bowel obstruction

Edited by : Ghada Alzoubi

bowel obstruction outline

Definition

Types

- mechanical
- Functional

Site

- Small bowel mechanical obstruction
- Large bowel obstruction

Definitions

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

Ileus= paralytic= adynamic; when obstruction is functional

Mechanical Small bowel obstruction

Etiology of Small bowel obstruction

- **Postoperative adhesions**; appendectomy, colorectal surgery, and gynecologic and upper gastrointestinal (GI) procedures
- **Hernias** more Common worldwide specially in under developed countries
- Malignancy
- Inflammatory causes; Crohns' disease
- Volvulus Most common is colon
- Foreign bodies; bezoars Most common is bezoars : eating unusual things like hair
- In pediatric patients include congenital atresia, pyloric stenosis, and intussusception

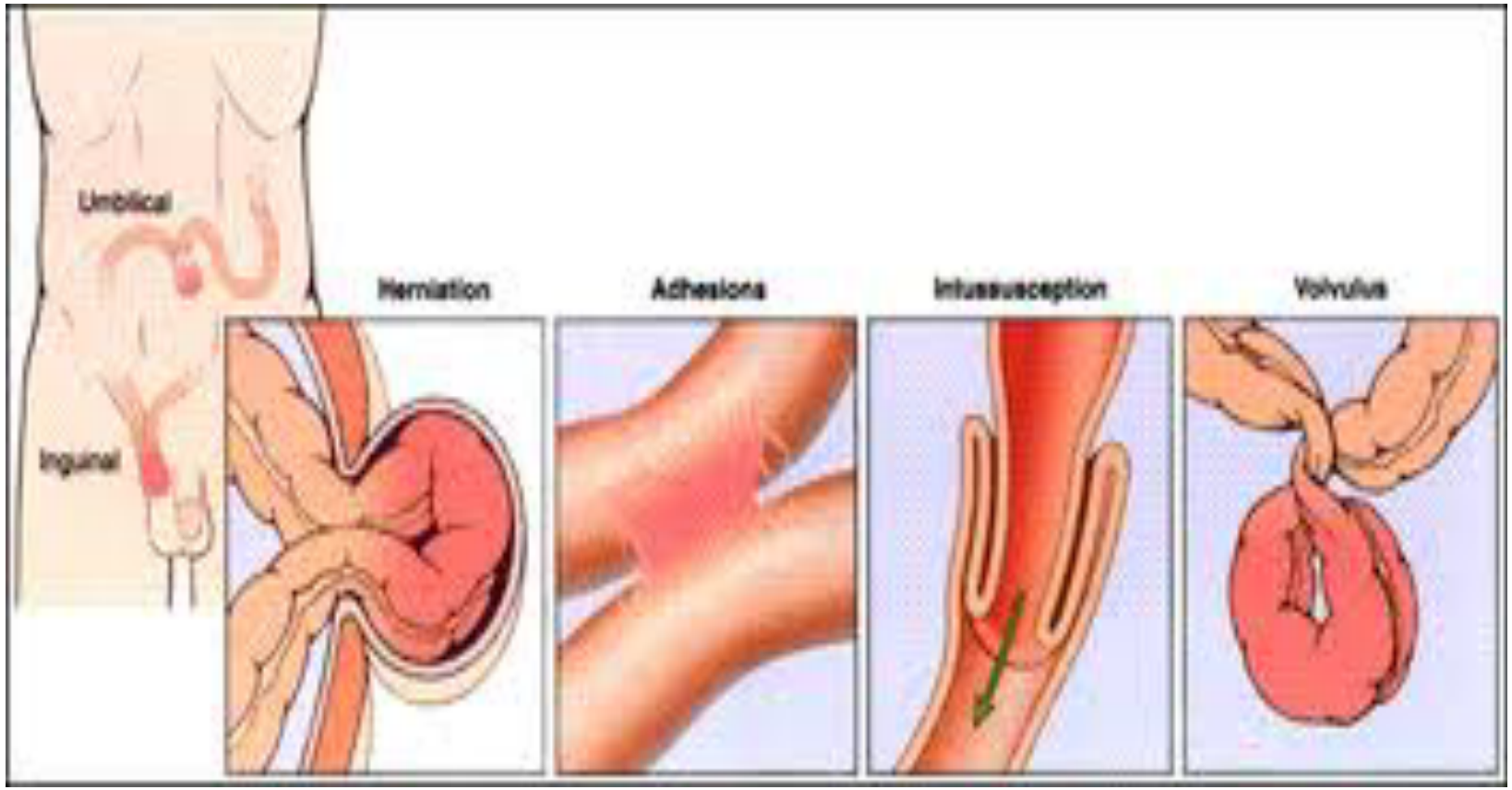
Closed loop obstruction

That means the obstruction not at single point but at points that the loop in btw them is obstructed .
It is very important to recognize because the pressure and tension in the lumen wall pulls up rapidly and lead to cut blood supply

1. Hernia Most common cause of closed loop obstruction
2. Volvulus
3. Colonic obstruction with a competent ileocecal valve
4. intussusception
5. Some adhesive obstructions

These are an emergency causes because it's lead to rapid lose of blood supply

Small bowel obstruction



Pathophysiology

- Increased peristalsis→ abdominal colic, exaggerated bowel sounds, and borborygmi
- Proximal bowel distension → third space losses , electrolyte imbalance, air-fluid levels
  - Increased secretion and decreases absorption → fluid accumulation
  - Swallowed air accumulation
- Bacterial overgrowth and translocation
- Proximal increased wall tension compromise of circulation

To clarify the previous slide

- **Increase peristalsis :** This will result in abdominal colic in a few minutes. We see them in the central of the abdomen because the small bowel is a part of midgut so the pain present centrally. Also it's result an exaggerated bowel sound as will be heard by stethoscope or even as borborygmi which is exaggerated sound heard by naked ear.

- **Proximal bowel obstruction :** Lead to third space losses in the wall of the bowel , lumen of the bowel and even out side , so the fluid is sequestered in the interstitial and intracellular but doesn't share movement across these spaces.

  Air –fluid levels can be seen in x-ray .In addition to than we see distention in patient abdomen (by physical examination) , and it's due to increase secretion and decrease absorption which result in fluid accumulation and the gas in the small bowel mostly swallowed that doesn't come from fermentation.or diffusion .

  Usually small bowel is gasless as we don't see much gas in small bowel , so any accumulation may suggest a pathological areas or obstruction.

- **Bacterial growth and translocation :** due to stasis in the proximal segment that allows to bacteria to grow and start to resemble the colonic bacteria that means a lot of anaerobes out numbering aerobes by one thousand or more , and start to smell and look like stools . This may result sometimes fecal vomitus in those patients due to prolonged obstruction. On the other hands,Translocation means bacteria that would come from the lumen and go to circulation without actual death of the wall (viable wall) which lead to sepsis and sometimes obstruction . Those patents treated by antibiotics.

- **Proximal increased wall tension compromise of circulation :** lead to strangulation obstruction

History

Abdominal pain The major presentation of small bowel obstruction

Crampy and intermittent, is more prevalent in simple obstruction.

Central

Pain is central as we said it is a midgut structure.
If the pain changes in character from intermittent to constant that means the bowel becomes ischemic (the simple and typical obstruction without strangulation, colicky in nature.

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).

History

- Reflex : vomiting due to any visible pain .
- Reflux: in complete obstruction the content of small bowel actually go back to the stomach and vomiting.
- Constipation : no passage of stool , with ability to pass flatus.
- Obstipation : completely no stool and flatus passage.

- Nausea
- Vomiting; reflex and reflux
- constipation or obstipation; more than 24 hours
- Diarrhea; in partial and intermittent obstruction like volvulus and gallstone ileus

History

- Fever and tachycardia - Occur late and may be associated with strangulation
- Previous abdominal or pelvic surgery, previous radiation therapy, or both Main cause of adhesion
- History of malignancy - Particularly ovarian and colonic malignancy

Physical Examination

1. Abdominal distention; The proximal small bowel has less distention when obstructed than the distal bowel has when obstructed.
2. Hyperactive bowel sounds occur early as GI contents attempt 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, which suggests late strangulation or malignancy
- Masses, which suggest obturator hernia

By feeling a mass outside the rectum

Clinical types

- Partial vs complete
- Simple vs strangulated

SBO accounts for 20% of all acute surgical admissions

Partial or complete obstruction it is depend on the patient if he is passing a gas or even feces or not.
Partial obstruction is less dangerous than complete obstruction.
Complete obstruction means that the problem are due to have strangulation or effects in the patient more dangerous .

Simple means that the bowel was viable while strangulated means the blood supply of the wall has been compromised. Small bowel obstruction it is not a rare things , actually it's one fifth of the admissions in the Surgical ER .

Strangulated SBOs

Check for findings commonly believed to be more diagnostic of intestinal ischemia, including the following:

- Fever
- Tachycardia
- Peritoneal signs

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

Serial abdominal examinations are important and may detect changes early.

X-ray is useful to detect that the strangulation is occurred . (early detection)

Terms

- **Bowel fatigue**; ileus complicating mechanical obstruction

  Smooth muscle do not actually fatigue.
- **Feculent vomiting**

Both are indicative of prolonged obstruction and the need for surgery

Labs

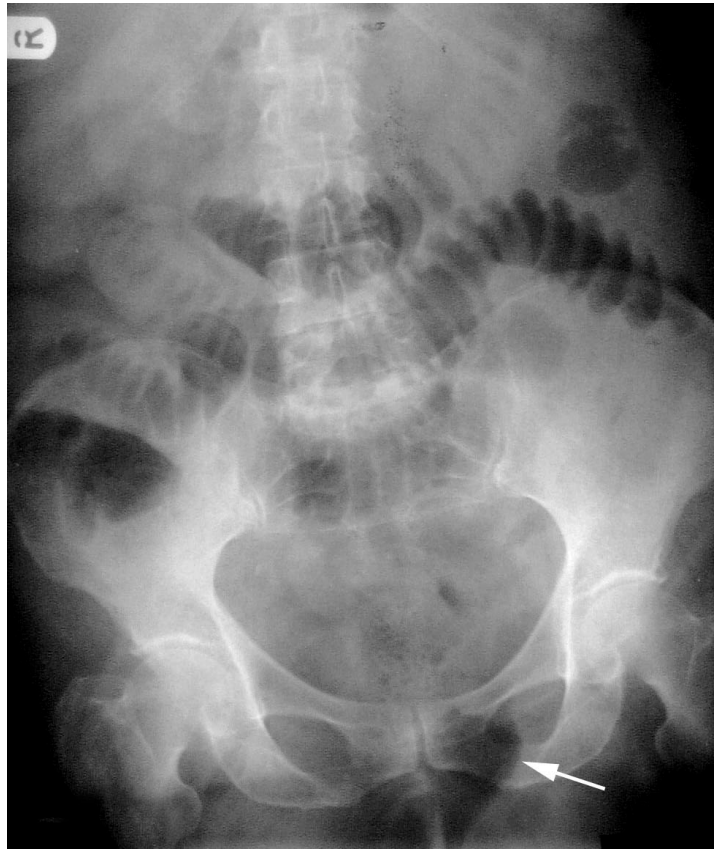
- Blood urea nitrogen (BUN) level
- Electrolytes
- Creatinine
- Complete blood count (CBC)
- Urinalysis
- Type and cross match

Imaging tests

The best diagnosis depends on the good history and physical

1. Plain radiographs first for patients in whom SBO is suspected. At least 2 views, supine or flat and upright, are required. Plain radiographs are diagnostically more accurate in cases of simple obstruction.
2. Enteroclysis is valuable in detecting the presence of obstruction and in differentiating partial from complete blockages. This study is useful when plain radiographic findings are normal in the presence of clinical signs of SBO or when plain radiographic findings are nonspecific.
3. Computed tomography (CT) scanning is the study of choice if the patient has fever, tachycardia, localized abdominal pain, and/or leukocytosis.
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%.

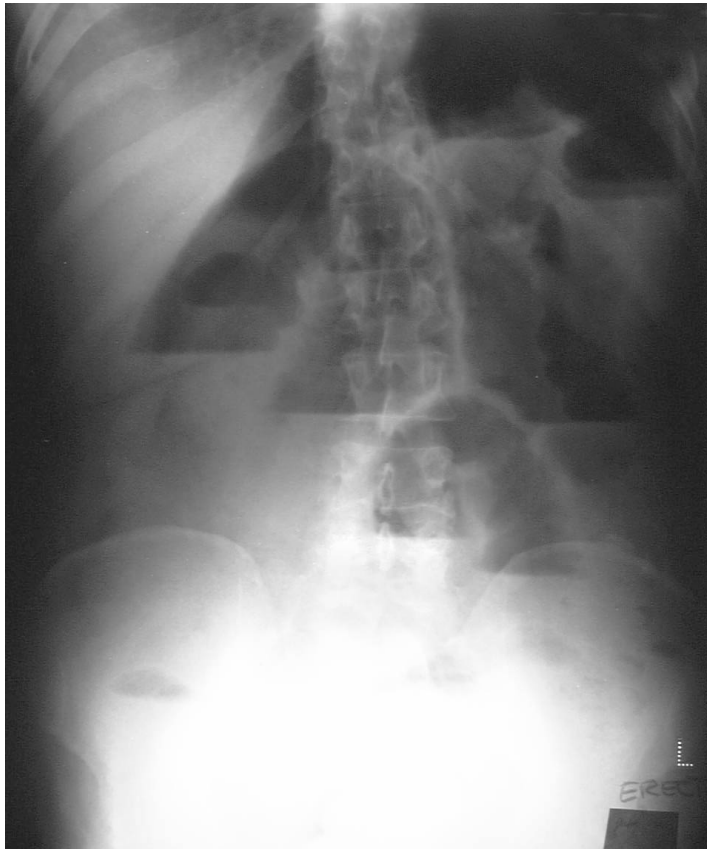
plain radiography recumbent obstructed inguinal hernia



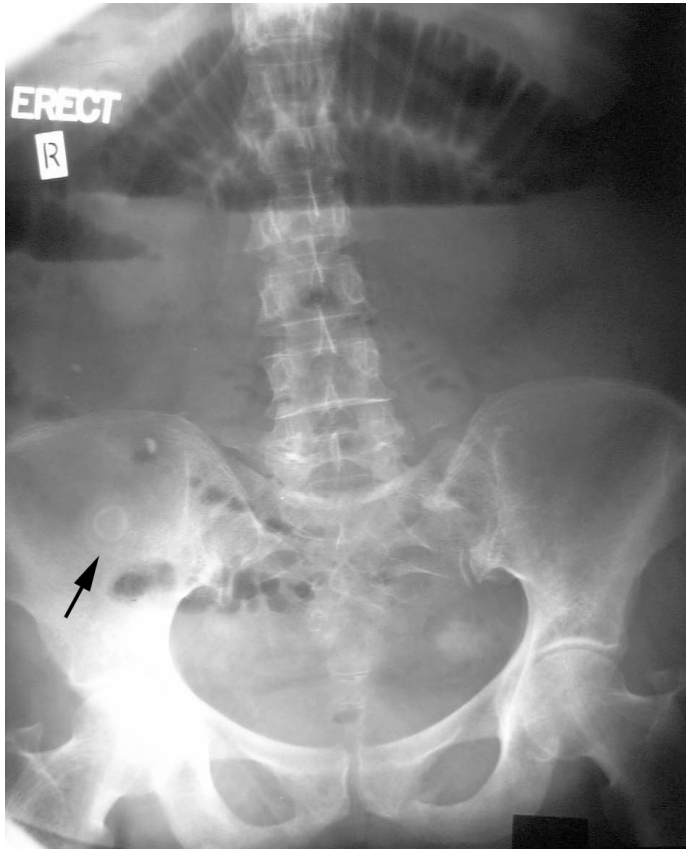
plain radiography recumbent

plain radiography (Standing) the step ladder appearance

Represent multiple Air-Fluid levels



plain radiography (gallstone ileus)



Enteroclysis

- is valuable in detecting the presence of obstruction and in differentiating partial from complete blockages.
- This study is useful when plain radiographic findings are normal in the presence of clinical signs of small-bowel obstruction (SBO) or when plain radiographic findings are nonspecific
- Enteroclysis distinguishes adhesions from metastases, tumor recurrence, and radiation damage.

Enteroclysis

Computed tomography (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.

Computed tomography (CT)

- CT scanning is 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.
- The modality does not require oral contrast for the diagnosis of SBO, because the retained intraluminal fluid serves as a natural contrast agent.

Computed tomography (CT)

Computed tomography (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.

Indications of Nonoperative treatment of SBO

General management is surgical, but many of these patients start to manage nonoperatively .

- 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.

Indications of Nonoperative treatment of SBO (con…)

- 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
- Acute postoperative obstruction - This is difficult to diagnose due to postoperative ileus

Diagnosis and management of adhesive small bowel obstruction (ASBO)

- In the absence of signs of strangulation and a history of persistent vomiting or combined CT-scan signs, 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

Diagnosis and management of adhesive small bowel obstruction (ASBO)

Nonoperative management can be prolonged for up to 72 hours in the absence of signs of strangulation or peritonitis Or bacteria translocation that's cause sepsis

surgery is recommended after 72 hours of nonoperative management without resolution

Open surgery is frequently used for patients with

- strangulating ASBO and
- after failed conservative management
- in appropriate patients, a laparoscopic approach using an open access technique is recommended

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 id due to narrow neck of the sac or adhesions within it surgery after stabilization

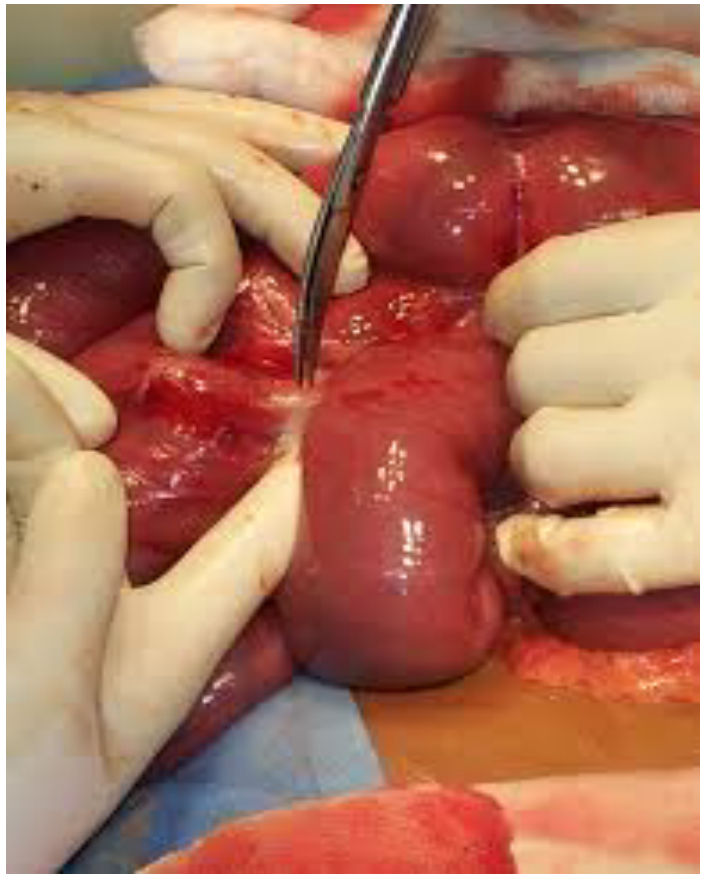
  Because those patient have closed loop obstruction (emergency) ,we should not wait till the morning.
  In recurrent cases some times bowel can't stand with ischemia for a few hours.

Complications of SBO

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

The major cause of death in those patients is strangulation (closed loop obstruction). The only ways to detect this type of obstruction is by using our clinical judgment and CT scan .

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

strangulated obstruction

strangulated obstruction 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.