COLON AND RECTAL SURGERY FELLOWSHIP
Program Curriculum

Saint Vincent Health System
Minimally Invasive Colorectal Surgery
Resident should be able to:
1. Discuss physiologic impact of pneumoperitoneum
2. Discuss port site placement theory
3. Discuss pros and cons of laparoscopy vs. open surgery
4. Discuss COST/COLOR trials
5. Discuss learning curve for lap colectomies
6. Discuss issue of port site recurrence
7. Discuss complications specific to laparoscopic surgery
8. Discuss laparoscopic ultrasound for liver assessment
9. Discuss hand assisted laparoscopy
10. Discuss Single Incision Lap Surgery (SILS)
11. Discuss NOTES literature pertaining to colon surgery

Fundamentals of Anorectal Physiology and Testing
Resident should be able to:
1. Understand the intrinsic and extrinsic neurohumoral controls of anorectal function
2. Understand current means for assessment of anorectal function
3. Appreciate the limitations of current physiologic measurements in predicting anorectal function
4. Discuss reflex arcs pertinent to anorectal testing

Anorectal and Colon Anatomy, Embryology, Malrotation
Resident should be able to:
1. Understand the embryologic development of the colon, rectum and anus
2. Understand the normal anatomy of the colon, rectum and anus and common variations thereof
3. Understand pathologic anatomy of congenital anorectal malformations and associated congenital defects
4. Understand anatomy of bowel malrotation
5. Understand clinical presentation, diagnostic and therapeutic approaches to malrotation

Colon Physiology, Irritable Bowel Syndrome
Resident should be able to:
1. Understand current concepts in neurobiochemical control of colonic motility
2. Understand fluid and electrolyte shifts in the colon
3. Understand pharmacology of gut transit time modifying agents
4. Understand prevalence, epidemiology and presentation of disorders of colonic motility
5. Understand cost-effective work-up of patient with IBS symptoms
6. Assess impact of colonic physiologic and psychiatric studies on the diagnosis and management of IBS
7. Understand therapeutic approach to IBS
8. Understand internationally accepted diagnostic criteria for IBS

Anal Fissures, Anal Stenosis, Perirectal Sepsis
Resident should be able to:
1. Understand the clinical presentation of anal fissures and recognize atypical features suggestive of extra-anal disease
2. Understand current knowledge concerning pathophysiology as it has evolved from observations and physiologic testing
3. Understand use of NO suppliers, botulinum toxin, Ca channel blocker for “chemical sphincterotomy”
4. Understand indications for surgery, evolution of procedures and relative risk profiles
**Hemorrhoidal Disease, Rectal Varices**

Resident should be able to:

1. Understand the evolution of concepts regarding etiology of hemorrhoids
2. Understand contribution of anorectal physiologic testing to that understanding
3. Understand classification of hemorrhoids and treatment options
4. Understand distinction between rectal varices and internal hemorrhoids; treatment for varices
5. Compare RBL, IRC, injection, excision, PPH, hemorrhoid artery ligation procedures

**Fistula in Ano**

Resident should be able to:

1. Understand the anatomy of the anal crypts and evidence suggesting cryptoglandular origin
2. Understand anatomy of perirectal spaces re: sepsis
3. Understand microbiology and management of various syndromes of fulminating sepsis
4. Understand perianal abscesses in infants
5. Understand the pros and cons of primary fistulotomy at time of abscess drainage with specific reference to the literature
6. Understand use of draining and cutting setons
7. Understand application of mucosal advancement for fistulas
8. Understand impact of anal ultrasound on management
9. Understand use of fibrin glue/collagen plug for fistulas
10. Understand LIFT procedure
11. Understand approach to fistulas in IBD

**Rectal Prolapse, Colitis Cystica Profunda, SRUS**

Resident should be able to:

1. Understand epidemiology and etiology of true rectal prolapse as defined clinically and radiographically
2. Appreciate coincident incontinence and allied abnormal parameters
3. Understand concept of internal prolapse
4. Understand and compare all major abdominal, perineal and laparoscopic approaches to prolapse, especially relative to recurrence rate and impact on continence
5. Understand procedure-specific post-operative functional expectations regarding continence, rectal capacitance and constipation
6. Understand disorders believed to be associated with rectal prolapse, e.g. colitis cystica profunda and solitary rectal ulcer syndrome

**Constipation: Evaluation and Management**

Resident should be able to:

1. Understand gradation and various definitions of constipation/colonic inertia
2. Understand new primary medical diagnosis that can manifest as new onset constipation
3. Understand spectrum of etiologies of constipation
4. Understand various components of constipation (i.e. slow-transit, anismus, non-relaxing PR, rectocele, etc.)
5. Discuss results/complications of surgery for constipation (e.g. resection, IPAA, levator sectioning)
6. Discuss role of biofeedback for dyschezia
7. Distinguish constipation from obstructed defecation syndrome
8. Discuss role of STARR for ODS
9. Discuss pediatric surgical management of severe constipation
Sexually Transmitted Diseases, Surgery in HIV+ Patients

Resident should be able to:
1. Understand STDs affecting colon, rectum and anus; prevalence, clinical presentation, appearance, diagnostics and specific therapy (exclude condyloma)
2. Understand infections of particular concern in HIV+ patients and impact of HIV status on management
3. Contrast preHAART versus postHAART medication impact on surgical evaluation and treatment for AIN and SCC

Tumors of the Retrorectal Space

Resident should be able to:
1. Understand the precise definition of the retrorectal space
2. Understand traditional classification of retrorectal tumors
3. Understand approach to differential diagnosis and therapy of congenital lesions (chordoma, dermoid, teratoma, meningocoele), neurogenic lesions, osseous lesions, sarcomas, carcinoid, metastatic lesions
4. Understand principles of selecting an operative approach to tumor excision

C Difficile, Infectious, Diversionary Colitis

Resident should be able to:
1. Understand the evolution of understanding of antibiotic-associated diarrhea and colitis: epidemiology and pathogenesis
2. Understand the various presentations of antibiotic-associated colitides including natural history, spontaneous remission, toxic dilatation and carrier state
3. Understand advantages and limitations of available tests for C Difficile
4. Understand therapy of C Difficile, particularly in patient who is NPO and patient with persistent or recurrent C Difficile
5. Understand key distinguishing features of common infectious colitides and enterocolitides, precautions and management
6. Understand nutrition of the colonocyte and etiology, diagnosis and management of diversion colitis

Precancer, Cancer Anal Canal and Anal Margin

Resident shall be able to:
1. Understand the role of HPV in anogenital neoplasia
2. Identify high and low-risk HPV strains
3. Discuss HPV immunization
4. Outline issues regarding management of anorectal intraepithelial neoplasia (AIN) (how aggressive?)
5. Understand the significance of anatomic distinction between anal canal and anal margin cancer
6. Understand histopathologic appearance of anal cancers
7. Understand clinical staging of anal canal cancer
8. Understand utility of anal pap smears and high resolution anoscopy
9. Understand techniques and results of surgery for anal canal cancer in the “Pre-Nigro” era – routes of spread, approach to inguinal nodes, etc.
10. Understand impact of radiation and chemoradiation on the management of anal canal cancer – surgeon’s role
11. Understand current concepts of salvage chemotherapy for recurrent anal canal cancer
12. Discuss role of inguinal lymph node surgery
13. Understand management of tumors anal margin
14. Understand gross and pathologic appearance of Bowen’s Disease, Paget’s Disease, BCE etc.
15. Understand treatments of Bowen and Paget’s disease
**Pilonidal Disease, Hidradenitis, Wound Healing**

Resident shall be able to:

1. Discuss evidence for competing views of etiology of pilonidal disease
2. Discuss surgical options for simple Pilonidal disease
3. Discuss options for advanced Pilonidal disease
4. Discuss etiology of Hidradenitis Suppurativa
5. Discuss differential diagnosis of HS
6. Discuss medical and surgical options for HS
7. Discuss surgical option for extensive HS
8. Discuss current concepts of wound healing

**Incontinence: Evaluation and Therapy**

Resident shall be able to:

1. Appreciate the incidence, presentation and classification of severity of incontinence, including FISI, CCIS and FIQL
2. Identify common etiologies of fecal incontinence and association with stress GU incontinence
3. Understand early and late impact of obstetric trauma on continence
4. Discuss technique and results of repair of obstetric tears and physiologic correlates
5. Discuss evaluation and repair of RV fistulae
6. Discuss impact of pharmacologic and physiologic management for incontinence (biofeedback, sacral nerve stimulation)
7. Understand goals and results of various approaches including stimulated neosphincter, artificial sphincter, anterior or posterior anal repair, Secca procedure

**Massive Gastrointestinal Hemorrhage**

Resident shall be able to:

1. Understand attempts to define “massive”
2. Understand angioanatomy of vascular ectasias of colon
3. Understand angioarchitecture of diverticular bleeding
4. Compare likely bleeding sites and function of patient age
5. Discuss evolution of management of massive hemorrhage and impact of angiography, nuclear scanning and urgent colonoscopy on the surgeon’s role; particularly endoscopic options for management
6. Understand management of chronic blood loss in renal failure
7. Understand approach to non-bleeding vascular ectasias found at colonoscopy
8. Understand syndromes of congenital vascular lesions
9. Understand incidence of hemorrhoidal bleeding causing persistent iron deficiency anemia
10. Understand subsequent evaluation of patients after initial self-limited, unlocalized massive LGI bleeding

**Inflammatory Bowel Disease: Etiology, Epidemiology**

Resident shall be able to:

1. Understand early observations, theories and treatments for IBD
2. Trace epidemiologic trends in IBD
3. Explain current understanding of the genetics and molecular basis of IBD
4. Outline evidence for microbiologic, autoimmune and allergic etiologies of IBD
5. Describe current understanding of inflammatory process in IBD: UC vs. Crohn’s; pANCA vs. ASCA; and Prometheus testing
IBD: Natural History, Medical Management, Ca Risk
Resident shall be able to:
1. Discuss clinical aspects of initial presentation of UC/CD
2. Understand definition of “fulminant colitis” and “Toxic Megacolon”
3. Understand relative frequency of anatomic distributions of CD
4. Discuss modes of action and side effects of IBD medications
5. Discuss medical management of UC including disease limited to distal large bowel
6. Discuss medical management of CD, role of immunosuppressive and biological therapy, including side effect/risk profile
7. Trace understanding of cancer risk in UC, CD and reliability of current screening protocols
8. Discuss post-op suppressive medical therapy after surgical intervention

Extraintestinal Manifestations IBD, IBD in pregnancy
Resident shall be able to:
1. Describe extraintestinal manifestations of IBD noting association with UC vs. CD and response to bowel resection
2. Describe sclerosing cholangitis, surveillance for and prescription options for cholangiocarcinoma; relation PSC to CA in UC
3. Describe impact of IBD and its treatment on male and female fertility and fecundity
4. Describe impact of pregnancy on course of IBD
5. Describe pharmacologic considerations in management of IBD in pregnancy and postpartum in regard to breastfeeding
6. Address GI toxicity of NSAIDS and treatment options for arthropathy in IBD

Evolution Surgery for UC
Resident shall be able to:
1. Understand the evolution of and potential problems associated with total proctocolectomy and Brooke ileostomy
2. Understand surgical options for fulminating colitis and toxic megacolon
3. Explain the functional results of colectomy with IRA for UC
4. Describe the technique of Kock Pouch creation along with complications, current indications
5. Describe the historic evolution and technical aspects of various forms of ileal pouch along with functional results as measured by physiologic studies
6. Describe presentation and management of complications of pouch surgery
7. Discuss management of pouch fistulas
8. Describe the role of pouch surgery for “indeterminate” colitis, Crohn’s Disease
9. Describe long-term change in pouch mucosa; cancer risk
10. Understand issues associated with pouch dysplasia/metaplasia

Surgical Principles in Crohn’s Disease
Resident will be able to:
1. Describe the natural history of the preanastomotic ileum as it relates to recurrence of Crohn’s Disease (CD)
2. Discuss what features of surgical margin correlate with recurrence of CD after resection
3. Describe indications for and technique of strictureplasty for Crohn’s Disease
4. Describe surgical approach to duodenal Crohn’s, internal fistulae
5. Describe management of anal Crohn’s particularly in reference to “watering can anus”
6. Discuss recurrence rate and pattern after resection and ileorectal anastomosis for Crohn’s
7. Discuss status of pharmacologic measures offered to prevent recurrence after resection
Colorectal and Anal Trauma
Resident should be able to:
1. Understand the evolution of concepts regarding primary repair of colonic and rectal injuries
2. Outline maneuvers important to management of rectal trauma
3. Understand management of rectal foreign body
4. Understand approach to endoscopic perforation

Colorectal Cancer: Etiology, Epidemiology, Screening
Resident shall be able to:
1. Outline epidemiologic evidence addressing colorectal cancer prevalence, possible environmental factors, association with polyps
2. Compare the literature regarding polyp-cancer sequence vs. carcinoma in the flat mucosa
3. Understand emerging screening tools
4. Discuss staging systems for colorectal cancer
5. Discuss status of chemoprevention, chromoendoscopy and narrow band imaging

Genetics of CRC; HNPCC
Resident shall be able to:
1. Discuss fundamentals of CRC oncogenesis
2. Discuss in detail the syndrome of HNPCC, genetics, significance of microsatellite instability
3. Discuss surgical management, family counseling and screening in HNPCC; screening in young children
4. Understand theory and practice of genetic testing

Polyposis Syndromes
Resident shall be able to:
1. Address the elucidation of genes associated with FAP
2. Discuss in detail the FAP syndromes
3. Discuss concept of attenuated Polyposis
4. Discuss surgical management of FAP
5. Discuss current status of screening for FAP
6. Discuss other Polyposis syndromes (with photos)
7. Discuss extracolonic manifestations

Anatomic Consideration Pelvic Dissection for CRC
Resident shall be able to:
1. Describe the pelvic fascia and presacral venous circulation
2. Describe the surgical anatomy of pelvic autonomic nerves
3. Discuss postoperative defects associated with pelvic nerve injury
4. Explain sites of potential urologic injury and repair options
5. Discuss management of presacral bleeding
6. Describe surgical anatomy germane to hysterectomy
7. Understand flaps available for perineal reconstruction
8. Outline surgical principles of posterior and transanal approaches to the rectum
9. Discuss in detail status of local treatment of rectal cancer including Transanal excision, Transanal Endoscopic Microsurgery (TEMS), and role of adjuvant therapy
Evolution of Sphincter-Sparing Surgery Rectal Cancer
  Resident shall be able to:
  1. Discuss principles embodied in the Miles Operation
  2. Trace evolution of understanding of surgical margins in rectal cancer
  3. Discuss status of coloanal procedures including colon pouch and coloplasty
  4. Understand significance of the mesorectum and radial margin to local recurrence
  5. Discuss results of Total Mesorectal Excision (TME) on local recurrence and survival
  6. Discuss functional results of rectal resection and anorectal physiologic correlates
  7. Discuss status of research re: “sphincter” reconstruction after APR

Diagnosis and Management Recurrent CRC
  Resident shall be able to:
  1. Discuss strategies for cancer surveillance follow-up schedules after curative resection
  2. Discuss management of lung mets, synchronous lung/liver mets
  3. Update status of markers for predicting recurrence
  4. Compare imaging modalities in detection of recurrence (including RIGS, PET) and impact on salvage surgery
  5. Discuss management of liver metastases: resection, cryotherapy, radiofrequency ablation, infusional chemotherapy
  6. Discuss factors predicting cure after resection
  7. Discuss anatomic considerations and results for exenteration for recurrence

Adjuvant and Neoadjuvant Rx for CRC
  Resident shall be able to:
  1. Understand patterns of failure in colorectal cancer
  2. Outline fundamental biology of radiation Rx and complications (early and late)
  3. Discuss incidence of XRT complications
  4. Discuss mechanism of action of chemotherapy
  5. Discuss evolution of RT, CRT pre/postop for rectal cancer
  6. Discuss place of chemotherapy in management of colon cancer
  7. Discuss incidence of chemo complications
  8. Cite basics of ongoing trials of significance
  9. Identify growth factor antagonists and other adjuvant modalities

Diverticular Disease
  Resident shall be able to:
  1. Discuss etiology of diverticular disease
  2. Discuss severity classification of diverticulitis
  3. Discuss interventional radiologic and surgical strategies for diverticulitis
  4. Discuss diagnosis and management of fistulas in diverticulitis
  5. Discuss cecal diverticulitis
  6. Discuss impact of NSAIDs, immunocompromise and renal failure on vulnerability to diverticulitis
  7. Discuss risk of recurrent left-sided diverticulitis after surgical resection
  8. Discuss theoretical/research foundation for elective sigmoid resection
**Hirschsprung's Disease**
Resident shall be able to:
1. Understand incidence, pathogenesis and presentations of congenital aganglionosis – relation to extent of segment
2. Understand spectrum of initial presentation, approach to enterocolitis and technique of initial urgent surgical management
3. Understand physiologic, radiographic and histologic findings and impact on management
4. Discuss diagnostic modalities and limitations
5. Discuss approaches to definitive surgery with complications and results
6. Understand management of residual defecatory problems
7. Discuss evidence pro and con the existence of “ultrashort segment” Hirschsprung’s Disease
8. Discuss Adult syndrome of hypoganglionosis

**Intestinal Pseudo-Obstruction, Volvulus, Colonic Dysmotility**
Resident shall be able to:
1. Discuss presentation of colonic and small intestinal pseudo-obstruction syndromes
2. Discuss etiologies proposed for pseudo-obstruction
3. Discuss diagnostic and therapeutic approach – pharmacologic and surgical
4. Discuss presentation, diagnosis and therapy for Volvulus: sigmoid, cecal and less common sites
5. Discuss use of neostigmine and its contraindications for colonic pseudoobstruction

**Ischemic Colitis**
Resident shall be able to:
1. Compare clinical features of mesenteric ischemia with ischemic colitis
2. Describe vascular anatomy of colon and anastomotic arcades
3. Anticipate potential ischemic syndromes after aneurysm resection and after colorectal resection
4. Relate natural history of ischemic colitis and implications for management
5. Characterize ischemia seen in runners, in cocaine users and after massive trauma

**Miscellaneous Tumors Colon and Rectum**
Resident shall be able to:
1. Discuss pathology and differential pathologic diagnosis of lymphoma, GIST, melanoma, carcinoid, and other less common tumors of colon, rectum and anus
2. Discuss clinical features, natural history and treatment of above tumors

**Endometriosis Surgical Evaluation & Management**
Resident shall be able to:
1. Discuss grading system for severity of disease
2. Discuss indications for colorectal surgery
3. Discuss pre-operative evaluation
4. Discuss common post-operative complications of operative treatment

**Rectocele, Enterocele, Sigmoidocele and Pelvic Organ Prolapse**
Resident shall be able to:
1. Discuss anatomic relations and grading systems for pelvic floor defects
2. Discuss preoperative evaluation
3. Discuss surgical approaches to repair
4. Discuss post-operative functional expectations and recurrence risks