Is duplex ultrasound better than angiography to predict target vessel failure/success after DCB in BTK intervention?

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Disclosure

Speaker name: Francesco Liistro

I have the following potential conflicts of interest to report:

- [x] Consulting: Cook, Medtronic

- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

I do not have any potential conflict of interest
DSA angiography in BTK Intervention

- Gold Standard for diagnosis Intervention and follow-up (BTK)
- More Anatomical (QCA) vs Functional (TFC) possible evaluation
- QCA was created for coronary angiography for 1-4 cm lesion and is applied in tibial lesion that can be 30 cm long
- Lumen but not vessel wall analysis
- Fake in spiral dissection (subintimal recanalization)
Usefulness of Fractional Flow Reserve to Predict Clinical Outcome After Balloon Angioplasty

Circulation 1999, 99:883-888
doi: 10.1161/01.CIR.99.7.883

Hideyuki Takimura, MD,*, Yasunari Sakamoto, MD,*, Shinsuke Mori, MD,*, Masakazu Tsutsumi, MD,*, Takuro Takama, MD,*, Yohsuke Honda, MD,*, Takahiro Tokuda, MD,*, Kenji Makino, MD,*, Shigemitsu Shirai, MD,*, and Yoshiaki Ito, MD.
Use of Ultrasound in DCB BTK angioplasty

✔ Procedure
- Optimal balloon angioplasty
- DCB delivery

✔ Follow-up assessment
- Early re-intervention
- Scheduled time

Duplex parameter: PSV, PSVR, Flow diagramm
Optimal balloon angioplasty (before DCB use)

Most used definition is:
Residual stenosis <30% by QVA with no flow limiting dissection.

Coronary artery dissection - NHLBI classification (The National Heart, Lung and Blood Institute)

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>Type A</td>
<td>minor radiolucent areas in the lumen without impairment of flow or persistent dye staining after contrast runoff</td>
</tr>
<tr>
<td>Type B</td>
<td>luminal flap that is radiolucent and runs parallel to the vessel wall with contrast injection but without impairment of flow or persistent dye staining after contrast runoff</td>
</tr>
<tr>
<td>Type C</td>
<td>contrast appears outside of the vessel lumen as an &quot;extraluminal cap&quot;, the staining appears even after contrast clears off the lumen</td>
</tr>
<tr>
<td>Type D</td>
<td>spiral radiolucent luminal filling defects, often persistent staining after contrast clears from the vessel</td>
</tr>
<tr>
<td>Type E</td>
<td>new and persistent filling defects in the vessel lumen</td>
</tr>
<tr>
<td>Type F</td>
<td>lesions that progress to impaired flow or total occlusion</td>
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</tbody>
</table>

References:
Lesion preparation: is angiographic result reliable?

The patient leaves the cathlab already with restenosis.

30% residual stenosis by QVA
Defining optimal balloon angioplasty

The role of Duplex guidance
Subintimal recanalization and early DCB reocclusion
Mechanically driven TLR (occurring the first 4 weeks)
Difining optimal balloon angioplasty in subintimal recanalization
Early reoclusion by dissection flap: indication to angio and mechanical TLR
Mechanical TLR: repeat revascularization due to early reocclusion caused by dissection or thrombosis not restenosis.
Duplex and angiography at 6 months
Defining optimal balloon angioplasty
1 Vel= 58.7 cm/s
2 Vel= 140.0 cm/s

NOT FOR MEDICAL USAGE
CONCLUSION

- Duplex ultrasound is a fundamental tool for diagnosis, treatment and follow up in peripheral intervention, particularly in BTK
- DUS can enrich angiography evaluation
- Optimal DUS after DCB seems to predict success on long term
- Due to its safety can be use for patency surveillance and indication for reintervention

So... get skilled !!!!
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