What Percent of CLI Patients Will Require an Open Surgical Procedure at Some Point in Their Course: an Interventionalist’s Point of View"

Giancarlo Biamino

Diabetes mellitus
Hypercholesterolemia
Current smoking

Histology of peripheral arteries differs

Diabetics (ESRD)

Extensive & more distal disease:
- Fem-Pop
- BTK
- Foot vessels

Non diabetics

Less extensive & more proximal disease:
- Iliac
- Fem-Pop

Calcification +++
Occlusion +++
Fast & aggressive

Calcification +/-
Stenosis ++
Slow & benign

Diabetes vs non-Diabetes manifestations of PAD

Trends in the prevalence of diagnosed diabetes in the USA.
Data from the Center for Disease Control and Prevention

Progression of Diabetes Mellitus in the World

60% or more of CLI pts are diabetic

CLI = ischemic diabetic foot

Histology of peripheral arteries differs

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Less extensive & more proximal disease:
- Iliac
- Fem-Pop

Calcification +/
Stenosis ++
Slow & benign

Disclosure

Speaker name:

I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

I do not have any potential conflict of interest

DM vs non-DM manifestations of PAD

asymptomatic
claudication
rest pain
tissue loss

Histology of peripheral arteries differs

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**Interventional Therapy BTK**

- **First Goal** (for tissue loss):
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- **Long term patency** of the treated vessel:
  - Of secondary importance ??

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**Pathophysiology of diabetic-CLI**

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**Interventional approach in DM-CLI**

1. We need an aggressive revascularization to give blood to the wound: fight for complete BTK revascularization and WRA
2. Remember that foot vessel disease can jeopardize the result of your above-the-ankle PTA reducing healing rate

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Angioplasty of Foot Arteries

Diabetic Rutherford 5

Antegrade recanalisation failed

Angioplasty of the Foot-Loop

Anatomical limits of bypass surgery

Some examples of “surgically unreconstructable disease” before and after angioplasty

This patient had an ulcer with tendons exposition at the dorsum of the foot involving the potential anastomosis site for the only patent vessel of the foot.

Courtesy R. Ferraresi
Diabetic CLI Treatment: THE Italian CONSENSUS

Italian Consensus Document:
- Italian Society of Diabetology
- Italian Society of Vascular Surgery
- Italian Society of Interventional Radiology

Consensus Contents: Targets & strategies in BTK-CLI revascularization

Angioplasty first strategy

How to decide revascularization strategy? Bypass or angioplasty?

Revascularization strategy in diabetic CLI due to chronic extensive FEM-POP-BTK occlusions

Open surgery

Leipzig Experience with DEB BTK

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<td>Lesion-length</td>
<td>183 mm</td>
<td>173 mm</td>
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<tr>
<td>Restenosis &gt;50 % @ 3 Mo</td>
<td>69 %</td>
<td>27 %</td>
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61% restenosis reduction

The vascular territories of the region related artery
Re-interventions during follow up

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<td>BTK re-intervention (including pre-planned secondary interventions), %</td>
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<td>Time to 1st re-intervention (months), mean± std</td>
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<td>Target lesion revascularization, %</td>
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Pedal bypass surgery after crural endovascular intervention
Christian Uhl, et al Regensburg, Germany

Feb. 2008 to Oct. 2012. 75 pedal bypass operations
In 36 of those cases, patients had undergone a prior infrapopliteal EVT,
In 39 cases bypass surgery as first-line treatment.

Results: Overall primary patency at 1 year was 58.3%,
Limb salvage was 76.8%.
Graft occlusion within 30 days was 18.7%. Revision in those cases was futile and 78.6% had major amputation.
Primary patency at 1 year was 67.0% in EVT group vs 48.3% in BSF group
Prior endovascular intervention had no significant impact on either limb salvage (82.3% vs 71.6% at 1 y.) or graft occlusions within 30 days (19.4% vs 17.9%).

Conclusions: Crural endovascular intervention does not seem to have a negative impact on the outcome of subsequent pedal bypass surgery.

Freedom from target lesion revascularization

6 months: 89%  
12 months: 77%

Option in case of crossing failure: Combined antegrade-retrograde approach

Unsuccessful antegrade PTA of the Apop-occlusion
Retrograde puncture of the PTA

The Double-Balloon Technique
Single Center Experience with the retrograde transpedal or transtibial approach

From Nov/2006 – Aug/2014
N patients 554

CLI-patients 395 (71.3 %)
  Rutherford 4 108 (27.3 %)
  Rutherford 5 216 (54.7 %)
  Rutherford 6 71 (18.0 %)

Registry Pedal and Tibial Access for CLI

- Successful intervention: 93.9 %
- Successful in CLI-patients: 92.7 %

  - Access-site
    - Dorsalis pedis artery: 37.2% (147)
    - Prox. anterior tibial artery: 22.8% (90)
    - Posterior tibial artery: 23.3% (92)
    - Peroneal artery: 14.9% (59)
    - Plantar arteries: 1.0% (4)
    - Occluded anteriot tibial art.: 0.8% (3)

TLR in CLI-Patients with retrograde pedal or tibial access

n TLRs during follow-up:
  6 months 84
  12 months 107 (19.3 %)

Bypasses: 13 (<1%)
Failed bypass: 4

Major-Amputation in CLI-Patients with retrograde pedal or tibial access

Major-amputations: 32
Major-amput. at 1y 7.7 %

Major-amp. / Ruth. class
  Ruth. class 4 4.8 % (5)
  Ruth. class 5 6.8 % (14)
  Ruth. class 6 19.7 % (13)

Discrepancy between limb salvage (LS) and wound healing (WH) rate

Approximately 20 % CLI patients are free from death and amputation without complete wound healing.

WE DO NOT HAVE SCIENTIFIC DATA TO ANSWER THE QUESTION!
MY OPPINION : 3-5 % of the CLI cases MAY NEED AN OPEN SURGERY

Giancarlo Biamino
Interventional approach in DM-CLI

Work in a multidisciplinary team: the time of lonely physicians is finished!

Courtesy of R. ferraresi

The End