What Are the Best Endo Techniques for Managing Arch Lesions – Branched Devices and In Situ Fenestrations

Indication for Endo Arch Repair

- Non-Surgical Candidates
- Previous Sternotomy
  - Open Ascending/Hemiarch/Arch
- Pathophysiology
  - Dissections vs Aneurysms
- Suitable Anatomy

Disclosure

COOK Medical - Consulting, IP, Speaker, Investigator
Cordis – Investigator
Medtronic – Investigator, SAB
GORE - Investigator
Endovascular Issues

- Ascending Aorta
  - Length, Diameter
- Valves
  - Insuff? Stenosis? Mechanical valve?
- Coronary Arteries
  - Disease? Position postCABG?
- Physiology
  - Movement, pulsatility
- Anatomy
  - Neck vessels, 3D orientation, Diastolic/systolic diameter variation, dissection lumina,

Planning

- 3D Workstation
- Ascending Aorta
- Coronaries
- Aortic Valve!
- Sealing zones in neck vessels

Planning

- Access
- Tortuosity
- Prev. EVAR/TEVAR
- Shaggy Aorta!

IN SITU FENESTRATION

Development

- McWilliams first publication 2004
  - LSCA in situ fenestration
- Numan et al ICVTS 2008
  - Experimental study
- Panneton JVS 2014
  - N=22 (LSA)
  - Laser-assisted fenestreration
  - 20/22 Technical success

Arch Rupture

Sonesson JVS 2009
Steps for total arch in situ

- Temporary femoral-carotid by-pass
- TEVAR deployment
- Fenestration
- Terminate bypass

Temporary femoral-carotid by-pass

Pump + cooling

Bypass

TEVAR deployment

Fenestration

Fenestration
Final Angio

8 cm Arch Pseudoaneurysm with Abberant RSCA Aneurysm

Final angiogram

In Situ Implant Evolution

- Intraoperative Cerebral circulation
  - Internal Shunts (Sonesson 2011)
- Fenestration Technique
  - Laser, (Needle, RF)
Arch Branch Implant Evolution

- CA-LSCA bypass not staged
- Fusion Guidance
- Lowering Pressure During Deployment
  - Caval Occlusion
  - (Rapid Pacing)
- Great Vessel Access
  - Direct carotid exposure allows embolization control

Algorithm Total Arch Endo Repair

Summary

- Arch Anatomy Complex
  - Limits Endo Repair
- Several Endo options exist
  - Early results promising
  - Highly selected patients
- Techniques Under Evolution