

Introduction

Phlegmasia Cerulea Dolens (PCD) complicated by compartment syndrome (CS) is a rare but devastating condition. Without emergent intervention, PCD carries catastrophic risks: amputation rates approach 50%, with mortality reaching 25–40%.

Case Description

A 44 year old woman with underlying chronic kidney disease (CKD) & systemic lupus erythematosus (SLE) presented with 1 day history of left lower limb (LL) pain & swelling (**Fig 1**). The pain intensified acutely 2 hours prior to arrival.

On examination, she was alert, normotensive, but tachycardic. Her left LL revealed a tense, swollen, & dusky left leg with coldness, absent pulses, and paraesthesia, consistent with acute limb ischemia & CS.

PoCUS revealed thrombus in the left femoral & popliteal veins. Emergency bedside fasciotomy done (**Fig 2**) followed with unfractionated heparin infusion.

Post-fasciotomy, distal perfusion improved. Subsequent CT angiogram/ venogram confirmed extensive left LL deep vein thrombosis extending into the left common iliac vein, with unilateral oedema involving subcutaneous & intramuscular compartments.

After 10 days hospitalization, she was discharged on a non-vitamin K antagonist oral anticoagulant.

At 6 month follow up, she showed complete wound healing & full functional recovery (**Fig 3**).



Fig 1



Fig 2



Fig 3

Discussion

- In advanced PCD, poor perfusion triggers ischemia, creating a vicious cycle in CS: rising pressure compresses vessels, worsening ischemia and edema.
- Chinsakchai et al.'s review of 62 cases found >50% required amputation, while 36% improved post-fasciotomy; one died from pulmonary embolism and multiorgan failure. Venous thrombectomy had the highest mortality (22%), while fasciotomy had the highest amputation rate (55%), reflecting its use as a last resort in advanced ischemia.
- Veltchev et al linked delayed decompression post heparin to limb loss, Wilson et al found irreversible gangrene without immediate intervention, and Cohen et al noted nonviable muscle despite fasciotomy when HIT worsened microvascular thrombosis.
- Early recognition and prompt venous outflow restoration via anticoagulation and decompression are critical for limb salvage in this time sensitive emergency.

Conclusion

In PCD with acute CS, urgent fasciotomy restores perfusion; anticoagulation prevents thrombosis. Delay risks irreversible ischemia and amputation. Optimal timing needs further study.

References

- Wilson B, Hawkins ML, Mansberger AR Jr. Posttraumatic phlegmasia cerulea dolens: an indication for the Greenfield filter. *South Med J.* 1989;82(6):780-782.
Cohen DJ, Briggs R, Head HD, Acher CW. Phlegmasia cerulea dolens and its association with hypercoagulable states: Case reports. *Angiology.* 1989;40(5):498-508.
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	Author	Intervention						Year	Outcome
		HN	VT	CDT	PTA/ST	FAS	IVCF		
1.	Faccin et al	Y	Y	Y	N/Y	Y	N	2023	Good functional outcome
2.	Hawkin et al	Y	N	N	N	Y	N	2010	Good functional outcome
3.	Veltchev et al	Y	N	N	N/N	Y	N	2009	Major amputation
4.	Shem et al	N	N	N	N/N	Y	Y	2008	Death
5.	Cahill and Redmond et al	Y	N	N	N/N	Y	N	2007	Good functional outcome
6.	Ibrahim et al	Y	N	N	N/N	Y	N	2001	Good functional outcome
7.	Wood et al	Y	N	N	N/N	Y	N	2000	Good functional outcome
8.	Nackman et al	Y	Y	N	N/N	Y	Y	2000	Good functional outcome
9.	Vanfleet et al	Y	N	N	N/N	Y	N	2000	Good functional outcome
10.	Robinson and Teitelbaum et al	Y	N	Y	N/N	Y	Y	1993	Good functional outcome
11.	Wilson et al	N	Y	N	N/N	Y	Y	1989	Major amputation
12.	Cohen et al	Y	Y	Y	N/N	Y	N	1989	Major amputation

Fig 4 Abbreviations: HN, heparinization; VT, venous thrombectomy; CDT, catheter directed thrombolysis; PTA, percutaneous transluminal angioplasty; ST, stent replacement; FAS, fasciotomy; IVCF, inferior vena cava filter

