Relay® BRANCH: Expanding TEVAR to a new class of patients

R.H. (Robin) Heijmen, MD PhD
Department of Cardiothoracic Surgery
St Antonius Hospital Nieuwegein,
The Netherlands
Disclosure

Speaker name:
Robin H. Heijmen

I have the following potential conflicts of interest to report:

- Consulting for Terumo Aortic / WL Gore / 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
Elective Aortic Arch Repair: Factors influencing neurological outcome in 791 patients

Cefarelli, Heijmen.
Ann Thorac Surg 2017:104;2016-2023
Elective Aortic Arch Repair: Factors influencing neurological outcome in 791 patients

Table 3. Postoperative Complications (N=791)

<table>
<thead>
<tr>
<th>Complication</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital mortality</td>
<td>42</td>
<td>5.3</td>
</tr>
<tr>
<td>Hospital stay (d ± SD)</td>
<td></td>
<td>12 ± 13.9</td>
</tr>
<tr>
<td>Respiratory failure</td>
<td>64</td>
<td>8.1</td>
</tr>
<tr>
<td>Renal failure (serum creatinine ≥200 μM/L)</td>
<td>28</td>
<td>3.5</td>
</tr>
<tr>
<td>Temporary dialysis</td>
<td>10</td>
<td>1.3</td>
</tr>
<tr>
<td>Permanent dialysis</td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>Neurologic dysfunction</td>
<td>91</td>
<td>11.5</td>
</tr>
<tr>
<td>Permanent</td>
<td>42</td>
<td>5.3</td>
</tr>
<tr>
<td>Temporary</td>
<td>49</td>
<td>6.2</td>
</tr>
<tr>
<td>Spinal cord injury</td>
<td>8</td>
<td>1.0</td>
</tr>
<tr>
<td>Recurrent nerve injury</td>
<td>18</td>
<td>2.3</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>11</td>
<td>1.4</td>
</tr>
</tbody>
</table>
Elective Aortic Arch Repair: Factors influencing neurological outcome in 791 patients

Table 3. Postoperative Complications (N = 791)

<table>
<thead>
<tr>
<th>Complication</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital mortality</td>
<td>42</td>
<td>5.3</td>
</tr>
<tr>
<td>Hospital stay (d ± SD)</td>
<td></td>
<td>12 ± 13.9</td>
</tr>
<tr>
<td>Respiratory failure</td>
<td>64</td>
<td>8.1</td>
</tr>
<tr>
<td>Renal failure (serum creatinine ≥200 μM/L)</td>
<td>28</td>
<td>3.5</td>
</tr>
<tr>
<td>Temporary dialysis</td>
<td>10</td>
<td>1.3</td>
</tr>
<tr>
<td>Permanent dialysis</td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>Neurologic dysfunction</td>
<td>91</td>
<td>11.5</td>
</tr>
<tr>
<td>Permanent</td>
<td>42</td>
<td>5.3</td>
</tr>
<tr>
<td>Temporary</td>
<td>49</td>
<td>6.2</td>
</tr>
<tr>
<td>Spinal cord injury</td>
<td>8</td>
<td>1.0</td>
</tr>
<tr>
<td>Recurrent nerve injury</td>
<td>18</td>
<td>2.3</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>11</td>
<td>1.4</td>
</tr>
</tbody>
</table>
Elective Aortic Arch Repair: Factors influencing neurological outcome in 791 patients

5.6 %
Elective Aortic Arch Repair:
Factors influencing neurological outcome in 791 patients

71.2 %  
5.6 %  
23.2 %
Older, comorbid patients ...
Redo surgery ...

23.2 %
. Older, comorbid patients ...
. Redo surgery ...
. (Frozen) Elephant Trunk technique ...

Hanif H, et al.
Can J Cardiol 2018;34:262-273
Towards ZONE 0 …

- Older, comorbid patients …
- Redo surgery …
- (Frozen) Elephant Trunk technique …
A functional assessment of the CoW prior to aortic arch surgery using TCD

Smith, Heijmen. 
J Thorac Cardiovasc Surg 2019, *in press*
A functional assessment of the CoW prior to aortic arch surgery using TCD

UNSAFE
MODERATE
SAFE

unilateral vs bilateral ASCP ...

CoW
UNSAFE
10%

MODERATE
18%

SAFE
72%
unilateral vs bilateral ASCP ...

= single-branched device:

- **UNSAFE**
  - 10%

- **MODERATE**
  - 18%

- **SAFE**
  - 72%
double-branched device:

UNSAFE: 0%
MODERATE: 19%
SAFE: 81%
double-branched device + LSA-revasc.


UNSAFE
0 %

MODERATE
0 %

SAFE
100 %
Relay® BRANCH system
Relay® BRANCH system

based on Relay® NBS Plus platform*

Dual sheath system
25 Fr OD

Proximal clasping on the outer curve to prevent windsock effect

Support wires on the inner curve to avoid retroflex and bird-beak effect

* RESTORE II
Relay® BRANCH system

- based on Relay® NBS Plus platform
- custommade, aiming at ‘off-the-shelf’
- worldwide implants > 160 (EFS in USA)
Relay® BRANCH system

ZERO point

ASC, L 45–60mm

BCT branch, 14-24mm

Max 270mm

Fenestration
L 50mm

LCCA branch, 8-13mm
Relay® BRANCH system

Main body ...

LV wire
LAO projection
Rapid ventricular pacing

Unsheathing from tip-to-hub
Relay® BRANCH system

LCCA branch …

Posterior tunnel for BCT
Anterior tunnel for LCCA

14 Fr OD
proximal clasping and short tip:

: Lock-Stent
to prevent branch separation
Relay® BRANCH system

BCT branch ...

RAO : 30°
Relay® BRANCH system
Relay® BRANCH system

Kuretani T, et al. at Veith  32
Italian TRIUmPH registry. Ferrer C, et al.  24
Dutch Registry. Heijmen R, et al.  11
Czerny M, et al. EJCTS 2018  15

82 pts  age > 75 yrs
<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>Mortality</th>
<th>Stroke</th>
<th>RTAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kuretani T, et al. at Veith</td>
<td>32</td>
<td>8.5 %</td>
<td>10.9 %</td>
<td>2.4 %</td>
</tr>
<tr>
<td>Italian TRIUmPH registry. Ferrer C, et al.</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dutch Registry. Heijmen R, et al.</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Czerny M, et al. EJCTS 2018</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>82 pts</td>
<td>8.5 %</td>
<td>10.9 %</td>
<td>2.4 %</td>
</tr>
</tbody>
</table>

**Technical Success**: 97.6 % 80 / 82

**nó branch occlusion**
In conclusion,

The Relay® BRANCH system is ...
  • technically feasible and effective
  • an alternative treatment option for unfit / high-risk cases
  expanding TEVAR to a new class of patients
In conclusion,

The Relay® BRANCH system is ...
  . technically feasible and effective
  . an alternative treatment option
    for unfit / high-risk cases
    expanding TEVAR to a new class of patients

Prevention of stroke is of the utmost importance
in both Open ánd Endovascular repair
of the aortic arch
Relay® BRANCH: Expanding TEVAR to a new class of patients

R.H. (Robin) Heijmen, MD PhD
Department of Cardiothoracic Surgery
St Antonius Hospital Nieuwegein,
The Netherlands