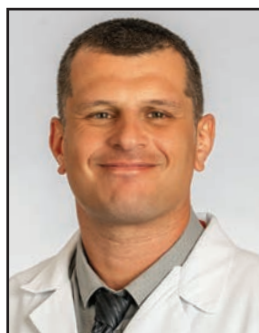


Uma Mahadevan MD, Series Editor
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What do Gastroenterologists Need to Know About Stomas?



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Intestinal stomas, whether from the small or large bowel, are the cornerstone of the surgical management of various gastrointestinal conditions, particularly in patients with inflammatory bowel disease (IBD) and rectal cancer. This review provides an overview of stoma types, indications, complications, and the critical role of preoperative and postoperative care. This highlights the necessity for collaboration between colorectal surgeons and gastroenterologists to optimize surgical planning, manage complex cases, and prevent complications. Stomas play a pivotal role in treating refractory diseases, high-risk surgical scenarios, and emergencies. Comprehensive care involving multidisciplinary teams that include stoma nurses, dietitians, and mental health professionals is essential for addressing stoma-related challenges, minimizing complications, and improving patient outcomes. By integrating medical and surgical expertise, healthcare teams can empower patients to adapt successfully and maintain high quality of life.

INTRODUCTION

Intestinal stomas involve the surgical exteriorization of either the small or large bowel through the anterior abdominal wall. These stomas, whether small or large, play vital roles in the treatment and management of various gastrointestinal diseases. In the United States, the estimated number of patients living with a stoma

(ostomates) ranges from 750,000 to 1 million, with approximately 150,000 new ostomies constructed each year.¹ A comprehensive understanding of the surgical planning and decision-making processes involved in constructing ostomies, the different types of stomas, their potential complications, and the preoperative and postoperative care required, are essential for the successful treatment of patients with ostomies.²

A summary of key points and stoma-related terms is presented in Tables 1 and 2. Stoma is the Greek word for mouth and is defined as an artificial opening of a hollow organ; an ostomy refers to an opening of the bowel brought to the

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skin to allow egress of intestinal fluids through the os, but “-ostomy” may also refer to tubes placed in GI organs that cannot reach the skin (i.e., duodenostomy, gastrostomy).

Types of Stomas

Large bowel stoma: colostomy

Colostomies are constructed using the large intestine, most commonly the distal transverse, descending, or sigmoid colon. The more distal the colostomy, the better the functional outcomes, as stool consistency becomes more dehydrated, and stool frequency decreases.³ Compared to small bowel ostomies, colostomies have firmer stool consistency, easier pouch management, and a lower incidence of systemic complications such as electrolyte disturbances and dehydration, which are more common in small bowel ostomies.³ Colostomies generally offer better functionality given the ability of the large bowel proximal to the colostomy to absorb water and electrolytes with a resultant neutral pH (as opposed to the mildly acidic succus from ileostomies which results in universal skin irritation and the need for maturation of the os in a budded manner). Given the neutral pH of stool from a colostomy, it may be budded (matured) and protrude a few centimeters above the skin or lie flush with the skin surface, depending on patient-specific factors, such as body habitus,

surgical technique, and the bowel’s length of reach to make a tension-free colocutaneous anastomosis whenever possible. Right colonic or proximal transverse colostomies are generally avoided, resulting in feculent diarrheal output as opposed to the thicker stool from distal colostomies or non-feculent succus entericus output from an ileostomy (which is generally preferred compared to a right-sided colostomy). A rare form of large-bowel stoma is an appendicostomy which may be used for antegrade colonic irrigation (i.e., the Malone antegrade continent enema [MACE] procedure).

Colostomies (Figure 1) can be fashioned as a loop colostomy, an end colostomy, or a “double barrel” colostomy depending on the clinical indication and surgical approach. A mucus fistula is an ostomy of the defunctionalized distal segment that is matured as a complete or partial opening to allow drainage of mucus and secretions from the distal segment and is critical to decompress the distal segment when a distal obstruction is present. An end colostomy is typically chosen when making a permanent colostomy, such as during an abdominoperineal resection for low rectal cancer or may be chosen in an emergency surgery after a segmental resection (e.g., surgery for perforated diverticulitis). In contrast, a loop colostomy or double-barrel colostomy may be selected when future bowel reconstruction is anticipated or when there is a need for distal decompression. A

Table 1. Key points: What do Gastroenterologists Need to Know About Stomas?

1. Know the anatomy	Exactly what kind of stoma?
	How much proximal and distal bowel?
	Plans for restoration of intestinal continuity?
2. Stoma complications	Poor pouching? Refer to Ostomy nursing
	Anatomic issue? Refer to surgeon
	Manifestation of systemic disease? Treat as appropriate
3. High output enterostomy	Avoid sugar (diarrheogenic)
	Isotonic oral rehydration solutions
	Stool bulking “thicken it up”
	Antimotility agents “slow it down”
	Parental fluid and/or nutritional support as needed

Table 2. Summary of Ostomy Terminology

Category	Organ	Ostomy
Ostomies	Jejunum	Jejunostomy
	Ileum	Ileostomy
	Appendix	Appendicostomy
	Colon	Colostomy
	Urinary tract	Urostomy
Tubes	Stomach	Gastrostomy
	Duodenum	Duodenostomy
Intestinal anastomoses	Small bowel	Enteroenterostomy
	Ileocolic	Ileocolostomy
	Colon	Colocolostomy
	Colorectum	Coloproctostomy
	Total colectomy	Ileoproctostomy (aka ileorectal anastomosis)

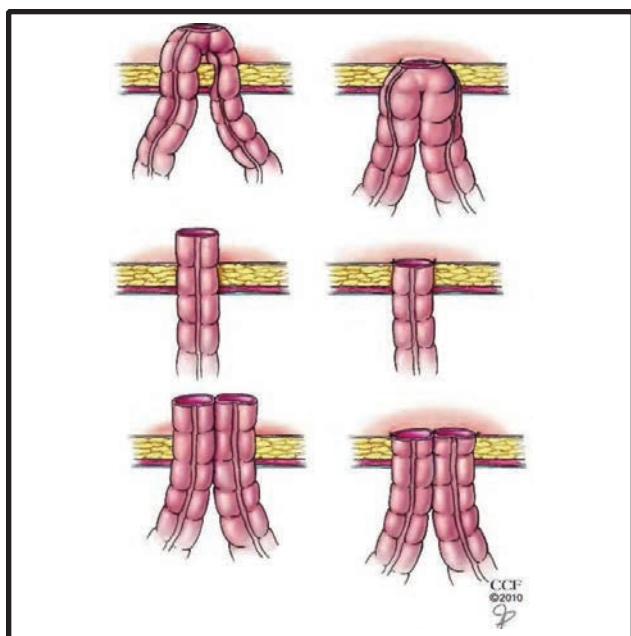


Figure 1. Types of colostomies. Upper panels show loop colostomy, middle panel shows end colostomy, and bottom panel shows double-barrel colostomy. The left panels depict budded colostomies, and the right panel depicts skin-level colostomies. © Cleveland Clinic 2025

double-barrel colostomy is distinguished from a loop colostomy by its separation into two distinct stomas, one for the proximal bowel to divert feces and the other for the distal bowel to allow mucus drainage, whereas a loop colostomy typically involves a single stoma with two openings.

**Small bowel stoma:
enterostomy (Ileostomy and Jejunostomy)**

Small bowel ostomies such as ileostomies and jejunostomies are constructed using the small intestine. They are most commonly fashioned from the terminal ileum but can be created from any part of the small bowel, depending on the clinical scenario. Generally, the more proximal the small bowel ostomy, the higher the sensitivity to systemic complications.¹ Ileostomies are indicated for conditions requiring bowel diversion or resection of either the small or large intestine when anastomosis to restore bowel continuity is not feasible, either temporarily or permanently. Jejunostomies are made from the more proximal jejunum and avoided as much as possible due to their morbid nature, given their significantly higher output of

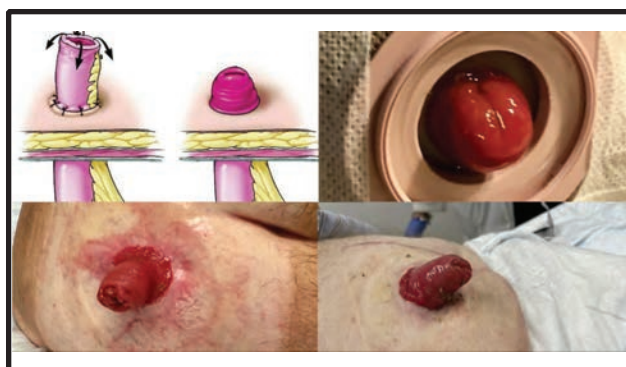


Figure 2. End ileostomy construction. The upper left panel depicts an end ileostomy before and after maturation by sewing the cut edge to the skin. The remaining panels show spouted ileostomies, in which the effluent flows into the bag like a spigot, thus minimizing skin contact. © Cleveland Clinic 2025

acidic, electrolyte-rich succus entericus resulting in total parenteral nutrition dependence and may be classified as low- or high- jejunostomies, less than or greater than 30 cm from the ligament of Treitz, respectively.

Compared to colostomies, ileostomies result in liquid to semi-liquid stool output (ideally yogurt consistency) owing to the lack of colonic reabsorption of water and electrolytes. Consequently, patients with ileostomies are at a higher risk of dehydration and electrolyte disturbances (e.g., hypokalemia and hyponatremia), as well as local issues such as skin irritation due to frequent stool output. Therefore, ileostomies must be matured such that the os is ideally 2 cm above the skin in a “spigot” manner (Figure 2) such that the stool egresses directly into the ostomy appliance bag to minimize skin irritation. Ileostomies (and jejunostomies) may be fashioned as an end ileostomy, loop ileostomy, or end loop.

An end ileostomy (Figure 2) involves bringing the ileum through the abdominal wall to create a single stoma and is often permanent and is typically performed after total proctocolectomy or when bowel continuity cannot be restored. End ileostomies may be fashioned in several ways (Figure 3). An end-loop ileostomy made by bringing a loop proximal to the stapled-off distal segment is brought out, often chosen when there are difficulties in getting the bowel to reach 2 cm above the surface due to the shorter divided mesentery associated with a true end ileostomy, while in an

end-loop the intact mesentery supplying the loop allows for additional length. When there is a distal obstruction, an end ileostomy may be performed with a mucus fistula as an additional small opening to allow drainage of mucus and secretions from the distal bowel segment when necessary.

A loop ileostomy (Figure 4) is commonly used for temporary bowel diversion to protect the downstream anastomosis after intestinal resection. A loop of the small bowel is brought to the surface and opened, creating a stoma with two openings; the proximal limb diverts stool to the exterior, while the distal limb allows mucus drainage from the downstream bowel. Loop ileostomies are typically easier to reverse than end ileostomies, making them the preferred choice for temporary diversion.

Continent ileostomy (Figure 5), although less commonly performed today, involves the creation of an internal reservoir, such as a Kock pouch. This reservoir allows stool to be stored and drained via intermittent catheterization. Continent ileostomies are typically chosen by patients who wish to avoid a traditional end ileostomy and are not candidates for restorative surgery with an ileal pouch-anal anastomosis (IPAA) after total proctocolectomy or personal preference.

Indications for Stoma Creation

Temporary diversion

Temporary bowel diversion is frequently required in specific clinical scenarios in which protecting the distal anastomosis is critical. For example, in patients undergoing low rectal anastomosis after neoadjuvant radiotherapy or after IPAA, a temporary stoma diverts the fecal stream to allow the pouch to heal. Risk factors for anastomotic leakage include high-dose/prolonged corticosteroids, malnutrition, anemia, smoking, and other risk factors.⁴ Of note, ileostomies do not decrease anastomotic leak rates but rather decrease the severity of leaks when they occur, thus allowing less invasive treatment and facilitating successful leak management and healing by methods such as percutaneous drains and endoluminal vacuum therapy.⁵⁻⁸ In cases of extensive perianal disease, such as severe perianal Crohn's disease or complex fistulas, temporary diversion may be necessary to facilitate perineal wound healing and reduce ongoing inflammation. Similarly, in the presence of

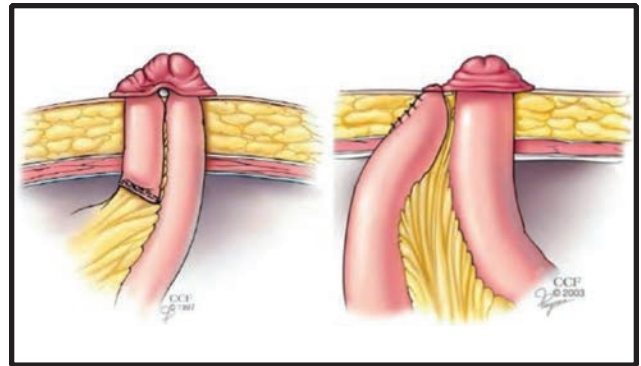


Figure 3. Variation in the end ileostomy. The left panel depicts an end-loop ileostomy, and the right panel depicts an end ileostomy with maturation of the distal limb as a mucus fistula. © Cleveland Clinic 2025

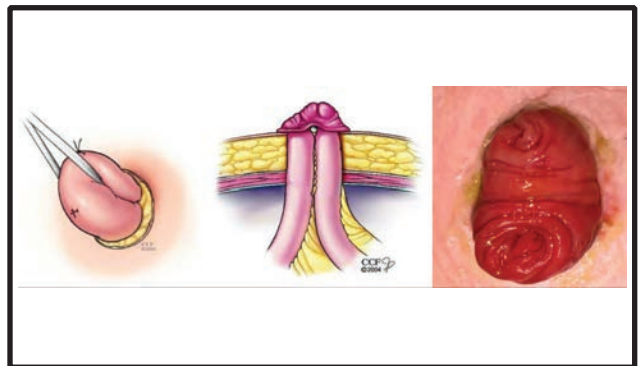


Figure 4. Loop ileostomy construction. The left panel depicts the loop brought out through the trephine, the middle panel, and the right panels; the final appearance after the loop has been opened and matured. © Cleveland Clinic 2025

active pelvic infections and inflammation — such as colovesical and colovaginal fistulas secondary to diverticulitis or malignancy — temporary diversion before or at the time of definitive surgical repair is often required to facilitate successful restoration of intestinal continuity.⁹

Permanent ostomies

In some cases, a permanent ostomy is planned from the outset, whereas in others, an initial temporary ostomy may become permanent due to unforeseen clinical factors or patient preference. Abdominoperineal resection (APR) is a common indication for permanent colostomy in patients with

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low rectal cancer, where sphincter preservation is not feasible. Another scenario requiring permanent bowel diversion is total proctocolectomy without ileal pouch creation, typically performed in patients with ulcerative colitis or familial adenomatous polyposis who are either not candidates for or decline an ileal pouch-anal anastomosis.

Emergencies

In emergency settings, primary bowel reconstruction is often contraindicated, which necessitates stoma creation. Emergency bowel resection, frequently required for patients presenting with perforation, obstruction, or ischemia, may necessitate a stoma when factors such as hemodynamic instability, active infection, or poor tissue perfusion preclude a safe anastomosis. Trauma, whether from

Table 3. Electrolyte Supplements (mg)

BOTTLED DRINKS	Serving size (oz.)	Na	Cl	K	Mg	Ca
Pedialyte® AdvCare+	12	460	590	260	--	--
KinderLyte®	12	460	570	300	--	--
Electrolit®	12	250	--	280	17	29
ElectroMax®	12	246	254	97	19	55
Gatorlyte® Rapid	10	245	520	175	57.5	6
Gatorade® Classic	12	160	--	50	--	--
Gatorade® Zero Sugar	12	160	--	50	--	--
Powerade®, Sugar-free	12	150	--	--	--	--
BOTTLES JUICES						
Harmless Harvest® Coconut water	12	55		812	29	69
Vita Coco® Coconut water	11	50	--	646	24	53
Watermelon Water®	12	10	--	270	25	15
POWDERS						
LMNT®	16	1000	--	200	60	--
DripDrop®	16	660	--	370	--	--
Pedialyte® AdvCare+	16	650	840	370	--	--
PediaLyte® Sport	16	650	920	600	55	--
Liquid IV®	16	510	--	380	--	--
Re-Lyte® Energy Boost	16	500	790	350	40	--
SaltStick®	16	430	110	120	22	--
Orgain® Hydroboost	16	300	410	180	--	--
HydraLyte®	8	280	250	160	--	--
Emergen-C® Hydration	16	160	--	400	120	100
TABLETS						
Nuun® tablets	16	300	--	150	25	13
FOODS						
Lay's® Baked Potato Chips	1.1	180	--	250	--	10
Whole milk	8	93	--	366	--	300
Low fat (1%) milk	8	95	--	388	--	307
Banana, one medium	-	1.2	--	422	31.9	--

penetrating or blunt abdominal injuries, may also warrant temporary or permanent stoma creation to manage bowel injuries and prevent further complications.

Stomas in Inflammatory Bowel Disease (IBD)

Despite advances in medical therapy, including biologics and small molecules, a subset of patients

with IBD still require surgical intervention. Surgery remains necessary for those with refractory disease, abdominal complications such as strictures, perforations, or abscesses, and severe perianal Crohn’s disease.¹⁰⁻¹² It is estimated that approximately 20–30% of ulcerative colitis patients will require a colectomy during their lifetime, while up to 58% of Crohn’s disease patients will undergo at least one major abdominal surgery within 20

	Ph	Vit C	Carbs, grams	Kcal	Sugar	Sweeteners	Other
	--	--	8	33	Dextrose	Sucralose	Zn 2.6 mg
	--	--	9	35	Dextrose	Stevia	Zn 3.1 mg
	--	--	18	130	Dextrose	Steviol	
	--	--	18	72	Glucose	Steviol	Lactate 301 mg
	--	--	7	25	Glucose	Stevia	
	--	--	22	80	Sugar	--	--
	--	--	0	0	--	Sucralose	
	--	--	0	0	--	Sucralose	
	243	--	23	90	Sugar	--	
	17	46	15	60	Sugar	--	
	--	6	18	70	--	--	
	--	--	2	10	--	Stevia	
	--	144	18	70	Fructose	Sucralose	Zn 3 mg
	--	--	15	50	Dextrose	Sucralose	
	190	--	10	40	Dextrose	Sucralose	
	--	--	12	45	Dextrose	Stevia	
	--	--	0	0	--	Stevia extract	Caffeine 120 mg
	--	--	3	10	--	Stevia extract	
	--	45	13	50	Sugar	Stevia extract	
	--	--	5	20	Dextrose	Stevia extract	
	384	250	7	30	Fructose	Stevia extract	Manganese 1.8 mg
	--	--	4	15	--	Stevia	
	--	--	24	140	Dextrose	--	4 g fat, 2 g protein
	--	--	11	100	--	--	7.8 g fat, 8 g protein
	--	--	13	105	--	--	2.3 fat, 8.3 g protein
	--	10.3	27	110	14.4 g	--	0.4 g fat, 1 g protein

years of diagnosis.¹¹⁻¹³

Stomas, typically ileostomies, are often indicated in IBD cases where anastomosis is either high-risk or should be avoided. Factors that increase the risk of anastomotic leakage include severe malnutrition, prolonged steroid use, and emergency surgical indications such as abdominal sepsis or bowel obstruction.

Stoma in Ulcerative Colitis

Total proctocolectomy is typically performed with or without IPAA for ulcerative colitis (UC). To optimize outcomes and reduce morbidity, this procedure is usually staged. The 3-staged approach is most common these days, starting with a total abdominal colectomy with end ileostomy (Stage 1), leaving the rectum intact, followed by a completion proctectomy with IPAA and temporary diverting loop ileostomy (Stage 2); finally, diverting loop ileostomy reversal (Stage 3) after pouch healing

is confirmed. Other staging strategies include a 2-stage, starting with a total proctocolectomy with IPAA and temporary loop ileostomy (Stage 1), followed by ileostomy reversal, and a modified 2-stage which is similar to a 3-stage, but the diverting loop ileostomy is omitted in the 2nd stage. Of note, approximately 10% of UC patients after Stage 1 of a 3-stage will have such a dramatic improvement in their health and quality of life they choose to keep it permanently and forgo IPAA, while others who are not candidates for IPAA choose a continent ileostomy. Another 5-10% of patients will require pouch excision and end ileostomy due to treatment-refractory leaks or Crohn’s-like disease of the pouch.

Stoma in Crohn’s disease

In Crohn’s disease, stomas are frequently necessary to manage complications such as strictures, fistulas, abscesses, and perforations.^{14,15} “Temporary” diversion with an ileostomy or colostomy may also be required in severe perianal disease to facilitate wound healing and symptom control, but become permanent in the vast majority.^{16,17} Additionally, in high-risk conditions such as malnutrition or sepsis, primary anastomosis carries an unacceptably high failure rate, making stoma creation the preferred surgical option.⁵ Ultimately, the decision to create a stoma in IBD should be guided by both the patient’s clinical status and long-term disease trajectory.

Endoscopy in Stoma Patients

Prior to performing ileoscopy or colonoscopy in ostomates, it is important for the endoscopist to focus on the exact anatomy of the ostomy and the segments that need endoscopic interrogation. For example, if a patient has undergone Hartmann’s colostomy, it also has a distal segment known as Hartmann’s pouch (rectal stump), which requires assessment prior to colostomy reversal and routine endoscopic surveillance if the stump is kept in place permanently. For ileostomies, it should be kept in mind the bowel wall is thinner and more prone to incidental perforation compared with the colon. When scoping an apparent loop ileostomy, it may be an end-loop, and in this case, excessive pressure trying to intubate the stapled distal limb may result in perforation and enterocutaneous fistula formation.

Table 4. Antimotility Agents

Agent	Adult Oral Dose	Maximum Daily Dose	Notes
Loperamide	1 – 4 two mg tablets or caplets (not capsules) QID 30 min. before meals & QHS	16 tabs	OTC but can also prescribe for some
Diphenoxylate-atropine	1 – 2 2.5 mg tabs QID 30 min. before meals & QHS	8 tabs	Opioid script, non-sedating
Codeine	15 – 60 mg QID 30 min. before meals & QHS	240 mg	Opioid script
Deodorized tincture of opium	0.3 – 0.6 mL sublingual QID 30 min. before meals & QHS	6 mL	Opioid script
Octreotide	300 – 1200 ug IV/day divided	1200 ug	Provided in TPN; monitor LFTs
Sandostatin	10, 20, or 30 mg IM q28 days	30 mg/month	Depot injection; monitor LFTs & glucose

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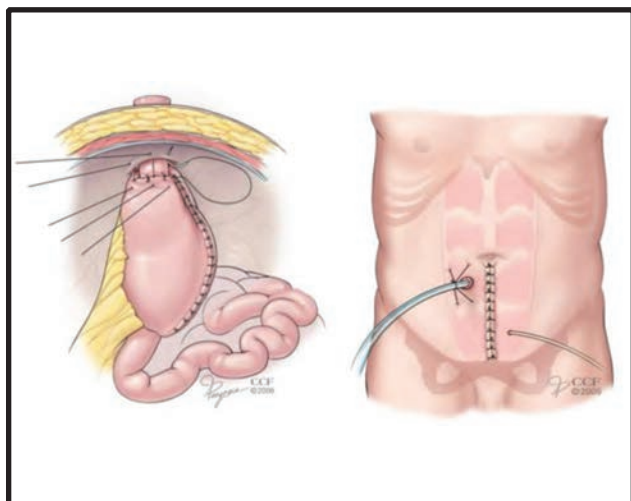


Figure 5. Continent ileostomy construction. The left panel depicts the construction of the intra-abdominal ileal reservoir and nipple valve, and the right panel depicts the postoperative appearance with ostomy intubation secured for 2-weeks postoperatively. © Cleveland Clinic 2025

Stoma Complications

The construction of an ostomy, whether a small bowel or colonic stoma, is associated with a substantial morbidity rate, with reported complication rates ranging from 20% to 80%.¹ Among the most common issues are peristomal skin complications and parastomal hernias. One large population-based study analyzing over 4,200 patients found an overall surgical complication rate of 37% in elective ostomy cases and 55% in emergency ostomy cases.¹⁸

Peristomal skin irritation, hyperplastic granulation tissue, and mucocutaneous separation

(Figure 6) Peristomal skin is particularly vulnerable to irritation and breakdown due to stool leakage or ill-fitting appliances. Contact dermatitis may occur secondary to appliance adhesive. Hyperplastic granulation tissue may result from the use of a tight-fitting appliance. Treatment involves optimizing pouching techniques, applying barrier creams, and revising the stoma if necessary. Mucocutaneous separation and peristomal ulceration (Figure 7) may be thought of as a failure of enterocutaneous anastomosis to heal, and fastidious skin care may expedite healing.

Stoma retraction and strictures

(Figure 7) Retraction below the skin level can cause a poor fit and difficulty in waste elimination. Less commonly, stenosis may develop because of mechanical causes (such as scar formation) or inflammatory changes, leading to impaired stoma function. Management options include dietary modification, dilation, or surgical revision.

Peristomal fistulae

(Figure 8) Peristomal infections can develop due to local inflammation or stool leakage, potentially resulting in abscess or fistula formation. Management may require surgical drainage and optimization of stoma care.

Peristomal pyoderma gangrenosum

(Figure 9) Chronic irritation can lead to inflammatory skin conditions including pyoderma gangrenosum (PG), which presents as painful ulcerations around the stoma. Management typically requires topical or intralesional corticosteroids and may require surgical revision in refractory cases. Surgical repositioning of the stoma is performed in severe cases, particularly when bowel continuity cannot be restored but is prone to recurrence if the underlying inflammatory disorder is not addressed with systemic advanced therapies. A stepwise algorithmic approach for management and treatment of peristoma PG is shown in Figure 10.

Prolapse and parastomal hernias

(Figure 11) Excessive protrusion of the stoma beyond the abdominal wall may lead to cosmetic concerns, difficulty in pouching, ischemia, or even bowel obstruction. Treatment depends on the severity and ranges from non-surgical interventions (e.g., manual reduction, application of sugar to draw out the edema from the prolapsed segment, and support belts) to surgical revision. Prolapse is typically secondary to a parastomal hernia

A parastomal hernia is defined as an incisional hernia that occurs at the site of an abdominal wall stoma. The reported incidence of parastomal hernias varies widely, depending on factors such as the length of follow-up and the type of stoma created. The incidence of end colostomies is slightly higher, reaching up to 48%, whereas

that of loop ileostomies is reported to be up to 30.8%.^{18,19} Although most parastomal hernias are asymptomatic and can therefore be treated conservatively, parastomal hernias can significantly impair the quality of life and cause symptoms such as pain, discomfort, and, in severe cases, bowel obstruction. Compared with other incisional hernias, parastomal hernias are more challenging to repair because of the permanent defect in the abdominal wall created by the stoma. This complexity often necessitates careful preoperative planning and use of specialized surgical techniques for hernia repair.^{20,21}

Nutrition in Ostomates

Dietary adjustments for ostomates can be divided into the early and late postoperative phases. In the early phase, the primary considerations were the patient's preoperative nutritional status and underlying condition. In cases of severe metabolic deconditioning, 10–14 days of enteral or parenteral nutritional therapy may be beneficial before surgery and directly affect postoperative recovery.²² Early physiological enteral nutrition after surgery improves intestinal adaptation, preserves the intestinal flora and enteric immune system, and is cost effective when compared with parenteral feeding.^{22,23} Postoperatively, the diet is usually introduced gradually and typically consists of low-fiber foods to minimize stool production, reduce strain, and prevent obstruction, as surgical manipulation can lead to bowel edema.²⁴

In the long term, dietary adjustments for ostomates should be individualized based on three key factors: type of stoma, output volume, and the patient's underlying condition. Generally, the aim is to maintain a healthy and rich diet, including all nutrients and fibers, as long as stoma function is optimal. After the initial recovery period (typically 6–8 weeks), it is recommended that new foods be



Figure 6. Ileostomy skin complications. The left panel shows contact dermatitis due to adhesive allergy. The upper right panel shows a retracted, strictured ileostomy. The bottom panels show hyperplastic granulation tissue from an overly tight-fitting appliance. © Cleveland Clinic 2025



Figure 7. Peristomal irritation, ulceration, and mucocutaneous separation. © Cleveland Clinic 2025

introduced slowly and in small quantities, one at a time, as it simplifies the process of eliminating them if issues arise.²⁵

Dietary adjustments for colostomy patients

The diet of patients undergoing colostomy tends to be easier to manage than that of patients undergoing ileostomy. For long-term management, especially for patients with a permanent colostomy, maintaining a healthy BMI is crucial, as obesity and weight gain have been associated with colostomy retraction and symptomatic parastomal hernias.¹⁵ Although no specific diet has been proven effective after colostomy formation, a diet rich in complex carbohydrates and low in fat (while incorporating medium-chain triglycerides) may be beneficial. It

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is important to monitor for potential deficiencies in fat-soluble vitamins (A, D, E, and K), as well as in fatty acids. After the early postoperative period, including higher-fiber foods such as brown rice or whole wheat bread for patients with colostomy may help prevent constipation.²⁶

Dietary adjustments in patients with ileostomies

After the formation of an ileostomy and during the early postoperative period, stoma output is usually unpredictable and may remain elevated for 1–3 months. When the entire colon is absent or not in continuity, patients lose the endogenous vitamins and nutrients typically produced by the gut microbiota, including vitamins K and B, folic acid, and short-chain fatty acids.²⁶ In addition, the absorption of fat and niacin is much lower than that in patients with a colostomy. Hence, these patients should be monitored for their fat intake and the levels of fat-soluble vitamins (A, D, E, and K), along with vitamin B12, which is absorbed in the ileum by intrinsic factors. For ileostomy patients, especially those with a high-output stoma, the energy requirements may increase by up to 30%.²⁷ To meet these needs, it is essential to increase the caloric content of the diet, which can be achieved either through dietary modifications or oral nutritional supplements. During the first year of recovery, patients may require multivitamin supplements.²⁵ To minimize fluid loss and reduce gastric fluid production, it is recommended that patients avoid drinking fluids 30 min before and after meals. The type of fluid consumed is also important, as carbonated beverages can increase the gas in the stoma bag, leading many patients to limit or avoid them. It is helpful to reduce the amount of food consumed per meal, while increasing the number of meals throughout the day.²⁸

After the first 6–8 weeks post-surgery, patients should be encouraged to introduce more fruits and vegetables, provided their stoma output has normalized in both volume and consistency.²⁴ Tolerance to fiber varies among individuals, with some patients being able to resume a high-fiber diet, while others may need to gradually reintroduce these foods or avoid certain items altogether. For ileostomy patients, some foods should be consumed with caution, as they may pose a risk of causing



Figure 8. Fistulizing peristomal Crohn's disease. The left panel shows an ileostomy fistula that appears as small os. In the right panel, the ileostomy is retracted laterally, and a surgical clamp is used to elevate the fistula. © Cleveland Clinic 2025

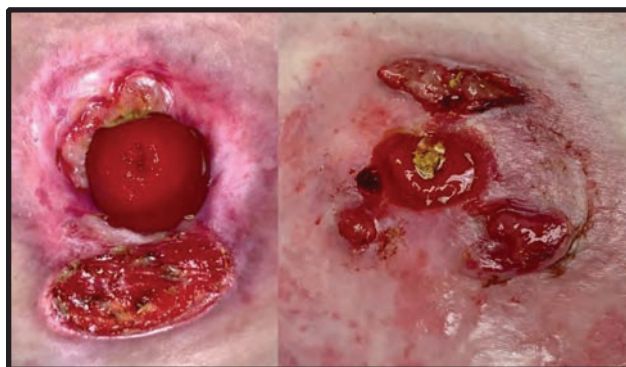


Figure 9. Peristomal pyoderma gangrenosum © Cleveland Clinic 2025

stoma blockages (popcorn, apple peels, whole corn, bean sprouts, dried fruit, and nuts) and excessive gas or unpleasant odors (beans/pulses, cabbage, broccoli, cauliflower, mushrooms, onions, and alcohol).²⁸ Additionally, patients with ileostomy may develop lactose intolerance after surgery due to changes in gut function. Therefore, they should avoid dairy products if they experience abdominal cramps or watery output.

High output enterostomy (HOE) and electrolyte management

Dehydration and electrolyte imbalances are the leading causes of hospital readmission following ileostomy formation and are responsible for up to 10% of readmissions within 60 days post-surgery; the most common postoperative losses in patients undergoing ileostomy are fluid, sodium, potassium, and magnesium.^{29,30} Table 3 shows electrolyte

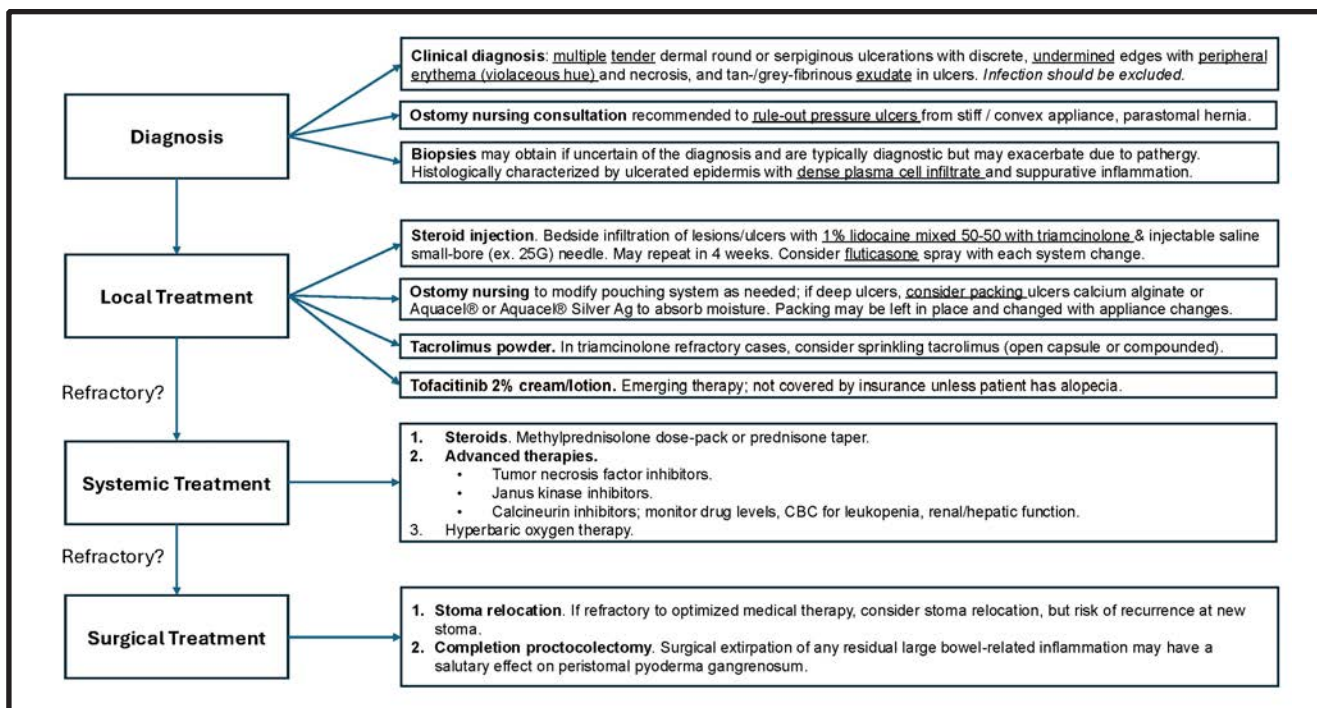


Figure 10. Peristoma pyoderma gangrenosum algorithm © Cleveland Clinic 2025



Figure 11. Ileostomy prolapse and hernia © Cleveland Clinic 2025

replacement options. Of note, magnesium sulfate supplements are diarrheogenic, and Mag Plus Protein (Miller Pharmaceutical Group) may be recommended to avoid obligate fluid losses associated with magnesium sulfate supplementation. During the first 6–8 weeks, patients may lose 1200–2000 ml of fluid and 120–200 mmol of sodium per day. However, after approximately eight weeks, the ileum typically undergoes adaptation, leading to a reduction in fluid losses.²⁸ During the immediate postoperative period; therefore, close monitoring of renal function and electrolyte balance is essential.

These assessments should be repeated at follow-up appointments within a month or sooner if any clinical signs arise. A stepwise algorithmic approach for managing HOE is recommended (Figure 12), which focuses on isotonic oral fluid repletion, stool bulking, and antimotility agents. A summary of antimotility agents is shown in Table 4. Patients with HOE, defined as producing >1500 ml/day after adaptation, are recommended to avoid sugary drinks and foods that cause osmotic diarrhea, avoid hypotonic fluids, and instead consume an additional 1000 ml of oral rehydration solution to replace the lost electrolytes.³¹ Unlike typical physiological responses, patients should be advised against increasing fluid intake of hypotonic fluids such as water, tea, or juice, as these hypotonic fluids may cause greater fluid loss from the stoma and instead use a rehydration solution.

Role of Multidisciplinary Care

Patients with ostomies, especially IBD, who require an ostomy, should be cared for by a multidisciplinary team that includes a gastroenterologist, colorectal surgeon, dietitian, pharmacist, social worker, psychologist, and a stoma therapist. Early involvement of colorectal

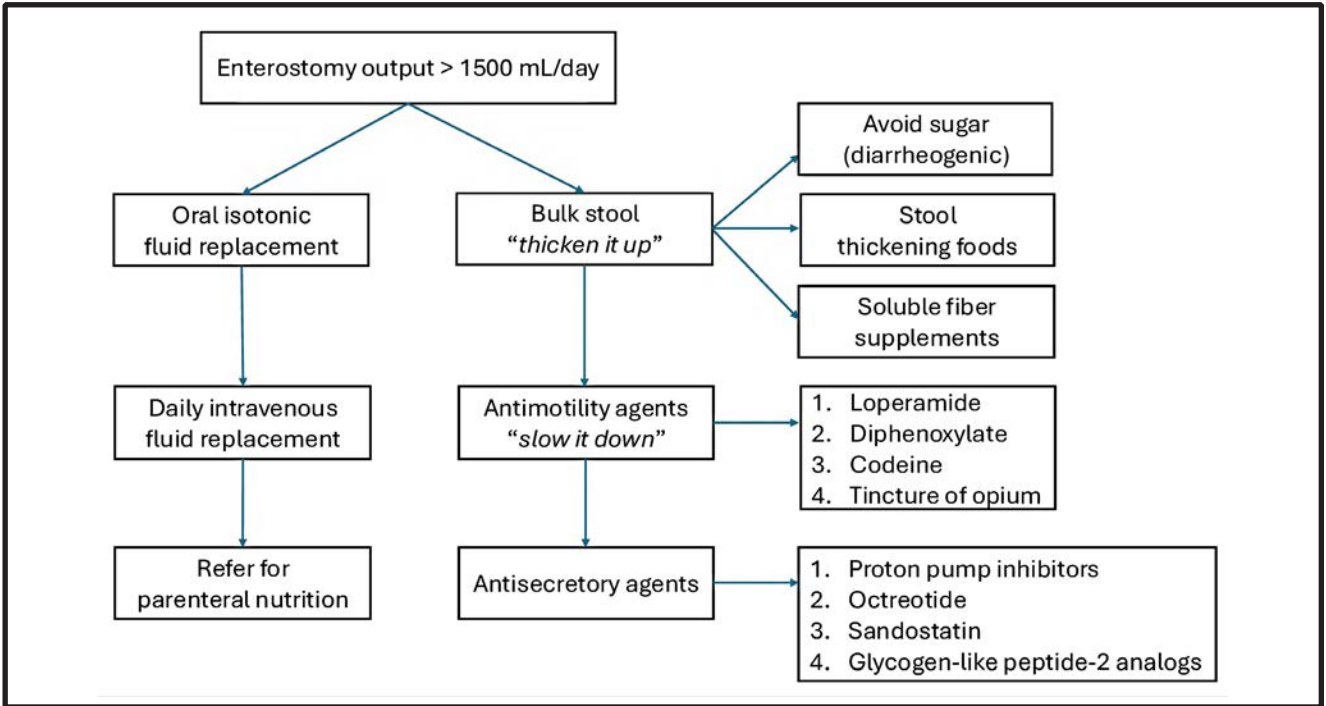


Figure 12. High enterostomy output algorithm © Cleveland Clinic 2025

surgeons is crucial for discussing the procedure, setting expectations, reassessing nutritional status, and possibly offering nutritional prehabilitation through enteral or parenteral feeding.

Stoma nurses are essential for providing education, support, and managing various stoma-related complications. The involvement of a mental health specialist and an ostomy nurse has been shown to enhance ostomy acceptance, reduce complications, improve quality of life, and are associated with shorter hospital stays.³²

CONCLUSION

Enterostomies remain a cornerstone of the surgical management of gastrointestinal conditions, particularly in patients with complex IBD. The creation of an intestinal stoma can profoundly reshape a patient’s life, often presenting unique challenges and risks, including complications and potential impacts on the quality of life. Enterostomies play a critical role in managing refractory diseases, complications, and surgical recovery in patients with IBD.

The success of stoma creation and its subsequent management relies heavily on the collaborative expertise of a multidisciplinary team that includes colorectal surgeons and gastroenterologists. This

partnership ensures tailored surgical planning, precise execution, and vigilant postoperative care, which are essential for minimizing complications and supporting patients in achieving the best possible outcome. By integrating medical and surgical approaches, healthcare teams can empower ostomy patients to adapt and lead fulfilling lives, even in the face of chronic illnesses. ■

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