Unexpected Sequalae: Case Report of Inferior Epigastric Artery (IEA) Pseudoaneurysm Rupture

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Received: 7 August 2025

Accepted: 8 December 2025

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DOI 10.5001/omj.2029.28

Abstract

Background: inferior epigastric artery (IEA) pseudoaneurysms are rare vascular abnormalities, usually caused by trauma or iatrogenic injury. Spontaneous rupture is extremely uncommon. **Case Presentation:** we present the case of patient with end-stage renal disease on anticoagulation for a recent mitral valve replacement, developed vague abdominal pain. Imaging revealed a pseudoaneurysm of the left inferior epigastric artery. Bleeding caused by spontaneous rupture of the aneurysm led to arrest. **Conclusion:** the case emphasis the diagnostic and therapeutic challenges of spontaneous IEA pseudoaneurysm rupture in high-risk patients. Early recognition and intervention are essential to prevent catastrophic outcomes.

Keywords: inferior epigastric artery, pseudoaneurysm, spontaneous rupture, anticoagulation.

Introduction

Pseudoaneurysms of the inferior epigastric artery (IEA) are rare vascular complications that can occur due to trauma or iatrogenic injury. Pseudoaneurysms is formed by disruption in the arterial wall, leading to blood collection localized by surrounding tissues. Most of the patients are asymptomatic. Sometimes they present with pain, palpable mass or bleeding.

Patients with end stage renal disease on hemodialysis, particularly those with mechanical heart valves requiring long-term anticoagulation, are at elevated risk for bleeding complications. Early detection and diagnosis of pseudoaneurysms in this population is challenging due to their atypical presentations and the potential for overlapping abdominal symptoms caused by other etiologies, such as bowel ischemia or peritonitis.

Abrashev and his colleague[1] reported a rare case of spontaneous rupture of a left inferior epigastric artery pseudoaneurysm in COVID patient kept on anticoagulation. Our case highlights the complexity of diagnosis, the role of imaging, and the need for intervention to prevent fatal outcomes in high-risk patients.

Case Report

A 49-year-old male with end-stage renal disease on hemodialysis and a history of mechanical mitral valve replacement kept on long-term warfarin therapy. He was admitted three months after his valve surgery with diagnosis of infective endocarditis. During his hospital stay, he developed abdominal pain. A contrast-

enhanced computed tomography (CT) scan revealed hypo-enhancement of the cecum and ascending colon with associated pneumatosis coli, although the mesenteric vessels were patent (Figure 1). However, the patient clinically was not showing signs and symptoms of mesenteric ischemia. A decision was made to proceed with diagnostic laparoscopy, which revealed no intra-abdominal pathology. Pneumatosis coli most likely was due to transient bowel wall ischemia from low-flow state rather than true mesenteric ischemia. After one month, he presented with vague, non-specific abdominal discomfort. A follow-up CT scan demonstrated a focal pseudoaneurysm in the left anterior abdominal wall, inferior to the umbilicus and adjacent to the rectus sheath muscle (Figure 2). There was no evidence of active contrast extravasation at that time. Given the patient's anticoagulation status and high bleeding risk, endovascular embolization attempted. However, procedural ultrasound failed to detect active flow within the pseudoaneurysm, suggesting spontaneous thrombosis. As a result, embolization was not performed. On the same day, the patient developed sudden, severe abdominal pain associated with hypotension and tachycardia. Immediate resuscitation was initiated, followed by urgent CT scan, which demonstrated, consistent with rupture of the previously identified pseudoaneurysm (Figure 3). While being transferred from the CT suite, the patient experienced cardiac arrest. Rapid bleeding secondary to pseudoaneurysm rupture led to hypovolemic.Cardiopulmonary resuscitation (CPR) was started and return of spontaneous circulation (ROSC) was achieved after eight minutes. The patient was immediately transferred to the operating room for exploratory laparotomy. Intraoperative findings revealed a ruptured pseudoaneurysm of the left inferior epigastric artery; however, there was no ongoing active bleeding. The artery was ligated at its origin. No other sources of hemorrhage were identified during exploration. Patient's vitals started to improve with aggressive resuscitation during and after the surgery. Postoperatively, the patient was admitted to the intensive care unit (ICU) for monitoring and resuscitation. He was successfully extubated 12 hours later. Following a period of rehabilitation and careful adjustment of his anticoagulation regimen, he was discharged in a stable condition.

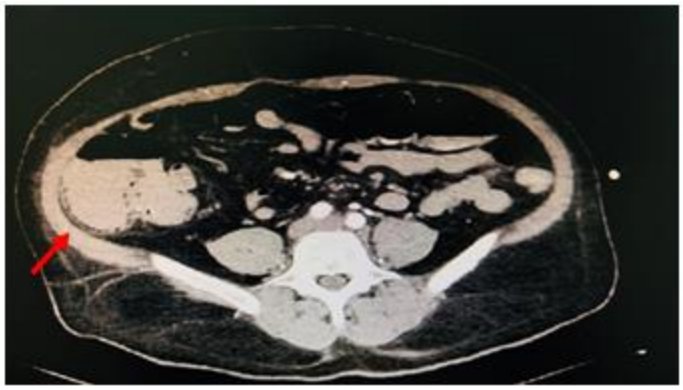

Figure 1: Pneumatosis coli of the cecum and ascending colon.

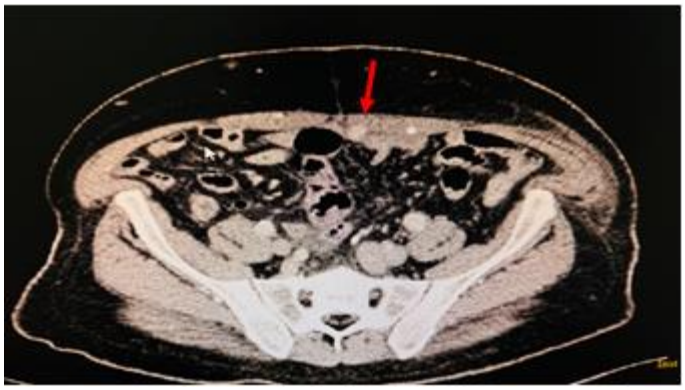

Figure 2: Pseudoaneurysm in the left anterior abdominal wall.

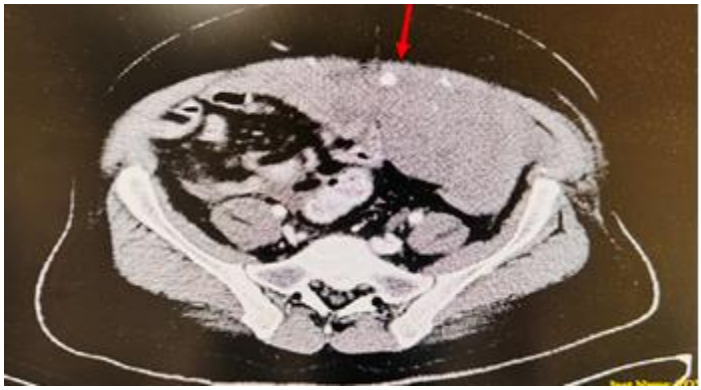

Figure 3: Active contrast extravasation from the left inferior epigastric artery.

Discussion

Pseudoaneurysms of the inferior epigastric artery (IEA) are documented in setting of trauma and surgical intervention.[4,5] However, spontaneous rupture is still considered a rare but serious complication. This case showed how unpredictable such vascular events in patients with chronic comorbidities, such as end-stage renal disease and who are with mechanical heart valves requiring anticoagulation therapy. In this patient, the pseudoaneurysm had initially appeared stable, possibly thrombosed on Doppler ultrasound, leading to deferring embolization. However, the clinical scenario evolved within hours. The patient became hemodynamically abnormal, and subsequent imaging confirmed active contrast extravasation from the IEA. Chronic kidney disease is a associated with vascular fragility and pseudoaneurysm formation.

Recent literature reported same concern for spontaneous rupture of pseudoaneurysm in high-risk patients. Abrashev et al. (2023) described a similar case in a COVID-19 patient on therapeutic anticoagulation, where spontaneous IEA rupture led to a significant retroperitoneal hematoma.[1] Covantsev et al. (2023) documented spontaneous bleeding from the IEA in a patient with no recent trauma or surgery, highlighting that non-iatrogenic causes are expected.[2] Moreover, Bruno et al. (2024) reviewed several cases of superficial artery pseudoaneurysms and emphasized the utility of ultrasound-guided thrombin injection, however, surgical ligation remains critical when rapid control is needed.[3] Historical reports by Targarona et al. and Mauro et al. largely focused on iatrogenic injuries related to laparoscopic surgery and catheterization.[4,5] More additional studies showed a trend toward spontaneous rupture in patients on long-term anticoagulation, such as those by Bhatti et al. (2020) and Sarikaya et al. (2010).[6,10] Yang et al. (2021) reported a spontaneous IEA rupture in a dialysis-dependent patient, which is illustrating the vascular fragility in this population.[11]

Early intervention for such high-risk patients is advised. We also emphasize the importance of close observation, even with thrombosed pseudoaneurysms, as suc patients already on anticoagulation therapy.

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