

Pylephlebitis as a postoperative complication of acute appendicitis

Agustín A. Alesandrini¹, Salvador Aguel Sabato², Juan A. Perriello¹, Isidro Moggiano²

¹ Colorectal Surgeon

² General Surgery Resident

Hospital Privado de la Comunidad, Mar del Plata, Argentina

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ABSTRACT

Pylephlebitis is a septic thrombosis of the portal venous system secondary to intra-abdominal infections and represents a rare but potentially severe complication of acute appendicitis. We present a case of a 52-year-old male patient diagnosed with gangrenous appendicitis who underwent laparoscopic appendectomy. After an initially favorable postoperative course and discharge on postoperative day 3, the patient was readmitted 72 hours later with fever and clinical deterioration. Contrast-enhanced abdominal computed tomography revealed thrombosis of the right portal vein branch. This finding was subsequently confirmed by Doppler ultrasonography. The patient was treated with broad-spectrum antibiotic therapy and therapeutic anticoagulation, resulting in favorable clinical evolution and partial portal vein reperfusion during follow-up. Pylephlebitis is a condition that, if diagnosed late, can lead to significant morbidity and mortality. It should be considered in patients who have persistent infectious symptoms following abdominal surgery. Early recognition and prompt treatment are essential to improve outcomes and prevent severe complications.

Keywords: pylephlebitis; portal vein thrombosis; acute appendicitis; appendectomy; postoperative complications

INTRODUCTION

Pylephlebitis is defined as septic thrombophlebitis of the portal vein or its tributaries secondary to an intra-abdominal infectious process arising within the portal venous drainage territory. Spread of infection through the mesenteric venous system promotes the formation of infected thrombi and septic embolization to the liver, particularly the right hepatic lobe, because of the physiologic pattern of portal venous flow.¹⁻³

This condition is an uncommon complication, reported in fewer than 0.2% of patients with intra-abdominal infections, although its true incidence remains uncertain.^{1,2} It predominantly affects men (72%–83%), with a mean age at presentation ranging from 49 to 57 years.⁴ In adults, the most common underlying infections are diverticulitis and pancreatitis, whereas acute appendicitis predominates in children and adolescents.^{2,3}

Clinical presentation is nonspecific and includes persistent fever, abdominal pain, jaundice, and signs of sepsis, frequently resulting in delayed diagnosis and treatment and, consequently, increased morbidity and mortality. Associated complications include hepatic abscesses, bowel ischemia, and, in advanced cases, septic shock.^{5,6}

Microbiology is typically polymicrobial and reflects the intestinal flora of the underlying infectious source. Anaerobic organisms such as *Bacteroides fragilis* and aerobic Gram-negative bacilli, including *Escherichia coli* and *Klebsiella pneumoniae* are the pathogens most frequently isolated from blood cultures and abscesses.^{2,4,7}

We report a case of pylephlebitis as a postoperative complication of acute appendicitis and highlight the importance of early diagnosis and prompt treatment given the substantial morbidity and mortality associated with this condition.

CASE

A 52-year-old man with no significant past medical history presented with a typical clinical presentation

of acute appendicitis. Laparoscopic appendectomy was performed, and intraoperative findings were consistent with gangrenous appendicitis. During the procedure, the patient developed hemodynamic instability requiring postoperative admission to the intensive care unit (ICU).

Given his favorable postoperative course, he was transferred to the general ward on postoperative day 2 and discharged home on postoperative day 3.

Seventy-two hours after discharge, he returned with fever, chills, and generalized malaise. On admission, his temperature was 38°C, white blood cell count was 12,580/mm³, and C-reactive protein level was 11 mg/dL. Contrast-enhanced abdominal computed tomography (CT) demonstrated a tubular hyperdense filling defect within the anterior right portal vein branch consistent with portal vein thrombosis, without evidence of intra-abdominal collections, hepatic abscesses, or extension into the porto-mesenteric venous system (Fig. 1). Hepatic Doppler ultrasonography confirmed thrombosis with absence of flow in the right portal vein branch (Fig. 2).

A diagnosis of pylephlebitis was established, and intravenous piperacillin-tazobactam and therapeutic anticoagulation with low-molecular-weight heparin were initiated. The patient remained in the ICU during the first 3 days of readmission. Blood cultures remained negative. He subsequently demonstrated favorable clinical evolution with progressive improvement in symptoms and inflammatory markers.

Follow-up Doppler ultrasonography demonstrated partial reperfusion of the portal venous system; therefore, therapy was transitioned to oral amoxicillin-clavulanate and oral anticoagulation with apixaban (10 mg twice daily for 7 days followed by the standard maintenance regimen). Anticoagulation was continued for 2 months.

At 2-month follow-up, the patient remained asymptomatic, with no evidence of recurrent infection or thrombotic complications.

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Correspondence to
Agustín A. Alesandrini
agustinalesandrini91@gmail.com



Figure 1. Contrast-enhanced abdominal CT, axial view. Absence of opacification of the anterior right portal vein branch, consistent with portal vein thrombosis.

DISCUSSION

Pylephlebitis is an uncommon but potentially life-threatening complication of intra-abdominal infections, such as acute appendicitis, particularly in perforated or gangrenous cases. Although its incidence has decreased with advances in diagnostic imaging and the rational use of antibiotics, delayed diagnosis and treatment remain associated with substantial morbidity and mortality.

Management is based on broad-spectrum antibiotic therapy targeting enteric flora in combination with early anticoagulation.

Several studies and systematic reviews suggest that prompt initiation of treatment is associated with improved clinical outcomes and reduced rates of complications, including hepatic abscesses, bowel ischemia, and severe sepsis.¹

Nevertheless, the role of anticoagulation remains controversial. Multiple retrospective series and reviews suggest that anticoagulation may promote portal vein recanalization while reducing thrombus propagation and septic complications.^{5,7,8}

In the present case, combined intravenous antibiotic therapy and anticoagulation were associated with rapid clinical improvement and favorable resolution, without recurrent infection or thrombotic events during follow-up, consistent with previously reported case series highlighting the effectiveness of early and appropriate management.

From a prognostic standpoint, reported mortality rates remain significant, particularly in the absence of timely diagnosis and treatment, and may result in severe complications such as septic shock or bowel ischemia.⁴ Therefore, maintaining a high index of suspicion is essential in patients presenting with persistent fever or clinical deterioration following abdominal surgery, especially in the setting of complicated appendicitis, underscoring the importance of prompt imaging evaluation.

In this context, contrast-enhanced CT is considered the diagnostic modality of choice because of its high sensitivity for detecting portal venous thrombosis and associated complications, including hepatic abscesses and extension into the portomesenteric venous system.^{2,5} Doppler ultrasonography may serve as a useful complementary modality to confirm absent portal flow and assess reperfusion during follow-up.

A limitation of the present report is the lack of follow-up imaging after hospital discharge to document complete portal vein recanalization. Nevertheless, the favorable clinical course and absence of complications during outpatient follow-up suggest adequate resolution of the condition.

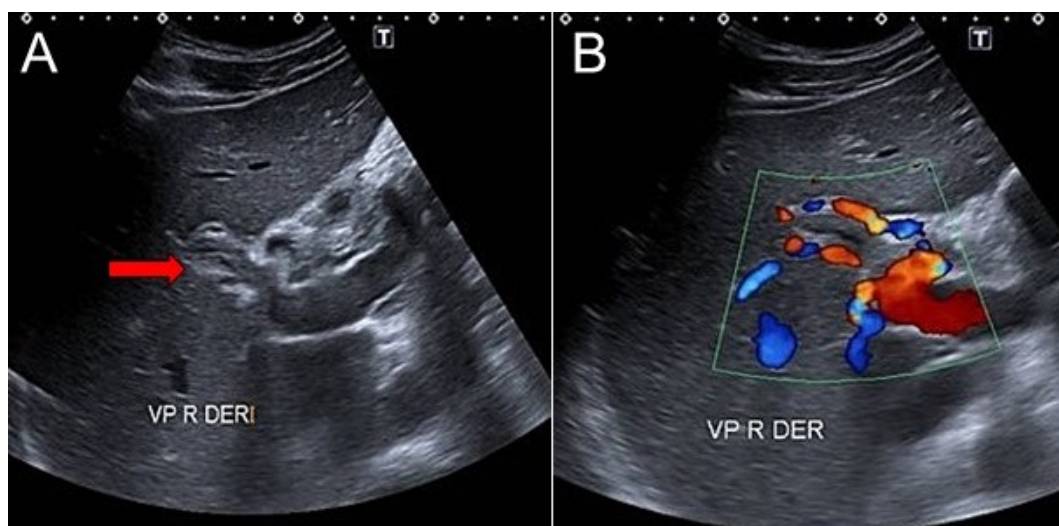


Figure 2. Hepatic Doppler US. **A.** Right portal vein branch containing echogenic material within the lumen (arrow). **B.** Color Doppler demonstrating absence of portal venous flow, confirming portal vein thrombosis.

CONCLUSION

Pylephlebitis is an uncommon but potentially severe complication of intra-abdominal infections and may occur during the postoperative period following a complicated appendectomy. Diagnosis requires a high index of clinical suspicion in patients with persistent systemic signs of infection after abdominal surgery. Contrast-enhanced CT, complemented by Doppler ultrasonography, plays a fundamental role in early diagnosis and assessment of thrombotic extension.

Management requires a multidisciplinary approach and includes early initiation of broad-spectrum antibiotics, therapeutic anticoagulation, and, in selected cases, surgical intervention for control of associated infectious foci.

This case highlights the importance of considering pylephlebitis in the differential diagnosis of patients with persistent infectious symptoms following abdominal surgery. Early recognition and prompt, appropriate treatment may significantly improve the prognosis of this rare but potentially life-threatening condition.

Author Contributions

AAA: research, manuscript review and editing, supervision. SSA: conceptualization, methodology, research, drafting of the original manuscript. JAP: supervision, project management, manuscript review. IM: research, resources, collection and curation of material. All authors reviewed and approved the final version of the manuscript.

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ORCIDiS

Agustin A. Alesandrini: 0000-0002-9821-8360

Salvador Aguel Sábato: 0009-0009-1890-3500

Juan A. Perriello: 0000-0002-2739-7242

Isidro Moggiano: 0009-0006-2023-1430

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