Occlusions in EVAR: What is the impact on early outcomes, quality of life, and cost efficiency?

Dr Amer Zanabili
Oviedo - Spain
Disclosure

Speaker name: Amer Zanabili

I have the following potential conflicts of interest to report:

- Consulting: W. L. Gore.
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s): Spanish National Health Service Employee

- I do not have any potential conflict of interest
Introduction

- **EVAR** - the most frequent treatment for AAA:
  - Lower short-term morbi-mortality.
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- **EVAR** - the most frequent treatment for AAA:
  - Lower short-term morbi-mortality.

- **Endograft limb occlusion:**
  - The **1st** cause of limb ischemia
  - The **3rd** cause of re-intervention after EVAR
Incidence

• It’s decreasing. For 2 reasons:
  • Newer generation endografts.
  • More experience of the teams.

1. Hammond et al. JVS 2018

Regression of Year of publication on Logit event rate

Year of publication

Logit event rate


5.6%
Risk factors

- Graft limb **kinking** (42.8%).
- Iliac tortuosity.
- Narrow distal aorta.
- Extension to the EIA.
- Stent-graft configuration.
- Oversizing.
- ...

2. Coelho et al. EJVES 2019
3. Demanget et al. EJVES 2013
How to detect limb kinking?

• Post-implantation CDSA is not enough.
How to detect limb kinking?

- Post-implantation CDSA is **not** enough.
- **Better** alternatives:
  - IVUS
  - C-Beam CT
Q1: How does it affect early outcome?

- More than 50% in the first 6 months.

HUCA experience:
- 434 elective EVAR 03-15
- Limb graft occlusion: 11 patients (2.5%)
Q1: How does it affect the early outcome?

<table>
<thead>
<tr>
<th>Endograft</th>
<th>Total Nº</th>
<th>Nº Thrombosis (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXCLUDER®, C3® (GORE)</td>
<td>283</td>
<td>1 (0.35%)</td>
</tr>
<tr>
<td>ENDURANT I®, II® (MEDTRONIC)</td>
<td>76</td>
<td>4 (5.26%)</td>
</tr>
<tr>
<td>ANACONDA® (VASCUTEK)</td>
<td>38</td>
<td>3 (7.89%)</td>
</tr>
<tr>
<td>TALENT® (MEDTRONIC)</td>
<td>26</td>
<td>1 (3.84%)</td>
</tr>
<tr>
<td>ZENITH® (COOK MEDICAL)</td>
<td>9</td>
<td>-</td>
</tr>
<tr>
<td>NELLIX® (ENDOLOGIX)</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>INCRAFT® (CORDIS)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>E-TEGRA® (JOTEC)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ANCURE® (BOSTON)</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>UNIFIT® (LEMAITRE)</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>
Q1: How does it affect the early outcome?

**TABLE 2. LOSS OF LIMB PATENCY RATES FROM LITERATURE**

<table>
<thead>
<tr>
<th>Peer-Reviewed Articles</th>
<th>Stent Graft</th>
<th>Limb Occlusion</th>
<th>Secondary Intervention for Limb Occlusion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n/N</td>
<td>%</td>
<td>n/N</td>
</tr>
<tr>
<td>Kalkeis et al., 2012</td>
<td>Various</td>
<td>[5/106]</td>
<td>[5/106]</td>
</tr>
<tr>
<td>Conway et al., 2012</td>
<td>Various</td>
<td>31/661</td>
<td>31/661</td>
</tr>
<tr>
<td>van Zeggeren et al., 2013</td>
<td>Endurant</td>
<td>20/496</td>
<td>20/496</td>
</tr>
<tr>
<td>Verhoeven et al., 2014</td>
<td>Excluder</td>
<td>8/400</td>
<td>8/400</td>
</tr>
<tr>
<td>Mehta et al., 2014</td>
<td>Aptus (Aptus Endosystems, Inc.)</td>
<td>12/155</td>
<td>12/155</td>
</tr>
<tr>
<td>Biswas et al., 2014</td>
<td>Endurant</td>
<td>[10/273]</td>
<td>[10/273]</td>
</tr>
<tr>
<td>Taudorf et al., 2014</td>
<td>Zenith</td>
<td>18/504</td>
<td>18/504</td>
</tr>
<tr>
<td>Freyre et al., 2014</td>
<td>Anaconda</td>
<td>9/177</td>
<td>9/177</td>
</tr>
<tr>
<td>Ishibashi et al., 2014</td>
<td>Various</td>
<td>5/175</td>
<td>3/175</td>
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<td>Mantas et al., 2014</td>
<td>Various</td>
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<td>Pratasi et al., 2014</td>
<td>Excluder</td>
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<tr>
<td>Donas et al., 2015</td>
<td>Endurant</td>
<td>15/712</td>
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<td>Bockler et al., 2015</td>
<td>Endurant</td>
<td>8/171</td>
<td>5/171</td>
</tr>
<tr>
<td>Faure et al., 2015</td>
<td>Endurant</td>
<td>42/1143</td>
<td>42/1143</td>
</tr>
</tbody>
</table>

**Author (registry):**

- Carroccio et al., 2002
- Ezurum et al., 2004
- Van Marrewijk et al., 2006
- Cochrane et al., 2007
- Maleux et al., 2008
- Abbruzzese et al., 2008
- Conradi et al., 2009
- EVAR 1 et al., 2010
- EVAR 2 et al., 2010
- DREAM et al., 2010
- Mehta et al., 2010
- Kathiresan et al., 2010
- Sivaramath et al., 2006
- Groenblad et al., 2006
- Jean Baptiste et al., 2006
- Mertens et al., 2011
- Peterson et al., 2007
- Bos et al., 2009
- Maleux et al., 2012
- Restos et al., 2012
- Prati et al., 2014
- Donas et al., 2015
- Bockler et al., 2015
- Faure et al., 2015

**Device:**

- SC
- MC

**Type of Study:**

- Mean follow-up, months:
  - 20
  - 24
  - 21
  - 23
  - 21
  - 24
  - 34
  - 39
  - 57
  - 34
  - 31
  - 30
  - 30
  - 30
  - 30
  - 30
  - 30
  - 24
  - 24
  - 66
  - 66
  - 66
  - 52
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  - 12
  - 12

**Oclusion rate, %:

- 3.7
- 2.7
- 8
- 7.2
- 3.1
- 6
- 2.9
- 3.2
- 2.2
- 6.7
- 1.4
- 1.1
- 5.2
- 2.6
- 1.8
- 5.6
- 0
- 0
- 1.6
- 1.4
- 1.1
- 6.1
- 2.3
- 4.4
- 1.7
- 1.7
- 5.7
- 2.2
- 1.9
- 3.0
- 1.3
- 2.0
- 4.0
- 3.4

4. Kouvelos et al. EVT 2015
5. Faure et al. JVS 2015
Q2: How does it affect QoL?

- Presentation:
  - Asymptomatic: 6.6%
  - Intermittent claudication: 53.9%
  - Acute ischemia: 32.4%
  - Critical limb ischemia: 6.5%

- 87 – 97.7% needed a re-intervention.

1. Hammond et al. JVS 2018
2. Coelho et al. EJVES 2019
Q3: Does it affect the cost efficiency of EVAR?
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- Yes, of course. (as any type of re-intervention)
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- Yes, of course. (as any type of re-intervention)
- Most frequent: Fem-fem crossover bypass.
Q3: Does it affect the cost efficiency of EVAR?

- **Yes, of course.** (as any type of re-intervention)
- Most frequent: Fem-fem crossover bypass.
- Lately, we prefer the **EV endograft limb rescue**.

**Acute case**

**Chronic case**
Q3: Does it affect the cost efficiency of EVAR?

• Yes, of course. (as any type of re-intervention)
  • Most frequent: Fem-fem crossover bypass.
  • Lately, we prefer the **EV endograft limb rescue**.

• **Even worse than costs**, after re-intervention:
  • ≈3% of limb loss.
  • ≈3% of perioperative mortality.

1. Hammond et al. JVS 2018
Conclusions

• The best treatment is prevention by:

  • Following the IFU of each endograft.

  • Choosing an appropriate endograft.
Thank you for the attention!!!
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