

Abstract

A 65-year-old male with a history of B-cell non-Hodgkin’s lymphoma/leukemia and splenic marginal zone lymphoma underwent a planned laparoscopic splenectomy, which was converted to open. On postoperative day (POD) 16, he presented with sudden-onset abdominal pain, food intolerance, fever, and chills for 2 days. Imaging revealed mesenteric ischemia with portal and splenic vein thrombosis. The patient underwent exploratory laparotomy with small bowel resection. Postoperatively, he recovered well and was discharged on POD 33 on anticoagulation (Eliquis). This case highlights post-splenectomy mesenteric ischemia in a patient with multiple predisposing factors, including hematologic malignancy, portal vein thrombosis, and splenomegaly. It underscores the importance of **early recognition, diagnostic evaluation, and timely surgical intervention**, and contributes to the literature on potential **prophylactic anticoagulation strategies** in high-risk patients.

Background

- Splenectomy is a treatment option for several hematologic diseases, including **splenic marginal zone lymphoma (SMZL)**, a rare B-cell lymphoma. While previously a first-line therapy, splenectomy is now typically reserved for patients who fail medical management with **rituximab** [1].
- Post-splenectomy complications include pulmonary dysfunction, deep vein thrombosis, portal vein thrombosis (PVT), and major bleeding [5]. Acute mesenteric ischemia is a **rare but serious** complication after splenectomy [2,4].
- Post-splenectomy thrombocytosis** is common and may contribute to thrombotic events, including PVT and, rarely, mesenteric ischemia [2]. PVT itself occurs in 2–8% of patients after splenectomy and is often asymptomatic, but in rare cases can lead to mesenteric ischemia [3,8,10].
- Risk factors for venous thromboembolism (VTE) and post-splenectomy PVT include **longer operative time** [7], **large spleen volume** [6] such as **spleen weight >650 g** [11], and **high postoperative platelet counts (>650 × 10³/μL)**. Malignancy further increases VTE risk, and ASCO guidelines recommend **7–10 days of pharmacologic thromboprophylaxis**, with consideration for extension to 4 weeks in high-risk patients [9].
- Understanding these risk factors is essential for **preoperative assessment, postoperative monitoring, and timely intervention** to prevent severe complications such as mesenteric ischemia.

Case Presentation

A 65-year-old male with a history of **B-cell non-Hodgkin’s lymphoma/leukemia (2012)** and **splenic marginal zone lymphoma (SMZL)** presented for a **planned laparoscopic splenectomy**, ultimately converted to **open surgery**.

Preoperative course:

- CT abdomen/pelvis (CTAP) in 2024 demonstrated **splenomegaly up to 24 cm**, as well as a pancreatic tail and left kidney mass. Repeat imaging in 2025 showed **splenomegaly (25 cm)** with prominent lymphadenopathy in multiple regions.
- Prior treatment included **6 cycles of Bendamustine**, with inadequate response, and **2 cycles of rituximab**, which were discontinued due to severe allergy.
- Given **refractory disease**, the patient was referred for **surgical splenectomy**.

Surgical course:

- Laparoscopic approach was initiated.
- Short gastric vessels divided** but due to **massive splenomegaly, venous bleeding, and poor visualization**, the case was converted to **open midline laparotomy**.
- Splenic artery and vein ligated**, and the specimen (**2.2 kg**) removed.
- 1 unit PRBC and 1 unit platelets** transfused intraoperatively.
- Operative time: **3 hours**
- Final pathology: **SMZL, CD20+, Bcl-2+, CD5–, CD10–**, compatible with B-cell non-Hodgkin’s lymphoma.

Postoperative course:

- Initially uncomplicated; discharged on **POD 4**
- POD 14:** seen in clinic, no concerns and healing well.
- POD 16:** Returned with **abdominal pain, food intolerance, fever, and chills x 2 days**. Labs: **WBC 42.9, platelets 456 ×10³/μL, lactate 7.6**.
- Imaging: **portal vein and splenic vein thrombosis, small bowel dilation**
- Taken to OR for **laparoscopic hand-assisted small bowel resection (60 cm)** for **acute mesenteric ischemia**; side-to-side anastomosis performed.
- Initiated on **heparin infusion**, later converted to **rivaroxaban**
- Discharged on **POD 33 from initial surgery**.
- 3-month follow-up CT:** Mildly enlarged lymph nodes, **portal vein occlusion with cavernous transformation**, otherwise stable.

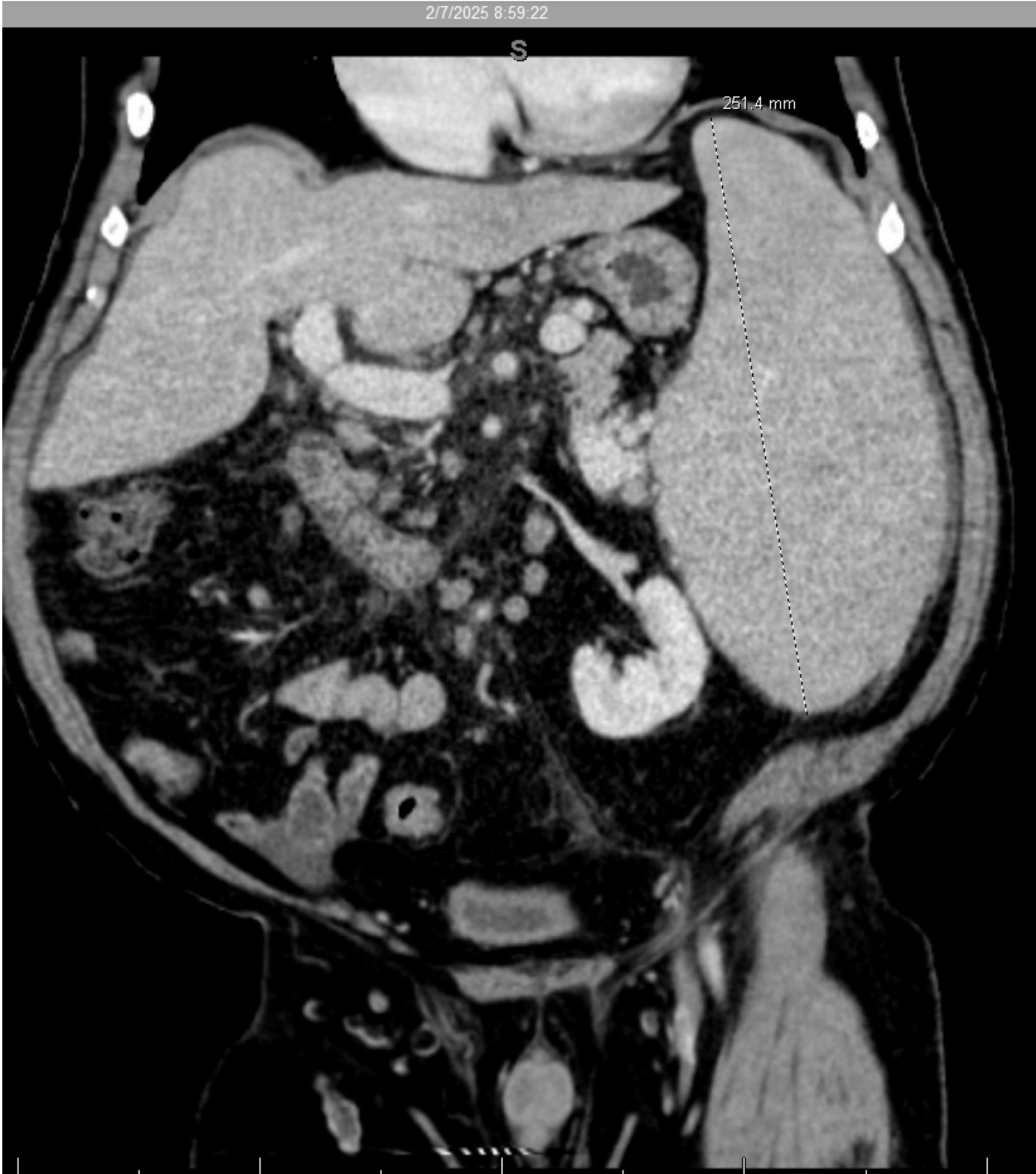


Image 1: Preoperative CTAP demonstrating splenomegaly measuring 25 cm



Image 2: CTAP on POD16 showing bowel dilation and enteritis

Discussion

- Incidence and Risk:**
 - This patient had **large spleen and malignancy**, which are shown to increase risk of post-splenectomy PVT, which can lead to mesenteric ischemia.
 - Post-splenectomy thrombocytosis** occurs in **75–82%** of patients and is associated with thrombotic events in ~5% of cases [2]. **Portal vein thrombosis (PVT)** and **mesenteric ischemia** are rare but potentially fatal complications.
- Pathophysiology:**
 - Reactive thrombocytosis and underlying malignancy** contribute to a **hypercoagulable state**, predisposing patients to **portal, splenic, and mesenteric venous thrombosis**.
- Preventive Strategies:**
 - Proposed interventions include:**
 - Anticoagulation and platelet suppression** postoperatively.
 - Some studies report **lower VTE rates** (PVT, DVT, PE) with **2–4 weeks of post-discharge LMWH**, though results are mixed [8,11].
 - Intraoperative ligation of the splenic vein close to its junction with the mesenteric vein** to reduce stasis [3].
- Clinical Implications:**
 - High-risk patients—those with large spleens, elevated platelets, malignancy, or prolonged operative times—**may benefit from **closer monitoring and prophylactic anticoagulation or platelet suppression**. Early imaging and prompt surgical intervention are critical for **mesenteric ischemia**.

References

- Kalpadakis C, et al. Treatment of Splenic Marginal Zone Lymphoma With Rituximab Monotherapy: Progress Report and Comparison With Splenectomy. *The Oncologist*. 2013;18(2):190-197.
- Khan PN, et al. Postsplenectomy Reactive Thrombocytosis. *Baylor University Medical Center Proceedings*. 2009;22(1):9-12.
- Boissel P, et al. Mesenteric and portal vein thrombosis following splenectomy in hematologic diseases. Apropos of 3 cases. *Chirurgie; memoires de l'Academie de chirurgie*. 1991;117(8):591-595; discussion 595-6.
- Vidal-Cañas S, et al. Mesenteric Ischemia in a Splenectomized Patient with Auto-Immune Hemolytic Anemia: Case Report. *Medicina (Kaunas, Lithuania)*. 2023;59(7):1325.
- Pata G, et al. Peri-operative complications and hematologic improvement after first-line splenectomy for splenic marginal zone lymphoma. *Leukemia & Lymphoma*. 2015;57(6):1467-1470.
- Péré G, et al. Splenic volume and splenic vein diameter are independent pre-operative risk factors of portal vein thrombosis after splenectomy: a retrospective cohort study. *BMC Surgery*. 2021;21(1).
- Amihai Rottenstreich, et al. Thromboembolic Events Following Splenectomy: Risk Factors, Prevention, Management and Outcomes. *World Journal of Surgery*. 2017;42(3):675-681.
- Mohren M, et al. Thromboembolic complications after splenectomy for hematologic diseases. *American Journal of Hematology*. 2004;76(2):143-147.
- Key NS, et al. Venous Thromboembolism Prophylaxis and Treatment in Patients With Cancer: ASCO Guideline Update. *Journal of Clinical Oncology*. 2023;41(16).
- Hafid M, et al. Portal vein thrombosis after splenectomy in childhood: report of 4 cases. *Archives de pediatrie : organe officiel de la Societe francaise de pediatrie*. 2009;16(11):1477-1480.
- Stamou KM, et al. Prospective Study of the Incidence and Risk Factors of Postsplenectomy Thrombosis of the Portal, Mesenteric, and Splenic Veins. *JAMA Surg*. 2006;141(7):663-663.