With Adjuncts (Chimney Grafts And Onyx) 100% Of RAAAs Can Be Treated By EVAR With Low 30-Day Mortality And Turn Down Rates: Technical Tips

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Disclosures

I have the following potential conflicts of interest to report:

Co-founder Meliora-Vision
Co-founder MV Arterica

Two-center study (Örebro/Zurich) 473 pts

Combined 14-year experience of 2 university centers performing EVAR on 100% of ruptured abdominal aortic aneurysms (RAAA) over a 32 months period...


rEVAR Concept has already been proven

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Patient Characteristics and 30-Day Morbidity of Operative and Total Cohorts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EVAR (n=351)</td>
</tr>
<tr>
<td>Age</td>
<td>70 (4)</td>
</tr>
<tr>
<td>Sex</td>
<td>24%</td>
</tr>
<tr>
<td>Type of surgery</td>
<td>11%</td>
</tr>
<tr>
<td>Final flap</td>
<td>52%</td>
</tr>
<tr>
<td>Ruptured</td>
<td>6%</td>
</tr>
<tr>
<td>Operative cohort mort</td>
<td>24%</td>
</tr>
<tr>
<td>Operative cohort mort</td>
<td>24%</td>
</tr>
<tr>
<td>Total cohort mort</td>
<td>27%</td>
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<tr>
<td>Total cohort mort</td>
<td>27%</td>
</tr>
<tr>
<td>30-day mortality</td>
<td>24%</td>
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<tr>
<td>30-day mortality</td>
<td>24%</td>
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</tbody>
</table>

63% LA 32%
20% LA/GA 22%
13% GA 45%
EVAR/ONLY v. EVAR/OPEN

- Rejection rate decreased from 10 to 4%
- Age increased from 73 to 76 yrs
- Women increased from 14 to 24%
- Hemodynamic instable increased from 38 to 47%

Proximal extending using Chimney grafts

Chimney grafts with sealing below SMA

Chimney grafts with sealing above SMA

Distal extending using Onyx

Key elements of Onyx embolization

- No selective catheterisation of IIA necessary
- No contraindications due to tortuosity
- Standard catheter equipment can be used
- Immediate sealing is obtained

Buddy Bernstein catheter parked before EIA stentgraft deployment.

Slow stepwise injection 5-10cc Onyx

Critical distal IIA branches remain patent.

Additional sealing with Onyx

Sealing of gutters in Chimney grafts.

rPRAA
82 yo male
Past EVAR
Percutaneous Combined PG EVAR and BEVAR

Selective Gutter Embolisation

3 months Outcome

Post EVAR-T1a endoleak with rupture.....

....solved by sealing with Onyx alone

Single-Center Experience: RAAA

Örebro University Hospital

<table>
<thead>
<tr>
<th>2009 – 2017</th>
<th>(100% EVAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of consecutive patients</td>
<td>311</td>
</tr>
<tr>
<td>Age (median [IQR])</td>
<td>77.2 years (70.6-83.5)</td>
</tr>
<tr>
<td>Female</td>
<td>26/101 (26%)</td>
</tr>
<tr>
<td>Unfit for any intervention</td>
<td>11/112 (10%)</td>
</tr>
<tr>
<td>30-days mortality</td>
<td>27/101 (27%)</td>
</tr>
<tr>
<td>90-days mortality</td>
<td>29/96 (30%)</td>
</tr>
<tr>
<td>Cohort 30-days mortality</td>
<td>38/112 (34%)</td>
</tr>
<tr>
<td>Cohort 90-days mortality</td>
<td>39/106 (37%)</td>
</tr>
</tbody>
</table>
**Single-Center Experience: RAAA**

Örebro University Hospital 2009 – 2017 (100% EVAR)

- Number of consecutive patients: 101
- Age (median [IQR]): 77.2 years (70.6-83.5)
- Female: 26/101 (26%)
- Unfit for any intervention: 11/112 (10%)
- 30-days mortality: 27/101 (27%)
- 90-days mortality: 29/96 (30%)
- Cohort 30-days mortality: 38/112 (34%)
- Cohort 90-days mortality: 39/106 (37%)

**Local anesthsia only**

- Mortality: GA > LA only: P=0.005 (OR 3.62 [1.44-9.09])
- ABO treatment: 21/101 (21%)
- Mortality: ABO > no ABO: P=0.001 (OR 7.66 [2.67-22.0])
- ACS with intervention: 25/101 (25%)
- Mortality: ASC > no ACS: P=0.001 (OR 5.94 [2.17-16.3])
- Shock: 50/101 (50%)
- Mortality: shock > no shock: P=0.037 (OR 2.63 [1.04-6.61])

**Use of ≥1 adjunct technique**

- Adjunct: 67/101 (66%)
- P=0.09 (OR 2.30 [0.87-6.10])

**Mortality: No adjunct > adjunct**

- 40/101 (40%)

**Conclusion**

- By using adjuncts “every” patient with RAAA can be offered EVAR
  – Ev. as a bridging procedure...
- Chimney grafts can extend landing zones
- Onyx can offer additional sealing options
- Valid long-term results for adjuncts

**Long-term survival (adjunct vs no adjunct)**

![Graph showing long-term survival of adjunct vs no adjunct patients.](image)