

Management of Problems Related to an Existing Continent Ileostomy

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Indications

There are three well-established configurations for construction of a continent ileostomy: Kock pouch (1969), Barnett continent intestinal reservoir (BCIR, 1984), and T-pouch (2002). Each features an ileal pouch reservoir with a valve mechanism created to prevent leakage of accumulating stool. It is offered to select patients after proctocolectomy for ulcerative colitis or FAP as a salvage alternative to an ileal J-pouch anal anastomosis or end ileostomy. Despite a notorious revision rate, these constructs offer the potential for improved quality of life, “continence,” and avoidance of a cumbersome external appliance.

Continent ileostomies are increasingly rare, and due to the required expertise, performed by only a few specialized centers. Nonetheless, patients with existing continent ileostomies may present to general surgeons. It is important to have a baseline understanding of the function, possible complications, and solutions to avert a catastrophe. This chapter describes these strategies for management of complications related to existing continent ileostomies.

Evaluation and Preparation

- Review the patient’s history, diagnosis, and functional aspects. Oftentimes, however, that information and respective records are not available when the continent ileostomy had been created decades earlier.

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- Recognize acute problems that necessitate immediate action (Table 52.1).
- Characterize chronic problems to plan appropriate workup (Table 52.2).
- Attempt a gentle intubation to allow drainage of at least some gas/stool using any available catheter of any size.
- Provide fluid resuscitation and electrolyte replacement if unable to tolerate oral intake.
- Identify signs of sepsis and administer antibiotics.

Pitfalls and Danger Points

- Inability to intubate/drain a continent ileostomy: Recognize that this is functionally a complete bowel obstruction. Emergency intervention is required to decompress before bowel ischemia and perforation occur.
- Placement of a nasogastric tube as a sole intervention is insufficient but may supplement decompression of the pouch and bowel.
- Valve slippage may result in a tortuous access segment: Forceful blind intubation may traumatize or even perforate the valve segment or the pouch.
- Abdominal exploration: Patients with continent ileostomy frequently have extensive adhesions. They also have a severely altered anatomy and counterintuitive blood supply to bowel segments that together, increase the risk for enterotomies, bowel loss, and short bowel syndrome.
- Cancer risk: Patients with inflammatory bowel disease or hereditary cancer syndromes such as FAP are at increased risk to develop cancer in the small bowel including the pouch. This must be considered in the differential diagnosis of a bowel obstruction.

Table 52.1 Acute complications: Assessment and immediate management

Acute problem	Assessment	Risk	Next steps
Inability to intubate with small bowel obstruction	SBO cause at pouch/valve	Pouch perforation Bowel perforation Aspiration	1. Establish quick and safe pouch intubation 2. Possible NGT, IV hydration, possible antibiotics
Small bowel obstruction despite ability to intubate	SBO cause proximal to pouch	Bowel perforation Aspiration	NGT, IV hydration, possible antibiotics. Possible exploration.
Inability to intubate due to: loss of consciousness, coordination, mental capacity anesthesia for unrelated problem	Need to bridge this time period	Pouch perforation Bowel perforation Aspiration	Intubate pouch for continued drainage
Perforation (due to intubation or due to inability to intubate)		Peritonitis/abscess formation Enterocutaneous fistula Incompetent valve	Peritonitis: Surgical exploration, antibiotics Contained/valve segment: Intubate pouch for continued drainage, antibiotics
Internal loss of intubation tube	Retained foreign body	No immediate risks	Endoscopic retrieval
Aggravated incontinence/urgency	Pouchitis Decompensated or traumatized valve Valve fistula	Accidents/ embarrassment Skin damage	Antibiotics Skin protection Pouch intubation + ostomy appliance

SBO small bowel obstruction, NGT nasogastric tube, IV intravenous

Table 52.2 Chronic problems: Workup and management planning

Acute problem	Assessment	Risk	Next steps
Chronic problems	Assessment		
Difficult intubation (stricture, desintussusception, kinking)	Skin level stricture Valve stricture Valve kinking Incremental trauma/edema	Progression to bowel obstruction	Once pouch intubated, leave/secure drain (with/without continued drainage) for 4 weeks
Incontinence and peristomal skin irritation	Pouchitis Decompensated or traumatized valve Valve fistula	Accidents/ embarrassment Skin damage	Antibiotics Skin protection Pouch intubation + ostomy appliance
Pouchitis with urgency/frequency		Accidents/ embarrassment Skin damage	Antibiotics, probiotics Endoscopy, possible pouchogram
Formation of fistula from valve to reservoir	Valve mechanism annihilated	Accidents/ embarrassment Skin damage	Pouchogram or/and CT scan Pouchoscopy Elective surgery
Prolapse	Partial valve desintussusception	Progression to incompetent valve Progression to difficult intubation	Pouchogram or/and CT scan Pouchoscopy Possible elective surgery
Peristomal herniation	Abdominal wall weakness	Discomfort Appearance SBO (rare)	Observation vs. hernia surgery
Bleeding	DDx: Intubation trauma Pouchitis Crohn disease Neoplasia	Anemia	Pouchoscopy
Anemia	Malabsorption Mucosal pathology (IBD, neoplasia)	Secondary	Pouchoscopy Vitamin B12 evaluation/replacement Search for other causes
Stone formation	Common incidental finding	Pouchitis	Removal only if revisional surgery for other reason
Disease transformation to Crohn	Inflammatory changes in afferent small bowel, fistula formations	Pouch failure	Pouch removal, biological treatment
Neoplasia	Change of priorities	Cancer progression	Cancer management, including possible resection and pouch removal, ileostomy

Operative Strategy

Quickly determine whether the patient's situation reflects an acute emergency that necessitates an urgent intervention, or whether a chronic management problem exists. As long as stool can be drained from the pouch, there is usually no acute emergency. It may be the case that intermittent intubation must be interrupted. An indwelling tube can be left in place to enable continuous drainage, or can be intermittently clamped and drained. Do not hesitate to contact a center with experience in managing continent ileostomies and their complications.

Difficult Stoma Intubation

The most common causes for difficult intubation are a desintussuscepted valve with a tortuous course of the access segment, chronic stricturing (at the skin level stoma or the valve itself), or acute traumatization from failed intubations with worsening edematous swelling. An excessively full pouch can also result in kinking of the valve segment or the afferent bowel, which may induce a vicious circle of overload and dysfunction.

The absolute priority is to establish access and successful decompression of the pouch, which should be achieved before other any other steps or imaging. If a tube with a soft tip cannot be easily inserted, pouch intubation under direct visualization is required. Depending on the circumstances, that may be possible on the spot (bedside, clinic) or require an interventional suite (operating room, GI, or fluoroscopy suite).

Management During Non-related Surgeries or Incapacitation

To manage patients who are temporarily incapacitated and unable to perform intubations for more than 4–6 hours (e.g., during anesthesia for a non-related surgery, or due to mental or physical factors), an indwelling tube should be placed and secured to a gravity draining bag, until the ability to intermittently intubate is restored. During that period the output needs to be carefully monitored and the tube may need to be flushed to maintain patency.

Considerations for Unrelated Abdominal Surgery

Patients with a functional continent ileostomy may need an abdominal surgery that is entirely unrelated to their

pouch (e.g., cholecystectomy, gynecological, and urological). In such cases, anticipation is the best protection. Imaging should be reviewed to determine the position and strategize about safest access routes. Extensive adhesions are common and may preclude minimally invasive procedures.

For minor/short procedures, it is sufficient to instruct the patient to intubate and empty the pouch immediately before and after surgery. For longer or complex surgeries, it is advisable to place an indwelling soft ileostomy tube that is connected to a draining bag and excluded from the surgical field underneath the sterile draping. In addition to providing continuous drainage, the tube facilitates palpation and identification of the pouch during the operation. If necessary, the pouch can be filled with water to further clarify the anatomy. Postoperatively the tube is left in place and monitored for regular output until the patient is again capable to resume self-intubations.

Acute Pouch Surgery

Pouch revision is a complex procedure and should not be considered without respective experience. Approach acute problems with a pouch that necessitate a nonelective abdominal intervention, by the following strategies (individually or in combination):

1. Repair acute injury and establish proper pouch drain position and function.
2. Proximal diversion with loop ileostomy.
3. Pouch excision and creation of end ileostomy.

Unless specifically consented for, the decision to perform a definitive pouch removal should be approached with caution. A true pouch revision during an emergency is discouraged, and whenever possible revision surgery should be deferred until the patient and the tissues are in optimal condition to minimize the postsurgical morbidity.

Chronic Pouch Dysfunction

Non-emergent problems with a continent ileostomy warrant a proper workup leading to a thorough decision-making process about the options and expectations. When confronted with chronic pouch issues, establish temporary measures to mitigate the symptoms and refer the patient to a center with experience in continent ileostomy surgery.

Documentation Basics

Coding for surgical procedures is complex. Consult the most recent edition of the AMA's *Current Procedural Terminology* book for details (see references at the end). In general, it is important to document:

- Findings and indications
- Bowel viability
- Absence of twisted efferent segment or small bowel mesentery
- Pouchoscopy—adequacy of views/preparation, ease of scope insertion, length and configuration of valve segment, mucosal appearance, abnormal findings, and any biopsies performed

Operative Technique

Endoscopic Pouch Decompression

First examine the abdomen and visualize the skin-level ostomy. A digital exam is almost always inappropriate. Instead, use a small catheter or a Q-tip to gently “palpate” the valve segment and get an idea about the direction for the intubation. Assess the diameter of the opening and decide which instrument to use. Sedation in most circumstances is not necessary.

- Narrow rigid sigmoidoscopy:** This instrument can often be advanced to the pouch reservoir and facilitate preliminary decompression. However, the narrow sigmoidoscope is too small to accommodate passage of an adequate size indwelling tube (24-30F), and a standard thin guide wire is too soft to serve as a reliable help. Therefore, you must first slide in a smaller tube that fits through the lumen of the rigid scope and then advance the desired tube over the first one. Take precaution not to inadvertently push the smaller tube further into the pouch where it may become a lost foreign body. A conventional guide wire may be pushed through the plastic at the end of the small catheter and looped to create a handle for added security. The larger tube can now be slid over the small tube+guidewire loop until the reservoir is reached. Withdraw the small tube and verify appropriate pouch drainage from the larger tube. Secure it in place and connect it to a catheter bag to gravity drainage.
- Flexible endoscope:** Select the appropriate size of instrument. A very slim 5–6 mm scope can usually be inserted but does not allow for appropriate drainage. Hence, using lots of lubricant, slide a larger drainage tube with an open end tip as a sheath over the flexible part before accessing the pouch. Then insert the sheathed instrument into the

ileostomy and advance it under direct visualization and with the minimum necessary insufflation. Once you reach the pouch, gently advance the tube into the reservoir and remove the scope. Stool should immediately start to drain. Repeated water irrigations may be necessary to flush the openings. Secure the drain in place and connect it to a catheter bag to gravity drainage.

Pouchoscopy

When performing a flexible pouchoscopy for diagnostic reasons rather than therapeutic pouch decompression (see above), use the largest flexible instrument that fits through the skin level stoma. Oftentimes, that is the pediatric endoscope. Sedation and analgesia are not routinely administered, but may be optional per patient request.

Insert the endoscope into the skin-level stoma and slowly advance under direct visualization, utilizing fluid irrigation or insufflation as necessary, until the pouch reservoir is visualized. Use irrigation as needed to remove residual stool and inspect for any mucosal abnormalities. Identify the afferent limb and attempt to follow it for 20 cm. Retroflex in the pouch reservoir to visualize the valve segment. Be sure to describe the intestinal mucosa, any abnormal findings, as well as the length and structure of the valve segment. Routinely take biopsies from the afferent limb and the pouch reservoir, or from any suspected pathology. Avoid biopsying the valve segment. Suck out as much air as possible as the scope is withdrawn.

Pouch Revision

A more detailed explanation of the technical aspects of pouch revision surgery is beyond the scope of this chapter.

Postoperative Care

- **Diet:** Restart immediately if no obstruction, otherwise as soon as return of bowel function
- **Catheter management:** Monitor and record output every 6 hours. Irrigate the catheter twice daily with 30 cc of tap water: Instillation and withdrawal should have not resistance.
- **Antibiotics:** Only for specific therapeutic indication.

Complications

- Bowel/pouch perforation
- Enterotomies

- Trauma to valve segment or pouch
- Abscess formation
- Enterocutaneous fistula formation

Further Reading

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