Ease of deployment of the TREO stent-graft: Value in resident training

Rylski B
Learning objectives

After this presentation you will be able to:

• Indicate if e-training is safe

• Describe the advantages of TREO device and explain why TREO may be considered as a working horse in AAA treatment
Agenda

Statistic

Is training in e-surgery safe?

TREO specifications

Summary
Agenda

Statistic

Is training in e-surgery safe?

TREO specifications

Summary
Endovascular aortic program in Freiburg

Year:
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018

Values:
- 0
- 20
- 40
- 60
- 80
- 100
- 120
Endovascular aortic program in Freiburg

- 2018: 120
- 2017: 100
- 2016: 90
- 2015: 80
- 2014: 70
- 2013: 60

- All
- Done by residents

Note: The graph shows the number of procedures done from 2013 to 2018, with a significant increase in 2018.
Endovascular aortic program in Freiburg

After exclusion of emergency patients and patients with privat health insurance

2018

71% done by residents
<table>
<thead>
<tr>
<th>Agenda</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Statistic</strong></td>
</tr>
<tr>
<td><strong>Is training in e-surgery safe?</strong></td>
</tr>
<tr>
<td><strong>TREO specifications</strong></td>
</tr>
<tr>
<td><strong>Summary</strong></td>
</tr>
</tbody>
</table>
May resident perform endovascular aortic repair as effectively and safely as an experienced specialist?
 Patients

Single centre report

Time 2016-2018

Total cohort N=119
Underwent EVAR

Excluded:
N=13 Lack of pre-operative CTA
N=5 Lack of post-operative CTA
N=5 Redo cases

Study cohort
N=96

Residents
N=45

Specialist
N=51

CTA – computed tomography angiography
## Results

<table>
<thead>
<tr>
<th>Procedure details</th>
<th>Residents n=45</th>
<th>Specialist n=51</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y - Stent-graft</td>
<td>39 (87%)</td>
<td>44 (86%)</td>
<td>0.808</td>
</tr>
<tr>
<td>Tube - Stent-graft</td>
<td>6 (13%)</td>
<td>7 (14%)</td>
<td>0.808</td>
</tr>
<tr>
<td>Right access Percutaneous</td>
<td>26 (58%)</td>
<td>28 (55%)</td>
<td>0.938</td>
</tr>
<tr>
<td>Left access Percutaneous</td>
<td>40 (89%)</td>
<td>41 (80%)</td>
<td>0.388</td>
</tr>
<tr>
<td>Intraoperative PTA</td>
<td>13 (29%)</td>
<td>20 (39%)</td>
<td>0.397</td>
</tr>
<tr>
<td>Operation time, min</td>
<td>112 (84; 129)</td>
<td>89 (75; 104)</td>
<td><strong>0.030</strong></td>
</tr>
<tr>
<td>X-ray time, min</td>
<td>18 (13; 25)</td>
<td>18 (12; 24)</td>
<td>0.628</td>
</tr>
<tr>
<td>X-ray dose, μGym²</td>
<td>13025 (7949; 19621)</td>
<td>12430 (7701; 15830)</td>
<td>0.330</td>
</tr>
</tbody>
</table>
## Results

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Resident n=45</th>
<th>Specialist n=51</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Endoleak</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ia</td>
<td>4 (9%)</td>
<td>4 (8%)</td>
<td>0.853</td>
</tr>
<tr>
<td>Ib</td>
<td>0</td>
<td>0</td>
<td>1.000</td>
</tr>
<tr>
<td>II</td>
<td>12 (27%)</td>
<td>11 (22%)</td>
<td>0.730</td>
</tr>
<tr>
<td>III</td>
<td>6 (13%)</td>
<td>2 (4%)</td>
<td>0.195</td>
</tr>
<tr>
<td>Distance to the lowest renal artery, mm</td>
<td>0 (0; 0)</td>
<td>0 (0; 0)</td>
<td>1.000</td>
</tr>
<tr>
<td><strong>Accidental Iliac internal artery coverage</strong></td>
<td>1 (2%)</td>
<td>1 (2%)</td>
<td>0.928</td>
</tr>
<tr>
<td>Wound infection</td>
<td>1 (2%)</td>
<td>0</td>
<td>1.000</td>
</tr>
<tr>
<td>In-hospital mortality</td>
<td>0</td>
<td>1 (2%)</td>
<td>1.000</td>
</tr>
</tbody>
</table>
Residents can perform EVAR under the supervision of an experienced specialist as effectively and safely as experts do.
EVAR program success is defined by use of an optimal device, education and consequent follow-up
What makes an EVAR device “a working horse”? 

Main concerns of EVAR users:

- Migration resistance
- Endoleaks (Type I and III)
- Kinking
- Precise and intuitive deliver
- Durability
TREO secure fixation | stent to aorta

SUPRARENAL FIXATION
Supra-renal barbs allow for primary proximal fixation once deployed

INFRARENAL FIXATION
Infra-renal barbs provides supplemental fixation especially in angulated anatomies
Personalized approach | 3 piece modular system

- **Graft Diameter**: 20-22-24-26
  - 28-30-33-36 mm
- **Transrenal Segment**: 17 mm
- **Main Body Length**: 80-100-120 mm
- **Proximal Diameters**: 15 mm
- **Distal Diameters**: 80-100-120-140-160 mm
- **Dimensions**:
  - 14 mm: Distal diameters on all sizes/length devices
  - 17 mm
  - 14 mm
  - 17-20-24 mm
TREO main body graft lengths

All main body diameters available in 3 length options

80 mm
100 mm
120 mm
Personalized approach: adjustable zones

10 mm contralateral adjustable zone

30 mm ipsilateral adjustable zone
TREO lock stent technology

- Secures limb to main body
- Dull barbs on the legs of the bifurcate graft
INTRODUCER SHEATH
Usable Length 49 cm

Main bifurcate delivery system
- 20 to 28 mm Bifurcate: 18 Fr
- 30 to 36 mm Bifurcate: 19 Fr

TIP

BLACK
STATIONARY
GRIP

GRAY TURN
KNOB
Controlled or
Pin & Pull

RELEASE
GRIP
TREO detachable sheath

ADVANCED HEMOSTASIS VALVE
Double valve mechanisms, one passive and one active with 10 different positions, secures hemostasis
<table>
<thead>
<tr>
<th>Statistic</th>
<th>Is training in e-surgery safe?</th>
</tr>
</thead>
<tbody>
<tr>
<td>TREO specifications</td>
<td>Summary</td>
</tr>
</tbody>
</table>
TREO – summary

**Personalized Approach**
- **widest range of sizes** to fit broad patient anatomies
- three-piece system enabling in-situ sizing

**Secure Fixation**
- the only EVAR graft with **dual proximal fixation**
- TREO‘s exclusive **lock stent** technology provides long term modular connections

**Optimized Procedure & Enhanced Delivery**
- low profile delivery system for enhanced access and navigation
- proximal clasp designed for safety
- detachable sheath
- valve technology
Ease of deployment of the TREO stent-graft: Value in resident training

Rylski B