

Surgery in Inflammatory Bowel Diseases (IBDs) Overview and Clinical Pearls for Nurses and Advanced Practice Providers

This resource provides a quick and thorough overview of IBD surgery including common indications for surgery, primary goals of surgery, common surgical procedures, post-operative issues, and finally, clinical pearls as takeaway points. Use this to learn more about IBD surgery or to refresh your knowledge in order to optimally manage your patients.

Common Indications for Surgery:^{1, 3, 4, 6, 7, 8, 9}

- Intractable disease, refractory to maximal medical therapy, Steroid dependent
- Dysplasia (precancerous changes) / cancer
- Massive colonic bleeding (uncommon, <5% of patients)
- Fulminant colitis or toxic megacolon
- Intestinal obstruction
- Symptomatic strictures
- Intra-abdominal or pelvic abscess
- Perforation
- Fistulas (up to 35% of Crohn's patients develop fistulas; majority involve the small intestine; can also involve the large intestine, bladder or vagina)
- Growth retardation (young patients may have impaired growth and mental development due to prolonged inadequate caloric intake)
- Perianal disease (abscess, fistulae) in Crohn's disease

Primary Goals of Surgery:^{5, 8, 9}

- Alleviate symptoms
- Alleviate complications
- In Crohn's disease*: preservation of intestinal length and function
- Achieve best possible quality of life for the patient

*All of the above goals are for UC and CD but the goal of preservation of intestinal length and function is only for Crohn's disease due to potential for multiple resections resulting in loss of bowel.

Pre-Op Work-Up May Include:^{1,2, 8, 9}

- ✓ Ileocolonoscopy with biopsies (to assess for terminal ileal and large bowel disease)
- ✓ MR or CT Enterography (to assess disease extent and activity)
- ✓ CT Abdomen/Pelvis (especially in patient with mass or fever—possible abscess)
- ✓ CBC, Comprehensive metabolic panel, PT, PTT
- ✓ Optimize nutritional status
- ✓ Taper steroids to lowest dose to keep patients from flaring and to reduce risk of infections and increase healing ability

Common IBD Surgical Procedures ^{3, 4, 8, 9, 16}

Surgical Options	Condition	Advantages	Disadvantages
Stricturoplasty (small bowel)	Crohn's	<ul style="list-style-type: none"> • Opens diseased portion of bowel (decreased risk of obstruction at the affected site) • Avoids resection/removal of bowel (bowel sparing procedure) 	<ul style="list-style-type: none"> • Does not remove diseased bowel • Increased risk in malnourished patients • May need to be repeated; about 25% of patients will require subsequent surgery ^{6, 7, 1}
Ileocecal/Ileocolic resection	Crohn's	<ul style="list-style-type: none"> • Primary anastomosis (reconnection of ends of bowel) No stoma 	<ul style="list-style-type: none"> • Recurrence rate of Crohn's disease requiring re-resection in patients who have undergone ileocolic resection is roughly 25% in 5 years and 35% in 10 years. In the era of treat to target therapy, re-resection percentages may decrease over time as more effective therapies are utilized.^{3, 8, 9, 17, 20}
Segmental Colectomy	Crohn's	<ul style="list-style-type: none"> • Effective in patients with disease limited to a segment of colon (i.e. stricture, obstruction) • Avoids ostomy placement 	<ul style="list-style-type: none"> • Contraindicated in patients with severe rectal or anal disease. Up to 50% of patients require reoperation in 5 years. ¹³
Total colectomy, Hartmann's pouch (retained rectum) with ileostomy	UC, Crohn's	<ul style="list-style-type: none"> • Eliminates colitis • Diverts stool, which can result in improved control of perianal disease • Indicated in acute setting of UC or Crohn's disease and Crohn's affecting the colon such as toxic colitis or a flare that is refractory to medical therapy • Can be the 1st stage in a 2 or 3-stage procedure for UC 	<ul style="list-style-type: none"> • End stoma, rectum remains – possible site of active disease or diversion colitis in future with high likelihood of recurrence requiring completion proctectomy and permanent ileostomy (roughly 50% of patients require proctectomy within 10 years) ^{13, 21} • May still have disease recurrence in small bowel (if Crohn's) • Risk of cancer developing in retained rectum, need for ongoing surveillance until removed ^{13, 21}

Surgical Options	Condition	Advantages	Disadvantages
Total abdominal colectomy with ileorectal anastomosis	UC, Crohn's	<ul style="list-style-type: none"> • Colon is removed • Maintains intestinal continuity 	<ul style="list-style-type: none"> • Rectum remains - possible site of active disease in future; high likelihood of disease recurrence requiring eventual completion proctectomy and ileostomy in UC; roughly 50% of patients require proctectomy within 10 years¹³ • Frequent stools, i.e. up to 3-6 per day • Cancer risk remains in rectum, but low with risk of cancer in retained rectum is 14 to 20% at 27 years.¹³ • Need ongoing surveillance with flexible sigmoidoscopy¹³
Total proctocolectomy with end ileostomy	UC, Crohn's	<ul style="list-style-type: none"> • Curative in UC, Removes all diseased colon, rectum and anus, Single operation 	<ul style="list-style-type: none"> • Permanent ileostomy • Challenges with perineal wound healing²¹
Total proctocolectomy with ileal pouch anal anastomosis (J-Pouch, IPAA)	UC	<ul style="list-style-type: none"> • Curative in UC • Removes all diseased colon • Preservation of the anal sphincter complex and intestinal continuity (no stoma) 	<ul style="list-style-type: none"> • Not usually recommended in Crohn's because of the risk of recurrence in the pouch with high failure rate of pouch function²⁰ • Usually requires 2-3 operations^{19, 21} • Frequent stools, up to 4-8 per day²¹ • Pouchitis – 50% risk, recent data suggests up to 80% develop 1 episode at 30 years^{19, 21} • Incontinence of stool – mostly at night as wetness, may improve over time²¹ • Ongoing pouch surveillance is recommended to assess function and for complications i.e. pouchitis or dysplasia if a retained 1-2 cm of the anal transition zone^{19, 21}

Surgical Options	Condition	Advantages	Disadvantages
Abdominoperineal resection (APR)	Crohn's	<ul style="list-style-type: none"> Useful in setting of isolated, severe perianal disease that is refractory to fecal diversion alone 	<ul style="list-style-type: none"> Permanent stoma¹⁷ Possibility of active disease in remaining bowel¹⁷ Possible risk of ureteral and sacral venous plexus and pelvic autonomic nerve damage all related to urinary and sexual function¹⁷ Delayed perineal wound healing¹⁷
Procedures for anorectal disease (e.g., Incision & drainage of abscess, seton placement, diverting ostomy, advancement flap repair)	Crohn's	<ul style="list-style-type: none"> Controls perianal disease, often in conjunction with antibiotics (Ciprofloxacin/Metronidazole) and/or biologic medications 	<ul style="list-style-type: none"> Perianal sepsis may require diverting ostomy, which rarely (if ever) can be reversed without relapse. <20% chance of successful restoration of intestinal continuity in complex fistulae and sepsis^{6, 9, 21} Possibility of leakage of stool, sphincter muscle damage^{9, 21}

Care & Recovery

- **Enhanced Recovery Protocols (ERP)** allow for early consumption of clear liquids on Postop day (POD)#0 or #1, early return of bowel function, early urinary catheter removal, early ambulation, multimodal analgesia and antiemetic regimen and decreased length of hospital stay with minimally invasive surgical technique ^{10, 18, 22, 23}
- **Nasogastric tubes** often unnecessary for bowel decompression; if placed, will need to stay in place for as long as patient has nausea, vomiting and/or distension (ileus vs small bowel obstruction)
- **Advance diet** once patient has evidence of return of bowel function (ostomy with gas and stool); low residue diet x 4-6 weeks for new ileostomy, bowel resection or stricturoplasty. Perianal procedures may resume regular diet.
- Leave **drains** in place until character (i.e., serosanguinous vs frank blood vs purulent) and amount of output (depending on drain location, i.e., deep vs superficial) is acceptable
- **Control post op nausea and vomiting (PONV)** to avoid excessive intra-abdominal pressure (on new anastomosis) from retching/emesis. Use of Antacids for 4 weeks after bowel surgery can help with reflux, nausea and decreased appetite postoperatively.^{8, 21}
- **Conservative methods of thromboembolic event prevention** for all hospitalized IBD patients should include hydration, mobilization, and use of compression stockings or pneumatic devices. ^{10, 18, 22,}

Post-Operative Risks

- **Anastomotic leak** +/- pelvic sepsis (4-10%) ^{9,}
- **Small bowel obstruction** (15-35%) (bowel rest + IV fluids vs return to OR) ^{6, 9}
- **Infection** (5-6%) – wound, pneumonia, UTI ^{10, 18, 22, 23}
- **Abscess** (may require antibiotics, +/- drainage, drain placement)
- **Bleeding** (~4%) (serial Hgb checks; transfuse as needed) ^{8,9}
- **Venous thromboembolism (VTE)(7-10%)**
Patients with IBD are at greater risk for postoperative deep vein thrombosis (DVT) and pulmonary embolism (PE). Other risk factors include previous thromboembolism, central venous catheters, age, presence of malignancy as well as the nature and duration of surgery. ^{10, 17, 18, 22, 23}
- **Fistula** involving bowel (location and volume will dictate expectant management vs surgery but often a combination) ^{1, 7, 9}
- **Pouchitis** (occurs in up to 50% of patients; treated with antibiotics) ^{19,21}
- **Sexual dysfunction** related to removal of rectum or perineal procedures in males (1-3%) and females can develop dyspareunia (pain during intercourse). These issues may be d/t adhesions. These issues may improve over time as tissues soften and become more elastic. Minimally invasive technique may decrease risk when applicable. ^{7, 17, 19, 21}
- **Decreased fertility** (25-40%) (females may elect ova harvest pre-op for in vitro fertilization once recovered)

23

- **Anticoagulation prophylaxis** daily while hospitalized and depending on risk, may typically continue up to 10 days. The optimal duration is not known but in high risk patients such as those who undergo major abdominal and/or pelvic surgery for cancer, compromised mobility concerns etc., longer duration is recommended and may extend up to 3-4 weeks. ^{10, 18, 22, 23}

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- **Stoma-related complications** (i.e., high ileostomy output, dehydration, metabolic disturbances may require use of anti-diarrhea agent, fiber supplements and IV fluid infusions to compensate for losses, parastomal hernia, retraction or prolapse of stoma which may eventually require revision of stoma) ²¹
 - **Pouch failure** due to development of refractory Crohn's or pouchitis as well as poor function and quality of life (requires removal of pouch and conversion to permanent ileostomy) ^{19, 21}

Pearls for managing surgical patients

- **Exercise:** At time of discharge from the hospital, patients are recommended to avoid strenuous activity and 10-pound weight-lifting restriction for four to six weeks from date of surgery but encouraged to participate in light activity, such as walking. ²¹
- **Postoperative visit:** Patients should return for an outpatient postoperative visit in 10-14 days after discharge for wound examination, incisional staple removal or ostomy assessment. They should call if unexpected symptoms such as significant abdominal pain, nausea/vomiting, abdominal bloating and decreased or no passage of stool, dizzy or lightheaded on standing, dark or decreased urine output. ²¹
- **Fluid absorption:** The majority of patients tolerate partial colectomy with only minor physiologic consequences related to fluid absorption, such as temporary loose stools. There is great variability in frequency, with most having a minimal increase, but some have at least a temporary increase to four or more movements per day. Such patients may benefit from the addition of a dietary fiber preparation or an anti-diarrheal agent initially. The remaining colon will adapt over a period of three to six months, gradually returning to a more normal bowel pattern. ²¹
- **VTE:** IBD patients have a risk of VTE that is 2- to 3-fold greater than that of the general population. However, during hospitalization, multiple prothrombotic risk factors other than active disease act synergistically, multiplying the absolute risk of VTE. Surgery represents a major risk factor for VTE, particularly in patients with IBD, and thromboprophylaxis is

universally performed during the perioperative period. Depending on patient risk factors for a thromboembolic event, the duration of prophylaxis may extend beyond hospitalization to three or four weeks.^{10, 18, 22, 23}

- The following actions can potentially reduce the incidence of VTE in the surgical setting: correcting preoperative coagulopathy and/or anemia, improving nutritional status, reducing steroid use, operating early to avoid emergency surgery, and limiting anesthesia time.
- **Shared decision-making:** An important factor in acceptance of a permanent ileostomy is that the decision needs to be the patient's decision of choice whenever possible. The patient needs to **"OWN it"**! This means the patient needs to have all the information necessary to make an informed choice and understand the permanent ileostomy is the best choice given their medical condition for an improved quality of life.²¹
- **Patient education:** It is important for patients to be counseled, educated and site marked by an enterostomal therapist preoperatively.²⁰
 - Patient needs to have all their **"What if's"** answered when possible, meaning there are no other medical options to treat the condition and surgery is the option which will afford the best quality of life. Otherwise, when complications or issues occur, they cannot say "But what if I would have tried that other treatment option and it would have worked and maybe I would not have had to deal with this problem!"
- **Discharge:** Remind patients with an ileostomy that have either a retained rectum or a diverted ileal pouch that it is normal to pass a discharge of clear or milky mucus like a bowel movement daily or less frequently. If the mucus becomes bloody with urgency and tenesmus, this may indicate recurrent flare of disease in the rectum or diversion proctitis.²¹
- **Dehydration:** Education on the signs and symptoms of dehydration preoperatively and postoperatively as well as measures to maintain hydration and thickened stool output are key principles in patient education with an ileostomy:²¹
 - Signs of dehydration include dry mouth and feeling thirsty, light-headed or dizzy especially upon standing, decreased urine output and dark amber in color, high ostomy output or multiple number of stools that are watery to liquid, fatigue, nausea, headaches, muscle cramps and elevated heart rate or palpitations.
 - Ileostomy output less than 500 ml or output greater than 1200 ml in 24 hours may be concern for possible dehydration.
 - Urine output that is amber and/or less than 800 ml in 24 hours may also be concern for possible dehydration.
 - Use of oral rehydration formulas or other electrolyte enhanced beverage may be useful when patients are feeling dehydrated.
 - May use oral antidiarrheal medications before meals and at bedtime to control the frequency of bowel movements. Maximum is 8 tablets in 24 hours.
- **Liquid and solid intake:** Patients best understand the concept of balancing liquid and solid intake with an ileostomy by using the following example: "By eating first and then drinking, the foods eaten will soak up the liquids, thereby slowing down the transit time of both through the intestines so the fluids and nutrients have time to be absorbed. Drinking fluids without food often causes fluids to move rapidly through the intestines with minimal absorption resulting in dehydration over time." Patients should always snack between meals when drinking liquids as much as possible.²¹

- **Pouch function:** It is very important for ileal pouch patients to understand that bowel function is not perfect or like what they knew as “normal” right away. Ileal pouch function improves over time and may take up to a year or more to settle into around 4-6 or sometimes 8 stools a day. May use antidiarrheals and fiber preparations to keep bowel movements within a reasonable number a day. Recommend following patients every 3 months the first year and then yearly or as frequently as needed if complications develop to assess pouch function. ^{19, 21}
- **Ongoing assessment of ileal pouch function** should include: ^{19, 21}
 - Number of daytime and nighttime bowel movements
 - Stool incontinence/leaks – use barrier ointment and anal leakage pads to protect the skin
 - Perineal skin integrity
 - Digital check of ileoanal anastomosis patency
 - Sexual function
 - Perceived quality of life – some patients revert back to thinking when they had ulcerative colitis and that having 10 or more bowel movements, fatigue and decreased quality of life is their “new normal”.
 - Feelings of depression, anxiety or post-traumatic stress – related to a chronic illness and multiple surgeries, especially in young kids and adults.
 - Perineal rash may be common initially after ileal pouch surgery or whenever stools are loose. Recommend patients to use a moisture barrier ointment to protect the skin but be sure the skin is dry before the barrier is applied and reapply after each loose bowel movement. For patients who have a lot of bowel movements, warm water (sitz baths or shower wand and pat dry)
 - Pouchoscopy with biopsies in the first year and then yearly as indicated if the patient develops signs or symptoms of pouchitis and to assess the rectal cuff for cuffitis and dysplasia based on risk.
- **Perianal incontinence of stool:** If patients experience minor perianal incontinence of stool, have draining perianal fistulae or setons in place, using anal leakage or incontinent butterfly pads is helpful to wick away the moisture from the perineal area and protect the skin. Wearing panty liners protects clothes *not the patient's perianal skin!* ^{17,19, 21}
- **Delayed perineal wound healing:** For patients who have delayed perineal wound healing, assess the area for hair growing into the wound and preventing it from healing. Shaving the hair around the perineal wound may help expedite healing and if drainage noted, use of butterfly pad or absorbent gauze to wick away the moisture. ²¹

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