Value of Fibrin Glue Sac Filling to Treat Type 1a Endoleaks after Standard EVAR with Bad Necks: Indications, Technique and 10-Yer Results

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Disclosures

- No

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Indication of EVAR

- favorable proximal neck anatomy
  - Length more than 10-15mm
  - Angle less than 60-75°
  - Irregular Shape
  - Without severe calcification and/or parietal thrombus

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Serious complication of EVAR

- Type Ia Endoleak
  - unfavorable proximal neck anatomy
  - Shorter
  - Irregular
  - Severely angulated necks
  - Severe calcification and/or parietal thrombus

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Simple, safe, cheap and effective method

- Prevent or Treat Type Ia Endoleak
  - Chimney
  - Fenestration
  - Branch
  - Sac Bag

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Fibrin Glue Sac Embolization

- Thrombin and Fibrinogen: Hemostasia in Open

- Active ingredients: Thrombin (Human). Fibrinogen (human), etc.
- Character: Thrombin (Human): A white or yellowish powder. Fibrinogen (Human): A grey-white or yellowish powder.
- Indications: Read enclosed insert
- Dosage and administration: Read enclosed insert
- Advance markings: Read enclosed insert
- Contraindications: Read enclosed insert
- Precautions: Read enclosed insert
- Package: One glass bottle per package
- Calcium Chloride Solution: One glass bottle per package
- Store in a dry place:

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Clinic Outcome

Patient characteristics: From 2006.12 to 2010.7 N=107

- Age, year 71.1±12.1
- Men 68 (63.8%)

Aneurysm characteristics

- Maximal aneurysm diameter, mm 59.8±11.77
- Proximal neck diameter, mm 22.9±5.12
- Proximal neck length, mm 11.8±5.61
- Proximal neck ≤ 10 mm 41 (38.3%)
- Proximal neck ≤ 15 mm 83 (77.6%)
- Proximal neck angle > 60° 27 (25.2%)
- Severe calcification of aneurysm neck 19 (17.8%)
- Mean of 17.7 ± 8.8 ml FG injection
Clinic Outcome

• Follow-up 7-10 years, mean 89.1 months
• 106 (99.1%) of 107 endoleaks were resolved.
• The mean maximum aneurysm diameter became significantly smaller (53.23 ± 10.9 mm vs. 59.86 ± 11.7 mm).
• The postoperative maximum aneurysm diameter decreased in 76 patients and was stable in 22 patients.
• One patient with aneurysm enlargement was transferred to open surgery because of a type IV endoleak.
• Four patients received repeated endovascular treatment after the distal part of iliac artery enlargement.
• There was no recurrent type I endoleak, type II endoleak.
• No embolization, infection, paraplegia, migration, or malfunction during the peri-operation period and follow-up.

Discussion: Mechanism

Not only Embolization For Endoleak
But also Coagulating All Sac of Aneurysm

Comparison Between Pre- and Post- Sac Filling Intrasac Pressures

<table>
<thead>
<tr>
<th>Pressure</th>
<th>Pre-sac filling</th>
<th>Post-sac filling</th>
<th>Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sac Pressure, mmHg</td>
<td>MPI, %</td>
<td>Sac Pressure, mmHg</td>
</tr>
<tr>
<td>Systolic</td>
<td>114.1±16.7</td>
<td>89.7±5.1</td>
<td>54.4±20.3</td>
</tr>
<tr>
<td>Diastolic</td>
<td>65.0±10.4</td>
<td>51.4±18.2</td>
<td>13.6±14.1</td>
</tr>
<tr>
<td>Mean</td>
<td>81.3±11.4</td>
<td>54.1±20.1</td>
<td>27.3±11.5</td>
</tr>
<tr>
<td>Pulse</td>
<td>49.1±12.8</td>
<td>8.2±5.2</td>
<td>40.9±13.9</td>
</tr>
</tbody>
</table>

Intrasac systolic, diastolic, mean, and pulse pressure decreased significantly in the treated cases (* p <0.01, respectively).

Discussion: Technique

Occlusion Proximal Flow
Protect Branch Ateliers
Prevent Distal Embolization
Fibrin Glue Sac Embolization: R-EVAR

- Treat Any Type Endoleak of R-EVAR
- Prevent Rupture Post R-EVAR
- Decrease Abdominal Compartment Syndrome

Conclusions

- Fibrin Glue Sac Embolization is a simple and effective treatment method,
- Especially for patients with short proximal neck, severe neck angulation, severe calcification, parietal thrombus and RAAA.
- This method could expand the current indications of EVAR.

Future of Aneurysm Sac Filling with Fibrin Sealant

- There was no recurrent type I endoleak, type II endoleak, even no endotension during the peri-operation period and follow-up.
- It maybe can be used in all EVAR cases to prevent any endoleak and improve long-term outcome.

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