Specifics of BTK arterial disease in diabetic patients and implications for patient specific revascularisation strategies: Which is the right concept – wound-related or total treatment?

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DISCLOSURES:

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• Abbott Vascular: Consultant
• Alvimedica: Consultant
• BARD: Consultant
• Boston SC: Consultant
• COOK: Consultant
• Medtronic-Invatec: Consultant
• Terumo: Consultant
1. Anatomical considerations

2. The angiosome as a target

3. Critics of the angiosome concept
Vascular Imaging of the Foot: The First Step toward Endovascular Recanalization

PER: angiosome 5-6

ATA: angiosome 1

PTA: angiosome 2-3-4
Vascular abnormalities of ankle vessels distribution
Distal distribution pattern: 3150 studied legs

- Standard distribution: “balanced circulation” 94.8%
- Anatomical variations: 5.2%
  - Anterior dominant PER artery: 2.4%
  - Posterior dominant PER artery: 1.9%
  - “Single” PER artery: 0.9%
94.8% Standard distribution: “balanced circulation”
Vascular abnormalities of foot vessels distribution
Distal distribution pattern: 3150 studied legs

- Standard distribution: “balanced circulation” (79.1%)
- Anatomical variations (20.9%)
  - Dominant dorsalis pedis artery (0.4%)
  - Dominant lateral plantar artery (13.2%)
  - Tarsal loop (7.2%)
  - Absence of the pedal-plantar loop (0.2%)
Dominant dorsalis pedis artery

Dominant lateral plantar artery

Balanced circulation
Every patient is different: Follow patient’s anatomy and not book pictures.
1. Anatomical considerations
2. The angiosome as a target
3. Critics of the angiosome concept
1. Angiosome-targeted Lower Limb Revascularization for Ischemic Foot Wounds: Systematic Review and Meta-analysis
   F. Biancari, T. Juvonen
   Department of Surgery, Oulu University Hospital, Oulu, Finland
   EJVES 2014;47:517-22

2. Systematic Review and Meta-analysis of Direct Versus Indirect Angiosomal Revascularisation of Infrapopliteal Arteries
   D.C. Bosanquet, J.C.D. Glasbey, I.M. Williams, C.P. Twine

3. Direct Revascularization With the Angiosome Concept for Lower Limb Ischemia: A Systematic Review and Meta-Analysis
   Tzu-Yen Huang, MD, Ting-Shuo Huang, MD, PhD, Yao-Chang Wang, MD, Pin-Fu Huang, MD, Hsin-Chin Yu, MS, and Chi-Hsiao Yeh, MD, PhD
   (Medicine 94(34):e1427)

3 meta-analysis on the angiosome guided angioplasty
Direct revascularization according to the angiosome concept seems to be better compared with rev. in terms of wound healing and limb salvage.
1. Anatomical considerations

2. The angiosome as a target

3. Critics of the angiosome concept
All of the studies comparing direct and indirect revascularization are retrospective.

It is possible that in the “indirect revascularization” groups there was a propensity to collect patients with the most technically challenging disease and the differences in the outcomes may simply reveal basal differences in the extension and type of obstructive disease.
Try to do what is possible and don’t lose time on unrealistic targets!

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It is possible that in the “indirect revascularization” groups there was a propensity to collect patients with the most technically challenging disease and the differences in the outcomes may simply reveal basal differences in the extension and type of obstructive disease.
The value of an angiosome-oriented revascularization is inversely related to the function of collateral vessels.
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= 0.264)
- The rates for healing and time to healing were directly influenced by the quality of the pedal arch rather than the angiosome revascularized
**Results:** The wound(s) interfered with one angiosome in only 24.0% cases.

**Conclusions:** In CLI, the tissue lesion affects several angiosomes in the majority of the cases.
Open BTK vessels | Limb salvage | **1 better than 0**
---|---|---
0 | 56% |  
1 | 73% |  
2 | 80% | **2-3 better than 1**
3 | 83% |  

When is a technically successful peripheral angioplasty effective in preventing above-the-ankle amputation in diabetic patients with critical limb ischaemia?

PTA of tibial arteries had a better outcome than PTA of the peroneal artery alone
Extensive tissue damage cannot be classified on the basis of an angiosome-oriented scheme. In these patients complete rev. better than partial rev.
Complex Lesion involving Bifurcations: Maintaining Good In-flow: focal calcified lesion scaffolding
R.R.
D.M., Dyalisis
CLI: non healing 2° toe amp; TUC 2c
1° and 3°
Revascularization Pattern Samples: Direct
Revascularization Pattern Samples: Direct

Subintimal Dissection
no re-entry
Revascularization Pattern Samples
1. Try to do what is possible and don’t lose time on unrealistic targets!

2. Consider the rule of collateral vessel disease/function

3. Complete revascularization is better than partial rev. in Rutherford 6 pts (huge wounds more than one angiosome)

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THANKS FOR YOUR ATTENTION
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