Directional Atherectomy and Anti-Restenotic Therapy in Multilevel Disease

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Disclosure

Speaker name:
Carlos Abel Gutierrez Diaz

I have the following potential conflicts of interest to report:

X Consulting: Medtronic, Bard, Abbott, Boston Scientific

Employment in industry

Stockholder of a healthcare company

Owner of a healthcare company

Other(s)

I do not have any potential conflict of interest
Predictors of poor outcome.

- Location: Iliac > Femoropopliteal > Tibial.
- Stenosis vs Occlusion.
- Length: Short vs Long.
- Calcium.
- Runoff status.
- Multifocal.
- Multilevel.
Primary patency: 78.9% vs 50.1%

- Sustained benefit of DCB over PTA.
- Benefit in longer and complex lesions (CTO’s), diabetic and females.
- Less reinterventions.

CD - TLR: 9.1% vs 28.3%

What about complex lesions?

Long, calcified, CTO’s, diabetic, multilevel. Real world cases.
Lower Limb Multilevel Treatment With Drug-Eluting Balloons: 6-Month Results From the DEBELLUM Randomized Trial

- Late lumen loss lower in DCB: 0.5 vs 1.6 mm.
- TLR: 6.1% vs 23.6%.
- Higher late lumen loss in calcified lesions: barrier to drug absorption.
- Small sample size: not support real conclusions.

• 21 patients with isolated popliteal lesions.
• Primary patency at 12 and 18 months: 95% and 90%.
• Better penetration of antiproliferative drug.
• 59 year-old woman.
• Smoker, diabetic.
• Ischemic rest pain and tissue loss.
• Left CFA anterograde access.
• CTO Cap analysis: antegrade congruous concavity.
• Hibernating lumen.
• Successful crossing: support catheter.
• Predilatation: < 1 mm than the vessel reference diameter.
• TurboHawk directional atherectomy with distal embolic protection filter.
• BTK PTA.
• Femoropopliteal DCB.
DCB efficacy can be affected by calcium (circumferential distribution)

Debulking

• 54 year-old man.
• Smoker and diabetic.
• Ischemic rest pain and tissue loss.
• Left CFA anterograde access.
• Femoropopliteal and tibial vessel disease.
- Severe calcification.
- Successful crossing: support catheter.
- 0.014 Guidewire: PTA - MPA - PA - ATA.
- Predilatation: < 1 mm than the vessel reference diameter.
- TurboHawk directional atherectomy with distal embolic protection filter.
- BTK DCB.
- Femoropopliteal DCB.
Directional Atherectomy Followed by a Paclitaxel-Coated Balloon to Inhibit Restenosis and Maintain Vessel Patency

Twelve-Month Results of the DEFINITIVE AR Study

Thomas Zeller, MD; Ralf Langhoff, MD; Krishna J. Rocha-Singh, MD; Michael R. Jaff, DO; Erwin Blessing, MD; Beatrice Amann-Vesti, MD; Marek Krzanowski, MD; Patrick Peeters, MD; Dierk Scheinert, MD; Giovanni Torsello, MD; Sebastian Sixt, MD; Gunnar Tepe, MD; on behalf of the DEFINITIVE AR Investigators

- 102 patients: 48 (DA + DCB) and 54 (DCB).
- Mean lesion length: 106 mm.
- Primary patency at 1 year: 82.4% (DA + DCB), 71.8% (DCB).
- Potential advantage in long > 10 cm and severely calcified lesions.
Increasing complexity of lesions

More endovascular tools are needed: technique and devices
<table>
<thead>
<tr>
<th>Condition</th>
<th>N = 14</th>
<th>N = 14</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td>68.3</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>71.4%</td>
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<tr>
<td>Smoker Current or Past</td>
<td>(9) 64.2%</td>
<td>(2) 14.2%</td>
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<tr>
<td>Diabetes mellitus</td>
<td>(10) 71.4%</td>
<td>(9) 64.2%</td>
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<tr>
<td>Hypertension</td>
<td>(11) 78.5%</td>
<td>(3) 21.4%</td>
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<tr>
<td>Hyperlipidemia</td>
<td>(6) 42.8%</td>
<td>(6) 42.8%</td>
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<tr>
<td>Chronic Kidney Disease</td>
<td>(6) 42.8%</td>
<td>(13) 92.8%</td>
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<td>Rutherford 4</td>
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<td>Rutherford 5</td>
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<tr>
<td>Rutherford 6</td>
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<tr>
<td>Multilevel disease</td>
<td>100%</td>
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<tr>
<td>Aortoiliac</td>
<td>42.8%</td>
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<tr>
<td>Femoropopliteal</td>
<td>85.7%</td>
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<tr>
<td>Tibial</td>
<td>92.8%</td>
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<tr>
<td>Category</td>
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<td>---------------------------------------</td>
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<tr>
<td>Technical success</td>
<td>13 (92.8%)</td>
<td></td>
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<tr>
<td>Occlusions/ Stenosis</td>
<td>13 (92.8%)/1 (7.2%)</td>
<td></td>
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<tr>
<td>DCB Femoropopliteal/ Tibial Stent</td>
<td>12 (85.7%)/ 6 (42.8)</td>
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<td>Dissection</td>
<td>(2) 14.2%</td>
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<td>Acute Arterial Thrombosis</td>
<td>(1) 7.1%</td>
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<tr>
<td>Distal Embolization</td>
<td>(1) 7.1%</td>
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<td>Arterial access complication</td>
<td>(1) 7.1%</td>
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<tr>
<td>Bleeding</td>
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<td>Pseudoaneurysm</td>
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<td>Amputation</td>
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<tr>
<td>Calcification</td>
<td>(12) 85.7%</td>
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</table>
Conclusions

• Complex lesions are determinants of poor outcome in endovascular surgery.
• Vessel preparation with DA before DCB is safe.
• Calcification and long lesions are potential predictors for superior outcome for DAART: multilevel disease?
• A RCT is needed to determine the benefits of DA + DCB.
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