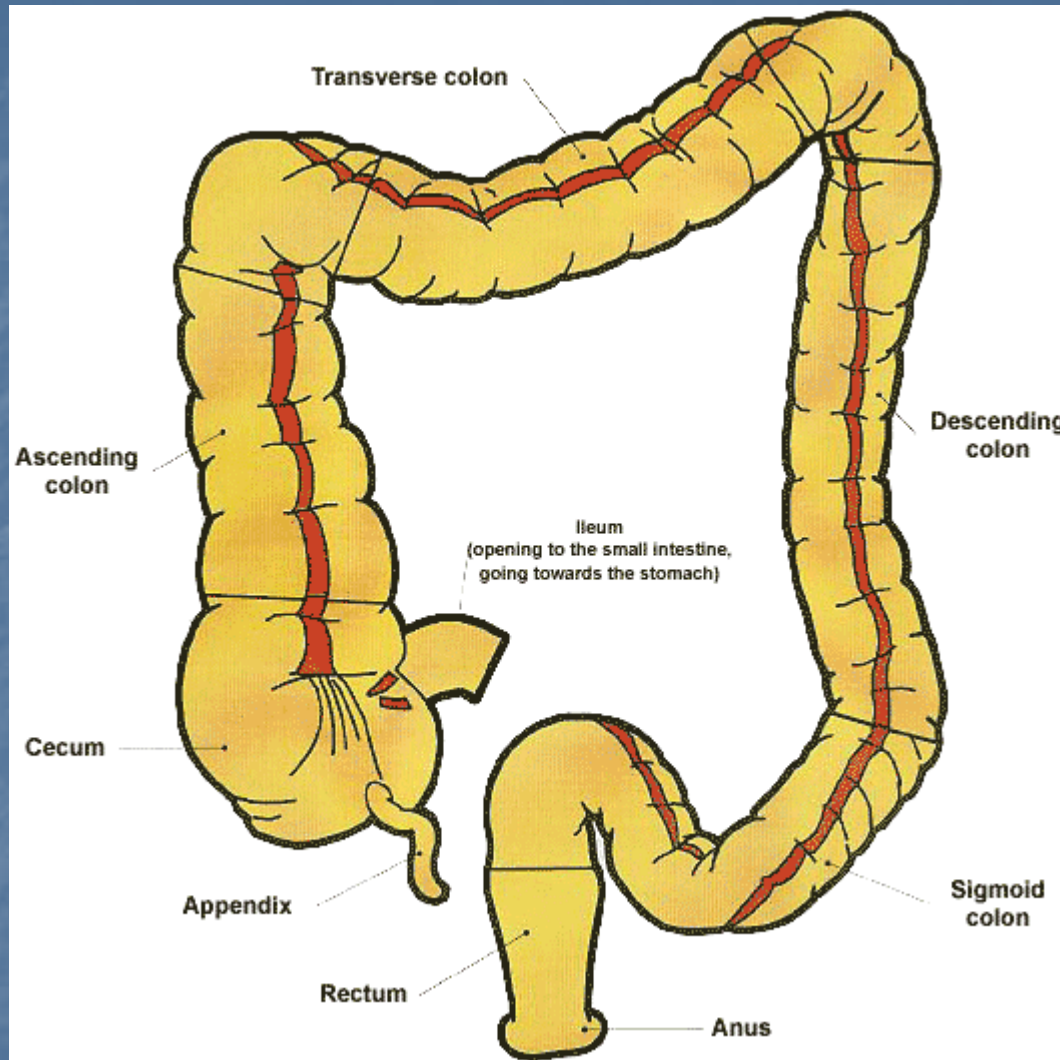


Colon, Rectum, and Anus

South College PA Surgical Course

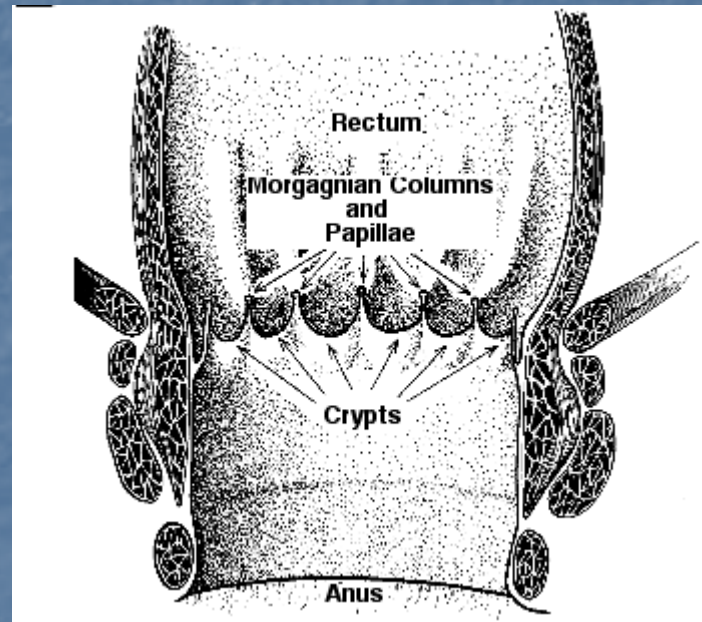
Colon and Rectum

- Terminal portion of GI tract
- Two functions
 - Absorption of water, electrolytes
 - Storage of feces
- Biologically not essential
- Disease is very common



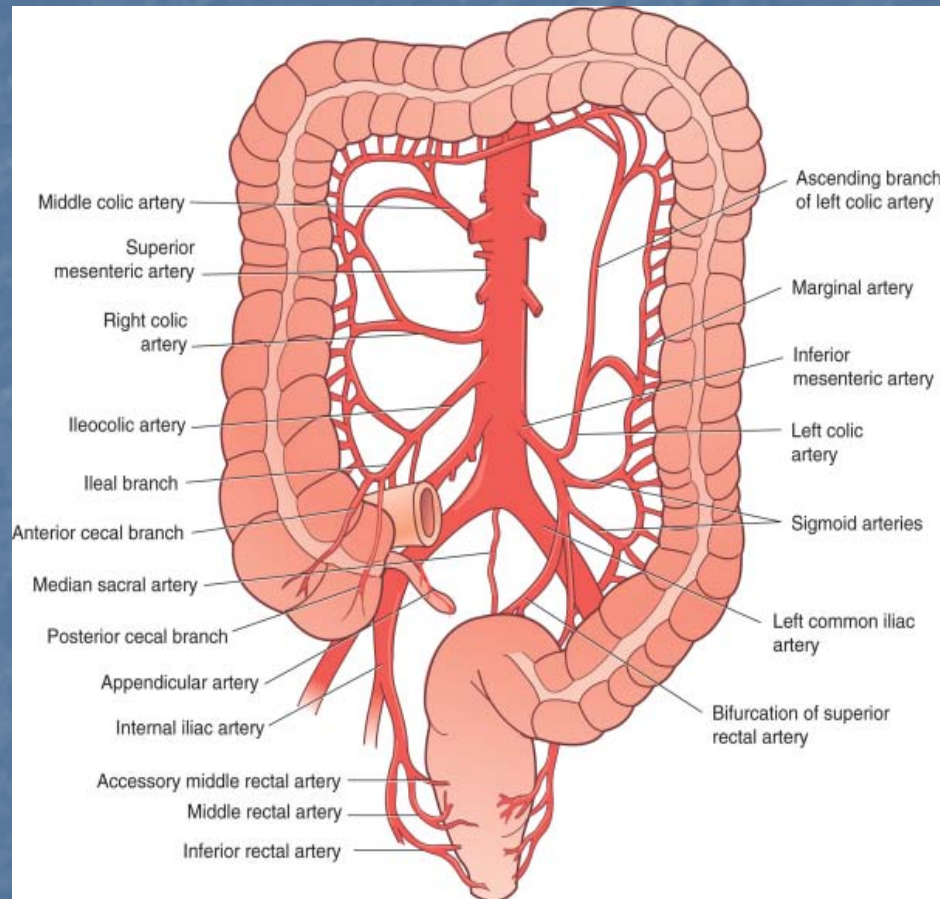
Anatomy

- Multiple parts
- Retroperitoneal and peritoneal portions
- External longitudinal muscle layers—teniae coli
- Rectum—15 cm, external layer continuous
- Anus—3-4 cm from dentate line to anal verge
- Above dentate line--insensate



Anatomy

- Blood supply to colon from superior and inferior mesenteric arteries
- Junction—relatively poor blood supply
- Rectum—three sources—IMA, internal iliac, internal pudendal
- Venous drainage of rectum to IMV/portal and to systemic circulation
- Connected by venous cushions--rrhoids

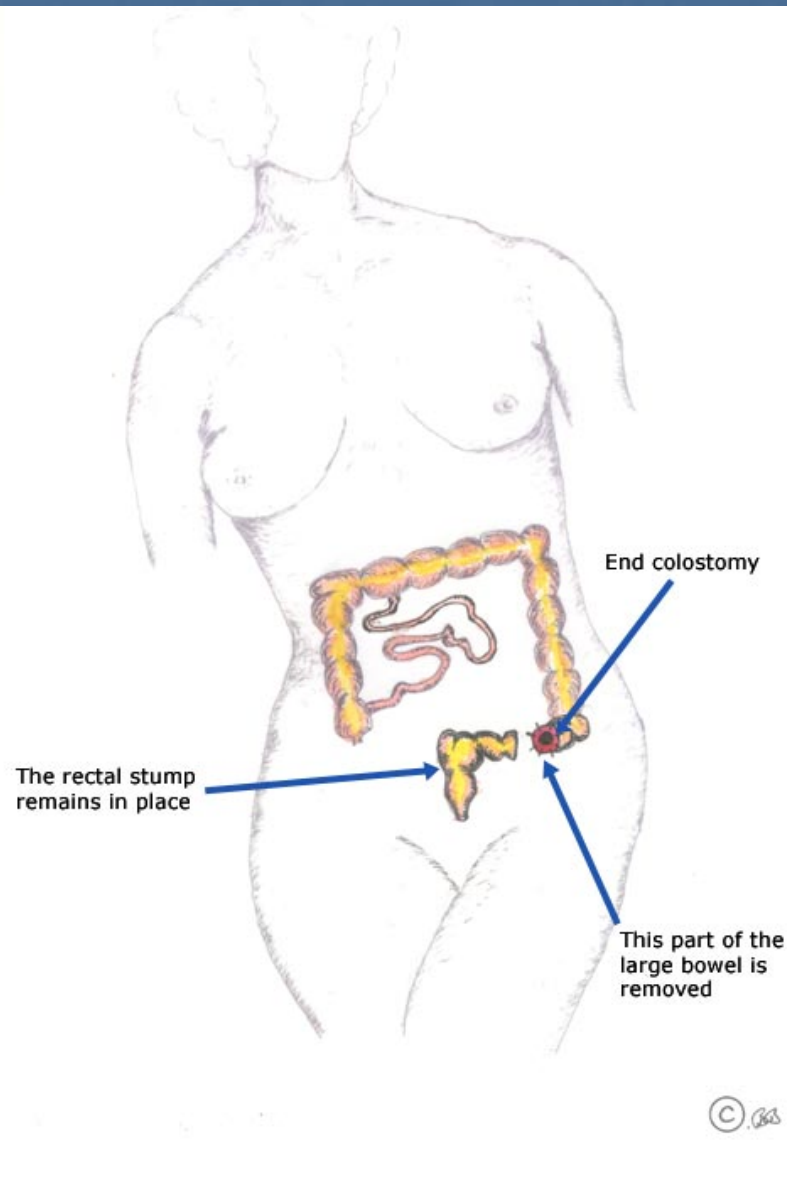


Diagnosis

- Digital rectal exam
- Endoscopy—routine after 50, q 3-5 years
- Abdominal series—pneumoperitoneum, obstruction, volvulus
- Contrast studies
- CT scan
- Angiography/nuclear study

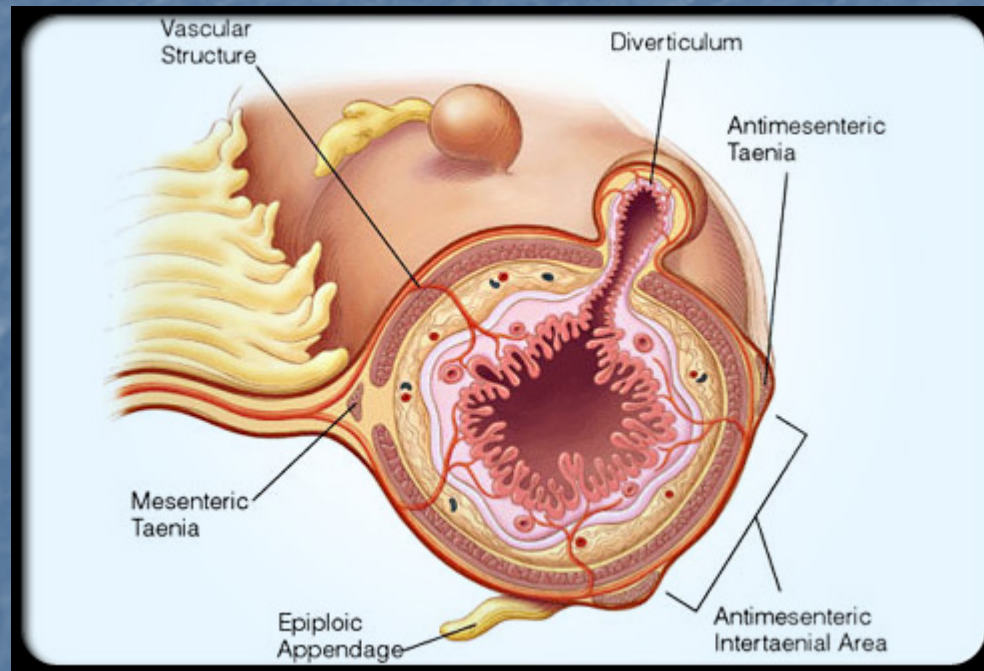
Terminology

- Ostomy—external opening
 - Colostomy, ileostomy
- Distal segment
 - Mucus fistula, Hartmann's pouch, loop
- -ectomy—resection
 - Colectomy, proctocolectomy, abdominoperineal resection (APR), low anterior resection



Diverticular Disease

- True diverticula—all layers, rare in colon
- Acquired (false or pseudo-) diverticula—mucosal herniation through muscle
 - Related to diet, straining, age
- Diverticulosis—presence of diverticula
- Diverticulitis—infectious process



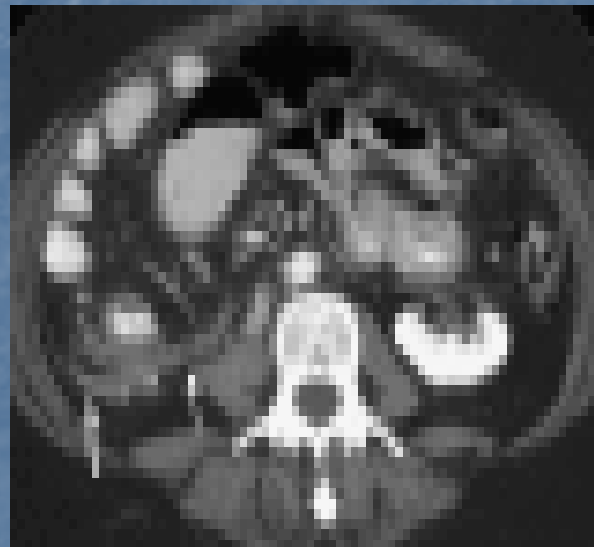
Diverticulosis

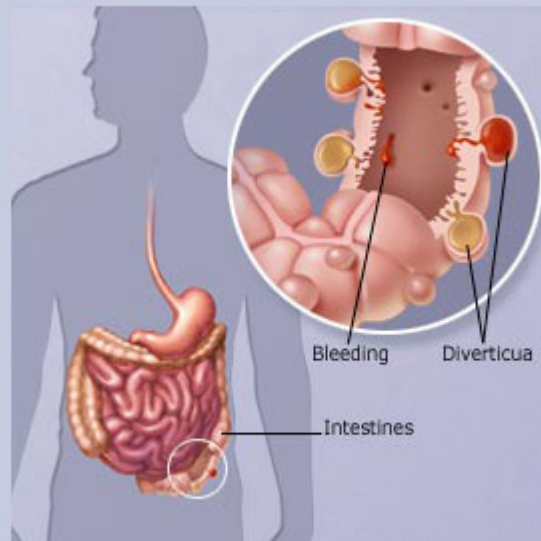
- Multiple false diverticula of colon
- Most commonly in sigmoid
- 80% asymptomatic finding on BE, other study
- Symptoms—LLQ pain, change in bowel habits, bleeding
- Treatment—high fiber diet



Diverticulitis

- Obstructed, infected diverticula
- Micro or macro perforation
- 1/6 of patients with –osis will have –itis
- Pain, change in bowel habits, possible mass, fever, white count, peritoneal signs
- Complications—44% perf or abscess, 8% fistula, 4% obstruction
- Diagnosis—CT, BE, scope later
- Treatment—antibiotics, hydration, NPO
- Surgery for severe complication or repeated bouts





Fistula formation

- Colovesical most common (4%)
 - UTI, fecaluria, pneumaturia
 - Other causes—cancer, Crohn's, radiation, trauma
- Diagnosis—contrast—BE, cysto, IVP, methylene blue
- Treatment--surgical



Diverticular Bleeding

- Bleeding primary symptom in 5-10%
- Occasionally massive (>4 units in 24 hours)
- Bleeding distal to Ligament of Treitz—70% diverticular, 25% is massive
- Differential—angiodysplasia, solitary ulcers, varices, cancer, rarely IBD
- Diagnosis—endoscopy, angio

Colonic Polyps

- Inflammatory polyps (pseudopolyps)—IBD
- Hamartomas (juvenile polyps, Peutz-Jehgers syndrome)—benign, may regress
- Adenomas—premalignant, esp. >2-3 cm
 - Tubular-7%, tubulovillous-20%, villous-33%
- Pedunculated—on stalk, remove by scope
- Sessile (flat)-remove surgically
- Familial polyposis or Gardner's syndrome—total abdominal colectomy, mucosal proctectomy, ileoanal pullthrough

Colon Cancer

- 55,000 deaths annually
- 140,000 new cases each year
- More occur on lower left side?
- Synchronous (simultaneous) in 5%
- Metachronous (second develops after resection) in 3-5%
- Peak at 70, start in 4th decade
- Familial polyposis, Gardner's, UC, Crohn's, polyps

Colon Cancer

- 5 year survival—60%
- Effective screening
- Effective screening strategies, based on risk
 - Mild risk factors—age, diet, physical inactivity, obesity, smoking, race, alcohol
 - Intermediate risk factors—personal history of colon cancer or adenoma or strong family history
 - High risk factors—familial polyposis, Gardner's, patients with UC or Crohn's for > 10 years

Screening—Mild Risk

- Beginning at age 50, one of below:
 - Yearly fecal occult blood test plus flexible sigmoidoscopy q 5 years
 - Flex sig q 5 years
 - Yearly fecal occult blood test
 - Colonoscopy q 10 years
 - Double contrast BE q 5 years

Screening—Greater Risk

- Intermediate risk
 - Begin at 40
 - Do more frequently—q 3-5 years
- High risk—function of duration
 - Blood tests for familial polyposis, HNPCC
 - Screening begin in teens
 - UC/Crohn's for 10 years, annual colonoscopy
 - Consider prophylactic total colectomy

Colon Cancer—Signs and Symptoms

- Right-sided—occult blood loss, anemia
- Left-sided—obstruction, macro bleeding
- Rectal—bleeding, obstruction, alternating diarrhea and constipation
- Change in bowel habits and/or bleeding:
 - Rectal exam, occult blood test
 - BE or colonoscopy

Colon Cancer—Preop Evaluation

- Colonoscopy—synchronous lesions
- CT-- + or –
- CEA blood test
- Treatment—surgery to remove primary, evaluate extent of spread, allow staging and plan further therapy

Colon Cancer--Staging

- Dukes-Astler-Coller System
- TMN Staging
- Both evaluate extent of penetration through colon, nodal involvement, and distal mets
- Adjuvant chemotherapy—5FU, others
- Radiation, especially in pelvis

Staging

AJCC/TNM	Dukes	Astler-Coller
0		
I	A	A, B1
IIA	B	B2
IIB	B	B3
IIIA	C	C1
IIIB	C	C2, C3
IIIC	C	C1, C2, C3
IV		D

Colon Cancer--Followup

- Curative resection, no adjuvant therapy indicated
 - Monthly exam, bimonthly CEA, scope or BE q 6 months for first two years
 - PET scan
 - CT scans

IBD—Ulcerative Colitis

- Mucosa and submucosa of colon and rectum
- Bimodal distribution—2/3 occur at 15-30, remainder at 55
- 10/100,000 population
- Family history in 20%
- Rectum involved in >90% with proximal extension

Ulcerative Colitis

- Presentation—variable
 - Watery diarrhea with blood, pus, mucus
 - Cramping, abdominal pain, tenesmus, urgency
 - Weight loss, dehydration, pain, fever
 - Fulminant—toxic megacolon, sepsis, shock
 - Extraintestinal signs: ankylosing spondylitis, peripheral arthritis, uveitis, pyoderma gangrenosum, sclerosing cholangitis, pericholangitis, pericarditis
 - Complications: toxic megacolon, colon perforation, massive hemorrhage, anorectal complication, cancer

IBD—Crohn's Disease

- Transmural disease, anywhere in GI tract
- Minority—limited to colorectal
- Also bimodal distribution
- Commonly in terminal ileum
- Differs from UC: rectal sparing, skip lesions, aphthous sores, linear ulcers

Colon Obstruction

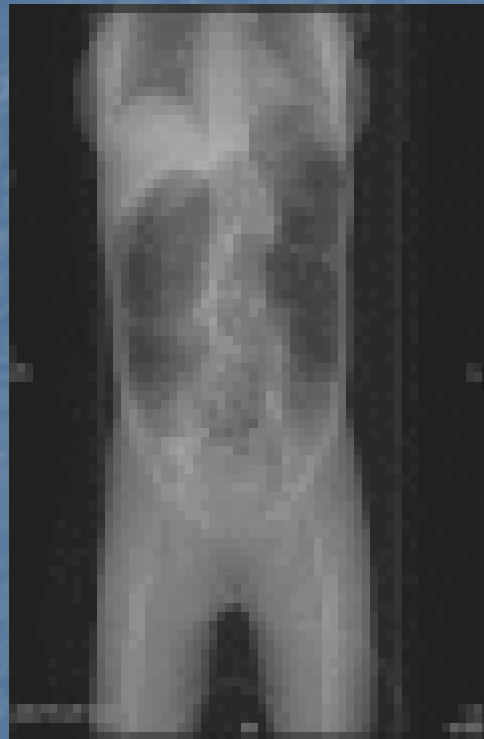
- 10-15% of intestinal obstructions
- Most commonly sigmoid
- Adenocarcinoma—65%, diverticulitis scarring—20%, volvulus—5%
- Inflammatory disorders, benign tumors, foreign bodies, fecal impaction
- Adhesive bands—rare in colon

Colon Obstruction

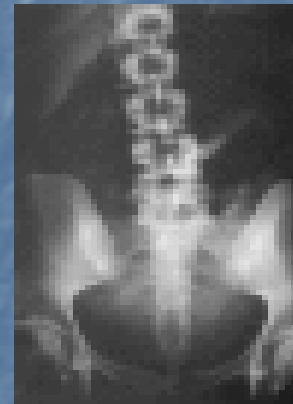
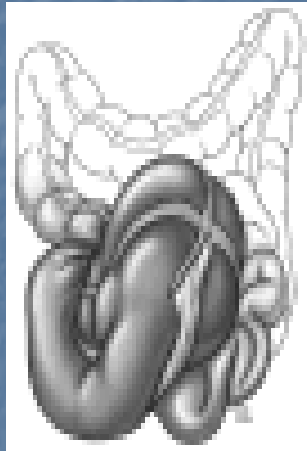
- Presentation—abdominal distention, cramping abdominal pain, nausea and vomiting, obstipation
- Radiographs—distended proximal colon, air-fluid levels, no rectal air
- Barium enema or scope may define area of obstruction
- IV fluids, NPO, NG suction
- Emergent lap for cecum > 12 cm or peritoneal signs

Colon Obstruction

- Ogilvie's syndrome—nonobstructive dilation
- Volvulus—rotation on axis of mesentery
 - 5-10% of large bowel obstructions
 - Sigmoid—70%
 - Cecal—30%
- More common in elderly



Cecal Volvulus



Sigmoid Volvulus

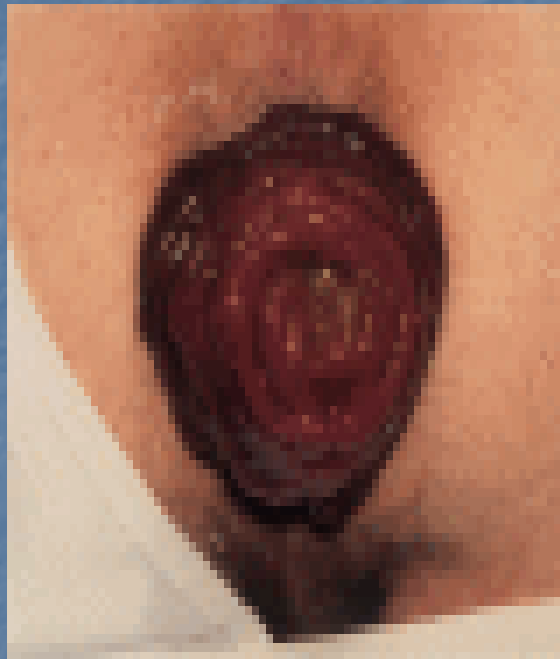


Anus and rectum

- Pain, protrusion, bleeding, discharge
- Everyone complains of hemorrhoids
- Must examine, but be gentle
- Inspection—fissures, skin tags, hemorrhoids, fistulae, tumors, dermatologic or infectious conditions
- Digital exam—tumors, polyps, sphincter weakness

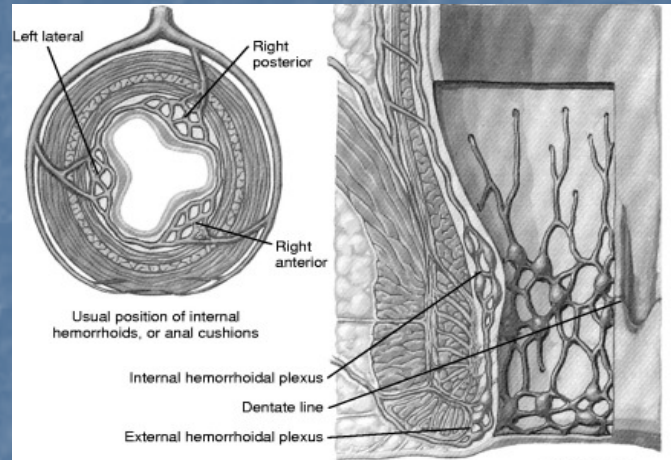
Rectal Prolapse

- Procidentia
- Full thickness intussusception of rectum through anal opening
- More common in thin women
- Symptoms—rectal pain, mild bleeding, incontinence, mucous discharge, moisture

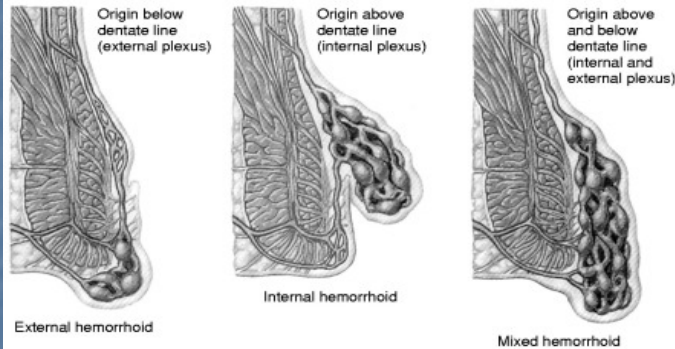


Hemorrhoids

- Precipitated by constipation, straining, pregnancy, increased pelvic pressure (ascites, tumor), portal hypertension, diarrhea
- Found in 3 positions: left lateral, right anterior, right posterior
- Internal—above dentate line, external below



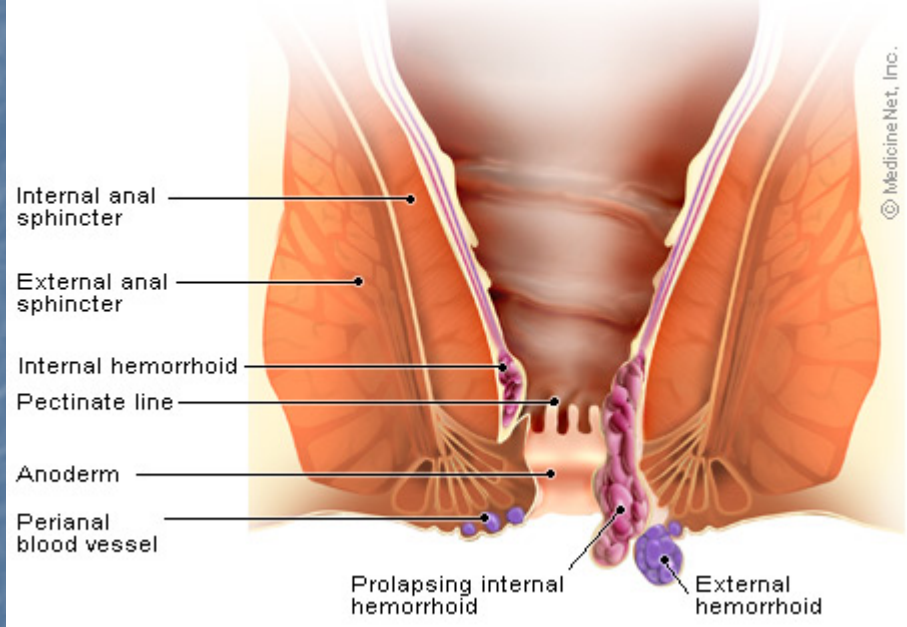
Types of hemorrhoids

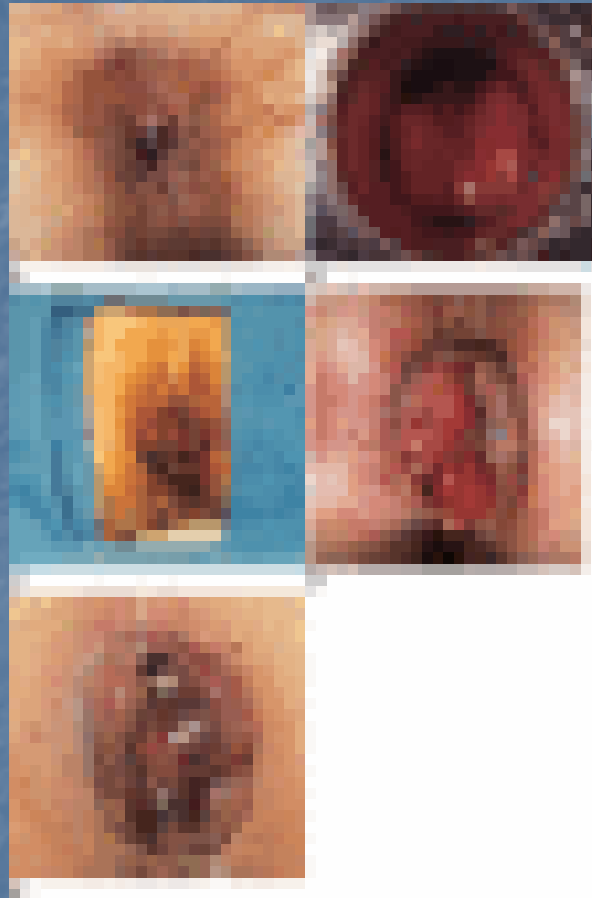


Hemorrhoids

- Presentation—protrusion, bleeding, pain
- Protrusion—4 degrees, 1st don't, 2nd do with stool, then reduce, 3rd must be reduced, 4th won't reduce
- Bleeding usually minimal, coats stool
- Pain with thrombosis, ulcer, gangrene

Formation of hemorrhoids





Pain in the -

- Perianal or perirectal abscesses—pain, fever, swelling
- Fistula-in-ano—connection between anus and skin—chronically drain pus
- Anal fissures—most common cause of anorectal pain
 - Linear tears in lining of anal canal
 - Worse with defecation
 - Sphincter spasm

Other Anorectal Conditions

- Anal malignancy—3-4% of colorectal CA
 - Epidermoid CA or malignant melanoma
- STD's—anal condyloma (HPV), Chlamydia and lymphogranuloma venereum, gonorrhea, herpes simplex