

Clinical Science

Surgeon specialization impacts the management but not outcomes of acute complicated diverticulitis



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Hinchey

Abstract

BACKGROUND: The management and outcomes of patients receiving nonelective surgical treatment of acute complicated diverticulitis by surgeon specialization have received little attention.

METHODS: A retrospective review was performed of consecutive patients with acute complicated diverticulitis who underwent surgery from 2006 to 2013. Patients were analyzed based on surgeon specialty: general surgery (GS) or colorectal surgery (CRS).

RESULTS: One hundred fifteen patients met criteria for study; 62 patients in the CRS and 53 in the GS group. GS were more likely to perform Hartmann's procedures or primary anastomosis and less likely to perform primary anastomosis with diverting ileostomy than CRS. There were no differences between groups for any outcome measures on univariate analysis. CRS patients had shorter operative time ($P = .001$) and length of stay ($P \leq .001$) for stoma reversal procedures. Surgeon specialization was not associated with morbidity, readmission, or length of stay on multivariate analysis.

CONCLUSIONS: Although surgical management differed significantly between CRS and GS, comparable outcomes were observed at the index hospital admission.

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Diverticula are present in 10% of the population more than 45 years old and the prevalence increases with age.¹ The lifetime prevalence of acute diverticulitis is approximately 25% in patients with diverticulosis.² Since the 1970s, complicated diverticulitis has been categorized based on the Hinchey classification.³ In Hinchey's era, patients requiring nonelective surgery for complicated diverticulitis were typically recommended a Hartmann's procedure (HP). More recently, guidelines suggest sigmoid resection with primary anastomosis and diverting ileostomy

(PA-D) may be the preferred management in Hinchey class III or IV, although the supporting data remain limited.⁴ The main advantage of such an approach is avoiding the significant morbidity associated with an HP reversal. Despite the attractiveness of this approach, recent population-based data indicate that the rate of HP in the emergent setting remains unchanged.⁵ The choice of procedure in these patients may be driven in part by surgeon specialty.

The rate of fellowship pursuit among US general surgery residency graduates has increased to 77%.⁶ Theoretical benefits to specialization include an increased volume and comfort level within a focused range of disease processes and procedures. In colorectal surgery, the benefit of specialization has been investigated across a variety of settings including performance of colonoscopy and adequacy of oncologic resection.⁷⁻⁹ Biondo et al¹⁰ investigated a large cohort undergoing emergency colorectal surgery in Spain over a 14-year period and found that patients treated by colorectal surgery (CRS) had lower rates of morbidity, mortality, and anastomotic leak compared with those treated by general surgery (GS). This study included a broad spectrum of disease processes, potentially limiting its conclusions. A more recent US study demonstrated that patients with acute complicated diverticulitis treated by CRS had lower rates of HP, reduced length of stay (LOS) and time to stoma reversal, and fewer postoperative complications.¹¹ Chief critiques of this study were the differences in presentation and disease severity between groups and lack of a risk-adjusted analysis to correct for these variables.

Acute complicated diverticulitis potentially requires urgent or emergent surgery which is a complicating factor as the availability of specialized surgeons may be limited in many centers. The differences in management and outcomes between GS and CRS in the surgical treatment of acute complicated diverticulitis have received limited attention. Our initial hypothesis was that improved outcomes could be obtained by CRS in the treatment of acute complicated diverticulitis because of their organ-specific specialization.

Methods

A retrospective chart review was performed at 2 university-affiliated hospitals (Spectrum Health Butterworth Campus and Blodgett Campus) from July 1, 2006 to June 30, 2013. Institutional review board approval was obtained including a waiver of informed consent. Consecutive patients with acute complicated diverticulitis who underwent nonelective surgical treatment were identified. Acute complicated diverticulitis was defined as perforation, abscess, or obstruction and included patients who failed nonoperative management if surgery was performed during the initial hospital admission. The institutions used for

study have 24/7 attending coverage by both GS and CRS and are affiliated with both a general surgery residency program (6 categorical residents per year) and a colon and rectal surgery fellowship program (2 fellows per year).

Patients in the study presented for treatment through the emergency department of 1 of the 2 hospitals. Initial workup was performed by the emergency department physician and universally consisted of abdominal and pelvic computed tomography. Once involvement of a surgical service was deemed necessary, referrals were then made to the on-call physician. Referrals are primarily driven by location; the GS service being most commonly used at the Butterworth Campus and CRS service at the Blodgett Campus. An exception to this included patients with pre-existing provider relationships driving referral to 1 of the 2 services.

Patients with clear evidence of perforation, peritonitis on physical examination, or hemodynamic instability were treated with intravenous antibiotics, aggressive fluid resuscitation, and taken expediently to the operating room. Hemodynamically stable patients with pelvic abscesses were treated with intravenous antibiotics and percutaneous drainage when feasible. Lack of clinical improvement with percutaneous drainage or colonic obstruction was considered indications for operative intervention. The decision for operative intervention was made by the attending surgeon in all cases. Surgical trainees involved in cases ranged from postgraduate year 3 to 6. Per hospital policy, presence of an attending physician was necessary to begin each case and they remained scrubbed for all critical portions of the operation. The extent of involvement of the resident or fellow was made at the discretion of the attending surgeon and was not otherwise quantified.

Demographics, disease characteristics, surgical treatment, and outcomes were collected for each patient from both inpatient and outpatient clinic records. Classification of complicated diverticulitis was performed using the Hinchey classification.³ The comorbid state of subjects was quantified using the Charlson Comorbidity Index (CCI).¹² Presence of septic shock was identified by greater than 2 systolic blood pressures less than 90 mm Hg after admission or need for vasopressors. Morbidity within 90 days of operation was classified according to the Clavien-Dindo model.¹³ Surgical site infections (SSIs) were further divided into "incisional" and "organ space" categories. Stoma reversal was tracked out to a minimum of 20 months from the index operation.

Patients were divided into groups based on surgeon training; GS vs CRS. There were 6 CRS, defined according to fellowship training and certification by the American Board of Colon and Rectal Surgery. The median time in practice for the CRS group was 11 years (range, 9 to 27). There were 4 of 18 GS with fellowship training in the following areas: surgical critical care, surgical oncology, and surgical endoscopy. The remaining 14 GS were board certified in GS with no additional fellowship training. The

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