Access Routes and Off-The-Shelf Devices For Ascending Aortic Endovascular Repair

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Stenting the Ascending Aorta

Senting the Ascending Aorta

Focal Aortic Defects (FAD)
Dissection (chronic)
Anwurysm

Disclosure
• Consultant
  – Bolton Medical
  – Medtronic
  – Lombard Medical
  – TriVascular

Aortic Building Blocks

Aortic Arch
Ascending Aorta
Sinotubular junction
Aortic Root
Aortic valve

Ascending Aorta

Celiac artery
Mesenteric artery
Splenic artery
Superior mesenteric artery
Aorta
Aorta
Off-The-Shelf Ascending Aorta

- Unmodified TEVAR Devices
- Modified TEVAR Devices
- Abdominal Aortic Cuffs
- Amplatzer plugs
- Amplatzer ASD devices
- TAVR devices

Length of the Ascending Aorta

Enlarging Dissection Ascending Aorta

Acute Dissection Ascending Aorta

High Risk Patient for Open Procedure

ELG Delivered Accurately Without Systemic Arterial Resistance
Unmodified TEVAR

Limitations
- Shortest length = 10 cm
  - too long for most ascending aortas
- Leading nose cone could be a problem with some anatomies
  - i.e. mechanical aortic valves

Advantages
- Efficient, wide range of diameters

Physician modified TEVAR

Limitations
- Need to be deployed on back table, modified, and re-loaded
- Concerns about structural integrity
- Should be done as part of a physician-sponsored IDE
- Time consuming

Advantages
- Efficient, wide range of diameters

Abdominal Aortic Cuffs

Limitations
- Short Delivery System
  - Often can’t reach ascending aorta from femoral access
  - Largest diameter is 32 – 34 mm
  - Less accurate deployment
  - Some systems still have nose-cone issue

Advantages
- Short lengths

Acute Type A Aortic Dissection (Focal)
Ascending Aorta Endoluminal Repair

Poor landing zone lengths relative to length of ascending aorta

CoreValve as a repair of ascending aortic dissection
Access

Trans-Femoral
Trans-Apical
Great Vessel

Easily convert to cardiopulmonary bypass
Standard cannulation site
Helps prevent migration and coverage of innominate artery
More accurate deployment
Avoids crossing the aortic arch
Decreased stroke risk
Summary
• Multiple types of approaches are needed
• Right Axillary has advantages
• Abdominal components are a possibility for some patients
• Convergence of technologies

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Ascending Endoluminal Adventure
Pseudoaneurysm of Ascending Aorta
Secondary to aorto right coronary artery bypass occluded

Attempted Coil Embolization
Coils failed to close entry point
Aneurysm expanded from 6-10cm in 4 months

Custom Made Endoluminal Graft Exclusion of Pseudoaneurysm