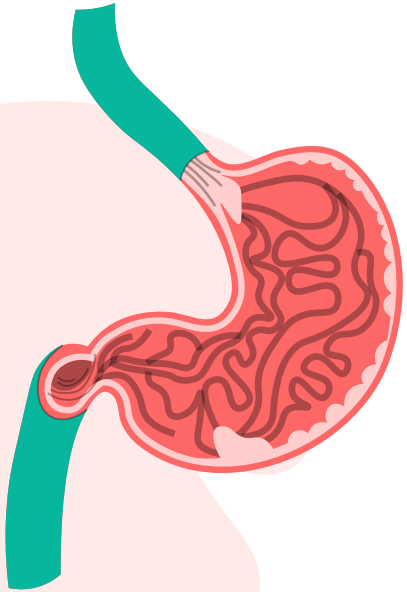
GASTROINTESTINAL

Stomas

and Fistulas



Under the supervision of Dr.Asem Qundah

B22 ☺

STOMAS

Stomas objectives:

1	Defenition
2	Why are they used and their indications
3	Dietary advices to ostomies
4	Quick hint to identify the type
5	Types of stomas
6	Complications
7	History and physical examination

1.What is stoma?

Note how it is part of intestine

Stomas are artificial openings of a hollow organ (for example the bowel). The bowel or urinary system is artificially opened onto the surface of the abdomen, allowing faeces or urine to drain, bypassing the distal portions of the bowel or urinary tract.

A specially adapted bag (***stoma bag***) is fitted around the stoma to collect the waste products and is emptied as required.

The procedure is called OSTOMY

VS

Stoma is a Greek word that means mouth
Stoma is red and moist as the inner of your mouth and it has no feeling
Swollen after surgery and regression occurs by time

Why stomas are used and what are their indications?

Used to divert feces or urine outside the body where it can be collected in a bag outside the body

Colostomy	Colon or rectal cancer , colon injury ,blockage
Ileostomy	IBD , Bowel cancer

Dietary advices to ostomies

Low fiber food

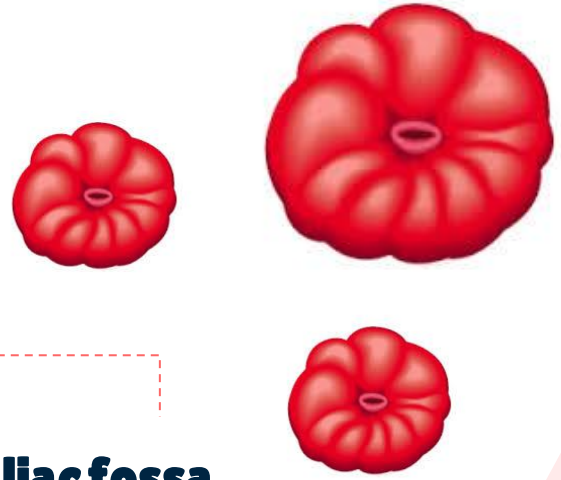
To reduce stool bulk and help in reducing intestinal obstruction

Avoid vegetables associated with offensive odor

Cabbage, radish, garlic and cucumber

Quick hint to Identify the type of The stoma

Look at the site



Left Iliac fossa

colostomy

Right Iliac fossa

Ileostomy

Types of stomas according to time:

- Temporary
- Reversible
- Obstruction/ inflammation /anastomosis
- Permanent -irreversible / for life
- No distal anastomosis (permanent removal of distal part (colon, rectum)

According to origin

- Ileostomy
- Colostomy
- Urostomy
- Gastrostomy

According to method of constriction

- End stoma
- Loop stoma

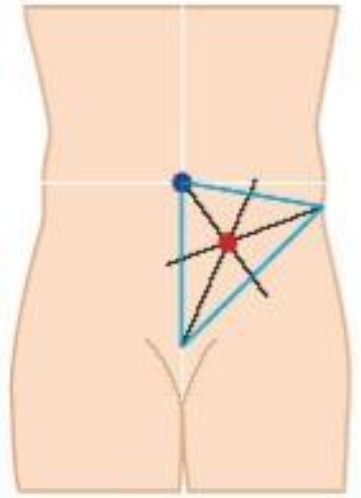
in both ileostomy and colostomy

Pre-operation

- The site is marked while patient is standing and sitting.

When choosing the site you should avoid:

- 1) Bony prominences (ASIS, costal margin)
- 2) The umbilicus(5 cm away)
- 3) Old wounds or scars (may be adhesions beneath)
- 4) Skin folds and creases
- 5) Waistline of clothes



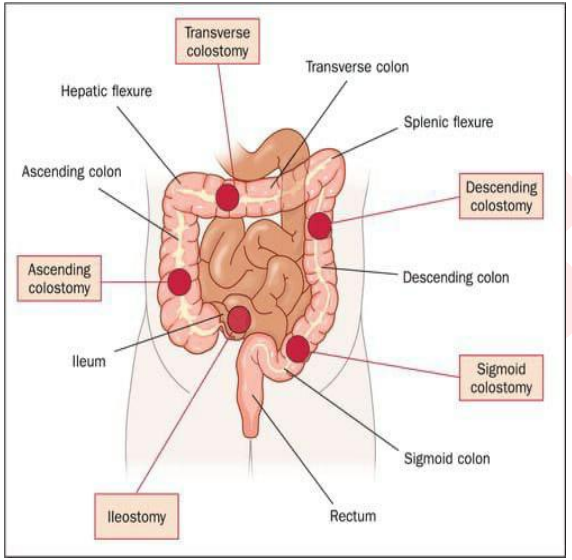
Pre-operation

- *The stoma is created through the **rectus abdominis** muscle **to provide support**.

*the site should be assisted preoperatively by a stoma nurse while standing and setting.

- **General rule : the site should be easily accessed by the patient.**

1. Colostomy



A **colostomy** is where the large intestine (**colon**) is **brought onto the skin.**

Colostomies drain **more solid stools**, as much of the water is reabsorbed in the remaining large intestine

.

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

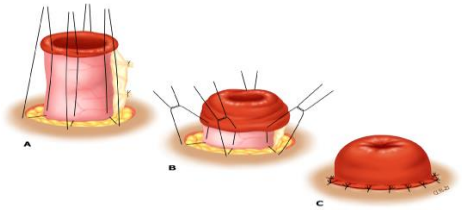
Colostomy

The colostomy divide into two types according to Method of constriction

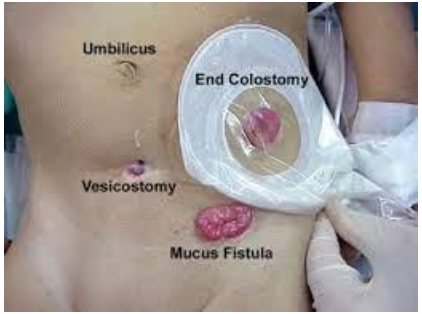
- 1 · End colostomy
- 2 · Loop colostomy

- Most colostomies are created as End colostomies rather than loop colostomies
- · End colostomies are permanent

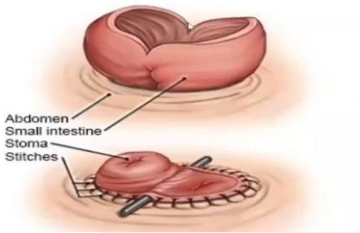
1.End colostomy :



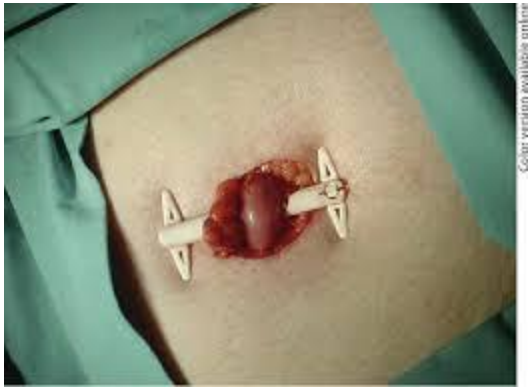
- An end colostomy is created after the removal of a section of the bowel,
- where the end part of the proximal portion of the bowel is brought onto the skin. !
- Faeces are able to drain out of the end colostomy into a stoma bag.
- The other open end of the remaining bowel (the distal part) is sutured and left in the abdomen.
- It may be reversed at a later date, where the two ends are sutured together creating an anastomosis.
- End colostomies are permanent after resection of abdomino-perineal resection (APR) because the entire rectum and anus have been removed.
- These are usually located in the lower left abdomen



2.Loop colostomy :

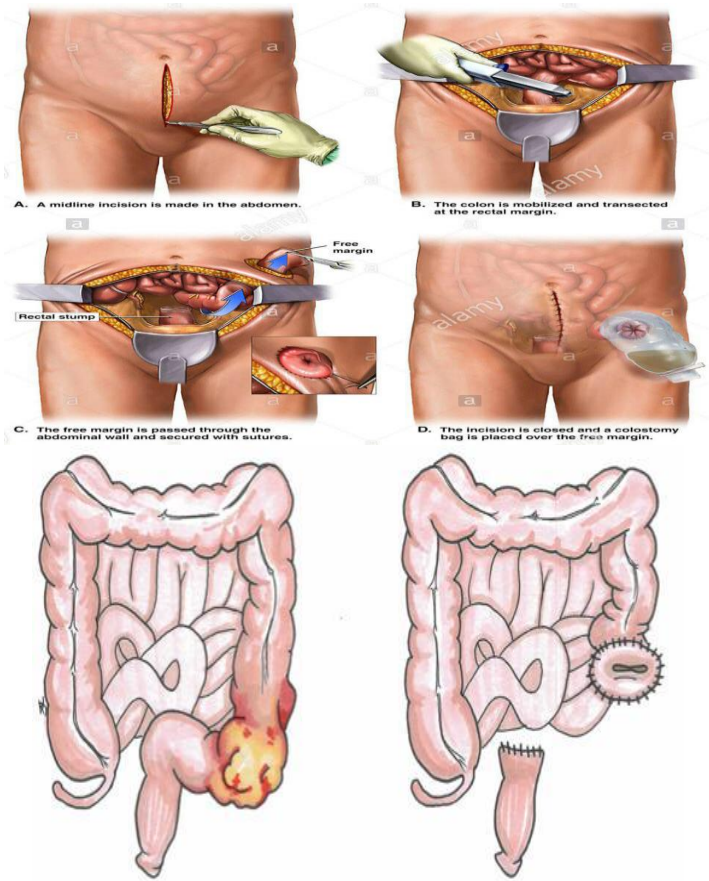


- loop colostomy **(it's temporarily)**
- **can be done sometimes to:**
- 1.prevent faecal peritonitis following traumatic injury to the rectum.
- 2.facilitate the operative treatment of high anal fistula.
- 3.For incontinence and to defunction an obstructing low rectal cancer prior to long chemotherapy course.

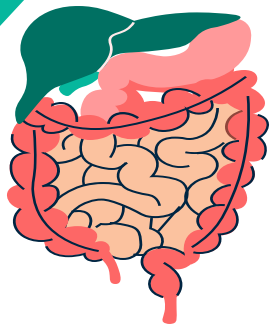


Hartmann's procedure:

- 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:



1.Carcinoma of the colon, rectum, or anus.
2.Diverticular disease.
3.Crohn's disease.
4.Obstruction.
5.Radiation enteritis.
6.Ischemic bowel.
7.Fecal incontinence.

2. Ileostomy

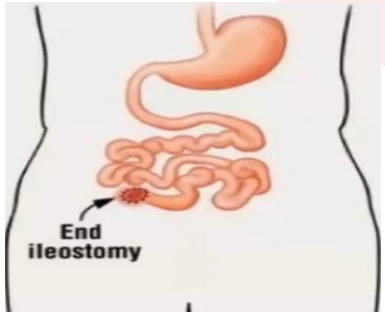
ileostomy is where the **end portion of the small bowel (ileum)** is **brought onto the skin**. Ileostomies **drain more liquid stools,** as the fluid content is normally reabsorbed later, in the large intestine. !

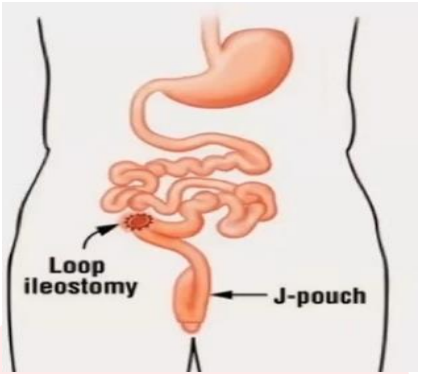
They have a spout, which allows them to drain **directly into** a tightly fitting stoma **bag** without the contents coming into contact with the surrounding skin because they are more alkali and **more irritating** to the skin

They are typically located in the right iliac fossa (RIF).

The ileostomy divide into two types according to Method of constriction

- End ileostomy
- Loop ileostomy



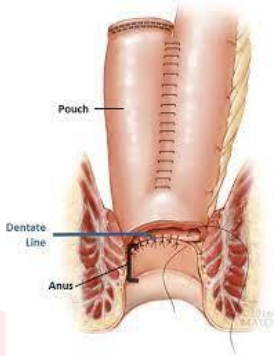


1. End ileostomy

End ileostomies are permanent after a panproctocolectomy (total colectomy with removal of the large bowel, rectum and anus), for example in the treatment of inflammatory bowel disease or familial adenomatous polyposis (FAP).

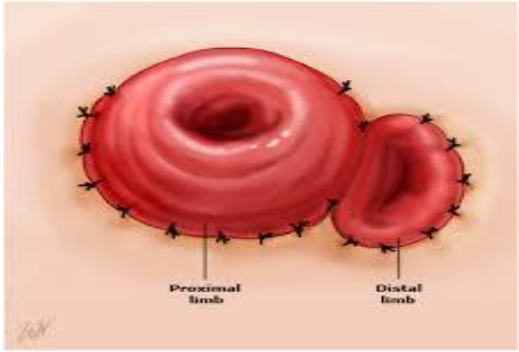
An alternative to this is to create an ileo-anal anastomosis (J-pouch).

This is where the ileum is folded back on itself and fashioned into a larger pouch that functions a bit like a rectum



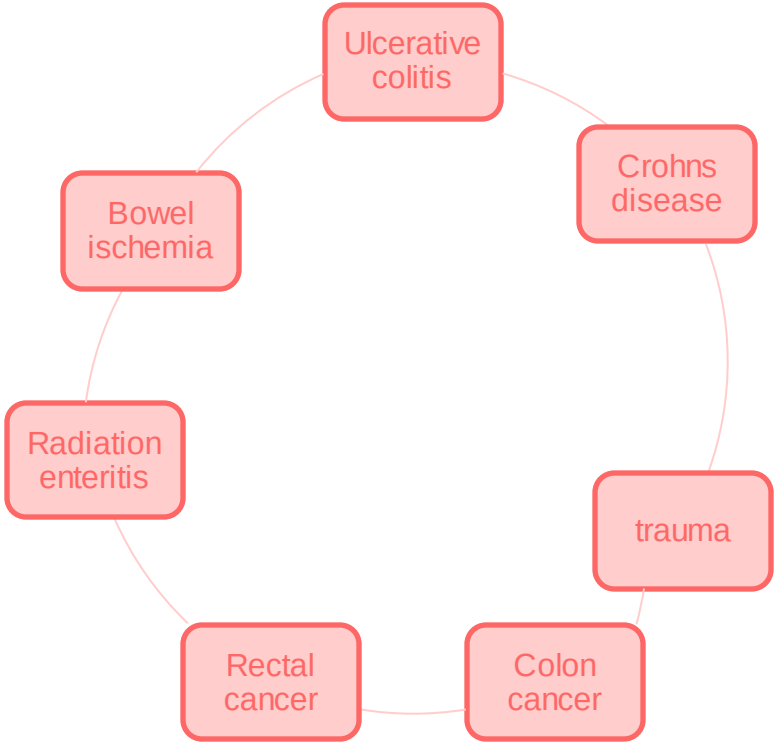
This “J-pouch” is then attached to the anus and collects stools prior to the person passing a motion

2. Loop Ileostomy



- **temporary** stoma used to allow a **distal portion of the bowel and anastomosis to heal after surgery.**
- They are usually **reversed around 6-8 weeks** later
- bowel is partially opened and folded so that there are **two openings on the skin side-by-side, attached in the middle.**
- **"Loop"** refers to it being the **two ends (proximal and distal)** of a section of small bowel being brought out onto the skin.
- The **proximal end (the productive side)** is turned inside out to form a spout to protect the surrounding skin.
- The **distal** end is **flatter**.
- This allows you to distinguish between the proximal and distal portions of the bowel.

"Indications for ileostomy:

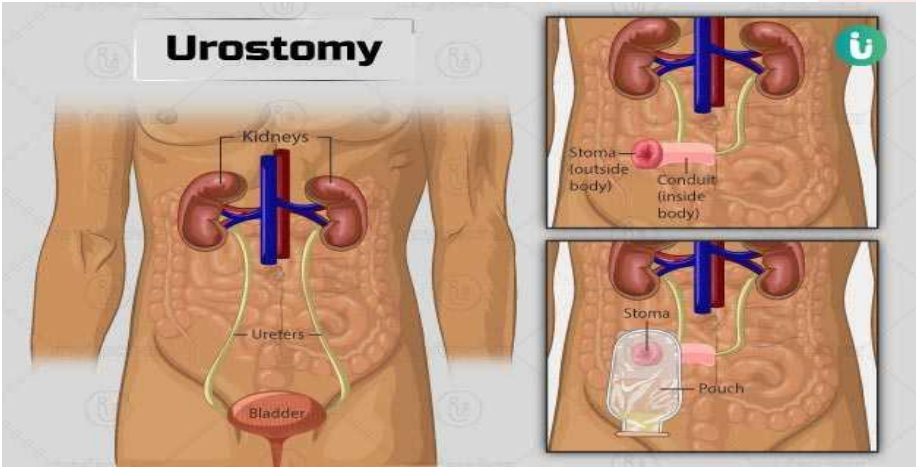


3. Gastrostomy

A gastrostomy involves creating an artificial connection between the stomach and the abdominal wall. ! This can be used for providing feeds directly into the stomach in patients that cannot meet their nutritional needs by mouth. ! Percutaneous endoscopic gastrostomy (PEG) refers to when the gastrostomy is fitted by an endoscopy procedure.

4. Urostomy

A **urostomy** involves creating an opening from the urinary system onto the skin.
They have a **spout** and are typically located in the right iliac fossa (**RIF**).



	colostomy	Ileostomy
Site	LIF	RIF
Shape	Flush(almost with skin)	Spouted (2-3cm)
Effluent	Solid – semi solid – large bowel	Fluid –small bowel
Output	Episodic(lower)	Continuous (higher)
Appliances	Disposable	Drainable
Electrolyte disturbance	Less common	More common
Skin irritation	Less comon	More common
Bad odour	more	less

Recap

Colostomy	Ileostomy
	

Complications of stoma

Early:

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

Delayed:

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

Complications

➢ STOMA ISCHEMIA AND NECROSIS	➢ HIGH OUTPUT (DEHYDRATION)	➢ SKIN IRRITATION
-occur in the early postoperative period -caused by skeletonizing the distal small bowel (impaired vascular supply, blood flow reduced or cut off). -Limited mucosal necrosis above the fascia may need observation, but necrosis below the level of the fascia requires surgical revision.	-Worse and more common with ileostomy. -range from dermatitis to painful ulcerations around the stoma . -Especially if the stoma appliance fits poorly . -Skin protecting agents can be used.	-ileostomy bypasses the fluid absorbing capability of the colon, and dehydration with fluid and electrolyte abnormalities is not uncommon. -ileostomy output should be maintained at less than 1500 mL/d to avoid this problem. -It's rare after colostomy.

➢ PARASTOMAL HERNIA

-less common after an ileostomy than after a colostomy.
-cause poor appliance fitting, pain, obstruction, or strangulation.
-should be repaired (if they caused small-bowel obstruction)
- local repair (either with or without mesh), laparoscopic repair, and stoma resiting.

➢ RETRACTION

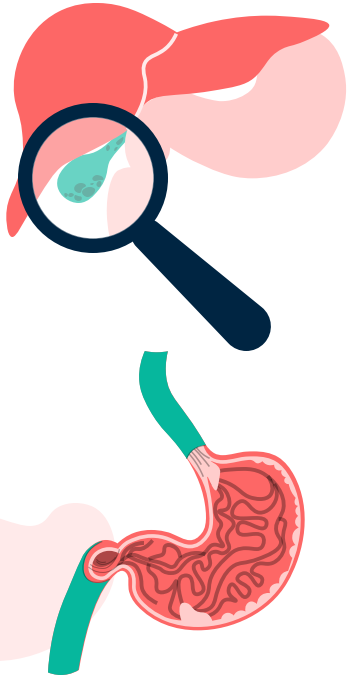
-The stoma going inward, may occur early or late and may be exacerbated by obesity.
-Local revision may be necessary

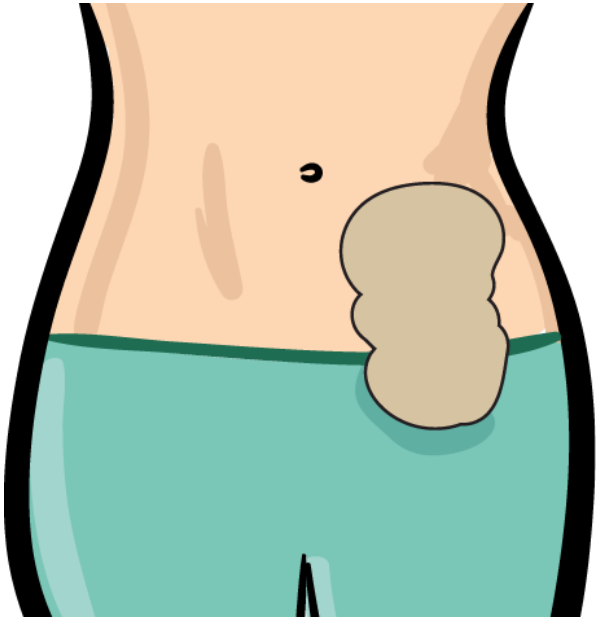
➢ PROLAPSE

-The stoma protruding outwards more than expected through the stomal opening.
-it's a rare complication but it's more common in loop stomas.

STOMAS History taking

1. **How long** has the patient had a stoma?
2. **Why** did they have a stoma created?
3. How do they **manage** with their stoma?
4. What **impact** does their stoma have on their daily life?
5. When was **the last time they saw their surgeon** or stomal therapy nurse?
6. **How many times** per day do they **empty their stoma bag?** Has that changed recently?
7. Are there **plans** from their surgeon for stoma **reversal**?





Physical Examination of Stoma

Physical Examination

- Introduction
- Inspection
- Palpation
- Full abdominal Examination.

- Wash your hands
- Introduce yourself to the patient
- Confirm patient's Name and DoB.
- Briefly explain what the examination
- Gain consent
- Patient position (Supine)

1: Inspection

Site

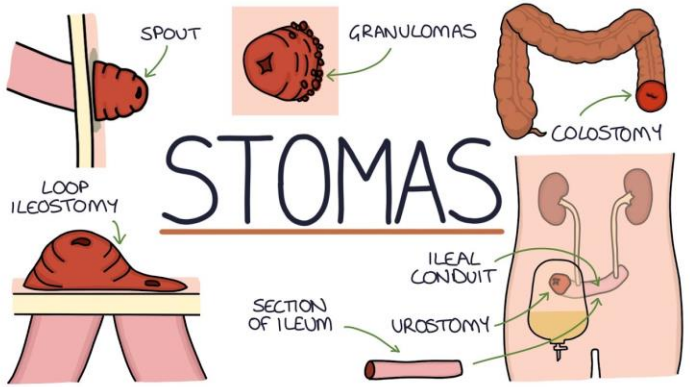
Number of lumens

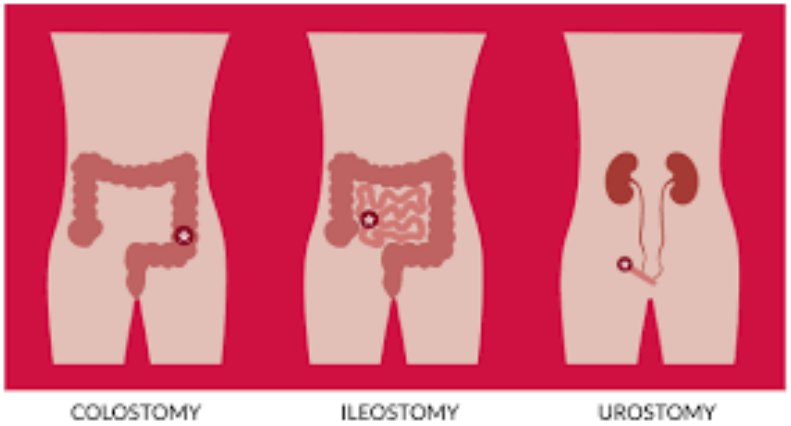
Spout

Effluent

Site

Colostomies are typically located in the left iliac fossa (**LIF**).
Ileostomies and **urostomies** are typically located in the right iliac fossa (**RIF)**





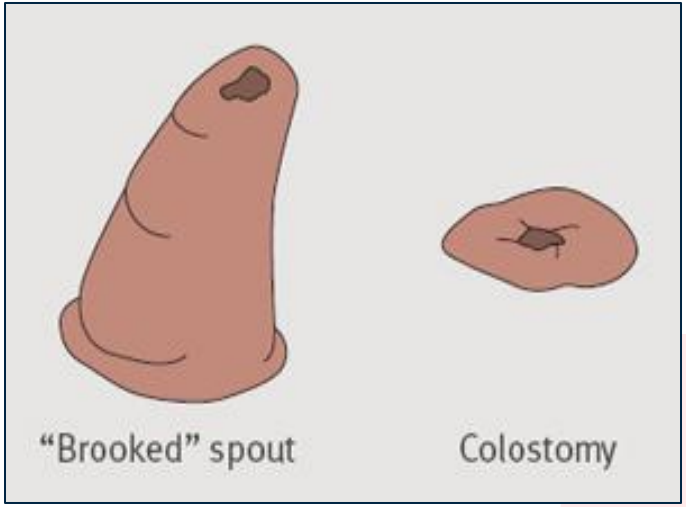
Number of lumens

The number of lumens can be a helpful clue when trying to determine the type of stoma:

- **1 lumen** located in the **RIF**: **end ileostomy or urostomy**
  1 lumen located in the LIF: **end colostomy**

- 2 lumens close together located in the RIF: loop ileostomy
  2 lumens close together located in the LIF: loop colostomy

Spout



The presence or absence of a spout can help to differentiate between ileostomies/urostomies and colostomies:

Spout present: ileostomy/urostomy
Spout absent: colostomy
A spout is used for ileostomies to prevent skin irritation from the small bowel contents produced by the stoma. A spout is used for urostomies for similar reasons.

Effluent

Effluent refers to the type of stoma output including feces and urine.

The type and form of the effluent can be useful in determining the type of stoma:

- Colostomies produce solid or semisolid feces 
- Ileostomies produce liquid or mushy small bowel content 
- Urostomies produce urine

Recap:

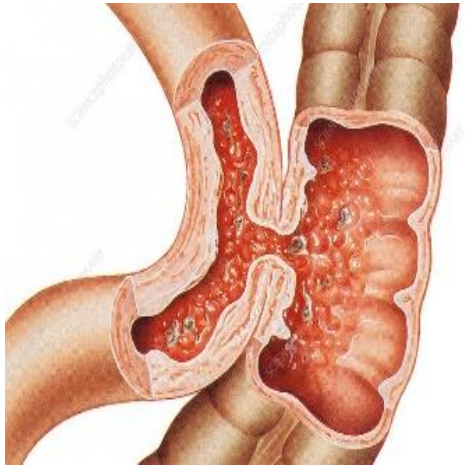
Table 3.1

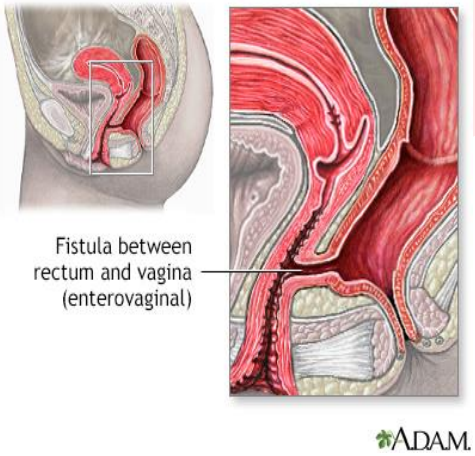
	Ileostomy	Colostomy
Site	Usually RIF	Usually LIF
Shape	Spouted. This is due to caustic nature of effluent which irritates surrounding skin (**high enzyme content**). Spout minimises this.	Flat/flush with skin
Effluent	Liquid to semi-liquid (small bowel contents)	Semi-solid to solid (faecal)
Output	**Low output:** 500 ml/day **High output:** 1 litre/day	200–300 ml/day (less with lower colostomies)

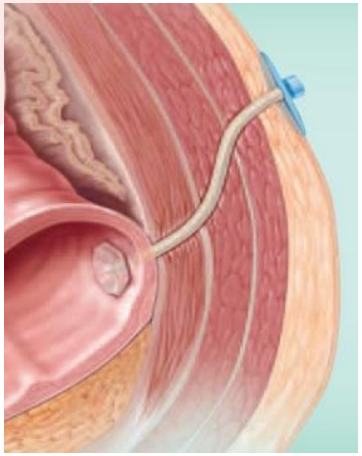
2: Palpation

- Gently feel around the stoma site for any tenderness
- Ask the patient to cough and feel for a cough impulse for any obvious parastomal hernia
- Gently digitate the stoma to assess for any stenosis and check patency
- Then you must **insert your index inside the lumen of stoma** and describe (bowel wall , stenosis , fecal impaction)
- Remove your index and describe (the color of the content , the consistency of the feces, if there is any blood)

- After you finish the examination of stoma you should do a full abdominal examination.
- Explain to the patient that the examination is now finished.
- Thank the patient & wash your hands
- Summarize your findings.







FISTULAS

Objectives of Fistulas

1	**Definition**
2	Classification.
3	Etiology
4	Clinical Presentation.
5	Investigations.
6	Management
7	Recap and case study

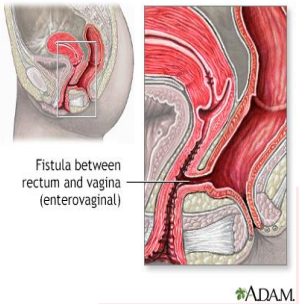
1. FISTULA

an abnormal communication between two epithelial–lined surfaces

LOCATION

FISTULA CAN ARISE IN ANY PART OF THE BODY (BETWEEN BLOOD VESSELS AND IN THE URINARY, REPRODUCTIVE AND LYMPHATIC SYSTEMS)

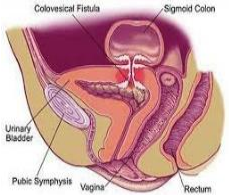
Most common: Digestive Tract



2. CLASSIFICATION

ANATOMICAL

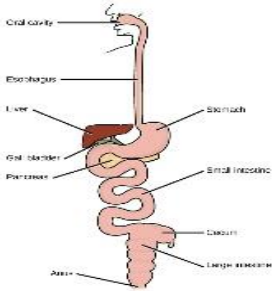
INTERNAL FISTULA:



CONNECT TWO HOLLOW ORGANS

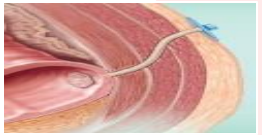
Colovesical fistula (with urinary bladder)

Enteroenteric fistula (with intestine)



EXTERNAL FISTULA:

MOST COMMON: (ENTEROCUTANEOUS)



Opens with external surface of the skin.

High output

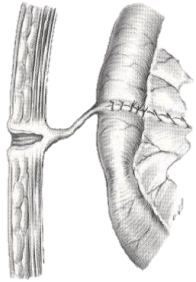
- >500 ml/day. (Proximal Fistulas)
stomach ,duodenum, or jejunum.
≥3 L/day leading to profound dehydration, malnutrition, and electrolyte disturbances

Low output –

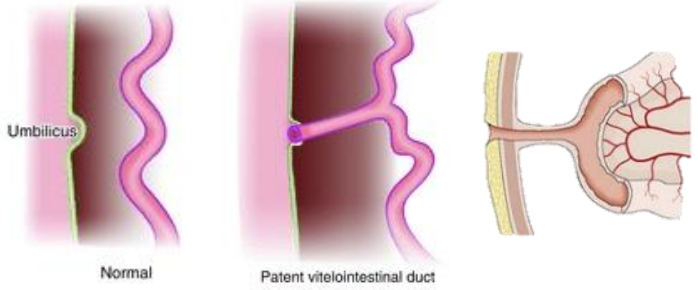
<500 ml/day (Distal Fistulas)
ileum or colon.
fewer complications, and more often close with nonoperative treatment

3. ETIOLOGY

- Trauma : Post-operative (80%)



- Congenital : Patent Vitello-intestinal duct



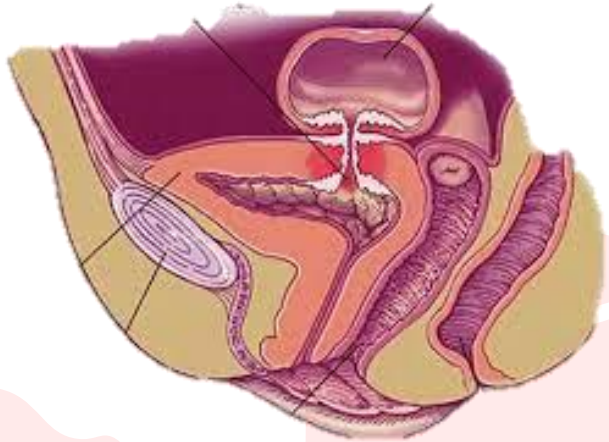
- Inflammation : Crohn's Disease (Colonic Diverticulum)

3. ETIOLOGY(CONT)

- Foreign body: wire, suture

Infection : Amebiasis , TB

- Malignancy.



NOTE

This communication or tract may be lined by: granulation tissue

But in chronic cases may become: epithelialized or infected

NATURE OF DISCHARGE:

- Bile Stained – Duodenum and Jejunum.
- Fluid Fecal – Ileum and Caecum.
- Semi-solid Fecal – Distal Colon.

4. CLINICAL PRESENTATION:

- Fever, Leukocytosis, abdominal tenderness, wound infection
- Hypovolemia/ Dehydration – Loss of GI contents
- Malnutrition – insufficient caloric intake and functional exclusion of portions of the GI tract limiting absorptive capacity.
- Skin Excoriation and Irritation – in Enterocutaneous Fistula

5. Investigations

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

A special x-ray procedure where contrast is injected into the fistula to provide visualization of all tracts and sites of enteral communication.

Shows blockage or stenosis

C. Imaging

Ultrasound or CT with oral and IV contrast, used for:

1. Characterize location of fistula.
2. Aspiration of intra-abdominal abscesses or undrained fluid collections.

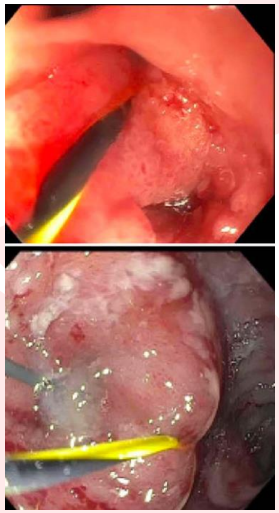
Less effective than fistulogram.

-infected collections are best identified on CT

D. Endoscopy

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

1. Peptic ulceration
2. Inflammatory bowel disease
3. Cancer



E. Contrast Enema

Helpful in the evaluation of rectal or colonic fistulas.

6. Treatment

A. Heal Spontaneously

Over 50% of intestinal fistulas close spontaneously. Approximately 40% of ECFs will close spontaneously in 4 to 6 weeks with adequate nutritional support and control of sepsis.
-90% of closure occurs within the first month

B. Non-Operative Treatment

1) Fluid resuscitation and electrolyte correction

IV fluid administration is typically necessary

Measure electrolytes in the effluent and match closely with replacement Fluid

Patients with high-output ECF will require a catheter

Patients with dehydration and electrolyte imbalance require serum testing of renal functions

2) Sepsis control

Sepsis control is critical as sepsis remains the primary determinant of fistula mortality.

-Sepsis is responsible for 70% of mortality in association with ECF

• Sepsis accompanies a large percentage of fistulas

CT with contrast has 97% accuracy rate in identifying Sepsis

• IV antibiotics directed against bowel flora are indicated when infection is present.

B. Non-Operative Treatment (Cont)

3) Nutritional support essential to facilitate spontaneous closure and to optimize the patient for surgery if the fistula does not heal on its own.

Complete bowel rest (Initial NPO status) reduces fistula drainage, stabilization of the patient.

Parenteral (IV)

Used in high output and Proximal fistula.

Because Malabsorption is severe.

Enteral (feeding tube)

Used in Low output and Distal Fistula.

TPN provides nourishment when enteral feeding is not possible.

B. Non-Operative Treatment (Cont)

4) Decrease of fistula output
-somatostatins and its analogs result in decreasing fistula output
-H2-receptor antagonists or proton-pump inhibitors are used to reduce gastric and duodenal fistula output and provide stress ulceration prophylaxis.

5) Skin protection
The drainage from enterocutaneous fistulas are irritating to the skin and cause excoriation
For low-output fistulas, dressings may be used Barrier/ostomy devices

C. Operative Treatment

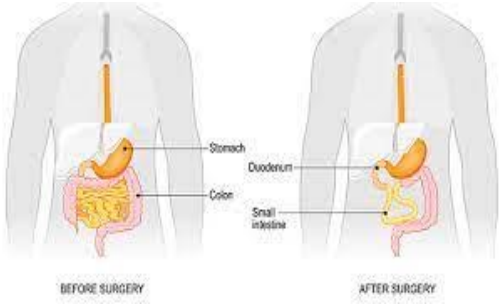
Indications for surgery 2-3 weeks
-Sepsis/Inflammation not amenable for percutaneous drainage
-complete Distal obstruction
-uncontrollable bleeding from fistula
-continued high-output from fistula after patient has been given nothing by mouth abs started parenteral nutrition
-signs of infection after institution of adequate antibiotic therapy and drainage of the abscess

Goals of the surgery
• to eradicate the fistula tract
• to restore the epithelial
continuity of the associated organ systems.

C. Operative Treatment (Cont)

And block resection of diseased intestine in continuity with the fistula tract
If inflammation / abscess present
• proximal diversion / drainage to allow to subside for 6
wks. & anastomosis
Resection confined to involved segment to conserve overall bowel length as excessive resection can cause :
- Malabsorption
- Short gut syndrome

Short Gut Syndrome



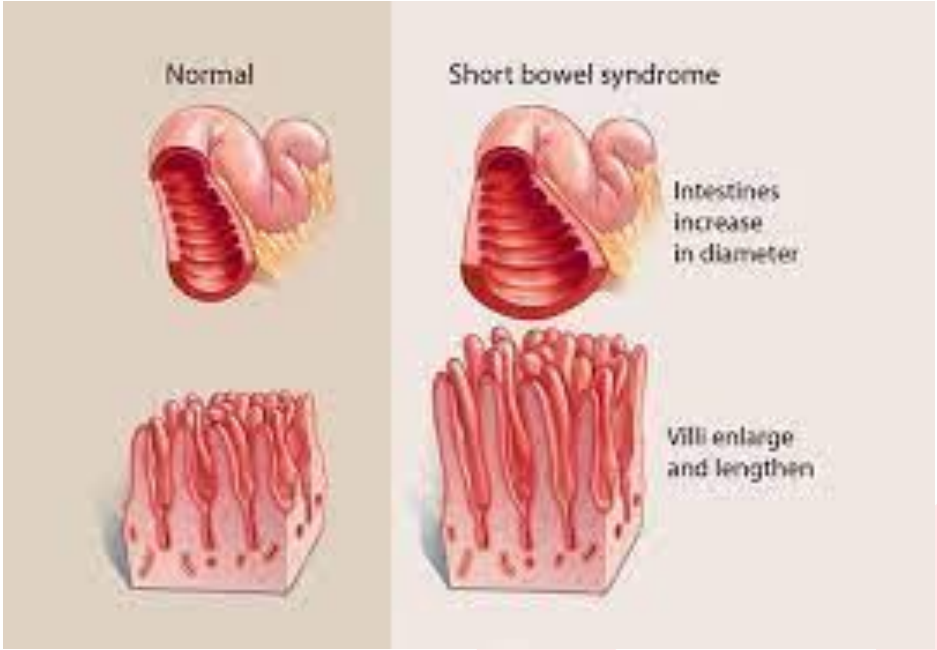
Intractable diarrhea with impaired absorption of nutrients following resection of small intestine

Symptoms appear when there is less than 200 cms of small bowl

Patients with intact colon are generally protected from the effect of small bowl resection

Patients with 100-200 cms intact anastomosing jejunum with the colon are generally able to maintain satisfactory nutrition , but still at risk for b12 vitamin

Short Gut Syndrome




TIME FOR RECAP
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Stoma vs fistulas

	stoma	Fistula
Definition	a surgically created opening in the abdomen to divert feces or urine to the outside of the body, to compensate for partial or complete loss of bowel function.	A fistula is an abnormal communication between two epithelial-lined surfaces
Classification	according to time ,origin or method of constriction	Anatomical
Indication and etiology	• Colostomy • Ileostomy	• Trauma (post op 80%) • Crohn's disease • Congenital
Management	Stoma reversal : Temporary stoma only After original surgery has healed (at least 2 months)	• Heal spontaneously(50%) • Nutritional support • Skin protection • Sepsis control • Decrease of fistula output • Operative treatment

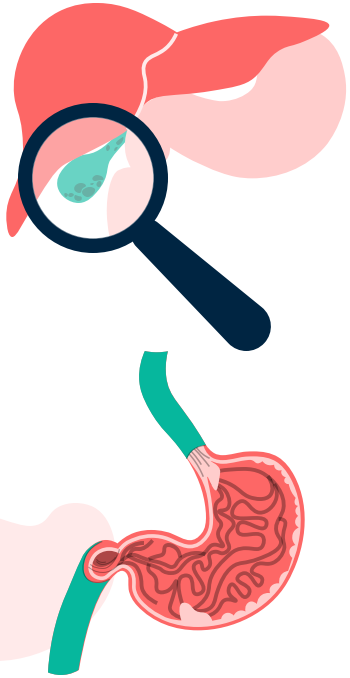

CASE STUDY

Case study 1

A 50 year old patient came to the ER due to dehydration, abdominal pain, fever ,chills and diarrhea on examination you notice leakage of intestinal content from abdominal wound into the skin then the patient states that he had colostomy one 10 days ago for Crohn's disease .what is the most likely complication of his surgery?

A. Enterocutaneous fistula
B. Hemorrhage
C. Stoma ischemia
D. Stoma retraction

thank you



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