Systemic review of below-the-ankle, inframalleolar intervention

When and how? Last frontier of lower limb intervention

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I have the following potential conflicts of interest to report:

- **Consulting:** Boston Scientific Japan, Century Medical Inc.
- Employment in industry: None
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  Abbot Vascular, Asahi Intecc., Boston Scientific, COOK, Cordis
  Cardinal Health, Goodman, KANEKA, Lifeline, Medikit, Medtronic,
  Orbus Neichi, Terumo,
Systemic review about BTA intervention...
NOT enough data about BTA intervention
Published data is very rare

=There are not enough data of BTA=

**The Clinical Utility of Below-the-Ankle Angioplasty using “Transmetatarsal Artery Access” in Complex Cases of CLI**
Palena LM, Manzi M et al. CCI 2014; 83: 123-129

**Clinical Implications of Additional Pedal Artery Angioplasty in Critical Limb Ischemia Patients With Infrapopliteal and Pedal Artery Disease**
Nakama et al. JEVT 2016; 83: 123-129

**Clinical Outcomes of Pedal Artery Angioplasty for Patients With Ischemic Wounds**
Results From the Multicenter RENDEZVOUS Registry
Nakama et al. JACC CI 2017; 1: 79-90

Retro, single-center
Single arm (n=38)

Retro, single-center
BTA (14) vs. non-BTA (18)

Retro, multi-center
BTA (140) vs. non-BTA (117)
3 problems of BTA intervention
Why? When? How?
Why?

Clinical *implication* of BTA intervention
Clinical implications of BTA interventions


Nakama et al, J Endovasc Ther. 23: 83-91 (2016)
Improvement of Rate of wound healing

Below-the-ankle interventions

Improvement of Rate of wound healing
When?

Indication of aggressive treatment

1. Clinical status (patients & limbs)
2. Lesion dependent (angiographic)
From the RENDEZVOUS registry

Delayed wound healing score (DH-score) was evaluated

Non-ambulatory
Depth of wound
Daily hemodialysis

DH-score 0
Low-risk population (n=28)

DH-score 1 - 2
Moderate-risk population (n=196)

DH-score 3
High-risk population (n=33)

Decision making by DH score

Low-risk population
Acceptable but controversial

Moderate-risk population
Good indication

High-risk population
Too much treatment

Anatomical variation BTA disease

Serial PD
(BTK to BTA disease)

Separate PD
(BTK and BTA disease)

Isolated PD
(Pure BTA disease)

Kawarada O, Nakama T, et al. submitted to Cardiovasc Interv Ther
When BTA intervention needed?

1. **Serial disease** (BTK to BTA disease)
   Should be treated in **primary session**

2. **Separate disease** (BTK & BTA disease)
   Should **not** be treated in primary session
   (Should be considered in **second session**)

3. **Isolated disease** (Pure BTA disease)
   Should be treated in **primary session**

Care the **Indication** of intervention

Kawarada O, Nakama T, et al. submitted to Cardiovasc Interv Ther
How?

technical problem

How to guidewire cross

How to open (expand) the lesion
How to cross GW

- Understand the **complex BTA anatomy**
  Figure of 8 (eight) shape

- Set up the **Bi-directional** approach
  Distal site puncture (**DP**)  
  Trans-collateral approach (**TCA**)
There is **No Distal puncture site!!**

Distal puncture is **impossible!**
Trans-collateral approach is an important technique for BTA-CTO revascularization.
80s female, Rutherford 5

SPP: Dorsal: 23mmHg
    Plantar: 12mmHg
Control angiogram
Target = Pedal arch reconstruction

DH-score: 2 (moderate risk)
Serial disease from BTK
Delayed healing after ATA angioplasty
Retrograde access from PTA
Trans-collateral access from DP
Dorsal to medial plantar connection
Rendezvous at PTA
Bifurcation wiring
Wiring to lateral plantar
Pedal artery angioplasty was done
Why?
- Achievement of rate of complete healing

When?
- Consider about DH-score & lesion morphology
  Objective finding (TcPO2 or SPP) is needed!!

How?
- Bi-directional approach is important
  (TCA is more important than DP)
Little is known about BTA intervention.

Further prospective trial should be needed to learn about the final frontier of lower limb intervention.
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