

Surgical Approach to Complicated Diverticulitis with Colostomy Creation Influences Reversal Rates and Postoperative Outcomes

A Retrospective Longitudinal Analysis

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01 BACKGROUND

Colostomy creation following colon resection for complicated diverticulitis is often intended as a **temporary measure**, but reversal rates remain low. Prior studies report that only **44–56%** of patients ultimately undergo colostomy reversal, and **fewer than one-third** are reversed within one year¹.

Comparative data on outcomes of **open versus laparoscopic** index resection and subsequent colostomy reversal are limited.

Objective: To evaluate the impact of index surgical approach (open vs. laparoscopic) on colostomy reversal rates and perioperative outcomes in patients with complicated diverticulitis.

¹Salem & Flum, *Dis Colon Rectum* 2005; Resio et al., *JAMA Surg* 2019; Hallam et al., *Ann R Coll Surg* 2018.

02 METHODS

- Design:** Retrospective enterprise-wide review of adult patients (18–89 yrs) undergoing colon resection with colostomy creation for complicated diverticulitis
- Period:** January 2022 – March 2025
- Stratification:** Index surgical approach — open vs. laparoscopic
- Primary outcome:** Rate of colostomy reversal
- Secondary outcomes:** Predictors of reversal within one year; perioperative complications at index and reversal
- Statistics:** Wilcoxon rank sum, chi-square, binomial logistic regression

03 STUDY POPULATION

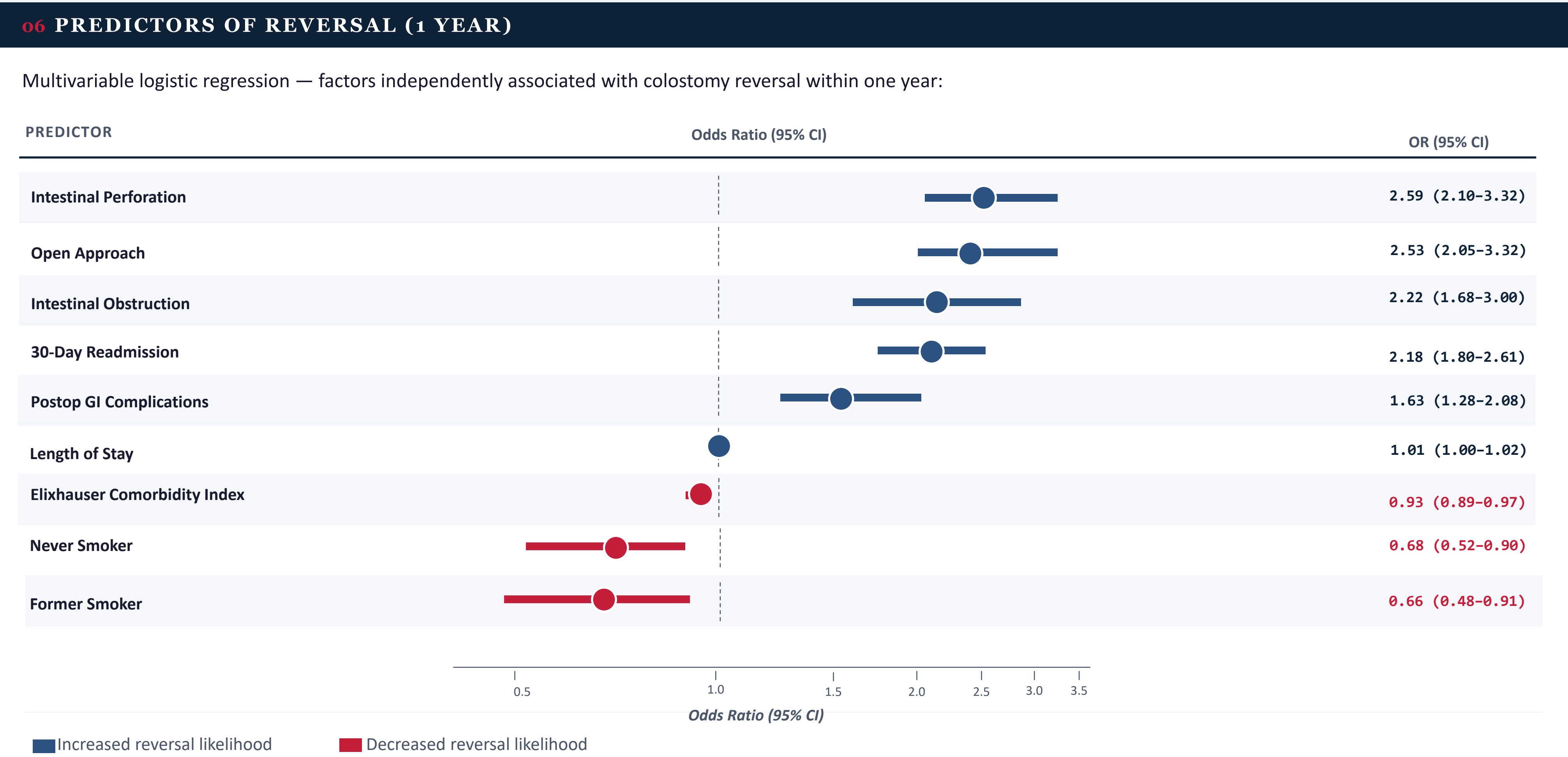
11,426 TOTAL PATIENTS	604 REVERSALS
6,126 OPEN APPROACH	5,300 LAPAROSCOPIC
OPEN APPROACH Reversed: 434 (7.2%)	LAPAROSCOPIC Reversed: 170 (3.0%)

Characteristic	Open (n=6,126)	Lap (n=5,300)
Age in years, mean (SD)	63.0 (14.8)	61.2 (13.4)
Female, n (%)	3,134 (51%)	2,930 (55%)
White race, n (%)	4,408 (72%)	3,976 (75%)
Hispanic ethnicity, n (%)	999 (16%)	872 (16%)
Private insurance, n (%)	1,666 (29%)	2,019 (42%)
Medicare, n (%)	3,224 (55%)	2,325 (49%)
BMI, median (IQR)	27 (23–32)	28 (24–33)
Elixhauser Comorbidity Index, median (IQR)	3 (2–5)	2 (1–2)
Current smoker status, n (%)	713 (17%)	432 (12%)

05 RESULTS — REVERSAL RATES

Colostomy reversal was performed in **604** of 11,426 patients (5.3% overall). The rate was **significantly higher** after open index resection.

Outcome	Open	Laparoscopic	p-value
Reversal rate	7.2%	3.0%	<0.001
Reversals (n)	434	170	—



07 REVERSAL PERIOPERATIVE OUTCOMES

Among 604 patients who underwent reversal, laparoscopic approach yielded improved metrics:

Outcome	Open	Laparoscopic	p-value
Median LOS (days)	6	4	<0.001
Transfusion rate	37%	21%	<0.001
Sepsis	Higher	Lower	<0.001
Surgical site infection	Higher	Lower	0.015



08 KEY FINDINGS

- Open index resection → **2.5× higher odds** of reversal (OR 2.53, 95% CI 2.05–3.32)
- Laparoscopic reversal → **shorter LOS** (4 vs 6 days), **fewer transfusions** (21% vs 37%), lower complications
- Intestinal perforation (OR 2.59) and obstruction (OR 2.22) were strong **positive predictors** of reversal
- Smoking history and higher comorbidity **reduced** reversal likelihood (OR 0.66–0.68)

08 CLINICAL IMPLICATIONS

- Preoperative counseling should address the overall reversal rate (5.3%) regardless of approach
- Index approach may influence subsequent reversal likelihood when reversal is anticipated
- Laparoscopic techniques at reversal should be favored when feasible given superior perioperative outcomes
- Comorbidity optimization may improve reversal candidacy

09 LIMITATIONS

- Retrospective design; subject to selection bias and unmeasured confounders
- Enterprise database may lack granularity on indication for index surgery and surgeon intent regarding ostomy temporariness
- The higher reversal rate after open resection may reflect unmeasured postoperative factors such as increased follow-up frequency, stoma-related complications prompting earlier surgical re-evaluation, or greater case complexity driving patient motivation for reversal; further research with prospective follow-up data is needed to clarify this relationship
- Reversal timing limited to one-year follow-up window; longer follow-up may capture additional reversals
- Limited to a single hospital system

10 CONCLUSIONS

Open colon resection for complicated diverticulitis was associated with **higher likelihood of subsequent colostomy reversal** within one year. However, **laparoscopic reversal** was associated with **improved perioperative outcomes**, including shorter hospitalization and fewer complications.

These findings suggest important **tradeoffs between index operative approach and reversal outcomes** and should inform patient selection and surgical decision-making. Further prospective studies are needed to elucidate the mechanisms driving the association between index approach and reversal likelihood.