<table>
<thead>
<tr>
<th>Featuroe</th>
<th>Crohn's Disease</th>
<th>Ulcerative Colitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Macroscopic features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Distribution</td>
<td>Segmental with skip areas&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Continuous without skip areas&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>2. Location</td>
<td>Commonly terminal ileum and/or ascending colon</td>
<td>Commonly rectum. Sigmoid colon and extending upwards</td>
</tr>
<tr>
<td>3. Extent</td>
<td>Usually involves the entire thickness of the affected segment of bowel wall</td>
<td>Usually superficial, confined to mucosal layers</td>
</tr>
<tr>
<td>4. Ulcer</td>
<td>Serpiginous ulcers, that may develop into deep Fissures&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Superficial mucosal ulcers without fissures</td>
</tr>
<tr>
<td>5. Pseudopolyps</td>
<td>Rarely seen</td>
<td>Commonly present&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>6. Fistrosis</td>
<td>Common</td>
<td>Rare</td>
</tr>
<tr>
<td>7. Shortening</td>
<td>Due to fibrosis</td>
<td>Due to contraction of muscularis</td>
</tr>
<tr>
<td>B. Microscopic features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Depth of inflammation</td>
<td>Typically transmural&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Mucosal&lt;sup&gt;2&lt;/sup&gt; and Submucosal</td>
</tr>
<tr>
<td>2. Type of inflammation</td>
<td>Non-caseating granulomas&lt;sup&gt;2&lt;/sup&gt; and infiltrate of mononuclear cells (lymphocytes, plasma cells and macrophage)</td>
<td>Crypt abscess and non-specific acute and chronic inflammatory cells (lymphocytes, plasma cells neutrophils, eosinophils, mast cells)</td>
</tr>
<tr>
<td>3. Mucosa</td>
<td>Patchy ulceration</td>
<td>Hemorrhagic mucosa with ulceration</td>
</tr>
<tr>
<td>4. Submucosa</td>
<td>Widened due to edema and lymphoid aggregates</td>
<td>Normal or reduced in width</td>
</tr>
<tr>
<td>5. Muscularis</td>
<td>Infiltrated by inflammatory cells</td>
<td>Usually spared, except in cases of Toxic Megacolon&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>6. Fibrosis</td>
<td>Present</td>
<td>Usually absent</td>
</tr>
<tr>
<td>C. Complications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Fistula formation</td>
<td>Internal and external fistulae in 10%&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Extremely rare&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>2. Malignant changes</td>
<td>Less common but present</td>
<td>May occur in disease of more than 10 years duration (more common&lt;sup&gt;3&lt;/sup&gt;)</td>
</tr>
<tr>
<td>3. Fibrous strictures</td>
<td>Common&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Never&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>4. Toxic megacolon</td>
<td></td>
<td>Risk presents&lt;sup&gt;5&lt;/sup&gt;</td>
</tr>
<tr>
<td>5. Named Features</td>
<td>Hose pipe appearance&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Garden hose appearance&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Dobble-stone appearance&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Pseudopolyps&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Halo sign on CT&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Pipetem colon (Ahaustral)&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>String sign of Kantor&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Raspberry/rosethorn appearance&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Remember
- Earliest change in Crohn's disease is- Aphthoid ulceration<sup>3</sup>.
- Earliest change in Ulcerative colitis is- Blurring of mucosal stripe and granular appearance<sup>3</sup>.
- Surgery is palliative in Crohn's disease<sup>3</sup> whereas curative in ulcerative colitis<sup>3</sup>.

11. Ans. c. Crohn's disease
19. Ans. d. Rectum
20. Ans. a. Pseudopolyps
23. Ans. a. Crohn's disease (Ref: Sabiston 19/e p1247, 1313, 1331; Smith 17/e p581)

**Common Causes of Colovesical Fistula**
- Diverticulitis (50-60%) More common in patients >40 years
- CA colon (20-25%) More common in patients >50 years
- Crohn's disease (10%) Seen in 2nd to 3rd decade

25. Ans. c. Rectum is always involved
26. Ans. c. Terminal ileum
27. Ans. c. Diagnosis of toxic megacolon (Ref: Bailey 25/e p1165)

Colonoscopy is not done in toxic colon for the fear of aggravating the disease or perforation.

**Indications of Colonoscopy and Biopsy in Ulcerative Colitis**
- To establish the extent of inflammation
- To distinguish between UC and Crohn's disease
- To monitor the response of treatment
- To assess long standing cases for malignant change

28. Ans. a. NOD2/CARD-15 gene
29. Ans. a. Smoking has a protecting effect
30. Ans. d. Crohn's disease

- Sabiston says "Fistula may develop between intestine and any other intra-abdominal organ, including bladder, bowel, uterus, vagina and stomach."
- Harrison says "Fistula involving stomach or duodenum arise from the small or large bowel and do not necessarily signify the presence of upper GI tract involvement."

32. Ans. a. All layer are involved, b. Malabsorption
- Both are the features of Crohn's disease.
33. Ans. d. Crypt abscess
34. Ans. a. Premalignant condition
35. Ans. a. Transmural inflammation

**IBD: EXTRA-INTESTINAL MANIFESTATIONS**
36. Ans. b. PSc. (Ref: Sabiston 19/e p1322; Schwartz 8/e p1034; Bailey 25/e p1166; Shackelford 7/e p1962)

Extra-intestinal Manifestations of Ulcerative Colitis
- Arthritis
- Ankylosing spondylitis
- Erythema nodosum
- Pyoderma gangrenosum
- Primary sclerosing cholangitis (PSC)
• Colectomy has no effect on the course of PSC in UC⁹.
• Pyoderma gangrenosum is more common in UC⁹.
• Erythema nodosum is more common in Crohn's disease⁶.
• Erythema nodosum, Peripheral arthritis, Ankylosing spondylitis, Stones (Cholelithiasis and oxalate stones), Ureteral obstruction⁷.
• MC cutaneous manifestation of IBD: Erythema nodosum⁸.
• Erythema nodosum is the most responsive to treatment of the bowel and persistence of the lesion indicates inadequate control of IBD⁹.

37. Ans. c. PSC
38. Ans. a. Ulcerative colitis
39. Ans. b. Circinate balanitis
   - Circinate balanitis is seen in Reiter's syndrome, not in ulcerative colitis.
40. Ans. a. Primary sclerosing cholangitis
41. Ans. a. Peptic ulceration
42. Ans. a. Calcium oxalate
43. Ans. a. Oxalate (Ref: Harrison 18/e p2468)

**UNOLOGIC MANIFESTATIONS OF IBD**

- The most frequent genitourinary complications are calculi, ureteral obstruction, and ileal bladder fistulas⁹.
- Calcium oxalate stones develop secondary to hyperoxaluria, which results from increased absorption of dietary oxalate⁹.
- Normally, dietary calcium combines with luminal oxalate to form insoluble calcium oxalate, which is eliminated in the stool.
- In patients with ileal dysfunction, nonabsorbed fatty acids bind calcium and leave oxalate unbound⁹.
- The unbound oxalate is then delivered to the colon, where it is readily absorbed, especially in the presence of inflammation⁹.

**IBD: TREATMENT**

44. Ans. c. Proctocolectomy with ileal anastomosis (Ref: Sabiston 19/e p1324-1329; Schwartz 9/e p1035-1036; Bailey 26/e p1146-1151, 25/e p1167-1173; Shackelford 7/e p1974)

**Indications of Surgery in Ulcerative Colitis**

- Massive colonic bleeding
- Toxic megacolon
- Dysplasia, carcinoma
- Intractability

**Surgical Options for Ulcerative Colitis**

- Total proctocolectomy with ileostomy
- Restorative proctocolectomy with IPAAQ
- Total proctocolectomy with a continent ileal reservoir (Kock pouch)
- Total abdominal colectomy with end-ileostomy
- Toxic megacolon

**Total Proctocolectomy With End Ileostomy**

- Total proctocolectomy has the advantage of removing all diseased mucosa, thereby preventing further inflammation and the potential for progression to dysplasia or carcinoma⁹.
- Major disadvantage: Need for a permanent ileostomy
- Older patients, those with poor sphincter function, and patients with carcinomas in the distal rectum may be candidates for this procedure⁹.
Total Proctocolectomy With Continent Ileostomy

- The major problem with the Kock pouch is the high complication rate necessitating reoperation in up to 50% of patients.
- MC problem is a slipped valve, which occurs when the intussuscepted limb everts and the continent nipple is lost.
- Other complications: Inflammation of the ileal pouch mucosa (so-called pouchitis) in 15% to 30% of cases, fistula formation (10%), and stoma stricture (10%).
- The Kock procedure should not be performed in obese patients, debilitated patients, or any patient with a physical or mental handicap that would prohibit safe characterization of the reservoir.
- The procedure is contraindicated in patients with Crohn's disease because of the high incidence of its recurrence, causing failure of the pouch.

Total Proctocolectomy With Ileal Pouch-Anal Anastomosis (IPAA)

Restorative proctocolectomy with IPAA has become the most common definitive operation for the surgical treatment of UC.

### Complications of Total Proctocolectomy With IPAA
- Pouchitis (7-33%)
- Small bowel obstruction (upto 27%)
- Pelvic sepsis
- Anastomotic and pouch suture line leaks
- Pouch-vaginal fistula

Older patients or those with fecal incontinence should undergo a total proctocolectomy with an end ileostomy.
- Younger patients with no evidence of rectal dysplasia should undergo restorative proctocolectomy and IPAA with a double- stapled anastomosis and diverting loop ileostomy.
- Patients with confirmed rectal dysplasia should be treated with mucosectomy and a hand-sewn IPAA.
- Patients with significant debility who are poor operative candidates should undergo a total abdominal colectomy with a very low Hartmann closure and an end ileostomy.

45. Ans. c. Done in cases where medical treatment fails, c. Pouch surgery done

46. Ans. c. Extraintestinal complication (Ref: Harrison 18/e p2983)

### Indications for Surgery in IBD

<table>
<thead>
<tr>
<th>Ulcerative Colitis</th>
<th>Crohn’s Disease</th>
<th>Colon and rectum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intractable disease</td>
<td>Stricture and obstruction unresponsive to medical therapy</td>
<td>Intractable disease</td>
</tr>
<tr>
<td>Fulminant disease</td>
<td>Massive hemorrhage</td>
<td>Fulminant disease</td>
</tr>
<tr>
<td>Toxic megacolon</td>
<td>Refractory fistula</td>
<td>Perianal disease unresponsive to medical therapy</td>
</tr>
<tr>
<td>Colonic perforation</td>
<td>Abscess</td>
<td>Refractory fistula</td>
</tr>
<tr>
<td>Massive colonic hemorrhage</td>
<td></td>
<td>Colonic obstruction</td>
</tr>
<tr>
<td>Extracolonic disease</td>
<td></td>
<td>Cancer prophylaxis</td>
</tr>
<tr>
<td>Colonic obstruction</td>
<td></td>
<td>Colon dysplasia or cancer</td>
</tr>
<tr>
<td>Colon cancer prophylaxis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colon dysplasia or cancer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

47. Ans. c. 2% case of Crohn's disease undergo malignant changes (Ref: Sabiston 19/e p1326-1329; Schwartz 9/e p1036; Bailey 26/e p1150-1151, Shackelford 7/e p1982)

- Pouch operation (total proctocolectomy with IPAA) is not done during fulminant ulcerative colitis.
- Fulminant ulcerative colitis not responding to medication is an indication for emergency operation. In emergency operations, total abdominal colectomy with ileostomy is done.
- The risk of malignancy in Crohn's pancolitis is similar to UC pancolitis, i.e. 2% after 10 years, 8% after 20 years and 18% after 30 years approximately.


- Salazopyrin is brand name of sulfasalazine.
**Table 28.3** Treatment of ulcerative colitis

<table>
<thead>
<tr>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Admission</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Not required</td>
<td>- Oral 20-40 mg</td>
<td>- Required</td>
</tr>
<tr>
<td>- Prednisolone</td>
<td>- Yes</td>
<td>- No</td>
</tr>
<tr>
<td>- 5-ASA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Can be given</td>
<td>- Oral</td>
<td>- Not done</td>
</tr>
<tr>
<td>- Oral electrolyte balance</td>
<td>- Normal</td>
<td>- No response for 3–5 days—surgery</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Surgery</td>
<td>Not done</td>
<td></td>
</tr>
</tbody>
</table>

**Dietary advice**

- High protein, carbohydrates, whole grains, and good fats.
- Meat, fish, poultry, and dairy products, breads, and cereals; fruits and vegetables may be consumed.
- For vegetarians: Dairy products and plant proteins—such as soya bean products may be consumed.

*Case diagnosed at a young age.

Tumour tend to be infiltrative, highly aggressive.
4. Ca Colon = incidence 3% when dis. present for >15 yrs
   - routine sigmoidoscopy and biopsy
   - dysplasia seen is considered premalign

5. Recurrent perianal abscess = Resulting in fistula

6. Extra-intestinal
   - Protein malnutrition
   - Skin ulceration, pyoderma, erythema nodosum
   - Conjunctivitis, iritis, arthritis of large joints
   - Bile duct ca

(Peptechna arthritis + Ankylosing Spondylitis are two most common extra-intestinal complications)

Dx = 1. Stool to rule out others
   2. Sigmoidoscopy - visible ulcer c pin point
      superficial bleeding
   3. Barium enema (not to be done in acute cases)
      - Luft reacts colour, pipe stem colour
      - Absence of haemostatic
      - Pseudopolyposis

4. Colonoscopy - for bx
   - To find out the extent of invasion and survival of ca
Notes of Dr. Ravindra Goswami (IAS-2015, AIR-153)

Indication
- Complications
- Active disease despite medical T/t
- Severe colitis
- Dyspepsia
- Haemorrhage
- Steroid dependence

1. Total proctocolectomy
   followed by permanent ileostomy

2. Reseorative proctocolectomy
   with ileal pouch

- Pouch on ileum

- Connected to
- Ileostomy

- Temporarily colostomy

- Open after 8 weeks.

Conservative

- Hospitalisation
- Bed rest
- Blood transfusion
- Sulphasalazine - First choice
- Steroids - for refractory
- Immunosuppressants
  - Cyclosporine
  - Azathioprine
- Monoclonal Antibody
  - Infliximab
- Partial enterectomy
  - Ileogastrostomy

Diet modification
- Avoid high fiber diet
Pleoeccal TB

1. Pathology - 2 types
   a) Ulcerative
   b) Tuberculous

2. Etiology - Sec. to pulmonary TB

3. Site - Terminal Ileum

4. Body resistance - Very poor

5. C/F - Pulmonary TB, blood and mucus in the stool, resulting in gross emaciation and cachexia

6. Complications - Acute transverse ulcers

   Chonic - Healing of ulcers leading to stricture and SAIO

    - Nodular, mobile
    - Firm mass in R1, Ileocecal fossa
    - CMAL SAIO

7. Barium meal - Follow through - Stricture

8. CXR

9. Colonoscopy - A point

   - Cecum II) Pulled up
   - Cecum III) Ulminating obstruction
   - Tumoral obstruction (IV) Obstructive single

   Echovation App

Group Code: 873541

Notes of Dr. Ravindra Goswami (IAS-2015, AIR-153)
Why Ileocecum involved more:
(i) Rich lymphatics in Peyer's patches
(ii) Of alkaline media favours growth of bacilli
(iii) Presence of ileocecal valve produces stasis
(iv) Terminal area is area of major absorption.

T/T

Medical

1/1 of primary TB in lungs
Anti TB also given in all cases
+ Repeated obstruction only this needed
9-12 months
Intestinal support

Surgical

Solitary structure

Strictureplasty
Cut it longitudinally and suture it transversely
- Multiple along length

Strictureplasty
- Multiple relatively short
Segment - Resection
- Also structure cili 10 cm of ileocecal valve is best resected
For hyperplastic
Small Intestinal (Jejuno-ileal) Diverticula

- Less common than duodenal diverticula, occur more commonly along the mesentery
- False diverticula, occurring mainly in an older age group (after sixth decade).
- With an increased frequency in the proximal jejunum and distal ileum
- Jejunal diverticula are more common and are larger than those in the ileum.

| Jejunal diverticula are multiple, usually protrudes from the mesenteric border of the bowel and may be overlooked at surgery because they are embedded within the small bowel mesentery. |

Clinical Features
- Mostly asymptomatic, discovered incidentally
- Vague chronic abdominal pain, malabsorption, functional pseudo-obstruction, and chronic low-grade gastrointestinal hemorrhage.
- Acute complications are diverticulitis, with or without abscess or perforation; gastrointestinal hemorrhage; and intestinal obstruction.
- Stasis of intestinal flow with bacterial overgrowth resulting in steatorrhea and megaloblastic anemia, with or without neuropathy.
- Perforation is the most common complication of jejunoileal diverticular disease and is a sequela of diverticulitis.

Treatment
- No treatment for incidentally noted, asymptomatic jejunoileal diverticula.
- In case of obstruction, bleeding, and perforation: Intestinal resection and end-to-end anastomosis.
- In malabsorption secondary bacterial overgrowth: Antibiotics.

Blind Loop Syndrome
- A rare condition manifested by diarrhea, steatorrhea, megaloblastic anemia, weight loss, abdominal pain.
- Deficiencies of the fat-soluble vitamins (A, D, E, and K) and neurologic disorders.

Etiopathogenesis
- Underlying cause: Bacterial overgrowth in stagnant areas of the small bowel produced by stricture, stenosis, fistulas, or diverticula (e.g., jejunoileal or Meckel's diverticulum).
- Bacterial overgrowth competes for vitamin B₁₂ producing systemic deficiency of vitamin B₁₂ and megaloblastic anemia.

Clinical Features
- Manifested by diarrhea, steatorrhea, megaloblastic anemia, weight loss, abdominal pain
- Deficiencies of the fat-soluble vitamins (A, D, E, and K), as well as neurologic disorders.

Diagnosis
- Diagnosed with cultures obtained through an intestinal tube (gold standard diagnostic test)
- By indirect tests such as the ¹⁴C-xylose or ¹⁴C-cholylglycine breath tests. Excessive bacterial use of ¹⁴C substrate leads to an increase in ¹⁴CO₂.

| In Schilling test, vitamin B₁₂ excretion is not altered by the addition of intrinsic factor, but a course of a broad-spectrum antibiotic (e.g., tetracycline) should return vitamin B₁₂ absorption to normal. |

GASTROINTESTINAL TUBERCULOSIS

29. Ans. d. Conservative management is treatment of choice (Ref: Sabiston 19/e p1254-1255; Schwartz 9/e p1007; Bailey 26/e p1158, 25/e p1174-1175)
**Gastrointestinal Tuberculosis**

- Mycobacterium tuberculosis is responsible for all cases of GI tuberculosis.
- M. bovis has largely been eliminated by public health measures.
- More common in poor socio-economic status.

### Pathogenesis

<table>
<thead>
<tr>
<th>Primary Intestinal Tuberculosis</th>
<th>Secondary Intestinal Tuberculosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingestion of contaminated food may cause primary tuberculosis (this route of infection has decreased in recent years)</td>
<td>Arises from swallowed sputum containing tuberculous bacilli infected by villus and crypt of host resistance of infection</td>
</tr>
</tbody>
</table>

- When the intestines become infected by lymphatic spread from the mesenteric nodes, the nodal disease is considered as the primary site and intestinal involvement is secondary.
- The earliest intestinal lesions are found in submucosa, while the overlying mucosa is normal.

### Sites of Intestinal Involvement

- MC site is terminal ileum and ileocecal junction.
- Other regions in decreasing frequency are colon, jejunum, rectum, and small duodenum, stomach and esophagus.
- The site of predilection is dictated by the factors: abundance of lymphoid tissue, rate of absorption of intestinal contents, prolonged stasis and digestive activity of intestinal contents.

### Pathology

- Tuberculous intestinal ulcers are usually deep and transversely placed in the direction of lymphatics.
- Multiple ulcers may be seen, most often in terminal ileum.
- Disease progression is associated with the appearance of inflammatory mass around the bowel.
- The affected part of the GIT becomes thickened and serosal surface is studded with tubercles.
- Marked increase in mesenteric fat with fat wrapping around the bowel loops.
- Regional lymph nodes become enlarged and may caseate, leading to mesenteric abscess formation.
- Bowel perforation is rare and is usually confined by peritubercular inflammatory mass.

### Hyperplastic Tuberculosis

- A fibrotic reaction occurs in submucosa and subserosa resulting in marked thickening of the bowel wall.
- Involvement of adjacent mesentery, lymph nodes and omentum, results in formation of a mass lesion.
- Hyperplastic lesions are due to reduced bacterial virulence and increased host resistance.

### Sclerotic or Fibrotic Tuberculosis

- Associated with strictures of intestine, typically described as "napkin-rolling strictures", which may be single or multiple.
- When multiple, strictures may occur in short segment of bowel or over the entire length of intestine.

### Clinical Features

- Initial symptoms are vague and non-specific.
- As the disease progresses, individual may develop fever (in two threat), night sweats, malaise, weakness, anorexia and weight loss.
- MC symptom of GI tuberculosis is abdominal pain.
- Weight loss may be another common symptom.
- Peritoneal distension suggests presence of ascites or subacute intestinal obstruction.

### Primary Small Bowel Disease

- Stools are large in amount, foul smelling and resemble those seen in patients with malabsorption.

### Colonic Tuberculosis

- Stools may be watery, small in amount and mixed with blood.

### Complications

- Intestinal obstruction and malabsorption are MC complications.
- Bowel perforation and GI hemorrhage are less common.
Diagnosis:
- Laboratory tests: MC abnormality is raised FSR (90° case)
  - Lymphocytosis (WBC >500/mm³)
  - High protein content (>2.5 gm/dl)
  - Ascitic fluid showing
    - SAAG <1.1
    - Adenosine deaminase is raised, has sensitivity and specificity of 90%
- Radiological Imaging
  - Ultrasound: Club sandwich appearance (presence of alternating echogenic and echodense layers produced by bowel wall, serosa and the adjacent bowel keeps with ascitic fluid collection)
  - CT scan:
    - High density appearance of ascitic fluid due to elevated protein content
    - Thickening of bowel wall and ileocecal valve
- Barium studies in GI tuberculosis
  - Earliest feature is spasm and hypermotility with edema of valve
  - Thickening of valve lips with narrowing of the terminal ileum (Fleishner or umbrella sign) is characteristic of TB
  - In advanced disease, the characteristic deformity includes symmetrical, annular, napkin ring stenosis and obstruction or shortening and pouch formation
  - The cecum becomes shrunken and retracted out of the iliac fossa due to contraction of mesocolon (pulled up cecum)
  - Loss of ileocecal angle with dilated terminal ileum imparting goose neck deformity
  - Narrowing of terminal ileum due to stricture along with shortened rigid cecum called as "Sterlein sign"
  - Persistent narrow stream of barium in the bowel indicates stenosis known as String sign

Remember: String sign and Sterlein sign are also seen in Crohn's disease and are not specific for TB.

Treatment:
- Treatment of GI tuberculosis is ATT.
- Fever, malaise and weight loss subside in few weeks
- Majority of patients (70%) with symptoms of subacute intestinal obstruction and evidence of intestinal strictures show complete resolution of the radiological abnormality

Indications of Surgery in GI Tuberculosis
- Intestinal obstruction secondary to stricture (MC)
- Free perforation
- Severe GI hemorrhage
- Laparotomy abscess
- Intestinal or external fistula

- MC site of GI tuberculosis: Ileocecal region
- MC type of Abdominal tuberculosis: Peritoneal tuberculosis

32. Ans. b. Intestine obstruction
33. Ans. c. Surgery is the treatment of choice
34. Ans. a. Obstruction
35. Ans. b. Ileum
36. Ans. d. Intestinal mucosa
   - Ileal perforation is a common problem seen in tropical countries. The commonest cause being typhoid fever.
   - In western countries the causes are malignancy, trauma and mechanical etiology. in the order of frequency.

SUPERIOR MESENTERIC ARTERY SYNDROME

39. Ans. d. Most common in 6th-7th decade (Ref. Sabiston 19/e p1276; Shackelford 7/e p1065)
   - Vascular compression of third portion of the duodenum by the superior mesenteric artery as it passes over this portion of the duodenum.
   - Also known as Wilkie's syndrome, cast syndrome, and arteriomesenteric duodenal inlets or compression

   **SUPERIOR MESENTERIC ARTERY SYNDROME**

   **Three Mechanical Factors Must be Present**
   - An abnormally narrow, aortomesenteric angle
   - An abnormally highly fixed transverse duodenum
   - An abnormal course of the mesenteric artery continuing inferiorly, anterior to the unyielding vertebral column

   - Most commonly seen in young asthenic individuals, with women being more commonly affected than men.
   - SMA normally leaves aorta at an acute angle (50-600)
   - Normally a mass of fat and lymphatics near origin of SMA is believed to protect duodenum from compression.

   **Predisposing Factors**
   - Rapid weight loss
   - Supine immobilization
   - Rapid growth of height
   - Scoliosis
   - Placement of a body cast

   **Clinical Features**
   - Symptoms include profound nausea and vomiting, abdominal distention, weight loss, and postprandial epigastric pain, which varies from intermittent to constant depending on the severity of the duodenal obstruction.
   - Weight loss usually occurs before the onset of symptoms and contributes to the syndrome.

   **Diagnosis**
   - Barium upper gastrointestinal series or hypotonic duodenography, which demonstrates abrupt or near-total cessation of flow of barium from the duodenum to the jejunum.
   - CT has been useful in certain instances.

   **Treatment**
   - Conservative measures are tried initially and have been increasingly successful as definitive treatment.
   - The operative treatment of choice is duodenojejunostomy.

40. Ans. b. Duodenal obstruction
41. Ans. d. Gastrojejunostomy is treatment of choice in chronic cases
   - TOC in annular pancreas: Duodenoduodenostomy
   - TOC in duodenal atresia: Diamond shaped Duodenoduodenostomy
   - TOC in SMA syndrome: Duodenojejunostomy

PNEUMATOSIS INTESTINALIS

42. Ans. a. Pneumatosis cystoides intestinalis (Ref. Sabiston 19/e p1272-1273; Schwartz 9/e p1009; Shackelford 7/e p1057-1058)
Limited Resection
Includes removal of terminal 3-10 cm of diseased ileum, cecum with appendix, diseased portion of ascending colon followed by ileocolic anastomosis

Acute Bacterial mastitis

1. Cystic Swelling Breast
   a. Inflammatory
   b. Neoplastic - benign - Phylloides
      - malignant - Intracystic Ca

3. Non Neoplastic Cyst
   - Fibroadenosis - cyclical mastalgia
   - Simple cyst of breast
   - Blue denoted cyst

4. Other Rare Causes
   - Tuberculous mastitis & cold abscess
   - Congenital lymphatic cyst of breast
   - Hydatid Cyst of breast
   - Breast hematoma
Causes of D/D of 400 Peptic ulcer dis. TB
Bouveret's syndrome
Gastric carcinoma
Pancreatic pseudocyst, CHPS
Gas stone block
Ca Stomach.

1. D/D with - Abdominal pain + weight loss
   - Predisposing factors
   - Chronic duodenal ulcer
   - Features of Stomach mass

2. C/E
   - Abdominal pain with or without Anemia
   - Solid
   - Secondary + Ulcers
   - Liver, parietal, omental, Blummer's shelf
   - Kruecberg

3. Assessment
   - Signs
   - Blood test
   - Lab + CxR
   - USG, CT
   - Flexible Endo
   - Bx, Dx
   - Laproscopy
   - Barium meal
   - LEA

4. T/I
   - ED - Mainly Surgical. May be Neoadjuvant
   - Vapour chemo - radiotherapy
   - Aims of Surgery

5. Ascites - Signs of inoperability
- R resections
- D resections
- Summary of T1 T:

Ca pyloric antrum => Gastric Body

- Intestinal
- Diffuse
- Subtotal gastrectomy (D2)

- Total
- Total with distal esophagus

- Roux-en-Y

- Greater lesser omentum
- Billroth I

- Palliative
- Omental Bursos
- Tail of pancreas
2) Palliative - (i) Adj. 4J as post. 9J may have involvement of Stoma Earries.

   (ii) Subtotal gastrectomy

   Adj. 4J

3) Endoscopic mucosal resection

4) Endoluminal gastric surgery

   For early C or O nodes

5) Chemoradiation (Advanced stage (Post-op))

   FAM (fluorouracil, Adriamycin, mitomycin C)

6) Neoadjuvant chemotherapy

   Unresectable tumours.