

Gastric outlet, small and large bowel obstruction



Objectives

The student is expected to describe and explain the pathogenesis, etiology, clinical features and complications of each of the following conditions:

- Mechanical
- Non-mechanical
- Adhesive
- Non-adhesive
- Gastric outlet obstruction

Colour Index

- Main Text
- Males slides
- Females slides
- Doctor notes
- Textbook
- Important
- ★ Golden notes
- Extra

Intestinal obstruction

- Defined as **mechanical** or **functional** obstruction of intestine by causes in the lumen/ wall/ outside wall resulting in stoppage in anal ward movement of bowel content, proximal dilation and distal collapse and associated with complex of symptoms and signs
- **One of the common cause of acute abdomen**
- May lead to **high morbidity and mortality** if not treated correctly

> Classification:

Peristalsis is working against a **mechanical obstruction** (partial or complete)

Mechanical
(dynamic)

Non-mechanical
(adynamic)

- Mechanical element is absent, peristalsis may be **absent** (paralytic ileus) or present in **non propulsive form** (mesenteric vascular occlusion or pseudo-obstruction)
- **Localized:** when there is appendicitis obstructing only part of intestine
- **Generalized:** generalized peritonitis and after any abdominal surgery there is physiological ileus for two days

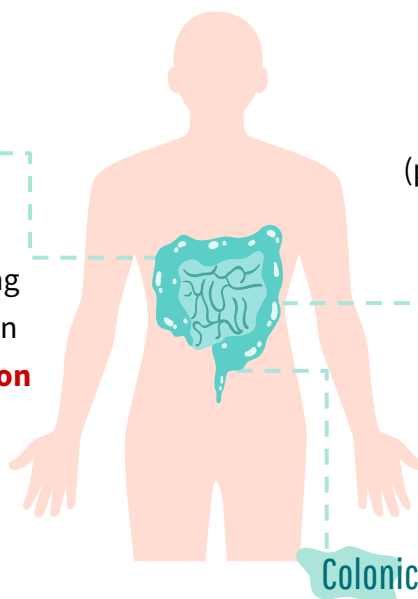
> Clinical picture:

- **Cardinal symptoms** of bowel obstruction are **abdominal pain, vomiting, Distention** and **constipation**
- As we move distally; abdominal pain↓ vomiting↓ distention↑ constipation↑
- Vary according to **location, duration, underlying pathology** and **intestinal ischemia**
- The clinical presentation of mechanical bowel obstruction reflects the anatomical location of the lesion.
- The predominating features from proximal to distal are as follows:

Proximal

- very short history of anorexia, vomiting
- relatively severe upper abdominal pain
- **absent/minimal abdominal distention**
- limited if any changes in bowel

★ **Profound vomiting!**



short history of **colicky** midgut (periumbilical pain, **distension, vomiting** and recent absolute constipation)

Distal

Colonic

- more **insidiously** with poorly defined hindgut abdominal pain/discomfort
- weight loss, **pronounced abdominal distension**
- history of altered bowel habit tending to constipation with **little or no vomiting**

Mechanical obstruction

Classification:

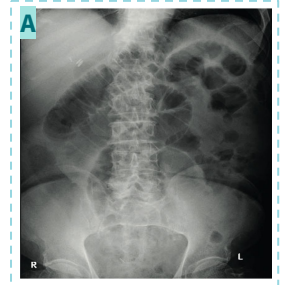
Site

Small bowel obstruction (SBO):

- **High** --> **vomiting** occurs **early**, **profuse** and causes **rapid dehydration**. Distension is **minimal** with little evidence of dilated small bowel loops on abdominal radiography
- **low** --> **predominant pain**, and central **distention**. Vomiting is **delayed**, multiple central air-fluid levels seen on abdominal x-rays (dilated small bowel loops) (pic A)

Large bowel obstruction (LBO):

- **Early pronounced distension**, mild pain and vomiting, dehydration late e.g. carcinoma, diverticulitis or volvulus. **An emergency, take to OR!**



Location

Intraluminal:

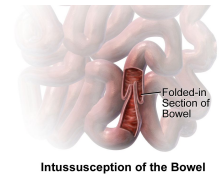
- impacted faeces, foreign bodies, gallstones, Bezoars: **solid mass of indigestible material** "hair or food" that accumulates

Intramural:

- tumors, inflammatory strictures

Extramural:

- adhesion, hernias, tumors, volvulus: **twisting or axial rotation** of a portion of bowel about its mesentery, intussusception: when one portion of the gut invaginates into an immediately adjacent segment.



Nature

Open loop obstruction (simple linear obstruction):

- when there is one point of obstruction in intestine it is less severe in symptoms & signs (**without interfering with vascular supply**)

Closed loop obstruction (rotational obstruction):

- When there are two points of obstruction in intestines. Loop of intestine between these two points is isolated from rest (more severe) and more likely to strangulate and perforate **and mandate early surgical intervention**. may present in those who have competent ileocecal valve (present in 15% of population)

Strangulation (surgical emergency):

- Significant impairment of blood supply. **Most commonly associated with hernia**, volvulus, intussusception, mesenteric infarction, adhesions/Bands

Etiology:

Doctor said Percentages aren't important, just know the two most common

Small intestine

Miscellaneous 8%

Intraluminal 10%

Obstructed
hernia 12%

Inflammatory 15%

Tumors 15%

Adhesions 40%
(MOST COMMON)

Adhesion can be congenital but mostly post-op

Percentages from Davidson:
intestinal obstruction are adhesions (60%)
obstructed hernia (20%)
malignancy (primary or secondary; 5-8%)

| | Small intestine | Large intestine |
|------------------------|---|--|
| Intramural (intrinsic) | Crohn's disease Radiation stricture Tuberculosis Ischaemic stricture caecal carcinoma Primary tumour: lymphoma, adenocarcinoma, carcinoid tumour Intussusception secondary to: hypertrophy of Peyer's patches, Peutz-Jeghers polyp | Colorectal adenocarcinoma Diverticular stricture Sigmoid volvulus Radiation stricture (rectum/sigmoid) Ischaemic stricture Caecal volvulus Crohn's disease |
| Extrinsic | Postoperative adhesions Adhesions from previous inflammatory condition Congenital band Hernia Compression by tumour mass Volvulus | Rare owing to lumen diameter and retroperitoneal location Compression by tumour mass Massive inguinal hernia Incisional hernia |
| Intraluminal | Foreign body Gallstone ileus Worm infestation Bezoar | Faecal concretion (very rare) |

Large intestine

sigmoid
volvulus 5%

Colorectal
adenocarcinoma
70%
(MOST COMMON)

stricturing
diverticular
disease 10%

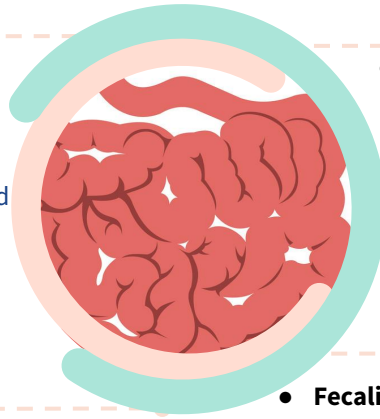
Diverticulosis if it happened it will cause large abscess that will cause bowel obstruction

Pathophysiology:

- Initially the small bowel proximal to an obstruction contracts vigorously to overcome the mechanical impedance (This why exaggerated bowel sound at the beginning)
- Distal to obstruction nothing is passed & bowel collapse > constipation

01

- The distension is caused by three factors:
 - Solids:** the food we eat
 - Fluids:** this is made up of the various digestive juices 1 litre per day (saliva, bile, pancreatic and gastric secretions)
 - Gas:** there is a significant overgrowth of both aerobic and anaerobic organisms, resulting in considerable gas production



03

- Dehydration** caused by:
 - Reduced oral intake
 - Defective intestinal absorption
 - Losses as a result of vomiting
 - Sequestration in the bowel lumen
 - Transudation of fluid into the peritoneal cavity (third space loss)
 - Enforced fasting

02

- Reflex contraction of smooth muscle > colicky pain
- Increased intraluminal pressure > Vomiting
- Increased peristalsis > Increased bowel sounds
- If obstruction not overcome > bowel atony

04

- Fecalization** happens in small bowel where there is no stool usually (only chyme); microorganisms will grow in the stagnated chyme and converted to a stool like material then the wall of the intestine will be inflamed
- Systemic effects of inflammation are hypovolemia, PH abnormality (acidosis) and sepsis

Complications:

Paralytic ileus

- If obstruction not overcome > peristalsis subsides and paralytic ileus (bowel atony) ensues due to electrolyte imbalance and gross distension proximal to the obstruction
- Decreased reabsorption with time and flaccidity prevent vascular damage from high pressure

Perforation

- Distension > blood vessels will collapse due to the pressure > **ischemia** then **perforation**
- ★ Features that indicate imminent perforation, strangulation or established peritonitis from perforation are:
 - pyrexia, tachycardia, dehydration
 - hypotension, leukocytosis
 - peritonism on abdominal palpation and completely absent bowel sounds

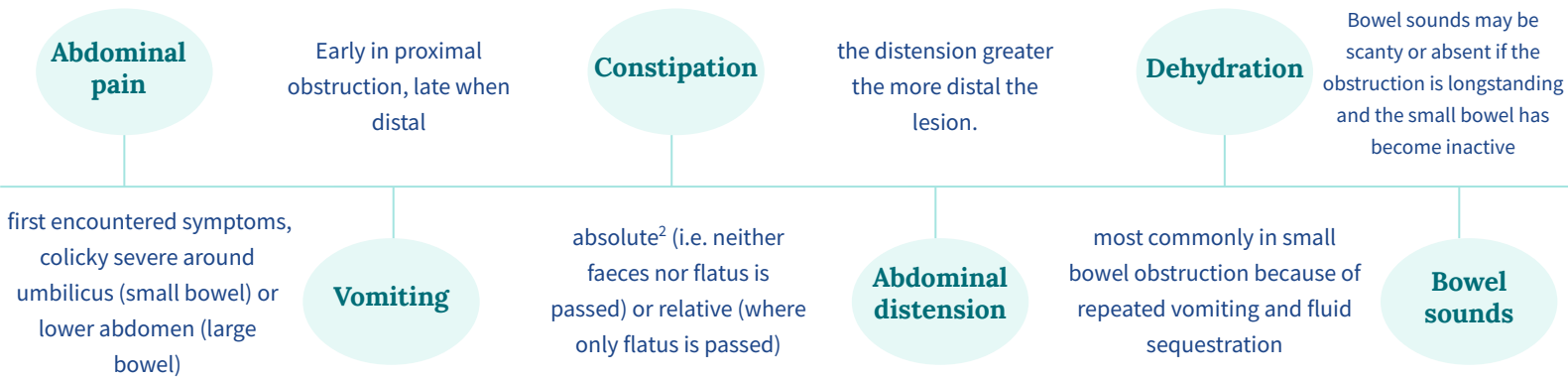
The risk of perforation increases as the cecal diameter exceeds 12 cm, so take immediately to the OR.

Infection

- If the situation continues without decompression and resolution, there is progressive **bacterial translocation** into the portal circulation then septicemia
- perforation may progress to peritonitis

> History:

- Full clinical history and examination is essential, along with immediate initiation of intravenous fluid and electrolyte therapy.
- The diagnosis of Mechanical obstruction depends mainly on the cardinal symptoms and signs, The nature of the presentation will also be influenced by the type of obstruction (small bowel/ large bowel) and degree¹ (complete/ incomplete). The symptoms:



Symptoms In strangulation (EMERGENCY):

- Severe constant abdominal pain
- tachycardia
- tenderness with rigidity and peritonism/rebound tenderness
- ★ Fever indicate ischaemia, perforation and inflammation
- shock
- Marked leukocytosis

> Examination:

- In general examination check vital sign and signs of dehydration, tachycardia, hypotension, dry mucus membrane, decreased skin turgor, decreased urine output.
- **Any patient with bowel obstruction; you MUST do Digital rectal & Hernial orifices exam**

Inspection

distension, scars, peristalsis, masses, hernial orifices

Percussion

tympanitic abdomen



Palpation

tenderness³, rebound tenderness⁴, guarding⁵, masses and rigidity

Auscultation

high pitched bowel sound or silent abdomen, Early tinkling bowel sounds, absent bowel sounds lately

Examine **rectum** for mass, blood, feces or it may be empty in case of complete obstruction. **Hernial orifices** must be carefully inspected and any previous surgical **abdominal scars** noted.

Right iliac fossa tenderness along with radiological evidence of gross **cecal distension** in the presence of **distal colonic obstruction** is a **critical sign** as it indicates **imminent caecal perforation**, which is a frequent complication of distal colonic obstruction. **think of competent ileocecal valve**

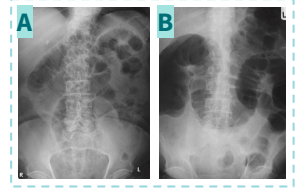
The reason that the caecum perforates even with obstruction due to sigmoid cancer is because the caecum is anatomically the largest diameter segment in the gut. Thus tension is greatest in the caecal wall, despite equalized intra-luminal pressure along the colon.

1. complete: has all the cardinal features, **food and gas can't pass (no air in rectum)**. Incomplete: food and gas will be able to pass (**air in rectum**)
2. Absolute constipation (Obstipation: failure to pass stool & gas) is a cardinal feature of complete intestinal obstruction. Some patients may pass flatus or faeces after the onset of obstruction as a result of the evacuation of the distal bowel contents. The administration of enemas should be avoided in cases of suspected obstruction. This merely stimulates evacuation of bowel contents distal to the obstruction and confuses the clinical picture.
3. **Pain when you press means there is inflammation in an organ**
4. **When you press the abdomen and suddenly release your hand, patient will feel severe pain. That means there is inflammation in the abdominal wall**
5. **Contraction of muscles of the abdominal wall whenever there's an inflammation in the abdomen so you feel the abdomen hard and tense**

Investigation:

- In patients without evidence of strangulation there is a role for other imaging modalities¹

★ Plain X-ray² **best initial**, in upright and supine position reveal distended small bowel (pic A) or large bowel loops (pic B) Grossly distended bowel loops or evidence of a closed loop obstruction also merit early surgical intervention



- CT abdomen³ **most accurate** used to determine the cause and assess bowel obstruction, because it allows interpretation of the likely need for surgery.

- Contrast enema. Contrast study are used to assess the level and the degree of obstruction. water-soluble enema used to differentiate large bowel obstruction from pseudo-obstruction. contraindicated when complete obstruction is suspected. Has a therapeutic role
- Contrast follow through. study of choice when investigating possible malrotation and contraindicated in the presence of acute obstruction and may be life-threatening.
- Contrast study Indicated in patient who failed to resolve: Passed contrast → continue conservative management, Delayed passages → OR

- CBC, **High WBC (neutrophilia with strangulation)**
- Hyperkalemia: due to the release of intracellular K⁺ from ischemic cells into the circulation, hyperamylasemia & raised LDH may be associated with strangulation
- Sigmoidoscopy (only in carcinoma, volvulus)

Management:

- There should be frequent clinical assessments and monitoring ins and outs
- Some cases will settle by using this conservative regimen, other need surgical intervention

01

Fluid and electrolyte replacement

with Normal saline and K (low Cl and K, metabolic alkalosis)

02

NG (nasogastric) tube decompression

03

NPO (nothing per mouth) + Foley catheter⁴

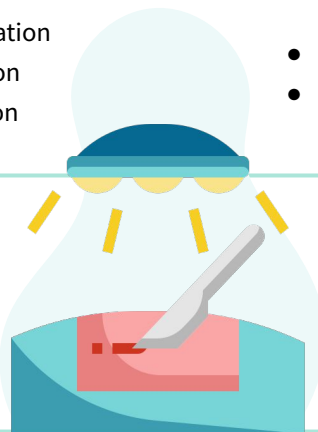
04

IV antibiotics and administration of Analgesics⁵

- Surgery should be delayed till resuscitation is complete unless signs of strangulation and evidence of closed-loop obstruction and large bowel obstruction

- procedure: exploratory laparotomy**
- "The sun should not both rise and set" in cases of unrelieved obstruction.

- Cases that show reasons for delay should be monitored continuously for 72 hours in hope of spontaneous resolution e.g. adhesions with radiological findings but no pain or tenderness



- Indication for surgery:**
 - Virgin abdomen (No previous surgery)
 - Failure of conservative management
 - Tender, irreducible hernia
 - Strangulation or perforation
 - Complete or losed-loop obstruction obstruction

- even with the best imaging techniques, the diagnosis of strangulation remains a clinical one
- A chest x-ray should be obtained to screen for air under the diaphragm indicates perforation and mandates laparotomy
- You can see the transition zone = distended bowel followed by collapsed bowel. It will show you "Pneumatosis intestinalis" air in the intestinal wall. It's a feature of ischemia. And it can show poor blood supply
- to monitor the urine output to assess dehydration
- mandatory for all patients undergoing surgery for intestinal obstruction.

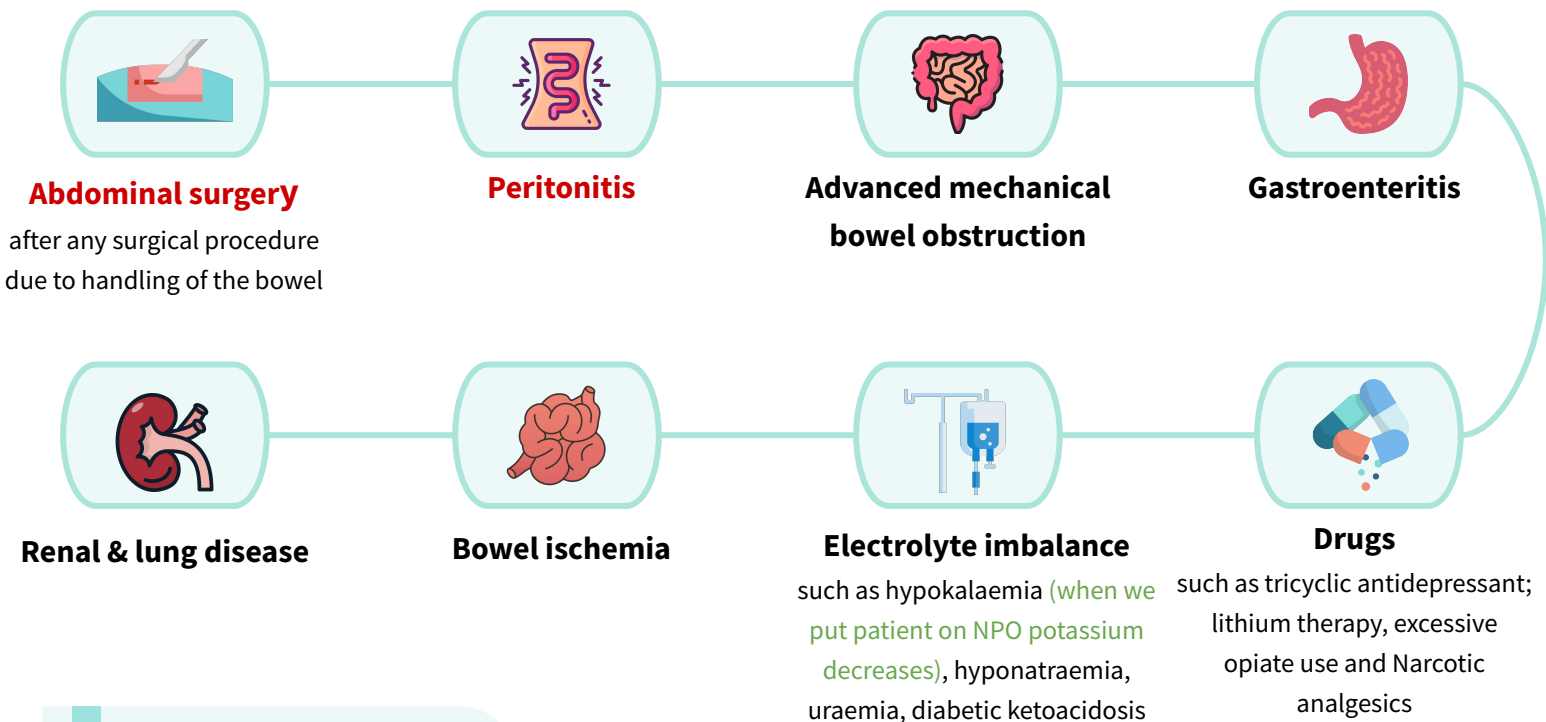
Non-Mechanical obstruction

- Mechanical element is absent, peristalsis may be absent (paralytic ileus) and present in non propulsive form (mesenteric vascular occlusion or pseudo-obstruction)

> Paralytic ileus:

- The term refers to lack of propulsive contractions or absent peristaltic movement of both jejunum and ileum due to neuromuscular failure (i.e. submucous "Meissner's" and myenteric "Auerbach's" plexuses), although the ileus can be localized in some instances. It is common as a secondary feature of peritonitis due to any cause or sequela of the end stage of mechanical obstruction.

Etiology:



Pathophysiology:

- Stressful stimuli to the bowel (e.g., surgery, peritonitis) → sympathetic nervous system activation → decreased/arrested peristalsis
- Inflammation or intraoperative manipulation → local release of nitric oxide → relaxation of intestinal smooth muscles → decreased/arrested peristalsis
- Decreased/arrested peristalsis → bowel wall distention → progresses to paralytic ileus as detailed in mechanical bowel obstruction.

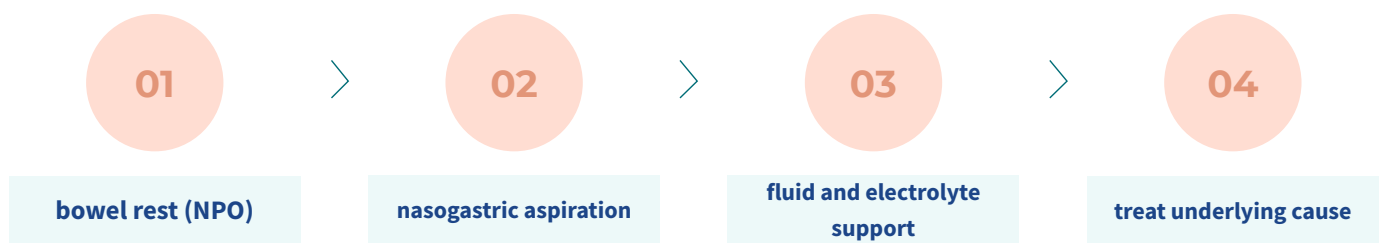
Clinical features:

- Paralytic ileus is clinically significant if it prolonged more than 72 hours after abdominal surgery:

- 1 No passage of flatus
- 2 No return sounds on auscultation
- 3 Effortless vomiting may occur in the absence of gastric aspiration
- 4 Tympanic and marked abdominal distension and bowel sounds are usually absent on auscultation
- 5 Colicky abdominal pain is not a feature
- 6 Increased pain in the abdominal wound due to abdominal distension
- 7 Abdominal x-ray shows gas-filled loops of small and large intestine down to the rectum with multiple air-fluid levels (erect film)

Management:

- Treatment is focused on the cause and conservative management with:



> Pseudoobstruction:

- The underlying mechanism of pseudoobstruction is not fully understood
- **Autonomic imbalance resulting from decreased parasympathetic tone or excessive sympathetic output. The majority of cases are due to large bowel dysfunction.**

- **Blood electrolyte analysis** is essential
- **imaging** to exclude mechanical obstruction

Diagnosis

Management

- **Stimulant enemas**
- **Colonoscopic deflation:** in cases where cecal distension causes perforation
- **IV erythromycin:** shown to stimulate motility by binding to colonic motilin receptors.
- **IV neostigmine:** when other measures fail
- In a small minority of cases **colectomy** with ileorectal anastomosis, or with ileostomy

Adhesive obstruction

- Most common cause of mechanical obstruction.
- It start after surgery in hour, difficult to distinguish from paralytic ileus.

> Causes:

- Any irritation to the peritoneum. May cause local production of fibrin which result in adhesions

1 Postoperative

2 Acute inflammation

3 Foreign bodies (mesh, gauze, sutures)

4 Infection (peritonitis, TB)

5 Chronic inflammatory disease (crohn disease)

6 Radiation enteritis

> Management:

- The initial treatment is based on **intravenous fluid rehydration, electrolytes replacement, and nasogastric decompression.**
- this conservative treatment is successful and curative
- regular clinical evaluation is necessary and the surgical intervention indicated in:

Failure of conservative treatment > 72 hours

Free intraperitoneal gas in the abdominal imaging

Laparoscopic adhesiolysis

Evidence of strangulation or peritonitis

Complete intestinal obstruction in the abdominal imaging

Gastric outlet obstruction

- GOO is the clinical and pathophysiological consequences of any impediment to gastric emptying mechanism due to gastric, duodenal or extraluminal disease
- Classified to benign or malignant causes
- The two common causes of gastric outlet obstruction are **gastric cancer** and pyloric stenosis secondary to **peptic ulceration**.

> Etiology:

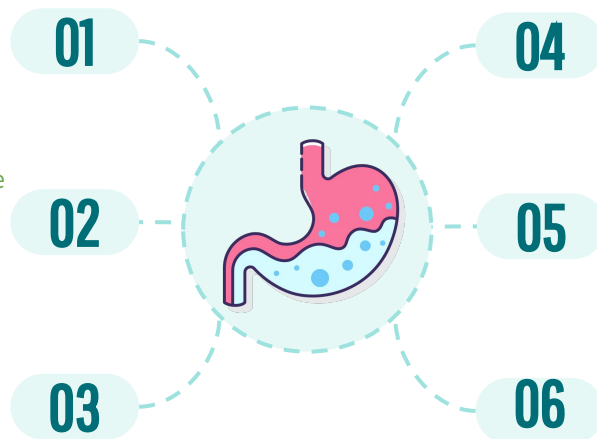
- PUD (peptic ulcer disease)
- Cancers (gastric, duodenal, ampullary, pancreatic, cholangiocarcinoma)
- Gastric, duodenal polyps
- Caustic ingestion
- Pyloric stenosis (in newborns diagnosed with US)
- Congenital duodenal webs
- Metastasis
- Gallstone (Bouveret syndrome): a gastric outlet obstruction secondary to an acquired fistula between the gallbladder and stomach or in duodenum, in duodenum called "gallstones ileus"
- Bezoars: solid mass of indigestible material "hair or food" that accumulates
- Pancreatic pseudocysts
- SMA (Superior mesenteric artery) syndrom: acute angulation of the SMA causes compression of the third part of the duodenum between the SMA and the aorta In people who lost a significant amount of weight the mesentery of SMA will press over the duodenum

> Diagnosis:

- with the decrease in the incidence of peptic ulceration and the advent of potent medical treatments, gastric outlet obstruction should be considered malignant until proven otherwise

Symptoms

- Abdominal pain¹
- Upper abdominal distension²
- Nausea, vomiting (copious, projectile³, non bilious (no bile, bile duct joins the GI at the 2nd part of the duodenum) undigested food taken several hours to days ago
- Anorexia and early satiety
- Dehydrated and Pallor

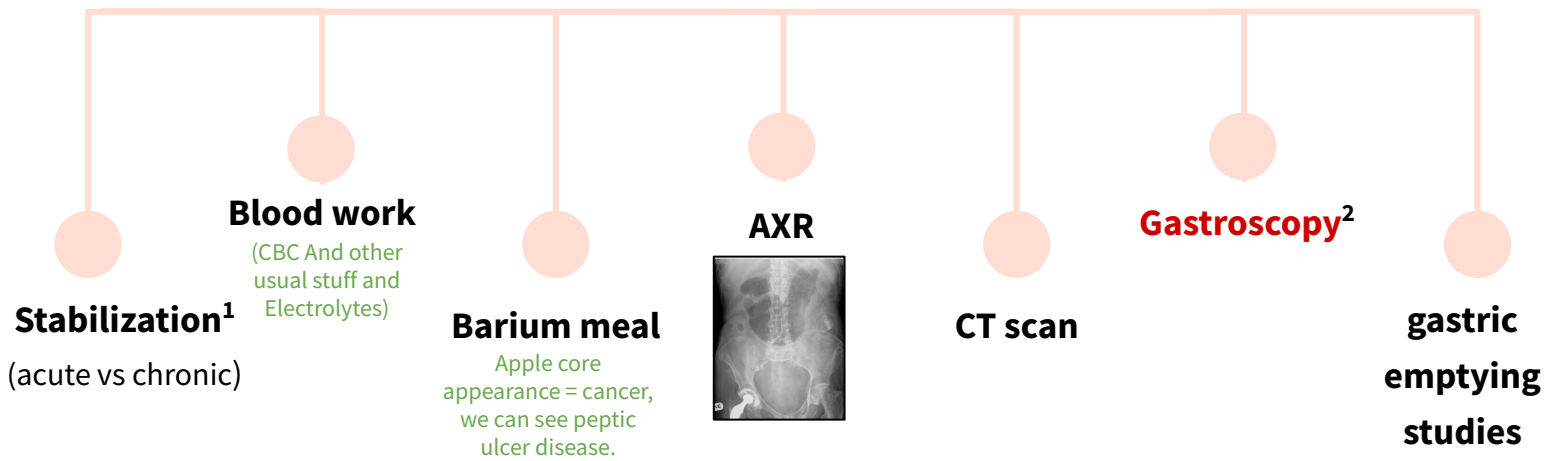


Signs

- Chronically ill looking
- Epigastric ,left or right hypochondrium tenderness
- Visible gastric peristalsis
- Succussion splash⁴ (splash sound indicating the presence of a hollow viscus filled with both fluid and gas)
- Signs of gastric cancer (supraclavicular lymph node enlargement, **sister mary joseph sign**: palpable nodule bulging into the umbilicus as a result of metastasis of a malignant cancer in the pelvis or abdomen

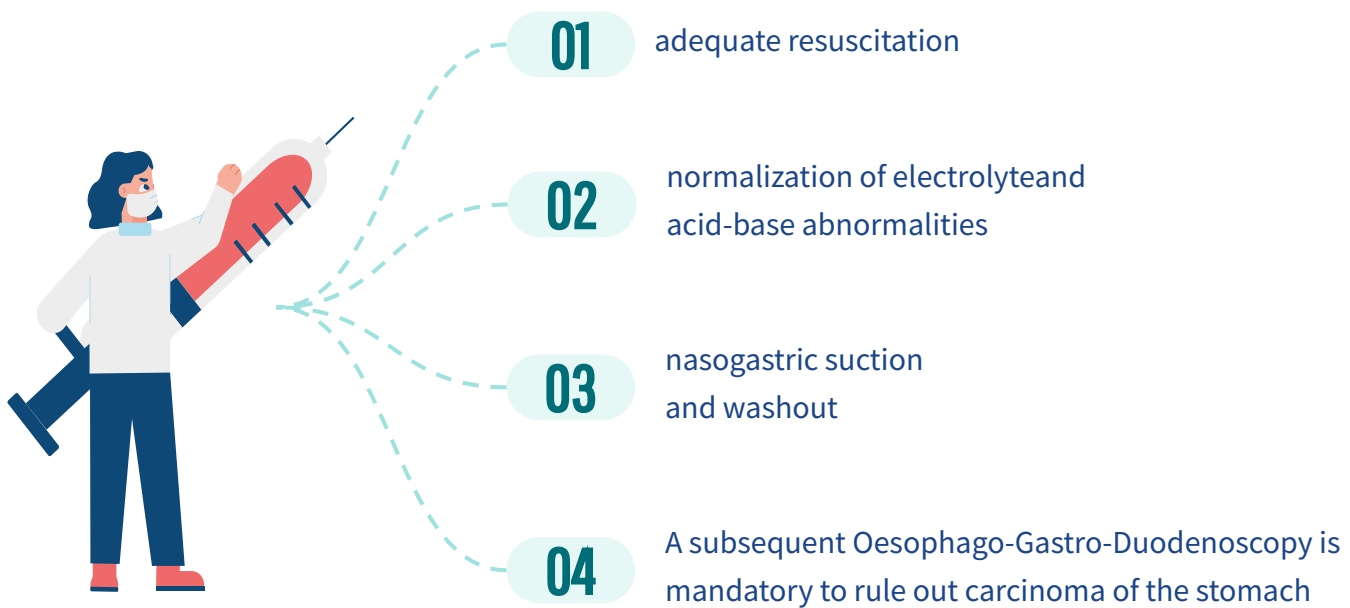
1. can be due to the Disease that caused the obstruction, not due to the distention itself
2. generalized distention happens if the obstruction was at a lower level of the GI tract
3. Projectile vomiting, it's a classical finding in neonates with pyloric stenosis projectile means it's so strong that it's shooting off the patient's mouth لدرجه يصير بالحدار
4. put the stethoscope on the stomach and place your right hand on the left side of the patient and try to shake the patient then you will hear the suction splash (صوب حص الورنه)

> Investigation:



> Management:

- First Correct the electrolyte imbalance and give iron if they're anemic and suck the gastric stuff. Then try to detect the cause.



- If medical therapy failed surgical treatment will involve a **gastrojejunostomy**, performed by open or laparoscopic access



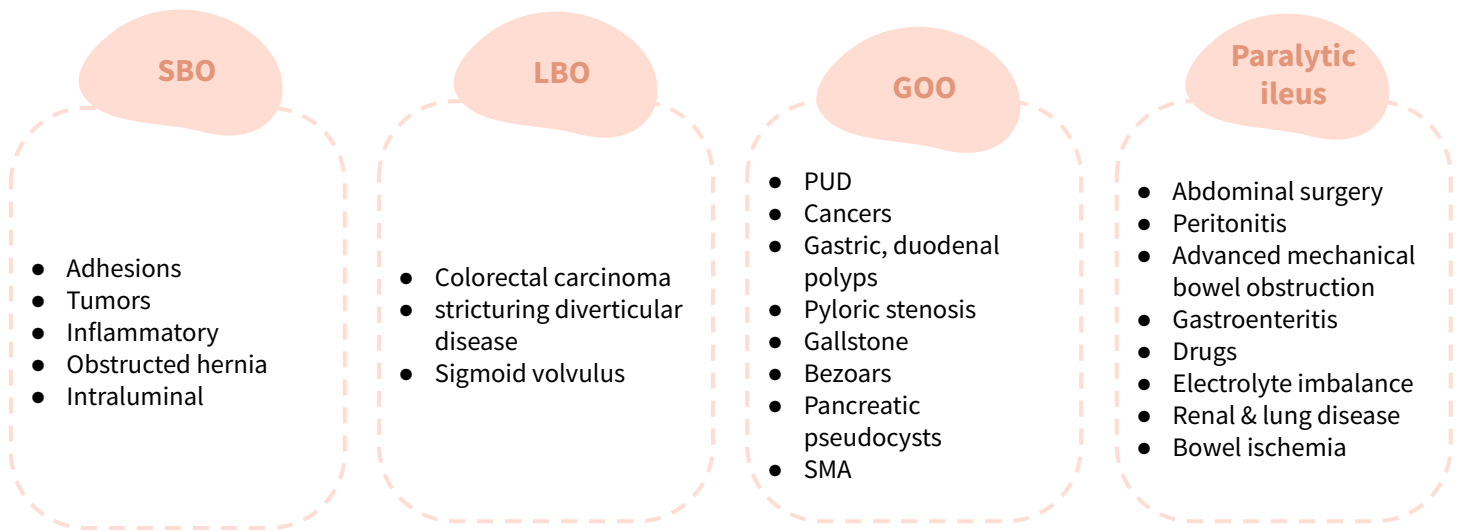
Click and enjoy watching how they do this amazing operation (anastomosis between stomach and jejunum)

- ABC if the patient is severely unstable, and electrolyte correction because the patient usually will be hyponatremic, hypokalemic and having high levels of bicarb. The metabolic abnormality of hypochloremic alkalosis is usually only seen with peptic ulcer disease (less in malignancy) and should be treated with isotonic saline with potassium
- Endoscopic biopsy is essential to determine whether the cause of the problem is malignancy. Usually useless as first line investigation because the stomach will be full of hard food that we can't suck up so basically we won't see anything, we should do **Gastric Aspiration first** where we place 2 large tubes while the patient is fasting and if it got filled with 400 cc of gastric content then this is diagnostic of obstruction. Then we will do a gastric lavage using large tubes. Then we can do the gastroscopy and diagnose.

Summary

- The obstruction patient is gonna present in ER because it's a surgical emergency
- There are imp things to know about them like
 - the level of obstruction (gastric, small bowel, large bowel)
 - is it acute or chronic?
 - What is the cause of it?
 - What is the grade of obstruction? (complete, partial)

• Etiology:



• Clinical features:

first exclude **strangulation**, **perforation** and **peritonitis** symptoms. Then try to differentiate based on cardinal symptoms:

| | SBO | LBO | GOO | Paralytic ileus |
|---------------------|--|---|---|---|
| Pain | <ul style="list-style-type: none"> • Colicky, periumbilical | <ul style="list-style-type: none"> • Colicky or constant | <ul style="list-style-type: none"> • Epigastric pain | <ul style="list-style-type: none"> • Continuous (noncolicky) abdominal pain or discomfort |
| Vomiting/ nausea | <ul style="list-style-type: none"> • Early-onset • Large volume • Bilius | <ul style="list-style-type: none"> • Late-onset • Little vomiting • Initially bilious Progresses to fecal vomiting | <ul style="list-style-type: none"> • Postprandial, nonbilious projectile vomiting | <ul style="list-style-type: none"> • Effortless vomiting |
| Constipation | <ul style="list-style-type: none"> • Late-onset | <ul style="list-style-type: none"> • Early-onset • Pronounced | - | - |
| Distention | <ul style="list-style-type: none"> • Minimal or absent | <ul style="list-style-type: none"> • Early • Pronounced | <ul style="list-style-type: none"> • Upper abdominal distention | <ul style="list-style-type: none"> • Marked |
| Other | <ul style="list-style-type: none"> • Dehydration. • Tympanic percussion. • Increased high-pitched, tinkling bowel sounds (early) or absent bowel sounds (late) • Generalized tenderness • Collapsed, empty rectum on digital rectal examination | | <ul style="list-style-type: none"> • Dehydration • Early satiety • Alkalosis • Epigastric ,left or right hypochondrium tenderness • Succussion splash • sister mary joseph sign | <ul style="list-style-type: none"> • Tympanic percussion • Bowel sounds usually absent • No tenderness unless there is peritonitis |

Summary

• Investigation:

In the workup of suspected mechanical bowel obstruction, **imaging** allows for quick confirmation of the diagnosis as well as detection of conditions requiring immediate surgery (e.g., perforation). **Laboratory tests** may further help to assess the severity of the condition (e.g., electrolyte imbalance due to vomiting).

Imaging

- erect and supine abdominal x-rays (best initial):
 - SBO → central dilated loops
 - LBO → peripheral dilated loops
 - GOO → enlarged stomach
 - paralytic ileus → Generalized small and large bowel gaseous distention
- erect chest x-ray: air under the diaphragm indicates perforation
- Abdominal CT: most accurate determine the cause and assess the bowel
 - mechanical obstruction → transition point
 - paralytic ileus → only to rule out suspected mechanical bowel obstruction
- Contrast study: has a therapeutic role
 - water-soluble enema → differentiate large bowel obstruction from pseudo-obstruction
 - barium meal → apple core appearance in GOO
 - to follow up conservative treatment if not passed take to OR

Laboratory

- Blood work and electrolyte:
 - vomiting → Hypochloremic hypokalemic metabolic alkalosis and Hyponatremia
 - strangulation → neutrophilia, hyperkalemia, hyperamylasemia & raised LDH

Endoscopy

- Sigmoidoscopy → in carcinoma, volvulus
- gastroscopy → to determine pathology in GOO

• Management:

Management in general is conservative by **Fluid resuscitation, correction of electrolyte imbalance, Intestinal decompression(nasogastric tube), Bowel rest (NPO)** and **Administration of IV analgesics and antiemetics if needed.** Procedure:

| | Mechanical | Adhesive | GOO | Pseudoobstruction |
|------------|---|--|---|---|
| Procedure | exploratory laparotomy | Laparoscopic adhesiolysis | gastrojejunostomy | colectomy |
| Indication | <ul style="list-style-type: none"> • Virgin abdomen (No previous surgery) • Failure of conservative management • Tender, irreducible hernia • Strangulation or perforation • Complete or closed-loop obstruction | <ul style="list-style-type: none"> • Failure of conservative treatment > 72 hours • Evidence of strangulation or peritonitis • Free intraperitoneal gas in the abdominal imaging • Complete intestinal obstruction in the abdominal imaging | <ul style="list-style-type: none"> • If medical therapy failed | Failure of conservative treatment which is: <ul style="list-style-type: none"> • Stimulant enemas • Colonoscopic deflation • IV erythromycin • IV neostigmine |

Summary

Recall

Q1: What is small bowel obstruction (SBO)?

Answer: Mechanical obstruction to the passage of intraluminal contents

Q2: What are the signs/symptoms?

Answer: Abdominal discomfort, cramping, nausea, abdominal distention, emesis, high-pitched bowel sounds

Q3: What lab tests are performed with SBO?

Answer: Electrolytes, CBC, type and screen, urinalysis

Q4: What are classic electrolyte/acid-base findings with proximal obstruction?

Answer: Hypovolemic, hypochloremic, hypokalemia, alkalosis

Q5: What must be ruled out on physical exam in patients with SBO?

Answer: Incarcerated hernia (also look for surgical scars)

Q6: What major AXR findings are associated with SBO?

Answer: Distended loops of small bowel air-fluid levels on upright film

Q7: Define complete SBO.

Answer: Complete obstruction of the lumen

Q8: What is the danger of complete SBO?

Answer: Closed loop strangulation of the bowel leading to bowel necrosis

Q9: Define partial SBO.

Answer: Incomplete SBO

Q10: What is initial management of all patients with SBO?

Answer: NPO, NGT, IVF, Foley

Q11: What tests can differentiate partial from complete bowel obstruction?

Answer: CT scan with oral contrast

Q12: What are the ABCs of SBO?

Answer: Causes of SBO:

1. **A**dhesions
2. **B**ulge(hernias)
3. **C**ancer And Tumors

Q13: What is the treatment of complete SBO?

Answer: Laparotomy and lysis of adhesions

Q14: Intraoperatively, how can the level of obstruction be determined in patients with SBO?

Answer: Transition from dilated bowel proximal to the decompressed bowel distal to the obstruction

Q15: What is the most common indication for abdominal surgery in patients with Crohn's disease?

Answer: SBO due to strictures

Q16: Can a patient have complete SBO and bowel movements and flatus?

Answer: Yes; the bowel distal to the obstruction can clear out gas and stool

Q17: What may cause SBO if patient is on Coumadin®?

Answer: Bowel wall hematoma

Q18: What is an absolute indication for operation with partial SBO?

Answer: Peritoneal signs, free air on AXR

Q19: What tumor classically causes SBO due to "mesenteric fibrosis"?

Answer: Carcinoid tumor

Quiz

MCQ

Q1: A 54-year-old man comes to the emergency department because of a 2-day history of increasingly severe abdominal pain, nausea, and bilious vomiting. His last bowel movement was yesterday and he has not passed flatus since then. He takes a topical corticosteroid, ramipril, metformin, and ibuprofen daily. Abdominal examination shows three well-healed laparoscopic scars. The abdomen is distended and there are frequent, high-pitched bowel sounds on auscultation. Which of the following is the most likely cause of this patient's condition

- A) Ibuprofen
- B) paralytic ileus
- C) History of abdominal surgery

Q2: A 63-year-old man comes to the emergency department because of a 2-day history of persistent vomiting after meals. The vomit consists of undigested food and a clear fluid. Abdominal examination shows epigastric fullness with mild tenderness. Which of the following is most likely to confirm the diagnosis?

- A) Upper endoscopy
- B) AXR
- C) Esophageal manometry

Q3: Four days after undergoing a total abdominal hysterectomy for atypical endometrial hyperplasia, a 59 year-old woman reports abdominal bloating and discomfort. She has also had nausea without vomiting. Her postoperative pain has been well controlled on a hydromorphone patient-controlled analgesia (PCA) pump. Examination shows a mildly distended, tympanic abdomen; bowel sounds are absent. An x-ray of the abdomen shows uniform distribution of gas in the small bowel, colon, and rectum without air-fluid levels. Which of the following is the most appropriate next step in the management of this patient?

- A) Reduce use of opioid therapy
- B) Gastrografin enema
- C) Return to OR for bowel resection

Q4: A 63-year-old man is brought to the emergency department for evaluation of abdominal pain. The pain started four days ago and is now a diffuse crampy pain. The patient has nausea and has vomited twice today. He has a history of hypertension and recurrent constipation. Five years ago, he underwent emergency laparotomy for a perforated duodenal ulcer. His father died of colorectal cancer at the age of 65 years. The patient has been smoking one pack of cigarettes daily for the past 40 years. Abdominal examination shows distention and mild tenderness to palpation. There is no guarding or rebound tenderness. The bowel sounds are high-pitched. In addition to fluid resuscitation, which of the following is the most appropriate next step in the management of this patient?

- A) Colonoscopy
- B) Nasogastric tube placement and bowel rest
- C) Surgical bowel decompression

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|----|---|----|---|
| Q1 | C | Q4 | B |
| Q2 | A | | |
| Q3 | A | | |

Answers

[Click here for explanation](#)

Extra Questions

Good Luck!



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