Coil embolization of internal iliac arteries before EVAR: experience with fusion imaging

Tokyo Bay Urayasu-Ichikawa Medical Center
Department of Cardiovascular Surgery
Hayato Morimura, Joji Ito, Minoru Tabata
Disclosure

Speaker name: Hayato Morimura

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I have the following potential conflicts of interest to report:

☐ Consulting
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
✓ Other(s) This research was funded by Siemens.

☐ I do not have any potential conflict of interest
Characteristics of EVAR guidance
– how the idea came up

① Detection of the vessel wall of aorta and branched vessels.
② Visualization of ostia rings for all main branched vessels.
③ Suggestion of landing zones for stent positioning.

➢ Stiff wires deform the aorta which disable the guidance.

➢ True benefit gained in procedures with soft wires.
  (e.g. IIA embolization)
Aorta deformed by the stiff wire and the stent graft.

Precise guidance of the IIA orifice.
Study Protocol

• **Patients**
  AAA, CIAA and IIAA patients undergoing EVAR with IIA embolization

• **Intervention**
  IIA embolization using EVAR Guidance (n=30)

• **Comparison**
  IIA embolization without the use of EVAR Guidance (n=30)

• **Outcome***
  Contrast medium dose, Fluoroscopy time, Radiation exposure, Procedure time

*From FA puncture to first coil or plug deployment.
Dec. 2018-Dec. 2020 EVAR (n=83)

- Emergent EVAR (n=14)
- Elective EVAR (n=69)
  - Excluded
  - Isolated EVAR (n=21)
  - EVAR with vessel embolization (n=48)  
    - 55 vessel embolization
      - IIA or SIGA embolization (n=43)
        - EVAR Guidance (n=32)
        - Standard Procedure (n=11)
      - IMA embolization (n=12)
        - EVAR Guidance (n=9)
        - Standard Procedure (n=3)
<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Standard Procedure</th>
<th>EVAR Guidance</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>43</td>
<td>11</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>79.9 ± 6.3</td>
<td>79.5 ± 4.9</td>
<td>80.1 ± 6.8</td>
<td>0.78</td>
</tr>
<tr>
<td>Male (%)</td>
<td>74.4</td>
<td>81.8</td>
<td>71.9</td>
<td>0.51</td>
</tr>
<tr>
<td>Body Mass Index (kg/m²)</td>
<td>22 ± 3.9</td>
<td>22.2 ± 2.8</td>
<td>21.9 ± 4.2</td>
<td>0.87</td>
</tr>
<tr>
<td>Hemodialysis (%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>eGFR (mL/min/1.73m²)</td>
<td>57.8 ± 13.4</td>
<td>52.6 ± 21.2</td>
<td>59.6 ± 9.2</td>
<td>0.13</td>
</tr>
<tr>
<td>Coil (%)</td>
<td>58.1</td>
<td>72.7</td>
<td>53.1</td>
<td>0.26</td>
</tr>
</tbody>
</table>
### Table 2: Median and Inter quartile range of each outcome

<table>
<thead>
<tr>
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<tr>
<td>N</td>
<td>43</td>
<td>11</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Contrast medium (mL)</td>
<td>14 (10-25)</td>
<td>23 (13-33)</td>
<td>14 (6-20)</td>
<td>0.099</td>
</tr>
<tr>
<td>Fluoroscopy time (min.)</td>
<td>12.9 (6.7-24.7)</td>
<td>22.0 (10.4-35.1)</td>
<td>10.3 (6.1-20.6)</td>
<td>0.058</td>
</tr>
<tr>
<td>Radiation exposure (mGy)</td>
<td>189 (89-330)</td>
<td>310 (89-491)</td>
<td>145.5 (98-321)</td>
<td>0.48</td>
</tr>
<tr>
<td>Procedure time (min.)</td>
<td>22 (14-37)</td>
<td>30 (20-55)</td>
<td>18 (11-35)</td>
<td>0.049</td>
</tr>
</tbody>
</table>
Limitation

• Multiple surgeons
  ➢ All procedures were done by experienced cardiac surgeons.

• Not randomized
  ➢ EVAR guidance group was first done and the control group after.
  ➢ Results are not influenced by learning curves.

• Small number of the control group
  ➢ We are going to enroll more cases and it needs further investigation.
Conclusions

• EVAR guidance may be most useful in procedures without stiff wires.

• Procedure time of IIA embolization was reduced with the use of EVAR guidance.

• There are some limitations, and we need further investigation.