

Below The Knee Interventions

What You Need to Know Before You Start

Issam D. Moussa, MD

Professor of Medicine
Chair, Division of Cardiovascular Diseases
Mayo Clinic
Jacksonville, Florida

Disclosure Statement of Financial Interest

- I, (Issam Moussa) DO NOT have a financial interest/arrangement or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this presentation

Below The Knee Interventions

What You Need to Know Before You Start

- You need to know enough to answer the following questions:

- Why you're doing the procedure?

Critical limb ischemia – Limb Salvage

- How to do the procedure?

Pre procedure imaging and planning objectives

- What to tell the patient and referring physician?

Expectations and factors that influence Prognosis

Critical Limb Ischemia (CLI)

- One new patient will develop CLI for every 100 patients with PAD (diabetics have 5-10 folds increased risk)
- CLI occurs when the essential supply of nutrients falls below the cut-off level that will sustain tissue viability:
 - Ankle systolic pressure <50 mm Hg in non diabetics
 - Toe systolic pressure < 30 mm Hg in diabetics
- CLI presentation
 - Chronic ischemic rest pain
 - Ulcer
 - Gangrene

Presentation of CLI





Superficial toe ulcer



Deep gangrene



Mild gangrene

Prognosis of CLI

- Only 50% of patients with CLI will be alive with 2 limbs at 6-12 months after diagnosis:
 - 12 to 18% will die
 - 30 to 35% will have amputation
- Of those who have amputation:
 - Only 22% will walk again
 - 30% will be bed bound

Below The Knee Interventions

What You Need to Know Before You Start

- You need to know enough to answer the following questions:

- Why you're doing the procedure?

Critical limb ischemia – Limb Salvage

- How to do the procedure?

Pre procedure imaging and planning objectives

- What to tell the patient and referring physician?

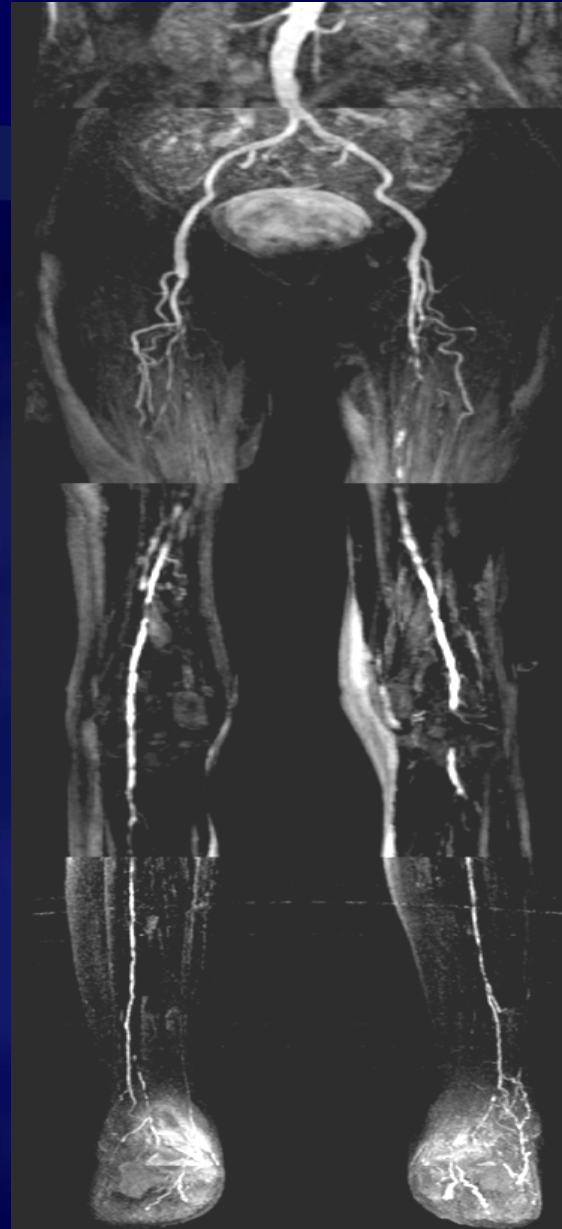
Expectations and factors that influence Prognosis

Arterial Occlusive Patterns in CLI

- **Multi level obstructions**
Collaterals to collaterals.....ABI<0.3
- **Non diabetic**
Multilevel (iliac + SFA + trifurcation)
Advanced age (>75 yrs) & / or smoker
- **Diabetics**
All trifurcation stenosed or occluded
Or multilevel if smoker

Pre Procedure Imaging





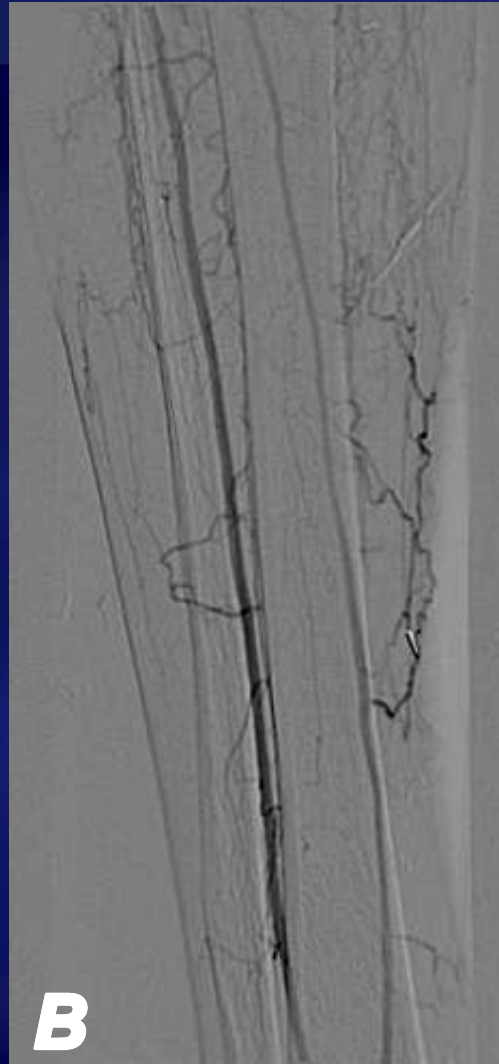
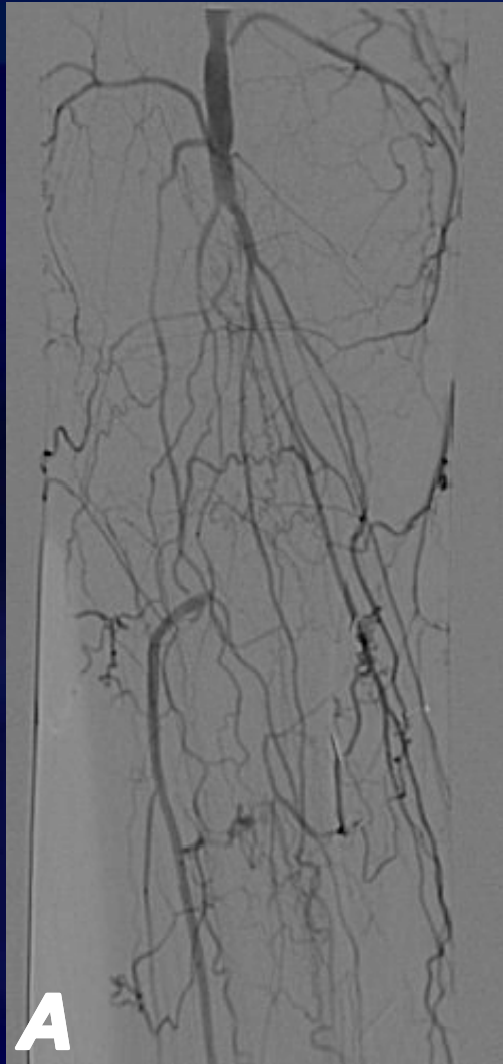
Anatomy of CLI # 1



Anatomy of CLI # 2



Anatomy of CLI # 3



What's Required for Limb Salvage?

- **Increase ABI to >0.4 long enough for wound to heal**
- **Excellent wound care (CRITICAL)**
- **Re intervention if ABI decreases**
- **Re intervention if wound healing plateaus**

PTA vs. Surgery for CLI

- PTA is as effective as surgery
- PTA is associated with:

Less morbidity

Shorter hospital stay

Lower short term cost

Below The Knee Interventions

What You Need to Know Before You Start

- You need to know enough to answer the following questions:

- Why you're doing the procedure?

Critical limb ischemia – Limb Salvage

- How to do the procedure?

Pre procedure imaging and planning objectives

- **What to tell the patient and referring physician?**

Expectations and factors that influence Prognosis

What Determines Healing after Revascularization?

- Number of vascular levels involved
- Quality of infra-popliteal runoff
- Plantar arch patency
- Amount of tissue destruction
- Presence of infection
- Co morbidities and nutritional status

What to Expect from Catheter-Based Intervention

- **Success**

Depends on number and duration of occluded vessels

- **Hospitalization duration**

Depends on co-morbidities (renal failure, foot ulcers, etc..)

- **Complications**

Despite successful revascularization patients with gangrene may need limited amputation

- **Foot ulcers may take 4-6 weeks to heal**

- **Patients typically need staged revascularization**

Summary

- Infrapopliteal interventions are most often performed in patients with CLI
- The interventionalist should be intimately familiar with the natural history, diagnosis and multidisciplinary treatment of this problem
- Pre procedure imaging is crucial for successful revascularization
- Managing patient and referring physician expectations is important



MAYO CLINIC