New Tips, Tricks and Devices for Pedal and Other Distal Access Procedures

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I have the following potential conflicts of interest to report:

Consulting:
Medtronic, Abbott, Boston Scientific, Cook, Cordis, C.R. Bard, Intactvascular, ReFlow Medical, Spectranetics, Upstream Peripheral

Single Center Experience with the retrograde transpedal or transtibial approach

From Nov/2006 – Aug/2014
N patients 554
- Retrograde access only if antegrade recanalization-attempts fail.
- Successrate of retrograde procedures: 93.9%

Right Forefoot CLI, GW-Perforation From Above

Angiography Assisted Distal Access

Especially for small, calcified, difficult to access arteries
Use different angulations during puncturing

Material for Pedal / Tibial Access

- 21 Gauge 4 or 7 cm long needle
- 0.018" polymer-coated guidewire through needle
  - Connect 300 cm
  - V-18 Control 300 cm

Sheathless approach

- 0.018" support-catheter 90cm QuickCross, TrailBlazer, CXC Seeker, Rubicon
Guidewires for BTK-Arteries

- Polymere-coated, lubricious (e.g. Hydro-ST, PT2, Command)
- CTO-GWs for Calcium
  - High tip-load for better „grip” into the plaque:
    - (e.g. CTO-approach 28g, Winn 200 T, Connect 250 T)

Low Profile Devices for CTO-Recanalization

- Avinger Wildcat
- Crosser
  - TruePath CTO Device
    - Rotates at 13,000 rpm
  - 0.014”; 0.018”; 0.035” Wingman

Techniques to Connect Antegrade and Retrograde GWs

- “CART” or “Reversed CART”-technique

New Material for the Retrograde Pedal Approach:
2.9 Fr-Sheath and 2.9 Fr-Compatible Balloons

- Advance Micro 14 OTW-balloon
  - 2.5 Fr catheter
  - .014 inch wire guide
  - 50, 90 and 150 cm shafts

- 2.9 Fr (ID) pedal sheath

Techniques to Connect Antegrade and Retrograde GWs

- Double-balloon-technique

Result after Bidirectional Approach Recanalization
Transpedal 3Fr Sheath
for Calcified, difficult-to-pass BTK-CTOs

to hold firm tension on the guidewire from both ends

Pushing and pulling of a Low-profile OTW-balloon via the 2.9 Fr sheath over a flossing GW
Coronary high-pressure balloons

Attempt to insert a Low-profile balloon from antegrade

Registry Pedal and Tibial Access

<table>
<thead>
<tr>
<th>Access-technique</th>
<th>Since 2.9 Fr. sheath is available</th>
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</thead>
<tbody>
<tr>
<td>Sheath-less</td>
<td>78.3 %</td>
</tr>
<tr>
<td>2.9 Fr. sheath</td>
<td>6.5 %</td>
</tr>
<tr>
<td>4 Fr. sheath</td>
<td>13.4 %</td>
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</tbody>
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Registry Pedal and Tibial Access

Technique for CTO-passage

- Retrograde GW-passage: 64.4%
- CART-technique: 19.3%
- Double-balloon: 11.9%
- Reentry-system / balloon: 2.7%

Sheath from retrograde necessary

Registry Pedal and Tibial Access for CLI

- Access-site complications (during treatment)
  - Spasm at access-site: 15.4%
  - Acute access artery occlusion: 0.5%
  - Access artery dissection: 0.5%
  - Distal thrombus / embolus: 0.9%
  - PTA of access artery: 0.9%
  - Compartment-syndrome: 0.7%

Major-Amputation in CLI-Patients with retrograde pedal or tibial access

Freedom from major amputation

Major-amputations: 32
Major-amput. at 1y: 7.7% (29)

Major-amp. / Ruth. class
- Ruth. class 4: 4.8% (5)
- Ruth. class 5: 6.8% (14)
- Ruth. class 6: 19.7% (13)
Summary

The retrograde transpedal / transfemoral access requires relatively few devices like
- support-catheter
- dedicated guidewires
- dedicated low-profile sheaths

and is safe and successful.