Arch Repair with the Bolton Medical RelayBranch Thoracic Stent-graft system: Multicenter experience

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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 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%

Mean age 63 yrs

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Hybrid Procedures
Aortic arch aneurysm: short- and mid-term results comparing open arch surgery and the hybrid procedure

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OR (n=25) HR (n=21)

– Mean age (yrs) 62 69
– Mortality 20% 19%
– Permanent stroke 17% 21%
– ICU stay (days) 11.9 5.5*
– Hospital stay (days) 29 24
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
  Trackability/ Bird beak phenomena

– Supra aortic target vessels
  Patency / Stroke risk / Endoleak

– Dynamic Environment
  Migration / Disconnections / 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
RelayBranch: Design Overview

Based on RELAY NBS PLUS: DUAL SHEATH SYSTEM

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.
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 wind-sock effect.
RelayBranch: Design Overview

- Wide window gives access to two antegrade 12mm inner branches ("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
RelayBranch: Design Overview

- Tunnels feature Lock-Stent with rounded barbs, that prevents branch disjunction

- Branches are available in wide range of sizes

13mm Diameter
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
Experiences

• To date 120 pts are treated with RelayBranch stentgrafts worldwide
Experiences

• 15 pts from 4 centers (Freiburg, Toulouse, Tübingen and Utrecht)

Orthotopic branched endovascular aortic arch repair in patients who cannot undergo classical surgery

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Demographics / comorbidities

- Median Age 76 yrs (IQR 74-82)
- 12 (80%) Male, 3 Female
- Mean Aneurysm size 6.3cm
- 47% COPD
- 27% Renal insufficiency
- 40% Coronary artery disease
- Previous coronary bypass n=1
- Previous aortic surgery 60%
- All patients rejected/ unfit for open repair
Results

Perioperative

• 93.3% technical success (1 self-limiting type Ib)
• Mortality n=1 (6.7%) (after 2 wks, myocardial infarction & stroke)
• Non-disabling stroke n=2 (13.3%)

Follow-up (median 263 days, IQR 84-564)

• 0 % Type I/III endoleaks
• 100% Patency graft & target vessels
• 1 (6.7%) Re-intervention (Type II el from LSCA)
• 0% Aortic related death
• 0% Aneurysm growth
Summary

• Positive experiences with RelayBranch for total endovascular arch repair
• Safe & feasible technique for treating aortic arch
  • Mortality and disabling stroke (6.7%) are limited
  • Low re-intervention rate (6.7%)
• 2 (13.3%) patients with temporally symptoms stroke
• Important to optimize endovascular techniques, especially to minimize numbers of strokes
• Further studies are needed to confirm results and the long-term durability
Thank you
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