Right-sided Colectomies for Diverticulitis Have Worse Outcomes Compared to Left-Sided Colectomies for Diverticulitis: An ACS NSQIP analysis of Predictors and Outcomes

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Introduction

- Right- and left-sided diverticulitis have **similar clinical presentations**
- Right-sided diverticulitis tends to affect younger patients, usually of Asian heritage
- There are **limited and conflicting data on the surgical outcomes** following resection for right-sided compared to left-sided diverticulitis.

Purpose

- The aim of this study was to **compare short-term outcomes of colectomies for right- and left-sided diverticulitis.**

Methods

- After institutional review board approval, **all cases of right- and left-sided colectomy for diverticulitis** were identified from the American College of Surgeons National Surgical Quality Improvement Program (**NSQIP**) database from **2005-2015**
- **Patients with diverticulitis were identified based on ICD-9 diagnostic codes** (ICD-9 562.11, 562.13)
- Right- and left-sided colectomy were identified by **primary procedure CPT codes**
- **Demographics, comorbidities, and postoperative outcomes were identified and compared**
- Predictors of the pre-defined outcomes were analyzed by **multivariate regression**

Results

Table 1. Patient Characteristics (50,288 patients)

Characteristic N (%) or Mean (SD)	Right-sided colectomy (n=710)	Left-sided colectomy (n=49,878)	p- value
Age	55.98 (14.68)	58.4 5 (13.07)	<0.01
Race			
Asian	26 (3.66)	416 (0.85)	<0.01
BMI			<0.01
< 18	24 (3.38)	1,210 (2.46)	
18.0 - 24.9	216 (30.42)	11,340 (23.08)	
25 - 29.9	236 (33.24)	17,173 (34.94)	
30.0 - 34.9	153 (21.55)	11,321 (23.04)	
>35.0	81 (11.41)	8,100 (16.48)	
Smoker	176 (24.79)	10,632 (21.63)	0.04
CHF	10 (1.41)	333 (0.68)	0.02
Bleeding disorder	46 (6.48)	1860 (3.78)	<0.01
Preoperative blood transfusion	23 (3.24)	298 (0.81)	<0.01
Emergency surgery	168 (23.66)	7654 (15.57)	<0.01
Laparoscopy	356 (50.14)	26,837 (54.61)	0.02
Preoperative Sepsis			<0.05
None	590 (83.10)	41,999 (85.46)	
SIRS	42 (5.92)	2038 (4.15)	
Sepsis	73 (10.28)	4483 (9.12)	
Septic Shock	3 (0.42)	525 (1.07)	
Stoma	4 (0.56)	10,515 (21.40)	<0.01

Results

Table 2. 30-day Post-operative Outcomes

Outcome N (%) or Mean (SD)	Right-sided colectomy (n=710)	Left-sided colectomy (n=49,878)	p- value
SSI			
Superficial	48 (6.76)	3391 (6.90)	0.88
Deep	9 (1.27)	641 (1.30)	0.93
Organ/Space	41 (5.77)	2062 (4.20)	0.04
Sepsis	61 (8.59)	3586 (7.30)	0.19
Bleeding/Transfusion	47 (6.62)	2273 (4.63)	0.01
30-Day Major Morbidity	166 (23.38)	10,157 (20.67)	0.07
30-Day Mortality	13 (1.83)	624 (1.27)	0.19
Reoperation	51 (7.18)	2354 (4.79)	<0.01
Readmission	48 (11.03)	2733 (8.37)	<0.05
Length of stay (days)	8.5 (8.7)	7.4 (7.46)	<0.01

Table 3. Colectomy-specific 30-day Post-op Outcomes

Outcome N (%)	Right-sided colectomy (n=214)	Left-sided colectomy (n=15,085)	p- value
Anastomotic Leak	12 (9.81)	438 (2.90)	<0.01
Management of Leak			<0.01
Reoperation	6 (2.34)	245 (1.62)	
Percutaneous drain	5 (2.34)	95 (0.63)	
Non-operative	1 (0.47)	61 (0.40)	
No intervention	0	37 (0.25)	
Unknown	3 (1.40)	55 (0.36)	
Postoperative Ileus	36 (16.82)	1798(11.92)	0.07

Table 4. Multivariate analysis for right-sided colectomy*

	OR	95% CI
Anastomotic leak	2.04	1.13-3.68
Major Morbidity	1.31	1.06-1.63

*After controlling for emergency surgery, ASA, immunosuppression, and sepsis amongst other confounders

- **Stomas were protective against anastomotic leak** (OR 0.38, 95% CI 0.26- 0.55) for both right- and left-sided colectomy
- **Emergency surgery** was also a **predictor for major morbidity** (OR 1.42, 95%CI 1.53-2.66) for both right and left-sided colectomies.
- **Type of colectomy** (right vs. left-sided) **was not a predictor of mortality**

Conclusions

- **Re-operation and readmission rates were higher with right-sided colectomy**
- Even after controlling for emergency surgery, **right-sided colectomy** was still an **independent risk factor for anastomotic leak, length of stay and major morbidity.**
- **Stomas were protective** against anastomotic leak, but **very few cases of right-sided diverticulitis were diverted** with an ileostomy.
- **Further research** required to determine whether morbidity associated with **right-sided colectomies could be reduced with more frequent use of diverting stomas.**