Anatomical Variability And Pathology Of Foot Arteries: When And How To Treat And Results: Value Of Angiosomes: Is There A Role For Bypass

Disclosure

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I have the following potential conflicts of interest to report:

Consultant: ABBOTT, Asahi, Cook, MEDTRONIC, Shire, Astra Zeneca

Stock shareholder: Limflow
Every patient is different: Follow patient’s anatomy and not book pictures

1. Anatomical variability
2. Pathology of foot arteries
3. Value of angiosomes
4. Is there a rule for bypass

Foot arteries are the border between two different worlds, two different diseases in terms of biology and clinical evolution: BAD & SAD
BAD = Big Artery Disease
SAD = Small Artery Disease

Key point in BTA-PTA!
Look at the outflow!

In BAD-patients outflow is good! We can do BTA-PTA looking for the healthy foot distribution system.
The majority of BAD-patients can be revascularized, either surgically or percutaneously.

In SAD-patients BTA outflow is obstructed and PTA can be dangerous because there is a disease of the foot distribution system.
In the vast majority of the cases SAD is an untreatable disease, either surgically or percutaneously, and is able to jeopardize the fate of the leg (and of the patient!)
1. Angiosome-targeted Lower Limb Revascularization for Ischemic Foot Ulcers: Systematic Review and Meta-analysis
   - Chan, W. W., Francis, C. A., S. A., 
   - EFES 2004; 47: 517-22

2. "Collateral Vessel Functionality and Foot Ulcer Healing in Lower Limb Angioplasty: A Meta-analysis of 55 Studies"
   - S. A. with/without BAD
   - Collateral vessels are generally involved
   - Failure of the foot distribution system

3. "Direct Revascularization With the Angiosome Concept for Lower Limb Ischemia: A Systematic Review and Meta-analysis"
   - S. A. with/without BAD
   - Collateral vessels are generally involved
   - Failure of the foot distribution system

The value of an angiosome-oriented revascularization is inversely related to the function of collateral vessels:

BAD without SAD
Collateral vessels are generally spared
- Good foot distribution system

SAD with/without BAD
Collateral vessels are generally involved
- Failure of the foot distribution system

In SAD patients angiosome-oriented revascularization, when possible, is the only way to get healing.
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Is this focal lesion critical? Has this lesion a role in the pathophysiology of CLI in this patient?

Hemodynamic significance of a lesion:
“50% diameter stenosis by visual estimation or by quantitative vessel analysis software assessing at least two different angiographic projections.”

Angioplasty must be confined to critical lesions or occlusions. In the vast majority of CLI pts angioplasty leaves behind not-critical diffuse disease.

Due to this hemodynamic reason, and due to patency rates, a good bypass will always be better than angioplasty in treating CLI patients with diffuse multilevel obstructive disease!
Is there a rule for bypass? Sure! However every revascularization strategy must be tailored on the global patient status.