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CASE REPORT

CLINICAL CASE

Multimodal Endovascular Salvage of Catastrophic Extensive Iliofemoral Venous Thrombosis

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ABSTRACT

BACKGROUND Burns when extensive are notorious for producing a profound inflammatory stage that often leads to a procoagulable milieu predisposing to deep venous thrombosis (DVT).

CASE SUMMARY A middle-aged man with extensive second-degree burns (30%-40% of total body surface area) after a boiler explosion developed fulminant iliocaval DVT complicated by venous gangrene. A meticulously structured multimodal endovascular approach was employed, integrating thrombolytic therapy (catheter-directed alteplase infusion) with nonthrombolytic modalities (inferior vena cava filter placement, aspiration thrombectomy, and iliac vein stenting). The combined approach facilitated rapid thrombus debulking and restoration of venous patency, resulting in complete limb salvage.

DISCUSSION This case underscores the grave yet infrequent complication of extensive DVT after extensive burns, culminating in impending venous gangrene, a condition precipitated by the triad of endothelial injury, venous stasis, and hypercoagulability that is inherent to severe burn pathology.

TAKE-HOME MESSAGE This case highlights the synergistic interaction between pharmacologic thrombolysis and mechanical interventions, demonstrating their complementary efficacy in optimizing outcomes in extensive, limb-threatening DVT. (JACC Case Rep. 2026;■:107287) © 2026 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

HISTORY OF PRESENTATION

A 41-year-old man experienced a major burn injury due to a boiler blast at an iron factory, resulting in second-degree burns involving 30% to 40% of the total body surface area, predominantly involving torso and groin area (Supplemental Figure 1). The patient was initially treated at an outside hospital for 1 month, where he underwent conservative management.[1,2] One month after discharge, the patient presented with rapidly progressing swelling, pain, and bluish discoloration of the left lower leg over 1 week, consistent with grade 3 pitting edema. The acute onset and progressive swelling accompanied by pain and discoloration raised suspicion for a vascular complication, prompting further investigation.[3]

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the Author Center.

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ABBREVIATIONS AND ACRONYMS

CDT = catheter-directed thrombolysis

DVT = deep venous thrombosis

IVC = inferior vena cava

PHYSICAL EXAMINATION

The left lower limb exhibited marked swelling with 3+ pitting edema and bluish discoloration of the foot and toes. The limb was extremely tender, with severe pain on movement, and accompanied by skin changes indicative of venous congestion and cyanosis, suggestive of venous ischemia or impending gangrene. Distal pulses remained palpable, although limb temperature was slightly decreased compared to the contralateral limb.

PAST MEDICAL HISTORY

The patient had no prior history of thrombotic events or coagulopathy, malignancy, or chronic illness such as diabetes mellitus or hypertension. No family history of thrombophilia was elicited.

DIFFERENTIAL DIAGNOSIS

A diagnosis of phlegmasia cerulea dolens secondary to extensive iliofemoral deep venous thrombosis (DVT) was favored based on imaging and clinical presentation (Figure 1). Cellulitis, arterial occlusion, compartment syndrome secondary to swelling or reperfusion injury, and lymphedema were excluded given imaging, Doppler studies, and clinical course.

TAKE-HOME MESSAGES

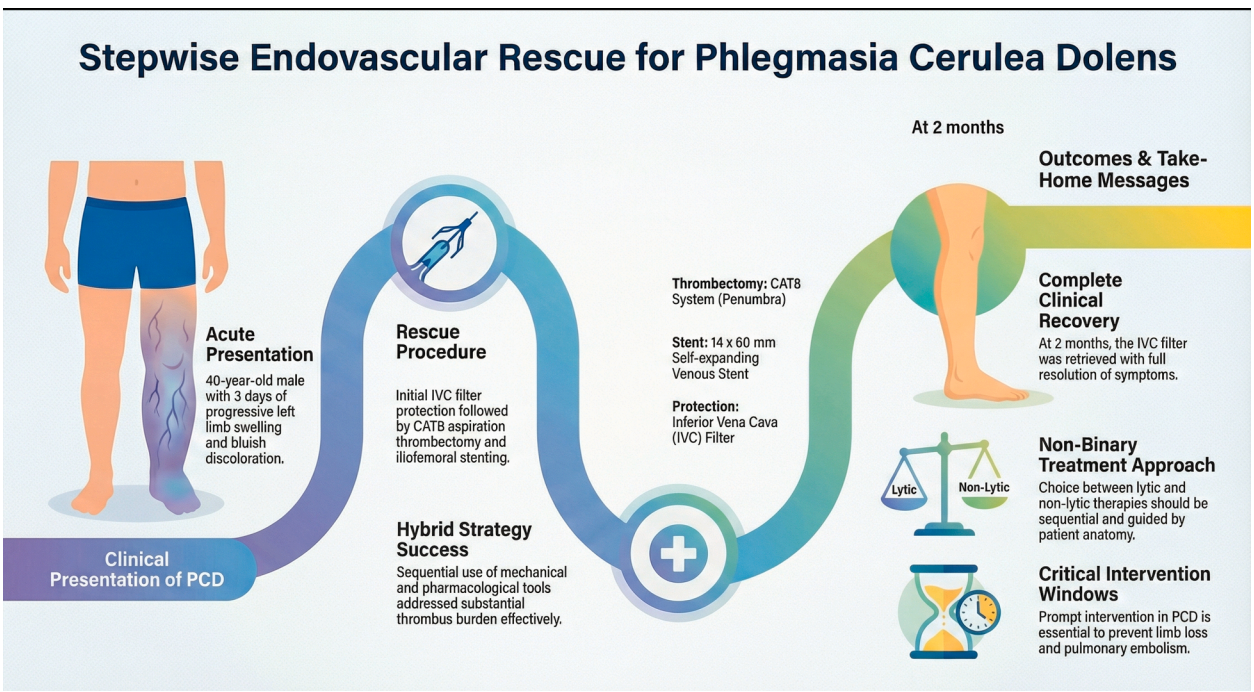
- Recognize the heightened risk of extensive venous thromboembolism and subsequent venous gangrene after severe burns and prolonged immobilization.
- Understand the role and indications of catheter-directed thrombolysis, mechanical thrombectomy, and venous stenting in extensive iliofemoral DVT.
- Appreciate the importance of IVC filter placement to mitigate embolic complications during invasive interventions.

INVESTIGATIONS

Initial investigations revealed marked leukocytosis (23,000/mm^3), suggesting systemic inflammation, while a significant elevation in creatine phosphokinase indicated muscle injury. Absence of urine myoglobin excluded rhabdomyolysis-associated myoglobinuria.[4]

A contrast-enhanced computed tomography venogram demonstrated a hypodense, nonenhancing

VISUAL SUMMARY Clinical Presentation, Treatment Course, and Outcomes and Take-Home Messages for This Case



IVC = inferior vena cava; PCD = phlegmasia cerulea dolens.

FIGURE 1 Limb With Severe, Extensive Skin Ulceration, Necrosis, and Evident Tissue Loss, Characteristic of Phlegmasia Cerulea Dolens

filling defect suggestive of thrombus extending along the inferior vena cava (IVC), bilateral common iliac veins, left external iliac vein, common femoral vein, superficial femoral vein, and popliteal vein, resulting in complete luminal occlusion (Figures 2A and 2B). This extensive thrombotic burden confirmed the diagnosis of extensive iliofemoral DVT, with no evidence of stenosis (external compression), pseudoaneurysm, or vascular malformation. Doppler ultrasonography of the bilateral lower limbs showed normal arterial flow, caliber, and diameter, eliminating arterial occlusive disease.

MANAGEMENT

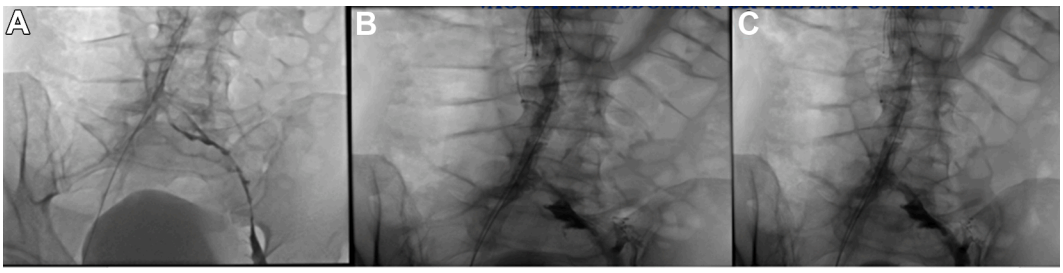
Given the extensive thrombus burden and limb-threatening venous gangrene, the patient was taken to the catheterization laboratory for intervention. An IVC filter was deployed via the right internal jugular vein to prevent pulmonary embolization during subsequent procedures (Figure 2C).[5] The patient was unable to lie in a prone position owing to excessive pain and swelling, hence procedures were performed in the supine position. Mechanical thrombectomy was initiated from both right and left femoral veins using the Penumbra CAT8 aspiration system. However, owing to the presence of organized thrombus and repeated catheter blockage, only partial thrombus removal was achieved (Figure 3). The case presented a significant therapeutic challenge, as repeated attempts at aspiration thrombectomy failed to achieve complete thrombus removal owing to recurrent catheter blockage and procedural blood loss. Given the patient's financial limitations, which precluded the use of advanced mechanical devices (eg, AngioJet), a decision was made to proceed with catheter-directed thrombolysis (CDT)[6] as a feasible and evidence-based alternative. This approach was considered the most appropriate under the circumstances to restore vessel patency while balancing safety and cost-effectiveness. Subsequently, CDT with alteplase infusion at 1 mg/h was started and continued over 48 hours to facilitate thrombus dissolution.[7]

During the intervention, the patient required 2 blood transfusions owing to blood loss during thrombus aspiration. After 48 hours of CTD, repeat venography revealed a significant residual stenosis in the right common iliac vein and IVC below the IVC filter (Figure 4), which was subsequently treated with stenting to the right common iliac vein using a 14 × 60 mm venous stent and simple ballon dilation to the IVC.

FIGURE 2 Initial Femoral Venogram Prior to Intervention

(A). Right femoral vein cine demonstrates complete occlusion of the right common iliac vein , with decompression of the ipsilateral lower extremity venous system via prominent collateral channels (B) Thrombus extends from the lower limb to the renal veins, indicating central spread. (C) IVC filter placed to prevent pulmonary embolism during intervention. IVC = inferior vena cava.

FIGURE 3 Pre- and Post-Thrombectomy Venography



(A) Preintervention venogram displaying extensive filling defects, indicative of significant thrombus burden, with resultant venous occlusion. (B and C) Post-thrombectomy venograms, where multiple aspiration attempts led to partial restoration of venous flow; although thrombus burden is substantially reduced, residual clot and persistent venous obstruction are still evident.

Postprocedural clinical and angiographic evaluation showed restoration of venous patency, with improved flow through the affected venous segments of the left lower limb (Figure 5). The patient was transitioned to direct oral anticoagulant therapy and dual antiplatelet therapy (aspirin and clopidogrel) after stabilization. Limb edema and cyanosis gradually resolved, and the patient experienced significant symptomatic relief.

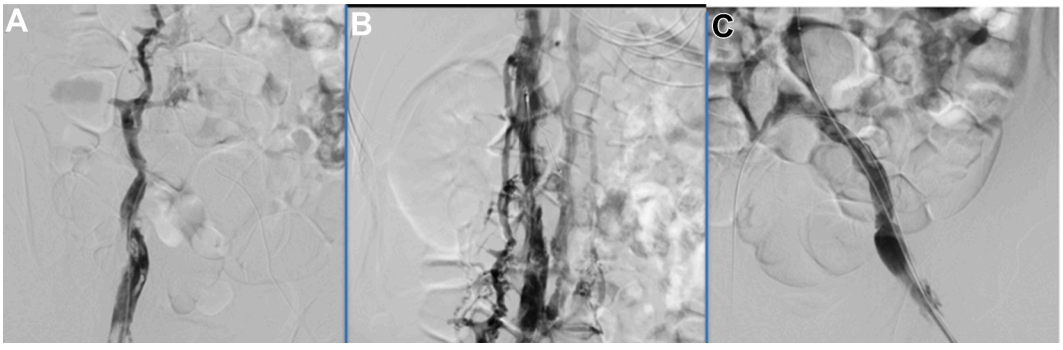
OUTCOME AND FOLLOW-UP

Complete resolution of limb cyanosis and edema was achieved, with successful restoration of venous patency. The patient was closely monitored in the postprocedure period. Limb edema and discoloration progressively improved, with near-complete resolution of cyanosis and pain. No recurrence of thrombosis or embolic complications was observed during the short-term follow-up. The patient was continued on direct oral anticoagulant therapy with apixaban 5 mg twice daily and short-term dual antiplatelet therapy (aspirin and clopidogrel) for 1 month. Venography at the 2-month follow-up demonstrated satisfactory venous flow without residual thrombus, permitting safe removal of the IVC filter (Figure 6).

DISCUSSION

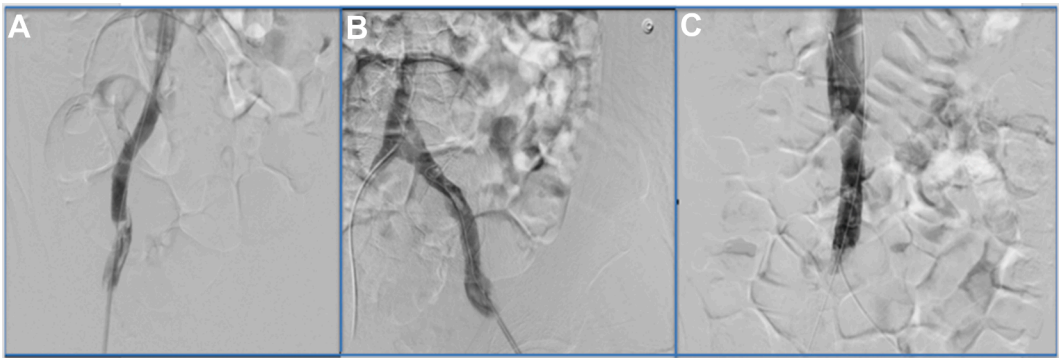
This case underscores the grave yet infrequent complication of extensive postburn DVT culminating in impending venous gangrene, a condition precipitated by the triad of endothelial injury, venous stasis,

FIGURE 4 Venography at 48 Hours After Catheter-Directed Thrombolysis



(A) Repeat aspiration thrombectomy performed 48 hours after catheter-directed thrombolysis reveals persistent occlusion of the right common iliac vein despite multiple interventions. (B) Marked residual stenosis due to web-like organized thrombus is observed in the IVC just inferior to the IVC filter. (C) Notably, there is unobstructed antegrade flow demonstrated in the left iliac and femoral veins. IVC = inferior vena cava.

FIGURE 5 Final Venogram Showing Restoration of Flow after Intervention

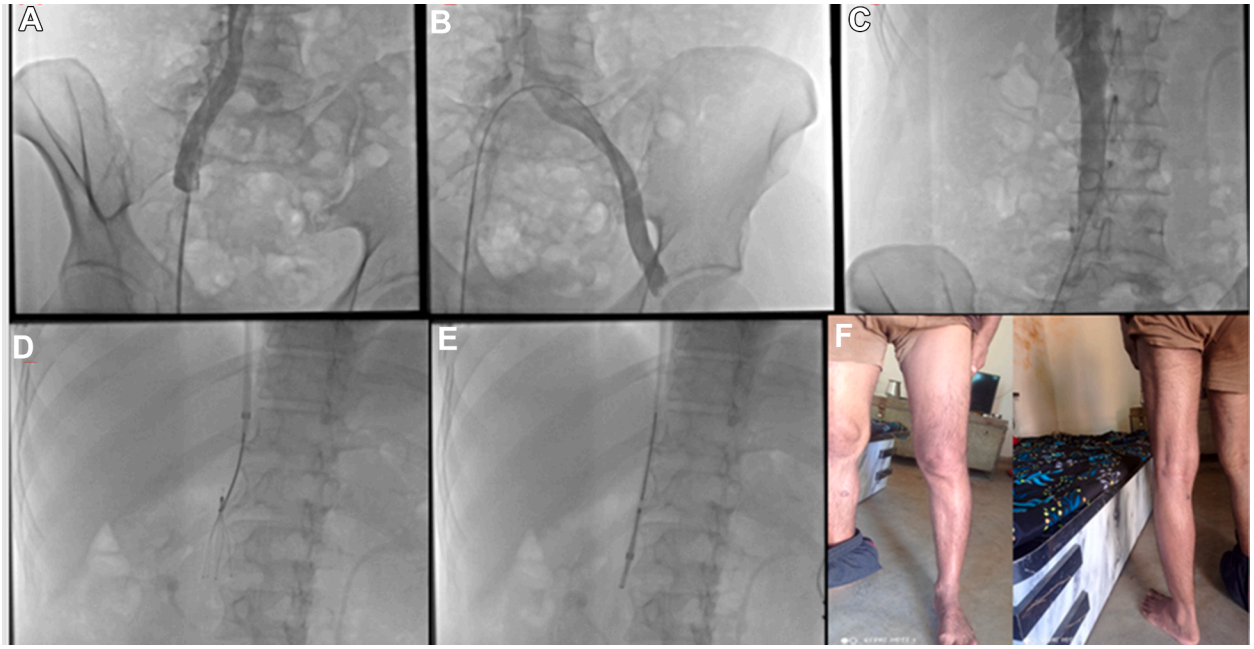


(A) After stenting of the right common iliac vein with a 14 × 60 mm venous stent, angiography demonstrates robust antegrade flow and complete resolution of collateral circulation. (B) The left iliac and femoral veins maintain unobstructed antegrade flow. (C) Postdilation of the inferior vena cava using a 12 × 40 mm peripheral balloon results in excellent flow restoration.

and hypercoagulability inherent to severe burn pathology. Extensive iliofemoral DVT represents a formidable clinical challenge, often manifesting as limb-threatening syndromes such as phlegmasia cerulea dolens and venous gangrene.

Crucially, this report highlights the indispensable role of early recognition and timely intervention to avert irreversible limb damage. Conventional systemic anticoagulation, while foundational, may prove insufficient in the setting of extensive

FIGURE 6 Successful IVC Filter Removal at 2-Month Follow-Up



(A to C) Patent stent in the right common iliac vein is confirmed and unobstructed flow within both the left venous system and IVC is demonstrated, with no evidence of residual thrombus or stenosis. (D) Optimal capture of the IVC filter hook and (E) confirmation of its successful extraction. (F) Clinical follow-up of the lower limbs, revealing no dilated or engorged veins, absence of edema, and no signs of post-thrombotic syndrome. IVC = inferior vena cava.

iliofemoral thrombosis complicated by tissue ischemia. Instead, a strategy employing multimodal endovascular techniques that leverage the synergistic effects of thrombolytic agents alongside mechanical thrombectomy and venous stenting provides a robust framework for rapid and effective thrombus resolution. The complementary action of these modalities facilitates restoration of venous patency by targeting diverse pathophysiologic aspects of thrombus burden, mechanical obstruction, and vessel remodeling.

CDT is particularly valuable as a bailout strategy when initial mechanical thrombectomy is unsuccessful or incomplete owing to organized thrombus or procedural limitations, effectively enhancing thrombus dissolution through localized pharmacologic means. Integral to the management paradigm of extensive thrombotic disease is the prophylactic deployment of IVC filters, which mitigate the risk of life-threatening pulmonary embolism during invasive interventions.[8]

This case adds to the accumulating evidence advocating for a multidisciplinary and aggressive endovascular approach in the management of complex venous thromboses, especially within the high-risk cohort of burn patients predisposed to thromboembolic sequelae. When implemented promptly and judiciously, such integrated therapy encompassing thrombolysis, thrombectomy, and stenting can salvage limbs and dramatically improve clinical outcomes.

CONCLUSIONS

Major burns can precipitate extensive iliofemoral DVT complicated further by venous gangrene. Early diagnosis supported by imaging and multidisciplinary endovascular intervention comprising thrombectomy, thrombolysis, stenting, and IVC filter placement can lead to limb salvage and favorable clinical outcomes.

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REFERENCES

1. Bordeanu-Diaconescu EM, Gherasim A, Ștefan-Bodog D, Mleşniţe A, Dănoiu L, Galea DI. Venous thromboembolism in burn patients: a 5-year retrospective study. *Cureus*. 2024;16(2):e54645. https://doi.org/10.7759/cureus.54645

2. Mory RN, Faustino EV, Crowley JJ. Burn injury and venous thromboembolism: pathophysiology, diagnosis, and management. *J Burn Care Res*. 2022;43(5):823-830. https://doi.org/10.1093/jbcr/irac045

3. Kim T, Chen L, Slattery J, et al. Clinical characteristics and management of phlegmasia cerulea dolens: a systematic review. *J Vasc Surg Venous Lymphat Disord*. 2020;8(6):908-917. https://doi.org/10.1016/j.jvsv.2019.12.067

4. Handschin AE, Noack F, Rab M, et al. Muscle injury markers in venous thromboembolism: diagnostic and prognostic implications. *J Thromb Haemost*. 2021;19(2):389-399. https://doi.org/10.1111/jth.151755

5. Huang MH, Benishay ET, Desai KR. Endovascular management of acute iliofemoral deep vein thrombosis. *Semin Intervent Radiol*. 2022;39(5):459-463. https://doi.org/10.1055/s-0042-1757935

6. Kennedy RJ, Henke PK. Catheter-directed thrombolysis for venous thromboembolism: patient selection and treatment strategies. *J Vasc Surg Venous Lymphat Disord*. 2018;6(1):1-8. https://doi.org/10.1016/j.jvsv.2017.06.010

7. Vedantham S, Kearon C, Julian JA, et al. Pharmacomechanical catheter-directed thrombolysis for deep-vein thrombosis. *N Engl J Med*. 2017;377(23):2240-2252. https://doi.org/10.1056/NEJMoa1615066

8. DeYoung E, Minocha J. Inferior vena cava filters: guidelines, best practice, and expandable indications. *Semin Intervent Radiol*. 2016;33(2):93-100. https://doi.org/10.1055/s-0036-1586142

KEY WORDS cardiovascular disease, peripheral vascular disease, pitting edema, risk factor, thrombosis, thrombus, treatment

APPENDIX For the supplemental figure, please see the online version of this paper.