Aortic Arch Repair with Bolton RelayBranch Thoracic Stent-graft system

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Disclosure

I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s):
  - Proctor / Trainer agreement with Bolton medical and Cook
Conventional Open repair of Aortic Arch aneurysms

• Associated with significant perioperative morbidity and mortality
  – Risk of stroke up to 12%
  – Mortality 7-20%

Semin Thorac Cardiovasc Surg
2009;21:347

Mean age 61 yrs
Hybrid Procedures
• 25 open repair
  – Mean age 62 yrs
  – 20% mortality
  – Permanent stroke 17%
  – Hospital stay 29 days

21 hybrid repair
  - Mean age 69
  - 19% mortality
  - 21%
  - 24 days
Hybrid Procedures

= Less invasive......

But the aim is minimal invasive...

What we need are probably total endovascular interventions
Endovascular Aortic Arch Repair

Challenges of the aortic Arch

- Aortic curvature
  Infolding / bird beak phenomena

- Branch vessels
  Patency / endoleaks

- Dynamic Environment
  Migration / Disconections / stent fracture
RelayBranch Thoracic Stent-Graft

- Device is not commercially available
- Patients are treated via the Custom Made program
- Device based on Relay Non-Bare Stent (NBS) Technology
- Intended for Zone 0 deployment
PRE-CURVED NITINOL INNER CATHETER
Tracking through the arch, the pre-curve enhance the alignment of the stentgraft.

INNER SHEATH
Flexible inner sheath allows atraumatic advancement.

OUTER SHEATH
Provides support / pushability during delivery and protects access vessels by acting a conduit for the inner sheath.

Based on RELAY NBS PLUS: DUAL SHEATH SYSTEM
RelayBranch: Design Overview

Based on RELAY NBS PLUS

**SUPPORT WIRES**
Provides controlled stent-graft expansion avoiding the retroflex & bird’s beak effect

**PROXIMAL CLASPING**
Two clasping points located on the outer curve allow repositioning of the device and prevent windsock effect.
RelayBranch: Design Overview

- Wide window gives access to two antegrade 12mm tunnels
- Brain perfusion is preserved during the procedure due to Flow through the tunnels directly after deployment of the graft
- Catheterization of the tunnels from the LCCA and BCT is in general easy
• Tunnels feature Lock-Stent with rounded barbs, that prevents branch disjunction

• Branches are available in wide range of sizes
Case

- Female 76 yrs
- Severe COPD
- 2011 TEVAR after left carotid-subclavian bypass
- Type IA and IB endoleak
- Rejected for open repair
Main Body Inner Sheath Advancement
Case
Experiences

- To date 77 pts are treated with RelayBranch stentgrafts
- 5 pts in UMC Utrecht, all aneurysms >6.5 cm and rejected for open repair
  - Median Age 76 yrs (74-84)
  - 100% technical success
  - Mortality n=1 (after 2 wks, myocardial infarction)
  - Minor Stroke n=1
  - Pneumonia n=2
Experiences

• Median FU with CTA: 442 days (range 2-1050)
• No Type I /III endoleak
• No limb occlusions / disconnections
• No aneurysm growth
Summary

- Positive experiences with RelayBranch for total endovascular arch repair
- Intuitive and controllable device
- Most positive points:
  - Brain perfusion is maintained during the procedure
  - Durability seems fine
- Important to share experiences to optimize endovascular techniques, especially to minimize numbers of stroke
- Longer follow up and bigger series are essential for final conclusions
Thank you
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