Interventional strategies in critical limb ischemia – how aggressive should we be with below-the-ankle procedures?

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DISCLOSURES:

Marco Manzi, MD

- Abbott Vascular: Consultant
- BARD: Consultant
- Boston SC: Consultant
- COOK: Consultant
- Medtronic-Invatec: Consultant
- Terumo: Consultant
Obstructive disease pattern in CLI "real world"

5% above-the-groin (ATG)

53% FEM-POP

95% BTK

Ferraresi R, Palena LM, Manzi M.

PanVascular Medicine. 2014

FOOT VESSEL DISEASE CLASSIFICATION

- We considered 3 foot vessels: dorsalis pedis artery (DPA), lateral plantar artery (LPA), medial plantar artery (MPA).
- Plantar arch was considered the distal arch originating from LPA giving the forefoot distribution system and generally connecting to DPA through the 1st perforating branch
Clinical Indications First
To Achieve the best in-line flow to the wounded area;
To Treat BTA vessels “outflow achieving” and better perfusion;
To Create an AVF;
To Achieve the best in-line flow to the wounded area

Critical Limb Ischemia

CLI in diabetics is expression of a complex interaction between PAD, infection, microcirculation and tissue metabolism

Pathophysiology: CLI ≠ ACS

1. **Chronic subcritical ischemia**: a low blood flow is sufficient to keep the limb asymptomatic

2. **Tissue lesion and infection**: healing needs a high blood flow because **healing is a blood flow dependent phenomenon**
   In animal models femoral artery blood flow increases 3-7 times in infected limbs

Courtesy of R. Ferraresi
The impact of arterial pedal arch quality and angiosome revascularization on foot tissue loss healing and infrapopliteal bypass outcome

Hisham Rashid, FRCS, Hani Slim, MRCS, Hany Zayed, FRCS, Dean Y. Huang, FRCR, C. Jason Wilkins, FRCR, David R. Evans, FRCR, Paul S. Sidhu, FRCR, and Michael Edmonds, MD, London, United Kingdom

J Vasc Surg 2013;57:1219-26

✓ 154 patients with CLI underwent 167 infrapopliteal bypasses
✓ Significant difference in healing and time to healing between the complete, incomplete and absent pedal arch (P=.0264)
✓ The rates for healing and time to healing were directly influenced by the quality of the pedal arch rather than the angiosome revascularized

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Troisi N, LINC 2016
To Create an AVF

- Distal AVFs System, LimFlow;

Lim Flow Device, S.KUM, Singapore
52-years-old man. Diabetes,

CLI (TcPO2:1 mmHg), TUC 3C forefoot gangrene.

2 consecutive antegrade intraluminal failures
No Landing Zone

Baseline Angiography - 01.11.2011
ACUTE RESULTS

Occasional AVF!
Combination of all these strategies (antegrade – retrograde, endoluminal-subintimal) can improve success rate in CLI treatment.

Clinical Case: Combined Approach

D.M., CLI
TcPO2 19 mmHg,
TUC 3D (Osteomyelitis)
Left IV toe (V amp) and plantar ulceration
Right TMA
Baseline ANGIO

PT Occlusion
Antegrade SubIntimal Failure and successful Intraluminal Retrograde
Acute Angio & Clinical Results
P.L., male, 74 yo

D.M., CLI

Previous Left TMA

Previous Right I toe amp

TcPO2 9 mmHg,

TUC 2C/3C IV toe
Intervention
Wounds Healing Improvement
Clinical Results@2years
G.A. 76 yo gentleman

- Left 1st Toe gangrene
- DM, Hypertension, MI disease
- TcPO2 = 17 mmHg
Baseline Angio
Baseline Angio
Complication in the foot

Case #1. 64 y-o, Male, Type II Diabetes. Hypertension, Dyslipidemia, ischemic heart disease. CLI right foot (TcPO2: 3 mmHg). Infection of the II toe. Previous TMA left foot.
CONCLUSIONS

Antegrade Plantar and Pedal accesses

Consider To Go BTA whenever is Clinical Indicated for Wound Healing

Antegrade-Retrograde techniques, when there are the right anatomical conditions, can Improve success rate
THANKS FOR YOUR ATTENTION
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