Advances in atherectomy: Phoenix atherectomy – why, when and how

Dr. Theodosios Bisdas
Associate Professor for Vascular Surgery
Clinic for Vascular Surgery
St. Franziskus Hospital, Muenster, Germany
th.bisdas@gmail.com
Disclosures

Speaker name:

Theodosios Bisdas

I have the following potential conflicts of interest to report:

- Consulting: Boston Scientific, Medtronic, BBraun, Cardinal, Penumbra, Bard, COOK
- Other: VASCUPEDIA (Co-founder)
Atherectomy market
Europe

- Growth in the next years
- Demand primarily concentrated in Germany (favorable reimbursement)
- Second largest country for atherectomy is Italy
- Lack of reimbursement and clinical supportive data limit adoption in other countries
- Recent favorable DAART results may support atherectomy as a preparation step before PTA

1Zeller et al. DEFINITIVE AR trial. Circ Cardiovasc Interv 2017;10:e004848
Phoenix Hybrid Atherectomy System
The next generation of atherectomy

<table>
<thead>
<tr>
<th>Feature</th>
<th>Hybrid</th>
<th>Directional</th>
<th>Laser</th>
<th>Orbital</th>
<th>Rotational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front cutting for direct lesion access</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Plaque removal</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directional cutting ability*</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single insertion</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>No need for capital equipment</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Phoenix atherectomy device

**Cut:** Front cutter clears tissue in a way that may help reduce potential trauma to the vessel.

**Capture:** Unique cutter head design allows for continuous capture of debulked material.

**Clear:** The internal Archimedes screw allows you to clear plaque without having to remove the catheter and clean out debulked material. **NO NEED FOR DISTAL PROTECTION DEVICE**

<table>
<thead>
<tr>
<th>Catheter Tip Diameter</th>
<th>Minimum Introducer Size</th>
<th>Crossing Profile</th>
<th>Working Length</th>
<th>Maximum Guide Wire Diameter</th>
<th>Minimum Vessel Diameter</th>
<th>Anatomical Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8 mm</td>
<td>5F (1.8 mm) or larger</td>
<td>1.8 mm</td>
<td>130 cm</td>
<td>0.014&quot; (0.36 mm)</td>
<td>2.5 mm</td>
<td>Femoral, popliteal, or distal arteries located below the knee</td>
</tr>
<tr>
<td>2.2 mm</td>
<td>6F (2.2 mm) or larger</td>
<td>2.2 mm</td>
<td>130 cm</td>
<td>0.014&quot; (0.36 mm)</td>
<td>3.0 mm</td>
<td></td>
</tr>
<tr>
<td>1.8 mm</td>
<td>5F (1.8 mm) or larger</td>
<td>1.8 mm</td>
<td>149 cm</td>
<td>0.014&quot; (0.36 mm)</td>
<td>2.5 mm</td>
<td></td>
</tr>
<tr>
<td>2.2 mm</td>
<td>6F (2.2 mm) or larger</td>
<td>2.2 mm</td>
<td>149 cm</td>
<td>0.014&quot; (0.36 mm)</td>
<td>3.0 mm</td>
<td></td>
</tr>
</tbody>
</table>

1Warning: Do not use the Phoenix Atherectomy Catheter in vessels smaller than the indicated size or harm to patient (vessel perforation, dissection or injury) could occur.
Phoenix system components

- Atherectomy catheter
  10000-12000 rpm

- Battery-powered handle

- Wire support clip

- Debris collection bag
Phoenix 7F
2.4 mm deflecting catheter

Non-Deflected (Straight)
127 cm working length

Deflected
125 cm working length

Rotation knob

Straight cutting with slider mechanism in back position

Deflected cutting with slider mechanism in forward position
When to use it?
When **not** to use it?

- Acute embolism
- Acute thrombotic occlusion
- Subintimal recanalization
When to use it?

SFA lesions - Stenosis
When to use it?
Long SFA occlusions
When to use it?

No stenting zones: CFA, deep femoral artery
When to use it?

No stenting zones: popliteal artery
When to use it?
In-stent stenosis*

*outside IFU – Personal opinion
When to use it?
Infrapopliteal/crural arteries
How to use it?

Important technical tips

• Advancement speed: 1cm/sec
• Pay attention to audible and tactile feedback
• The system should stay properly lubricated
  – Treat 5-10cm and pull catheter back to allow flow
• Pay attention to aspirant flow
• Choose appropriate guidewire
  – Flexible wire for ATK- and stiffer wire for BTK arteries
  – EV3 Nitrex, Abbott HiTorque Xtra Support, Abbott Iron Man
Conclusions

- The Phoenix catheter has been designed to treat a wide variety of plaque morphologies and all types of lesions of the infrainguinal arteries (except acute clot)
- The device can be a first-line atherectomy solution due to its versatility
- Several features of the device are very comfortable for the user and effective for the patient, but a learning curve is still required
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