Value Of DCBs In BTK And Crural Arteries: Reasons For Past Failures: New Technology, New Results And Promising Future Prospects

Francesco Liistro MD
Cardiovascular Department
San Donato Hospital
Arezzo, Italy

Disclosure

Speaker name: FRANCESCO LIISTRO
I have the following potential conflicts of interest to report:

- Consulting 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

Debate BTK vs Inpact Deep

Angio Cohort

Deb BTK

Impact Deep

Comparison of Residual Restenosis and Occlusion rates

100%

90%

80%

70%

60%

50%

40%

30%

20%

10%

0%

All Patients

12-month Major Amputation

12-month In-stent Stenosis

Restenosis

41(25/61)

35.5 (11/31)

0.51 ± 0.66

0.60 ± 0.97

61/113 (54%)

31/53 (57%)

9.2% (18/196)

13.1% (14/107)

8.8% (20/227)

3.6% (4/111)

Debate BTK

InPact Deep

Difference in study design, completion, wound care program and procedural strategy

The IDEAS Randomized Controlled Trial

- 50 patients, 25 (25 lesions) DEB, 25 (30 lesions) DES
- Mean lesion length: 348±56 DEB vs 127±56 DES p<0.1
- CTO: 3/25 (12%) DEB vs 7/30 (23%) DES
- DCB inflation time: 1 min

Siablis D, JACC Intervention 2014

DES: 1.35 ± 0.2

DEB: 1.15 ± 0.3

P = 0.6

DES: 3.6 ± 1.5

DEB: 4.3 ± 1.6

P = 0.16

Suboptimal Angioplasty

Residual significant narrowing and DCB failure

POST DEB 1 MONTH

3 MONTHS

3 MONTHS ANGIO

POST DEB 3 MONTHS

Residual significant narrowing and DCB failure

POST DEB 3 MONTHS ANGIO
Importance of DCB/vessel size

DCB needs to touch and press the vessel wall for paclitaxel release: procedural strategy (Transfer phase): Choose proper RVD/Balloon ratio
Paclitaxel has to remain as long as possible (reservoir) for anti-proliferative effect: DCB technology (Action phase)

No touch → No effect!

Spot restenosis with DCB: missing transfer or drug penetration

Pacitaxel vessel Reservoir and DCB Efficacy

Solid-phase paclitaxel
Reservoir
Slow clearance

CARRIER dissolution

Soluble-phase paclitaxel
immediately active and cleared

The carrier may accelerate or slow down the dissolution of paclitaxel
Hydrophilic carriers do not emulsionate paclitaxel (hydrophobis)

Coating formulation and technology (drug dose+excipient) is key in sustaining therapeutic levels of Paclitaxel in the tissue

Paclitaxel nanocrystal encapsulation coating technology

- Paclitaxel nanocarriers by using biocompatible phospholipids
- Ultrasonic Homogenisation to create nanoparticles
- Inert gas-assisted spray process
- Drug concentration variability<10%

Drug load: 2.5mcg/mm2


Sirolimus DCB Technology

DEVOIR DCB

ACOART BTK

Hypothesis
DCB Revascularization in CLI can reduce LLL vs. std PTA at 6-month

Study Device:
Ulos DCB (ACOTEC Ltd)
**AcoartBTK Six-month outcome**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Litos</th>
<th>POBA</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with follow-up</td>
<td>39/41</td>
<td>39/44</td>
<td>0.9</td>
</tr>
<tr>
<td>Patients lost</td>
<td>1(2)</td>
<td>1(2)</td>
<td></td>
</tr>
<tr>
<td>Death</td>
<td>3(7)</td>
<td>2(4)</td>
<td>0.7</td>
</tr>
<tr>
<td>NR* Lesions at follow-up</td>
<td>43/50</td>
<td>46/54</td>
<td></td>
</tr>
<tr>
<td>ANGIO</td>
<td>4(100)</td>
<td>44(95)</td>
<td>0.9</td>
</tr>
<tr>
<td>DUPLEX</td>
<td>4(100)</td>
<td>46(100)</td>
<td>1</td>
</tr>
<tr>
<td>Restenosis</td>
<td>15/48(35)</td>
<td>15/48(34)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Re-Oclusion</td>
<td>6(16)</td>
<td>27(9)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Major Amputation</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>TLR</td>
<td>4(9)</td>
<td>20(41)</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

*Final Data June 2019*

---

**Lutonix IDE Clinical Trial**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Lutonix</th>
<th>PTA</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM</td>
<td>71.1%</td>
<td>68.4%</td>
<td>ns</td>
</tr>
<tr>
<td>Baseline occlusion</td>
<td>36.1%</td>
<td>33.3%</td>
<td>ns</td>
</tr>
<tr>
<td>Lesion Length</td>
<td>111.8 mm ± 92.6</td>
<td>94.7 mm ± 85.4 mm</td>
<td>ns</td>
</tr>
<tr>
<td>RVD</td>
<td>2.6 ± 0.6</td>
<td>2.6 ± 0.6</td>
<td>ns</td>
</tr>
<tr>
<td>Calcification</td>
<td>59.9%</td>
<td>54.2%</td>
<td></td>
</tr>
<tr>
<td>safety endpoint *</td>
<td>99.3</td>
<td>99.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>efficacy endpoint **</td>
<td>73.7%</td>
<td>63.5%</td>
<td>P = .0273 for superiority</td>
</tr>
</tbody>
</table>

*Freedom from major adverse limb events and all-cause perioperative death at 30 days
**Freedom from target limb occlusion, above ankle amputation, and clinically driven target lesion revascularisation

---

**Complex Long Lesions: Which Endpoint to Choose?**

- Optimal balloon angioplasty before DCB delivery
- DUS evaluation and guidance may improve DCB results
- Correct DCB sizing
- The new DCB Litos (ACOTEC Ltd) appears to be efficacious and safe based on preliminary results of the ACO-ART BTK Italian RCTs, reducing mostly vessel reocclusion (dejavoux).
- TVAL seems to be the best angiographic endpoint for BTK trial
- Reocclusion by DUS can be the endpoint but with a nearly 100% of baseline lesion occlusion

---

**Primary Endpoints in BTK Studies: TVAL**

- **Safety:** Freedom from major adverse limb event (MALL) and post-operative death (POD) at 30 days post procedure
- **Duplex patency assessment may be good if baseline occlusion

---

**Conclusion**

- Optimal balloon angioplasty before DCB delivery
- DUS evaluation and guidance may improve DCB results
- Correct DCB sizing
- The new DCB Litos (ACOTEC Ltd) appears to be efficacious and safe based on preliminary results of the ACO-ART BTK Italian RCTs, reducing mostly vessel reocclusion (dejavoux).
- TVAL seems to be the best angiographic endpoint for BTK trial
- Reocclusion by DUS can be the endpoint but with a nearly 100% of baseline lesion occlusion

---

**Lutonix IDE Clinical Trial**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Lutonix</th>
<th>PTA</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM</td>
<td>71.1%</td>
<td>68.4%</td>
<td>ns</td>
</tr>
<tr>
<td>Baseline occlusion</td>
<td>36.1%</td>
<td>33.3%</td>
<td>ns</td>
</tr>
<tr>
<td>Lesion Length</td>
<td>111.8 mm ± 92.6</td>
<td>94.7 mm ± 85.4 mm</td>
<td>ns</td>
</tr>
<tr>
<td>RVD</td>
<td>2.6 ± 0.6</td>
<td>2.6 ± 0.6</td>
<td>ns</td>
</tr>
<tr>
<td>Calcification</td>
<td>59.9%</td>
<td>54.2%</td>
<td></td>
</tr>
<tr>
<td>safety endpoint *</td>
<td>99.3</td>
<td>99.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>efficacy endpoint **</td>
<td>73.7%</td>
<td>63.5%</td>
<td>P = .0273 for superiority</td>
</tr>
</tbody>
</table>

*Freedom from major adverse limb events and all-cause perioperative death at 30 days
**Freedom from target limb occlusion, above ankle amputation, and clinically driven target lesion revascularisation*

---

**Complex Long Lesions: Which Endpoint to Choose?**

- Optimal balloon angioplasty before DCB delivery
- DUS evaluation and guidance may improve DCB results
- Correct DCB sizing
- The new DCB Litos (ACOTEC Ltd) appears to be efficacious and safe based on preliminary results of the ACO-ART BTK Italian RCTs, reducing mostly vessel reocclusion (dejavoux).
- TVAL seems to be the best angiographic endpoint for BTK trial
- Reocclusion by DUS can be the endpoint but with a nearly 100% of baseline lesion occlusion

---

**Primary Endpoints in BTK Studies: TVAL**

- **Safety:** Freedom from major adverse limb event (MALL) and post-operative death (POD) at 30 days post procedure
- **Duplex patency assessment may be good if baseline occlusion

---

**Conclusion**

- Optimal balloon angioplasty before DCB delivery
- DUS evaluation and guidance may improve DCB results
- Correct DCB sizing
- The new DCB Litos (ACOTEC Ltd) appears to be efficacious and safe based on preliminary results of the ACO-ART BTK Italian RCTs, reducing mostly vessel reocclusion (dejavoux).
- TVAL seems to be the best angiographic endpoint for BTK trial
- Reocclusion by DUS can be the endpoint but with a nearly 100% of baseline lesion occlusion