



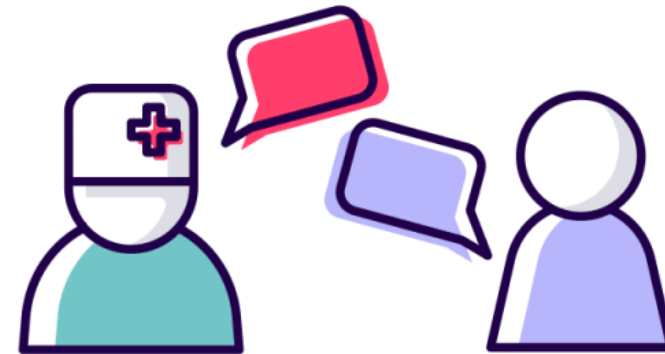
الفاخرة على اندوارح شهرنا الابرار الذين حملوا اندوارحمهم على ذكناهم شرفا و تضحية لهذه الامة

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ ①. الْحَمْدُ لِلَّهِ رَبِّ الْعَالَمِينَ ② الرَّحْمَنِ الرَّحِيمِ ③ مَلِكِ يَوْمِ الدِّينِ ④ إِيَّاكَ نَعْبُدُ وَإِيَّاكَ نَسْتَعِينُ ⑤ أَهْدِنَا الصِّرَاطَ الْمُسْتَقِيمَ ⑥ صِرَاطَ الَّذِينَ أَنْعَمْتَ عَلَيْهِمْ غَيْرِ الْمَغْضُوبِ عَلَيْهِمْ وَلَا الضَّالِّينَ .

Stoma and fistula

Done by:

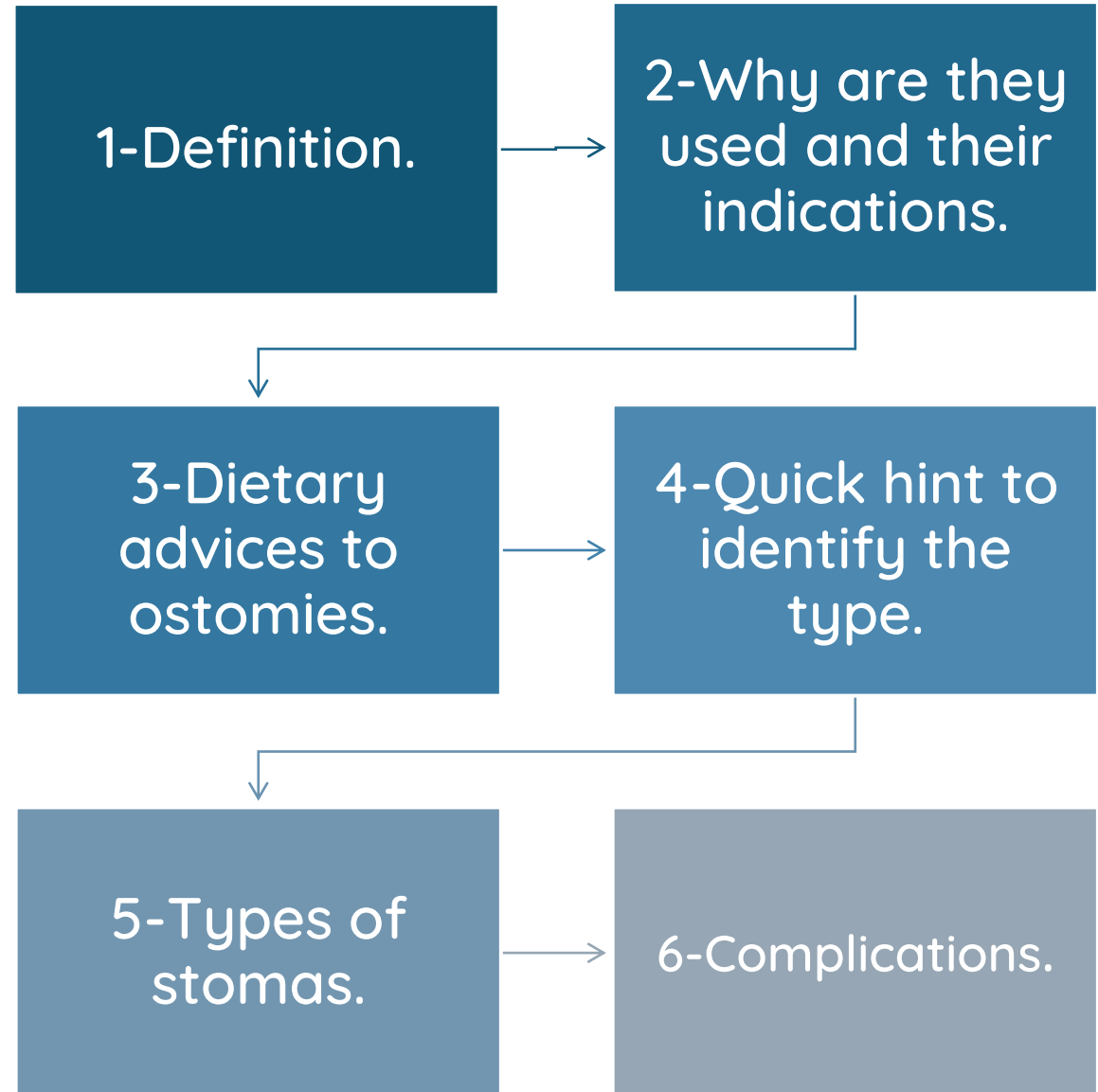
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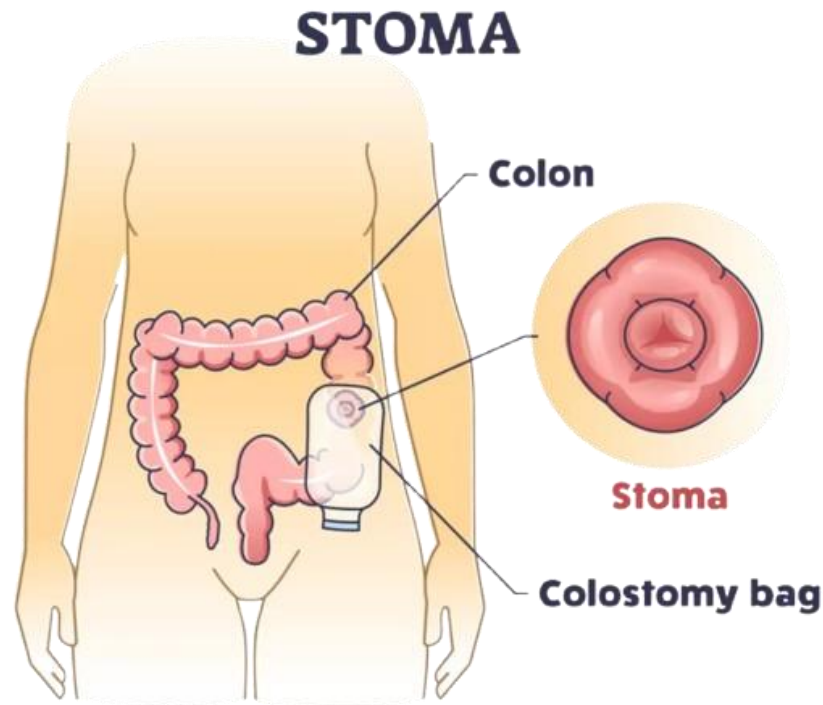




1-STOMAS

OBJECTIVES





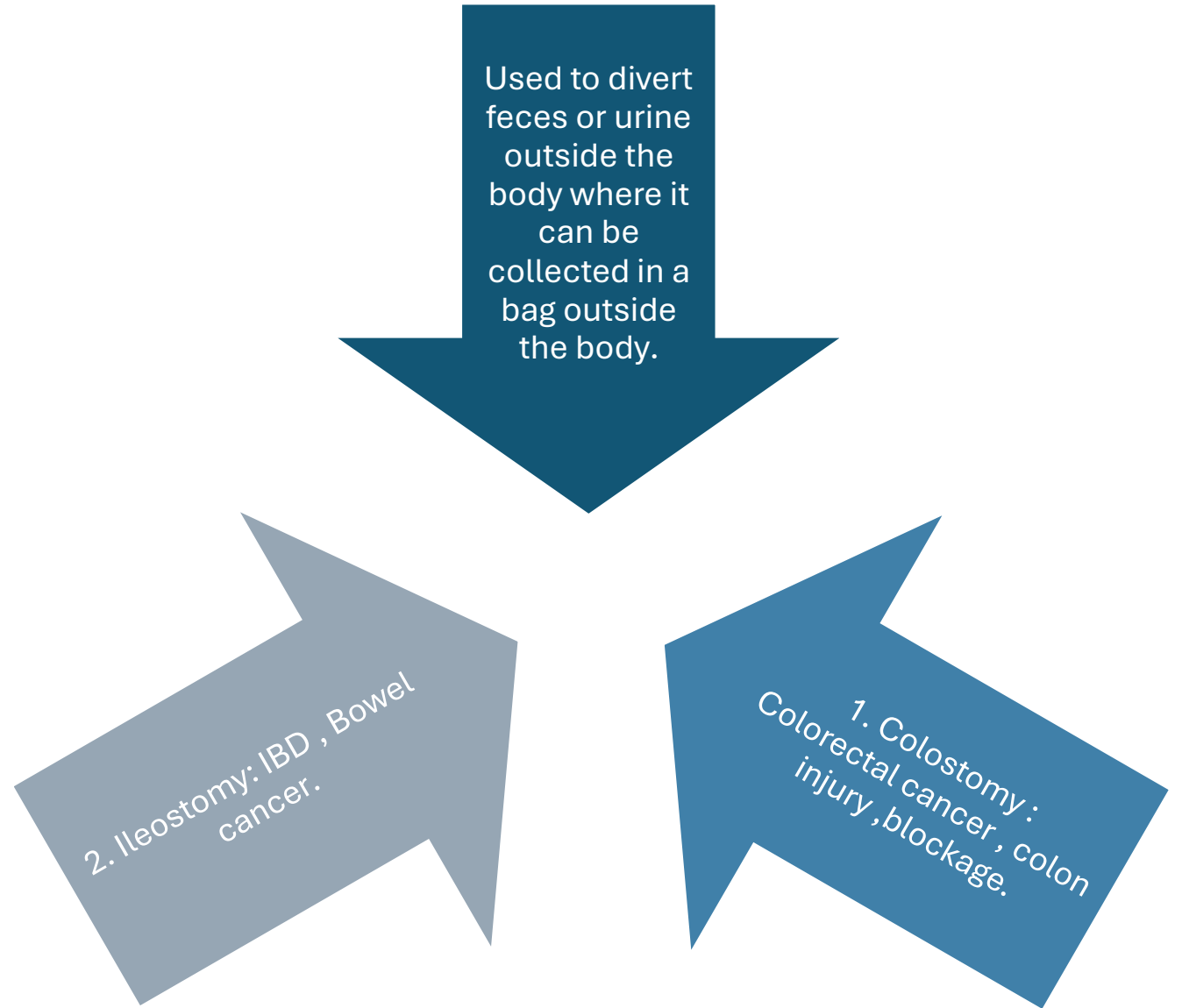
What is stoma?

A stoma is a surgically created opening that allows faeces or urine to exit the body when the normal route is not possible. This procedure is often necessary for certain medical conditions affecting the bowel or urinary system, bypassing the distal portions of these tracts.

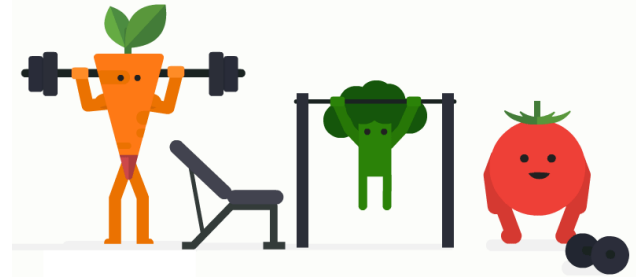


A stoma bag, also known as an ostomy bag, is specially designed to fit around the stoma and collect waste, ensuring it is contained and can be disposed of hygienically.

Why stomas are used and what are their indications?



Dietary advices to ostomies



Low fiber food: to reduce stool bulk and help in reducing intestinal obstruction.

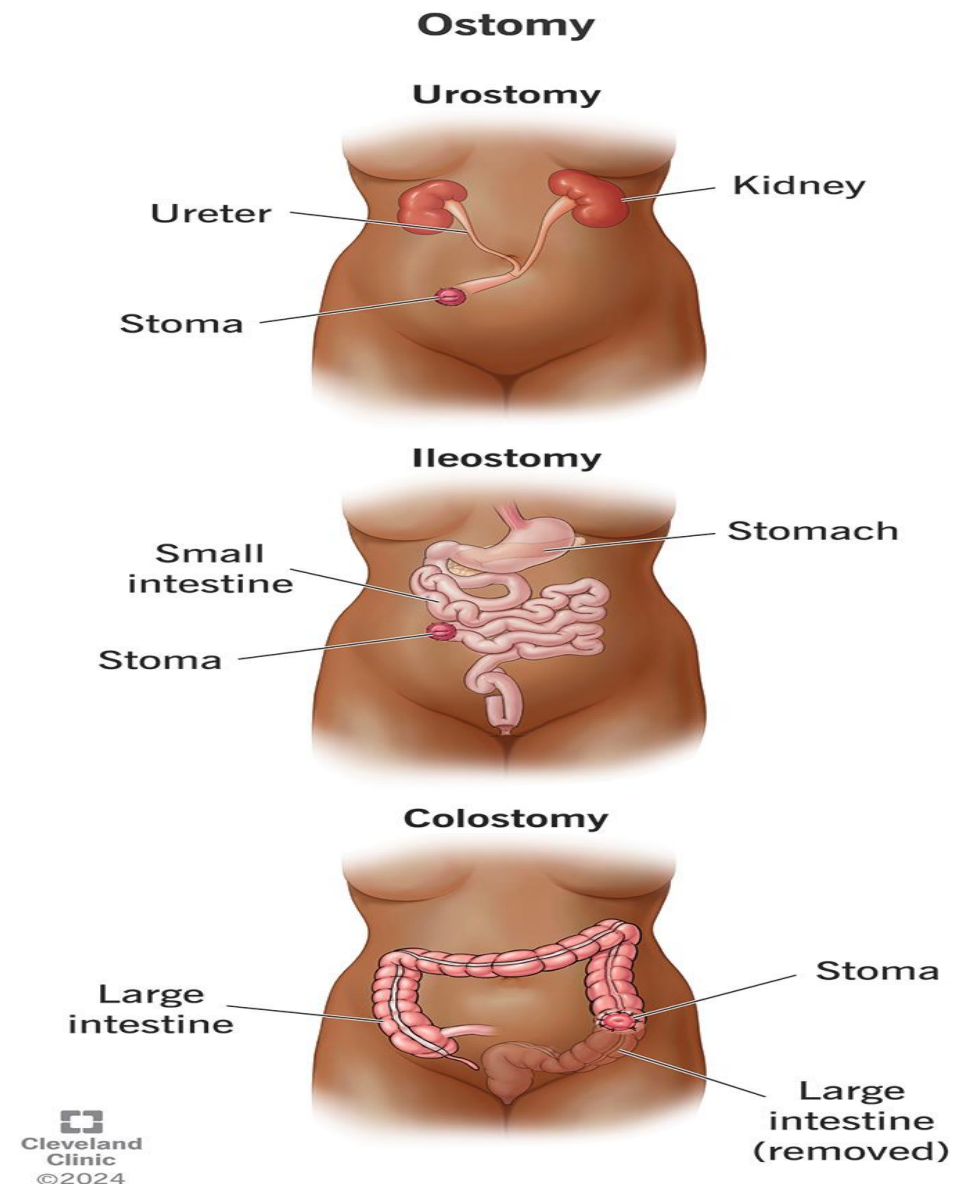
Avoid vegetables associated with offensive odor
Cabbage, radish, garlic and cucumber.

Hint to Identify the types of stoma

- The key difference between an ileostomy and a colostomy is that an ileostomy redirects part of the small intestine to a stoma, while a colostomy redirects the large intestine (colon) to this abdominal opening.

What is an ostomy?

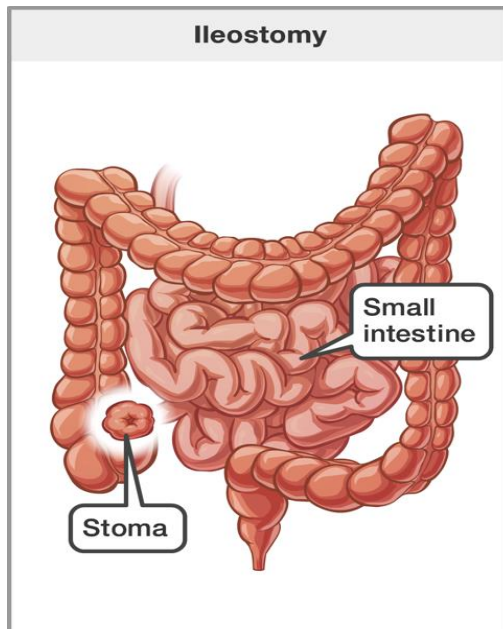
- An opening, In the small intestine or large intestine, Created as an outlet through the anterior abdominal wall, In order to pass fecal matter into a bag.
- **STOMA**: part of intestine we use to create this outlet.



Types of ostomy

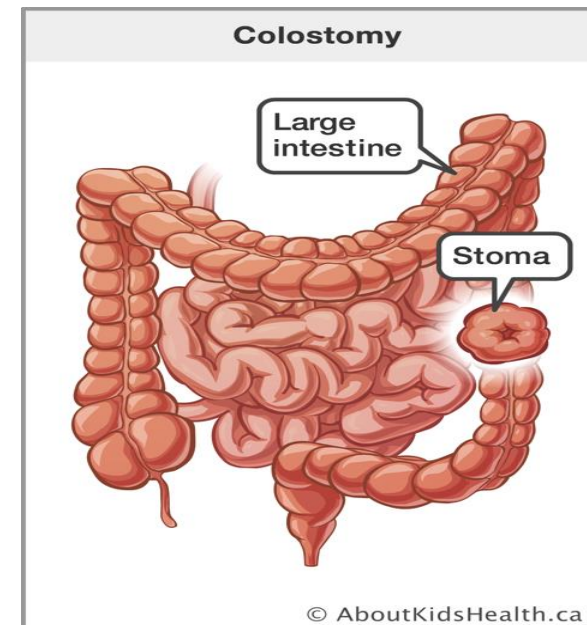
Ileostomy

Stoma of the terminal part of small intestine



Colostomy

Stoma of the large bowel



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Types of Stomas according to duration:

1. Temporary :

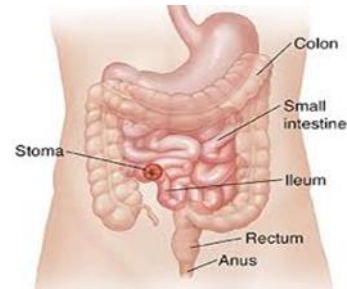
- Reversible / Short term.
- Obstruction / Inflammation / Anastomosis.

2. Permanent :

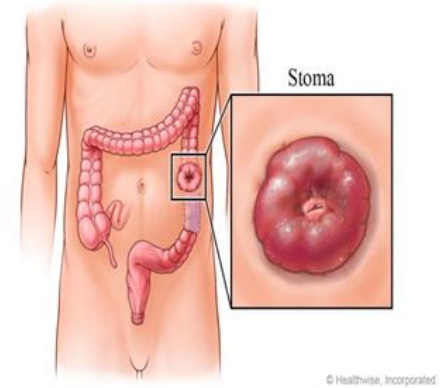
- Irreversible / for life.
- No distal Anastamosis permanent removal of colon /rectum.

According to origin

Ileostomy



Colostomy



Urostomy

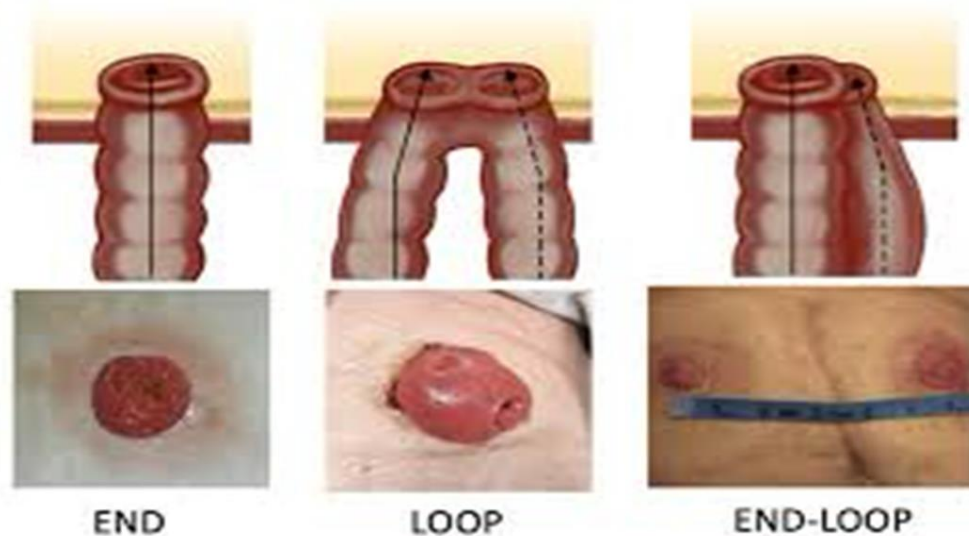


Gastrostomy



Stomas according to method of constriction

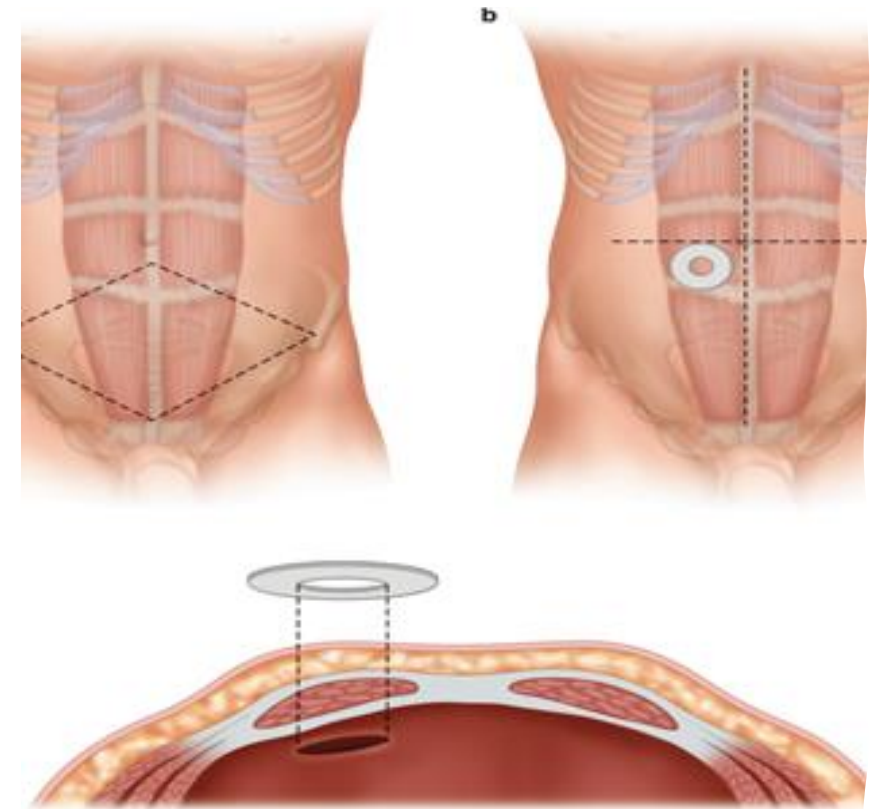
End stoma:



Loop stoma:

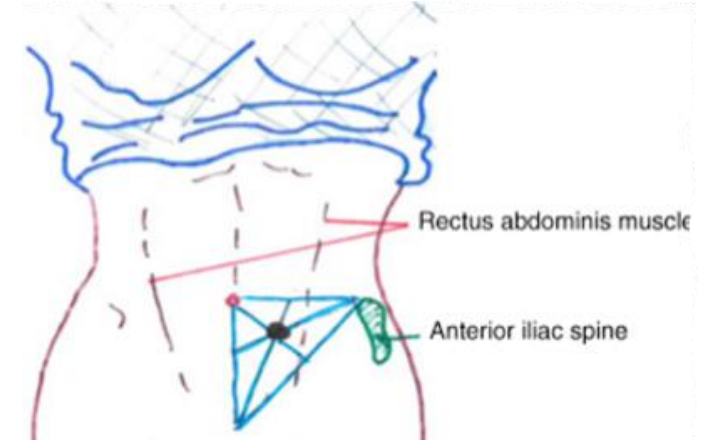
Pre-Operation

- The surgical site is marked while the patient is standing or sitting.
- You should avoid marking:
 1. Bony prominences.
 2. The umbilicus (at least 5cm away).
 3. Old wounds/Scars.
 4. Skin folds/creases.
 5. Waistline of clothes.

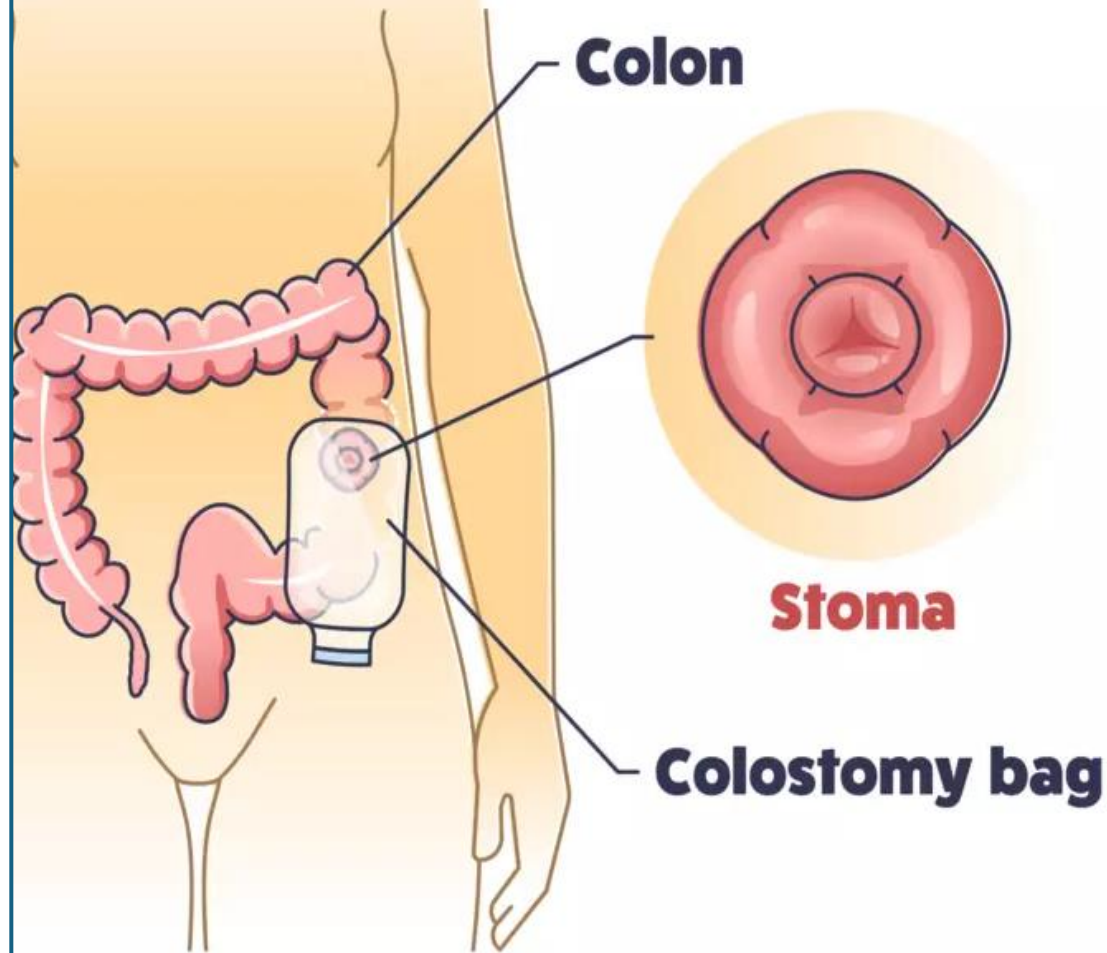


Pre-Operation

- CONFIRM AND DARKLY MARK THE BEST OPTION(S).
- Obtain agreement from patient about the recommended location.
- Ensure mark is within the rectus abdominis muscle, visible to the patient and on a flat surface .
- Clean the desired site with alcohol and allow to dry.
- For the final mark, use a marking pen and create an easily visible dark mark.
- It may be desirable to mark multiple potential sites in different abdominal quadrants (right vs left, upper vs lower). When multiple sites are marked, indicate the rank order of site preference. If in question, discuss the location, number and intent of potential stoma sites with a member of the surgical team.



STOMA



1-COLOSTOMY:

A colostomy is surgery to create an opening for the colon (large intestine) through the belly (abdomen). A colostomy may be short-term (temporary) or long-term (permanent). It's often done after bowel surgery or injury. Most permanent colostomies are end colostomies.

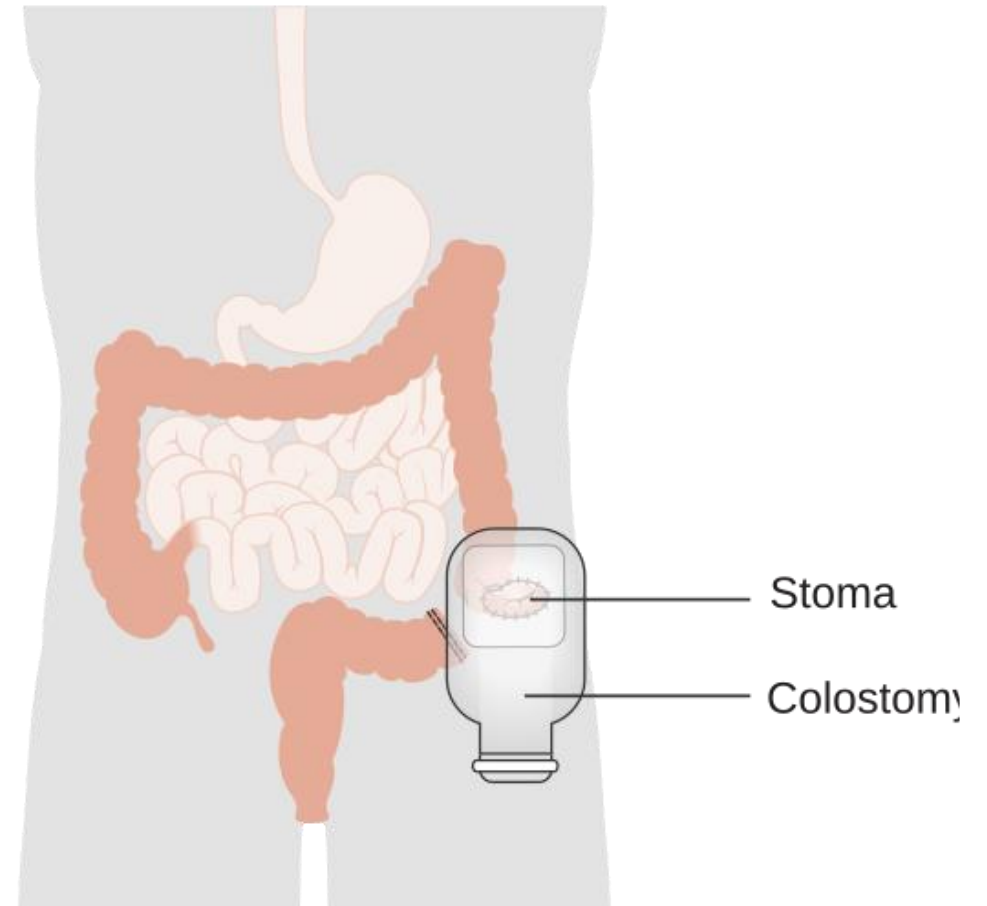
And they are typically located in the left iliac fossa(LIF).

1-COLOSTOMY:

The Colostomy divide into two types according to the method of constriction :

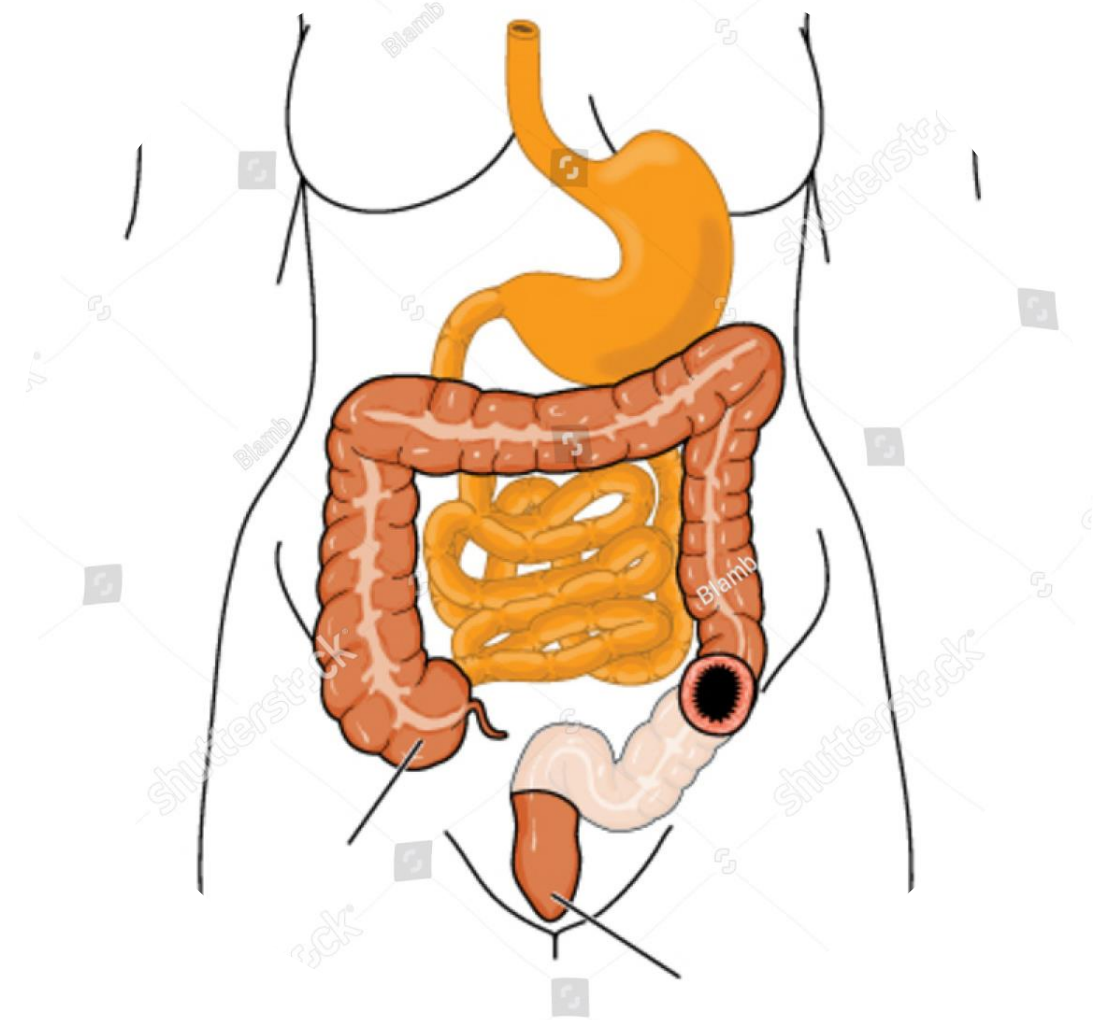
1. End colostomy.
2. Loop colostomy.

MOST COLOSTOMIES are created as end colostomies rather than loop colostomies , and they are the permanent type.



A.END COLOSTOMY:

During an end colostomy, **the end of the colon is brought through the abdominal wall**. Then it may be turned under, like a cuff. The edges of the colon are then stitched to the skin of the abdominal wall to form an opening called a stoma. Poop (stool) drains from the stoma into a bag or pouch attached to the abdomen



B. LOOP COLOSTOMY

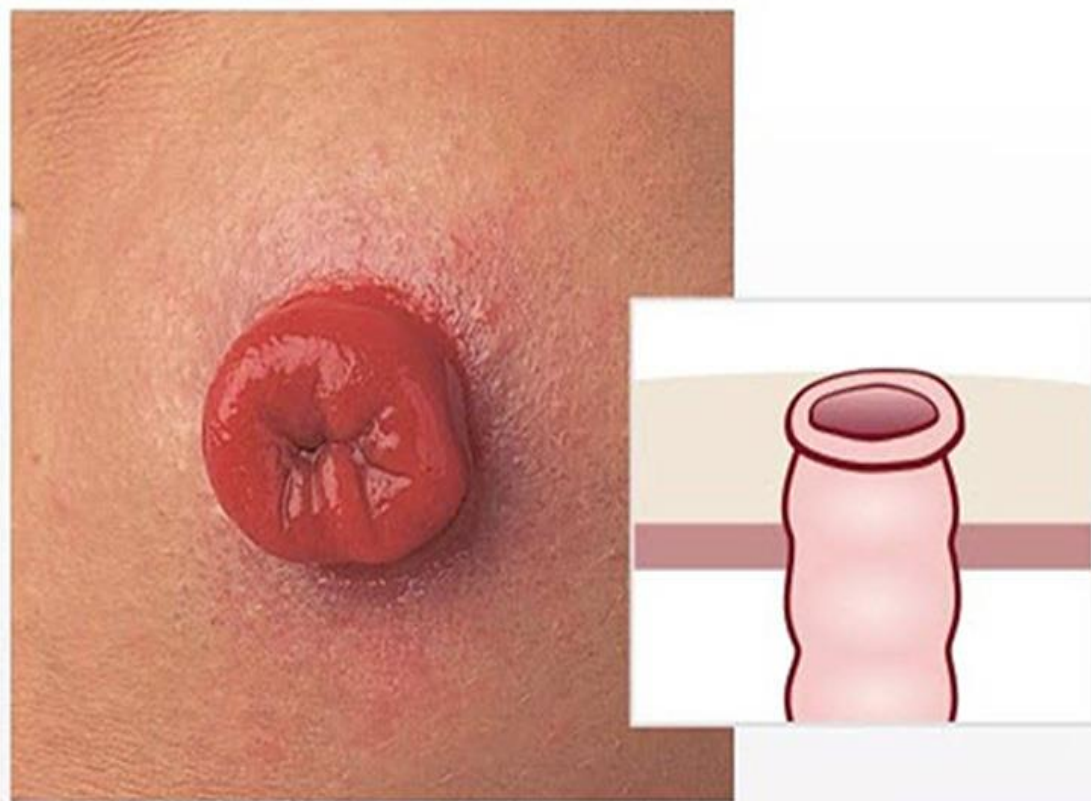
A loop colostomy is a another type of colostomy ,, and it's usually temporary. Because the loop method makes the colostomy easier to reverse, it's the operation of choice when the bowel only needs a temporary intervention to heal. It may be done for a few weeks, months or years depending on your condition.

- When is a loop colostomy indicated?

- The two main purposes for a temporary loop colostomy are diversion and decompression.
 1. Diversion means keeping feces out of a certain section of the colon that needs to rest and heal. You may need a diverting loop colostomy if the colon is recovering from injury, surgery or infection. The colostomy diverts the feaces away from the site of the trauma to avoid contamination and give that part of the colon some relief from its usual duties.
 2. Decompression means there's an obstruction in the colon that needs to be removed and relieved. A decompressing loop colostomy allows the patient to continue to move their bowels through the stoma while the lower part of the bowel is temporarily out of commission. Removing a blockage usually requires surgery, and that means the affected part of the colon will need to heal afterward. When it has recovered, the bowel can be reconnected

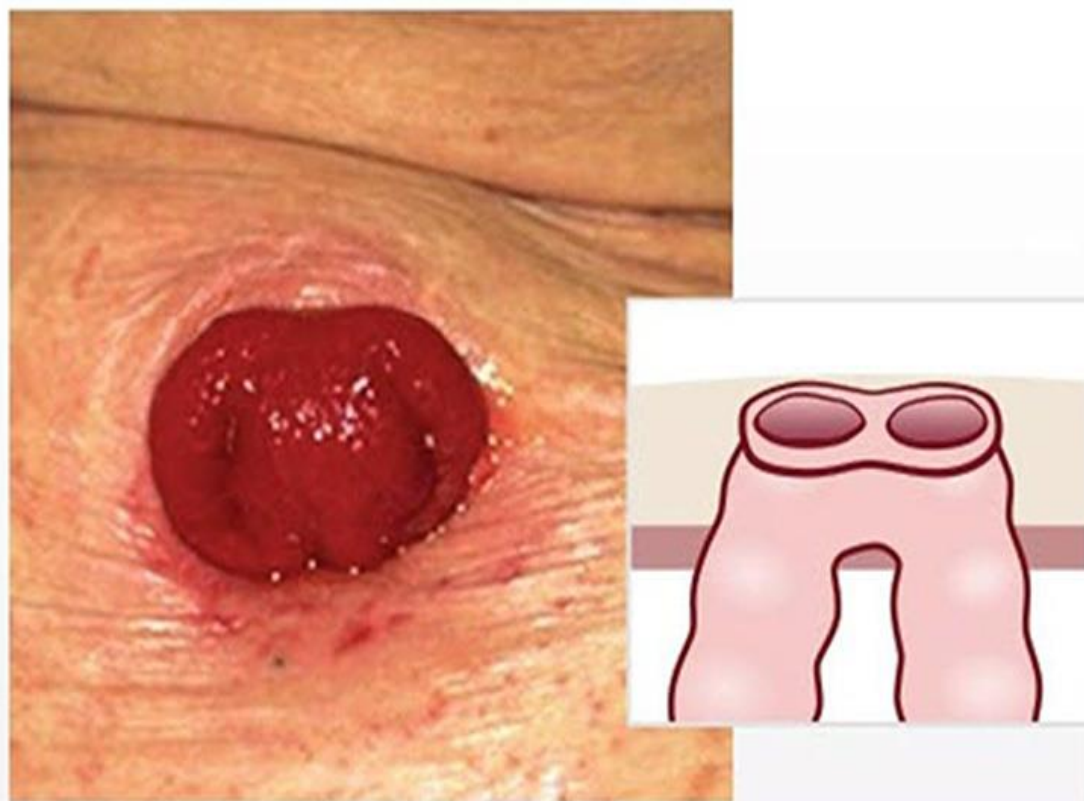


End Colostomy Formation



An end colostomy is generally permanent.
An end colostomy has only one opening.

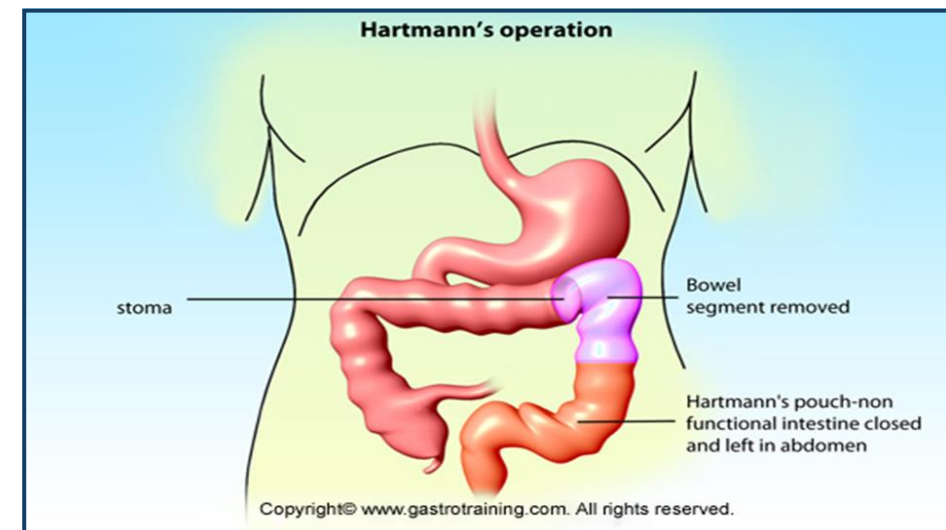
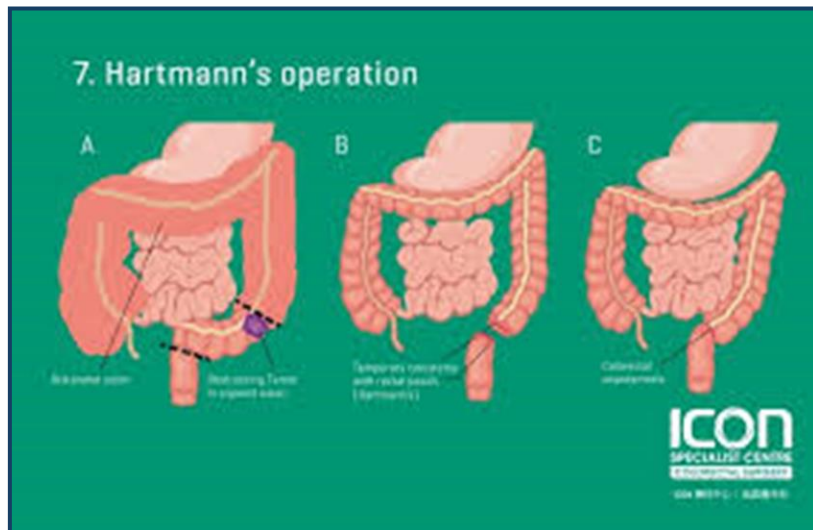
Loop Colostomy Formation



A loop colostomy is generally temporary and can be reversed later when no longer required. A loop colostomy has two openings.

Hartmann's procedure:

- A type of colectomy that removes part of the colon and sometimes rectum (proctosigmoidectomy). The remaining rectum is sealed, creating what is known as Hartmann's pouch.
- In emergency settings (Ischemia, perforation or obstruction of distal colon and rectum).
- Potentially Reversible 3-4 months later.
- Patients are often elderly and frail or bowel conditions doesn't allow anastomosis. -40% never undergo reversal (becomes permanent).



Indications for colostomy

- Birth defect, such as a blocked or missing anal opening, called an imperforate anus.
- Complications from diverticula. These are small, bulging pouches of the colon.
- Inflammatory bowel disease.
- Injury to the colon or rectum.
- Partial or complete intestinal or bowel blockage.
- Rectal or colon cancer.
- Wounds or fistulas in the perineum.

2. Ileostomy

Most important one →

Ileostomy: an operation to bring the end of the small bowel through an opening in the abdomen to form a stoma.

Ileostomies drain more liquid stools, as the fluid content is normally reabsorbed later, in the large intestine.

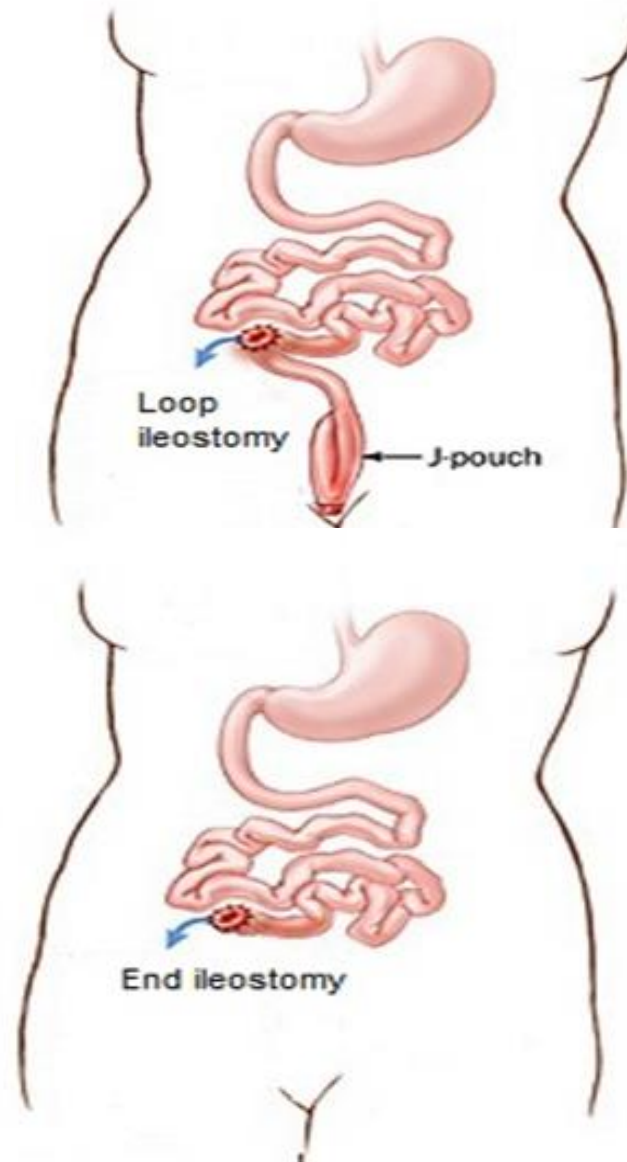
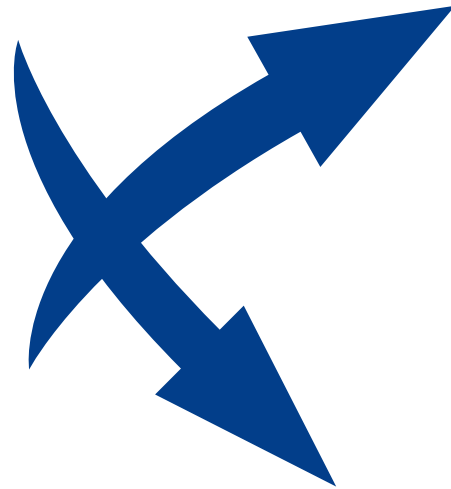
An ileostomy is usually done when the large bowel (colon) needs to be removed, or rested after treatment or surgery.

Typically located in the right Iliac fossa (RIF).

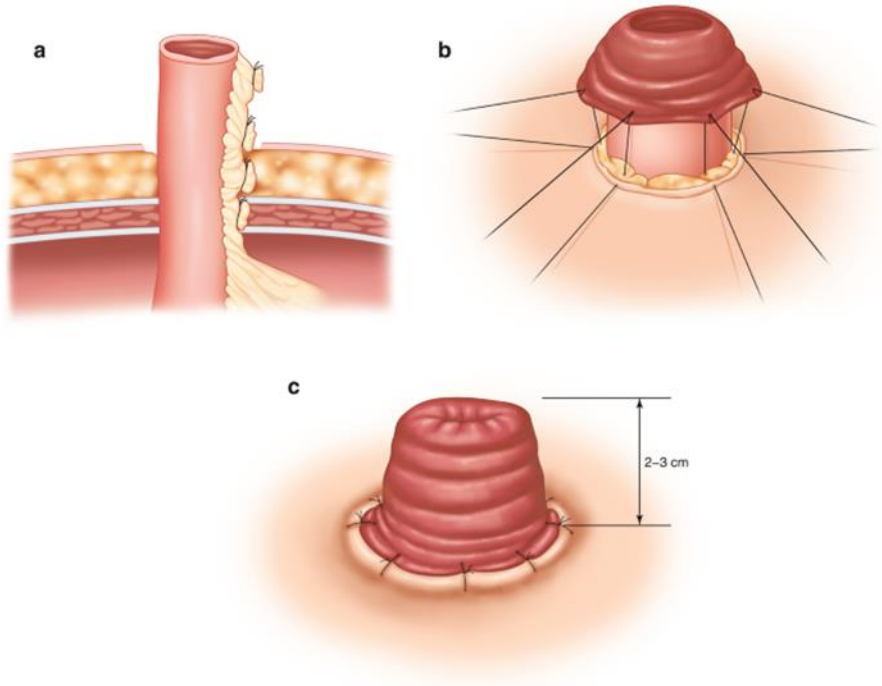
Ileostomy is divided into 2 types:

1- end ileostomy:

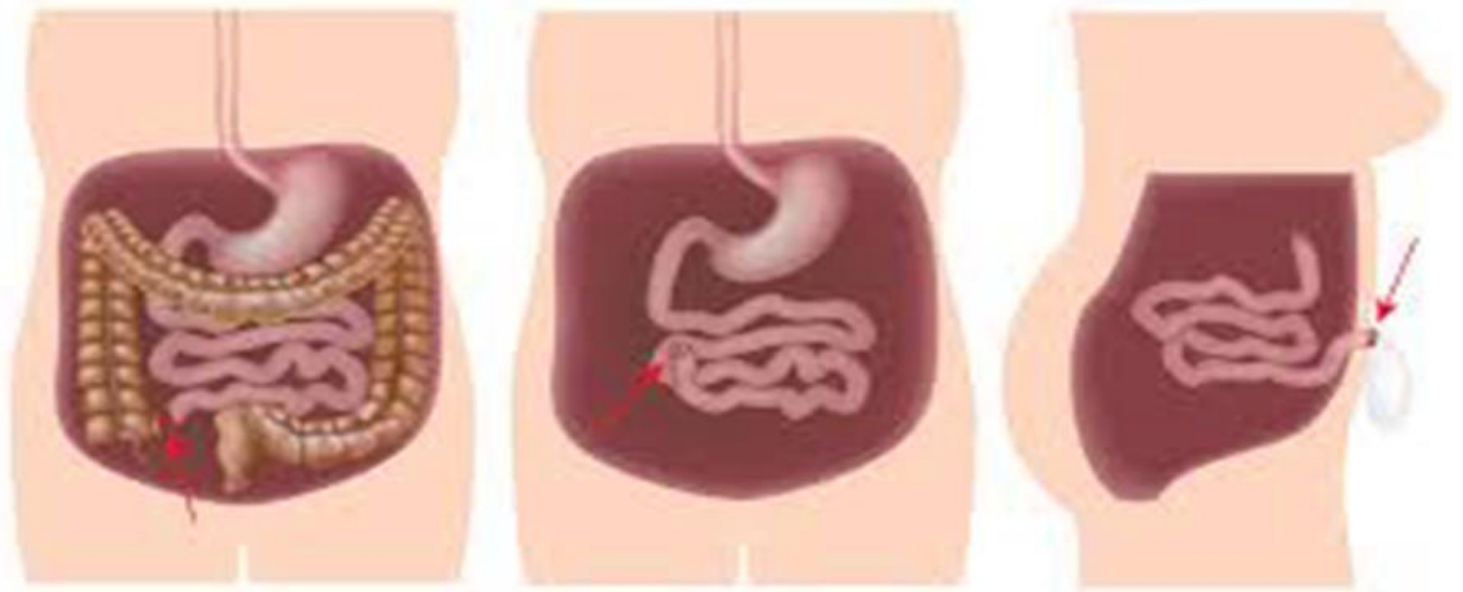
2-Loop ileostomy:



1. End ileostomy:

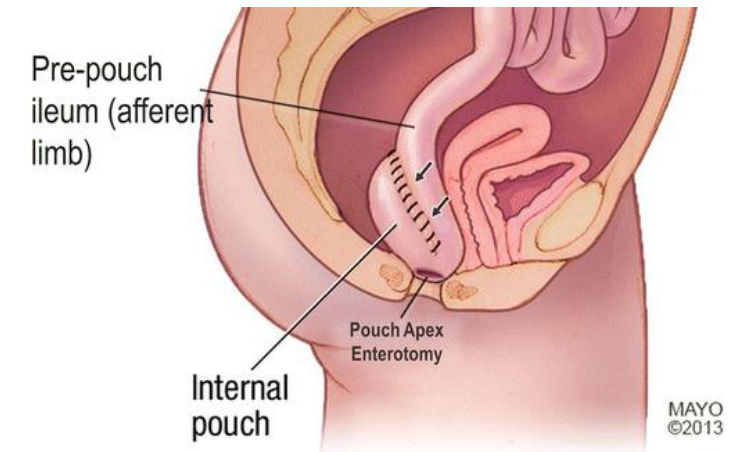
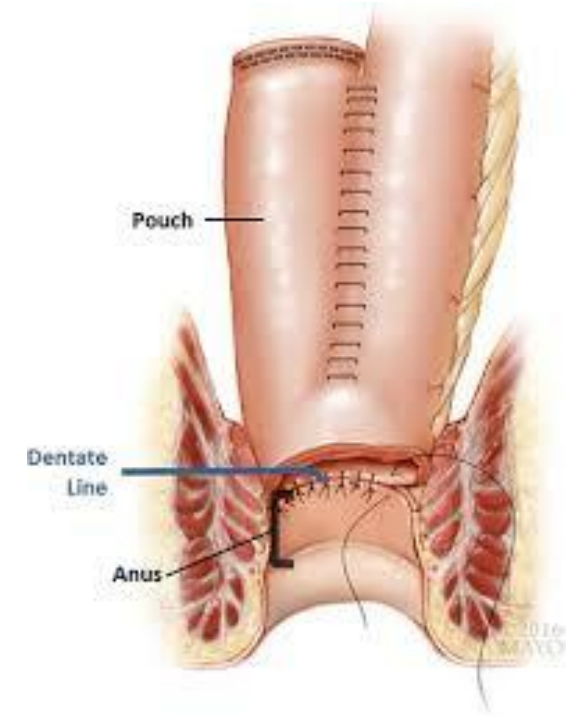


- End ileostomies are permanent after a panproctocolectomy (total colectomy with removal of the large bowel, rectum and anus).
- **The permanent solution is chosen in situations where it is too risky or not possible to re-join the two parts of the intestine.**



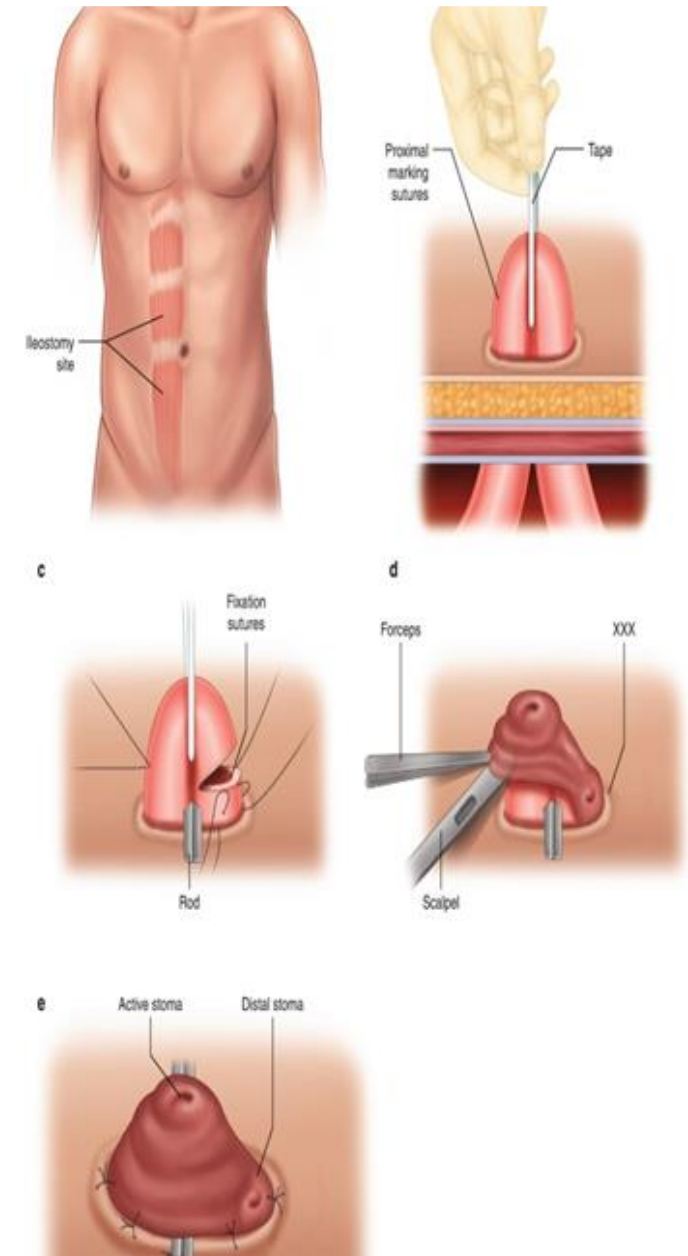
Ileoanal anastomosis (-J)- Pouch)

- An Alternative to End Ileostomy is Ileoanal anastomosis surgery.
- The J-pouch is an alternative to a permanent end ileostomy. If the anus is still functional, the J-pouch can replace the colon and rectum internally. It reconnects the ileum and anus so the patient can defecate normally.
- Where the ileum is folded back on itself and fashioned into a larger pouch that functions a bit like a rectum.



2. Loop Ileostomy:

- A loop ileostomy is when a distal loop of the ileum is brought out to the skin with 2 lumens draining into the stoma bag and is commonly used as a temporary diversion of stool usually to protect a distal anastomosis such as a colonic anastomosis in segmental colonic resections.
- Reversed around 6-8 weeks later.
- The proximal end (the productive side) is turned inside out to form a spout to protect the surrounding skin. The distal end is flatter.



Indications for ileostomy:

- A growth in the large bowel, such as bowel cancer, or growths that might turn into cancer over time (bowel polyps).
- Inflammation (such as inflammatory bowel disease) or infection (such as an abscess).
- Not enough blood getting to the colon (such as ischaemic bowel disease).
- A bowel obstruction, when your colon becomes blocked so poo and wind cannot move through it.
- Megacolon, where part of the colon becomes very stretched and swollen and might tear (rupture).
- Injury to the spinal cord, (rectal incontinence)
- Hirschsprung's disease, where problems with nerves in the colon cause blockages and infections.
- Problems with the colon or pelvic floor muscles that cause severe constipation that does not get better with treatment.
- Problems with the bowel because of a condition that affect the brain and spinal cord, such as multiple sclerosis.

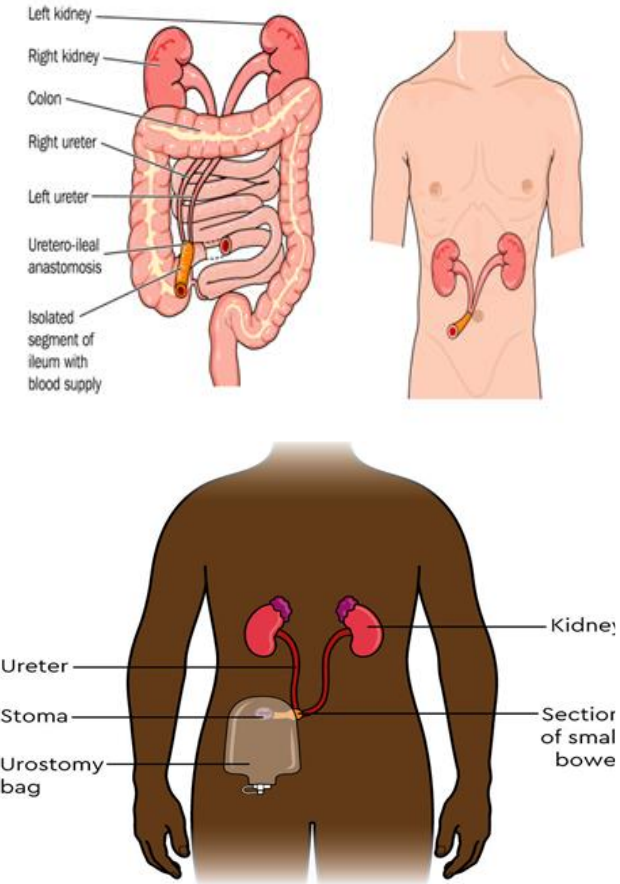
3. Gastrostomy:

- ❖ A gastrostomy is a surgical opening through the skin of the abdomen to the stomach. A feeding device is put into this opening so that feed can be delivered directly into the stomach bypassing the mouth and throat.
- ❖ This can be used for providing feeds directly into the stomach in patients that cannot meet their nutritional needs by mouth.



4. Urostomy:

- A **urostomy** is a surgical procedure that creates a stoma (artificial opening) for the urinary system. A urostomy is made to avail for urinary diversion in cases where drainage of urine through the bladder and urethra is not possible, e.g. after extensive surgery or in case of obstruction.
- Typically located in the right iliac fossa (RIF).



Complications of stoma:-

A. Early :

- Hemorrhage at stoma site
 - Stoma ischemia
 - High output
- Obstruction secondary to adhesions
- Stoma retraction

B. Delayed :

- Obstruction
- Skin irritation around stoma site
 - Stoma prolapse
 - Stenosis
- Parastomal hernia
 - Fistula
- Psychological problems



Photo cred: Marzena Sroczynski, RN

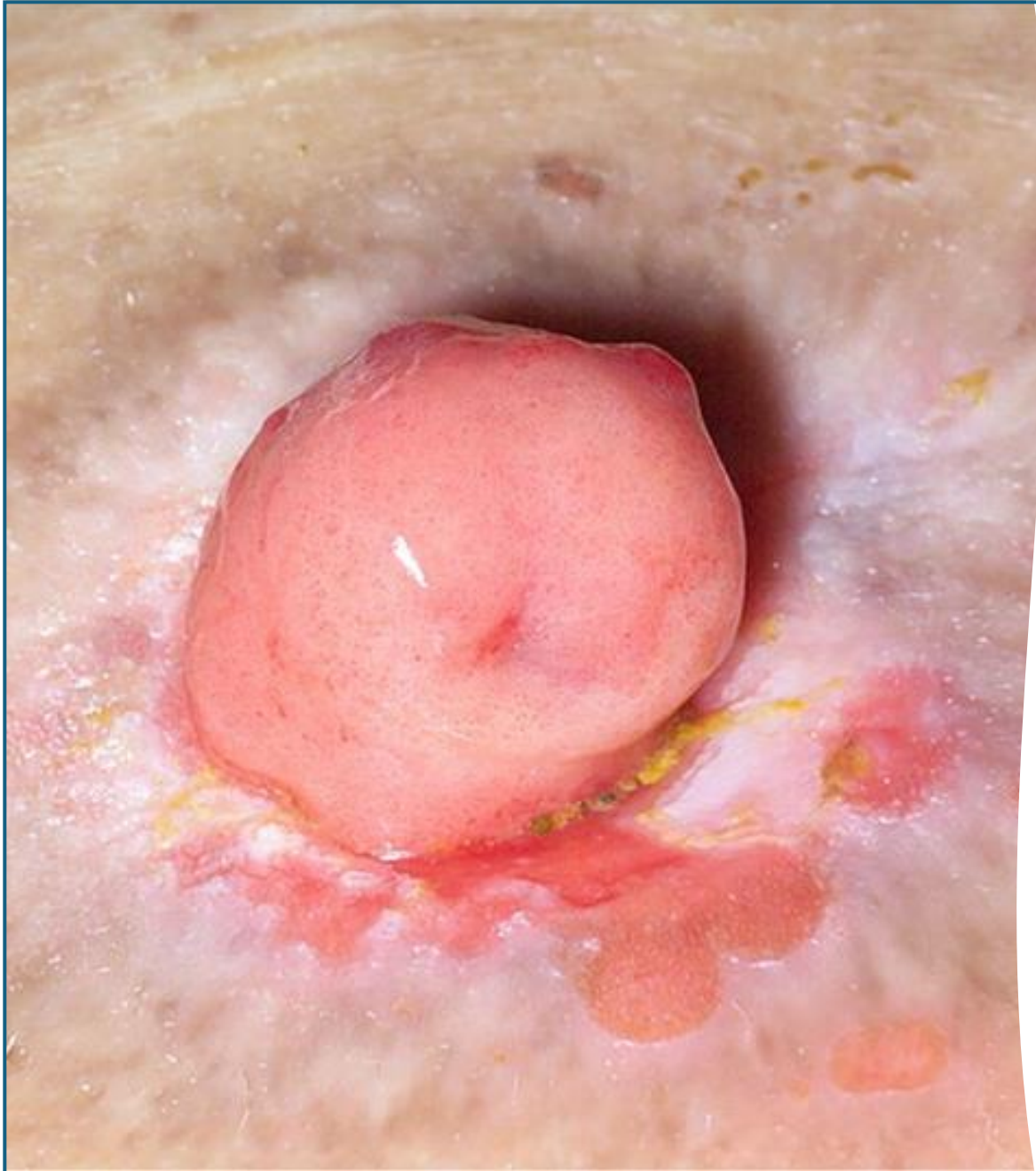
Figure 5. Examples of stoma and peristomal complications. From left to right, and example of retraction, stenosis, peristomal skin breakdown, dusky stoma with risk of necrosis.



Complications

1- STOMA ISCHEMIA AND NECROSIS

It occurs when the blood supply to/ from the stoma is impaired or interrupted, resulting in partial or complete stoma tissue death. As blood flow and tissue perfusion are essential for stoma health, deficient blood flow to the stoma will lead to necrosis.

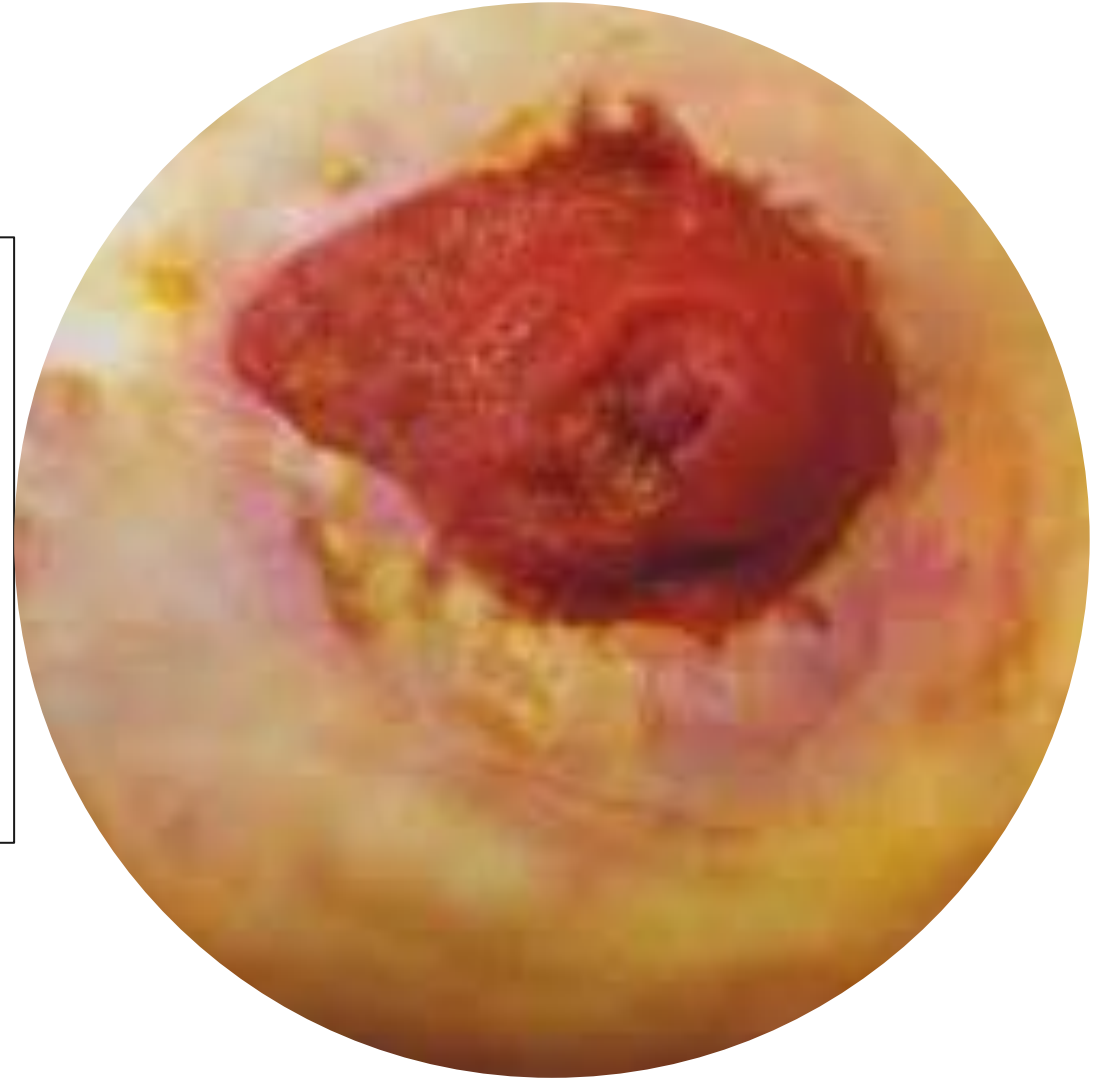


2- HIGH OUTPUT (DEHYDRATION)

A high-output stoma (HOS) (often called ileostomy diarrhoea) is when the output is enough to cause 'dehydration' (water and sodium depletion). In general, this occurs with an output of greater than 1.5–2.0 L / 24 hours.

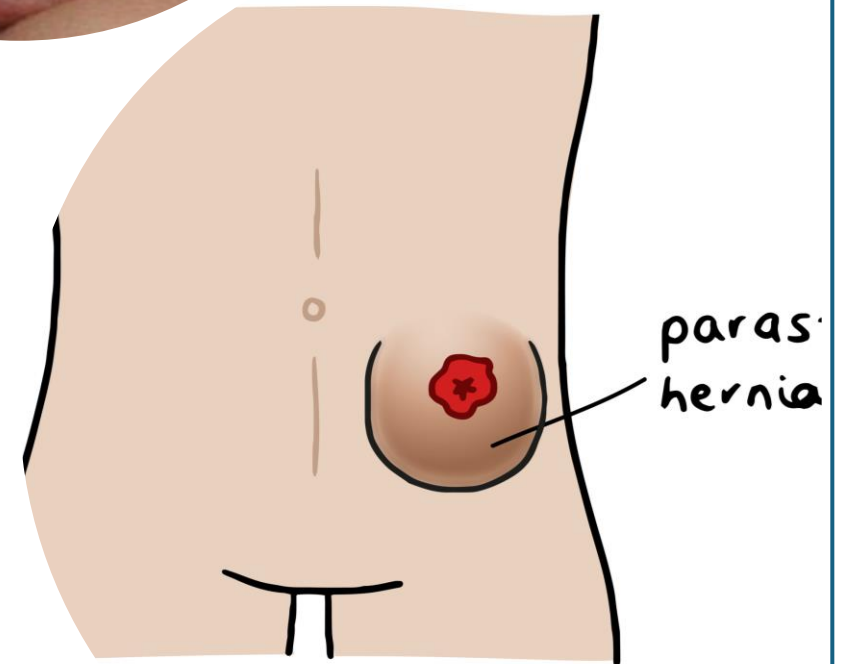
3-SKIN IRRITATION

- Skin irritation around the stoma is usually caused by leakage from the ostomy pouch and the output from the stoma getting underneath the adhesive and onto the skin. It is uncomfortable and can stop the pouch from working well. The skin around the stoma should look similar to the skin on the rest of the body..



4-Parastomal Hernia

A parastomal hernia is a type of incisional hernia that allows protrusion of abdominal contents through the abdominal wall defect created during ostomy formation



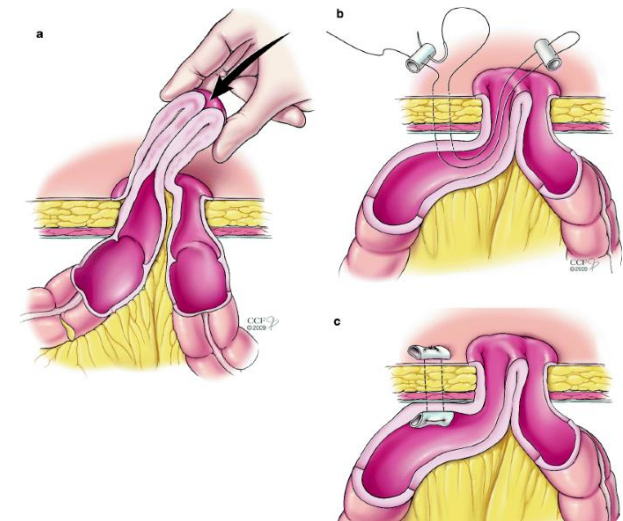
5-RETRACTION

A stoma will normally protrude slightly above the skin level. The length of the protrusion will depend on whether you have a colostomy or ileostomy (ileostomies tend to protrude further out) and the size of your bowel. [A retraction of the stoma is when the stoma lays flat to the skin or below skin surface level.](#)



6-PROLAPSE:

A prolapse of the stoma occurs when the bowel protrudes through the stomal opening in the skin to a greater extent than was anticipated. The amount of protruding bowel can vary from 2-3cm to more than 10cm. Although when this first happens it can be very distressing and frightening it is usually not serious.

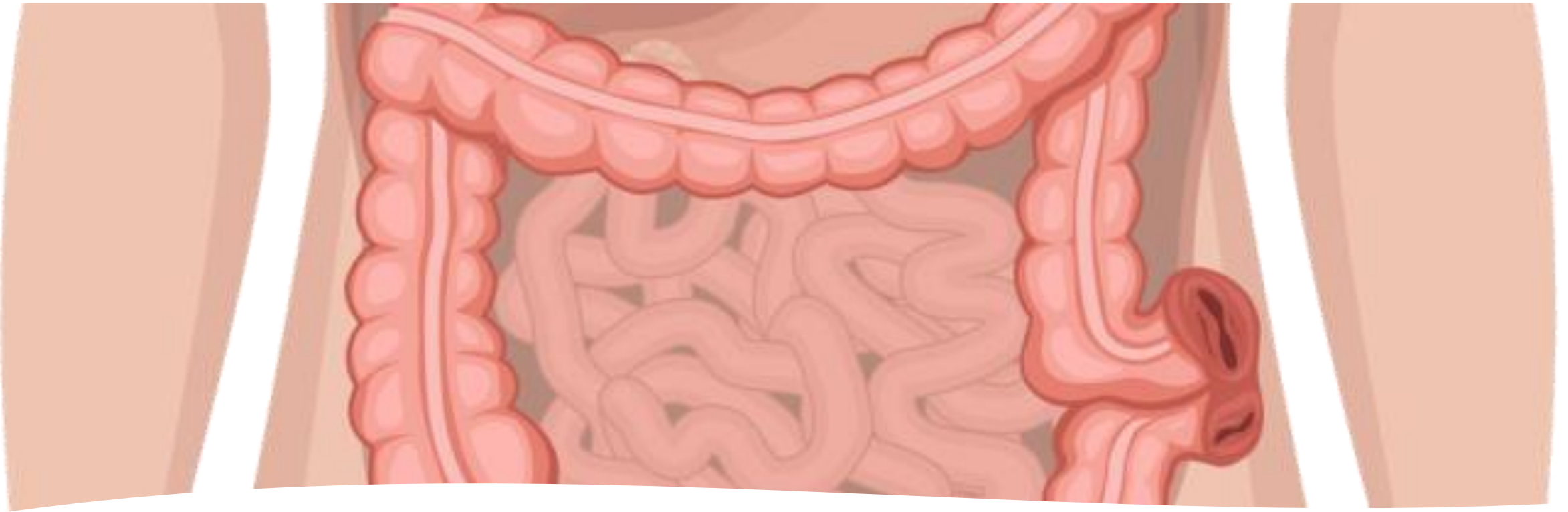


STOMAS HISTORY TAKING



- How long has the patient had a stoma?
- What was the medical indication for a stoma?
- How do they manage with their stoma?
- What impact does their stoma have on their daily life?
- When was the last time they saw their surgeon or stomal therapy nurse?
- How many times per day do they empty their stoma bag?
- Has that changed recently?
- Are there plans from their surgeon for stoma reversal?





STOMA PHYSICAL EXAMINATION

Physical examination

INITIALLY

- Wash hands and ensure privacy
- Introduce yourself and confirm patient's identity
- Explain procedure and obtain consent
- Expose abdomen fully
- Reposition patient lying down / 45

GENERALLY

- Around the patient
- The patient as a whole
- Hands
- Mucus mem. in eyes and mouth

Abdomen / stoma

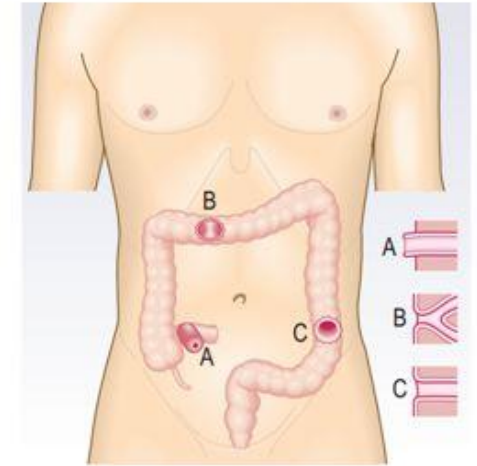
Inspection

- location (RIF/LIF/RUQ)
- Stoma bag contents
- Relation to skin
- If it is with one or two lumens (type)
- Ask the pt to cough (parastomal hernia)
- Skin around the stoma !

Palpation

- Around the stoma
- Insert your finger inside the stoma

Auscultation of bowel sounds

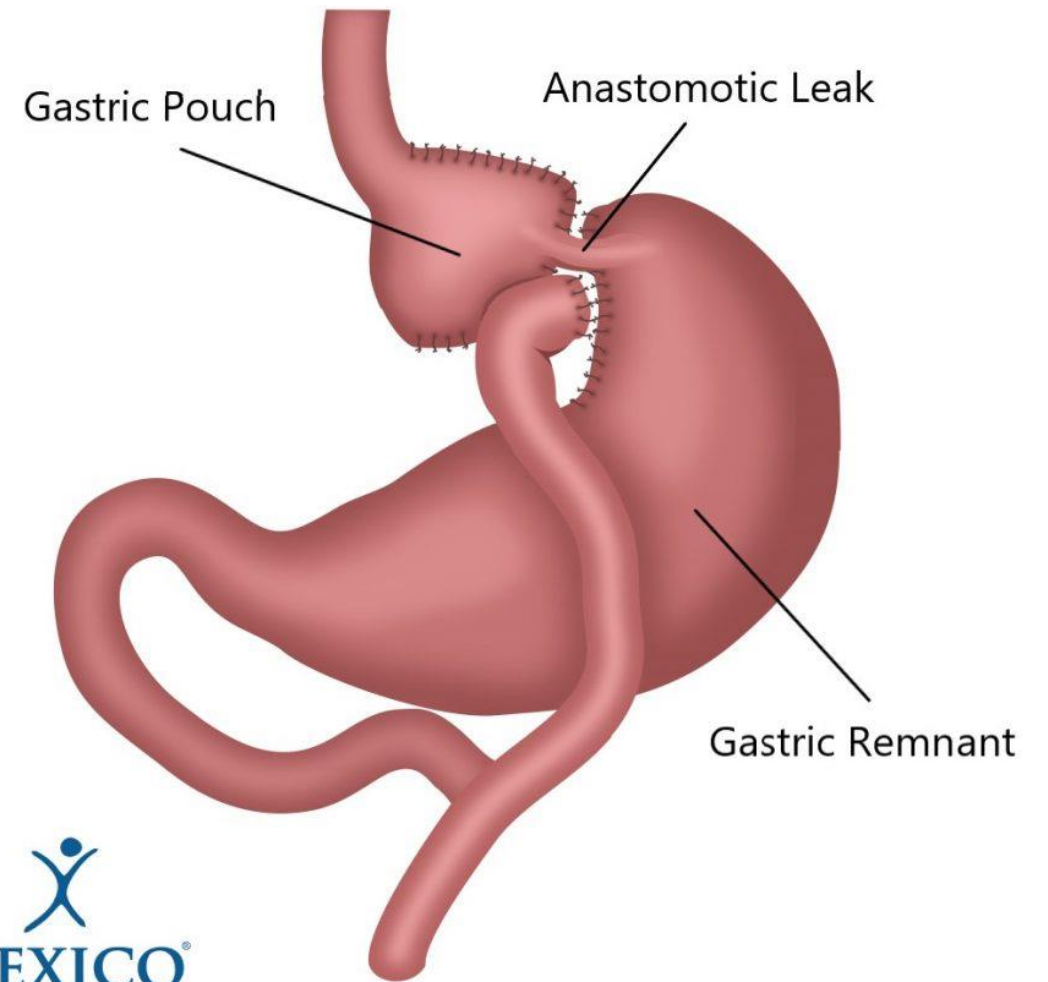


QUICK RECAP OF STOMAS

Type of ostomy	Ileostomy ²	Colostomy ³
Definition	Opening between the small intestine and abdominal wall, most commonly the distal small intestine	Opening between the colon and abdominal wall, most commonly descending or sigmoid colon
Typical location and size	Typically right abdomen and smaller size (small bowel is smaller)	Typically left abdomen and larger size
Content quality	Loose, liquid stool	More often formed stool, though proximal colostomies may produce loose stool
Typical indications	Temporary or permanent fecal diversions to bypass entire colon to manage pathologic conditions, such as congenital anomalies, bowel obstruction, IBD, traumatic disruption of intestinal tract, or GI malignancy	When it is necessary to bypass or remove the distal colon, rectum or anus, e.g. to facilitate healing of stage 4 pressure injuries, decompression in setting of obstructing lesion, and removal of the distal colon, rectum or anus because of cancer or severe infection
Time to maturation	Approximately 6-8 weeks. During this time the stoma will become smaller	Approximately 6-8 weeks. During this time the stoma will become smaller

FISTULAS

Gastro-Gastric Fistula



Roux-en-Y Gastric Bypass

OBJECTIVES



Definition



Classification



Etiology



Clinical
Presentation



Investigations



Management

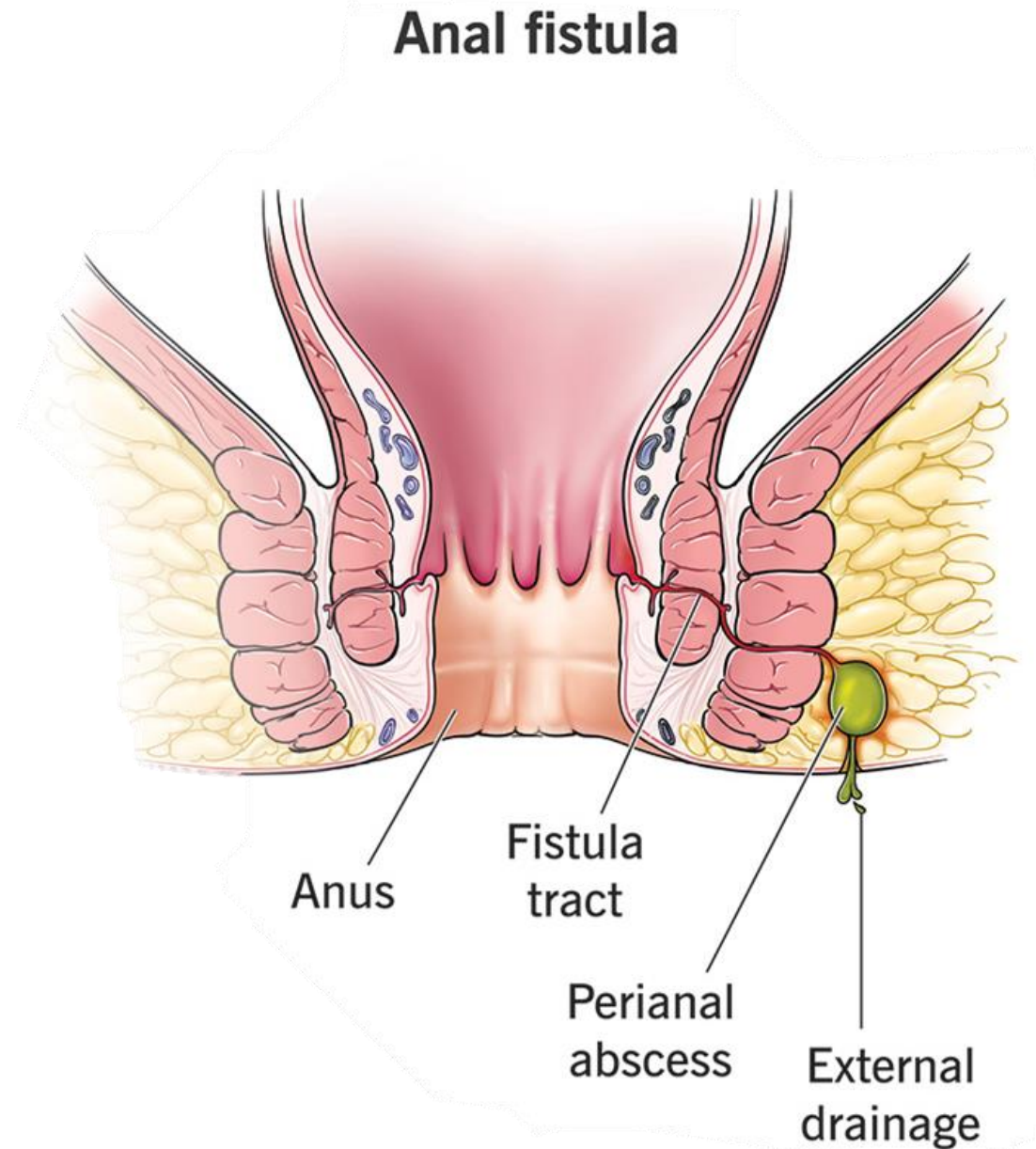


SHORT BOWEL
SYNDROME

FISTULA

Fistula is a connection between two body parts that don't normally connect. •

They can form entirely inside your body or •
from somewhere inside your body to the outer surface of your skin.



TYPES OF FISTULA

1. Internal
fistula

2. External
fistula

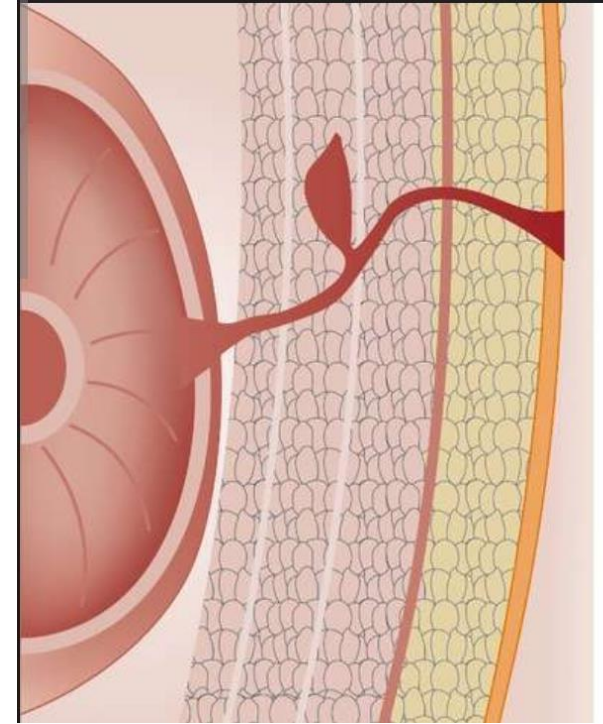
1) EXTERNAL FISTULA

Is an abnormal tunnel between an internal organ and the outside of the body

Enterocutaneous fistula:

is an abnormal connection that develops between the intestinal tract or stomach and the skin.

- Most ECFs occur after bowel surgery and can cause sepsis and intestinal failure.



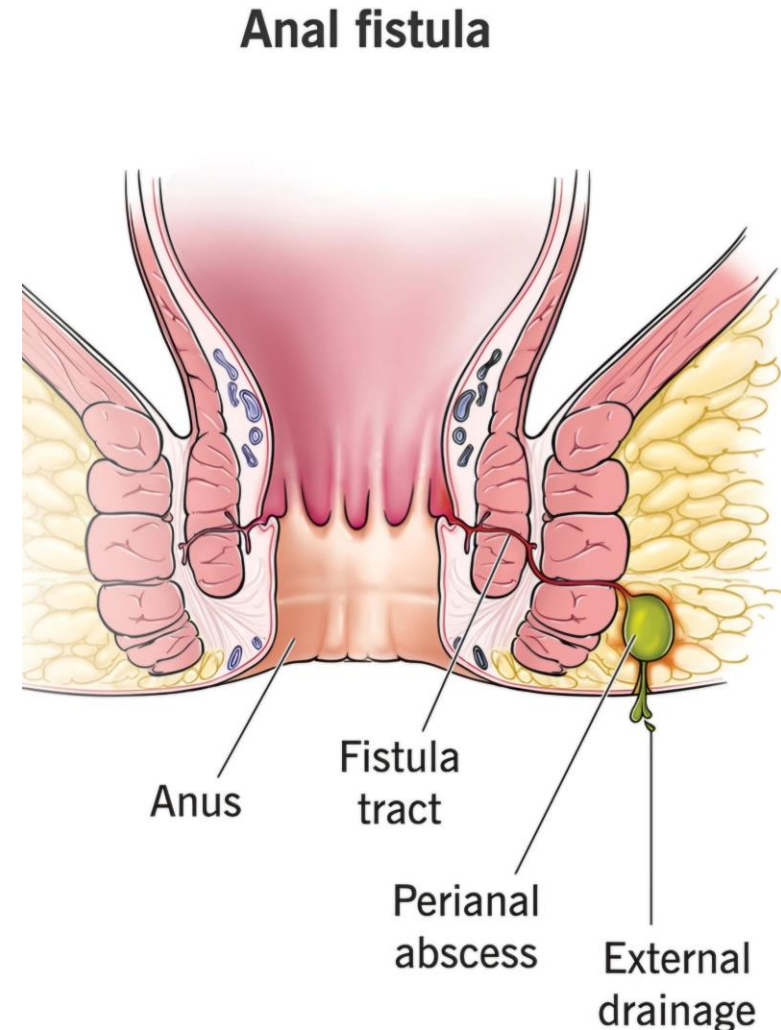
Anal fistula

It is an abnormal passageway that develops from inside the anus to the skin outside.

It usually develops in the upper part of the anus where the anal glands are.

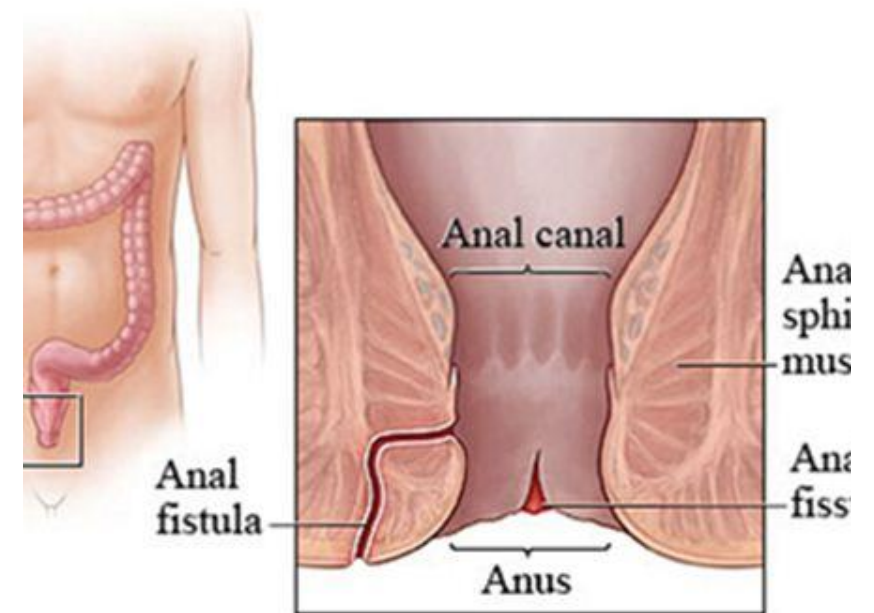
When these glands become infected, drainage from the infection can create a fistula.

This infection is called a perianal abscess



❖ THE MOST COMMON SYMPTOMS OF ANAL FISTULA

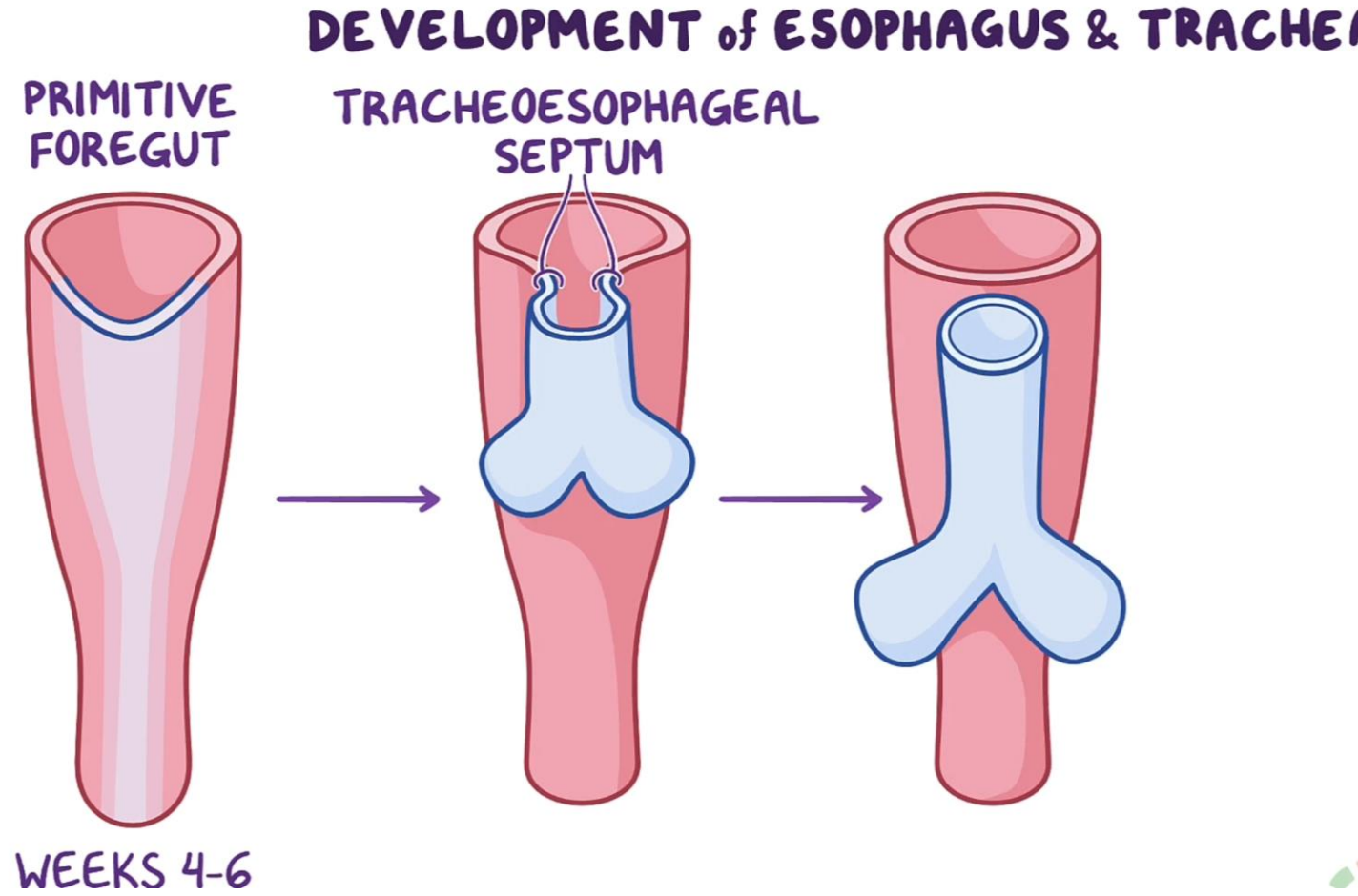
- Swelling and inflammation inside or around your anus. These are signs of active infection under the skin (cellulitis).
- Anal pain, You may feel it more when you poop, cough or sit
- Fluid drainage from somewhere around your anus. It may include pus, stool or blood (rectal bleeding)



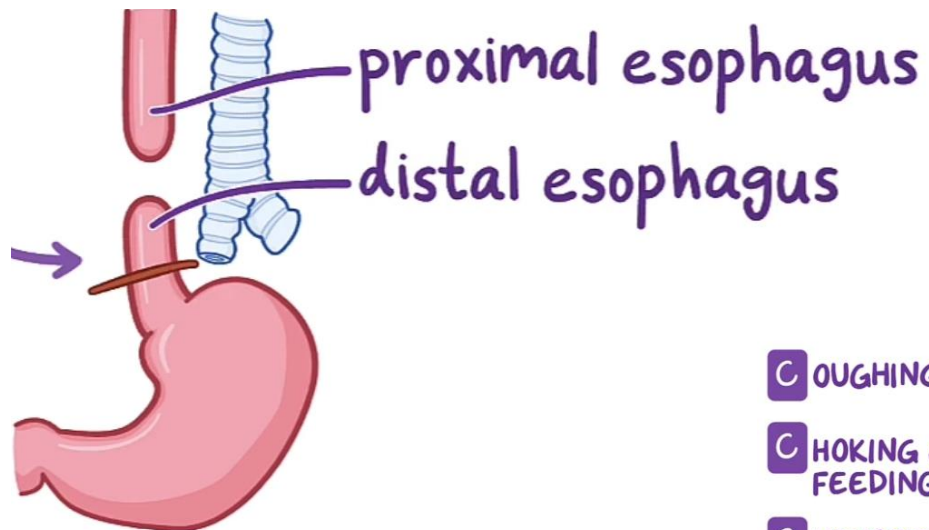
2) INTERNAL FISTULA

Tracheoesophageal fistula:

Is an abnormal connection between the trachea and esophagus



A



- ☒ COUGHING
- ☒ CHOKING during FEEDING
- ☒ CYANOSIS

B

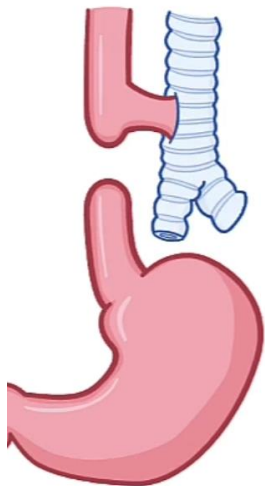
Esophageal atresia with distal tracheoesophageal fistula (most common)



3 C's + * GI SYMPTOMS (e.g. gastric distention)

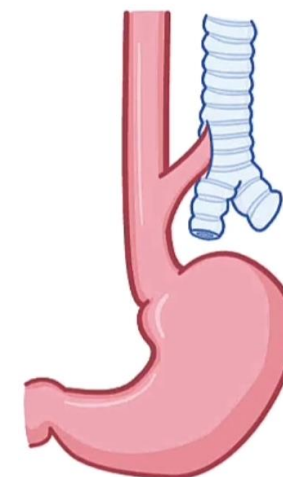
C

Esophageal atresia with proximal tracheoesophageal fistula



3 C's + * ↑ CHANCE of ASPIRATION PNEUMONIA
↳ RESPIRATORY SYMPTOMS

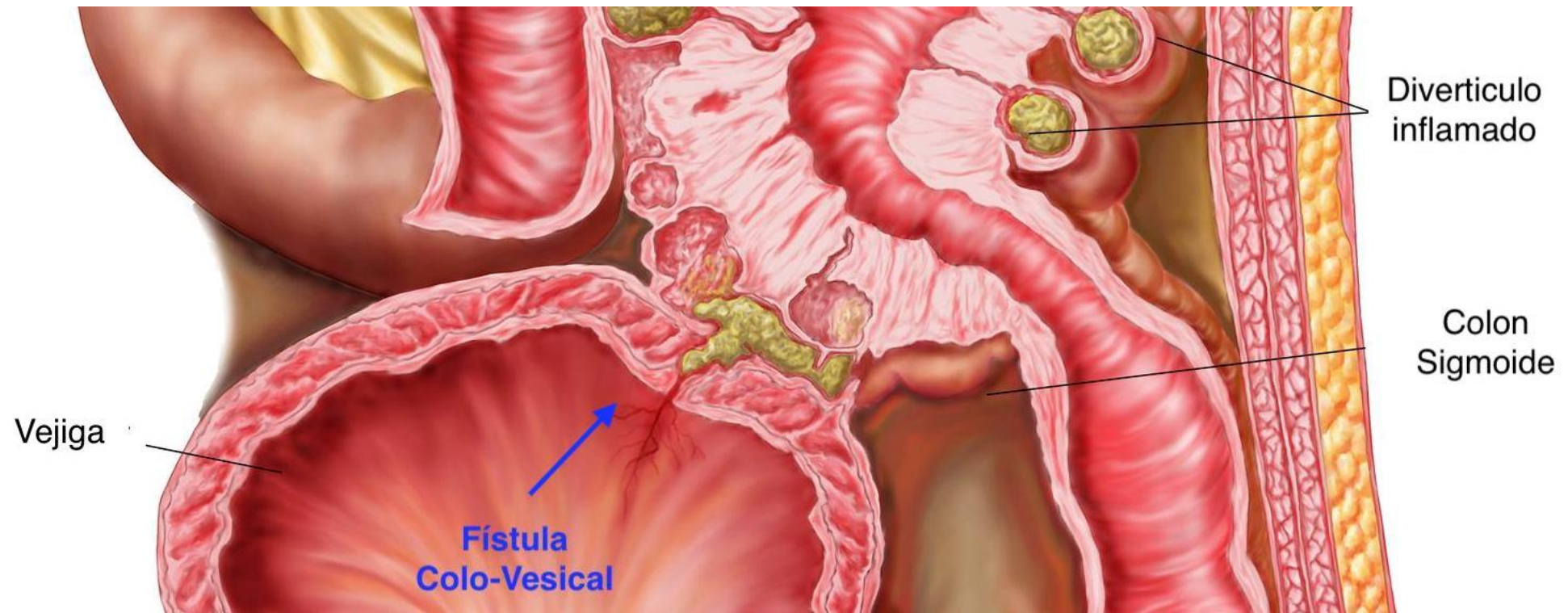
D



Pure tracheoesophageal fistula (H-type)

Colovesical fistula : Is an abnormal connection between the colon and urinary bladder.

-patient can present with recurrent urinary tract infections
More specifically they present with pneumaturia and/or fecaluria.



CAUSES OF FISTULA

- The causes vary according to the type of fistula you have. In general, possible causes include:
 - Inflammation and/or infection.
 - Trauma or injury to part of your body.
 - Complication of surgery.
 - Side effect of treatment, like radiation therapy.
 - Changes that occur during fetal development.

INVESTIGATIONS

A. Physical Examinations.

B. Fistulogram.

C. Endoscopic ultrasound.

D. Endoscopy.

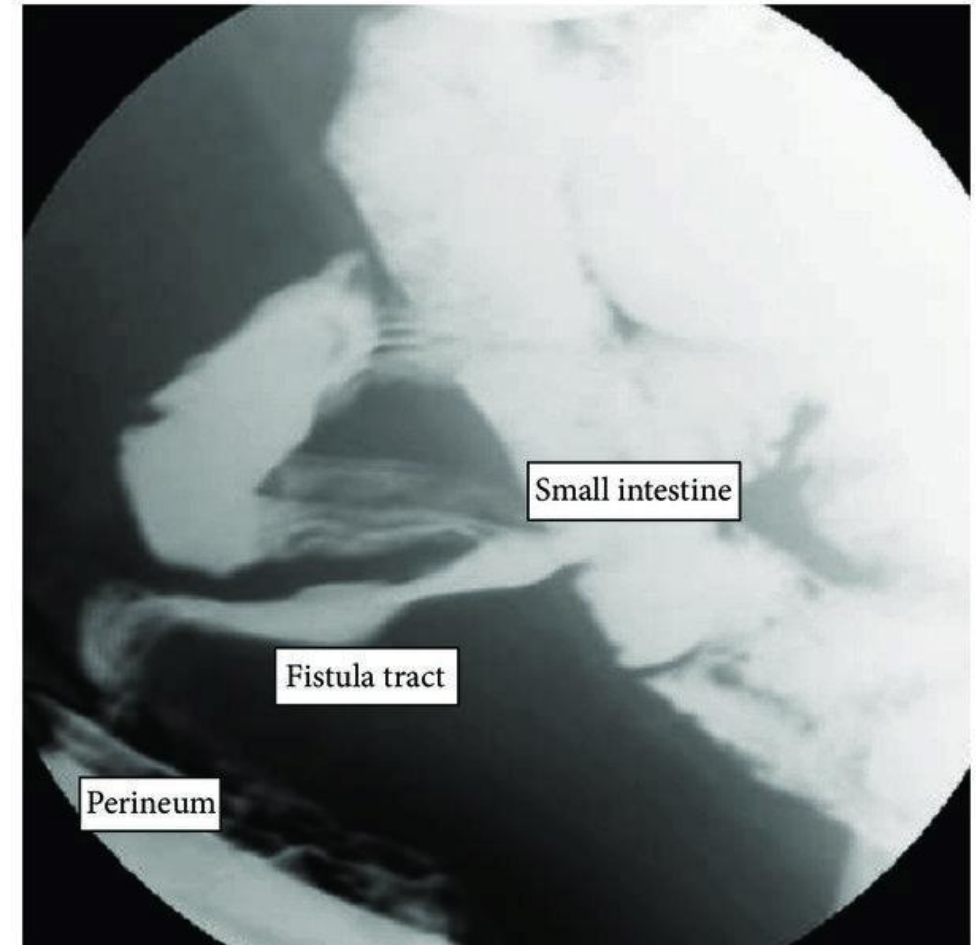
A. Physical Examinations:

In case of an external fistula this includes inspecting the area for the external opening of the fistula and any signs of abscess.

B. Fistulogram:

This test uses X-rays with a special dye that is injected into the area of the fistula. The dye allows the fistula to show up on the X-ray.

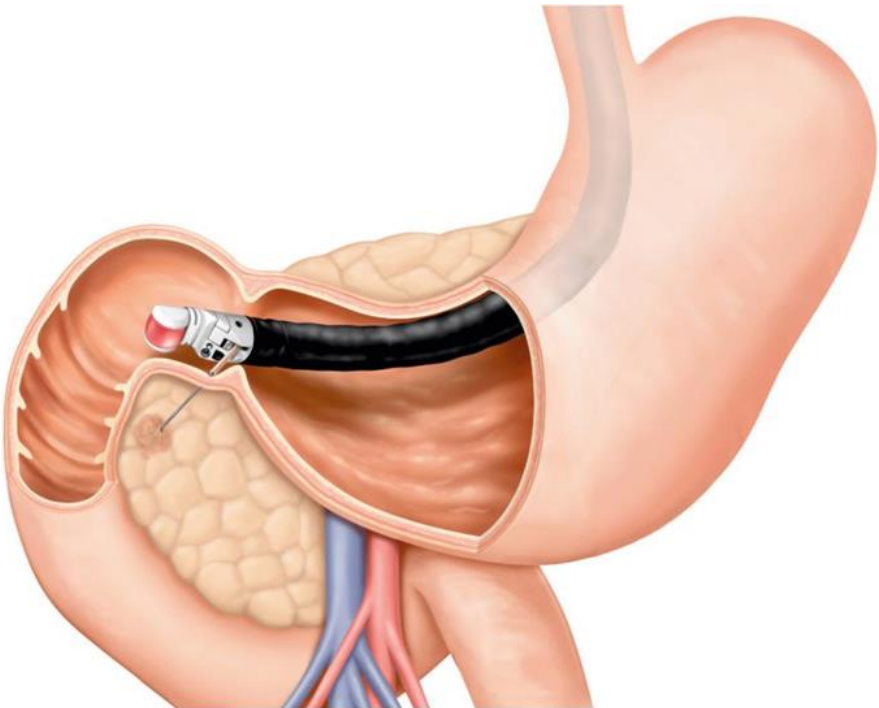
A CT scan can also be used for these tests.



C.ENDOSCOPIC ULTRASOUND

Endoscopic ultrasound is a procedure that combines endoscopy and ultrasound to create images of the digestive tract and tissues.

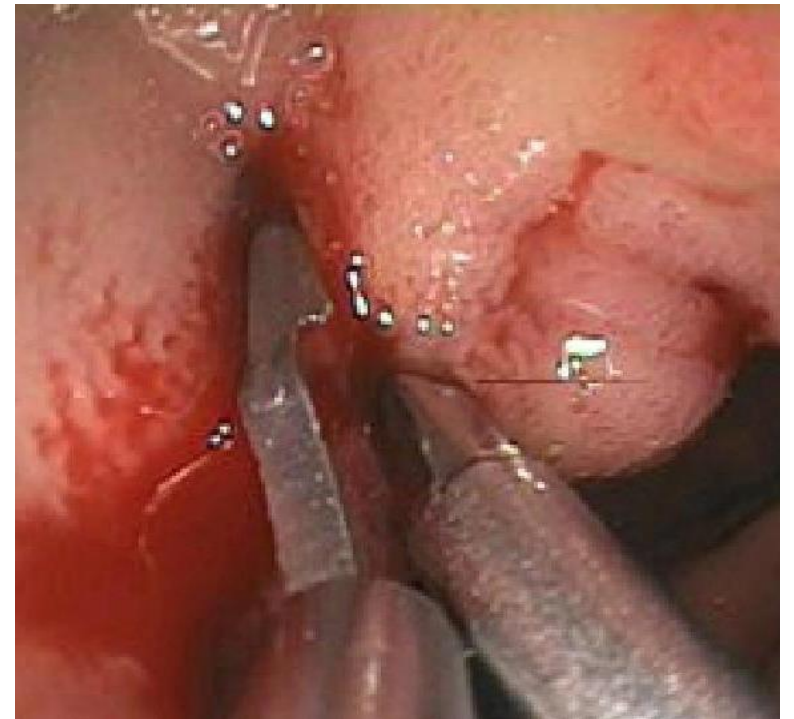
During EUS, a thin, flexible tube called an endoscope is placed in the digestive tract. An ultrasound device on the tip of the tube uses high-frequency sound waves to create detailed images of the digestive tract



D. ENDOSCOPY

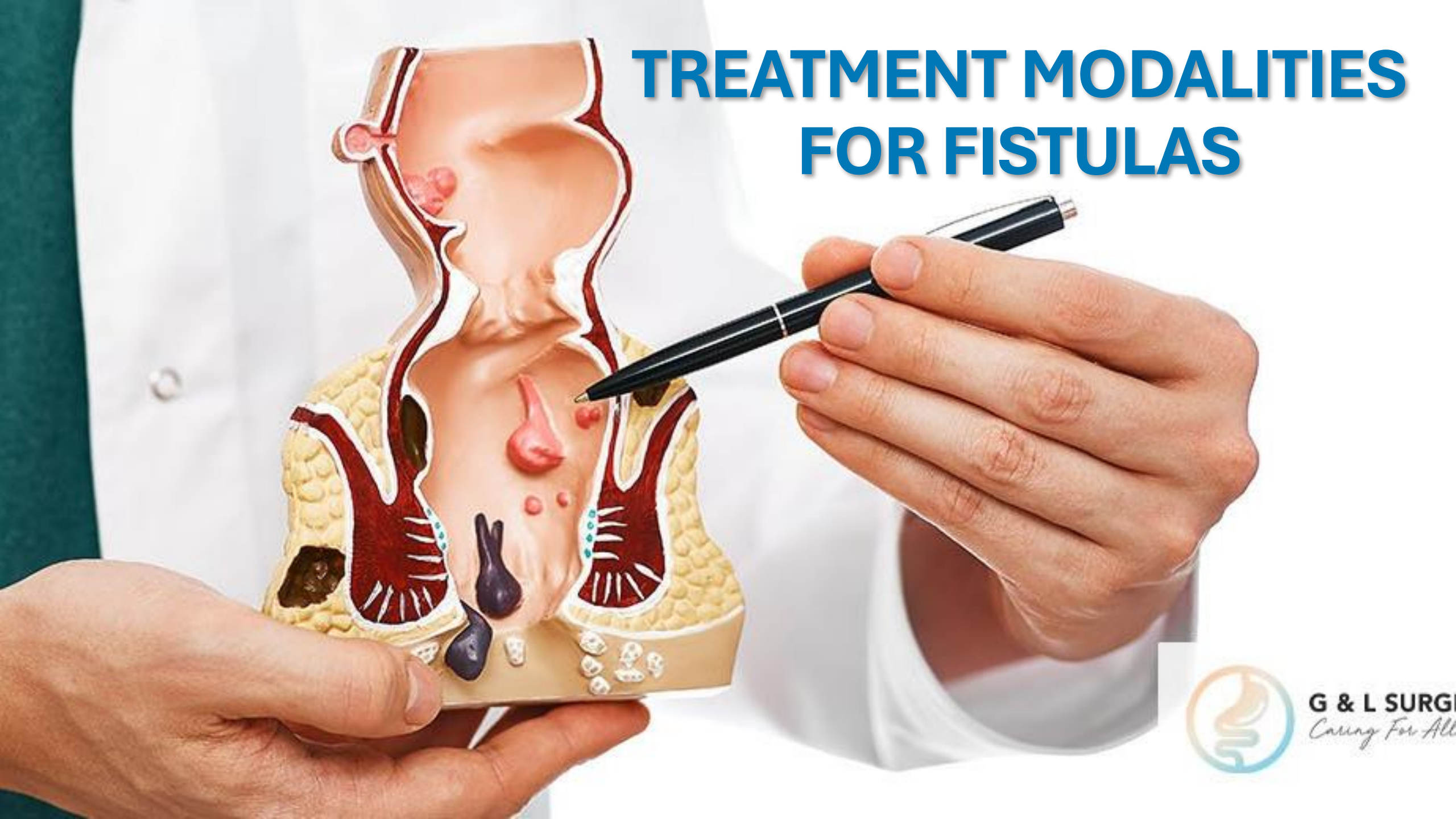
□ Useful to assess the bowel for underlying pathology, such as:

- I. Peptic ulceration
- II. Cancer
- III. Inflammatory bowel disease



Upper GI endoscopy shows duodenal ulcer with active bleeding

TREATMENT MODALITIES FOR FISTULAS



G & L SURGEONS
Caring For All

TREATMENT MODALITIES FOR FISTULAS

- Depends on:
 1. Location of the fistula.
 2. Size of the fistula.
 3. Condition of the fistula (clean, inflamed, or containing pus).

TREATMENT MODALITIES FOR FISTULAS

1. **Non-invasive treatment**

- a) Fibrin glue: medical adhesive substance to close the fistula.
- b) Plug: is usually collagen matrix to full the fistula.
- c) Catheters: used to drain fistulas, usually they are used for small fistulas to manage infections.

TREATMENT MODALITIES FOR FISTULAS

2. Pharmacological treatment

Antibiotic or another medication used to treat infection associated with fistula but there is no medication to eradicate fistula at this time.

(Note: Postoperative prophylactic antibiotic therapy for 7-10 days (eg, ciprofloxacin, metronidazole) appears to be a key part of preventing anal fistulas after incision and drainage of perianal abscess.)

TREATMENT MODALITIES FOR FISTULAS

3. Surgical treatment

- a) Trans abdominal surgery: the fistula is accessed through abdominal wall by laparoscopy or laparotomy in cases of entero-enteric fistula.
- b) Fistulotomy: in case of perianal fistula by opening of fistula for complete drainage.
- c) Fistulectomy: in this procedure, the whole fistulous tract is removed. This increases the likelihood of damage to the sphincters and is therefore often not preferred. However, this may be necessary if there is a large amount of tissue that is blocking normal function, or if there is a high likelihood of recurrence.

TREATMENT MODALITIES FOR FISTULAS

- **d) Laser surgery:** is becoming used more and more frequently in various surgical procedures as a less invasive option. In most cases, it is considered to be the best and the most effective surgical treatment for anal fistula. It involves inserting a small probe into the fistula tract, guided by an endoscope or other imaging techniques. The laser energy is delivered through the probe, targeting and destroying the tissues along the fistula tract.

TREATMENT MODALITIES FOR FISTULAS

4. **Draining seton:** a piece of surgical thread that's left in the fistula for several weeks to keep it open. This allows it to drain and helps it heal, while avoiding the need to cut the sphincter muscles. Loose setons allow fistulas to drain, but do not cure them.
5. **Cutting seton:** a suture knot that is placed in the fistulous track around the anal sphincter that is tied with tension and tightened intervally until the track is completely superficialised or cut through. Cutting seton has been associated with high fecal incontinence with a reported rate of 25%.

TREATMENT MODALITIES FOR FISTULAS

- 6) **Advancement flap:** This procedure involves creating a small flap of tissue within the anus and lower part of the rectum. The flap is then used to cover the internal opening of the fistula track inside the anus and is fixed in place with sutures. An advancement flap procedure may be combined with the use of a fistula plug or paste. This procedure is considered if the fistula passes through the anal sphincter muscles and fistulotomy carries a high risk of faecal incontinence.

TREATMENT MODALITIES FOR FISTULAS

7. **VAAFT (Video assisted anal fistula treatment)**: A tiny camera is used to see inside the track. The surgeon will use burning (cautery) of the internal lining and a brush to clean the fistula track. The internal opening to the anus/rectum is closed or left for another time if the track is more complex.

SHORT BOWEL SYNDROME

Malabsorption secondary to decreased intestinal absorptive surface area and rapid intestinal transit. The most common signs, symptoms, and findings include malnutrition, weight loss, diarrhea, steatorrhea, dehydration, vitamin deficiencies, and electrolyte imbalance.

SBS can result from extensive surgical resection or congenital intestinal diseases. The most common pathologies that lead to SBS in adults are Crohn disease, mesenteric ischemia, radiation enteritis, post-surgical adhesions, and post-operative complications. In children, the most common pathologies include volvulus, intestinal malformations, and necrotizing enterocolitis.

SHORT BOWEL SYNDROME

INTESTINES

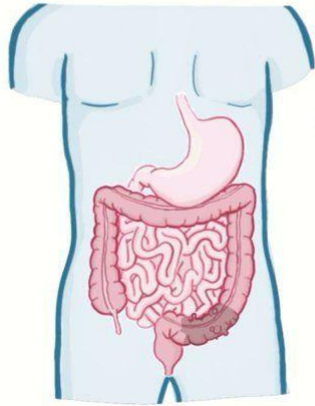
~ CONDITION OCCURS when:

* **SMALL / LARGE INTESTINES** become **PHYSICALLY SHORTER** (PORTION REMOVED)

* PORTION is **DAMAGED**, MAKING it **NONFUNCTIONAL**



POOR ABSORPTION of:
WATER & VITAL NUTRIENTS



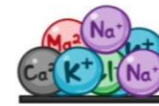
SHORT BOWEL SYNDROME

INSUFFICIENT LENGTH or FUNCTION of SMALL INTESTINES
= MALABSORPTION of:

WATER



ELECTROLYTES



MICRO & MACRONUTRIENTS



CAUSED by **EXTENSIVE SURGICAL RESECTION**
of the **SMALL INTESTINE:**

TRAUMA



INFLAMMATORY
BOWEL DISEASE



CONGENITAL
ABNORMALITY



SHORT BOWEL SYNDROME

