Minimally Invasive Surgery for Diverticulitis: A Focus on Splenic Flexure Mobilization in Sigmoid Colectomy

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INTRODUCTION

- Patients with complicated diverticular disease can benefit from sigmoidectomy
- Creating a tension-free anastomosis is crucial to any colectomy procedure
  - Splenic flexure mobilization (SFM) is selectively performed
- SFM is technically challenging and may be associated with increased morbidity

OBJECTIVES

- Evaluate the preoperative and intraoperative factors associated with SFM for minimally-invasive sigmoidectomy for diverticular disease
- Compare postoperative outcomes between patients that underwent SFM versus those that did not

METHODS

- Retrospective cohort analysis
- Patients that underwent sigmoid resection for diverticulitis between 2019-2022
  - Conventional laparoscopic, single-incision laparoscopic, and robotic cases were included
  - Patients that underwent low anterior resection or left colectomy were excluded

RESULTS

Table 1: Intraoperative Characteristics and Concomitant Procedures

	SPLENIC FLEXURE MOBILIZATION (%) (N=27)	NO SPLENIC FLEXURE MOBILIZATON (%) (N=90)	p-VALUE
Approach			0.885
Laparoscopic	14.8%	15.6%	
Single-Incision Laparoscopy	44.4%	48.9%	
Robotic	40.7%	35.6%	
OR Time (mins), mean ± SD	241.7 ± 76.4	199.2 ± 75.7	0.009*
Conversion to Open	14.8%	3.3%	0.049*
Indication: Abscess	55.6%	31.5%	0.023*
Indication: Fistula	59.3%	17.8%	<0.001*
Indication: Stricture or Obstruction	3.7%	3.4%	0.934
Complicated Diverticulitis	81.5%	42.2%	<0.001*
Partial colectomy with ostomy	3.7%	4.4%	0.867
Concomitant procedures			
Extensive Lysis of Adhesions	29.6%	10.0%	0.025*
Ureteral Stent	7.4%	6.7%	>0.999
Enterorrhaphy	7.4%	1.1%	0.133
Small Bowel Resection	11.1%	3.3%	0.135
Fistula Takedown	48.1%	16.7%	0.002*
Bladder Repair	11.1%	7.8%	0.695
Ureteral Repair / Reconstruction	7.4%	3.3%	0.326
GYN Procedure	7.4%	3.3%	0.326
Splenectomy	0%	0%	-
Intraop Bleeding Requiring Transfusion	0%	0%	-
Estimated Blood Loss (EBL) mean ± SD	131.3 ± 177.5	53.5 ± 73.5	0.028*

Table 2: Postoperative Outcomes

	SPLENIC FLEXURE MOBILIZATION (%) (N=27)	NO SPLENIC FLEXURE MOBILIZATON (%) (N=90)	p-VALUE
Time to Return of Bowel Function (days) mean ± SD	1.8 ± 0.9	2.2 ± 2.6	0.978
Length of Stay (LOS) (days) mean ± SD	4.2 ± 2.8	3.6 ± 4.3	0.041*
Prolonged Length of Stay	33.3%	14.4%	0.028*
Anastomotic Leak	0%	1.1%	>0.999

There were no significant differences in other postoperative complications including infection, ileus, urinary retention, urinary tract infection, bleeding requiring transfusion, return to OR, or 30-day readmission.

Table 3: Predictors of Splenic Flexure Mobilization

	OR	95% CI	p-value
Age	1.022	0.978-1.067	0.334
Gender			
Male	Reference		
Female	0.488	0.169-1.411	0.185
BMI	0.948	0.855-1.052	0.315
Approach			
Laparoscopic	0.960	0.219-4.200	0.957
Robotic	1.158	0.401-3.344	0.786
Lap single incision	Reference		
Abscess	1.862	0.690-5.024	0.220
Fistula	5.886	2.142-16.173	<0.001*
Stricture	1.506	0.101-22.458	0.766

DISCUSSION

- Patients that underwent SFM were more likely to present with complicated diverticulitis (abscess, fistula, or stricture)
- The proportion of patients that underwent SFM did not vary by minimally invasive approach
- Patients that underwent SFM experienced longer operative time, greater EBL, and were more likely to be converted to open
  - Also had a greater average LOS and were more likely to experience a prolonged LOS
  - No significant differences in complications including anastomotic leak
- Presence of fistula is a significant independent predictor of SFM being performed
  - Minimally invasive approach was not predictive

Patients who undergo minimally invasive sigmoidectomy for diverticulitis are more likely to require SFM if their disease is complicated. SFM does not impact 30-day morbidity or mortality.