Bowel obstruction outline

Types → o mechanical o Functional

Site → o Small bowel mechanical obstruction o Large bowel obstruction

Definitions →Interruption in the normal flow of intestinal contents along the intestinal tract

Functional obstruction → Ileus = paralytic = adynamic

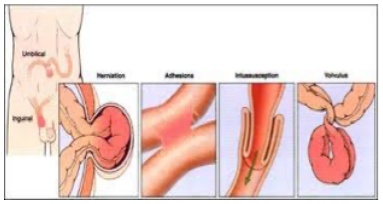
Mechanical Small bowel obstruction:

⇒ **Etiology :**

O M/C cause →**Postoperative adhesions** : appendectomy, colorectal surgery, and gynecologic and upper (GI) procedures
O **Hernias** (underdeveloped countries) O **Malignancy** O **Inflammatory causes**; Crohns' disease (due transmural inf processes O **Volvulus** O **Foreign bodies**; bezoars O In **peds** : congenital atresia, pyloric stenosis, and intussusception

- **Closed loop obstruction** →**dangerous , obstruction Of 2 points causing strangulation and gangrene then proliferation**

1. Hernia
2. Volvulus
3. Colonic obstruction with a competent ileocecal valve → gas + contents cant flow out → 30%
4. intussusception peds
5. Some adhesive obstructions



1st space: intracellular
2nd space: extracellular
3rd space: peritoneal cavity

⇒ **Pathophysiology**
- ⇒ **Increased peristalsis** → abdominal colic, ↑↑ bowel sounds , borborygmi , causing relative ischemia
- ⇒ **Proximal bowel distension** → third space losses , electrolyte imbalance, air-fluid levels
  - o ↑ secreion and ↓ absorpion → fluid accumulaion
  - o Swallowed air accumulation
- ⇒ **Bacterial overgrowth and translocation (anaerobic bacteria which then cause feculent vomit)**
- ⇒ **Proximal increased wall tension compromise of circulation (venous → art. → sys) = strangulated obstruction**

⇒ **History**
1. **Abdominal pain → major presentation**

Crampy and intermittent→ more prevalent in simple obstruction / Central

Note : Changes in the character of the pain may indicate the development of a more serious complication (i.e., constant pain of a strangulated or ischemic bowel

2. **Nausea**
3. **Vomiting**→ more common in proximal; reflex and reflux
4. **constipation** or **obstipation**; more than 24 hours
5. **Diarrhea**; in partial and intermittent obstruction(ex. volvulus and gallstone ileus)
6. **Fever and tachycardia** → Occur late and may be associated with strangulation
7. Prev abdominal or pelvic **surgery**, previous **radiation therapy**, or **both**
8. **Hx of malignancy** - Particularly ovarian and colonic malignancy

⇒ **Physical Examination :**
1 - **Abdominal distention**; The proximal small bowel (less distention when obstructed than the distal) (in colonic → distention is before other symp.)
2 - **Hyperactive bowel sounds** occur early (GI contents try to overcome the obstruction and typically related to the colic)
3 - **Visible peristalsis**
4 - **Borborygmi;** audible peristalsis
5 - **Abdominal scars**

6 - Abdominal hernias

Rectal examination:
• Gross or occult blood→ suggests late strangulation or malignancy

• Masses→ suggest obturator hernia (extra note : old , thin lady / thigh pain / bowel obs.)

- **Clinical types**

⇒ Partial → may pass some stool
⇒ complete →more chance for strangulation
⇒ Simple → no compression of blood supply
⇒ strangulated → compromising of blood supply

SBO accounts for 20% of all acute surgical admissions

- Strangulated SBOs :
  - ⇒ Check for findings (more diagnostic of intestinal ischemia, including the following: (late presentation)
    - Fever
    - Tachycardia
    - Peritoneal signs
    - Constant severe abd pain

No reliable way exists to differentiate simple from early strangulated obstruction on physical examination.

Serial abdominal examinations are important and may detect changes early

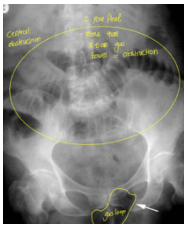
- Bowel fatigue →(fx superimposed on mechanical mainly due to dehydration and electrolyte imbalance) **; ileus complicating mechanical obstruction**
- Feculent vomiting

Both are indicative **of prolonged obstruction** and **bacterial overgrowth** and **the need for surgery**

- **Labs**
  - ⇒ (BUN) level → DEHYDRATION
  - ⇒ Electrolytes
  - ⇒ Creatinine
  - ⇒ (CBC)
  - ⇒ Urinalysis
  - ⇒ Type and cross match

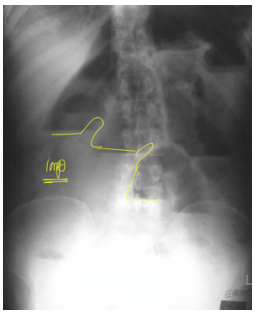
- **Imaging tests**
  1. Plain radiographs→ **first** for patients in whom SBO is suspected. At least 2 views, supine or flat and upright are required. **diagnostically more accurate in cases of simple obstruction**.
  2. Enteroclysis→ valuable in detecting the presence of obstruction and in differentiating partial from complete blockages. useful **when plain radiographic findings are normal in the presence of clinical signs of SBO** or when **plain radiographic findings are nonspecific**. (tube into duodenum then barium and air then xray / fluroscopy / ct →all to visualize small i
  3. CT scanning is the **study of choice** if the patient has fever, tachycardia, localized abdominal pain, and/or leukocytosis. (+ when cause of obs is not clear)
  4. Ultrasonography is less costly and invasive than CT scanning and may reliably exclude SBO in as many as 89% of patients; **specificity is reportedly 100%. (used in elderly)**

plain radiography recumbent obstructed inguinal hernia →

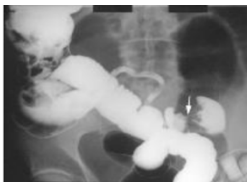


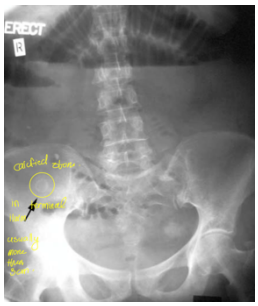
← plain radiography recumbent

plain radiography (**Standing**) the **step ladder appearance** (multiple air fluid levels)→



plain radiography (gallstone ileus) →





- **Enteroclysis ^**
  - ⇒ distinguishes **adhesions** from **metastases**, **tumor recurrence**, and **radiation damage**.

- **CT**
  - High sensitivity and specificity
  - **early diagnosis of strangulated obstruction**
  - delineating the myriad other **causes of acute abdominal pain**, particularly when clinical and radiographic findings are inconclusive.
  - distinguishing the **etiologies of small-bowel obstruction (SBO),** that is, in distinguishing extrinsic causes (such as adhesions and hernia) from intrinsic causes (such as neoplasms and Crohn's disease) and intraluminal causes(such as bezoars)
  - capable of **revealing abscess**, **inflammatory process**, **extraluminal pathology** resulting in obstruction, and mesenteric ischemia
  - enables the clinician to **distinguish between ileus and mechanical small bowel obstruction in postoperative** patients. (if theres a **transitional point then this mechanical** if not then this ilius
  - The modality does **not** require oral contrast for the diagnosis of SBO, **because the retained intraluminal fluid serves as a natural contrast agent.**

(CT) strangulated

- **Ultrasonography**
  - Is less costly and invasive than CT scanning and may reliably exclude SBO in as many as 89% of patients; specificity is reportedly 100%.
  - **Emergency physician**–performed ultrasonography compared favorably with radiography→ results were as good as xray

- **Indications of Nonoperative treatment of SBO**
  - × Adhesions
  - × Malignant tumor - Obstruction by tumor is usually caused by **metastasis**; initial treatment should be **nonoperative** (surgical resection is recommended when feasible)

- × Pediatric obstructed hernia - Initially use manual reduction and observation; **advise** elective hernia repair as soon as possible after reduction
- × Inflammatory bowel disease - **high-dose steroids**; consider parenteral treatment for prolonged periods of **bowel rest**, and undertake surgical treatment, bowel resection, and/or stricturoplasty **if nonoperative treatment fails**.
- × Intra-abdominal abscess - **CT scan–guided drainage** is usually sufficient to relieve obstruction
- × Radiation enteritis - acutely, nonoperative treatment **accompanied by steroids is usually sufficient**; if the **obstruction is a chronic sequela of radiation therapy, surgical treatment is indicated** (inf after radiotx especially cervical , prostate , colon ca)
- × Acute postoperative obstruction - This is difficult to diagnose due to postoperative ileus

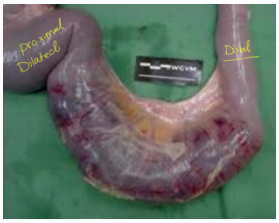
- **Diagnosis and management of adhesive small bowel obstruction (ASBO)**

  Extra note : the Diagnosis of SBO is essentially **clinical**

  the tx of SBO is essentially **surgical**

  - ⇒ In the absence of signs of strangulation and a history of persistent vomiting or combined CT-scan signs(sign of strangulation : closed loop / whirl sign / bowel thickening / mesenteric edema), patients with partial ASBO can be safely managed with nonoperative management;
  - ⇒ tube decompression should be attempted
  - ⇒ Water-soluble contrast medium (WSCM) is recommended for both **diagnostic and therapeutic** purposes in patients undergoing
  - ⇒ **Nonoperative** management can be prolonged for **up to 72 hours in the absence of signs of strangulation or peritonitis**
    surgery is recommended after 72 hours of nonoperative management without resolution
  - ⇒ **Open surgery** is frequently used for patients with
    • strangulating ASBO
    • after failed conservative management
    • in appropriate patients, a laparoscopic approach using an open access technique is recommended nonoperative managemen
- **obstructed hernia**
  - × Pediatric inguinal hernia; the obstruction is mostly due to **muscle spasm** // **manual reduction after sedation**. Surgery on next list
  - × Adult obstructed hernia; obstruction due to **narrow neck of the sac** or **adhesions** within it surgery after stabilization

- **Complications of SBO**
  - **Sepsis**; bacterial translocation or frank bowel gangrene
  - **Intra-abdominal abscess**
  - **Wound dehiscence** →reopened wounds
  - **Aspiration**
  - **Short-bowel syndrome** (as a result of multiple surgeries)
  - **Death** (secondary to delayed treatment)



Open adhesiolysis →

- **strangulated obstruction** →
  - A strangulated obstruction is a **surgical emergency**.
  - In patients with **closed loop obstruction** and in patients with a **complete small-bowel obstruction (SBO),** the risk of **strangulation** is high and early surgical intervention is warranted.
  - Patients with simple complete obstructions in whom **nonoperative trials fail** also need surgical treatment but experience **no** apparent disadvantage to delayed surgery.
  - Laparoscopy has been shown to be safe and effective in selected cases of SBO
- **mortality**
  - × If untreated, **strangulated obstructions cause death in 100% of patients.**
  - × If surgery is performed **within 36 hours, the mortality rate decreases to 8%.**
  - × The mortality rate is **25**% if the surgery is **postponed beyond 36 hours in these patients**

- **ileus** :

• Interruption of the normal propagation of intestinal contents **due to decreased motor activity**

• Synonyms→ functional = Paralytic = adynamic

- **Etiology**
  1- Peritonitis
  2- Postoperative
  3- Stress,sepsis,hypoperfusion,hypoxia
  4- Trauma
  5- Drugs,narcotics,anticholinergics,sedatives,...etc.
  6- Metabolic, electrolyte disturbances, DKA, organ failures
  7- Idiopathic

Distribution :

→ Generalized

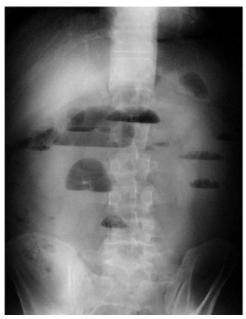
→ Localized = • Small bowel as in pancreatitis • Large bowel as acute appendicitis

- **Diagnosis clinical**
  ⇒ The predisposing factor
  ⇒ Constipation or obstipation
  ⇒ Abdominal distention
  ⇒ Vomiting or regurge
  ⇒ **Diminished bowel sounds** (high sounds are associated with mech. Obstruction)
  ⇒ **Minimal or no abdominal pain**

Diagnosis radiological

Diffused and no transitional point on xray.

Erect abdomen, air-fluid levels



Extra :

Feature	Mechanical Bowel Obstruction	Ileus
Bowel Dilation	Distended loops, especially small bowel	Diffuse dilation throughout both small & large bowel
Air-fluid Levels	Multiple, distinct air-fluid levels	Few or no air-fluid levels
Transition Zone	Clear transition between dilated and collapsed bowel	No clear transition zone; uniform dilation
Gas in Colon	Little to no gas in colon (in complete obstruction)	Gas often present throughout colon
Pattern	Step-ladder appearance in air-fluid levels	No step-ladder pattern, more diffuse

- **Postoperative ileus**

♣ Affects small and large bowel

♣ Small bowel regains activity before the large (usually within **hours**)

♣ <u>May last few days</u>

♣ **CT scan is the best modality to distinguish postop ileus from postop mechanical obstruction**

- **General Management**

1. NPO
2. Nasogastric intubation
3. Fluid and electrolyte resuscitation
4. Reverse the primary cause
5. Use of prokinetic drugs? E.g.metoclopramide or neostigmine

- **Etiology**:

The most common causes of **adult large-bowel obstruction**:

o**Neoplasm** (benign or malignant)

oStricture (diverticular or ischemic)

oVolvulus (colonic, sigmoid, cecal)

o Intussusception, usually with an identifiable anatomic abnormality in adults but not in children

oImpaction

- **Pathophysiology**

o Bowel dilatation above the obstruction causes

- Dehydration and electrolyte abnormalities.
- Bowel edema and ischemia increase the mucosal permeability of the bowel
- Bacterial translocation and systemic toxicity
- Bowel ischemia can lead to perforation and fecal soilage of the peritoneal cavity.

o In cases of **closed loop obstructions**, such as colonic obstruction in the presence of a closed ileocecal valve or incarcerated hernia, this process may be **accelerated**.

oThe cecum is the area most likely to perforate (Laplace law)