EJCRIM
European Journal
of Case Reports
in Internal Medicine

ISOLATED RECTAL WALL NECROSIS PRESENTING WITH SEPTIC SHOCK: A RARE MANIFESTATION OF NON-OCCLUSIVE ISCHAEMIA

Liza Loce[1], Timurs Salimbajevs[2]

[1] Faculty of Medicine, Rīga Stradiņš University, Rīga, Latvia
[2] Department of Surgery, Jelgava City Hospital, Jelgava, Latvia

Corresponding author's e-mail: liza.loce1@gmail.com

Received: 29/03/2026
Accepted: 14/04/2026
Published: 06/05/2026

Conflicts of Interests: The Authors declare that there are no competing interests.
Patient Consent: Written informed consent from the patient for publication of their clinical information has been obtained.
This article is licensed under a CC Attribution-NonCommercial-NoDerivatives 4.0 License

How to cite this article: Loce L, Salimbajevs T. Isolated rectal wall necrosis presenting with septic shock: a rare manifestation of non-occlusive ischaemia. *EJCRIM* 2026;**13**:doi:10.12890/2026_006620

ABSTRACT

Introduction: Acute rectal ischaemia is an exceptionally rare but life-threatening condition because the rectum is usually protected by its rich collateral blood supply. Isolated rectal wall necrosis is particularly uncommon and may present a major diagnostic challenge, especially in critically ill patients.

Case description: A 45-year-old male presented with a three-day history of progressive diffuse abdominal pain and profound haemodynamic instability. On admission, he was hypotensive (70/50 mmHg) and showed signs of generalised peritonitis. Laboratory investigations revealed leukopenia and acute kidney injury. Computed tomography demonstrated free intraperitoneal air, most prominent along the anterior rectal wall, with suspected perforation below the peritoneal reflection and intramural gas extending above it, along with the presence of free intraperitoneal fluid. An emergency laparotomy revealed faecal peritonitis and extensive transmural necrosis of the anterior rectal wall with perforation in the mid-rectum below the peritoneal reflection. Necrosis extended to and involved the peritoneal reflection and rectovesical pouch, without evidence of malignancy, diverticular disease or mechanical obstruction. A low Hartmann's procedure was performed. Postoperatively, the patient required intensive care and vasopressor support but gradually improved. Bowel continuity was later restored, with satisfactory functional recovery.

Conclusion: This case demonstrates that isolated rectal wall necrosis secondary to non-occlusive ischaemic injury may progress to perforation, faecal peritonitis and septic shock, even in the absence of classical local predisposing factors. Early recognition and prompt source control are essential for survival.

KEYWORDS

Non-occlusive mesenteric ischaemia, rectal necrosis, rectal perforation, faecal peritonitis, septic shock

LEARNING POINTS

- Isolated rectal ischaemia is exceptionally rare but should be considered in critically ill patients presenting with abdominal pain, septic shock and signs of peritonitis or bowel perforation.
- Non-occlusive mesenteric ischaemia may involve even well-perfused segments such as the rectum, as mesenteric vasoconstriction leads to severe splanchnic hypoperfusion and rapid progression to transmural necrosis and perforation.
- In haemodynamically unstable patients, CT findings may underestimate the extent of ischaemic bowel injury; early recognition and prompt source control are crucial for survival.

EFIM
European Federation of Internal Medicine

Publisher
smc media srl

INTRODUCTION

Acute rectal ischaemia is an uncommon but potentially catastrophic condition, and its rarity is largely attributed to the rich collateral blood supply of the distal bowel. The rectum receives arterial supply from the superior rectal artery, a branch of the inferior mesenteric artery, as well as from the middle and inferior rectal arteries originating from the internal iliac system, forming a rich anastomotic network[1]. Because of this rich collateral blood supply, the rectum is generally protected from ischaemic injury compared to other segments of the large bowel[1,2]. Rectal ischaemia has been described in association with advanced malignancy, radiation exposure, traumatic injury, major vascular surgery and severe pelvic infection[3,4]. However, isolated rectal wall necrosis in the absence of an identifiable local precipitating factor remains exceptionally rare.

Non-occlusive mesenteric ischaemia (NOMI) represents a form of intestinal ischaemia occurring without arterial obstruction and is typically seen in critically ill patients with systemic hypoperfusion, septic shock or cardiac dysfunction[5,6]. It is associated with high mortality due to delayed diagnosis and rapid progression to transmural necrosis[6]. Although NOMI most commonly affects the small intestine and proximal colon, involvement of the distal colon and rectum has only rarely been reported[5].

This case illustrates an unusual presentation of isolated rectal wall necrosis due to non-occlusive ischaemic injury, which progressed to septic shock.

CASE DESCRIPTION

A 45-year-old male with no known history of cardiovascular disease, diabetes mellitus, inflammatory bowel disease, malignancy, radiation exposure or previous abdominal surgery presented with a three-day history of progressively worsening diffuse abdominal pain.

On admission, the patient appeared critically ill. He was hypotensive, with a blood pressure of 70/50 mmHg, and tachypnoeic, with a respiratory rate of 24 breaths per minute. Physical examination revealed generalised abdominal tenderness with signs of peritoneal irritation. He was haemodynamically unstable and required immediate resuscitation. The overall clinical presentation was consistent with septic shock and generalised peritonitis.

Laboratory investigations demonstrated leukopenia (1.57 ×10/l) and elevated serum creatinine (140 µmol/l) consistent with acute kidney injury. Broad-spectrum intravenous antibiotics and aggressive fluid resuscitation were initiated. Urgent computed tomography (CT) of the abdomen revealed free intraperitoneal air, most prominent along the anterior rectal wall, with suspected perforation below the peritoneal reflection and intramural gas extending above it *(Fig. 1A and 1B)*. Free fluid was present around the liver *(Fig. 2)* and spleen, and within the *(Fig. 3)* and pelvis, with additional scattered air locules along the right hepatic lobe *(Fig. 4)* and greater curvature of the stomach. No obstructing lesion, mass or diverticular



Figure 1. *A) Coronal CT image demonstrating gas adjacent to the anterior rectal wall with surrounding inflammatory changes. B) Sagittal CT image showing rectal wall defect with adjacent free air and pelvic fluid, suggestive of rectal perforation.*

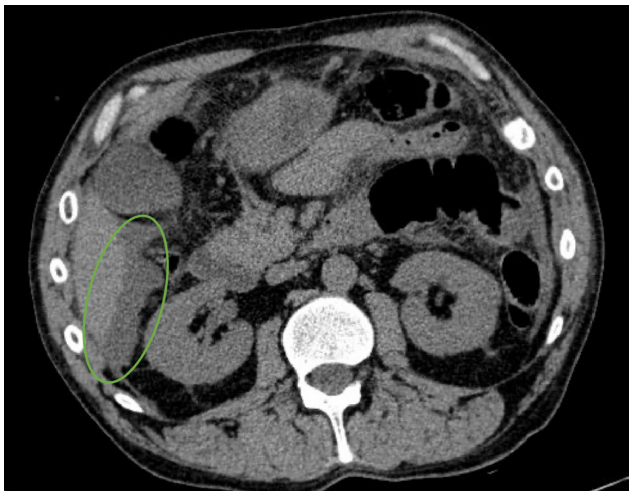


Figure 2. *Axial CT image demonstrating free fluid in the subhepatic space.*

disease was identified. Given the clinical picture of generalised peritonitis and haemodynamic instability, an emergency laparotomy was performed. A large volume of contaminated intraperitoneal fluid with faecal content was encountered, consistent with faecal peritonitis. Exploration revealed extensive transmural necrosis of the anterior rectal wall in the mid-rectum with an approximately 2 cm defect, extending to and involving the peritoneal reflection



Figure 3. Axial CT image demonstrating free fluid along both paracolic gutters, adjacent to the ascending and descending colon.



Figure 4. Axial CT image showing free air in the perihepatic region.

and rectovesical pouch, without evidence of malignancy, diverticular disease or mechanical obstruction. A low Hartmann's procedure was performed, and the abdominal cavity was irrigated and drained. Histopathological examination confirmed transmural ischaemic necrosis of the rectal wall without evidence of malignancy.

Postoperatively, the patient was admitted to the intensive care unit for five days, followed by a further three-day stay in the surgical ward. Vasopressor support with norepinephrine was required for approximately 48 hours because of persistent hypotension; gradual haemodynamic stabilisation followed. Follow-up CT imaging demonstrated no residual pelvic collections or abscess formation, and the patient showed progressive clinical improvement.

At a later stage, bowel continuity was restored with coloanal anastomosis. The postoperative recovery was uneventful, with preserved sphincter function and satisfactory functional recovery.

DISCUSSION

The most striking feature of this case is the occurrence of extensive isolated rectal wall necrosis in a relatively young patient without an identifiable local cause. No malignancy, diverticular disease, mechanical obstruction or prior pelvic insult was documented, making the presentation highly unusual.

The clinical picture at presentation strongly suggested profound systemic compromise, with hypotension, leukopenia, acute kidney injury and generalised peritonitis. In this context, the most plausible mechanism is NOMI, in which mesenteric vasoconstriction leads to severe splanchnic hypoperfusion and subsequent intestinal ischaemia in the absence of an identifiable vascular occlusion[7,8]. This process is driven by systemic circulatory failure with redistribution of blood flow away from the gastrointestinal tract towards vital organs, mediated by activation of the sympathetic nervous system and the renin–angiotensin system[7]. Persistent vasospasm at the level of mesenteric arcades and small arterioles further compromises tissue perfusion, while microcirculatory dysfunction and endothelial injury impair oxygen delivery and extraction at the tissue level[7,8]. Although NOMI most commonly affects the small bowel and proximal colon, this case demonstrates that the rectum, despite its normally robust vascular supply, may also become vulnerable[7].

Another important aspect of this case is the discrepancy between imaging and operative findings. In this patient, non-contrast CT raised suspicion of rectal wall compromise but did not fully reflect the extent of transmural necrosis encountered intraoperatively. This underlines an important clinical point: while contrast-enhanced CT remains the first-line diagnostic modality in haemodynamically stable patients without suspicion of perforation or peritonitis, providing essential information on bowel perfusion and extraintestinal findings[7], imaging may underestimate the severity of ischaemic bowel injury. Endoscopy may serve as a complementary tool for direct visualisation of mucosal ischaemia in selected stable patients[9]; however, in the presence of suspected perforation, peritonitis or clinical deterioration, it is contraindicated and timely surgical exploration should not be delayed[7].

Leukopenia rather than leucocytosis was also a notable feature. In septic patients, leukopenia may indicate overwhelming systemic inflammation and has been associated with worse outcomes[10,11]. In this case, it may have represented an early marker of severe physiological derangement rather than a reassuring laboratory finding.

This case emphasises the need to consider uncommon causes of septic shock in patients presenting with abdominal pain and suspected bowel perforation. It also demonstrates that isolated rectal ischaemia may occur even in the absence of classical vascular risk factors or obvious local pathology. Early recognition and prompt source control were likely crucial to the favourable outcome in this patient.

REFERENCES

1. Brandt LJ, Boley SJ. Colonic ischemia. *Surg Clin North Am* 1992;**72**:203–229. doi: 10.1016/S0039-6109(16)45635-5
2. Theodoropoulou A, Koutroubakis IE. Ischemic colitis: clinical practice in diagnosis and treatment. *World J Gastroenterol* 2008;**14**:7302–7308. doi: 10.3748/wjg.14.7302
3. Fousekis FF, Aggeli P, Gkogkos S, Christou P, Pappas-Gogos G. Rectal ischemia causes mass formation, masquerading as rectal cancer. *Oxf Med Case Reports* 2018;**2018**:omy068. doi: 10.1093/omcr/omy068
4. Moszkowicz D, Mariani A, Trésallet C, Menegaux F. Ischemic colitis: the ABCs of diagnosis and surgical management. *J Visc Surg* 2013;**150**:19–28. doi: 10.1016/j.jviscsurg.2013.01.002
5. Oyachi N, Emura T, Numano F, Tando T, Saito T, Goto Y. Non-occlusive intestinal ischemia in the ascending colon and rectum: a pediatric case occurring during encephalitis treatment. *Surg Case Rep* 2019;**5**:23. doi: 10.1186/s40792-019-0592-y
6. Kawada H, Nagata S, Noda Y, Kawai N, Ando T, Kaga T, et al. Nonocclusive mesenteric ischemia: a review for interventional radiologists. *Interv Radiol (Higashimatsuyama)* 2024;**10**:e20230026. doi: 10.22575/interventionalradiology.2023-0026
7. Bala M, Catena F, Kashuk J, De Simone B, Gomes CA, Weber D, et al. Acute mesenteric ischemia: updated guidelines of the World Society of Emergency Surgery. *World J Emerg Surg* 2022;**17**:54. doi: 10.1186/s13017-022-00443-x
8. Björck M, Koelemay M, Acosta S, Bastos Goncalves F, Kölbel T, Kolkman JJ, et al. Editor's choice – management of the diseases of mesenteric arteries and veins: clinical practice guidelines of the European Society of Vascular Surgery (ESVS). *Eur J Vasc Endovasc Surg* 2017;**53**:460–510. doi: 10.1016/j.ejvs.2017.01.010
9. Brandt LJ, Feuerstadt P, Longstreth GF, Boley SJ; American College of Gastroenterology. ACG clinical guideline: epidemiology, risk factors, patterns of presentation, diagnosis, and management of colon ischemia (CI). *Am J Gastroenterol* 2015;**110**:18–44; quiz45. doi: 10.1038/ajg.2014.395
10. Belok SH, Bosch NA, Klings ES, Walkey AJ. Evaluation of leukopenia during sepsis as a marker of sepsis-defining organ dysfunction. *PLoS One* 2021;**16**:e0252206. doi: 10.1371/journal.pone.0252206
11. Rimmer E, Garland A, Kumar A, Doucette S, Houston BL, Menard CE, et al. White blood cell count trajectory and mortality in septic shock: a historical cohort study. *Can J Anaesth* 2022;**69**:1230–1239. doi: 10.1007/s12630-022-02282-5