

New Approach in Non-Surgical Management of Perforated Diverticulitis

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Abstract

The management of acute diverticulitis with perforation is often immediate surgical intervention. In this case we discuss the management of perforated sigmoid diverticulitis and abscess without surgical intervention. The patient is a 77-year-old male with a history of diverticulosis and recurrent acute diverticulitis that developed an acute sigmoid diverticulitis with perforation. While deferring to patient's choice and decision, he has been managed conservatively with serial interval imaging studies and antibiotics both as outpatient and inpatient, with satisfactory outcome. He still has episodic acute presentations, but has remained fairly stable over a three and half year period.

This case report highlights the successful non-surgical approach to management of perforated sigmoid diverticulitis. While the patient's outcome was favorable and he is pleased with the resolution of his illness, this case demonstrates the pros and cons of non-surgical management of perforated diverticulitis. It also emphasizes the role of the patient's autonomy and decision-making in their health care.

Keywords: Perforation; Surgical Intervention; Acute Sigmoid Diverticulitis

Introduction

Diverticular disease of the colon (asymptomatic diverticulosis) has a prevalent rate of 5% by the age of 40 and rises to 65% in people 85 years or older and the lifetime risk of developing acute diverticulitis or other complications in this population is 15 - 20% [1]. Diverticular disease without inflammation is mostly asymptomatic and diagnosis only made at screening colonoscopy or as incidental finding from an imaging study. However, it may present with abdominal pain or change in bowel habit. Its etiology is intricately associated with diet and lifestyle and the observed increases in prevalence most likely related to earlier and overall increase in the use of colonoscopy as a surveillance tool [2].

The pathophysiology of the transition from asymptomatic diverticular disease to acute diverticulitis is related to fecal obstruction of a diverticulum or diverticula, which elicits a mucosal inflammatory response characterized by congestion, trauma and ischemia (Barbaro, *et al.* 2022). Diverticulitis, the inflammation of diverticula, is said to be the most common non-cancerous gastrointestinal pathology of the colon in the western world with a great economic burden due to recurrence and multiple hospital admissions [3]. Normally presenting

with severe acute abdominal pain, which may be associated with other constitutional symptoms, initial diagnosis is by imaging studies (Computerized Tomography is very sensitive and the modality of choice) to localize disease and assess severity. Complications of diverticulitis can include colon perforation, abscess or fistula formations and even bowel obstructions. It presents as a surgical emergency when associated with peritonitis, but there is room for non-surgical management of perforated diverticulitis, if patients present without peritonitis [4].

In a meta-analysis by Ceresoli, *et al.* [5], a much less invasive procedure like laparoscopic lavage, was found to correlate well with reduced morbidity, but no long-term difference in mortality was observed when compared with open colectomy with Hartmann's procedure. There appears to be an ongoing shift in the overall management of perforated diverticulitis, with the less invasive or minimally invasive, robotic assisted surgical approaches gaining more mainstream acceptance. A recent review suggests that many clinicians are now opting for outpatient treatments, with or without the use of antibiotics [6].

Case Presentation

This is a review of a 77-year-old Caucasian male with established diagnoses of hypertension, paroxysmal atrial fibrillation, chronic congestive heart failure, coronary artery disease, colonic diverticulosis (with recurrent bouts of acute diverticulitis). Patient's multiple and recurrent acute flares of diverticulitis have been managed conservatively with interval imaging studies and courses of antibiotics, which usually resolve symptoms.

On his initial presentation, the patient came to his Primary Care Physician (PCP), reporting severe abdominal pain. He was examined and found to have diffuse tenderness, with guarding and abdominal distention. Patient was immediately started on Metronidazole 500 mg three times a day, and a CT scan of the Abdomen was ordered. CT scan was negative for any acute processes. Following a ten-day course of antibiotics, his symptoms remained quiescent for the next 14 months.

He re-presented with similar symptoms again as an outpatient and follow up abdominal CT revealed minimal acute sigmoid diverticulitis without perforation, free fluid or abscess formation. He was treated with a 10-day course of Metronidazole 500 mg every 8 hours, combined with Levofloxacin 750 mg daily with satisfactory resolution.

His next office visit with acute left lower quadrant (LLQ) abdominal pain was also 14 months after the last encounter. This time, CT of the abdomen demonstrated an acute sigmoid diverticulitis with perforation and pneumoperitoneum. After general surgical assessment, a nonsurgical approach was decided on and patient was placed on a 14-day course of Ciprofloxacin and Metronidazole. Only 10 days later, he was re-admitted with persisting abdominal pain. Repeat CT scan re-demonstrated sequela of sigmoid diverticulitis with contained perforation along the left side of the sigmoid colon measuring 5.8 x 3.6 x 3.3 cm. A 2-day interval rescanning while still on admission then revealed a LLQ peridiverticular gas and abscess collection (Figure 1). Patient was offered, but ultimately refused to have elective sigmoid colon resection by the attending General Surgeon. However, a less invasive CT-guided percutaneous drainage (PCD) was performed, with return of 20 ml of purulent fluid. Culture from this fluid was negative for bacterial organisms but showed some candida growth. The patient's laboratory tests at the hospital demonstrated a leukocytosis with normal renal function and electrolytes as seen in table 1. He was treated with IV Ertapenem 1gm daily during this 10-day admission and discharged home when stable, on oral antibiotics and the percutaneous drain *in-situ*.

16 days after his discharge, the patient was readmitted to the hospital, this time for generalized weakness and Transient Ischemic Attack (TIA). Incidental leukocytosis was noted, with his White Blood Cells (WBCs) as recorded in table 2, so CT Abdomen was repeated because of his established history of recurrent diverticulitis. This revealed multiple loculated collections/abscesses in the sigmoid region

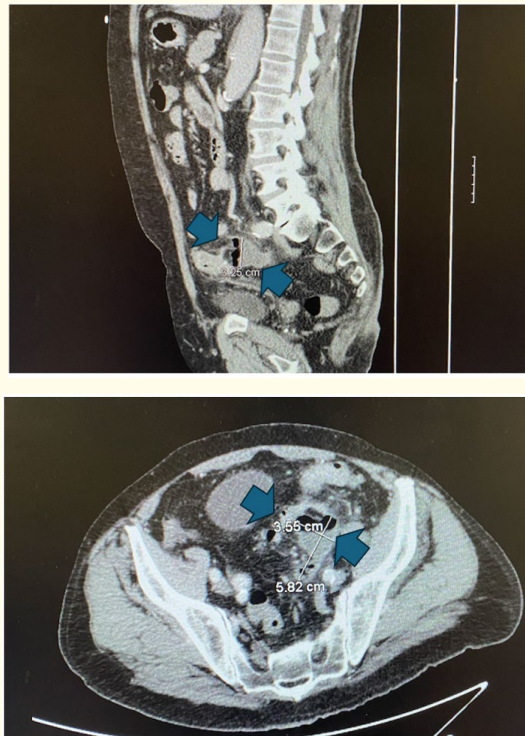


Figure 1: Computed Tomography (CT) scan showing redemonstrated sequela of sigmoid colon diverticulitis with contained perforation along the left side of the colon. Diverticulitis indicated by blue arrows.

Results (Normal Range)	Day 1	Day 2	Day 3
WBC (White Blood Cell) K/ul (4.0-10.0)	20.9	14.8	11.5
Hb (Hemoglobin) (12.0-16.0)	14.3	13.1	13.9
Hct (Hematocrit) (39-55%)	42.4	38.7	41.9
Platelet K/uL (150-400)	419	315	310

Table 1: Complete blood count (CBC) results during the patient's hospital admission at a tertiary care center with conservative management.

associated with the previously demonstrated perforated diverticulitis. The drain previously placed had retracted, as seen in figure 2. This drain was then removed and patient started on Fluconazole (based on previous culture of fluid from drain) and IV Ertapenem. He was discharged on day 3 of admission with oral amoxicillin-clavulanate 875 - 125 mg twice a day and fluconazole 100 mg orally once daily for 14 days. He was scheduled to follow up with surgery, gastroenterology and infectious disease as an outpatient.



Figure 2: CT scan shows improved inflammation and resolved abscess post conservative management treatment. Resolved area is indicated by blue arrows.

Results (Normal range)	Day 1	Day 2	Day 3
Na ⁺ (Sodium) mmol/L (136-145)	142	143	144
K ⁺ (Potassium) mmol/L (3.5-5.1)	4.5	4.0	4.0
Cl ⁻ (Chloride) mmol/L (98-107)	116	113	115
Creatinine mg/dL (0.70-1.3)	0.75	0.71	0.68
EGFR (Estimated Glomerular Filtration Rate)	94	95	96
Calcium mg/dL (8.4-10.2)	8.6	8.5	8.9

Table 2: Comprehensive metabolic panel (CMP) results during the patient’s hospital admission at a tertiary care center with conservative management.

Two months after this last hospital admission, patient saw his PCP at the outpatient clinic with new onset abdominal pain, consistent with his usual acute presentations. He was given 4 doses of Ceftriaxone 1 gram IV daily. His symptoms eventually improved and follow up was scheduled for the next two months. Within those two months, patient had another hospital admission and this time his CT scan was positive for diverticulosis without diverticulitis. This was his 4th hospital admission for acute symptoms. He was discharged home the following day and treated as an outpatient with a 3-day course of IM ceftriaxone. His next office visits following this, were 5 months and 2.5 months apart and he was treated successfully with oral metronidazole and IM ceftriaxone for between 5 to 7 days.

Discussion

The patient in this study has remained fairly stable on conservative medical management for three and half years, albeit with recurrent acute diverticulitis flare-ups, some of which required inpatient management. With complicated, recurrent diverticulitis/abscesses, quality of life (QOL) issues become pertinent, as in this index study. The goal of managing complicated diverticulitis/diverticular abscess should be to improve patients’ QOL [7].

In a randomized clinical trial analyzed by Santos., *et al.* [8], the QOL outcomes after 2 years was compared between patients that underwent surgical resection vs those that had conservative medical treatment. A Gastrointestinal QOL Index (GIQOLI) was used for this comparison and revealed that at 1 year, 18% of the medical group eventually ended up with surgical resections. The mean GIQOLI was better in the surgical group at year 1, but parity was achieved between the two groups at year 2.

In a multicenter case-control study, Podda., *et al.* [9] identified risk factors for predicting non-surgical treatment failure, and these include CT scan Hinchey classification IIb, tobacco smoking and presence of air bubbles within the abscess.

If indeed at 2 years of treatment, there is no significant difference in QOL between surgical or conservative management of diverticular abscesses, then some protocol must be observed as to when to offer either mode of therapy to patients. Several guidelines are available in scientific literature, and while many are conflicting, almost all agree that a multi-disciplinary approach that includes the Surgeon, Interventional Radiology and Infectious Disease specialists must be standardized [10]. They posit that there is a progressive shift favoring non-surgical management, likely due to availability of more sensitive imaging modalities and better equipped ICU monitoring. However, abscess diameter cut-off remains at issue, with many investigators not agreeing on 3 cm, 4 cm or above 4 cm for offering surgical intervention.

The subject of this study made a personal decision not to undergo surgical treatment even after it was suggested at least a couple of times when he presented for hospital admissions. It has been three and a half years since he presented with his initial symptom and fifteen months since he had the sigmoid perforation. His first two bouts of acute diverticulitis were successfully treated as outpatient with oral antibiotics and had intervening asymptomatic periods of fourteen months each. However, since then he has had periods without symptoms varying from ten days to five months.

Patient's last CT abdomen in July 2024 again demonstrated the presence of diverticulosis with no diverticulitis.

Conclusion

This case study demonstrates that medical management can be a valuable option with successful outcomes in the overall treatment modalities available for treatment of complicated diverticulitis or abscesses. It also highlights the physician-patient partnership in allowing the latter play a significant decision-making role in their own health care. Patient is doing well and is happy with the outcome and resolution of perforated diverticulitis without surgical intervention.

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