

Vanderbilt University Medical Center
Emergency General Surgery Service
Surgical Residency Rotation and Curriculum

UNIT 13 LIVER, BILIARY TRACT AND PANCREAS

UNIT OBJECTIVES:

1. Demonstrate knowledge of the anatomy, physiology, and pathophysiology of the liver, biliary tract, and pancreas.
2. Demonstrate the ability to manage emergency disease of the liver, biliary tract, and pancreas amenable to surgical intervention.

COMPETENCY-BASED KNOWLEDGE OBJECTIVES:

Junior Level:

Liver and Biliary Tract

1. Explain the formation of bile, its composition, and its function in digestion. Describe the pathophysiology of gallstone formation.
2. Correlate bile formation and composition with disease states affecting the biliary system such as gallstone formation and biliary obstruction.
3. Discuss the enterohepatic circulation of bile.
4. Outline the work-up and differential diagnosis of the jaundiced patient.
5. Identify the most significant determinants of mortality in elderly patients following cholecystectomy.
6. Outline the pathophysiology, evaluation, and management of the following:
 - a. Choledochal cysts
 - b. Caroli's disease
 - c. Sclerosing cholangitis
 - d. Symptomatic gallstones
 - e. Acalculous cholecystitis
 - f. Cholangitis
 - g. Gallstone ileus
 - h. Gallstone pancreatitis
 - i. Benign biliary strictures
 - j. Acute cholecystitis
 - k. Biliary dyskinesia

Pancreas

1. Describe the anatomy of the pancreas, including regional vascular anatomy.
2. Explain the pathophysiology of pancreatitis to include:
 - a. Common etiologies such as:
 - (1) Gallstones
 - (2) Alcohol related
 - (3) Trauma
 - (4) Steroid-induced
 - (5) Postoperative
 - (6) Post endoscopic retrograde cholangiopancreatography (ERCP)
 - (7) Idiopathic
 - b. Diagnosis, evaluation, and medical management
 - c. Role of peritoneal lavage

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- d. Complications of pancreatitis, such as:
 - (1) Adult respiratory distress syndrome (ARDS; Acute lung injury-ALI also used)
 - (2) Hypovolemia
 - (3) Pseudocyst
 - (4) Abscess
 - (5) Infected pancreatic necrosis
- e. Indications for operative management of pancreatitis
- f. Management of gallstone pancreatitis with timing of surgery
- g. Ranson's criteria for assessing pancreatitis and its correlation with prognosis

Senior Level:

Liver and Biliary Tract

- 1. Analyze alternatives to surgery in the management of gallstones, such as:
 - a. Oral dissolution with ursodeoxycholic acid
 - b. Extracorporeal shock wave lithotripsy
 - c. Endoscopic sphincterotomy
- 2. Compare laparoscopic versus open cholecystectomy.
- 3. Assess management alternatives for common bile duct stones:
 - a. Open versus laparoscopic common bile duct exploration
 - b. ERCP
- 4. Since acute cholecystitis is becoming one of the more common indications for emergency admissions of elderly patients to a surgical service, specify factors contributing to its being a more complex disease in elderly vs. young patients by considering:
 - a. Incidence of comorbid disease such as diabetes
 - b. Atypical clinical presentation (right upper quadrant pain, fever, leukocytosis)
 - c. Signs of sepsis or septic shock
 - d. Jaundice
 - e. Altered mental status

Pancreas

- 1. Compare the probabilities of coexisting intra-abdominal pathology in elderly vs. younger patients.
Consider:
 - a. Acute pancreatitis
 - b. Mesenteric ischemia
 - c. Gangrenous cholecystitis
 - d. Perforated viscus

Chief Level:

Liver and Biliary Tract

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1. Detail the appropriate surgical management of any selected emergency disorder of the liver or biliary tract.
2. Summarize the principles of perioperative management of urgent liver and biliary tract disease.

Pancreas

1. Describe the common complications associated with surgical management of diseases of the pancreas.
4. Summarize the principles of perioperative management of emergent diseases of the pancreas.

COMPETENCY-BASED PERFORMANCE OBJECTIVES:

Junior Level:

Liver and Biliary Tract

1. Perform history and physical examination specifically focused on liver and biliary system.
2. Select and interpret appropriate laboratory and radiologic evaluations in the work-up of the jaundiced patient to include:
 - a. Alkaline phosphatase, serum glutamic oxaloacetic transaminase (SGOT), serum glutamic pyruvic transaminase (SGPT), direct and indirect bilirubin, prothrombin time (PT) and partial thromboplastin time (PTT)
 - b. Endoscopic retrograde cholangiopancreatography (ERCP)
 - c. Percutaneous transhepatic cholangiography (PTC)
 - d. Liver-spleen scan
 - e. Hepatobiliary nuclear scan (HIDA)
 - f. Oral cholecystogram (OCG)
 - g. Ultrasound
 - h. Computed axial tomography
 - i. Arteriography
3. Assist in the perioperative management of patients undergoing hepatobiliary surgery.
4. Perform uncomplicated hepatobiliary surgery under supervision, such as cholecystectomy, both laparoscopic and open, with operative cholangiography.

Pancreas

1. Perform history and physical examination focused on the pancreas.
2. Select and interpret appropriate laboratory and radiologic examinations in evaluation of pancreatic disease, including:
 - a. Serum amylase and lipase
 - b. Urinary amylase

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- c. Computed axial tomography
 - d. Ultrasound
 - e. Endoscopic retrograde cholangiopancreatography (ERCP)
3. Assist in management of patient with acute pancreatitis.
 4. Assist in perioperative management of patients undergoing pancreatic surgery.

Senior Level:

Liver and Biliary Tract

1. Perform detailed evaluation of patients with acute liver and biliary disease and plan appropriate management and operative approach.
2. Perform, under supervision, increasingly complex hepatobiliary surgery:
 - a. Laparoscopic cholecystectomy with cholangiography
 - b. Common bile duct exploration with choledochoscopy
 - c. Complicated cholecystectomy--acute, gangrenous

Pancreas

1. Perform detailed evaluation of patients with acute pancreatic disease and plan appropriate medical or surgical management.

Chief Level:

Liver and Biliary Tract

1. Coordinate overall care of patients with emergent or acute hepatobiliary disease including:
 - a. Initial evaluation
 - b. Appropriate diagnostic studies
 - c. Indicated consultations
 - d. Operative management
2. Supervise and instruct junior house staff in minor hepatobiliary procedures.

Pancreas

1. Coordinate overall care of patients with complex pancreatic disease, including initial evaluation, appropriate diagnostic studies, and operative management of pancreatic abscess and infected pancreatic necrosis
2. Perform complex pancreatic procedures such as operative debridement and drainage of pancreatic