GI Pathologies COLON

Remember that the GI tract

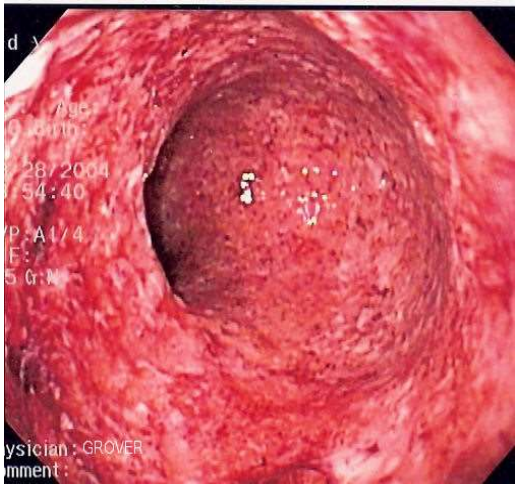
- Is "open" to the outside world, and that it is lined by protective mucosal tissue that protects against invaders.

  Is home to more than 500 species of naturally occurring symbiotic bacteria (the microbiome)

  Healthy homeostasis of the GI tract is maintained by the immune system, which balances inflammatory responses against the need to maintain a healthy mucosa.

Crohn's (Regional Enteritis)

Crohn's disease occurs when immune responses are too strong and the intestinal mucosa becomes inflamed



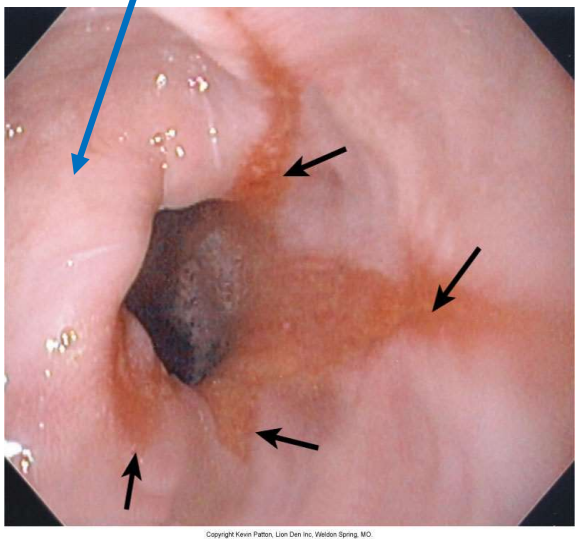


Figure 18-13- Patton and Thibodeau

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The Physiology of Crohn's

1. The epithelial layer of the intestinal wall becomes more permeable to pathogens, which causes antigen receptors in the sub-mucosa to trigger an inflammatory "cascade". When the inflammation reaches the serosa the bowel wall becomes "rubbery".
2. The mucosa's antigen recognition receptors become hypersensitive to natural flora.
3. The mucosa is unable to control the strength of the inflammatory response in the usual way, which involves clearing t-lymphocytes from the body.

Clinical and Radiographic Indications

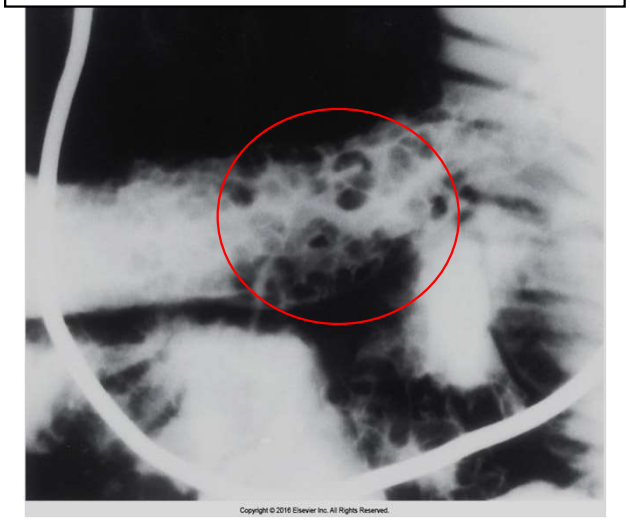
- Most commonly affects young adults
- Most commonly starts at the terminal ileum, but can affect any section of the bowel
- "Skip lesions" are common: interspersion of healthy and inflamed sections of bowel
- All four layers of the bowel wall are affected
- Inflammation can cause decreased lumen, ulcers, fistulas, granulomas (collections of immune cells), anemia, and bowel blockages

Crohn's (Regional Enteritis)



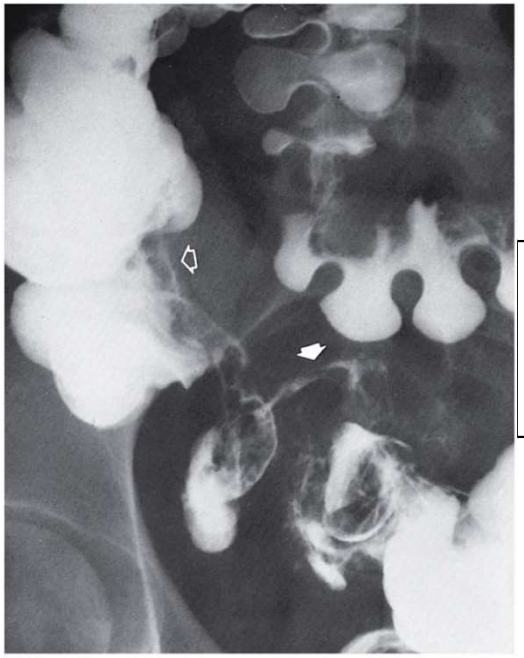
String sign; note the pattern of the villi is lost, and the area is stenotic because the walls of the bowel are thickened and "rubbery"

Cobblestone appearance caused by granulomas and ulcerations spread throughout thickened mucosa and submucosa


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Crohn's (Regional Enteritis)


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Fistula between terminal ileum and sigmoid colon (solid arrow) and cecum (open arrow)

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Treatment for Crohn's

- The first line of treatment involves medication:

1. anti-inflammatories such as corticosteroids
2. immuno-suppressors that inhibit the production of t-lymphocytes
3. Antibiotics to prevent native flora from moving beyond the GI tract, via fistulas

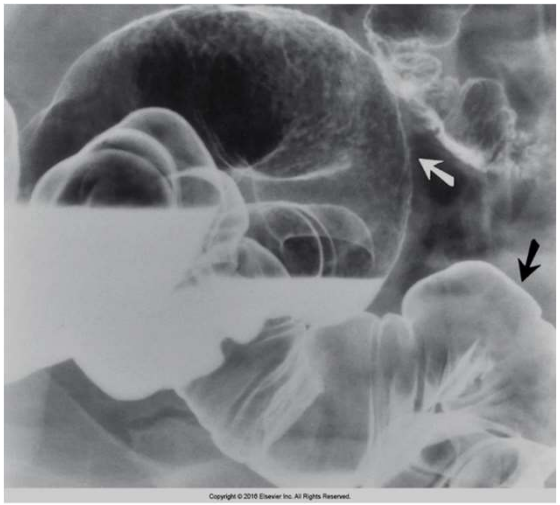
- Surgery is only used in acute life-threatening situations as 70% of patients will have a recurrence within a year.

- Short bowel syndrome, a malabsorption disorder, may occur if >50% of intestinal tract is removed

Ulcerative colitis

- Clinical and radiographic indications
  - Alternating periods of complete remission and relapse
  - Usually confined to the mucosal layer of the large colon only
  - Begins in the rectosigmoid area
  - Does not exhibit skip lesions
  - Begins as fine granulation of mucosa
  - Chronic condition will cause rigidity and shortening of the colon over time. (lead-pipe sign)

Ulcerative colitis





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Small superficial ulcers with hyperemia and edema cause a granular appearance at first; may progress to deeper collar- button ulcers involving the submucosa

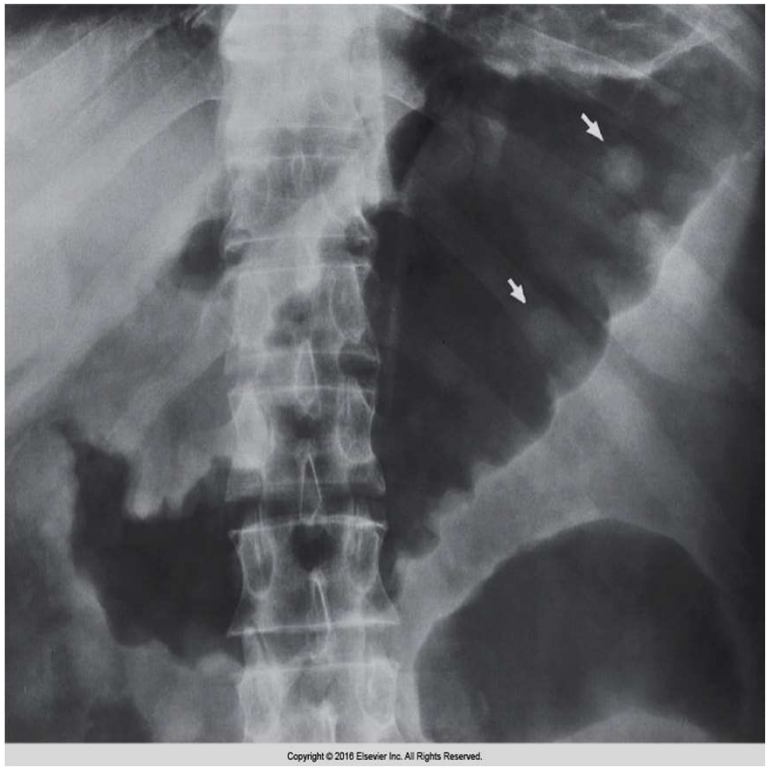
Ulcerative colitis


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Lead-pipe colon caused by hypertrophy and spasm of muscles. Colon shortens, becomes rigid and loses haustral markings

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Toxic megacolon is an acute non-obstructive dilation of a segment of the colon. It can be a complication of ulcerative colitis. It can lead to dramatic sudden perforation


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Eisenberg 5-68: Toxic megacolon secondary to ulcerative colitis

Colon (colorectal) Cancer

- 3rd leading cause of death from cancer
- Most commonly occurs between 50 and 70 years of age
- Twice as common in men
- 10 X more frequent in patients with chronic ulcerative colitis
- A first degree relative with familial polyposis is a risk factor
- Most cancers arise from pre-cancerous cells on polyps, so colonoscopies are done to find and remove polyps

- Colon cancer is treatable if it is diagnosed early, and is usually treated with surgical resection. Multiple lesions will require radiation therapy and/or chemotherapy

Colonic Polyp



>2cm is associated with malignancy

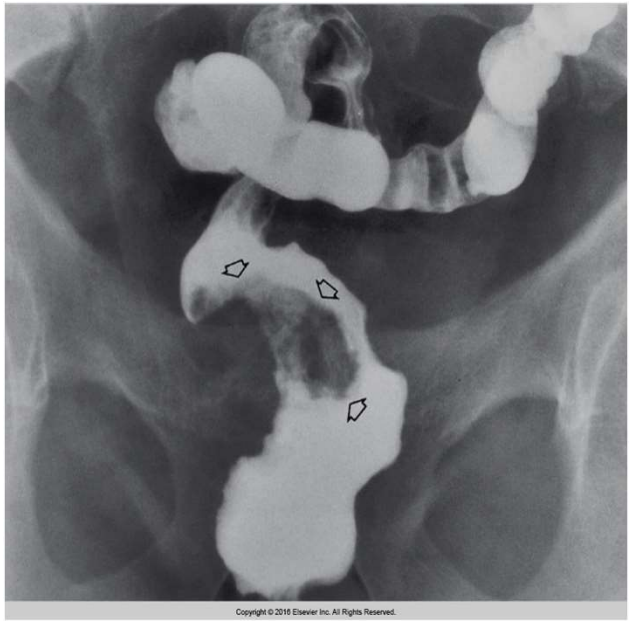
Sessile polyps (those without stalks) are usually cancerous

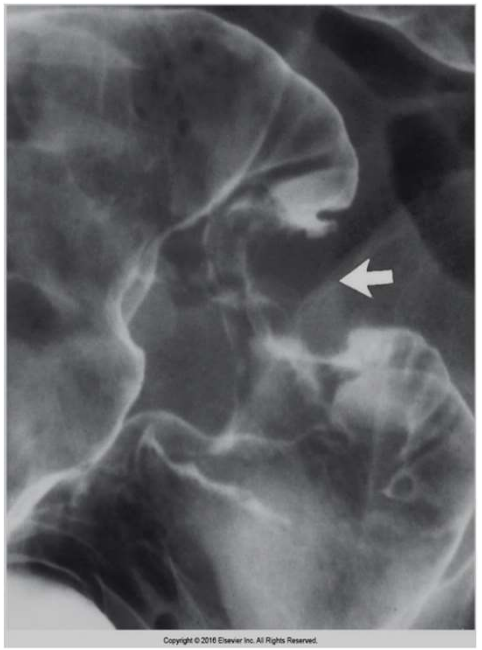
Fig 5-71 Kowalczyk, N. (2014). Radiographic Pathology for Technologists (6th ed.). Maryland Heights, MO: Elsevier Mosby. pg. 175)



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Colon Cancer


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Saddle lesions infiltrate the bowel wall and cause the classic “apple core” or “napkin ring” radiographic sign

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THANKS