UNDERSTANDING X-RAYS: ABDOMINAL IMAGING

Radiology Enterprises
radiologyenterprises@gmail.com
www.radiologyenterprises.com

THE ABDOMEN

STOMACH AND SMALL BOWEL

- Swallowed air is a major source of gas in stomach
- Very common to see small amounts of gas in nondistended loops of small bowel
- Small bowel is a winding tube which is of variable lengths and position within the abdomen
- In general, the small bowel loops lie within the CENTRAL portion of the abdomen
- Small bowel loops vary in size
- In general, small bowel loops normally range between 2cm to 4cm in transverse diameter
- Small bowel loops which are greater than 4 to 5cm should be considered to be dilated

THE SMALL BOWEL

- Small bowel folds
  - Generally are circumferential vs haustra of colon
  - Typically NOT obliterated when small bowel is distended
  - Slow passage of food along the intestine and allow increased surface for absorption
- Names
  -
  -
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THE LARGE BOWEL

- Located along the LATERAL PERIPHERY of the abdomen, and along the upper portion of the abdomen, below the stomach
- Portions of the large bowel are the Cecum, Ascending Colon, Transverse Colon, Descending Colon, Sigmoid Colon, and Rectum
- Size of large bowel loops vary, but in general range between 3cm to 6cm
- Haustral markings
  - Folds of large bowel are not circumferential
  - Folds of large bowel are wider spaced than small bowel
ADHESIONS

SMALL BOWEL OBSTRUCTION

• Symptoms
  – Abdominal pain
  – Abdominal distention
  – Vomiting
• Often history of prior surgery
  – Common cause of obstruction
• Other causes
  – Hernia
  – Malignancy
  – Inflammatory bowel disease
  – Volvulus
  – Appendiceal abscess
  – Gallstone ileus

ETIOLOGY
Postoperative adhesions most common cause of SBO
Incarcerated groin hernia
Malignant tumor (20%)
Inflammatory bowel disease (5%)
Volvulus (3%)
Miscellaneous causes (2%)

COMPLICATIONS
Sepsis
Intra-abdominal abscess
Wound dehiscence
Aspiration
Short bowel syndrome (as a result of multiple surgeries)
Death (secondary to delayed treatment)

LARGE BOWEL OBSTRUCTION

• Obstruction of colon usually caused by cancer or diverticulitis
• Other causes
  – Volvulus, hernia, fecal impaction
• Symptoms
  – Constipation
  – Abdominal distention
  – Abdominal pain
• Dilated loops of bowel PROXIMAL to the obstructing point
• Diagnosis can be confirmed by endoscopy or barium enema

DIVERTICULAR DISEASE
DIVERTICULA
A small pouch or sac that protrudes outward from a weakened portion of the bowel wall.
Can develop in any part of the bowel, but usually form in the colon.
Diverticula increase with increasing age.
Nearly 7 in 10 will have diverticula by age 80.

DIVERTICULA
Diverticula within the bowel wall is known as DIVERTICULOSIS.
If one or more of the diverticula becomes infected, the condition is known as DIVERTICULITIS.

DIVERTICULA
Usually there are no symptoms and diverticula are often discovered as an incidental finding during colonoscopy or barium enema.
If symptoms do occur they can include abdominal pain, cramping, bloating, tenderness, nausea, diarrhea, constipation, fever, and rectal bleeding.

DIVERTICULA
If one or more of the diverticula becomes infected, the condition is known as DIVERTICULITIS.

DIVERTICULITIS
COMPLICATIONS
Obstruction
Abscess Formation
Fistula Formation
Perforation
Peritonitis

DIVERTICULITIS
COMPLICATIONS
Obstruction – the inflamed diverticula may lead to narrowing of the bowel causing bowel obstruction, or scarring from previous bouts of inflammation caused by prior diverticular disease may lead to bowel obstruction.
DIVERTICULITIS

COMPLICATIONS
Abscess Formation – the inflammation may spread to the outside of the colon causing an abscess to form

DIVERTICULITIS

COMPLICATIONS
Fistula Formation – the affected part of the colon may adhere to an adjacent organ, such as the bladder, small bowel, or skin causing an abnormal connection (fistula)

DIVERTICULITIS

COMPLICATIONS
Perforation – a small tear or hole may occur in the infected diverticulum leading to free air in the abdomen

DIVERTICULITIS

COMPLICATIONS
Peritonitis – the infection may spread to the lining of the abdominal cavity (the peritoneum), and may result in potentially life threatening peritonitis

COLORECTAL CANCER

• Fourth most common cancer in US
• In 2015, an estimated 140,000 new cases of colorectal cancer expected to be diagnosed, with 50,000 deaths expected
COLORECTAL CANCER RISK FACTORS

- Age - most common over 50
- Diet - diets high in fats and low in fiber
- Polyps
- Medical History - Ovarian cancer, uterine cancer, breast cancer, prior colorectal cancer
- Family History
- Ulcerative Colitis

COLORECTAL CANCER SYMPTOMS

- Change in bowel habits
- Blood in stool
- Diarrhea
- Constipation
- Bloating
- Stools that are narrower than usual
- Weight loss
- Abdominal cramping

COLORECTAL CANCER DETECTION

- Fecal occult blood test
- Sigmoidoscopy
- Colonoscopy
- CT
- Barium enema
- Digital rectal examination
- Virtual colonoscopy

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