Rare & Serious complication of EVAR

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Disclosure

Speaker name:
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I have the following potential conflicts of interest to report:

- X Consulting
- □ Employment in industry
- X Stockholder of a healthcare company
- □ Owner of a healthcare company
- □ Other(s)

- X I do not have any potential conflict of interest
EVAR Device failure .. ?

• It has been described with all generation of devices despite improved stent graft designs and implantation techniques.

• Conversion after EVAR have also increased and will probably continue increasing as EVAR has become preferred mode of treatment for AAA.
The most common reasons are

Disintegration of the top metal stent

ENDOLEAKS

ANEURYSM EXPANSION
Disintegration of the top stent on Abdominal Aortic stent-Grafts
Case report

- 55 years old male
- Infra-renal abdominal aortic aneurysm
- EVAR 2014
Post EVAR Follow up
Post EVAR annual follow up
How to Fix .. ?

A. Surgery → Patient refused

B. Connecting graft between bare metal and graft (endoanchor) → No safe landing zone

C. Chimney’s → Patient has 2 renal arteries on each side and the distance between them is not optimal

D. Custom made fenestrated device
However, there is always a challenge
1. Four renal arteries

2. Minimal required direct contact between the aortic wall and graft according to IFU for fenestrated stent graft = 2cm

3. Thus, the stent has to be implanted higher including fenestration for SMA and a scallop for celiac branch

4. Cannulation of visceral artery with pre-existing stent
The PLAN ?
Graft plan of 5 fenestrations + a scallop for celiac branch.
Procedure -2019
• Between September 1998 and October 2003
• 143 Patient were treated with EVAR (Cook Zenith endograft)
• Mean Follow-up 66.4 Months

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# Long-term results after endovascular abdominal aortic aneurysm repair using the Cook Zenith endograft

Johan Mertens, MD,\textsuperscript{a} Sabrina Houthoofd, MD,\textsuperscript{a} Kim Daenens, MD, PhD,\textsuperscript{a} Inge Fourneau, MD, PhD,\textsuperscript{a} Geert Maleux, MD, PhD,\textsuperscript{b} Philip Lerut, MD,\textsuperscript{a} and Andre Nevelsteen, MD, PhD,\textsuperscript{a}\textsuperscript{†} Leuven, Belgium

<table>
<thead>
<tr>
<th>Complications</th>
<th>Patients, No.</th>
<th>Reinterventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late aneurysm rupture</td>
<td>6</td>
<td>3 died, 1 conversion, 1 distal endograft extension, 1 drainage of the aneurysm sac</td>
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<tr>
<td>Endoleak</td>
<td>47</td>
<td></td>
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</tbody>
</table>

### Disconnection of top stent device migration

- **3** (1 leading to a type Ia endoleak, subsequent rupture; 1 (without endoleak)

<table>
<thead>
<tr>
<th>Type II</th>
<th>26 (36 endoleaks, 6 were persistent after embolization)</th>
<th>11 embolizations (9 patients), 1 conversion (sac enlargement despite embolization), 1 conversion, 2 distal endograft extensions, 1 endovascular occlusion + crossover bypass, 1 conversion, 2 untreated, 5 endovascular treatments, 4 crossover bypasses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type III</td>
<td>3 (1 bilateral, 1 iatrogenic)</td>
<td>1 conversion, 2 distal endograft extensions, 1 endovascular occlusion + crossover bypass, 1 conversion, 2 untreated, 5 endovascular treatments, 4 crossover bypasses</td>
</tr>
<tr>
<td>Endotension</td>
<td>1</td>
<td>1 conversion, 2 untreated, 5 endovascular treatments, 4 crossover bypasses</td>
</tr>
<tr>
<td>Limb stenosis or occlusion</td>
<td>11</td>
<td>1 conversion, 2 untreated, 5 endovascular treatments, 4 crossover bypasses</td>
</tr>
<tr>
<td>Stent body fracture</td>
<td>6</td>
<td>Not requiring reintervention</td>
</tr>
<tr>
<td>Disconnection of top stent device migration</td>
<td>3 (1 leading to a type Ia endoleak, subsequent rupture)</td>
<td>4 distal endograft extensions (1 bilateral), 1 covered stent of internal iliac artery aneurysm, 1 aortic tube interposition, 1 untreated</td>
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<tr>
<td>Aneurysm outside of the device</td>
<td>6</td>
<td>1 endovascular treatment, 2 redo crossover bypasses</td>
</tr>
<tr>
<td>Complication related to fem-fem crossover bypass</td>
<td>4 (1 stenosis, 2 occlusions, 1 infection)</td>
<td>1 endovascular treatment, 2 redo crossover bypasses</td>
</tr>
</tbody>
</table>
Two men treated with EVAR
75 and 67 years old

Follow up: CT angiography At 4 and 3 years
Separation of the proximal fixation stent from the stent-graft.
Fenestrated cuff and Open surgery
Conclusion

• Physicians should be aware of such rare and serious complication
• Long term follow up is a must to detect such a complication
• Challenges: Anatomical, Economical
• Advanced technology is needed for repair
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