

Critical Limb Ischemia in a patient with Popliteal artery occlusion

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Disclosures

I have no relevant relationships with commercial interests to disclose.



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Objectives

- Role of non-invasive testing in critical limb ischemia (CLI)
- Medical management of CLI
- Role of Endovascular therapies in CLI
- Role of Surgical Intervention in CLI



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Patient History

- **HPI:** 69 y.o male with history of DM, HTN, HLD who presented with left lower extremity non-healing wound on the medial dorsal aspect of the hallux; associated with pain at rest. Patient reports trauma to the foot followed by several weeks of increasing redness and pain in the area with inability to bear weight (Rutherford class III/category 5, Fontaine class IV). Denied any drainage from wound, or fevers/chills. WiFi class 1,1,0
- **Past Medical History:** DM-2 (>10 years, HbA1C 8.0%), HTN, hyperlipidemia, and prior history of smoking (about 30 pack years), known PAD with Right sided popliteal intervention in the past, CKD Stage II, non-ischemic cardiomyopathy (LVEF 29%)
- **Medications:** Insulin, Metformin, Aspirin, Amlodipine, Metoprolol, Lisinopril, Atorvastatin, Cilostazol
- **Labs:** WBC 4.4, Hgb 12.2, Plt 211, BUN/Creat 12/1.35

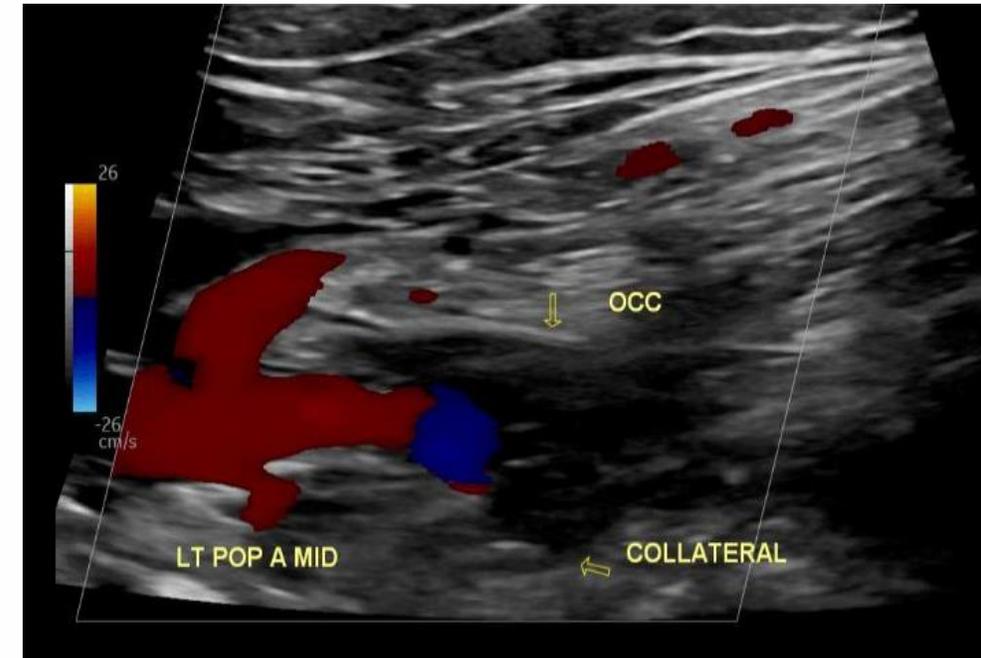


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Evaluation – Arterial Duplex

SEGMENT	LEFT		
	PSV (cm/sec)	Impression	Waveform
Distal External Iliac Artery	111	Normal	Triphasic
Proximal Common Femoral Artery	91		
Mid Common Femoral Artery	86		
Distal Common Femoral Artery	86	Normal	Triphasic
Proximal Profunda Femoral Artery	83	Normal	Triphasic
Proximal Superficial Femoral Artery	67		
Mid Superficial Femoral Artery	62		
Distal Superficial Femoral Artery	46		
Proximal Popliteal Artery	42	Normal	Triphasic
Mid Popliteal Artery		Occluded	
Distal Popliteal Artery		Occluded	
Proximal Tibioperoneal Trunk	35		
Distal Tibioperoneal Trunk	32	Normal	Monophasic
Distal Posterior Tibial Artery	41	Normal	Monophasic
Distal Peroneal Artery	21		
Anterior Tibial Artery Origin		Not Visualized	
Proximal Anterior Tibial Artery	204	50 - 99%	Monophasic
Mid Anterior Tibial Artery	36		
Distal Anterior Tibial Artery	35	Normal	Monophasic
Proximal Dorsalis Pedis Artery	29	Normal	Monophasic



ABIs – 0.71 on the left, 0.86 on the right



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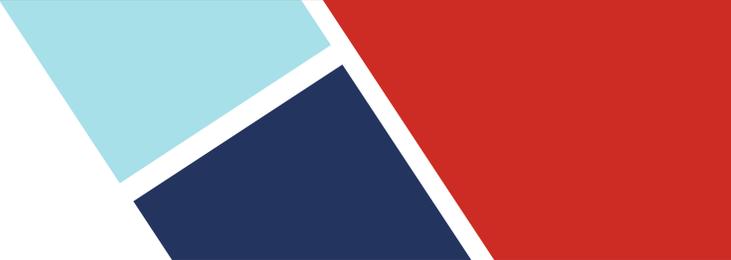
Peripheral Angiography

Selective Angiography through catheter in the distal SFA
Subtracted Image



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Selective Angio

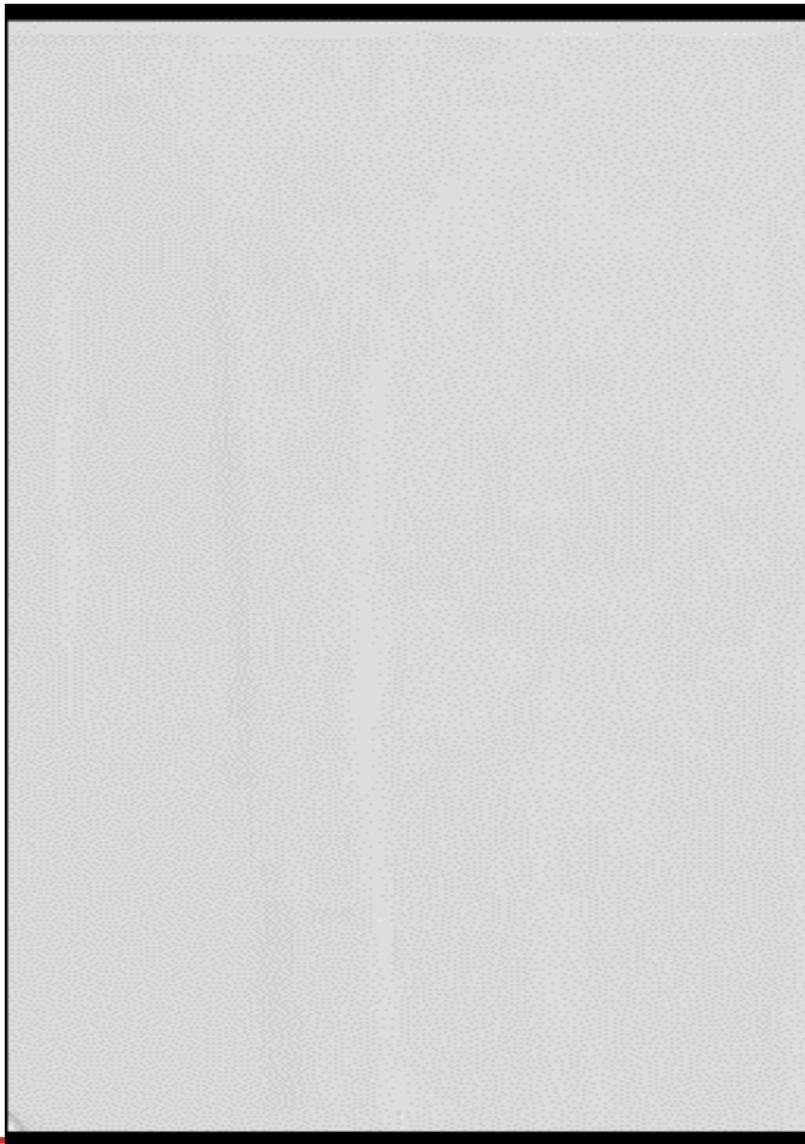
Selective Angiography through catheter in the distal SFA
Non-Subtracted Image



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Below the knee Angiogram



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Foot angiogram



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Treatment options?

ACC/AHA/SCAI/SIR/SVM 2019 Appropriate Use Criteria for Peripheral Artery

TABLE 3.1 Critical Limb Ischemia

Indications	AUC Score		
	Continue or Intensify Medical Therapy	Endovascular Treatment	Surgical Treatment
21. ■ Aortoiliac		A (8.5)	A (8)
22. ■ SFA and popliteal artery		A (8)	A (8)
23. ■ Below the knee		A (8)	A (8)

A = Appropriate; AUC = Appropriate Use Criteria; SFA = superficial femoral artery.

- AUC suggests Endovascular and surgical intervention as equally appropriate in patients with CLI



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Peripheral Angiography

Proximal Cap

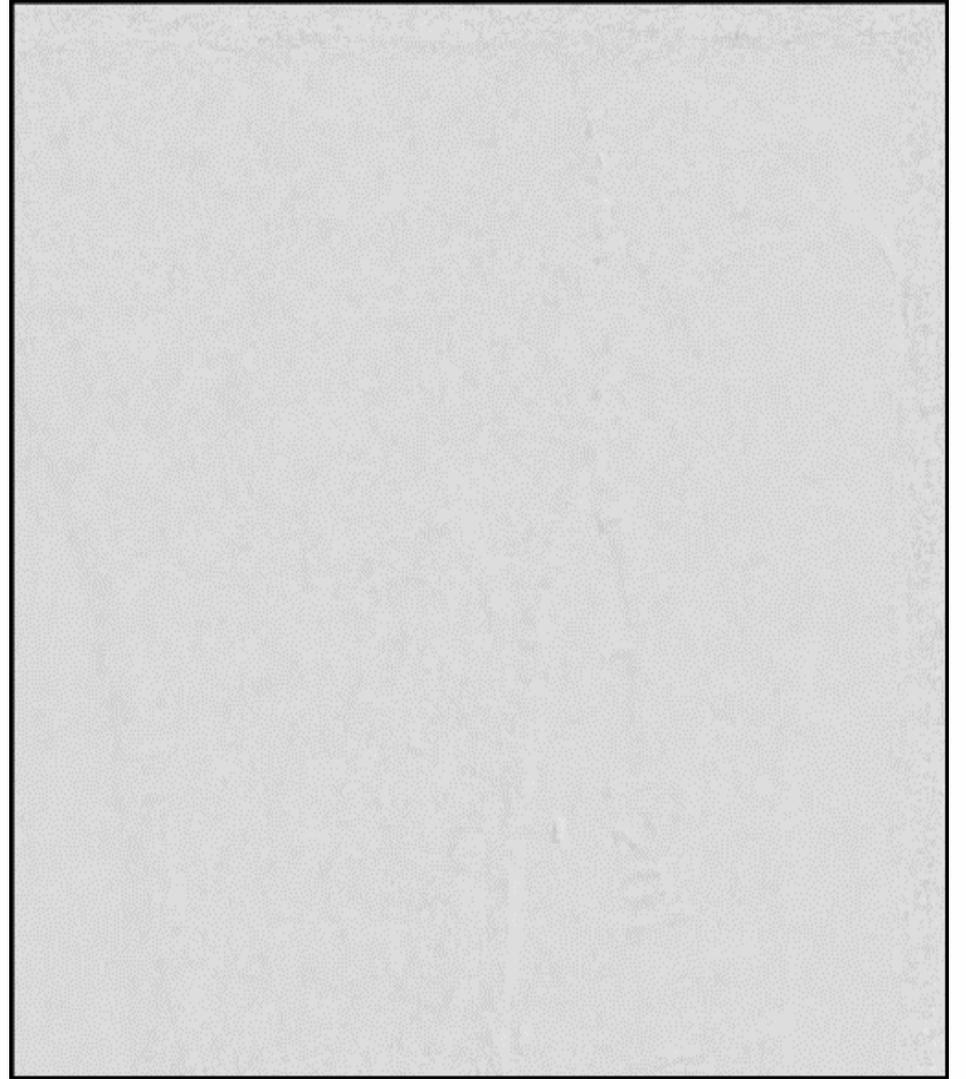


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Endovascular Intervention

Pedal access injection via 0.018 Trailblazer catheter



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Endovascular Intervention

Bilateral Injection



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Endovascular Intervention

Crossing using Terumo M wire

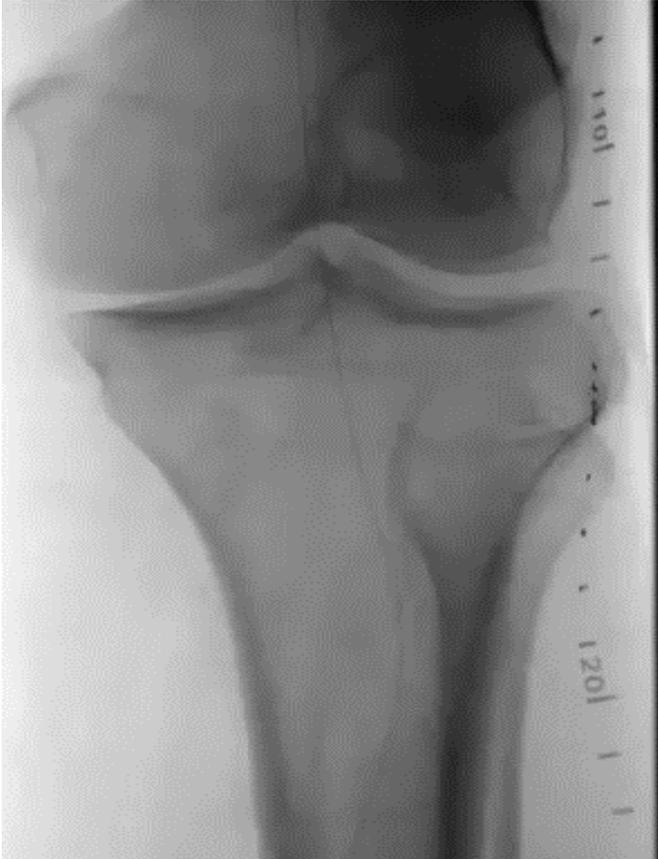


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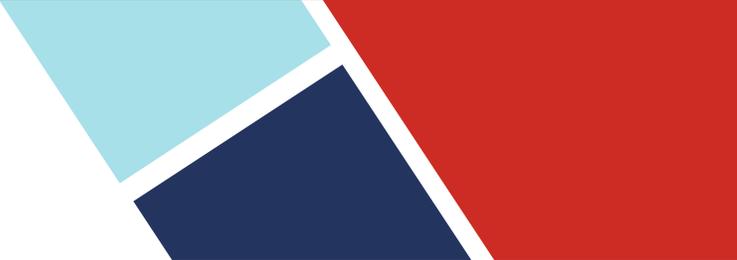
Endovascular Intervention

Crossed CTO



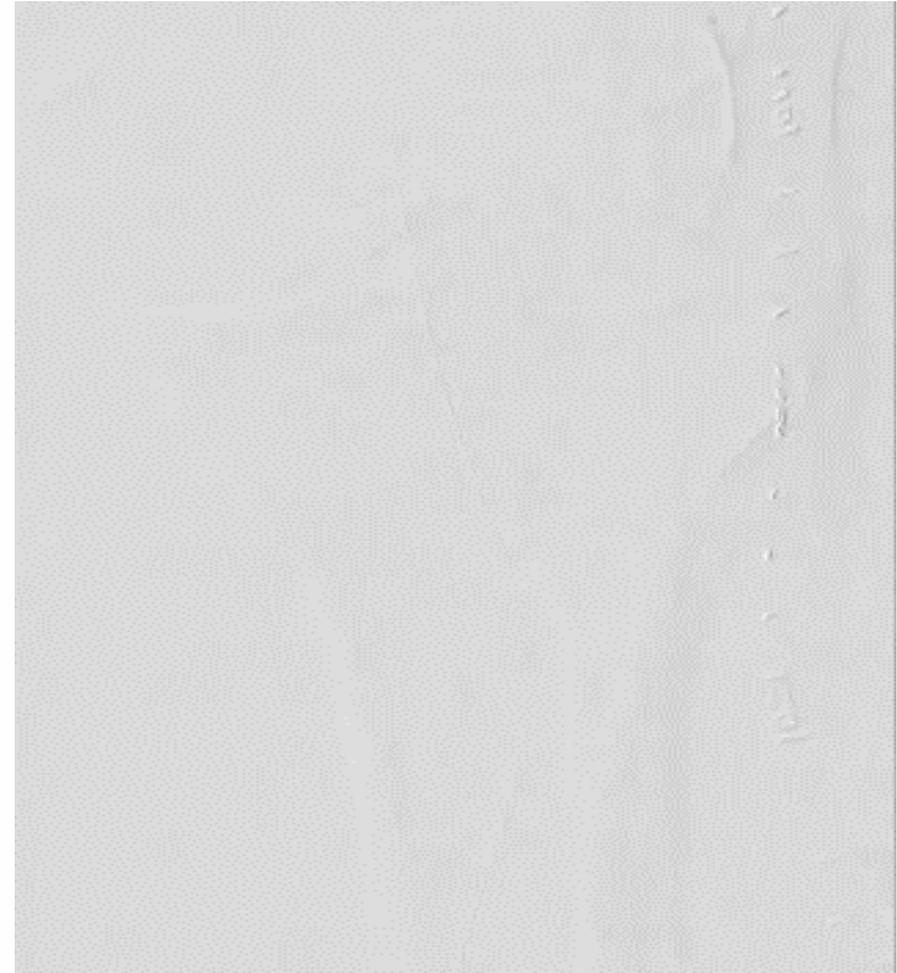
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Endovascular Intervention

Post DCB

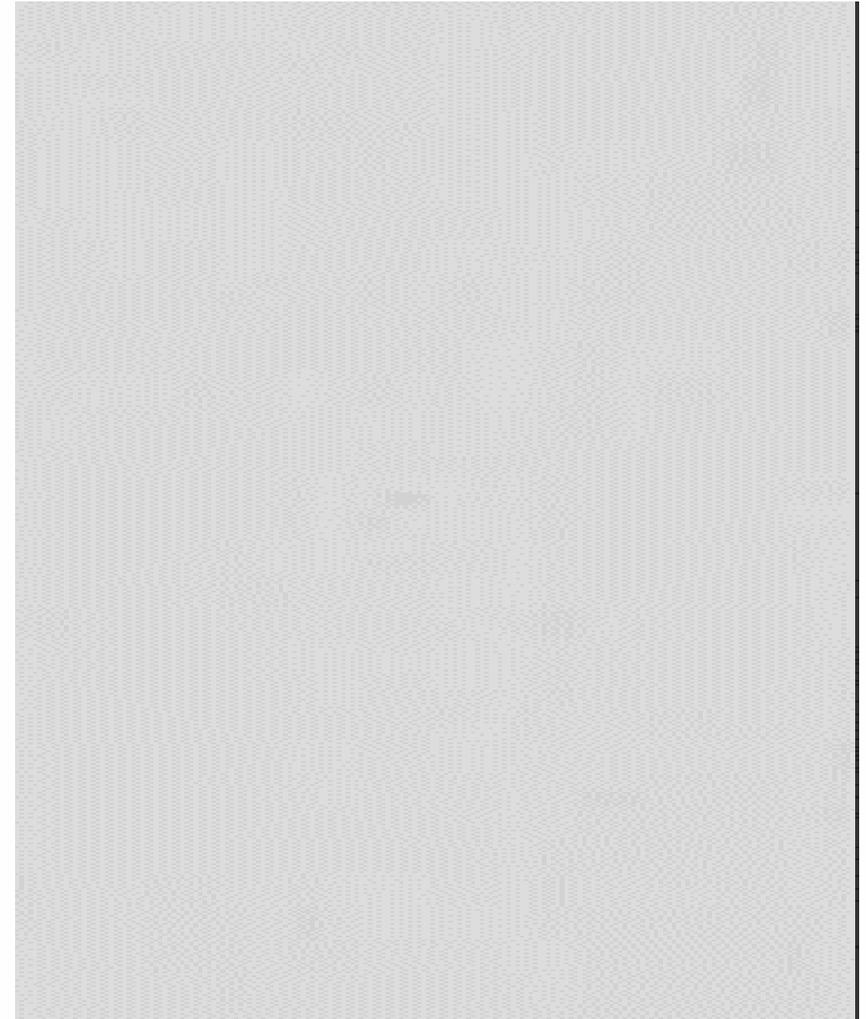


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Post intervention angiogram

Below the knee angio post DCB and directional atherectomy



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Post intervention angiogram

Foot angio post DCB and directional atherectomy



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Conclusions

- Guideline-directed medical therapy is the cornerstone of treatment of peripheral artery disease patients with CLI
- Besides physical exam, diagnostic modalities including ankle/brachial index and ultrasound imaging are fundamental tools for the diagnosis and treatment planning for patients with CLI
- Revascularization by means of endovascular intervention or surgery are imperative for the avoidance of limb loss and major cardiovascular events
- Peripheral angiogram is an appropriate tool for further evaluation of the possibility of endovascular or surgical revascularization
- Endovascular first approach is a reasonable revascularization modality in CLI utilizing a team-based approach including vascular surgery and endovascular interventionalists
- Pedal/tibial artery access is recommended as an adjunctive approach to facilitate lesion crossing rather than primary access
- Angiosome guided “direct revascularization” is recommended if possible. However, achieving adequate inline flow to the pedal arch is the primary goal of revascularization in CLI
- Vein mapping is recommended in case of the need for surgical revascularization as designated treatment modality to ensure the selection of an appropriate conduit with high-rate of patency
- Successful CLI treatment involves a multi-disciplinary approach involving management of comorbidities, infection control and wound care and revascularization.



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