Anatomical applicability of current off-the-shelf branched endografts in thoracoabdominal aortic aneurysms managed by open surgery

Tommaso Cambiaghi

Vascular Surgery, “Vita-Salute” - San Raffaele University Scientific Institute Ospedale San Raffaele, Milan – Italy
Chair: Prof. Roberto Chiesa
Disclosure

Speaker name: Tommaso Cambiaghi

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)

☑ I do not have any potential conflict of interest
Endovascular TAAA management
Off-the-shelf solutions

Cook P-Branch
Cook T-Branch
Endologix Ventana
Cook P-Branch
Gore TAMBE

Illustrations by David Factor, taken from «Endovascular Aortic Repair» by G. Oderich
IRCCS San Raffaele Hospital – Vascular Surgery Department – «Vita-Salute» San Raffaele University
Off-the-shelf limitations

Cook T-Branch
Original graft design

...considered suitable for endovascular repair using a customized multi-branched thoracoabdominal stent-graft...

88%
Early applicability study

Assessing the anatomic applicability of the multibranched endovascular repair of thoracoabdominal aortic aneurysm technique

Warren J. Gasper, MD,a Linda M. Reilly, MD,a Joseph H. Rapp, MD,b S. Marlene Grenon, MD,b Jade S. Hiramoto, MD,a Julia D. Sobel, BS,a and Timothy A. M. Chuter, DM,a San Francisco, Calif

...patients referred for treatment in a single-center, nonrandomized, prospective clinical trial of MBEVAR...

47%
“Real life” applicability
Study population

562 TAAA + 157 pararenal AAA treated by OPEN SURGERY, 2007-2017

432 pre-Op CTA slice thickness ≤1.0mm

Inadequate CTA resolution

100 TAAA extent II

100 TAAA extent III

100 TAAA extent IV + pararenal

IRCCS San Raffaele Hospital – Vascular Surgery Department – «Vita-Salute» San Raffaele University
Study design

- Software analysis: 3Mensio
- Reference point: top of CT ostium;
- Distance to LSA
- Distance to proximal and distal aneurysm neck;
- Distance to aortic bifurcation and bilateral iliac bifurcations;
- Diameter at 0mm, 10mm and 20mm above proximal neck,
- Diameter at CT, at 45mm and 65mm above CT origin,
- Diameter at SMA and renal arteries origin,
- Diameter at aortic bifurcation, and at common iliac artery bilaterally.
Study design

- Software analysis: 3Mensio
- Reference point: top of CT ostium;
- Distance to the top of SMA, LRA, RRA;
- Radial orientation of the target vessels;
- Direction of the target vessels wrt aortic axis
- Anatomical variations of visceral vessels
Results
Access vessels

- One iliac axis ≥7mm
- One upper extremity access

96%
Access vessels

- One iliac axis $\geq 7\text{mm}$
- One upper extremity access
- Acceptable access tortuosity

91%

IRCCS San Raffaele Hospital – Vascular Surgery Department – «Vita-Salute» San Raffaele University
Proximal sealing

- Parallel, healthy neck, 24-30mm diameter
- Extent IV and pararenals

43% → 14%
Proximal sealing + TEVAR

- Healthy arch $\rightarrow$ Zone > 2

87%
Visceral vessels revascularization

- Correct number of visceral vessels
- No upward visceral vessel

55% - 8% - 22% - 19%
Visceral vessels revascularization

- Correct number of visceral vessels
- No upward visceral vessel
- Target vessel diameter $\geq 5\text{mm}$

50\%
Visceral vessels revascularization

- Correct number of visceral vessels
- No upward visceral vessel
- Target vessel diameter $\geq 5\text{mm}$
- No aneurysm/stenosis $>75\%$/early branching

41\%
Visceral vessels distribution

5-10%

Chuter T.A.M.  Chiesa R.
Strict applicability

42%
Overall applicability

- Proximal extension up to Zone 2
- Embolization of inadequate vessels
- Occlusion of supernumerary branches

80-85\%
Conclusions

• Waiting for final data

• Good applicability with adjunctive procedures

• Further off-the-shelf designs
Anatomical applicability of current off-the-shelf branched endografts in thoracoabdominal aortic aneurysms managed by open surgery

Tommaso Cambiaghi

Vascular Surgery, “Vita-Salute” - San Raffaele University Scientific Institute Ospedale San Raffaele, Milan – Italy
Chair: Prof. Roberto Chiesa