Intra-procedural extra-vascular ultrasound prevents early and late failures in BTK

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Disclosure

Speaker name:

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I have the following potential conflicts of interest to report:

☑ Consulting: Medronic, Philips, Biotronik, 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
How to optimize angioplasty

«after angiography-guided PTCA, adjunctive IVUS-guided balloon angioplasty induced an additional increase in hyperemic blood velocity related to a reduction of residual lumen obstruction. Subsequent elective stent implantation resulted in a further increase of coronary lumen dimensions, whereas the hyperemic blood flow velocity remained unchange

Reference Vessel Diameter and Balloon sizing: Is Angio enough?

Balloon angioplasty is often undersized in BTK Duplex is more accurate for RVD and Balloon size
Drug Transfer, RVD and Inflation Pressure

DCB has to touch and press vessel wall
Importance of DCB/vessel size

DEB shrunk

Post procedure

6 months

No touch ➔ No effect!
Spot restenosis: missing transfer or drug penetration?

Baseline  
Post DCB 300mm  
6-month
Defining optimal balloon angioplasty
The role of Duplex guidance
Defining optimal balloon angioplasty
The role of Duplex guidance

- Pulsatile flow
- PSVR<1.5
- Bi-three-fasic Flow pattern
Residual significant narrowing due to undersized POBA
Residual significant narrowing: Early patency scan necessary to support healing
Lesion preparation: is angiographic evaluation enough for dissection

30% residual stenosis by QVA

The patient leaves the cathlab already with restenosis
Peripheral Arterial Balloon Angioplasty: Effect of Short versus Long Balloon Inflation Times on the Results

<table>
<thead>
<tr>
<th></th>
<th>Inflation Time (sec)</th>
<th></th>
<th>P Value</th>
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<tbody>
<tr>
<td></td>
<td>30</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>Major dissection (grades 3 and 4)</td>
<td>16</td>
<td>5</td>
<td>.010</td>
</tr>
<tr>
<td>Minor or no dissection (grades 1 and 2)</td>
<td>21</td>
<td>32</td>
<td>.010</td>
</tr>
<tr>
<td>Further interventions</td>
<td>20</td>
<td>9</td>
<td>.017</td>
</tr>
<tr>
<td>Stent</td>
<td>4</td>
<td>1</td>
<td></td>
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<tr>
<td>Further dilation (prolonged dilation, dilation with larger diameter)</td>
<td>16</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Residual stenosis (&gt;30%)</td>
<td>12</td>
<td>5</td>
<td>.097</td>
</tr>
<tr>
<td>Complication (embolization, thrombosis)</td>
<td>1</td>
<td>1</td>
<td></td>
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<tr>
<td>Mean ankle-brachial index (before, after intervention)</td>
<td>0.66, 0.87</td>
<td>0.65, 0.84</td>
<td></td>
</tr>
</tbody>
</table>
Flow-limiting Dissection
Long inflation may help
Subintimal recanalization and Spiral Dissection

PRE Retrograde

DCB 3x300mm

POST POST
Subintimal recanalization and Spiral Dissection

Things may change early

Post procedure

2 weeks later
Mechanical TLR: Repeat Revascularization Due to Early Reocclusion Caused by Dissection-Recoil-Thrombosis Not Restenosis
CONCLUSION

➢ Vessel preparation is part of DCB angioplasty
➢ Duplex ultrasound is a fundamental tool to guide intervention (balloon/artery ratio) and evaluate the results togheter with angio
➢ Pulsatile flow, PSVR<1.5, Bi-three-fasic Flow pattern
➢ Long Inflation time (5 min) may help in reducing/sealing flow limiting dissection
➢ DCB only after optimal angioplasty
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