

## Lecture 1 – Perioperative management of the surgical patient

Faculty: Dr. Arthur Sanford

Reference: Lawrence Chap 1 and 2

1. *Preoperative Evaluation of the Surgical Patient (Chap 1)*
  - a. Explain the key components and value of the preoperative history, physical examination, and selected diagnostic and screening tests prior to an elective surgical procedure.
  - b. Discuss the elements of the patient's history that are essential in the preoperative evaluation of surgical emergencies.
  - c. Discuss the assessment of pulmonary and cardiac risk including any necessary preoperative testing.
  - d. Discuss the effects of diabetes, hepatic dysfunction, adrenal insufficiency, and malnutrition on preoperative preparation and postoperative management.
  - e. Identify how to properly obtain informed consent for a surgical procedure.
2. *Postoperative Management of the Surgical Patient (Chap 1)*
  - a. Discuss the effects of diabetes, hepatic dysfunction, adrenal insufficiency, and malnutrition on postoperative management.
  - b. List the most common post-operative problems and understand the evaluation, diagnosis, and treatment for each.
3. *Perioperative Electrolyte Management (Chap 2)*
  - a. Know the range of normal values of sodium, potassium, bicarbonate, and chloride in serum, gastric aspirate, bile, and ileostomy aspirate.
  - b. Explain the change in values of sodium, potassium, bicarbonate, chloride and pH in the following disease statuses: excessive gastric losses, high-volume pancreatic fistula, small intestinal fistula, biliary fistula, diarrhea, and closed head injury.
  - c. Discuss the differential diagnosis and treatment of hypernatremia, hyponatremia, hyperkalemia, and hypokalemia in the postoperative period.
4. *Perioperative Fluid Management (Chap 2)*
  - a. Identify the contributions that extracellular, intracellular, and intravascular volume make to body weight.
  - b. List the hormones or substrates that affect renal absorption and excretion of sodium and water.
  - c. Outline the methods of determining fluid balance in the immediate postoperative period including invasive and non-invasive means.
  - d. Describe the typical 24 hour fluid and electrolyte needs in the postoperative patient who has no complications.
  - e. Explain the composition of electrolytes in normal saline, lactated Ringer's solution, and D5W.

## Lecture 2 – Trauma and Surgical Bleeding

Faculty: Dr. Hieu Ton-That or Dr. John Santaniello

Reference: Lawrence Chap 4 and 9

1. *Surgical Bleeding (Chap 4)*
  - a. Identify the reasons for excessive surgical bleeding including preexisting hemostatic defects and intraoperative complications.
  - b. Describe the common laboratory tests that are used to assess coagulation status and explain how these tests apply to the diagnosis of specific bleeding disorders.
  - c. Name the conditions that might lead to disseminated intravascular coagulation (DIC).
  - d. Describe the symptoms of a transfusion reaction and the methods of treatment.
2. *Neck Trauma (Chap 9)*
  - a. Describe the diagnosis and treatment of a patient with a blunt or penetrating neck injury.
3. *Abdominal Trauma (Chap 9)*
  - b. Describe the diagnostic and therapeutic procedures that pertain to abdominal trauma including the indications, contraindications, and limitations of diagnostic peritoneal lavage.
  - c. Describe the technique of a focused abdominal sonogram for trauma (FAST).
  - d. Describe management of blunt and penetrating injuries to the abdomen and pelvis.

## Lecture 3 – Surgical Critical Care and Shock

Faculty: Dr. John Santaniello

Reference: Lawrence Chap 2, 5 and 6

1. Define shock and list the two primary mechanisms that may cause cellular malfunction consistent with shock (Chap 5).
2. List the primary etiologies of shock (Chap 5).
3. List the clinical information that helps to determine which mechanism is the predominant cause of shock in an individual patient (Chap 5).
4. Describe the treatment of shock based upon its etiology (Chap 5).
5. Describe the parameters used to gauge shock and its successful treatment (Chap 5).
6. Describe the importance of prophylaxis (DVT, GI, pressure ulcer, hospital acquired infections) in a critically ill patient and list the methods of prophylaxis (Chap 6).
7. Explain the pathophysiology and management of abdominal compartment syndrome (Chap 6).
8. Identify the effects of multisystem organ failure on morbidity and mortality in the surgical patient (Chap 6).
9. Describe the differences between the basic modes of mechanical ventilation and the advantages and disadvantages of each mode (Chap 6).
10. Explain the changes in arterial blood gas values in the setting of acute metabolic acidosis, acute respiratory acidosis, chronic respiratory acidosis, and compensated metabolic acidosis (Chap 2).

## Lecture 4 – Wounds, Wound Healing and Surgical Site Infections

Faculty: Dr. Michael Mosier

Reference: Lawrence Chap 7 and 8

1. *Surgical Wounds*
  - a. Define clean, clean/contaminated, contaminated, and infected wounds and describe the management of each type.
  - b. Define the stages of pressure ulcers.
2. *Wound Healing*
  - a. Define the anatomy of the skin.
  - b. Describe the sequence and approximate time frame of the phases of wound healing.
  - c. Describe the 3 types of wound healing and the elements of each.
3. *Surgical Site Infections*
  - a. Describe the principals of prophylactic antibiotic use.
  - b. Define the risk factors for surgical wound infection.
  - c. Discuss the treatment options for surgical wound infections.

## Lecture 5 – Burns

Faculty: Dr. Michael Mosier

Reference: Lawrence Chap 10

1. List the classification of burns by depth of injury and indicate the anatomic differences between these injuries.
2. List the initial steps in the acute care of the patient with a burn injury.
3. Describe the appropriate fluid resuscitation of the burn patient.
4. Define burn shock and outline its treatment.
5. Describe the indications for excision and skin grafting of burn wounds.
6. List the general indications for referral of a patient to a burn center.

## Lecture 6 – Benign Esophagus and Peptic Ulcer Disease

Faculty: Dr. Eric Marcotte

Reference: Lawrence Chap 12 and 13

### 1. *Esophageal Reflux Disease and Hiatal Hernia (Chap 12)*

- a. Describe the anatomic and physiologic factors that predispose to reflux esophagitis.
- b. Describe the symptoms of reflux esophagitis and discuss the diagnostic procedures used to confirm the diagnosis.
- c. List the indications for operative management of esophageal reflux and the most common anti-reflux procedures.
- d. Describe esophageal hiatal hernia with regard to anatomic type (sliding and paraesophageal) and the relative need for treatment.

### 2. *Achalasia (Chap 12)*

- a. Describe the pathophysiology and clinical symptoms associated with achalasia of the esophagus and outline the management options.
- b. Discuss manometric evaluation of the lower esophageal sphincter.

### 3. *Esophageal Diverticula (Chap 12)*

- a. Describe the common esophageal diverticula in terms of their location, symptoms, and pathogenesis.

### 4. *Esophageal Perforation (Chap 12)*

- a. Describe the etiology and presentation of a traumatic perforation of the esophagus and the physical exam findings that occur early and late after this injury.

### 5. *Upper Gastrointestinal Ulcer Disease (Chap 13)*

- a. Describe the common symptoms and pathogenesis of gastric versus duodenal ulcers including the patterns of acid secretion.
- b. Discuss the significance of the anatomic location of gastric and duodenal ulcers.
- c. Compare and contrast the pathophysiology, evaluation and treatment of gastric and duodenal ulcer disease.
- d. List the clinical and laboratory features that differentiates Zollinger-Ellison syndrome from duodenal ulcer disease.

- e. Describe the common operations performed for duodenal and gastric ulcer disease and discuss the morbidity rates associated with each procedure.
- f. Discuss the commonly recognized side effects associated with surgery for duodenal and gastric ulcer disease.

## Lecture 7 – Malignant Esophagus and Stomach

Faculty: Dr. Sam Pappas

Reference: Lawrence Chap 12 and 13

### 1. *Esophageal Neoplasms (Chap 12)*

- a. List the 2 major cell types of esophageal neoplasms.
- b. Describe the risk factors for esophageal neoplasms.
- c. Describe the diagnostic evaluation of a patient with a suspected esophageal tumor including modalities that are helpful in staging the neoplasm.

### 2. *Gastric Malignancy (Chap 13)*

- a. Describe the premalignant conditions, epidemiological factors, and clinical features in patients with gastric adenocarcinoma.
- b. Describe the common types of neoplasms that occur in this stomach and discuss the appropriate diagnostic procedures and therapeutic modalities for each.



## Lecture 8 – Colorectal 2

Faculty: Dr. Joshua Eberhardt

Reference: Lawrence Chap 15

### 1. *Inflammatory Bowel Disease*

- a. Differentiate ulcerative colitis from Crohn's disease of the colon in terms of history, pathology, x-ray findings, treatment, and risk of cancer.
- b. Discuss the role of surgery in the treatment of patients with ulcerative colitis and Crohn's colitis.

### 2. *Large Bowel Obstruction*

- a. List the signs, symptoms, and diagnostic aids for evaluating the patient with a presumed large bowel obstruction.
- b. Identify the radiographic findings of a large bowel obstruction.
- c. List the common causes of colonic obstruction in adults.
- d. Outline a plan for diagnostic studies, preoperative management, and treatment of volvulus, intussusception, impaction, and obstructing colon cancer.

## Lecture 9 – Colorectal 1

Faculty: Dr. Vinod Winston

Reference: Lawrence Chap 15

### 1. *Diverticular Disease of the Colon*

- a. Describe the clinical findings of diverticular disease of the colon.
- b. Discuss the imaging findings of diverticular disease and be able to identify them on various imaging modalities.
- c. Discuss the complications of diverticular disease and the appropriate surgical management.
- d. Describe the differential diagnosis, initial management, diagnostic studies and indications for medical versus surgical treatment in a patient with diverticulitis.

### 2. *Colorectal Malignancy*

- a. Identify the common symptoms and signs of carcinoma of the colon and rectum.
- b. Discuss the appropriate laboratory, endoscopic, and x-ray studies for the diagnosis of carcinoma of the colon and rectum.
- c. Discuss the staging and five-year survival of patients with carcinoma of the colon and rectum.

## Lecture 10 – Anorectal

Faculty: Dr. Dana Hayden

Reference: Lawrence Chap 15

### 1. *Perianal Disease*

- a. Discuss the anatomy of hemorrhoids, including the 4 grades encountered clinically, and differentiate internal from external hemorrhoids. Describe the symptoms and signs of patients with external and internal hemorrhoids.
- b. Outline the principals of management of patients with symptomatic external and internal hemorrhoids, including non-operative and operative management.
- c. Outline the symptoms and physical findings of patients with perianal infections.
- d. Outline the principals of management of patients with perianal infections, including the role of antibiotics, incision and drainage, and primary fistulectomy.
- e. Describe the symptoms and physical findings of patients with anal fissures.
- f. Outline the principals of management of patients with anal fissures.

### 2. *Anal Malignancy*

- a. Name the 2 most common cancers of the anal canal and describe their clinical presentation.

## Lecture 10 – Biliary Disease

Faculty: Dr. Anthony Baldea

Reference: Lawrence Chap 16

### 1. *Cholelithiasis*

- a. Discuss the factors that contribute to the formation of the 3 most common types of gallstones.
- b. Describe the epidemiology of gallstone disease as it relates to patient evaluation and management.
- c. Describe the management of asymptomatic gallstones found incidentally on radiologic studies or at laparotomy.
- d. Describe the potential complications associated with laparoscopic cholecystectomy and open cholecystectomy.

### 2. *Choledocholithiasis*

- a. Discuss the options available to treat stones in the gallbladder and the extrahepatic biliary ducts.

### 3. *Cholecystitis*

- a. Compare and contrast the clinical presentation, laboratory and radiologic findings, and management of the patients with chronic cholecystitis and acute cholecystitis.
- b. Identify the findings of acute cholecystitis on ultrasound, HIDA scan and CT scan.

### 4. *Cholangitis*

- a. Describe the clinical presentation, evaluation, and management of a patient with acute cholangitis and acute suppurative cholangitis.

### 5. *Gallstone Ileus*

- a. Outline the clinical presentation, evaluation, and management of a patient with gallstone ileus.

## Lecture 11 – Liver

Faculty: Dr. Diego diSabato

Reference: Lawrence Chap 16 and 18

### 1. *Biliary Tract Malignancy (Chap 16)*

- a. List the common causes of benign strictures of the common bile duct.
- b. Discuss the epidemiology, clinical presentation, evaluation and management of carcinoma of the gallbladder.
- c. Describe the management of carcinoma of the extrahepatic biliary ducts.

### 2. *Benign Hepatic Tumors (Chap 18)*

- a. List 3 common benign tumors of the liver and describe their appropriate treatment.
- b. Describe the diagnostic modalities useful in evaluating a liver mass.
- c. Compare and contrast the clinical and pathologic features and treatment of hepatic adenoma and focal nodular hyperplasia.

### 3. *Malignant Hepatic Tumors (Chap 18)*

- a. List four factors that favorably influence the prognosis after resection of hepatic metastasis from colorectal cancer.
- b. List the 2 most common primary hepatobiliary malignancies and their relative frequency.

### 4. *Portal Hypertension (Chap 18)*

- a. List the 3 major complications of portal hypertension.
- b. List and describe the options for therapy for acute variceal hemorrhage.
- c. Describe the causes of portal hypertension.
- d. List the complications associated with ascites formation in the patient with portal hypertension.

### 5. *Hepatic Failure (Chap 18)*

- a. List 3 common causes of fulminant hepatic failure.
- b. Describe the indications for liver transplantation.

## Lecture 12 – Transplantation

Faculty: Dr. Jorge Almario

Reference: Lawrence Chap 23

1. List the criteria to establish death for the purpose of organ donation.
2. Define autograft, isograft, allograft, xenograft, orthotopic graft, and heterotopic graft.
3. List the current forms of immunosuppression for transplantation and describe their mechanisms of action and specific complications.
4. Distinguish among hyperacute, acute, and chronic rejection in terms of pathophysiology, interval from transplant, histology, prognosis and treatment.
5. List the common methods used to gain access to the circulation for hemodialysis.

## Lecture 13 – Pancreas

Faculty: Dr. Gerard Abood

Reference: Lawrence Chap 17

### 1. *Pancreatitis*

- a. List four etiologies of pancreatitis.
- b. Discuss the clinical presentation, evaluation, and management of the patient with acute pancreatitis and the indications for surgical intervention.
- c. Identify the radiographic findings which are diagnostic of pancreatitis.
- d. List the potential complications associated with acute pancreatitis.
- e. Discuss the criteria that are used to predict the prognosis for pancreatitis.
- f. Discuss the mechanism of pseudocyst formation and the symptoms and physical signs associated with the pseudocyst.
- g. Discuss the natural history of an untreated pancreatic pseudocyst as well as the medical and surgical treatment options.

### 2. *Pancreatic Neoplasm*

- a. Describe the pathology of 4 types of pancreatic neoplasms.
- b. Describe the imaging procedures used in the evaluation of pancreatic cancer.
- c. Describe the surgical treatment of pancreatic neoplasms.
- d. Discuss the long-term prognosis for pancreatic cancer on the basis of pathology and cell type.

## Lecture 14 – Breast

Faculty: Dr. Constantine Godellas or Dr. Claudia Perez or Dr. Faaiza Vaince

Reference: Lawrence Chap 19

### 1. *Benign Breast Disease*

- a. Describe the diagnostic workup and management for common benign breast conditions including cysts, breast pain, nipple discharge, fibroadenoma, and breast abscess.

### 2. *Malignancy Breast Disease*

- a. List the risk factors for breast cancer.
- b. Describe the guidelines for routine screening mammography.
- c. Describe the primary and secondary mammographic signs of malignancy.
- d. Describe the diagnostic work up for a palpable and non-palpable breast mass suspicious for carcinoma.
- e. Describe the preoperative evaluation for a patient with breast cancer.
- f. Identify the difference between ductal carcinoma in situ and invasive carcinoma of the breast.
- g. Describe the rationale for adjuvant therapy, radiation, and hormonal therapy in the treatment of breast cancer. Describe the expected survival and local recurrence rates after treatment for early breast cancer.



## Lecture 15 – Endocrine Surgery

Faculty: Dr. Adam Kabaker or Dr. Steven De Jong

Reference: Lawrence Chap 20

### 1. *Hyperthyroidism*

- a. Describe the symptoms of a patient with hyperthyroidism and the possible treatment options.

### 2. *Thyroid Malignancy*

- a. Discuss the evaluation and differential diagnosis of a patient with a thyroid nodule.
- b. List the different types of carcinoma of the thyroid gland and describe the treatment options and prognosis for each.
- c. List the risk factors for carcinoma of the thyroid gland.
- d. List the possible complications after thyroid surgery.

### 3. *Hyperparathyroidism*

- a. Describe the symptoms of hyperparathyroidism and its treatment options.
- b. Describe the difference between primary, secondary, and tertiary hyperparathyroidism.
- c. Describe the management of acute hypercalcemia.
- d. Describe the indications for surgical resection for hyperparathyroidism.
- e. List the possible complications after parathyroid surgery.

### 4. *Multiple Endocrine Neoplasia (MEN) Syndromes*

- a. Describe the multiple endocrine neoplasia (MEN) syndromes and their surgical management.

## Lecture 16 – Diseases of the Vascular System – Arterial Disease

Faculty: Dr. Pegge Halandras

Reference: Lawrence Chap 22

### 1. *Aneurysmal Disease*

- a. List the common size and relative incidence of arterial aneurysms.
- b. Identify an abdominal aortic aneurysm on cross sectional imaging.
- c. List the signs, symptoms, differential diagnosis and diagnostic and management plans for a patient with a ruptured abdominal aortic aneurysm.
- d. Compare the presentation, complications, and treatment of aortic and extremity aneurysms.

### 2. *Aortic Dissection*

- a. Describe the classical clinical presentation of a dissecting aorta.
- b. List the available imaging procedures to diagnose an aortic dissection and be able to identify the pathology on these imaging modalities.

### 3. *Arterial Occlusive Disease*

- a. Describe the risk factors for atherosclerosis.
- b. Describe the pathophysiology of intermittent claudication and differentiate this symptom from leg pain of other causes.
- c. Describe the diagnosis and medical and/or surgical treatment options for chronic occlusive disease of the aorta, iliac, superficial femoral, popliteal and tibial arteries.
- d. Describe the clinical manifestations of renal artery stenosis.
- e. List the signs and symptoms of acute arterial occlusion and outline its management including acute mesenteric ischemia.
- f. Define amaurosis fugax, transient ischemic attacks, reversible ischemic neurologic defects, and cerebrovascular accident.
- g. Describe the diagnostic methods, and medical and surgical management of a patient with symptomatic carotid artery stenosis.
- h. List the indications for arteriography in a patient with a possible arterial injury to the extremity.

#### 4. *Venous Disease*

- a. Identify the typical initial anatomic location of deep venous thrombosis.
- b. Identify the clinical factors that lead to an increased incidence of venous thromboembolism.
- c. Describe the modalities used to prevent the development of venous thrombosis in surgical patients.
- d. List the indications for surgical intervention for venous thrombosis.
- e. Outline the diagnostic, operative, and non-operative management of venous ulcers and varicose veins.
- f. Describe the anatomic mechanisms that caused thoracic outlet compression syndrome and discuss the appropriate diagnostic studies and surgical treatment.

#### 5. *Lymphedema*

- a. Explain the pathophysiology of lymphedema and discuss its treatment.

## Lecture 18 – Pediatric Surgery

Faculty: Dr. Heather Paddock

### 1. *Congenital Malformations*

- a. List the differential diagnosis for an infant with bilious emesis and which diagnoses constitute a surgical emergency.
- b. Explain the difference between gastroschisis and omphalocele.

### 2. *Pediatric Appendicitis*

- a. Chart the work up for right lower quadrant pain in a pediatric patient.

### 3. *Pediatric Intussusception*

- a. Identify the epidemiology, diagnosis and treatment of intussusception.

### 4. *Hirschsprung's Disease*

- a. Describe the diagnosis and treatment of Hirschsprung's disease.

## Lecture 19 – Malignant Disease of the Skin

Faculty: Dr. Michael Nishimura

Reference: Lawrence Chap 24

### 1. *Cutaneous Neoplasms*

- a. Describe the etiology and incidence of basal and squamous cell carcinomas as well as the treatment methods.
- b. Discuss the predisposing factors for melanoma.
- c. List the four categories of melanoma.
- d. Outline the steps to confirm a diagnosis and determine the extent of malignant melanoma.
- e. Describe the therapy options for malignant melanoma.

## Lecture 20 – Acute Abdomen

Faculty: Dr. Fred Luchette

1. List the differential diagnosis for an acute abdomen case.
2. Describe the appropriate history and physical of a patient with an acute abdomen.
3. Describes the appropriate treatment of a patient with an acute abdomen.

## Lecture 21 – Radiology

Faculty: Dr. Angelo Malamis or Dr. Faaiza Mahmoud

1. *Medical Knowledge*
  - a. Summarize key principles of radiology and radiation
  - b. Identify normal anatomy on radiographic images
  - c. Summarize principles, indications for the use of, comparative benefits/drawbacks and strengths/weaknesses and potential risks of the following modalities: plain films, computed tomography (CT), magnetic resonance imaging (MRI), ultrasound (US),
  - d. Recognize common and prototypic abnormalities and diseases on radiographic images
  - e. Discuss general principles and diagnostic and therapeutic uses of nuclear medicine
  - f. Summarize the basics of normal and abnormal mammograms
  - g. Discuss indications for obtaining angiograms
2. *Patient Care*
  - a. Apply evidence-based medicine in choice of radiological imaging, screening procedures, and appropriate interpretation
  - b. Formulate appropriate differential diagnoses for common radiologic findings
  - c. Prevent, recognize and treat contrast allergy
  - d. Interpret the results of the most frequent commonly used radiological tests
  - e. Utilize information technology as it relates to radiological imaging to provide effective care of patients
3. *Interpersonal and Communication Skills*
  - a. Recognize the role of the radiologist as a consultant and the importance of effective communication between radiologists, radiology health professionals, and other clinicians
4. *Practice Based Learning and Improvement*
  - a. Use health information resources to access and manage clinical information to support ongoing self-directed learning
  - b. Search, evaluate, and critically review radiologic scientific evidence appropriately as an approach to a clinical problem

- c. Critically evaluate one's performance in the curriculum to identify strengths and personal limitations in either knowledge of radiology principles presented or study methods; develop learning goals to address any deficiencies and actively seek out assistance from appropriate sources to successfully remediate these deficiencies

5. *Professionalism*

- a. Apply basic concepts of confidentiality as it applies to radiology and the obligations to protect patients' interests.
- b. Demonstrate professional behavior by completing all vertical curricular requirements, including course evaluations, in a timely manner.
- c. Demonstrate professional behavior by responding to direct communication from the vertical curriculum Director or Coordinator in a timely fashion, particularly in circumstances related to academic performance.
- d. Demonstrate professional and ethical behavior by honestly completing examinations associated with the vertical curriculum without attempting to seek advantage by unfair means, and by reporting unethical behavior of peers to clerkship administration.

6. *Systems Based Practice*

- a. Develop diagnostic and treatment strategies with regard to radiological technologies that are cost-effective, sensitive to limited resources, and do not compromise quality of care.

7. *Interprofessional Collaboration*

- a. Collaborate with radiologists and radiology healthcare professionals as part of the healthcare team.

8. *Personal and Professional Development*

- a. Demonstrate ongoing personal commitment to lifelong learning related to new and emerging radiological technologies for patient care