

## GENERAL SURGERY – Minimally Invasive Surgery

### PGY 1 and 2

#### Medical Knowledge

1. Describe the embryological development of the peritoneal cavity and the positioning of the abdominal viscera.
2. Diagram the anatomy of the abdomen including its viscera and anatomic spaces:
  - a. Musculoskeletal envelope (focus on the anterior abdominal wall)
  - b. Lesser sac
  - c. Subphrenic spaces
  - d. Morrison's pouch
  - e. Foramen of Winslow
  - f. Pouch of Douglas
  - g. True pelvis
  - h. Lateral gutters
  - i. Contents of the retroperitoneum
  - j. Major lymph node groups and their drainage
3. Explain absorption and secretory functions of the peritoneal surfaces and the diaphragm.
4. Describe the anatomy of the omentum and its role in responding to inflammatory processes.
5. Assess the following signs associated with the acute abdomen and describe their pathophysiology:
  - a. Referred pain
  - b. Rebound tenderness
  - c. Guarding
  - d. Rigidity
6. Specify characteristics of the history, physical examination findings, and mechanism of visceral and somatic pain for the following processes:
  - a. Acute appendicitis
  - b. Bowel obstruction
  - c. Perforated ulcer
  - d. Ureteral colic
  - e. Diffuse peritonitis
  - f. Anastomotic leak
7. Explain the mechanism of referred pain in:
  - a. Ruptured spleen
  - b. Biliary colic
  - c. Basilar pneumonia
  - d. Renal colic
  - e. Anastomotic leak
  - f. Pancreatitis
  - g. Inguinal hernia

8. Discuss the following causes of paralytic ileus:
  - a. Postoperative electrolyte imbalance
  - b. Retroperitoneal pathology
  - c. Trauma
  - d. Extraperitoneal disease (central nervous system, lung)
  
9. Illustrate use of the following diagnostic studies in the work up of each process in #6 and #7 above:
  - a. Plain x-rays
  - b. Contrast gastrointestinal (GI) studies
  - c. Ultrasound
  - d. Computed axial tomography (CAT)
  - e. Biliary studies
  - f. Renal studies
  
10. When considering the possibility of wound complications:
  - a. What are the risk factors for abdominal wound infection?
  - b. What are the contributing factors for abdominal wound dehiscence and evisceration?
  - c. What are the usual clinical presentations?
  - d. What is the incidence of wound infection in surgeries involving the biliary tree, upper GI tract, and colon?
  
11. Identify the anatomic locations for the following intra-abdominal abscesses; name disease process(es) associated with each:
  - a. Left subphrenic space
  - b. Right subphrenic space
  - c. Subhepatic space
  - d. Lesser sac
  - e. Interloop
  - f. Pelvis
  - g. Left paracolic gutter
  - h. Right paracolic gutter
  - i. Psoas muscle
  
12. Differentiate between the conditions favoring percutaneous drainage versus operative drainage for each of the abscesses in #11. Describe the safest and most effective approach using each technique.
  
13. Differentiate between the following intestinal fistulas and the organs to which they most often communicate:
  - a. Esophageal
  - b. Gastric
  - c. Enteric (including duodenal)
  - d. Colonic
  
14. Explain the formation of fistulas in each of the following disease processes or factors:
  - a. Operative complications (bowel injury with abscess formation)

- b. Inflammatory bowel disease
  - c. Acute pancreatitis
  - d. Foreign body or prosthetic material
15. Explain the role of a fistulogram in the diagnosis of intra-abdominal fistulas and abscesses.
16. Assess the factors that prevent healing of a fistula.
17. Summarize the conditions favoring operative versus non-operative treatment for the fistulas in #14.
18. Describe the anatomy, clinical presentation, and complications of non-operative management for:
- a. Direct, indirect, inguinal, and femoral
  - b. Sliding hiatal
  - c. Paraesophageal
  - d. Ventral
  - e. Umbilical
  - f. Spigelian
  - g. Paraduodenal
  - h. Obturator
  - i. Lumbar
  - j. Parastomal
  - k. Diaphragmatic
    - (1) Posterolateral (Bochdalek)
    - (2) Anterior (Morgagni)
    - (3) Traumatic
  - l. Internal
  - m. Petit
19. Define a Richter's hernia and describe its clinical presentation.
20. Define a sliding hernia and describe its repair.
21. Differentiate between *incarceration* and *strangulation*.

### **Patient Care**

1. Perform, record, and report complete patient evaluation and assessment.
2. Evaluate and diagnose the acute abdomen.
3. Assist with hernia repairs in the groin or umbilical regions, demonstrating a basic understanding of the anatomy and surgical repair.
4. Interpret the following in coordination with attending radiologists and staff:
  - a. Acute abdominal series (identify free air, small bowel obstruction, ileus, colonic pseudo-obstruction, volvulus; the presence of ascites, atelectasis vs. pneumonia)
  - b. Upper GI series
  - c. Barium enema (identify neoplasms, signs of ischemia)
  - d. Abdominal ultrasound and CT scans

5. Evaluate and institute management of abdominal wound problems, including:
  - a. Infection
  - b. Evisceration
  - c. Fasciitis
  - d. Dehiscence
6. Coordinate pre- and post- operative care for the patient with the acute abdomen.
7. Institute drainage for abdominal wall fistula and protection of surrounding structures, especially skin.
8. Assist in closure of abdominal incisions; exhibit competency in suture technique.

### **Practice Based Learning**

Familiarity with the literature regarding surgical management of conditions afflicting the minimally invasive surgery population including areas of controversy is also expected.

### **Interpersonal and Communication Skills**

1. The PGY 1 residents should instruct students about the preoperative and postoperative care of surgical patients and the principles of surgery.
2. Residents should develop good interpersonal skills with nurses, patients, and families.

### **Professionalism**

1. Demonstrate commitment to patient care and acquiring the necessary knowledge to successfully carry out the duties of a PGY 1 resident.
2. They are expected to attend general surgery and bariatric surgery clinics as assigned the equivalent of at least one full day a week.
3. Develop a working relationship with members of the bariatric surgery team in managing postoperative patients.

### **Systems-Based Practice**

1. Develop an appreciation of multi-disciplinary approaches to surgical patients by participating in multi-disciplinary outpatient and inpatient activities.
2. Presentation of patients in multidisciplinary patient management conferences.

### **PGY 2**

#### **Medical Knowledge**

1. Define the basic science principles of the alimentary tract and digestive system diseases to include:
  - a. Anatomy and biochemistry of the gastrointestinal (GI) tract
    - (1) Histology of alimentary tract, including differentiation of cell types

- (2) Anatomy of alimentary tract from esophagus to anus with emphasis on systemic blood supply, portal venous drainage, neural-endocrine axis, and lymphatic drainage
  - (3) Abdominal anatomy, explaining its relationship to lower thorax, retroperitoneum, and pelvic floor
  - (4) Mucosal transport, including mechanism of absorption of nutrients and water
  - (5) Sites of electrolyte and acid-base regulation
  - b. GI physiology
    - (1) Physiology of deglutition and phases of digestion
    - (2) Neuroendocrine control of GI secretion and motility
    - (3) Regional controls of mucosal secretion and absorption (neural and hormonal)
    - (4) Enterohepatic circulation
    - (5) Neuromuscular control of defecation
    - (6) Digestion of sugars, fats, proteins, vitamins, and cofactors
    - (7) Rates of mucosal turnover
    - (8) Nutritional needs of surgical patients
  - c. Normal bacterial flora and their concentrations in the upper and lower GI tract
  - d. Immunologic properties of the GI tract and how this barrier is affected by: trauma, sepsis, burns, malnutrition, and chronic disease
  - e. Principles of intestinal healing
    - (1) Normal GI tissue integrity and strength
    - (2) Effects of suturing and stapling techniques of the gut
2. Explain and give examples for the following aspects of gastrointestinal diseases:
- a. Infections inside and outside the GI tract from esophagus to anus, including the peritoneum
  - b. Acquired abnormalities of gut motility
  - c. Neoplasia of the GI tract
  - d. Ulceration of the proximal GI tract
  - e. Causes of GI obstruction
  - f. Causes of paralytic ileus
  - h. Causes of GI hemorrhage
  - i. Causes of GI perforation
  - j. Causes of abdominal abscess formation or secondary peritonitis
  - k. Short gut and malabsorptive conditions
  - l. Acute and chronic mesenteric ischemia
  - m. Portal hypertension and venous thrombosis
  - n. Inflammatory bowel diseases
  - o. Causes of an acute abdomen
  - p. Management of intestinal ostomies
  - q. Traumatic injury to abdominal viscera
3. Outline the essential characteristics of routine diagnostic evaluation of the alimentary tract, including:
- a. History
    - (1) Pain
    - (2) Nausea/emesis
    - (3) Bowel function
    - (4) Prior episodes
    - (5) Past surgical history
  - b. Physical examination:
    - (1) Inspection
    - (2) Auscultation

- (3) Percussion
  - (4) Palpation
  - c. Radiologic examinations, including:
    - (1) Barium swallow
    - (2) Upper GI Series with small bowel follow-through
    - (3) Enteroclysis
    - (4) Ultrasound
    - (5) Computerized Tomography
    - (6) Magnetic Resonance Imaging
    - (7) Barium enema
    - (8) Angiograms
    - (9) Nuclear scans for bleeding or to evaluate for Meckel's diverticulum
  - d. Fiberoptic endoscopy
  - e. Rigid anoscopy and sigmoidoscopy
  - f. Tests of GI function including:
    - (1) Manometry
    - (2) pH measurement
    - (3) Gastric analysis (basal and stimulated)
    - (4) Hormonal determinations
    - (5) Absorption
4. Summarize current medical management and its potential limitations; explain the role of surgical intervention when management fails in the following:
- a. Peptic ulcer disease
  - b. Esophageal varices
  - c. Upper and lower GI bleeding
  - d. Gastroparesis
  - e. Inflammatory bowel disease
  - f. Diverticulitis

### **Patient Care**

1. Evaluate emergency department or clinic patients who present with problems referable to the GI tract.
2. Serve as assistant to the primary surgeon during operations of the esophagus, stomach, small intestine, colon, and anorectum.
3. Perform less complicated surgical procedures such as:
  - a. Gastrostomy
  - b. Meckel's diverticulectomy
  - c. Appendectomy
  - d. Hemorrhoidectomy
  - e. Anal fissurectomy and fistulectomy
  - f. Incision and drainage of perirectal abscesses
4. Accept responsibility for (under the guidance of the chief resident and attending surgeon) the postoperative management of:

- a. Nasogastric tubes
  - b. Intestinal tubes
  - c. Intra-abdominal drains
  - d. Intestinal fistulas
  - e. Abdominal incisions (simple and complicated)
5. Evaluate and manage nutritional needs (enteral and parenteral) of surgical patients until normal GI function returns.
  6. Provide follow-up care to the surgical patient in the outpatient clinic or surgical office.

### **Practice Based Learning**

Familiarity with the literature regarding surgical management of conditions afflicting the minimally invasive surgery population including areas of controversy is also expected.

### **Interpersonal and Communication Skills**

3. The PGY 2 residents should instruct students about the preoperative and postoperative care of surgical patients and the principles of surgery.
4. Residents should develop good interpersonal skills with nurses, patients, and families.

### **Professionalism**

3. Demonstrate commitment to patient care and acquiring the necessary knowledge to successfully carry out the duties of a PGY 2 resident.
4. They are expected to attend general surgery and bariatric surgery clinics as assigned the equivalent of at least one full day a week.
3. Develop a working relationship with members of the bariatric surgery team in managing postoperative patients.

### **Systems-Based Practice**

3. Develop an appreciation of multi-disciplinary approaches to surgical patients by participating in multi-disciplinary outpatient and inpatient activities.
4. Presentation of patients in multidisciplinary patient management conferences.

## **PGY 4**

### **Medical Knowledge**

1. Diagram the laparoscopic anatomy of the abdomen including its viscera and anatomic spaces:
  - a. Musculoskeletal envelope (focus on the diaphragm, anterior abdominal wall and pelvis)
  - b. Lesser sac
  - c. Esophageal hiatus, anatomic and physiologic anti reflux barrier
  - d. Biliary Tree
  - e. Contents of the retroperitoneum
  - f. Major lymph node groups and their drainage

2. Explain absorption and secretory functions of the peritoneal surfaces and the diaphragm.
3. Describe the anatomy of the omentum and its role in responding to inflammatory processes.
4. Assess the following signs associated with the acute abdomen and describe their pathophysiology:
  - a. Referred pain
  - b. Rebound tenderness
  - c. Guarding
  - d. Rigidity
5. Specify characteristics of the history, physical examination findings, and mechanism of visceral and somatic pain for the following processes:
  - a. Acute appendicitis
  - b. Bowel obstruction
  - c. Perforated ulcer
  - d. Ureteral colic
  - e. Diffuse peritonitis
  - f. Anastomotic leak
6. Explain the mechanism of referred pain in:
  - a. Ruptured spleen
  - b. Biliary colic
  - c. Basilar pneumonia
  - d. Renal colic
  - e. Anastomotic leak
  - f. Pancreatitis
  - g. Inguinal hernia
7. Discuss the following causes of paralytic ileus:
  - a. Postoperative electrolyte imbalance
  - b. Retroperitoneal pathology
  - c. Trauma
  - d. Extrapertoneal disease (central nervous system, lung)
8. Illustrate use of the following diagnostic studies in the work up of each process in #6 and #7 above:
  - a. Plain x-rays
  - b. Contrast gastrointestinal (GI) studies
  - c. Ultrasound
  - d. Computed axial tomography (CAT)
  - e. Biliary studies
  - f. Renal studies
9. When considering the possibility of wound complications:
  - a. What are the risk factors for abdominal wound infection?
  - b. What are the contributing factors for abdominal wound dehiscence and evisceration?
  - c. What are the usual clinical presentations?
  - d. What is the incidence of wound infection in surgeries involving the biliary tree, upper GI tract, and colon?
  - e. What is the treatment and surgical management of the above?
  - f. Describe current local and national initiatives with respect to surgical site infections.

10. Identify the anatomic locations for the following intra-abdominal abscesses; name disease process(es) associated with each:
  - a. Left subphrenic space
  - b. Right subphrenic space
  - c. Subhepatic space
  - d. Lesser sac
  - e. Interloop
  - f. Pelvis
  - g. Left paracolic gutter
  - h. Right paracolic gutter
  - i. Psoas muscle
  
11. Differentiate between the conditions favoring percutaneous drainage versus operative drainage for each of the abscesses in #11. Describe the safest and most effective approach using each technique.
  
12. Differentiate between the following intestinal fistulas and the organs to which they most often communicate:
  - a. Esophageal
  - b. Gastric
  - c. Enteric (including duodenal)
  - d. Colonic
  - e. Biliary
  
13. Explain the formation of fistulas in each of the following disease processes or factors:
  - a. Operative complications (bowel injury with abscess formation)
  - b. Inflammatory bowel disease
  - c. Acute pancreatitis
  - d. Foreign body or prosthetic material
  - e. Malignancy
  - f. Radiation
  
14. Explain the role of a fistulogram in the diagnosis of intra-abdominal fistulas and abscesses.
  
15. Assess the factors that prevent healing of a fistula.
  
16. Summarize the conditions favoring operative versus non-operative treatment for the fistulas in #14.
  
17. Describe the anatomy, clinical presentation, and complications of non-operative management for:
  - a. Direct, indirect, inguinal, and femoral
  - b. Sliding hiatal
  - c. Paraesophageal
  - d. Ventral
  - e. Umbilical
  - f. Spigelian
  - g. Paraduodenal
  - h. Obturator
  - i. Lumbar

- j. Parastomal
  - k. Diaphragmatic
    - (1) Posterolateral (Bochdalek)
    - (2) Anterior (Morgagni)
    - (3) Traumatic
  - l. Internal
  - m. Petit
18. Define a Richter's hernia and describe its clinical presentation.
  19. Define a sliding hernia and describe its repair.
  20. Differentiate between *incarceration* and *strangulation*.
  21. Discuss the classification of inguinal hernias.
  22. Discuss current indications for repair and the role of non-operative therapy.
  23. Discuss hernia complications
    - a. seroma
    - b. pain syndromes
    - c. recurrence
    - d. mesh migration/shrinkage
    - e. bowel injury and fistula
    - f. wound infection
    - g. mesh infection
  24. Discuss fixation options and prosthetics for hernia repairs.
  24. Explain and give examples for the aspects of surgically treated diseases of the spleen and adrenal glands.
  25. Discuss the evaluation of a kidney donor.

### **Patient Care**

1. Perform, record, and report complete patient evaluation and assessment.
2. Evaluate and diagnose the acute abdomen.
3. Serve as primary surgeon (under the guidance of the attending surgeon) with complex abdominal wall hernia repairs, demonstrating an understanding of the anatomy, pathophysiology and surgical repair using biologic prosthetics.
4. Serve as primary surgeon (under the guidance of the attending surgeon) with laparoscopic hernia repairs of diaphragm, esophageal hiatus, anterior abdominal wall, inguinal region, demonstrating an understanding of the laparoscopic anatomy, biologic and synthetic prosthetics, and surgical repair.
5. Serve as primary surgeon (under the guidance of the attending surgeon) with laparoscopic solid organ surgery.
  - a. Evaluate and treat diseases of the spleen requiring splenectomy.

- b. Evaluate and treat diseases of the adrenal glands requiring adrenalectomy.
  - c. Evaluate and define patients appropriate for kidney donation. Assist in and participate in nephrectomy for organ donation.
6. Interpret the following in coordination with attending radiologists and staff:
- a. Acute abdominal series (identify free air, small bowel obstruction, ileus, colonic pseudo-obstruction, volvulus; the presence of ascites, atelectasis vs. pneumonia)
  - b. Upper GI series
  - c. Barium enema (identify neoplasms, signs of ischemia)
  - d. Abdominal ultrasound and CT scans
  - e. MRI of the abdomen and pelvis
  - f. Nuclear imaging of the alimentary tract and biliary tree
7. Evaluate and institute management of abdominal wound problems, including:
- a. Infection
  - b. Evisceration
  - c. Seroma
  - d. Hematoma
  - e. Fasciitis
  - f. Dehiscence
  - g. Hernia recurrence
  - h. Fistula
8. Coordinate pre- and post- operative care for the patient with the acute abdomen.
9. Institute drainage for abdominal wall fistula and protection of surrounding structures, especially skin.
10. Preoperative Considerations
- a. Develop proficiency with the function, safety and trouble shooting of the laparoscopic and operating room equipment including:
    - (1) Operating room table
    - (2) Gas Supply
    - (3) Suction devices
    - (4) Video console and camera
    - (5) Light source
    - (6) Electro surgery devices for dissection and coagulation
    - (7) Ultrasonic devices for dissection and coagulation
    - (8) Laser devices for ablation of cholelithiasis and choledocholithiasis
    - (9) Fluoroscopy
  - b. Evaluate and optimize the video image patient relationship, patient positioning, and ancillary equipment in preparation for laparoscopic surgery
  - c. Evaluate appropriate candidates for laparoscopic surgery based on prior surgical and medical histories, prior history of abdominal or pelvic radiation, and other factors comprising safe access into the abdomen or chest, establishment of a pneumoperitoneum, or wound healing.
  - d. Define the basic science principles of the physiology of Pneumoperitoneum including the chemical, mechanical, immunologic, and oncologic properties. Identify alternate gases for use during laparoscopy.

## 11. Intraoperative Considerations

- a. Evaluate and manage the appropriate type of anesthetic, use of preoperative antibiotics, and patient positioning. Always begin a procedure with a “time out”.
- b. Perform and safely establish the trocar placement and pneumoperitoneum through established techniques including:
  - (1) Veres needle access
  - (2) Trocar introduction via Hassan’s technique
  - (3) Use of direct visualization trocars for entry into the operative space
  - (4) Placement secondary trocars under direct vision
- c. Appropriately place trocars based on planned procedure.
- d. Evaluate and manage appropriate strategies for exiting the abdomen including visualization of trocar sites prior to desufflation and internal versus external closure of port site fascial defects.

## 12. Basic Laparoscopic Procedures

- a. Perform a diagnostic laparoscopy and appropriately inspect and explore the contents of the abdomen and pelvis including adhesionolysis.
- b. Perform biopsies as needed to make a pathologic diagnosis.
- c. Perform laparoscopic suturing as evaluated by successful completion of the following steps:
  - (1) Needle positioning and handling
  - (2) Suture technique and set up
  - (3) Site stabilization
  - (4) Extracorporeal and intra corporeal tying
- d. Evaluate and manage intraoperative hemorrhage and obtain hemostasis using clips, cautery, hemostatic agents, or ultrasonic dissection.
- e. Place or reposition peritoneal dialysis access catheters in appropriate position.

## 13. Postoperative Care and Complications

- a. Accept responsibility for (under the guidance of the attending surgeon) the postoperative management of all laparoscopic surgery patients.
- b. Evaluate and diagnose injuries as a result of access and surgical injuries.
- c. Evaluate and diagnose injuries as a result of pneumoperitoneum.
- d. Evaluate and diagnose procedural complications.

### **Practice Based Learning**

Familiarity with the literature regarding surgical management of conditions afflicting the minimally invasive surgery population including areas of controversy is also expected.

### **Interpersonal and Communication Skills**

5. The PGY 4 residents should instruct students about the preoperative and postoperative care of surgical patients and the principles of surgery.
6. Residents should develop good interpersonal skills with nurses, patients, and families.

### **Professionalism**

5. Demonstrate commitment to patient care and acquiring the necessary knowledge to successfully carry out the duties of a PGY 4 resident.

6. They are expected to attend general surgery and bariatric surgery clinics as assigned the equivalent of at least one full day a week.
3. Develop a working relationship with members of the bariatric surgery team in managing postoperative patients.

### **Systems-Based Practice**

5. Develop an appreciation of multi-disciplinary approaches to surgical patients by participating in multi-disciplinary outpatient and inpatient activities.
6. Presentation of patients in multidisciplinary patient management conferences.

## **PGY 5**

### **Medical Knowledge**

1. Define the basic science principles of the alimentary tract and digestive system diseases to include:
  - a. Anatomy and biochemistry of the gastrointestinal (GI) tract
    - (1) Histology of alimentary tract, including differentiation of cell types
    - (2) Anatomy of alimentary tract from esophagus to anus with emphasis on systemic blood supply, portal venous drainage, neural-endocrine axis, and lymphatic drainage
    - (3) Abdominal anatomy, explaining its relationship to lower thorax, retroperitoneum, and pelvic floor
    - (4) Mucosal transport, including mechanism of absorption of nutrients and water
    - (5) Sites of electrolyte and acid-base regulation
  - b. GI physiology
    - (1) Physiology of deglutition and phases of digestion
    - (2) Neuroendocrine control of GI secretion and motility
    - (3) Regional controls of mucosal secretion and absorption (neural and hormonal)
    - (4) Enterohepatic circulation
    - (5) Neuromuscular control of defecation
    - (6) Digestion of sugars, fats, proteins, vitamins, and cofactors
    - (7) Rates of mucosal turnover
    - (8) Nutritional needs of surgical patients
  - c. Normal bacterial flora and their concentrations in the upper and lower GI tract
  - d. Immunologic properties of the GI tract and how this barrier is affected by: trauma, sepsis, burns, malnutrition, and chronic disease
  - e. Principles of intestinal healing
    - (1) Normal GI tissue integrity and strength
    - (2) Effects of suturing and stapling techniques of the gut
2. Explain and give examples for the following aspects of gastrointestinal diseases:
  - a. Infections inside and outside the GI tract from esophagus to anus, including the peritoneum
  - b. Acquired abnormalities of gut motility
  - c. Neoplasia of the GI tract
  - d. Ulceration of the proximal GI tract

- e. Causes of GI obstruction
  - f. Causes of paralytic ileus
  - g. Causes of GI hemorrhage
  - h. Causes of GI perforation
  - i. Causes of abdominal abscess formation or secondary peritonitis
  - j. Short gut and malabsorptive conditions
  - k. Management of surgical complications after bariatric surgery
    - (1) Perioperative complications
    - (2) Long term complications
  - l. Acute and chronic mesenteric ischemia
  - m. Inflammatory bowel diseases
  - n. Causes of an acute abdomen
  - o. Management of intestinal ostomies
  - p. Traumatic injury to abdominal viscera
3. Outline the essential characteristics of routine diagnostic evaluation of the alimentary tract, including:
- a. History
    - (1) Pain
    - (2) Nausea/emesis
    - (3) Bowel function
    - (4) Prior episodes
    - (5) Past surgical history
  - b. Physical examination:
    - (1) Inspection
    - (2) Auscultation
    - (3) Percussion
    - (4) Palpation
  - c. Radiologic examinations, including:
    - (1) Barium swallow
    - (2) Upper GI Series with small bowel follow-through
    - (3) Enteroclysis
    - (4) Ultrasound
    - (5) Computerized Tomography
    - (6) Magnetic Resonance Imaging
    - (7) Barium enema
    - (8) Angiograms
    - (9) Nuclear scans for bleeding or to evaluate for Meckel's diverticulum
  - d. Fiberoptic endoscopy
  - e. Rigid anoscopy and sigmoidoscopy
  - f. Tests of GI function including:
    - (1) Manometry
    - (2) pH measurement
    - (3) Gastric analysis (basal and stimulated)
    - (4) Hormonal determinations
    - (5) Absorption
  - g. Serologic and pathologic determinants of infection
4. Summarize current medical management and its potential limitations; explain the role of surgical intervention when management fails in the following:
- a. Peptic ulcer disease

- b. Esophageal varices
  - c. Upper and lower GI bleeding
  - d. Gastroparesis
  - e. Inflammatory bowel disease
  - f. Diverticulitis
  - g. Morbid obesity
  - f. Gastro-esophageal reflux disease
  - h. Acute and chronic malnutrition
5. Discuss the patient preparation for colon surgery and requirements for adequate oncologic resection.

### **Patient Care**

1. Evaluate emergency department or clinic patients who present with problems referable to the GI or Biliary tract.
2. Interpret the following in coordination with attending radiologists and staff:
  - a. Acute abdominal series (identify free air, small bowel obstruction, ileus, colonic pseudo-obstruction, volvulus; the presence of ascites, atelectasis vs. pneumonia)
  - b. Upper GI series
  - c. Barium enema (identify neoplasms, signs of ischemia)
  - d. Abdominal ultrasound
  - e. CT scans of the abdomen and pelvis
  - f. MRI of the abdomen and pelvis
  - g. Nuclear imaging of the alimentary tract and biliary tree
3. Serve as the primary surgeon during operations of the esophagus, stomach, biliary tract, small intestine, and colon. Assist the junior residents with operations of the anorectum.
4. Perform open or laparoscopic surgical procedures such as:
  - a. Esophagectomy
  - b. Esophageal diverticula
  - c. Complete or partial funduplications
  - d. Heller Myotomy
  - e. Vagotomy
  - f. Gastrojejunostomy for obstruction
  - g. Gastrorrhaphy for perforation
  - h. Feeding access
  - i. Roux-en-Y Gastric Bypass
  - j. Gastrectomy
  - k. Cholecystectomy, cholangiogram and common bile duct exploration.
    - (1) Evaluate and treat common bile duct injuries.
    - (2) Evaluate and treat bile leaks.
  - l. Enterectomy with or without primary anastomosis or enterostomy
  - m. Colectomy with or without primary anastomosis or colostomy
  - n. Colostomy or enterostomy closure
  - o. Assist junior residents with:
    - (1) Gastrostomy
    - (2) Meckel's diverticulectomy
    - (3) Appendectomy
    - (4) Hemorrhoidectomy

- (5) Anal fissurectomy and fistulectomy
  - (6) Incision and drainage of perirectal abscesses
5. Perform laparoscopy for staging for malignancy and perform palliative bypasses (i.e. cholecystojejunostomy or gastrojejunostomy) as needed.
6. Accept responsibility for (under the guidance of the attending surgeon) the postoperative management of:
- a. Nasogastric tubes
  - b. Intestinal tubes
  - c. Intra-abdominal drains
  - d. Intestinal fistulas
  - e. Abdominal incisions (simple and complicated)
7. Evaluate and institute management of complications related to 3, including:
- a. Intra-abdominal Abscess
  - b. Ileus
  - c. Anastomotic disruption
  - d. Bleeding
  - e. Pulmonary complications
  - f. Abdominal sepsis
8. Evaluate and manage nutritional needs (enteral and parenteral) of surgical patients until normal GI function returns.
9. Provide follow-up care to the surgical patient in the outpatient clinic or surgical office.
10. Preoperative Considerations
- a. Develop proficiency with the function, safety and trouble shooting of the laparoscopic and operating room equipment including:
    - (1) Operating room table
    - (2) Gas Supply
    - (3) Suction devices
    - (4) Video console and camera
    - (5) Light source
    - (6) Electro surgery devices for dissection and coagulation
    - (7) Ultrasonic devices for dissection and coagulation
    - (8) Laser devices for ablation of cholelithiasis and choledocholithiasis
    - (9) Fluoroscopy
  - b. Evaluate and optimize the video image patient relationship, patient positioning, and ancillary equipment in preparation for laparoscopic surgery
  - c. Evaluate appropriate candidates for laparoscopic surgery based on prior surgical and medical histories, prior history of abdominal or pelvic radiation, and other factors comprising safe access into the abdomen or chest, establishment of a pneumoperitoneum, or wound healing.
  - d. Define the basic science principles of the physiology of Pneumoperitoneum including the chemical, mechanical, immunologic, and oncologic properties. Identify alternate gases for use during laparoscopy.

## 11. Intraoperative Considerations

- a. Evaluate and manage the appropriate type of anesthetic, use of preoperative antibiotics, and patient positioning. Always begin a procedure with a “time out”.
- b. Perform and safely establish the trocar placement and pneumoperitoneum through established techniques including:
  - (1) Veres needle access
  - (2) Trocar introduction via Hassan’s technique
  - (3) Use of direct visualization trocars for entry into the operative space
  - (4) Placement secondary trocars under direct vision
- c. Appropriately place trocars based on planned procedure.
- d. Evaluate and manage appropriate strategies for exiting the abdomen including visualization of trocar sites prior to desufflation and internal versus external closure of port site fascial defects.

## 12. Basic Laparoscopic Procedures

- a. Perform a diagnostic laparoscopy and appropriately inspect and explore the contents of the abdomen and pelvis including adhesionolysis.
- b. Perform biopsies as needed to make a pathologic diagnosis.
- c. Perform laparoscopic suturing as evaluated by successful completion of the following steps:
  - (1) Needle positioning and handling
  - (2) Suture technique and set up
  - (3) Site stabilization
  - (4) Extracorporeal and intra corporeal tying
- d. Evaluate and manage intraoperative hemorrhage and obtain hemostasis using clips, cautery, hemostatic agents, or ultrasonic dissection.
- e. Place or reposition peritoneal dialysis access catheters in appropriate position.

## 13. Postoperative Care and Complications

- a. Accept responsibility for (under the guidance of the attending surgeon) the postoperative management of all laparoscopic surgery patients.
- b. Evaluate and diagnose injuries as a result of access and surgical injuries.
- c. Evaluate and diagnose injuries as a result of pneumoperitoneum.
- d. Evaluate and diagnose procedural complications.

### **Practice Based Learning**

Familiarity with the literature regarding surgical management of conditions afflicting the minimally invasive surgery population including areas of controversy is also expected.

### **Interpersonal and Communication Skills**

7. The PGY 5 residents should instruct students about the preoperative and postoperative care of surgical patients and the principles of surgery.
8. Residents should develop good interpersonal skills with nurses, patients, and families.

### **Professionalism**

7. Demonstrate commitment to patient care and acquiring the necessary knowledge to successfully carry out the duties of a PGY 5 resident.

8. They are expected to attend general surgery and bariatric surgery clinics as assigned the equivalent of at least one full day a week.
3. Develop a working relationship with members of the bariatric surgery team in managing postoperative patients.

**Systems-Based Practice**

7. Develop an appreciation of multi-disciplinary approaches to surgical patients by participating in multi-disciplinary outpatient and inpatient activities.
8. Presentation of patients in multidisciplinary patient management conferences.