Ascending Aortic Endografting: Lessons Learned, Present Status And Future Potential: From A PSIDE Experience

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My disclosure: optimist!
Most ascendings amenable to TEVAR?
Not currently! But most probably soon!

Ascending stent grafting using off-label (not dedicated) stents – novel?

88 yo s/p rupture IMH, tamponade

One-year follow-up
An A-HA moment vs. Epiphany
- Demonstrated the utility of ascending TEVAR in a dying patient that had no other treatment option
- Efficacious
- Longevity of results (5 years for this patient)
- I need dedicated devices with an IDE

First Physician-Sponsored IDE: Ascending Aortic Stent graft
National Co-PIs: Drs. White & Khoynezhad

PS-IDE Indications
- Type A thoracic aortic dissection,
- Retrograde Type A thoracic aortic dissection,
- Intramural hematoma, penetrating ulcer
- Pseudoaneurysm of the ascending thoracic aorta affecting the area between the Sinus of Valsalva and the innominate artery orifice (with no involvement of the aortic valve)
- Patient must also have proximal and distal landing zones in the ascending Aorta between 28-44 mm in diameter;
- The patient must be deemed a non-surgical or very high-risk surgical candidate.

PS-IDE Contra-indications
- Type A dissection with aortic valve/root involvement
- Diffuse ascending aortic aneurysm
- Annulo-aortic ectasia
- Pregnant or pediatric patients
- Infections, allergies, no consent
- Expected survival less than one year.

TEVAR for ascending aorta: Technical considerations
- Hemodynamics, aortic regurg, coronary anatomy including CABG
- Access eval, transapical?
- Radial/brachial/carotid access
- Micropuncture, 4-5F sheath
- transfemoral RV pacing
- TEE, IVUS, Angio, CTA
- Bailout maneuvers (also open conversion)
- HLM in standby (primed?)
- Paralex and deployment accuracy

First enrollee: 79yo with symptomatic PAU and IMH
Current experience

- 26 patients with ascending TEVAR;
- 7 pts consented for the IDE
- Results of IDE:
  - no early mortality or early open conversion
  - 100% technical success (delivery and deployment)
  - 1/7 stroke, 1/7 type Ia endoleak (same pt)
  - open repair (FET operation) 2 months, death at 4 months

Results of IDE:

100% technical success (delivery and deployment)
1/7 stroke, 1/7 type Ia endoleak (same pt)
open repair (FET operation) 2 months, death at 4 months

TEVAR for Acute Type A Aortic Dissection: challenges

- Access – ilio-femoral, thoracic aorta, arch, valve
- Stability and safety in LV
- Impinge on valve, coronary arteries, innominate
- Accurate deployment – minimal movement - haemodynamic stress
- Conform to reverse curve of ascending (horizontal aorta)
- Trauma to ascending – progression of Type A dissection
- Stroke risk

Conclusions

- Proof of concept: TEVAR for the ascending aorta
- 1st FDA-approved TEVAR with promising early results
- Many technical challenges still to be tackled!
- Total endovascular solution is the future!

And will always be!!!