How to fix complicated thoracic abdominal anatomy by the retrograde branches technique

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Disclosure

Speaker name: Wei Guo

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)

I do not have any potential conflict of interest
Background

B-EVAR or Parallel for Complicated Aortic Aneurysm

- Off the shelf 4-branch
- Insides branches
- Parallel graft

F-EVAR for Complicated Aortic Aneurysm
Background

- But, some limitations:
  Upper extremity access; Customized; Complicated procedure; Cost

- TAAA
- Suprarenal AAA
- Juxtarenal AAA
- Chronic aortic dissection
Methods

Retrograde Branches Stent Grafts for Endovascular Reconstruction of Visceral Arteries
Methods
One, two or three retrograde branches for renal, SMA
Results

M/74yo, Pending ruptured AAA, TAA

6.8 cm

7.6 cm
Results

M/74yo, Pending ruptured AAA, TAA
Post-operative CTA
Results

M/64yo, Chronic pending ruptured abdominal aortic dissection
Results

M/64yo, Chronic pending ruptured abdominal aortic dissection
M/76yo, ruptured juxrenal AAA, Hb 8.6g/L
Results

M/76yo, ruptured juxrenal AAA, Emergency EVAR
Results

M/80yo, TAA & AAA; LRA: Conversion to Retrograde Branch technique
## Results

### Demographics

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>$74 \pm 6.6$ (37-86)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>17 (81%)</td>
</tr>
<tr>
<td>TAAA</td>
<td>4 (19%)</td>
</tr>
<tr>
<td>Suprarenal AAA</td>
<td>8 (38%)</td>
</tr>
<tr>
<td>Juxtarenal AAA</td>
<td>4 (19%)</td>
</tr>
<tr>
<td>Aortic dissection</td>
<td>5 (24%)</td>
</tr>
<tr>
<td>COPD</td>
<td>9 (43%)</td>
</tr>
<tr>
<td>CAD</td>
<td>11 (52%)</td>
</tr>
<tr>
<td>HT</td>
<td>13 (62%)</td>
</tr>
<tr>
<td>CABG</td>
<td>6 (29%)</td>
</tr>
<tr>
<td>Symptomatic</td>
<td>8 (36%)</td>
</tr>
<tr>
<td>Asymptomatic</td>
<td>13 (62%)</td>
</tr>
<tr>
<td>Target vessel, n</td>
<td>76</td>
</tr>
</tbody>
</table>

### Procedures

<table>
<thead>
<tr>
<th>General anesthesia</th>
<th>19 (91%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure time (minutes)</td>
<td>$231 \pm 43$</td>
</tr>
<tr>
<td>Contrast (ml)</td>
<td>$328 \pm 102$</td>
</tr>
</tbody>
</table>

### Combined Techniques

| Chimney          | 14 (67%) |
| Fenestration     | 7 (33%)  |

### Complications

<table>
<thead>
<tr>
<th>30-days mortality</th>
<th>1 (4.7%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I endoleak</td>
<td>2 (9.5%)</td>
</tr>
<tr>
<td>Type II endoleak</td>
<td>6 (28.6%)</td>
</tr>
<tr>
<td>Paraplegia</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

### Follow up (1-37 mon.)

<table>
<thead>
<tr>
<th>Aneurysm related death</th>
<th>1 (4.7%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target vessel patency</td>
<td>96.4%</td>
</tr>
<tr>
<td>Type I&amp;III Endoleak</td>
<td>0 %</td>
</tr>
</tbody>
</table>

*Data from Mar. 2013~Nov. 2017, unpublished*
**Discussion**

- **Indication of retrograde branch technique**
  - **TAAA**
    - Enough proximal landing zone
    - Safer blood supply during procedure
    - Low endoleak
  - **Suprarenal AAA**
    - CA/SMA fenestration and/or chimney technique
    - Safer blood supply of renal arteries during procedure
    - Low endoleak
  - **Juxtarenal AAA**
    - CA/SMA fenestration and/or chimney technique
    - Renal graft insertion first for safer blood supply
    - Low endoleak
  - **Some chronic aortic dissection**
    - Fenestration for one renal artery
    - Retrograde reconstruction of another renal artery through false channel
    - Avoid limitation of narrow true lumen
Tips and Tricks

- Enough space of sac
- Enough overlap of end-end landing
- Favorable diameter to match
- Branch loading 2cm below the target vessels
- Operation time control
- 1- or 2-stage operation
- Complication control
Discussion

- About hemodynamic before and after EVAR
Conclusion

• As primary experience, retrograde branch technique has a better safety and efficacy.

• TAAA/suprarenal AAA/juxtarenal AAA/chronic aortic dissection will be the candidates of this technique.

• Long-term outcome need more investigation.
Thanks for your attention
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