Endovascular Treatment of Aortic Disease

Joshua D. Adams, M.D.

Head of Endovascular Surgery
Surgical Director, MUSC Health Aortic Center
Assistant Professor of Surgery & Radiology
Vascular Surgery & Vascular Interventional Radiology
Disclosures

• Financial Disclosures:
  – Cook Medical, Inc.
    • Consultant & Proctor
  – CorMatrix Cardiovascular, Inc.
    • Scientific Advisory Board
    • Consultant
  – Medtronic
    • Consultant and Proctor
  – Oscor, Inc.
    • Scientific Advisory Board
    • Consultant
  – W.L. Gore and Associates, Inc.
    • Consultant

• This presentation will include information about and cases demonstrating “Off-Label Use” of medical devices.
Multidisciplinary Training
Multidisciplinary Training

4-2 Early Specialization Pathway for Vascular Surgery

And

DIRECT Pathway for Vascular & Interventional Radiology
Collaborative Position

• Endovascular Surgery
  – Vascular Surgery
  – Vascular Interventional Radiology
Aortic Disease

- Thoracic Aorta
  - Aneurysm
  - Dissection
  - Penetrating Aortic Ulcer
  - Traumatic Injury

- Abdominal Aorta
  - Aneurysm
  - Dissection
  - Occlusive Disease
Photos courtesy of Cook, Inc.
Thoracic Aortic Aneurysm
Post TEVAR
Ruptured TAA
Aortic Dissection

Normal

Dissected

A

B

celiac trunk

left subclavian artery

left renal artery

superior mesenteric artery
Aortic Dissection Classification

- **Timeframe**
  - Acute
  - Chronic

- **Anatomy**
  - Stanford Type A
  - Stanford Type B

- **Complexity**
  - Complicated
  - Uncomplicated
Thoracic Aortic Injury
51 y/o male s/p MVC with pelvic fractures and multiple orthopedic injuries.
Abdominal Aorta

- Aneurysms
Standard AAA Devices

- APTUS, INC.
  - Aptus
- COOK MEDICAL
  - Zenith
  - Zenith Flex
  - Zenith LP
- CORDIS CORPORATION
  - Incraft
- ENDOLOGIX
  - Powerlink
  - Nellix
- GORE & ASSOCIATES
  - Excluder
- LOMBARD
  - Aorfix
- MEDTRONIC, INC.
  - AneuRx
  - Talent
  - Endurant
- TRIVASCULAR
  - Ovation
- VASCUTEK
  - Anaconda
Modifying the Fenestrated

- 62 year old female with morbid obesity and 6 cm “trilobed” juxtarenal AAA
The maximum number of fenestrations is three. The maximum number of any particular type of fenestration is two.

### Internal Aortic Diameter

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>21</strong></td>
<td></td>
</tr>
</tbody>
</table>

### Scallop

All scallops are 10 mm wide.
Height ranges from 6 to 12 mm.

<table>
<thead>
<tr>
<th></th>
<th>#1</th>
<th>#2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Height</strong></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td><strong>Clock Position</strong></td>
<td>12:30</td>
<td></td>
</tr>
</tbody>
</table>

### Large Fenestration

Diameters are 8, 10 or 12 mm.
Stent struts may cross large fenestration.
Distance from center to edge must be ≥ 10 mm.

<table>
<thead>
<tr>
<th></th>
<th>#1</th>
<th>#2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diameter</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Clock Position</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Distance from Edge</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Small Fenestration

All small fenestrations are 6 mm wide.
Heights are either 6 or 8 mm.
Distance from center to proximal edge must be ≥ 15 mm.

<table>
<thead>
<tr>
<th></th>
<th>#1</th>
<th>#2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Height</strong></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td><strong>Clock Position</strong></td>
<td>4:15</td>
<td></td>
</tr>
<tr>
<td><strong>Distance from Edge</strong></td>
<td>23</td>
<td></td>
</tr>
</tbody>
</table>
ZFEN as Platform for Branched-EVAR

- 72 year old male with 7.0 cm Extent III TAAA and history of previous open infrarenal AAA repair.