Total Arch Replacement for Aortic Dissections: Value of Frozen Elephant Trunk Procedures with Jotec EVITA, or Thoraflex Hybrid Graft

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Disclosures
- Relevant: Vascutek
  Research support
- NOT relevant:
  Medtronic, Atricure, Edwards, St Jude Medical, Bard

Aims of type A dissection repair
- replace ascending to avoid rupture
- correct aortic regurgitation
- correct coronary malperfusion
- correct brain malperfusion
- reverse aortic remodeling to avoid future downstream operations

Fate of distal aorta after type A repair
- reverse aortic remodeling typically does not happen after type A dissection repair
- around 30% will require downstream aortic operations
- What can be done
  About that?

Frozen Elephant Trunk
A concept aimed at reducing subsequent distal aortic operations

Frozen elephant trunk
Helps reverse remodeling of the DTA
Reduction of interval mortality of standard elephant trunk operation
Obviates M&M of left thoracotomy
Literature support for FET

Operative Strategy for Acute Type A Aortic Dissection: Ascending Aortic or Hemiaortic Versus Total Arch Replacement With Frozen Elephant Trunk

H. Jakob, Essen Germany

89% Remodeled Aorta in Type A Dissection

Options for Frozen elephant trunk operation

- Use commercially available stent grafts during the circulatory arrest of the operation
- Jotec Evita open plus graft
- Vascutek Thoraflex

FET with island technique

Evita Open Plus graft
(not available in the US)

Antegrade implantation

E-Vita repair of type A dissection
Multicenter early experience with extended aortic repair in acute aortic dissection: Is simultaneous descending stent grafting justified?

Kostantinos Tsagakis, MD, Devale Padia, MD, Robert D. Bamismenou, PhD, Michael Gottlieb, MD, Gary H. Reiss, MD, Carlos A. Montes, PhD, Jardel Bonilha, MD, Stefan Cetta, PhD, and Heinz Jarch, PhD

- International E-vita Open Registry
  - From 1/2005-1/2010, 68 pts underwent hybrid procedure for TAAD
  - In-hospital mortality 13%
  - Immediate complete false lumen thrombosis 86% along stent graft
    - increased to 94% during follow-up (23 +/- 17 months)
  - Distally, complete or partial false lumen thrombosis was initially observed in 61% (36/59) and in 82% (40/49) after follow-up.
  - The 1- and 3-year actuarial survival was 82% and 74%.

E-vita Registry Conclusions
- Extended thoracic aortic repair of acute aortic dissection with a hybrid stent graft is feasible at acceptable early mortality
- Hybrid procedure promotes false lumen thrombosis around the stent graft and distally.

Vascutek Graft (not available in the US)

Thoraflex has branches for total arch replacement

Vascutek first-in-man experience
- From April 2010 to August 2011, 34 patients underwent hybrid operation [14 aneurysms, 20 dissections (18 acute)].
- Hybrid graft deployment technical success 100%
- 30 day mortality AADA 17%
- Long term follow up not available

Pro/Con of Jotec Evita Open Plus and Vascutek graft

Pro
1) reducing type Ia endoleak.
2) making distal anastomosis easier (collar)
3) Thrombosis of false lumen in DTA
4) Reverse remodeling of stented DTA
5) Easier Stent graft deployment?

Con
1) Not available in the US
2) Increased cost?
3) Blind insertion of the device in the DTA under hypothermic circulatory arrest
Conclusions

- Type A dissection is a technically challenging but life-saving operation.
- Frozen elephant trunk operation in experienced hands has better longterm outcome with less distal re-operation.
- Jotec Evita open Plus and Vascutek Thoraflex have dacron and stent graft combinations to facilitate FET.
- Neither are currently available in the US. Long-term results are still needed for TAAD.