Our strategies to prevent TEVAR related complications

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Disclosure

Speaker name: ...Shinsuke Kotani.....

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

• Thoracic endovascular aortic repair (TEVAR) has been established as promising less invasive therapeutic options.

• However, despite continuous advances and device improvements, important complications unique to the procedure still remain.
TEVAR-related complications

• Stroke

• Spinal cord ischemia (SCI)

• Retrograde type A dissection (RTAD)

• Rupture of iliac access vessel
2012-2014 (30 cases)

Mean Age, y 74.3
Male, n(%) 22(73)

Indication, n
aneurysm 22
Type B dissection 8
Rupture 2

Landing zone, n
Zone 0 1
Zone 1 2
Zone 2 6
Zone 3 16
Zone 4 5

Oversizing(%) 18.7

Cases

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases</th>
</tr>
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<tbody>
<tr>
<td>2012</td>
<td>8</td>
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<tr>
<td>2013</td>
<td>10</td>
</tr>
<tr>
<td>2014</td>
<td>12</td>
</tr>
</tbody>
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TX-2, 14
CTAG, 11
VALIANT, 5
<table>
<thead>
<tr>
<th></th>
<th>Total (30)</th>
<th>VALIANT (5)</th>
<th>TX-2 (14)</th>
<th>TAG / CTAG (11)</th>
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</thead>
<tbody>
<tr>
<td><strong>death, n(%)</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>operative</td>
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<tr>
<td>in hospital</td>
<td>2 (6.7)</td>
<td>1 (20)</td>
<td>1 (7)</td>
<td>0 (0)</td>
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<tr>
<td><strong>neurological event, n(%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stroke</td>
<td>2 (6.7)</td>
<td>1 (20)</td>
<td>1 (7)</td>
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<td>2 (40)</td>
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<td><strong>perioperative events, n(%)</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>RTAD</td>
<td>2 (6.7)</td>
<td>1 (20)</td>
<td>1 (7)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>conversion to open surgery</td>
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<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>rupture of iliac access</td>
<td>3 (10)</td>
<td>0 (0)</td>
<td>1 (7)</td>
<td>2 (18)</td>
</tr>
<tr>
<td><strong>endoleak, n(%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>type 1</td>
<td>1 (3.3)</td>
<td>1 (20)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>type 2</td>
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</table>

Why VALIANT?
To prevent stroke 
atherothrombosis from thoracic aorta

- LSCA occlusion, LSCA revascularization
- Filter
- Clamping of branch vessel (if exposed)
- Compression of branch vessel (if not exposed)
Our strategies to prevent stroke

- Zone 3 or 4
  no adjunctive measure

- Zone 2
  1 debranch (RSCA-LSCA bypass)
  LSCA balloon occlusion

- Zone 1
  2 debranch (RSCA-LSCA-LCCA bypass)

- Zone 0
  2 debranch + BCA chimney

LSCA balloon occlusion
LCCA (occluded)
RSCA clamp
RCCA compression
In case of shaggy aorta

distal protection using retrograde filter via brachiocephalic artery
In case of shaggy aorta

distal protection of SMA using Filtrap
Risk factors to develop SCI and our management

- Length of aortic coverage
- Previous abdominal aortic repair
- Occluded internal iliac arteries
- Renal failure
- Shaggy aorta

- Coverage of LSCA
- Hypotension

High risk

TEVAR with CSF drainage

Revascularization of LSCA
Hemodynamic management

unavoidable
Strategies to prevent RTAD

Retrograde Aortic Dissection After Thoracic Endovascular Aortic Repair

Ludovic Canaud, MD, PhD, Baris A. Ozdemir, BSc, MRCS, Benjamin O. Patterson, BSc, MRCS, Peter J. E. Holt, PhD, FRCS, Ian M. Loftus, MD, FRCS, and Matt M. Thompson, MD, FRCS


Conclusions: Although RTAD after TEVAR is an uncommon complication, it has a high mortality rate. RTAD is significantly more frequent in patients treated for acute and chronic type B dissection, and when the endograft is significantly oversized. The proximal endograft configuration was not associated with any difference in the incidence of RTAD.

no significant oversizing especially in dissection cases
Strategies to prevent RTAD

Rapid pacing to minimize the “windsock effect”

Rapid pacing may also decrease the damage of aortic wall during deployment and touch up.
deployment under rapid pacing
To prevent vessel access complications

- Use the low profile device

VALIANT

Or

CTAG via SENTRANT sheath

Iliac artery rupture due to 22F DrySeal sheath
VALIANT high accessibility

- Saccular aneurysm
- Small and angulated access vessel
- Y-graft (20*10mm)
- 11mm
- 4mm
- 7mm
- 8mm
- no access complication

• VALIANT Captivia 34mm (24F)
Mean age, y: 73.0
Male, n(%): 20 (62.5)

Indication, n:
- Aneurysm: 22
- Type B dissection: 10
- Rupture: 2

Landing zone, n:
- Zone 0: 2
- Zone 1: 4
- Zone 2: 9
- Zone 3: 14
- Zone 4: 3

Oversizing(%): 13.2
(dissection: 9.1, aneurysm: 15.0)

<table>
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<tr>
<th>Event</th>
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<th>VALIANT (8)</th>
<th>CTAG (22)</th>
<th>TX-2 (1)</th>
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<td>1 (4.5)</td>
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Conclusion

- Our strategies to reduce TEVAR related complications may play a beneficial role.
- Access complication still remains challenging in small iliac artery.
- VALIANT is safe and effective option to avoid rupture of iliac access vessel.
Why not VALIANT?
Our strategies to prevent TEVAR related complications

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