

Preoperative Risk Factors for Adverse Events in Older Adults Undergoing Bowel Resection for Inflammatory Bowel Disease: 15-Year Assessment of ACS-NSQIP



Cristina Fernandez MD MPH¹, Zoran Gajic (MD/PhD Candidate '25)¹, Eren Esen MD MS², Feza Remzi MD², David Hudesman MD³, Mara McAdams-DeMarco PhD², Dorry Segev MD PhD², Joshua Chodosh MD⁴, John Dodson MD MPH⁵, Aasma Shaukat MD MPH³, Adam S. Faye MD MS³

¹Department of Medicine at New York University Langone Health

²Department of Surgery at New York University Langone Health

³Inflammatory Bowel Disease Center at New York University Langone Health, Division of Gastroenterology and Hepatology

⁴Department of Medicine at New York University Langone Health, Division of Geriatric Medicine and Palliative Care

⁵Department of Medicine at New York University Langone Health, Division of Cardiology

INTRODUCTION

- Nearly a quarter of older adults with inflammatory bowel disease (IBD) require surgery.
- Patients with IBD are at risk for complications postoperatively and this risk is increased in older adults.
- Little is known about the risk factors leading to these complications.
- We assessed risk factors associated with adverse postoperative outcomes among older adults who underwent IBD-related surgery, as well as evaluated trends in emergency vs. elective surgery in this population.

METHODS

- Using the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database, we identified adults ≥60 years of age who underwent an IBD-related intestinal resection from 2005-2019.
- Primary Outcome: 30-day composite of mortality, readmission, reoperation, and/or a serious complication as listed in NSQIP.

RESULTS

- In total, 9,640 intestinal resections were performed among older adults with IBD from 2005-2019, with 48.30% having undergone resection for Crohn's disease (CD), and 51.70% for ulcerative colitis (UC).
- Nearly 37% experienced an adverse outcome, with the most common complication being infection (20.21%).
- On univariate analysis, higher rates of adverse postoperative outcomes were seen with increasing age ($p < 0.001$), with nearly 50% of those ≥80 years of age having an adverse outcome.
- Having CD as compared to UC (OR 1.41; 95% CI 1.29-1.53) was associated with a higher proportion of major surgical complications on univariable analysis.
- Patients who underwent an emergency surgery had a higher likelihood of postoperative complications (66.86%; $p < 0.001$).
- On multivariable analysis, preoperative albumin ≤3 (aOR 1.99; 95%CI 1.69-2.33), the presence of two or more comorbidities (aOR, 1.50; 95%CI 1.27-1.76), partially dependent functional status (aOR, 1.72; 95%CI 1.28-2.32) or totally dependent functional status (aOR, 7.28; 95%CI 3.14-21.20) as compared to being independent, and emergency surgery (aOR, 1.70; 95%CI 1.36-2.11) significantly increased the odds of an adverse outcome.
- Regarding preoperative sepsis, we found that the odds of having adverse postoperative outcome increased by two-fold when present (aOR 2.18; 95% CI 1.78-2.67).
- Among patients with preoperative malnourishment, the odds of having an adverse postoperative outcome increased by 23% (aOR 1.23; 95% CI 1.03-1.48).

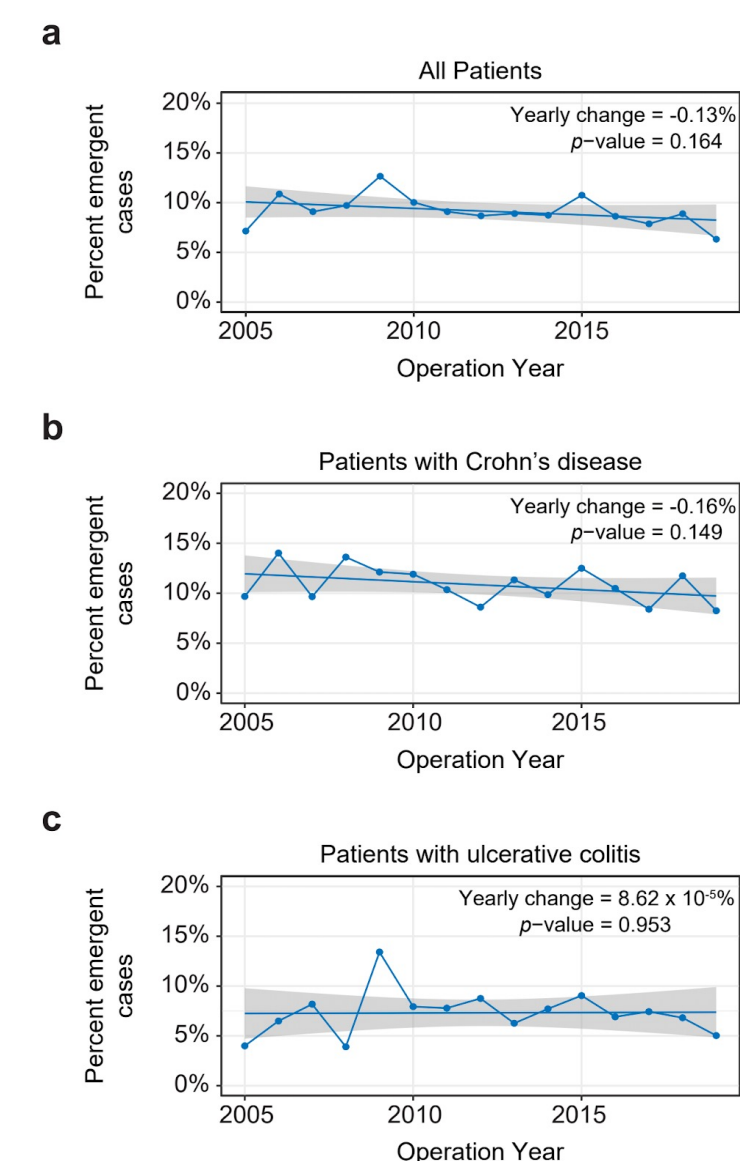
Table 1 – Multivariable Analysis Evaluating Preoperative Risk Factors Associated with Adverse Postoperative Outcomes among Older Adults Undergoing IBD-Related Bowel Resection: 2005-2019

Characteristic	Adjusted OR ^c (95% CI ^d)
Age (years)	
60-70	Ref
70-80	1.01 (0.89-1.14)
≥80	1.02 (0.81-1.29)
Sex	
Male	Ref
Female	1.03 (0.92-1.15)
Race	
Asian/Hawaiian	Ref
Non-Hispanic Black	1.14 (0.66-2.01)
Non-Hispanic White	1.19 (0.73-2.00)
Other	1.56 (0.58-4.13)
IBD	
UC ^e	Ref
CD ^f	1.22 (1.09-1.36)
Preoperative Serum Albumin	
0-3	1.99 (1.69-2.33)
3-3.5	Ref
3.5-10	0.69 (0.60-0.80)
BMI^g	
0-18.5	0.81 (0.63-1.05)
18.5-25	Ref
25-30	1.03 (0.90-1.17)
30+	1.20 (1.04-1.40)
Current Smoker^h	
No	Ref
Yes	0.90 (0.76-1.07)
Comorbiditiesⁱ	
0-1	Ref
1-2	1.15 (1.02-1.30)
≥2	1.50 (1.27-1.76)
Functional Health Status	
Independent	Ref
Partially Dependent	1.72 (1.28-2.32)
Totally Dependent	7.28 (3.14-21.20)
Malnourishment^j	
No	Ref
Yes	1.23 (1.03-1.48)
Sepsis within 48 hours prior to Surgery	
No	Ref
Yes	2.18 (1.78-2.67)
Emergency Case	
No	Ref
Yes	1.70 (1.36-2.11)

^aAny of the following: Death, hospital readmission, unplanned reoperation, infection, Postoperative Clostridium Difficile (C.diff) Colitis, sepsis, wound disruption, thromboembolic event, cardiac event, pulmonary complication, renal complication, Transfusion Intra/Postop (RBC within the First 72 Hrs of Surgery Start Time);

^bInflammatory Bowel Disease; ^cOdds Ratio; ^dConfidence Interval; ^eUlcerative Colitis; ^fCrohn's Disease; ^gBody Mass Index; ^hCurrent smoker within one year; ⁱHypertension Requiring Medication + history of severe COPD + ascites within 30 days prior to surgery + CHF in 30 days before surgery + Diabetes Mellitus Requiring Therapy with Non-Insulin Agents or Insulin + CKD + disseminated cancer; ^j>10% Loss of Body Weight in the 6 Months Prior to Surgery

Figure 1 - Emergency Surgery Trends from 2005-2015 according to ACS-NSQIP stratified by IBD subtype



- From 2005 to 2015, there was no decrease in the number of emergent surgical cases among older adults

DISCUSSION

- Overall, 37% of older adults with IBD experienced an adverse outcome as a result of IBD-related surgery.
- Limited functional health status, low preoperative serum albumin levels, and those undergoing emergent surgery were associated with a significantly higher risk.
- This is particularly important as the number of older adults with IBD is increasing, with a persisting number of emergency cases over time.
- Given the high rate of surgery in this population, future research should focus on preoperative rehabilitation, nutritional optimization, and timely surgery to improve outcomes.

SELECT REFERENCES

- Nguyen GC, Bernstein CN, Benchimol EI. Risk of Surgery and Mortality in Elderly-onset Inflammatory Bowel Disease: A Population-based Cohort Study. *Inflamm Bowel Dis*. 2017;23(2):218-223. doi:10.1097/MIB.0000000000000993
- Bollegala N, Jackson TD, Nguyen GC. Increased Postoperative Mortality and Complications Among Elderly Patients With Inflammatory Bowel Diseases: An Analysis of the National Surgical Quality Improvement Program Cohort. *Clin Gastroenterol Hepatol*. 2016;14(9):1274-1281. doi:10.1016/j.cgh.2015.11.012