Welcome to the IBD Nurse Fellowship Program!

The program consists of 13 modules:

Module 1 – Ulcerative Colitis
Module 2 – Crohn's Disease
Module 3 – Ulcerative Colitis vs. Crohn's Disease
Module 4 – Management of Ulcerative Colitis
Module 5 – Management of Crohn's Disease
Module 6 – IBD and Surgery
Module 7 – Medication Adherence in IBD
Module 8 – Health Promotion and Maintenance in IBD
Module 9 – Nutrition and IBD
Module 10 – Extra-intestinal Manifestations of IBD
Module 11 – Anemia in IBD
Module 12 – Fatigue in IBD
Module 13 – Anxiety and Depression in IBD

Each module is divided into sections, all of which are listed in the Table of Contents. The Table of Contents allows you to click on the page numbers to navigate to each section. Each page has a Home Button on the bottom right-hand corner that will take you back to the Table of Contents.

The learning objectives are at the beginning and end of each module. Before completing the module, you will have the opportunity to take a self-directed quiz, which will test your knowledge on several of the key concepts and takeaways from the module. It is recommended that you take the quiz and accomplish all of the learning objectives before moving on to the next module.

This program is supported through an educational grant from janssen

IBD nurse fellowship PROGRAM

csgna
Canadian Society of Gastroenterology Nurses & Associates
Société canadienne des infirmières et infirmiers en gastroentérologie et travailleurs associés

CANIBD
Canadian Nurses IBD Group

Module 6

IBD and surgery

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Learning objectives

After completing Module 6 you will be able to:

- Describe the surgical procedures for ulcerative colitis (UC) and Crohn's disease (CD)
- Identify appropriate patients for each type of surgery for both UC and CD
- Recap the advantages and disadvantages of different procedures
- Understand the clinical consequences of surgery
- Assess the risks vs. benefits of surgery using the risk-benefit analysis

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Section 1

Surgery in ulcerative colitis

Surgery in ulcerative colitis

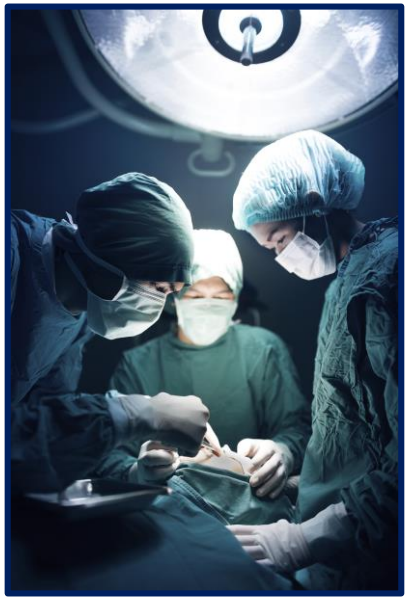
- Surgery that removes the rectum and colon may be curative in ulcerative colitis (UC)
- The goals of surgical treatment include:
  - Removal of the entire diseased colon while preserving continence and sexual function
  - Elimination of the risk of colorectal cancer
- Indications for surgery in the UC patient include:

Emergency situations:

- Massive bleeding
- Toxic colitis
- Toxic megacolon
- Intestinal perforation
- Severe nutritional deficiencies
- Systemic toxicity

Common elective indications:

- Failure or complications of medical therapy
- Evidence of dysplasia or cancer on surveillance colonoscopy



Blumberg *et al*., 2002.

Surgical procedures for ulcerative colitis

- There are multiple surgical options that can be used to treat ulcerative colitis (UC):
  - Restorative proctocolectomy
    - Ileal pouch-anal anastomosis (IPAA)
    - Ileal pouch-anal transition zone anastomosis
  - Proctocolectomy with permanent ileostomy
    - Brooke ileostomy
    - Continent ileostomy
  - Subtotal colectomy with ileostomy
  - Colectomy with ileorectal anastomosis

Common elective procedures for UC

Standard emergency procedure for UC

- These procedures are described in more detail on the following pages

Blumberg *et al*., 2002.

Restorative proctocolectomy

- Removal of the colon and rectum with preservation of the anal sphincters
- A pouch is constructed from the ileum
  - Sewn to the anal canal (IPAA)
  - Stapled to the distal rectum (ileal pouch-anal transition zone anastomosis)
- Indicated in healthy individuals motivated to maintain continence
- Contraindicated in patients with anal incontinence or a distal rectal cancer that requires removal of the anal sphincter

Advantages:

- Offers potential cure of disease
- Minimizes risk of cancer development
- Avoidance of a stoma (end of bowel brought through an opening in the abdomen)
- Maintenance of anal continence

Disadvantages:

- Technical complexity of the operation
- Potential for significant early and late complications
- Even if colon has been removed, may still have 5 to 6 soft bowel movements per day

IPAA, ileal pouch-anal anastomosis

Blumberg *et al*., 2002; Feldman *et al*., 2015.

Restorative proctocolectomy

- Complications associated with ileal pouch-anal anastomosis:
  - Perianal irritation
  - Incontinence and diarrhea
  - Anastomotic stricture
  - Pouchitis (inflammation of the pouch)
  - Cuffitis (inflammation of the rectal cuff)
  - Small bowel obstruction (can occur from adhesions or scar tissue from surgery)
  - Pouch failure in 8%-10% of patients
  - Difficulty getting pregnant

Blumberg *et al*., 2002; Feldman *et al*., 2015.

Total proctocolectomy with permanent ileostomy

- Entire colon and rectum are removed, and the end of the ileum is passed through through an opening in the abdominal wall (ileostomy)
  - Brooke ileostomy or continent ileostomy
- For patients for whom the formation of a pouch is not recommended (ie, the aged or incontinent)
- Removal of all diseased bowel, at the expense of a permanent stoma

Advantages:

- Removal of all disease
- Elimination of cancer risk
- Relatively low morbidity
- Absence of the functional issues associated with a ileal-anal pouch

Disadvantages:

- Many patients fail to accept permanent ileostomy, which impacts quality of life

Blumberg *et al*., 2002; Feldman *et al*., 2015.

Total proctocolectomy with permanent ileostomy

- Complications associated with total proctocolectomy:
  - Negative sodium balance
  - Increased frequency of urolithiasis (formation of urinary stones)
  - Abnormalities in bile acid reabsorption
  - Malabsorption of vitamin B12
  - Steatorrhea (excess fat in feces)
  - Oliguria (low urine output)
  - Change in fecal microbiota
  - Dehydration with high stomal output

Blumberg *et al*., 2002; Feldman *et al*., 2015.

Conventional Brooke ileostomy

- The terminal ileum is pulled through the abdominal wall and a segment is turned back and sutured to the skin, leaving a smooth, rounded ileum
- The stoma is located on a flat surface sufficiently free from irregularities
- Fecal output is not controlled and will require wearing a collection pouch
- Complications associated with Brooke ileostomy include:
  - Parastomal hernia (protrusion of abdominal contents through stoma)
  - Prestomal ileitis (ileal inflammation)
  - Irritation of the stoma
  - Stomal obstruction

Blumberg *et al*., 2002; Feldman *et al*., 2015; UOAA 2011.

Continent ileostomy (Kock Pouch)

- A continent ileostomy reduces the esthetic appearance of the Brooke ileostomy and eliminates the requirement for an external appliance
- The intra-abdominal pouch comprises 3 loops of small bowel, and provides internal storage for the patient's intestinal contents
- The patient empties the pouch 4 to 6 times per day by inserting a catheter through the stoma
- This surgery is rarely practiced today since the introduction of IPAA

Indications:

- Conventional ileostomy malfunction
- Pelvic pouch not an option
- Failed or malfunctioning pelvic pouch
- Patient preference

Contraindications:

- Pouchitis or dysmotility
- Previous multiple small bowel resections
- Crohn's disease

IPAA, ileal pouch-anal anastomosis

Blumberg *et al*., 2002.

Continent ileostomy (Kock Pouch)

- Complications associated with continent ileostomy:
  - Valve slippage
  - Prolapse (slipping of organs)
  - Fistulas (abnormal passage between organs)
  - Volvulus (obstruction caused by twisting of intestine)
  - Parastomal hernia (organ protrusion)
  - Valve stenosis (narrowing of valves)
  - Pouchitis (pouch inflammation)

Blumberg *et al*., 2002; Feldman *et al*., 2015.

Subtotal colectomy with ileostomy

- Removal of most of the colon and creation of an ileostomy
- Preserves the rectum and avoids a pelvic dissection
- Indicated for emergencies, patients with minimal rectal disease, incontinent patients, and cases of indeterminate colitis

Advantages:

- Eliminates risk of significant hemorrhage
- Decreases risk of impotence and neurogenic bladder
- Leaves the patient with future restorative options

Disadvantages:

- Requirement for an external appliance
- Potential for associated skin excoriation
- Possibility of fluid and electrolyte depletion
- Increased risk of rectal cancer

Blumberg *et al*., 2002.

Colectomy with ileorectal anastomosis

- After removal of the colon, an anastomosis (surgical connection) between the ileum and the rectum is performed
- Appropriate for patients with minimal rectal disease, good sphincter function, and motivation to undergo lifelong endoscopic surveillance of the rectum
- Contraindicated in:
  - Patients requiring emergency surgery (because of the high risk of anastomotic leak)
  - Patients with a strictured, fibrotic,and/or low-capacity rectum
  - Patients with incontinence

Advantages:

- Allows for maintenance of anal continence
- No pelvic dissection, and the patient is spared an ileostomy

Disadvantages:

- Bowel movements are looser than normal
- The retained rectum is at risk for recurrent disease and cancer development

Blumberg *et al*., 2002; Armstrong *et al*., 2003.

Complications of surgery in ulcerative colitis

- Common early complications include:
  - Small bowel obstruction occurs in 11%–26% of patients
  - Sepsis occurs in 3%–15% of patients after ileal pouch-anal anastomosis
  - Other early complications include deep vein thrombosis, pulmonary embolus, intestinal bleeding from the ileostomy or pouch, pouch ischemia, fistulas, abscess formation, and diarrhea
- Common late complications include:
  - Pouchitis (10%–28% occurrence): characterized by fever, abdominal cramping, and diarrhea with peak incidence at 18 months after surgery
  - Pouch fistula (2.8%–9.7% occurrence): usually occurs between the pouch and perianal skin or the pouch and vagina
  - Pouch stricture (7.8%–14% occurrence): narrowing at the pouch inlet or outlet that can cause symptoms of obstruction such as nausea, vomiting, bloating, abdominal pain, and change in output

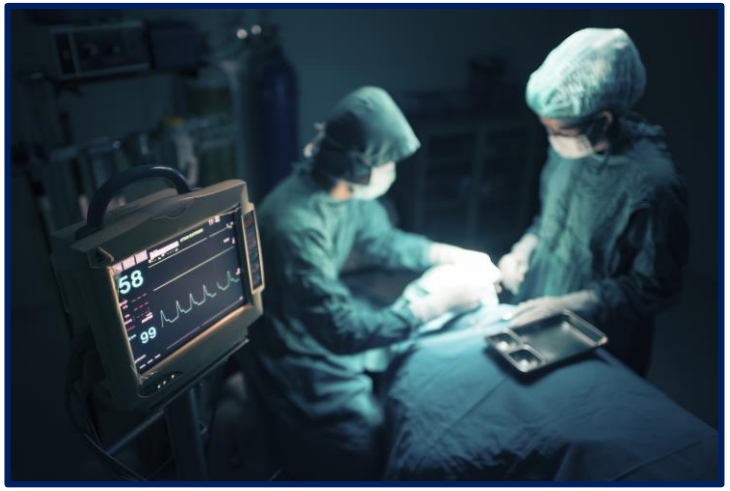
Blumberg *et al*., 2002.

Section 2

Surgery in Crohn's disease

Surgery in Crohn's disease

- Surgery does not cure Crohn's disease (CD), but plays an integral role in controlling symptoms and treating complications
  - The rate of surgery within 3 years of diagnosis varies from 25% to 45%
  - By the 20th year from symptom onset, roughly 75% of patients with CD have had at least one surgical procedure



- Surgery in CD patients is associated with a high rate of disease recurrence
  - About 30% of patients require a second surgery by 5 years after the first, and about 33% of patients who need a second surgery eventually require a third
- The main goal of surgery in CD is preservation of intestinal length and function

Blumberg *et al*., 2002; Armstrong *et al*., 2003; Feldman *et al*., 2015.

Indications for surgery in Crohn's disease

- Indications for small intestine surgery in Crohn's disease (CD) include:
  - Complications such as intra-abdominal abscess, medically intractable fistula, fibrotic stricture with obstructive symptoms, toxic megacolon, hemorrhage, and cancer
  - Patients with symptoms refractory to medical therapy
- IPAA procedures are avoided in patients with CD due to the high rate of pouch failure
  - Diversion surgery (ileostomy) may be indicated for unremitting sepsis or anorectal CD
  - Resection or stricturoplasty may be performed with a stricture
- Common surgical procedures in patients with CD include:
  - If CD is in the small bowel → bowel resection and stricturoplasty
  - If CD is in the large bowel → proctocolectomy, terminal ileostomy, and total colectomy with ileorectal anastomosis

IPAA, ileal pouch-anal anastomosis

Blumberg *et al*., 2002; Armstrong *et al*., 2003; Feldman *et al*., 2015.

Bowel resection

- Resection is the most commonly performed surgical procedure for small bowel Crohn's disease
- Refers to the removal of the involved segment of colon, together with its lymphatic drainage
- Surgery should address only to segments causing obstruction, bleeding, or perforation
- The disease-free margins are established by gross inspection, with the goal of preserving as much small bowel as possible
- Can be performed open laparotomy or laproscopically

Armstrong *et al*., 2003; Feldman *et al*., 2015.

Stricturoplasty

- Stricturoplasty involves a longitudinal incision made across the area of stricture
- The incision is sutured in a horizontal direction, creating a wider lumen

Indications:

- Stricturing disease of a large portion of bowel where one or more stricturoplasties are preferred to large resection
- Prior bowel resection of more than 100 cm
- Short-bowel syndrome
- Strictures without an associated abscess
- Septic fistula
- Recurrent strictures at ileocolic sites
- Growth retardation

Contraindications:

- Cases complicated by severe sepsis
- Abscess
- Phlegmon
- Peritonitis
- Hypoalbuminemia
- Suspicion for carcinoma
- High tension on the suture line

- Complications associated with stricturoplasty include:
  - Diarrhea
  - Weight loss
  - Recurrence of disease
  - Infection

Campbell *et al*., 2012; Feldman *et al*., 2015.

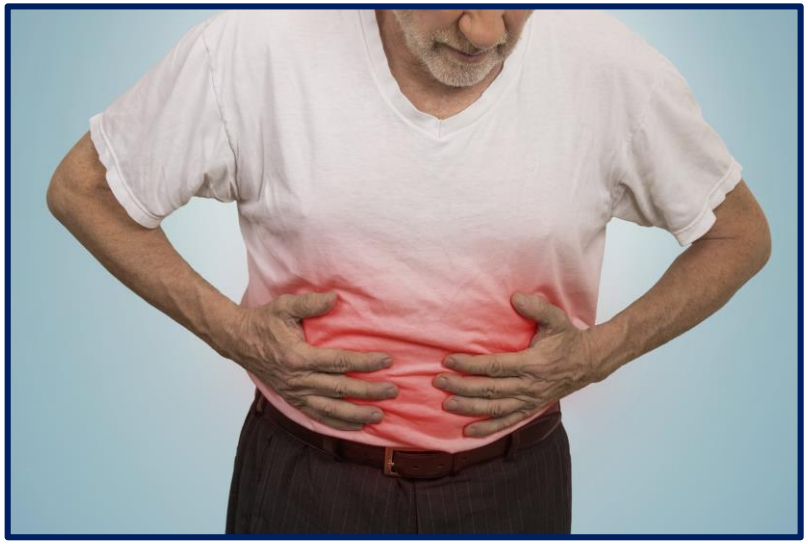
Stricturoplasty

- Short length strictures (<5 cm)
  - Heineke-Mikulicz stricturoplasty: longitudinal incision of the bowel longitudinally and transverse closure
- Medium length strictures (5-20 cm)
  - Finney's stricturoplasty: a side-to-side anastomosis
  - Jaboulay stricturoplasty: the loop of intestine containing the stricture is positioned in a U-shape
- Long strictures (>20 cm)
  - Michelassi stricturoplasty: a side-to-side anastomosis that avoids the loss of a long segment of small bowel

Campbell *et al*., 2012; Chandra *et al*., 2011.

Complications of surgery in Crohn's disease

- Complications of surgery in Crohn's disease include:
  - Diarrhea
  - Weight loss
  - Recurrence of disease
  - Obstruction
  - Infection
  - Fluid and electrolyte imbalance
  - Nutritional deficiency
  - Vitamin B12 deficiency



Feldman *et al*., 2015.

Section 3

Risk-benefit analysis in surgery

Benefits and risks of surgery for ulcerative colitis

Potential benefits include:

- Long-term symptom relief
- Surgery to remove diseased intestinal tissue potentially represents a "cure"
- Reduced or even eliminated need for ongoing medication
- Healthier, more active lifestyle

Potential risks/side effects include:

- Surgery-related complications, as with any surgery
- Psychological implications for those with ileostomy
- Ongoing disease, if reclassified to Crohn's disease post-surgery

Blumberg *et al*., 2002; Feldman *et al*., 2015.

Benefits and risks of surgery for Crohn's disease

Potential benefits include:

- Long-term symptom relief
- Reduced frequency or dose for ongoing medication
- Healthier, more active lifestyle
- Combination of medication and surgery often can give people with Crohn's disease the best quality of life

Potential risks/side effects include:

- Surgery-related complications, as with any surgery
- High risk of disease recurrence
- About 50% of people with recurrence will need another surgery
- Psychological implications for those with ileostomy

Feldman *et al*., 2015.

Risk-benefit analysis for surgery in IBD

- Selection of a specific operation is based on the following considerations:
  - Age and health of the patient
  - Urgency of operation
  - Presence of dysplasia and risk of carcinoma
  - Patients desire for continence
  - The status of anal continence
  - Diagnostic certainty

- Selection of a specific operation must weigh the benefits and risks with the goal of:
  - Minimizing risks of procedural complications
  - Maximizing cure of the disease
  - Reducing the long-term cancer risk
  - Improving functional outcome

Blumberg *et al*., 2002; Feldman *et al*., 2015.

Section 4

Self-assessment quiz

Self-assessment quiz

- Now that you have reviewed the module content, you have the opportunity to test your knowledge and understanding of the material by completing a self-assessment
- The assessment consists of 5 multiple choice questions
- Please attempt each question before looking at the answer key, which is located on page 36
- The answer key provides the rationale for each answer and indicates where the correct answer can be found in the module

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Question 1

Which of the following surgical options for ulcerative colitis preserves the rectum and avoids pelvic dissection?

a) Restorative proctocolectomy

b) Subtotal colectomy with ileostomy

c) Colectomy with ileorectal anastomosis

d) Proctocolectomy with permanent ileostomy

Question 2

Which of the following is a common early complication of surgery in ulcerative colitis?

a) Pouchitis

b) Pouch stricture

c) Small bowel obstruction

d) Pouch fistula

Question 3

Which surgical procedure may be done if Crohn's disease is affecting the small bowel?

a) Proctocolectomy

b) Total colectomy

c) Terminal ileostomy

d) Bowel resection

Question 4

Which of the following are potential complications of Crohn's disease?

a) Diarrhea and weight loss

b) Obstruction and infection

c) Nutritional deficiency and Vitamin B12 deficiency

d) All of the above

Question 5

Which of the following risk(s) is/are associated with surgery for both Crohn's disease and ulcerative colitis?

a) Disease recurrence

b) Surgery-related complications

c) Psychological implications for those with ileostomy

d) Both b) and c)

Answer key

1. **The correct answer is b.** Subtotal colectomy with ileostomy preserves the rectum and avoids pelvic dissection. See page 15 for more information on this topic.

2. **The correct answer is c.** Small bowel obstruction is a common early complication of surgery in ulcerative colitis. See page 17 for more information on this topic.

3. **The correct answer is d.** Bowel resection and stricturoplasty may be done if Crohn's disease is in the small bowel. See page 20 for more information on this topic.

4. **The correct answer is d.** All complications listed may potentially occur after surgery in Crohn's disease. See page 24 for more information on this topic.

5. **The correct answer is d.** Surgery-related complications and psychological implications for those with ileostomy are risks associated with both Crohn's disease and ulcerative colitis. See page 26 for more information on this topic.

Congratulations!

You have completed the 6th module of the program.

Based on what you learned in Module 6, you should be able to:

- Describe the surgical procedures for ulcerative colitis (UC) and Crohn's disease (CD)
- Identify appropriate patients for each type of surgery for both UC and CD
- Recap the advantages and disadvantages of different procedures
- Understand the clinical consequences of surgery
- Assess the risks vs. benefits of surgery using the risk-benefit analysis

If you have answered the quiz questions correctly and achieved the learning objectives, you are ready to move on to Module 7, which will focus on medication adherence in IBD.

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