Dorsalis Pedis Artery Entrapment – curiosity or clinical issue in CLI patients?

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Disclosure

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I have the following potential conflicts of interest to report: consulting, travel reimbursement, teaching courses, training, proctoring:

Medtronic, Boston Scientific, Abbott, LimFlow, Terumo, Cook, Biotronik, Asahi, Shire, Kardia, Orbus
1. Literature

2. DPA entrapment: cases

3. DPA clinical evaluation

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“The DPA develops extensive kinks across the ankle joint during foot dorsiflexion (left), but straightens during plantar flexion of the foot (right)”

The opposite the distal posterior tibial artery
Single case

- Claudication
- In case of active dorsiflexion
- Entrapment of DPA by the extensor hallucis brevis tendon.

Single case

- Blue toe syndrome
- Extrinsic compression of DPA by the extensor hallucis brevis tendon

Single case

- Claudication
- Forced plantar flexion
- Costriction by tissue bands

Single case

Anterior tarsal tunnel syndrome with DPA thrombosis
“Unique biomechanical characteristics of the DPA and distal posterior tibial arteries ... Morphology of the arteries changes according to the dynamics of the ankle articulation” (Katsanos)

Regarding a DPA-E condition we found few single case reports, heterogeneous
1. Literature

2. DPA entrapment: cases

3. DPA clinical evaluation
My first DPA-E patient
Persistent stenosis despite multiple balloon inflation
DPA-E is a functional obstruction observed in plantar flexion of the foot and released in standard position.
DPA-E is an anatomical condition and is not related to the endovascular treatment (spasm, dissection etc.)
DPA-E can affect the tarsal artery
DPA-E can lead to functional total occlusion
1. DPA-E is an anatomical condition that can affect the true DPA or the tarsal artery

2. DPA-E must be considered when there is a focal stenosis at the passage ATA-DPA

3. In the majority of the cases the dynamic obstruction is in correspondence of the distal astragalus
In some cases is higher, at the ankle level.
1. Literature

2. DPA entrapment: cases

3. DPA clinical evaluation
We started an analysis on DPA-E prevalence in the healthy population, however we are far from standardizing the measurement method.

< 5%
Many patients, especially bedridden & neuropathic pts, assume a plantar flexed foot position as the resting position while lying on the bed.

*In these pts we cannot exclude that DPA-E could play a role in developing or maintaining CLI.*

In the last 6 yy I made ≈ 4000 angio on CLI pts and I found 15 DPA-E cases → 0.4%
What can we do?

In DPA-E patients, heel protectors can save heel and patency.
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