Covered Endovascular Reconstruction of the Aortic Bifurcation or CERAB as treatment of extensive aortoiliac occlusive disease: 3-year results

P. Goverde MD,
K. Lauwers MD, L. Helsloot MD, K. Taeymans MD, P. Verbruggen MD,
Vascular Clinic ZNA, Antwerp, Belgium
Disclosure

Speaker’s name: Peter Goverde

I have the following potential conflicts of interest to report:

- Consulting:

  Abbott Vascular; Angioslide; Atrium Maquet Getinge group; Bard Peripheral Vascular; Cardionovum; Cordis Cardinal Health; IMDS; Ivascular; Stille; Veyran; Ziehm Imaging
How to prevent?

How to treat?
Important

Infrarenal aorta

Aortoiliac bifurcation

Iliac region
Covered Endovascular Reconstruction Aortic Bifurcation
protrusion of “kissing” stents into the distal aortic lumen creates a new flow divider, but....
Differencese between “kissing” stent configuration & ” neo” bifurcation with covered stents
Adaptiveness

1 stent = 4 different shapes
V12 LD 12x 61 mm
How to start?

Case Example
Step 1: Femoral Access (+/- brachial access)

9 Fr

7 Fr
Step 2: recanalization
Step 3: actual measurement (During the procedure)
Step 4: Positioning + deployment of Advanta V12 LD 12 mm
Step 5: picking-up & positioning of V12 LD by XL balloon by manual inflation and inflation device
Step 6: Inflation of XL balloon, creation of conic stent segment

15 – 20 mm
Step 6: Inflation of XL balloon, creation of conic stent segment

15 – 20 mm
Step 7: replacement of 2’ guide wire in aortic stent + CONTROL
Step 8: positioning 2 V12 stents in kissing stent formation

 +/-15 mm overlap
Step 8: positioning 2 V12 stents in kissing stent formation

Sheat retraction

+/-15 mm overlap
Step 9: simultaneous inflation of both kissing stents
Step 10: final result: Check in & outflow regions
Step 10: final result: Check in & outflow regions
Technical considerations
What’s on the market
Different possible CERAB configurations with BX covered stents
Different possible CERAB configurations

• CERAB made of:
  • Main body:
    – V12 Maquet Getinge Bx
    – Diameters 10-12-14-16 mm
    – Length:
      – 10 : 38 & 59 mm
      – 12-14-16 : 41 & 61 mm
  • Legs:
    – V12 Maquet Getinge Bx
    – Diameters 6 to 9 mm
    – Length : 38 & 59 mm
• Can be postdilated
• Cave shortening

Courtesy of Peter Goverde MD
Different possible CERAB configurations

- **Future CERAB made of:**
  - **Main body:**
    - BeGraft Aortic Bentley Bx
    - **Diameters** 12-14-16-18-20-22-24mm
    - Largest Can been postdilated up to max 28 mm
    - **Length:**
      - 19-28- 37-57mm
  - **Legs:**
    - BeGraft Bentley Bx Bx
    - **Diameters** 6 to 10mm
    - **Length**: 28 (27)-38(37)-58(57)
- Can be postdilated
- Less shortening

*Courtesy of Peter Goverde MD & Bentley*
Different possible CERAB configurations

- **CERAB made of:**
  - **Main body:**
    - LifeStream Bard PV Bx
    - **Diameters** 10-12 mm
    - Can been postdilated to 16 mm
    - **Length:**
      - 38 & 58 mm
  - **Legs:**
    - LifeStream Bard PV Bx
    - **Diameters** 6 to 9 mm
    - **Length:** 37 (38 for 9mm) & 58 mm
- Can be postdilated
- Less shortening

Courtesy of Peter Goverde MD
Different possible CERAB configurations

• **CERAB made of:**
  • **Main body + bifurcation:**
    – AFX main body Endologix
    – **Diameters 22 mm**
    – **Length:** 40 or 60 mm
  • **Legs:**
    – V12 Maquet Getinge Bx
    – LifeStream Bard PV
    – Fluency Plus Bard PV
    – Viabahn Gore

• Can be an alternative if rest is not available
• For larger reconstructions

Courtesy of Dr Peter Goverde MD
Vascular Clinic ZNA, Antwerp, Belgium

follow-up study

RESULTS OF V12 CERAB

- Single center physician initiated prospective follow-up trial
- 67 patients with aortoiliac occlusive disease
- 2010-2016

- Treated with Maquet V12 LD & V12 covered stents

- follow up: 8 – 70 months
- TASC II C & D AORTOILIAC lesions.
- Femoral access +/- brachial access
- Can be done completely endovascularly (7 & 9 Fr)
- Technical success rate: 98.5%.
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>37</td>
<td>55.2</td>
</tr>
<tr>
<td>Age (years)</td>
<td>57 Y(40-79)</td>
<td>58 (±9.5)</td>
</tr>
<tr>
<td>Smoking</td>
<td>57</td>
<td>79.1%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>56</td>
<td>83.6%</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>24</td>
<td>35.8%</td>
</tr>
<tr>
<td>Coronary artery disease</td>
<td>28</td>
<td>41.7%</td>
</tr>
<tr>
<td>Neurologic disease</td>
<td>23</td>
<td>34.3%</td>
</tr>
<tr>
<td>Pulmonary disease</td>
<td>33</td>
<td>47.8%</td>
</tr>
<tr>
<td>Renal disease</td>
<td>15</td>
<td>22.4%</td>
</tr>
</tbody>
</table>
## Patient characteristics

<table>
<thead>
<tr>
<th>Rutherford Category</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>37</td>
<td>55.2%</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>25.4%</td>
</tr>
<tr>
<td>5</td>
<td>9</td>
<td>13.4%</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>6.5%</td>
</tr>
</tbody>
</table>
Follow-up

- **Post op**: Asperin & Clopidogrel (min 3mo)

- *by ultrasound (at 1, 3, 6, 12, every 6 months) / CT-angiography*

- 6 patients died of non-interventional causes (<30 D)

- relief of symptoms immediately after revascularisation
## Follow-up

- relief of symptoms immediately after revascularisation

<table>
<thead>
<tr>
<th>Ankle Brachial Index</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.55 (0.05-1.13) or 0.57(±0.23)</td>
<td>0.84 (0.42-1.18) or 0.87 (±0.15)</td>
</tr>
</tbody>
</table>

* Difference ABI before and after significance P<.01
## Complications

### Procedure
- 1 dislocation stent; placement in EIA
- 6 minor dissections, conservative

### At discharge
- 12 hematomas, conservative treatment
- 1 bleeding, conservative treatment
- 2 pneumonia
- 2 renal insufficiency, temporary
- 1 reperfusion pain

### At 6 weeks
- 1 hematoma
- 10 oedema
## RESULTS

<table>
<thead>
<tr>
<th>V12 CERAB</th>
<th>6 m</th>
<th>12m</th>
<th>18</th>
<th>24</th>
<th>36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prim patency</td>
<td>97.0%</td>
<td>89.55%</td>
<td>88.07%</td>
<td>85.07%</td>
<td>86.6%</td>
</tr>
<tr>
<td>Sec Patency</td>
<td>100%</td>
<td>95.5%</td>
<td>93.5%</td>
<td>93.5%</td>
<td>92.5 %</td>
</tr>
<tr>
<td>Freedom from TLR</td>
<td>98.5%</td>
<td>91.5%</td>
<td>89.55%</td>
<td>86.5%</td>
<td>85.0%</td>
</tr>
</tbody>
</table>
Conclusions

• Safe and feasible techniques

• “Sufficient” distal outflow is recommended/needed

• Awareness of some tips & tricks
Thank you for your attention
Covered Endovascular Reconstruction of the Aortic Bifurcation or CERAB as treatment of extensive aortoiliac occlusive disease: 3-year results

P. Goverde MD,
K. Lauwers MD, L. Helsloot MD, K. Taeymans MD, P. Verbruggen MD,
Vascular Clinic ZNA, Antwerp, Belgium