



Diverticular Disease

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Diverticular Disease

Terminology

- Diverticular Disease: presence of symptomatic diverticula
- Diverticulosis: Diverticula without inflammation
- Diverticulitis: Inflammation and infection associated with diverticula
- False Diverticula: Herniation of mucosa and muscularis mucosa through intestinal wall, usually acquired
- True Diverticula: Comprise all layers of bowel wall, usually congenital



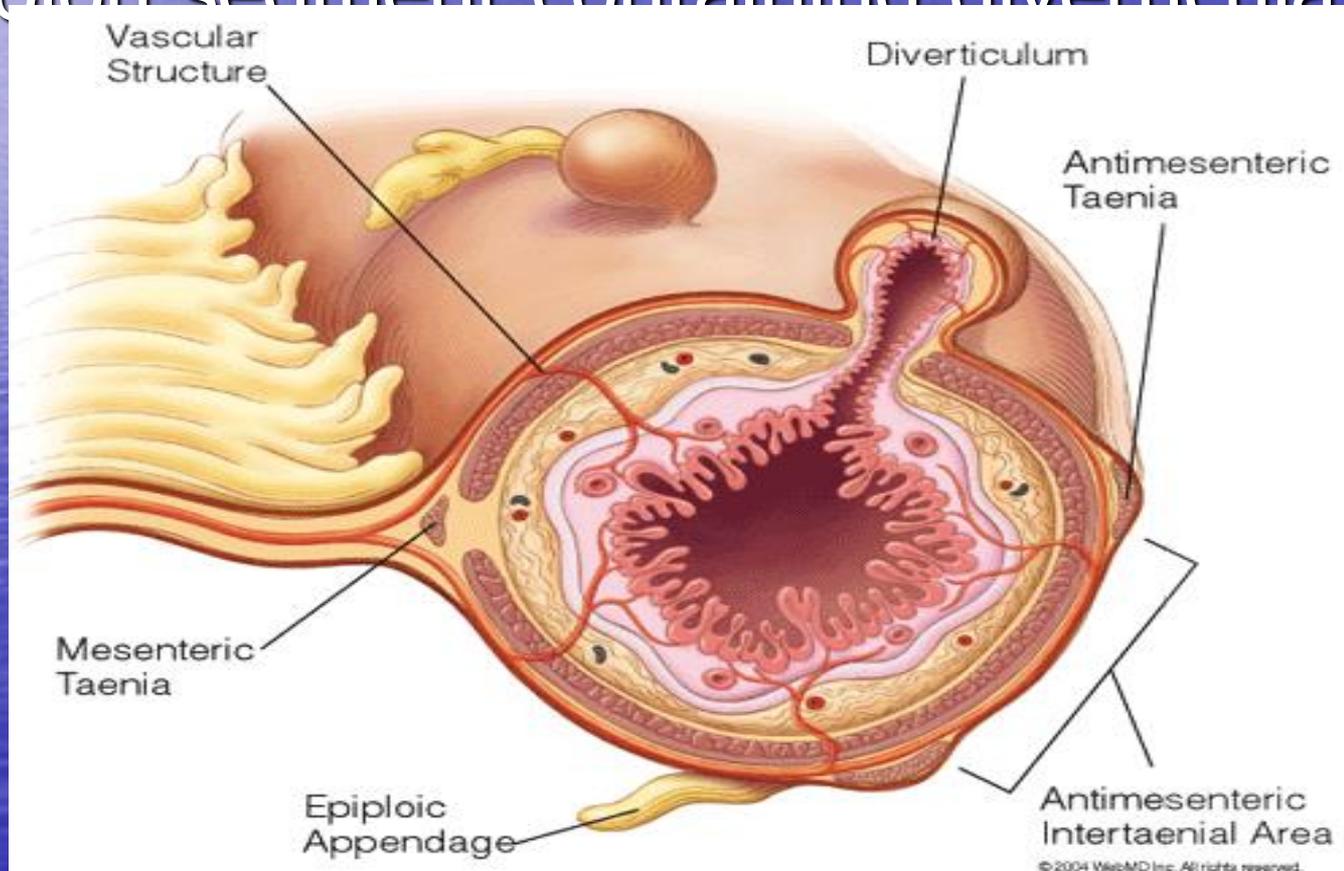
Diverticular Disease

Epidemiology

- Most colonic diverticula are false diverticula
- Occur between the teniae coli, at points where the main blood vessels penetrate the colonic wall.
- They are thought to be pulsion due to high intraluminal pressure
- Diverticulosis is very common in USA & Europe
- Sigmoid colon is the most common site of diverticulosis

Diverticular Disease

- Colon segment containing diverticula





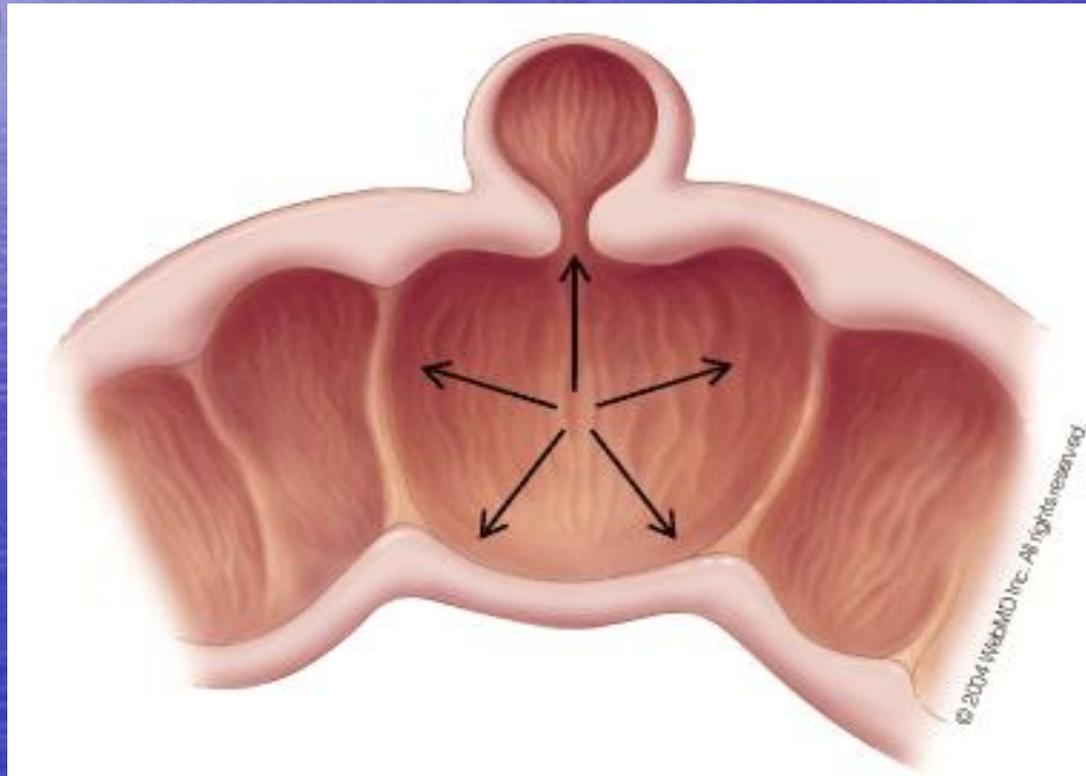
Diverticular Disease

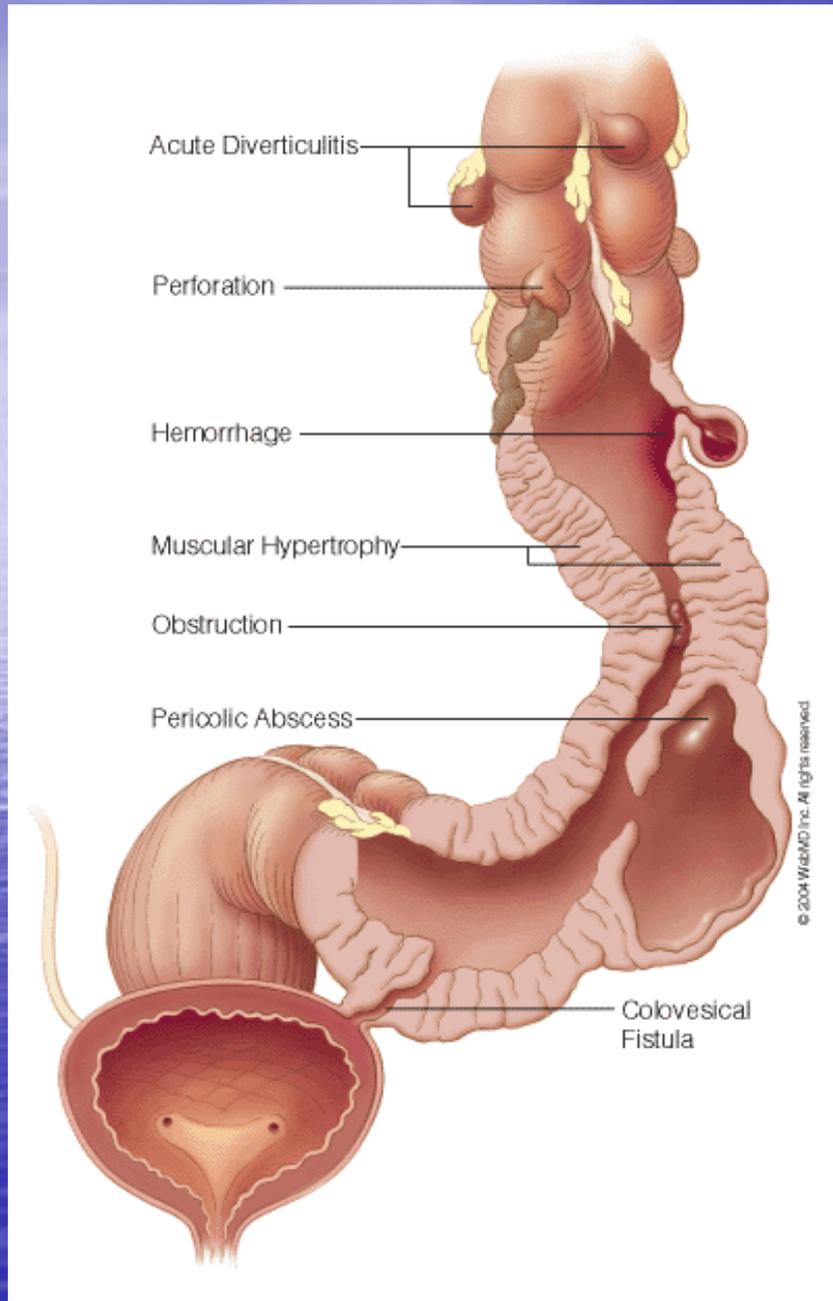
Etiology

- Poorly understood
- The most accepted theory is that lack of dietary fiber results in smaller stool volume, requiring high intraluminal pressure and high colonic wall tension for propulsion
- Chronic contraction results in muscular hypertrophy and pulsion diverticula
- High fiber diet decrease the incidence
- Most cases are asymptomatic, complication in minority

Diverticular Disease

- Schematic representation: segmentation in the colon





- Major complications



Diverticular Disease

Inflammatory Complications (Diverticulitis)

- Occur in 10 – 25% of patients with diverticulosis
- Peridiverticular and pericolic infection results from a perforation (either macroscopic or microscopic) of a diverticulum
- The spectrum of disease ranges from mild , uncomplicated diverticulitis to free perforation and diffuse peritonitis



Diverticular Disease

Inflammatory Complications (Diverticulitis)

Presentation & Investigation

- Left sided abdominal pain
- With / out fever
- Mass may be present
- Leukocytosis
- Plain abdominal x-ray can show free intra-abdominal air
- CT scan of abdomen can show peri-colic inflammation, phlegmon or abscess
- Contrast enema and colonoscopy are relatively contraindicated because of the risk of perforation



Diverticular Disease

Inflammatory Complications (Diverticulitis)

Uncomplicated Diverticulitis

- Mild, treat with broad spectrum antibiotics for 7 – 10 days , with low residue diet (outpatient)
- Severe, treat by admission to hospital and parenteral antibiotics
- Failure to respond may suggest abscess formation which can be drained percutaneous



Diverticular Disease

Inflammatory Complications (Diverticulitis)

Uncomplicated Diverticulitis

- Elective sigmoid resection is indicated after the second episode of diverticulitis
- Indicated after first episode in the very young and in the immunosuppressed or after the first episode of complicated diverticulitis
- After resolution of the acute episode (after 4 – 6 weeks), sigmoidoscopy or colonoscopy indicated to R/O malignancy

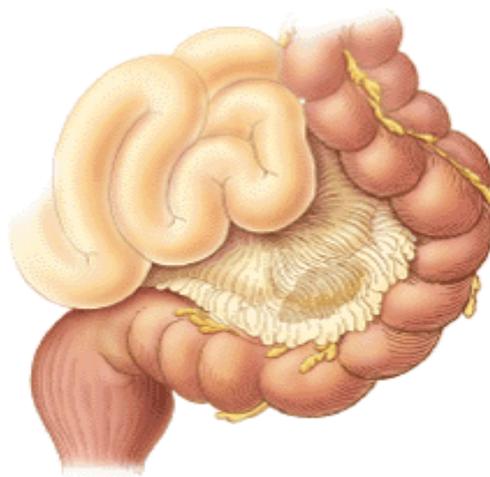


Diverticular Disease

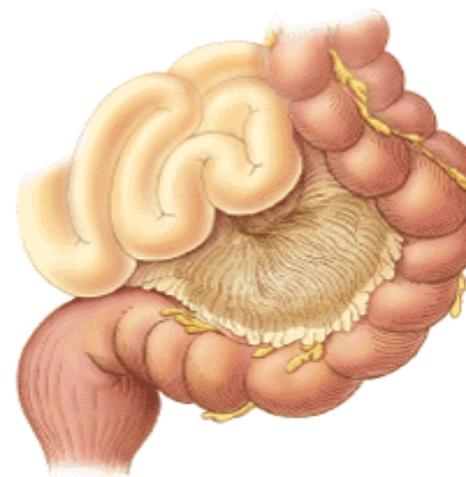
Inflammatory Complications (Diverticulitis)

Complicated Diverticulitis

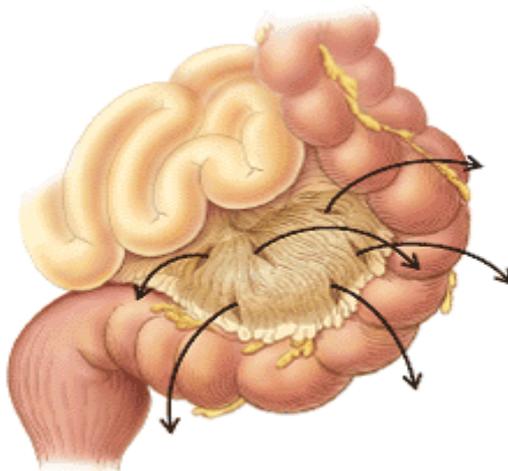
- Diverticulitis with abscess
obstruction
Peritonitis (free perforation)
fistulas between colon and adjacent structures
 - Colovesical
 - Colovaginal
 - Coloenteric



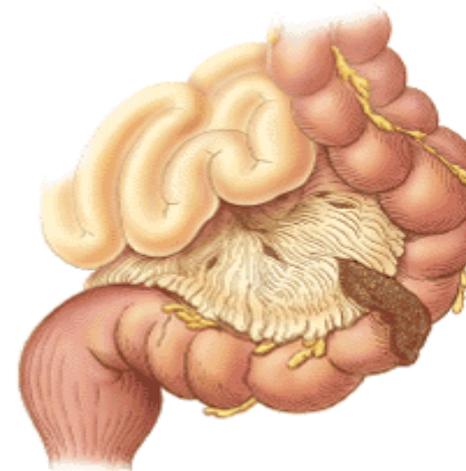
Localized Pericolic Abscess
(Hinchey Stage I)



Large Mesenteric Abscess
(Hinchey Stage II)



Free Perforation
(Hinchey Stage III)



Free Perforation Causing Fecal Peritonitis
(Hinchey Stage IV)

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The Hinchey classification divides diverticular perforations into four stages. Mortality increases significantly in stages III and IV.



Diverticular Disease

Inflammatory Complications (Diverticulitis)

Complicated Diverticulitis Management

- Abscess: percutaneous drainage, if not accessible or patient doesn't improve or present with peritonitis, proceed with laparotomy drainage / sigmoid resection
- Obstruction :67% of patients, complete in 10%, partial obstruction most of the time can treated conservatively, if doesn't respond do laparotomy



Diverticular Disease

Inflammatory Complications (Diverticulitis)

Complicated Diverticulitis

- Fistula: 5% of patient
 - Should evaluate the anatomy of the fistula and rule out other diagnoses (cancer, crohn's disease, or radiation induced fistula)
 - Treat by resection of the affected segment of colon with primary repair of the secondarily affected organ



Diverticular Disease

Hemorrhage

- Result from erosion of peridiverticular arteriole
- May be massive
- In 80% bleeding stop spontaneously
- Diagnosis by colonoscopy, angiography
- If bleeding persists or recurs, laparotomy and segmental colectomy may be required



Diverticular Disease

Giant Colonic Diverticulum

- Extremely rare
- Occur on antimesenteric side of sigmoid
- May be asymptomatic or cause vague abdominal pain
- Complication: perforation, obstruction or volvulus
- Barium enema is diagnostic
- Resection of the involved colon and diverticulum is recommended



Diverticular Disease

- **Right sided diverticulum**
- The cecum and ascending colon infrequently are involved in diverticulosis coli
- True solitary diverticulum
- Occur more common in younger patients
- Usually asymptomatic, diverticulitis does occur
- If single large diverticulum and minimal inflammation, diverticulectomy may be performed, but ileocecal resection is usually the preferred procedure
- Hemorrhage, rarely occur, and is treated as hemorrhage of left sided diverticulum



Meckels Diverticulum

Epidemiology

- Most common congenital anomaly of GIT
- Affecting 2% of population
- M:F 3:2
- True diverticula
- Location 100cm from ileocecal valve
- 60% of Meckels diverticula contain heterotopic mucosa (gastric mucosa, pancreatic acini)



Meckels Diverticulum

Pathophysiology

- Happens as a result of failure or incomplete vitelline duct obliteration
- Complications
 - (1) Bleeding associated with MD is usually the result of ileal mucosal ulceration that occurs adjacent to acid producing gastric mucosa located within the diverticulum



Meckels Diverticulum

Pathophysiology

- (2) Obstruction
 - Volvulus
 - Entrapment of intestine by mesodiverticular band
 - Intussusception
 - Stricture 2nd to chronic diverticulitis



Meckels Diverticulum

Clinical Presentation

- MD asymptomatic unless associated with complications
- Most common presentations associated with symptomatic MD are bleeding, intestinal obstruction and diverticulitis
- Bleeding is the most common presentation in children (younger than 18 yr) with MD
- Bleeding is rare after age of 30 yr
- Intestinal obstruction is the most common presentation in adults
- Diverticulitis in 20% of symptomatic MD



Meckels Diverticulum

Diagnosis

- Most are discovered incidentally (radiology, endoscopy or surgery)
- Rarely diagnosed prior to surgical intervention
- Radionuclide scan (Tc pertechnetate) suggest the diagnosis of MD when uptake occurs in associated ectopic gastric mucosa
- Angiography can localize the site of bleeding during acute hemorrhage



Meckels Diverticulum

Therapy

- For diverticulitis do diverticulectomy
- For bleeding do segment ileal resection to include the diverticulum and the ulcer
- Segmental ileal resection is also indicated when the diverticulum contain tumor
- Mx of incidental MD is controversial