss the diagnosis, treatment and complications of acute and chronic otitis media. Include indications for myringotomy tube placement.
C) Outline the evaluation of a patient presenting with hearing loss; differentiate between conductive and sensorineural hearing loss; identify treatable causes.
D) Outline the evaluation of a patient presenting with tinnitus. describe the potential etiologies and management.
E) Describe the risk factors, diagnosis and management of epistaxis. describe the indications and techniques for nasal packing.
F) Discuss the causes and mechanisms of chronic rhinitis/rhinorrhea. outline the evaluation and management of chronic rhinitis.
G) Describe the indications for tonsillectomy.
H) Outline the evaluation of a patient with a salivary gland mass.
describe the potential etiologies of inflammatory neck masses.

Neck Mass

- Discuss the embryologic origin of these lesions and the anatomic implications to consider when resecting them.
- Describe the signs, symptoms, and etiologies of inflammatory neck masses.
- Discuss Ludwig’s angina and why it may be life-threatening.
- What is appropriate treatment for cervical adenitis?
- Describe the most common neoplastic neck masses and their origin.
- Discuss the role of fine-needle cytology, open biopsy, CT scan, MRI, thyroid scan, and nasopharyngeal endoscopy in the diagnostic work up of a neck mass.
- Discuss the evaluation and differential diagnosis of a patient with a thyroid nodule.
- Discuss the common thyroid malignancies, their cell of origin and their management. Which has the best prognosis? Which has the worst?
- Which is associated with MEN syndrome?
- Discuss the relationship of radiation exposure to thyroid malignancy.
- Which malignancies frequently metastasize to the neck?
- Discuss the common non-neoplastic thyroid diseases that could present as a mass.
- Discuss the symptoms associated with hyperthyroidism and discuss treatment options.
- Discuss diagnosis and management of thyroiditis.

Leg Pain

- Describe atherosclerosis, its etiology, prevention and sites of predilection.
- Discuss neurological vs. vascular etiologies of walking induced leg pain.
- Discuss musculoskeletal etiologies.
- Describe the pathophysiology of intermittent claudication.
- Discuss the diagnostic work-up of chronic arterial occlusive disease.
- Discuss the role of segmental Doppler studies and arteriography.
- Discuss the medical management of arterial occlusive disease.
- Discuss risk factors associated with arterial occlusive disease.
- Discuss the etiologies and presentation of acute arterial occlusion.
- Discuss embolic vs. thrombotic occlusion.
- Discuss the signs and symptoms of acute arterial occlusion (the “P’s”).
- Discuss the medical and surgical management.
Discuss the complications associated with prolonged ischemia and revascularization.

Discuss the diagnosis and treatment of compartment syndrome.

Describe the differential diagnosis, location, appearance and symptoms of leg ulcers due to:
- arterial disease
- venous stasis disease
- neuropathy
- infection
- malignancy

Discuss how to differentiate lymphedema from venous stasis.

Describe the factors that lead to venous thrombosis and embolism.

Discuss the usual locations for thrombosis.

Discuss differing implications of deep and superficial venous thrombophlebitis.

Discuss the common invasive and noninvasive diagnostic tests for DVT.

Discuss the common risk factors and clinical symptoms of lung cancer.

List the most common sources of malignant metastases to the lungs.

Compare and contrast the management and prognosis of metastatic vs. primary lung malignancies.

Describe the most common diagnostic procedures used to evaluate pulmonary and mediastinal lesions.

List the common tumors of the anterior, posterior and superior mediastinum.

Create an algorithm for the evaluation of a patient with a lung nodule on chest x-ray.

List the normal range of Na+, K+, HCO3-, Cl- in serum and indicate how these ranges change in perspiration, gastric juice, bile and ileostomy contents.

List at least four endogenous factors that affect renal control of sodium and water excretion.

List least six symptoms or physical findings of dehydration.

List and describe the objective ways of measuring fluid balance.

List the electrolyte composition of the following solutions:
- Normal (0.9%) saline
- ½ normal saline
- 1/3 normal saline
- 5% dextrose in water
- Ringer’s lactate
F) In the following situations, indicate whether serum Na, K, HCO₃, Cl and blood pH will remain stable (0), rise considerably (+ +), rise moderately (+), fall moderately (-), or fall considerably (- -):

- excessive gastric losses
- high volume pancreatic fistula
- small intestine fistula
- Biliary fistula
- diarrhea

In the following situations, indicate whether serum and urine Na, K, HCO₃, Cl and osmolality will remain stable (0), rise considerably (+ +), rise moderately (+), fall moderately (-), or fall considerably (- -):

- acute tubular necrosis
- dehydration
- inappropriate ADH secretion (SIADH)
- diabetes insipidus
- congestive heart failure

G) Describe the possible causes, appropriate laboratory studies needed, and treatment of the following conditions:

- hypernatremia
- hyponatremia
- hyperkalemia
- hypokalemia
- hyperchloremia
- hypochloremia

Describe the concept of a “third space” and list those conditions that can cause fluid sequestration of this type.

**Acid Base Balance**

**A)** List the physiological limits of normal blood gases. List the factors that effect oxygen delivery and consumption. Indicate the mechanisms, methods of compensation, differential diagnosis, and treatment of the following acid base disorders:

- acute metabolic acidosis
- acute respiratory acidosis
- acute metabolic alkalosis
- acute respiratory alkalosis
Shock

A) Define shock.
B) Differentiate the signs, symptoms, and hemodynamic features of:
   - shock
   - hemorrhagic
   - cardiogenic
   - septic
   - neurogenic
   - anaphylactic
C) Discuss priorities and specific goals of resuscitation for each form of shock:
   - define goals of resuscitation
   - defend choice of fluids
   - discuss indications for transfusion
   - discuss management of acute coagulopathy
   - discuss indications for invasive monitoring
   - discuss use of inotropes
   - afterload reduction in management

Post-operative Complications

A) Describe the differential diagnosis of a patient having postoperative fever. For each entity, discuss the clinical manifestations, appropriate diagnostic work-up, and management.

Within 24 hours:
   - response to surgical trauma
   - atelectasis
   - necrotizing wound infections

Between 24 and 72 hours:
   - pulmonary disorders (atelectasis, pneumonia)
   - catheter related complications (IV-phlebitis, Foley-UTI)

After 72 hours:
   - infectious (UTI, pneumonia, wound infection, deep abscess, anastomotic leak, prosthetic infection, parotitis)
   - noninfectious (deep vein thrombosis)

Discuss the following wound complications in terms of predisposing risk factors (patient condition, type of operation, technique), as well as their recognition, treatment, and prevention:
   - hematoma and seroma
wound infection
dehiscence
incisional hernia

B) Discuss the various causes of respiratory distress and respiratory insufficiency that may occur in the postoperative patient. For each complication, describe the etiology, clinical presentation, management, and methods of prevention:
- atelectasis
- pneumonia
- aspiration
- pulmonary edema
- pulmonary embolism (including deep venous thrombosis)
- fat embolism

C) Discuss the diagnostic work-up and treatment of oliguria in the postoperative period. Include pre-renal, renal, and post-renal causes (including urinary retention).

D) Discuss the possible causes of hypotension which may occur in the postoperative period. For each etiology describe its pathophysiology and treatment:
- hypovolemia
- sepsis
- cardiogenic shock - including postoperative myocardial infarction
- fluid overload
- arrhythmias
- pericardial tamponade
- medication effects

E) Describe the management of postoperative chest pain.

F) Describe factors which can lead to abnormal bleeding postoperatively, and discuss its prevention and management:
- Surgical site - inherited and acquired factor deficiencies
- DIC
- transfusion reactions
- operative technique
- Gastroduodenal (i.e. stress ulcerations)

G) Discuss disorders of alimentary tract function following laparotomy which may produce nausea, vomiting, and/or abdominal distension:
- paralytic ileus
- acute gastric dilatation
- intestinal obstruction
- fecal impaction
H) Describe the factors which can give rise to alterations in cognitive function postoperatively, as well as their evaluation and treatment. Alterations in cognitive function:
- hypoxia
- metabolic
- alcohol withdrawal

Altered Neurologic Status

A) Describe the physiology of intracerebral pressure (ICP) and cerebral perfusion pressure (CPP), including the effects of blood pressure, ventilatory status, and fluid balance on ICP and CPP.

B) Recognize the Cushing reflex and its clinical importance (brain herniation).

C) Describe the signs, etiology and treatment of intracranial hemorrhage (subarachnoid hemorrhage and intracerebral hemorrhage).

D) Describe the relative incidence and location of the most common brain tumors, their clinical manifestations, their diagnosis, and general treatment strategies.

E) Differentiate TIA, RIND, and CVA.

F) Describe the presentation and management of hydrocephalus. Compare and contrast adult and pediatric hydrocephalus.

G) Students will understand the importance of early diagnosis and treatment in subarachnoid hemorrhage and epidural hematomas.

Scrotal Pain & Swelling

A) Discuss the following:
- Testicular tumor
- Testicular torsion
- Epididymitis
- Torsion of the appendix testis
- Orchitis
- Trauma
- Hydrocele
- Varicocele

B) Discuss emergent vs. non emergent causes.

C) Discuss presentation and physical findings of each. (loss of cremasteric
reflex, high or transverse lie, blue dot sign etc.)

D) Laboratory investigations: normal urinalysis, normal or minimally elevated white blood cell count.
E) Discuss role of scrotal ultrasound/ transillumination

GENITOURINARY
A) Describe the potential etiologies of hematuria.
B) Consider age and character of bleeding: initial, terminal, total.
C) Consider microscopic vs. gross hematuria.
D) Discuss the diagnostic modalities available for evaluation of hematuria.
E) Consider CT, cystoscopy, IVP, ultrasound, cystourethrogram, and retrograde pyelography.
F) Describe the staging and management of renal cell carcinoma, and transitional cell carcinoma.
G) Discuss renal and ureteral calculi.
H) Discuss the clinical presentation of renal and ureteral calculi.
I) Discuss the etiologies and diagnostic evaluation of a patient with UTI.
J) Outline the etiologies and work-up of a patient with pneumaturia.
K) Outline the initial evaluation of patients presenting with urinary frequency, nocturia, urgency or urinary retention.

Skin & Soft Tissue Lesions
A) Describe the commonly used local anesthetics.
B) Discuss the advantages and disadvantages of epinephrine in the local anesthetic.
C) Discuss special precautions needed on the digits.
D) Discuss safe dosage ranges of the common anesthetics and the potential toxicities of these drugs.

E) Describe the common benign skin lesions and their treatment (papillomas, skin tags, subcutaneous cysts, lipomas).

F) Describe the characteristics, typical location, etiology and incidence of basal cell and squamous skin cancers.

G) Discuss the relationship to solar irradiation, ethnicity, previous tissue injury, & immunosuppression.

H) Discuss the characteristics of malignant skin lesions which distinguish them from benign lesions.

I) Describe the characteristics, typical locations, etiology and incidence of malignant melanoma.

J) Discuss the relationship of melanoma to benign nevi and characteristics which help differentiate them.

K) Discuss risk factors for melanoma.

L) What are the lesions which have high potential for malignant transformation?

M) Discuss the various types of melanoma and prognosis for each type.

N) Discuss the relationship of size and thickness to prognosis.

O) Discuss the usual treatment for cutaneous melanoma including margins, depth and lymph node management including sentinel node mapping.

**Non-Healing Wounds**

A) Define “non-healing”.

B) Discuss a differential diagnosis, evaluation, and treatment of a patient with:
   - non-healing lower extremity wound
   - non-healing wound of the torso
   - body area other than the lower extremity

   Describe the pathophysiology involved for each of the diagnostic possibilities. Consider:

C) pressure
   - ischemia
   - infection
   - malignancy
   - foreign body

D) Discuss wound infection, seroma, hematoma, wound dehisance.
Trauma

A) Describe the priorities and sequence of a trauma patient evaluation (ABC’s).
B) Describe the four classes of hemorrhagic shock and how to recognize them.
C) Describe the appropriate fluid resuscitation of a trauma victim.
D) Discuss choice of IV access.
E) Discuss the choice of fluid and use of blood components.
F) Discuss the differences between adult and pediatric resuscitation.
G) Discuss the types, etiology and prevention of coagulopathies typically found in patients with massive hemorrhage.
H) Describe the appropriate triage of a patient in a trauma system.
I) Describe the diagnostic evaluation, differences between blunt and penetrating mechanisms of injury and the initial management of:
J) Spine injury (consider mechanism of injury, level of injury, use of steroids, immobilization, neuro exam, management of shock)
K) Thoracic injury (consider hemo / pneumothorax, tension pneumothorax, tamponade, pulmonary contusion, massive air leak, widened mediastinum, flail chest)
L) Abdominal injury (consider role of physical exam, ultrasound, CT, peritoneal lavage, operative vs. non-operative management of liver and spleen injury, which patients need urgent laparotomy, management of hematomas)
M) Urinary injury (consider operative vs. non-operative renal injury, ureteral injury, intraperitoneal and extraperitoneal bladder injury, urethral trauma, when not to place a Foley, candidates for cystogram, relationship to pelvic fracture)
N) Describe the early management of a major burn.
O) Discuss estimation of total body surface burn and burn depth.
P) Discuss fluid resuscitation, choice of fluid and monitoring for adequacy of resuscitation (rule of 9’s, differences in pediatric and adult management).
Q) Discuss options for topical antimicrobial therapy.
R) Discuss inhalation injury, CO poisoning and triage of patients to burn centers.
S) Discuss the basic principles of wound coverage, skin grafting, and timing.
T) Discuss the assessment and need for escharotomy.
PEDIATRIC SURGERY

Hernias/Hydroceles
Neck Masses
Bowel obstruction: Adhesions, hernias, intussusception, meckel’s diverticulum, Volvulus, Hirschprung's disease.

OPHTALMOLOGY

Red eye:
   Traumatic
   Infectious
   Inflammatory
   Chronic

Common retinal problems
Cataracts
Pterygium
Chalazion