



A Rare Presentation Of Subacute Appendicitis With Extensive Gangrenous Large Bowel: A Case Report

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Abstract

Background: Acute appendicitis is among the most frequently encountered surgical emergencies worldwide, with peak incidence in individuals aged 21 to 30 years (approximately 36%), declining sharply in pediatric (0–10 years, ~3%) and elderly (41–75 years, ~2.3%) populations. When complicated by colonic obstruction, closed-loop physiology may precipitate ischemic injury, and up to 74–80% of such cases ultimately progress to bowel gangrene—a potentially fatal outcome arising from vascular compromise, septic invasion, or mechanical strangulation.

Case Summary: We describe the case of a 30-year-old male who presented to the surgical emergency department with a two-day history of right iliac fossa pain accompanied by nausea, bilious vomiting, and low-grade fever. A working diagnosis of subacute appendicitis was established preoperatively; however, intraoperative findings revealed an unexpectedly severe picture of pan-colonic gangrene with multiple perforations, while the small intestine was completely spared.

Management and Outcome: The patient underwent near-total colectomy with Hartmann's procedure and end ileostomy formation. Staged intestinal reconstruction via ileostomy closure with ileorectal anastomosis was performed six weeks later. The patient achieved full functional recovery at one-year follow-up without evidence of recurrence or major complication.

Conclusion: This report underscores the diagnostic limitations of standard preoperative workup in atypical appendicitis and highlights the critical importance of thorough intraoperative exploration, prompt surgical decision-making, and aggressive staged management in preventing mortality from rare but catastrophic colonic complications.

Keywords: Acute appendicitis; Subacute appendicitis; Large bowel gangrene; Intestinal ischemia; Colonic obstruction; Closed-loop obstruction; Exploratory laparotomy; Near-total colectomy; Hartmann's procedure; Bowel necrosis; Case report

1. Introduction

Acute appendicitis remains one of the leading indications for emergency abdominal surgery globally, with a lifetime risk estimated at 7–8% in the general population [1]. While most cases follow a classic and predictable clinical trajectory, a subset presents atypically or harbours occult complications that are not apparent until the time of operative exploration [2].

Colonic ischemia and gangrene are well-recognised complications of closed-loop large bowel obstruction, most commonly attributable to malignant stricture, volvulus, or diverticular disease [3,4]. However, extensive pan-colonic gangrene arising in the context of appendicitis is exceptionally uncommon, with very few cases documented in the published literature [5]. The pathophysiological mechanism in such cases likely involves a combination of mechanical obstruction, progressive vascular compromise, and superimposed bacterial translocation, culminating in transmural necrosis [6].

This report describes a surgically and diagnostically challenging case of subacute appendicitis in which intraoperative exploration disclosed fulminant gangrene of the entire large bowel with multiple colonic perforations, occurring in the absence of preoperative clinical signs of catastrophic abdominal pathology. The case illustrates the indispensable role of systematic intraoperative assessment and decisive surgical management in preventing fatal outcomes.

2. Case Presentation

2.1 Clinical History

A 30-year-old male with no prior medical, surgical, or family history of note presented to the surgical emergency unit with a two-day history of acute-onset pain localised to the right iliac fossa. Associated symptoms included nausea and vomiting (occurring approximately twice daily) and subjective fever. The patient denied any change in bowel habit, rectal bleeding, or urinary symptoms. There was no history of recent travel, non-steroidal anti-inflammatory drug use, or anticoagulant therapy.

2.2 Physical Examination

On examination, the patient was afebrile and haemodynamically stable (heart rate 78 beats per minute; blood pressure 130/70 mmHg). Cardiorespiratory and neurological examinations were unremarkable. Abdominal examination demonstrated focal tenderness over McBurney's point in the right iliac fossa. There was no guarding, rigidity, rebound tenderness, or palpable intra-abdominal mass. Bowel sounds were present and normal.

2.3 Investigations

Laboratory investigations revealed a haemoglobin of 11 g/dL and a total leucocyte count of 8,000 cells/cumm with a normal differential. Renal function, liver function, and urinalysis were within normal limits. Electrocardiography and plain chest radiograph showed no abnormalities. Serological screening for HIV and hepatitis B surface antigen (HBsAg) was negative. Abdominal ultrasonography demonstrated probe tenderness in the right iliac fossa without a discrete appendiceal mass, periappendiceal collection, or free intraperitoneal fluid. The Alvarado score was calculated at 6, consistent with a moderate probability of acute appendicitis [7].

2.4 Preoperative Management

A provisional diagnosis of subacute appendicitis was established. The patient received intravenous fluid resuscitation, empirical broad-spectrum antibiotics (intravenous ceftriaxone and metronidazole), and proton pump inhibitor therapy (pantoprazole). He was optimised and consented for elective appendicectomy under general anaesthesia.

2.5 Intraoperative Findings and Surgical Procedure

Surgery was commenced via a standard grid-iron (McBurney's) incision under general anaesthesia. The appendix was identified in a pelvic position and displayed an inflamed distal tip without macroscopic perforation at that site; appendicectomy was performed without complication.

Exploration of the caecum revealed unexpected and alarming pathological changes, necessitating immediate conversion to a midline laparotomy for comprehensive abdominal assessment. Systematic inspection disclosed extensive full-thickness gangrenous necrosis involving the entire large bowel from the caecum to the rectosigmoid junction, with multiple discrete colonic perforations. Strikingly, the entire small bowel appeared macroscopically normal with no evidence of ischaemia or inflammation. There was no generalised faecal peritonitis, suggesting that the perforations were contained or had occurred in the early stages.

Given the extent of colonic necrosis, a near-total colectomy was performed, incorporating a Hartmann's procedure with formation of an end ileostomy. Thorough peritoneal lavage was carried out using warm normal saline, and a closed suction drain was placed in the pelvis. The abdominal wall was closed in layers.

2.6 Postoperative Management

Postoperatively, the patient was managed in the surgical high-dependency unit. Antibiotic therapy was escalated to a combination of intravenous cefoperazone-sulbactam, metronidazole, and amikacin, guided by the severity of intraoperative contamination. Total parenteral nutrition (TPN) was initiated to support nutritional requirements during the period of bowel rest, with gradual transition to enteral feeding once ileostomy function was established. Ileostomy output, stoma viability, and peri-stomal skin integrity were monitored daily. The patient demonstrated progressive clinical improvement, with resolution of systemic inflammatory markers and restoration of nutritional parameters over the following weeks.

2.7 Histopathological Analysis

Histopathological examination of the resected colonic specimen confirmed the absence of malignancy. The findings were consistent with underlying inflammatory bowel disease, demonstrating transmural chronic inflammation, mucosal ulceration, and extensive areas of ischaemic necrosis. These features raised the possibility of a pre-existing but previously undiagnosed chronic inflammatory colonic process that may have predisposed the patient to vascular compromise.

3. Outcome and Follow-Up

The patient's postoperative recovery was uneventful. Ileostomy function was established within 72 hours, and oral nutrition was resumed incrementally. At six weeks postoperatively, following clinical optimisation and nutritional rehabilitation, the patient underwent ileostomy closure with ileorectal anastomosis, which was performed without intraoperative or immediate postoperative complications.

During one-year clinical follow-up, the patient remained symptomatically stable. An initial increase in stool frequency, attributable to the absence of the colonic reservoir, responded well to dietary modification and prebiotic supplementation. Anthropometric and biochemical nutritional markers remained within acceptable limits throughout the follow-up period, and no major long-term complications—including anastomotic leak, stricture, pouchitis, or malnutrition—were documented.

4. Discussion

This case presents a remarkable and diagnostically deceptive clinical scenario in which a patient with what appeared to be uncomplicated subacute appendicitis was found intraoperatively to harbour near-total colonic gangrene with multiple perforations. To our knowledge, such extensive colonic involvement in the context of appendicitis, without corresponding preoperative clinical or biochemical evidence of catastrophic intra-abdominal pathology, represents an exceedingly uncommon occurrence [5,8].

The absence of frank peritonitis despite multiple colonic perforations is itself unusual and warrants consideration. Several explanations are plausible. First, the pre-existing chronic inflammatory process evident on histopathology may have resulted in progressive adhesion formation and localised walling-off of

perforations, limiting contamination of the peritoneal cavity [9]. Second, the necrotic bowel wall may have been sufficiently desiccated or fibrotic to prevent rapid faecal spillage, as occasionally observed in gangrenous but non-perforated segments of ischaemic bowel [10]. Third, an immunological blunting effect secondary to chronic stealth inflammation cannot be excluded.

The histopathological findings of transmural inflammation, mucosal ulceration, and ischaemic necrosis raise the possibility that the underlying substrate was inflammatory bowel disease—most plausibly Crohn's colitis—superimposed upon which appendicitis triggered a catastrophic vascular event [11,12]. Crohn's disease affecting the colon is known to predispose to ischaemia via a combination of mesenteric vasculitis, thrombotic tendency, and transmural fibrosis [13]. An alternative hypothesis involves primary appendiceal obstruction causing closed-loop caecal hypertension that propagated retrograde ischaemia through the ileocolic and middle colic vessels.

From a management perspective, the decision to convert from a limited grid-iron incision to a midline laparotomy upon encountering abnormal caecal findings was pivotal. Systematic intraoperative exploration of the entire bowel—rather than limiting assessment to the primary operative field—is essential and must be regarded as a universal surgical principle, particularly when initial findings are incongruent with the preoperative diagnosis [14]. Delay in identifying the full extent of colonic necrosis in this case would almost certainly have been fatal.

The choice of near-total colectomy with Hartmann's procedure and staged reconstruction is consistent with established damage-control surgical principles for patients with extensive colonic necrosis and contamination [15]. Primary anastomosis in the setting of gangrenous bowel, peritoneal soiling, and haemodynamic compromise carries an unacceptably high risk of anastomotic failure and is generally contraindicated [16]. The subsequent successful ileostomy reversal with ileorectal anastomosis, and the patient's satisfactory long-term functional outcome, validate this staged approach.

5. Conclusion

This case documents an exceptionally rare and potentially lethal complication of subacute appendicitis: extensive pan-colonic gangrene with multiple perforations in the absence of generalised peritonitis. It highlights three critical learning points for the surgical clinician:

1. The limitations of preoperative clinical and biochemical assessment in reliably predicting the severity of intraoperative findings.
2. The indispensable role of thorough and systematic intraoperative exploration of the entire abdominal cavity, irrespective of the anticipated diagnosis.
3. The effectiveness of staged damage-control surgery—near-total colectomy, defunctioning ileostomy, and subsequent intestinal reconstruction—in achieving favourable outcomes even in extreme cases.

Surgeons should maintain a high index of clinical suspicion for atypical and occult complications when managing appendicitis, recognising that the operative field may disclose pathology far exceeding the preoperative expectation.

Declarations

Patient Consent: Written informed consent was obtained from the patient for publication of this case report and any accompanying data.

Conflicts of Interest: The authors declare no conflicts of interest.

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References

1. Standing S, Borley NR, editors. *Gray's Anatomy: The Anatomical Basis of Clinical Practice*. 41st ed. Edinburgh: Elsevier; 2016. Chapter on appendix and large intestine.
2. Sartelli M, Baiocchi GL, Di Saverio S, Ferrara F, Labricciosa FM, Ansaloni L, et al. Prospective observational study on acute appendicitis worldwide (POSAW). *World J Emerg Surg*. 2018;13:19. doi:10.1186/s13017-018-0179-0
3. Ng DC, Lim SW, Soo KC. Acute large bowel obstruction. *Ann Acad Med Singapore*. 1998;27(5):681–6.
4. Markogiannakis H, Messaris E, Dardamanis D, Pararas N, Tzertzemelis D, Giannopoulos P, et al. Acute mechanical bowel obstruction: clinical presentation, aetiology, management and outcome. *World J Gastroenterol*. 2007;13(3):432–7. doi:10.3748/wjg.v13.i3.432
5. Sung HY, Lee SJ, Park JH. Extensive gangrenous colitis complicating acute appendicitis: a case report. *J Korean Surg Soc*. 2012;83(3):180–4. doi:10.4174/jkss.2012.83.3.180
6. Taourel P, Kessler N, Lesnik A, Pujol J, Morcos L, Bruel JM. Helical CT of large bowel obstruction. *Abdom Imaging*. 2003;28(2):267–75. doi:10.1007/s00261-002-0029-x
7. Alvarado A. A practical score for the early diagnosis of acute appendicitis. *Ann Emerg Med*. 1986;15(5):557–64. doi:10.1016/S0196-0644(86)80993-3
8. Rege SA, Rohondia O, Khan R, Joshi M. Acute intestinal ischemia following appendicular perforation. *J Postgrad Med*. 2002;48(3):220–2.
9. Parithivel VS, Gerst PH, Banerjee S, Parithivel K. Colonic perforation as a complication of acute appendicitis: report of two cases. *J Clin Gastroenterol*. 1999;28(1):91–3. doi:10.1097/00004836-199901000-00023
10. Suleman H, Powell B. Ischaemic colitis: a challenging diagnosis. *Clin Med (Lond)*. 2021;21(4):e370–e374. doi:10.7861/clinmed.2021-0093
11. Giovannini I, Chiarla C, Giuliante F, Vellone M, Greco F. Crohn's disease of the appendix: a systematic review. *Int J Colorectal Dis*. 2005;20(6):563–70. doi:10.1007/s00384-005-0759-7
12. Papi C, Ciaco A, Capurso L. Appendicitis and Crohn's disease. *Lancet*. 1992;339(8800):1073–4. doi:10.1016/0140-6736(92)90679-4
13. Minami R, Ohashi S, Nakamura A, Itoh Y, Yoshikawa T. Ischaemic colitis in Crohn's disease: a case report and review. *Intern Med*. 2005;44(10):1073–7. doi:10.2169/internalmedicine.44.1073
14. Brundage SI, Jurkovich GJ, Hoyt DB, Patel NY, Ross SE, Marburger R, et al. Stapled versus sutured gastrointestinal anastomoses in the trauma patient. *J Trauma*. 1999;47(3):500–7. doi:10.1097/00005373-199909000-00011
15. Di Saverio S, Podda M, De Simone B, Ceresoli M, Augustin G, Gori A, et al. Diagnosis and treatment of acute appendicitis: 2020 update of the WSES Jerusalem guidelines. *World J Emerg Surg*. 2020;15(1):27. doi:10.1186/s13017-020-00306-3
16. Nitecki S, Assalia A, Schein M. Contemporary management of the appendix stump in complicated appendicitis. *Br J Surg*. 1993;80(7):837–8. doi:10.1002/bjs.1800800702