HOW EFFECTIVE IS EMBOLIZATION FOR OTHERWISE UNTREATABLE PROXIMAL TYPE 1 ENDOLEAKS AFTER EVAR: TECHNIQUES, MID TERM OUTCOMES, PITFALLS AND PATIENT SELECTION

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DISCLOSURES
• Proctor for Medtronic

Type 1 endoleaks (EL1)
Is there a role for embolization?

When none of the conventional options are available

- Cuffs
- Palmaz stents
- Fenestrated cuffs
- Endograft extensions

Anatomy
Severe comorbidity

Embolization of type 1 endoleaks
• May be a large space to fill
• Endoleak close to aortic/iliac artery lumen
  → therefore risk of non-target embolization increased
• Potential embolics:
  - Coils
  - Glue
  - Onyx™
  - Combination

Nellix EVAR – 3m CTA
3mm increase in sac diameter
83yr old with a contained rupture

Outcomes

Immediate technical success in all patients

6 procedural complications
3 cases of Onyx reflux, 3 puncture site hematomas

Personal Experience of EL1 embolization

25 pts, 27 procedures
24 EL1a, 1 EL1b

No pt was suitable for conventional therapy

1 contained rupture
1 infected EVAR and mycotic aneurysm

Onyx alone in 16 procedures
Onyx + Detachable Coils in 11 procedures

Follow-up

Imaging f/u – mean 311 days (1-1357d)

No recurrent endoleak – 69%
Stable or decreasing sac size in 76%

<table>
<thead>
<tr>
<th>Stent graft</th>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nexus</td>
<td>11</td>
</tr>
<tr>
<td>Zenith</td>
<td>7</td>
</tr>
<tr>
<td>Endura</td>
<td>4</td>
</tr>
<tr>
<td>Captivia</td>
<td>1</td>
</tr>
<tr>
<td>Ventana</td>
<td>1</td>
</tr>
<tr>
<td>FEVAR</td>
<td>1</td>
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</tbody>
</table>

No pt was suitable for conventional therapy

Stent graft

<table>
<thead>
<tr>
<th>Change in Sac Size</th>
<th>Number of cases</th>
<th>%</th>
<th>Endoleak recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease ≥5 mm</td>
<td>10</td>
<td>75%</td>
<td>1/10 (10%)</td>
</tr>
<tr>
<td>Stable</td>
<td>10</td>
<td>75%</td>
<td>2/10 (20%)</td>
</tr>
<tr>
<td>Increase ≥5 mm</td>
<td>6</td>
<td>43%</td>
<td>5/6 (83%)</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>100%</td>
<td>8/26 (31%)</td>
</tr>
</tbody>
</table>
Follow-up
Imaging f/u available in 26/27 procedures
Mean 311 days (1-1357 d)
No recurrent endoleak – 69%
Stable or decreasing sac size in 76%

Coils + Onyx may be better than Onyx alone

<table>
<thead>
<tr>
<th>No endoleak recurrence</th>
<th>Onyx</th>
<th>Onyx and coils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endoleak recurrence</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>% of endoleak recurrence</td>
<td>44%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Which Type 1 endoleaks are suitable for embolization?

Small > large EL1

Small communication between EL1 cavity and aorta

Not wide necked EL1

Literature

EMBOLIZATION OF TYPE 1 ENDOLEAKS

Conclusions

- Embolization is useful for some EL1 not suitable for conventional solutions
- High technical success and no recurrence at mid-term follow-up in majority
  - May be used as a palliative treatment
- Optimal anatomic criteria for embolization not yet defined
  - Choice of optimal embolic agent not known
    - Single agent vs combination