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CASE REPORT

The impending abdominal aortic aneurysm rupture diagnostic dilemma: a case of misleading symptoms and concurrent life-threatening conditions

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ABSTRACT

BACKGROUND: Symptomatic non-ruptured abdominal aortic aneurysm (AAA) is a diagnosis of exclusion. In this case report, we faced two vascular challenges: (1) establishing a diagnosis of impending rupture and (2) restructuring the intervention plan and timing after a second abdominal emergency was diagnosed and treated.

CASE REPORT: A 72-year-old male presented to the emergency department with left lower quadrant abdominal pain lasting over 12 hours. Clinical assessment revealed a pulsatile midline abdominal mass and abdominal discomfort on palpation, without signs of peritoneal irritation. The patient was haemodynamically stable, and laboratory findings showed leucocytosis and elevated C-reactive protein. Abdominal computed tomography angiography revealed an infrarenal AAA measuring 85 mm with features of impending rupture, and no findings suggestive of an alternative diagnosis.

The patient was admitted to the vascular ward with the aim of intervening at the first elective opportunity, but worsening abdominal pain in association with hypotension prompted an emergent decision. Open surgical repair was chosen based on the aneurysm's anatomical features - a short neck (13 mm) with severe infrarenal angulation (approximately 90°). Intraprocedural bowel mobilisation revealed transmural ischaemia extending from the transverse colon to the mid-rectum. Collaboration with general surgery was arranged, and the patient underwent a Hartmann procedure. The patient subsequently underwent endovascular aortic repair (EVAR) 10 days after the first procedure.

CONCLUSION: Ischaemic colitis is a recognised complication of major vascular surgery, particularly after AAA repair. In our case, the aetiology of colonic ischaemia was unclear, but it likely resulted from a state of hypoperfusion in a patient with atherosclerotic disease and poor collateral circulation. The patient presented with two life-threatening conditions, although only one was diagnosed in advance.

Keywords: Abdominal aorta aneurysm; symptomatic; short neck; impending rupture; ischemic colitis

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INTRODUCTION

Abdominal pain in the setting of a known, recently diagnosed, or incidentally discovered abdominal aortic aneurysm (AAA) can pose a significant clinical challenge and requires careful consideration of life-threatening causes. Symptomatic non-ruptured AAA is, by definition, an exclusion diagnosis. It encompasses symptoms such as back or abdominal pain, palpation tenderness, or limb ischaemia due to distal embolisation that can be attributed to the aneurysm. A broad, age- and medical history-adjusted investigation should therefore be performed to rule out other serious underlying aetiologies. However, in the absence of a definitive alternative diagnosis, symptoms should be attributed to the AAA until proven otherwise. The optimal timing of intervention in symptomatic non-ruptured AAAs is also a matter of debate. Despite the presumed higher rupture risk of these aneurysms relative to asymptomatic cases, current guidelines advocate clinical stabilisation and risk assessment before proceeding with urgent surgical repair to improve outcomes.[1]

In this case report, we were faced with two vascular challenges: (1) the difficulty in ascertaining a diagnosis of impending rupture and (2) the difficulty in restructuring an intervention plan and timing after a second abdominal emergency was diagnosed and treated.

CASE REPORT

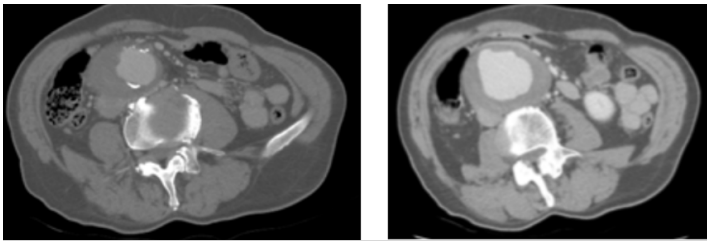
A 72-year-old male with a past medical history of dyslipidaemia and smoking presented to the emergency department with left lower quadrant abdominal pain persisting for over 12 hours. No other symptoms were reported. Clinical assessment revealed a pulsatile, tender midline abdominal mass and abdominal discomfort on deep palpation, without signs of peritoneal irritation.

The patient was febrile but haemodynamically stable, and analytical studies revealed normal haemoglobin, leucocytosis, and C-reactive protein elevation, with otherwise unremarkable results.

An abdominal Computed Tomography Angiography (CTA) scan was performed, showing an infrarenal AAA measuring 85 mm in diameter, with no other findings suggestive of an alternative diagnosis. In addition to the aneurysm size, CTA revealed extensive mural thrombus, a hyperattenuating crescent sign, a draped aorta, and focal discontinuity of intimal calcification, all features of impending rupture, Figure 1.

The patient was admitted to the vascular ward with the intention of intervening surgically at the first elective opportunity, but persistently worsening abdominal pain, in association with the development of hypotension, prompted an emergent decision. Open surgical repair was the treatment of choice based on the aneurysm's anatomical features - a short neck (13 mm) with severe infrarenal angulation (approximately 90°), Figure 2.

Figure 1. Pre-operative abdominal computed tomography angiography at admission (axial view).

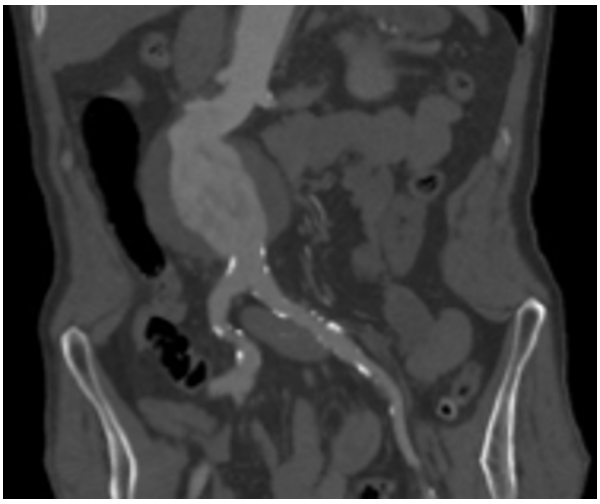


An integer abdominal aorta aneurysm is observed, with extensive mural thrombus, hyperattenuating crescent sign, draped aorta and focal discontinuity of intimal calcification.

Intraprocedural mobilisation of the bowel revealed transmural ischaemia extending from the transverse colon to the mid-rectum. Collaboration with general surgery was sought, and the patient underwent a Hartmann procedure. After an uneventful recovery, the vascular surgical plan was revised to avoid placing a vascular prosthesis in an infected territory, and endovascular aneurysm repair with an Endurant II stent graft (Medtronic, Santa Rosa, CA) was performed on the 10th postoperative day, accepting the risks of a suboptimal neck. No adjunctive procedures were performed. Per the technique's specifications, a 20–30% oversizing of the endograft was considered during device selection.

Given the risks of an endovascular procedure in an infected territory, infectious disease and general surgery consults were obtained to optimise antibiotic selection. The patient completed a 7-day course of ceftriaxone and metronidazole following the Hartmann procedure and prior to the EVAR procedure.

Figure 2. Pre-operative abdominal computed tomography angiography at admission (coronal view).



Anatomical details are shown, namely, hostile neck anatomy - a short neck and severe infrarenal angulation.

DISCUSSION

Ischemic colitis is a well-known complication of major vascular surgery, particularly after AAA repair. However, ischemic colitis as either a consequence of AAA or a diagnostic mimic of a symptomatic AAA is exceedingly rare. Ischemic colitis is associated with increased mortality.[2] The underlying pathophysiology involves disruption of blood flow to the colon, most commonly due to low-flow states or embolic events. Clinically, ischemic colitis typically presents with abdominal pain and/or distension, fever, and diarrhoea. Computed tomography (CT) findings suggestive of ischemic colitis include bowel wall thickening, mucosal enhancement, mesenteric fat stranding, intramural air, and colonic dilation.[3,4] However, in early or mild cases of ischemic colitis, CT findings may be unremarkable.[4] The aetiology of colonic ischaemia in this setting is difficult to ascertain. CTA analysis revealed patency of both the celiac and superior mesenteric arteries. Assessment of the inferior mesenteric artery is limited by the aneurysm's extent and anatomical position; however, CTA findings are consistent with thrombotic occlusion of the vessel. A well-developed Riolan arch was not found. Therefore, the ischemic colitis probably occurred due to a hypoperfusion state in a patient with atherosclerotic disease and poor collateral circulation.

Symptomatic non-ruptured AAAs often present with nonspecific symptoms, making early recognition challenging. However, timely recognition of impending rupture is essential, given the significant risk of progression to rupture and the subsequent dismal prognosis. CTA findings suggestive of impending rupture include the hyperattenuating crescent sign - indicative of haemorrhage into the mural thrombus or aneurysm wall and recognised as one of the earliest and most specific radiological signs of rupture - along with the 'draped aorta' sign, in which the posterior aortic wall is no longer visualised as a distinct line and instead conforms to the contour of the vertebral body, and focal discontinuity of intimal calcification.[5]

Due to suboptimal neck anatomy, several factors were carefully considered during intervention planning. The Endurant II stent graft was selected for its immediate availability, as the urgency of an impending rupture made a delay in producing a custom-made fenestrated device unsuitable. Additionally, the surgical team has substantial experience with this endograft. Deployment was performed using the reverse slider technique (specific to this stent graft), which facilitates proximal sealing in cases with short, angulated aneurysm necks.[6]

In this clinical case, a patient presented with two life-threatening conditions even though only one was pre-emptively diagnosed. Albeit the abdominal pain predominantly located at the left lower quadrant in association with elevated inflammatory parameters were not entirely consistent with the sole diagnosis of a symptomatic non ruptured AAA, the presence of impending signs of rupture, in a patient with several risk factors for rupture (age, smoking history, and increased AAA diameter), the development of hypotension and lack of other imagiological features of an alternative diagnosis prompted a surgical intervention.

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REFERENCES

1. Wanhainen A, Van Herzeele I, Bastos Goncalves F, Bellmunt Montoya F, Berard X, Boyle J, et al. European Society for Vascular Surgery (ESVS) 2024 Clinical Practice Guidelines on the Management of Abdominal Aorto-Iliac Artery Aneurysms. Eur J Vasc Endovasc Surg 2024; 67: 192-331

2. Glishtein H, Hallon K, Kluger Y. Ischemic colitis caused increased early and delayed mortality. World J Emerg Surg. 2018;13:31.

3. Steele S. Ischemic Colitis Complicating Major Vascular Surgery. Surg Clin N Am 2007; 87: 1099-114.

4. FitzGerald J, Hernandez III L. Ischemic Colitis. Clin Colon Rectal Surg 2015; 28(2): 93-8.

5. Schwartz S, Taljanovic M, Smyth S, O'Brien M, Rogers L. CT Findings of Rupture, Impending Rupture, and Contained Rupture of Abdominal Aortic Aneurysms. AJR Am J Roentgenol. 2007;188:W57-62.

6. Morikage N, Nishimura J, Mizoguchi T, Takeuchi Y, Nagase T, Samura M et al. Reverse slider technique using the Endurant stent graft for accurate proximal sealing in hostile neck endovascular aneurysm repair. J Vasc Surg Cases and Innovative Techniques 2019;5:332-7.