Ultrasound guided revascularization of complex peripheral obstructions

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Disclosure Statement of Financial Interest

Within the past 12 months, I or my spouse/partner have had a financial interest/arrangement or affiliation with the organization(s) listed below.

Affiliation/Financial Relationship
• Consulting Fees/Honoraria

Company
• Abbott Vascular
• Bard Peripheral Vascular
• Boston Scientific
• Cardiovascular Systems, Inc.
• Cook Medical
• Medtronic
• Spectranetics
• Terumo
EVUS clock for safe access into arterial conduit Including diseased and small arteries
Can easily avoid venous puncture.
Ankle “strap” dissected

Posterior Tibial
A: Always find the cross sectional view of the proximal SFA/PFA then scan back to the CFA
B: Showing the CFA after scanning back from the visualizing the SFA/PFA
C: Long access view of the CFA/SFA/PFA with color

You will always know Where you are
Real Time to Tibial Access

- 0 Contrast
- 0 Radiation
Step by step ultrasound guided tibial access

0 radiation \(\rightarrow\) 0 contrast
ADVANCING GUIDE WIRE UNDER US

Sheath in the anterior tibial artery

AT Artery

AT Vein

Wire tip

J.A. Mustapha MD
EVUS wire advancement

- 0 Contrast
- 0 Radiation

Reverberation artifacts appear as multiple, equally spaced parallel lines.
• After access, operators are able to maneuver their guide wire/access wire through high grade stenoses that otherwise could cause potential complication.
Why Is This Better than Fluoroscopy?

- 0 Contrast
- 0 Radiation

Can see the wire tip
Avoid retro-perforation
Avoid retro-dissection
Enhance CTO crossing
Increased confidence
<table>
<thead>
<tr>
<th>Access Site</th>
<th>Number of Attempts mean (min, median, max)</th>
<th>Time to Access median (seconds) mean (min, max)</th>
<th>Access Success Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common femoral retrograde</td>
<td>1.2 [1, 1, 5]</td>
<td>39 [3, 1348]</td>
<td>308/310 [99.4%]</td>
</tr>
<tr>
<td>Common femoral antegrade</td>
<td>1.2 [1, 1, 6]</td>
<td>45 [1, 1018]</td>
<td>288/296 [97.3%]</td>
</tr>
<tr>
<td>Posterior tibial</td>
<td>1.5 [1, 1, 5]</td>
<td>41 [7, 922]</td>
<td>98/108 [90.7%]</td>
</tr>
<tr>
<td>Anterior tibial</td>
<td>1.4 [1, 1, 4]</td>
<td>59 [2, 908]</td>
<td>100/108 [92.6%]</td>
</tr>
<tr>
<td>Superficial femoral antegrade</td>
<td>1.2 [1, 1, 3]</td>
<td>20 [1, 554]</td>
<td>24/25 [96.0%]</td>
</tr>
<tr>
<td>Dorsalis pedis</td>
<td>1.4 [1, 1, 4]</td>
<td>30 [1, 169]</td>
<td>11/14 [78.6%]</td>
</tr>
<tr>
<td>Brachial</td>
<td>1 [1, 1, 1]</td>
<td>29 [15, 137]</td>
<td>9/9 [100%]</td>
</tr>
<tr>
<td>Radial</td>
<td>1.1 [1, 1, 2]</td>
<td>49 [10, 128]</td>
<td>8/8 [100%]</td>
</tr>
<tr>
<td>Superficial femoral retrograde</td>
<td>1.1 [1, 1, 2]</td>
<td>44 [13, 78]</td>
<td>7/8 [87.5%]</td>
</tr>
<tr>
<td>Peroneal</td>
<td>3.0 [1, 2, 7]</td>
<td>52 [10, 147]</td>
<td>4/7 [57.1%]</td>
</tr>
</tbody>
</table>

Comparison of CF Retrograde, CF Antegrade, PT and AT Access Success

Table 4. Access-site related complications and procedural outcomes.

<table>
<thead>
<tr>
<th></th>
<th>Femoral Antegrade (n = 188)</th>
<th>Femoral Retrograde (n = 185)</th>
<th>Dual Femoral/Tibial (n = 130)</th>
<th>Dual Femoral Retrograde (n = 44)</th>
<th>TAMI (n = 73)</th>
<th>Other (n = 29)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
</tr>
<tr>
<td>Arteriovenous fistula</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>1 [0.8%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>1 [3.4%]</td>
</tr>
<tr>
<td>Hematoma</td>
<td>4 [2.1%]</td>
<td>1 [0.5%]</td>
<td>2 [1.5%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>1 [3.4%]</td>
</tr>
<tr>
<td>Thrombosis</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
</tr>
<tr>
<td>Compartment syndrome</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
</tr>
<tr>
<td>Aneurysm</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
</tr>
<tr>
<td>Pseudoaneurysm</td>
<td>5 [2.7%]</td>
<td>0 [0.0%]</td>
<td>2 [1.5%]</td>
<td>1 [2.3%]</td>
<td>1 [1.4%]</td>
<td>2 [6.9%]</td>
</tr>
<tr>
<td>BARC3a</td>
<td>5 [2.7%]</td>
<td>0 [0.0%]</td>
<td>2 [1.5%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>1 [3.4%]</td>
</tr>
<tr>
<td>BARC3b</td>
<td>1 [0.5%]</td>
<td>1 [0.5%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>1 [3.4%]</td>
</tr>
<tr>
<td>Transfusion</td>
<td>6 [3.2%]</td>
<td>1 [0.5%]</td>
<td>1 [0.8%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>2 [6.9%]</td>
</tr>
<tr>
<td>Endovascular intervention</td>
<td>0 [0.0%]</td>
<td>1 [0.5%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>1 [3.4%]</td>
</tr>
<tr>
<td>Surgical intervention</td>
<td>1 [0.5%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
<td>0 [0.0%]</td>
</tr>
<tr>
<td>Mean contrast volume [cc]</td>
<td>163</td>
<td>196</td>
<td>159</td>
<td>200</td>
<td>57</td>
<td>208</td>
</tr>
<tr>
<td>Mean fluoroscopy time [min]</td>
<td>22</td>
<td>25</td>
<td>44</td>
<td>21</td>
<td>17</td>
<td>32</td>
</tr>
<tr>
<td>Mean procedure time [min]</td>
<td>84</td>
<td>81</td>
<td>134</td>
<td>82</td>
<td>83</td>
<td>105</td>
</tr>
<tr>
<td>Mean hospital stay [days]</td>
<td>1.5</td>
<td>1.3</td>
<td>1.6</td>
<td>1.1</td>
<td>0.9</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Data provided as number (percentage) or mean.
Thank you

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