A case of critical limb ischemia using a metatarsal artery puncture

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Disclosures

Speaker name: Kenji Ogata

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
Trans-metatarsal retrograde access

The Clinical Utility of Below-the-Ankle Angioplasty using “Transmetatarsal Artery Access” in Complex Cases of CLI

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Case: 52yo Male, ESRD on HD

Unhealed ulceration in the right 5th toe

【SPP】
Dorsal : 25mmHg
Plantar : 18mmHg

【Risk Factor】
HT(+), DL(+), DM(+), Smoking(+)
Control Angiogram

1st metatarsal a.
Variation of the BTK arteries

7.8 to 10.8% infrapopliteal artery have some anatomical abnormalities

Kawarada et al, CCI 76; 888-894 (2010)
Type III B variant?

Kawarada et al, CCI 76; 888-894 (2010)
We did not know the antegrade root.

Retrograde 1st strategy is mandatory.
How to establish the retrograde access

Collaterals
→ Tiny and fragile

Pedal plantar loop
→ Occluded

Pedal puncture is only one option!
Where was the best puncture site?

CTO body

More distal, More stable
Where was the best puncture site?

Metatarsal artery puncture
1st Metatarsal artery puncture
Possibility of the type III B variant
Bi-directional → Rendezvous
CROSSER ➔ POBA (2.0mm×40mm)
Final Angiogram
Clinical course

4 weeks later

【SPP】
Dorsalis : 25mmHg
Plantar : 18mmHg

4 weeks later

【SPP】
Dorsalis : 62mmHg
Plantar : 41mmHg
Conclusions

We sometimes face BTK anatomical abnormalities in the daily clinical settings.

Retrograde access 1st strategy is mandatory when the antegrade root is not clear.

Trans-metatarsal retrograde access is a feasible option when conventional pedal puncture is difficult.
Thank you for your attention!

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Retrograde metatarsal access is useful

The advanced retrograde access technique appears feasible and beneficial.

*J Endovasc Ther. 2012; 19:805-811*
The most effective approach?

Dorsalis pedis artery
Pedal artery might be related to wound healing rate in critical limb ischemia
Where is the most effective puncture site?

More distal, More stable

CTO lesion
Anatomical anomalies

Fig. 1. Schema of infrapopliteal variants. Revised based on the reference 1. For further information, see Table I. ATA, anterior tibial artery; PTA, posterior tibial artery; PA, peroneal artery.
Control Angiography (Below the knee)
1. Antegrade approach

2. Bidirectional approach
   trans collateral approach (TCA)
   pedal/plantar access
distal puncture
Where is the most effective puncture site?
Check the correct line

Peroneal – Dorsalis pedis
Kawarada classification Type IIIb variant
Metatarsal artery puncture!!!
Conclusions

- Retrograde approach is sometimes contributory to explain the anatomical problems.
- Retrograde metatarsal puncture is very useful technique in this situation.
- The advanced access has stable landing and stable back up.
The way to guidewire passage

① Antegrade approach

② Bidirectional approach
   Trans collateral approach (TCA)
   Trans-pedal retrograde access
   Distal puncture
The problem of BTK lesion

ATA might be hypoplasia

PTA was chronic total occlusion with severe calcified

Collateral channels were very tortuous
Getting the enough back up force!!

CTO lesion

More distal, More stable
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