Single Branch Carotid Ch/TEVAR with Cervical Bypasses
A Simple Solution for Some Complex Arch Lesions: Technical Tips and Results

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Disclosure Statement
- Consultant
  - Cook
  - Endologix
  - Terumo Aortic
  - W. L. Gore

Carotid Chimney / TEVAR
- Open surgical repair of descending and aortic arch disease
  - Morbidity – 30-40%
  - Mortality – 2-20%

Voskresensky I et al; J Vasc Surg 2017

- TEVAR
  - Treatment of choice for appropriate thoracic lesions
  - Limitations of seal in the aortic arch
  - Often needs coverage of the LSA and encroachment on LCCA for optimal seal

Carotid Chimney / TEVAR
- Deployment of TEVAR devices in Zone 2 -
  - Is the most common seal zone used in the arch
  - Requires accurate device deployment to maximize seal and avoid LCCA coverage
  - Seal is often maximized due to the concern of occlusion of the LCCA
  - Failure of accurate deployment often leads to a Type IA endoleak or inadvertent coverage of the LCCA

Voskresensky I et al; J Vasc Surg 2017
Wang T et al; J Endovasc Ther 2017

Carotid Chimney / TEVAR
- Hybrid arch procedures -
  - TEVAR
  - Carotid-Subclavian reconstruction
  - LCCA stenting (planned or unplanned)

- Left common carotid chimney have been increasingly used to obtain a better seal in the arch.
- Concerns include stroke, Type A retrograde dissection, and Type IA endoleaks.

Carotid Chimney / TEVAR
- Available data is limited
- Recently published series – treatment over 11-13 years

<table>
<thead>
<tr>
<th>Patients</th>
<th>Technical Success</th>
<th>Mortality</th>
<th>Stroke</th>
<th>Chimney patency</th>
<th>Type IA endoleak</th>
<th>LCCA Chimney</th>
<th>F U (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>85%</td>
<td>4%</td>
<td>10%</td>
<td>100%</td>
<td>11%</td>
<td>89%</td>
<td>9</td>
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<tr>
<td>132</td>
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<td>0.8%</td>
<td>0.8%</td>
<td>98%</td>
<td>11%</td>
<td>79%</td>
<td>32</td>
</tr>
</tbody>
</table>

- LCCA chimneys are the most commonly used chimney in the aortic arch

Voskresensky I et al; J Vasc Surg 2017
Wang T et al; J Endovasc Ther 2017
Carotid Chimney / TEVAR

- Technical Tips to decrease risk & complications during Zone 1-2 TEVAR procedures
  - Applicable for elective or emergency procedures
  - Electively include:
    - Open left carotid/subclavian access via supraclavicular incision
    - Perform a subclavian transposition or a carotid-subclavian bypass

- Electively include:
  - Retrograde LCCA access
  - 7 FR sheath placement – diagnostic & therapeutic use
  - Alignment of the TEVAR device at or over the carotid sheath for maximum seal

- Accurate TEVAR deployment
- LCCA chimney deployment under LCCA control in the neck to avoid embolization
- Carotid flush and primary repair
- Proximal subclavian embolization if needed

CONCLUSION

- Carotid Chimney/TEVAR combination is frequently used to obtain additional seal in the aortic arch with good results.
- Early retrograde LCCA access allows safe TEVAR deployment with maximum seal.
- The procedure can be safely performed with low morbidity and mortality rates and excellent results in selected patients.