Subclavian Artery Plug Embolization (SAPE study): a real experience about endovascular subclavian occlusion prior to thoracic vascular repair

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Chief: Prof. Roberto Chiesa
Disclosure

Simone Salvati, MD

☐ I do not have any potential conflict of interest
Carotid to subclavian BP during TEVAR

In case of coverage of the LSA artery, SVS recommends routine pre-operative LSA revascularization.
Subclavian artery plug embolization

In case of CSB, LSA origin occlusion to avoid Type IC endoleak
Amplatzer Vascular Plug (AVP)

3 different devices to occlude aortic side branches

<table>
<thead>
<tr>
<th>AVP I</th>
<th>AVP II</th>
<th>AVP IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>4-16 mm</td>
<td>3-22 mm</td>
</tr>
<tr>
<td>Sheath required</td>
<td>4-6 Fr</td>
<td>4-7 Fr</td>
</tr>
<tr>
<td>Delivery system length</td>
<td>100 cm</td>
<td>100 cm</td>
</tr>
<tr>
<td>Landing zone</td>
<td>Shortest</td>
<td>Medium/long</td>
</tr>
<tr>
<td>Flow type</td>
<td>Low-medium</td>
<td>Medium-high</td>
</tr>
</tbody>
</table>
Subclavian Artery Plug Embolization (SAPE) study

ClinicalTrials.gov Identifier: NCT03620006

**Population:** 92 patients treated with CSB and Plug occlusion
- 70 patients retrospective
- 22 patients prospective

**Inclusion:** Elective cases scheduled for TEVAR, FET or B/FEVAR

**Primary endpoint:** Primary technical success rate

**Secondary endpoints:** neurological events, access complications

**Status:** enrolling
**SAPE study: anatomical characteristics**

Artery anatomy is mandatory for the choice of AVP

<table>
<thead>
<tr>
<th>Subclavian artery anatomy</th>
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</thead>
<tbody>
<tr>
<td>Length (median)</td>
</tr>
<tr>
<td>4.3 cm (3.7-5.2)</td>
</tr>
<tr>
<td>Diameter (mm)</td>
</tr>
<tr>
<td>&gt; 12 mm</td>
</tr>
<tr>
<td>55%</td>
</tr>
<tr>
<td>&lt; 12 mm</td>
</tr>
<tr>
<td>45%</td>
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</tbody>
</table>
SAPE study: anatomical characteristics

Use of AVP according to the anatomical characteristics

AVP I
- 12 mm: 1
- 14 mm: 6
- 16 mm: 22
- 18 mm: 4
- Total: 33 (36%)

AVP II
- 14 mm: 6
- 16 mm: 21
- 18 mm: 10
- 20 mm: 10
- 22 mm: 12
- Total: 59 (64%)

SAPE study: technical aspects

Type of vascular access

- Percutaneous: 67%
- Cut-down: 33%
- Femoral: 16%
- Radial: 49%
- Brachial: 31%
- Subclavian: 3%
### SAPE study: clinical results

#### Post-operative events and follow-up

<table>
<thead>
<tr>
<th>Adverse events</th>
<th>Count (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>2 (2.5%)</td>
</tr>
<tr>
<td>Access reoperations (brachial percutaneous)</td>
<td>2 (2.5%)</td>
</tr>
<tr>
<td>Asymptomatic thrombosis (radial access)</td>
<td>7 (8.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Post-op follow up (CT scan)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBS patency at 2-year</td>
<td>93%</td>
</tr>
<tr>
<td>Technical Success</td>
<td>95%</td>
</tr>
<tr>
<td>Type IA-IC endoleak</td>
<td>5%</td>
</tr>
</tbody>
</table>
Tips & tricks: real experience

Short neck in large subclavian artery
Tips & tricks: real experience

AVP II protruding in the aorta
Tips & tricks: stent-graft sealing interference

AVP II protruding in the aorta

Risk of Type I EL for Zone 2 PLZ
Tips & tricks: stent-graft sealing interference

Zone 2 sealing interference

Zone 2 TEVAR

AVP II lobe protruding in the aorta
Tips & tricks: stent-graft sealing no interference

Zone 0-1 no sealing interferences

Zone 1 PLZ no interferences
Tips & tricks: real experience

Dissected subclavian artery
Tips & tricks: double lumen embolization

TL and FL embolization

TL AVP II plug

FL AVP II plug

TL and FL plug occlusion
Tips & tricks: subclavian dissection

TL and FL embolization
Conclusions

TECHNIQUE
— Quick with a “single shot” approach
— No dedicated plugs for the subclavian anatomy

RESULTS
— High technical success rates
— Few associated complications
Thank you for your attention
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