How does device sizing impact outcome in trauma patients?

Hence Verhagen, Frederik Jonker, Bart Muhs

Department of Vascular Surgery
Erasmus University Medical Center
Rotterdam, The Netherlands
Disclosures

- W.L. Gore
- Medtronic
- Philips
- Endologix
Trauma mechanism
Trauma mechanism
Trauma result
TEVAR = standard of care
TEVAR = standard of care
Unfortunately, there are a few issues here
Unfortunately, there are a few issues here
Next day
Same week
Conversion
Graft collaps after Traumatic transection

Anatomic factors associated with acute endograft collapse after Gore TAG treatment of thoracic aortic dissection or traumatic rupture

Bart E. Muhs, MD,a Ron Balm, MD, PhD,b Geoffrey H. White, MD,c and Hence J. M. Verhagen, MD, PhD,d New York, NY; Amsterdam and Utrecht, The Netherlands; and Sydney, Australia

- Outside IFU
- Narrow aorta resulting in excessive oversizing
- Steep arch, grafts not flexible enough
- Birds beak
- Sizing may be more complex than expected
Sizing may be more complex than expected
Sizing may be more complex than expected
Sizing may be more complex than expected

Aorta diameter: 18 mm
Sizing may be more complex than expected
Sizing may be more complex than expected

The influence of hypotension

Difficulties with endograft sizing in a patient with traumatic rupture of the thoracic aorta: The possible influence of hypovolemic shock

Joffrey van Prehn, MD, Joost A. van Herwaarden, MD, PhD, Bart E. Muls, MD, PhD, Adam Arnowsky, MD, Frans L. Moll, MD, PhD, and Henc J. M. Verhagen, MD, PhD

Utrecht and Rotterdam, The Netherlands; Manhasset, NY; and New Haven, Conn

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Sizing may be more complex than expected
The influence of hypotension

- Inclusion criteria:
  - Trauma patients admitted with hemodynamic instability (MAP <95 mm Hg and pulse >100)
  - CT scans at admission and at another moment when hemodynamically stable (control CT)

- Differences in aortic diameter between the initial CTs and the control CTs were compared
Sizing may be more complex than expected
The influence of hypotension

Aortic endograft sizing in trauma patients with hemodynamic instability
Frederik H. W. Jonker, MD;* Hence J. M. Verhagen, MD, PhD;6 Hamid Mojibian, MD;*
Kimberly A. Davis, MD,* Frans L. Moll, MD, PhD,* and Bart E. Mohs, MD, PhD,* New Haven, Conn; and Rotterdam and Utrecht, The Netherlands
What is the exact impact of hypovolemia on the aorta?

The Impact of Hypovolaemic Shock on the Aortic Diameter in a Porcine Model


European Journal of Vascular and Endovascular Surgery
What is the exact impact of hypovolemia on the aorta?
Consequence

- Hypovolemic patient with traumatic aortic injury
Consequence

- Endograft sizing using pre-operative CTA
Consequence

- Aortic diameter increases after fluid resuscitation
Consequence
Do these changes take place in all patients?
Lots of unknowns for sizing!

- Pulsatility of the aorta
- Shock?
- Hypovolaemic?
- Elasticity of aorta?

You need an endograft with a wide treatment range!
Wide treatment range

Device Attributes:
Conformable GORE TAG® Thoracic Endoprosthesis

Expanded Sizes and Oversizing Windows

Intended Range of Aortic Diameters (mm)

Device Diameters

- 45 mm
- 40 mm
- 37 mm
- 34 mm
- 31 mm
- 28 mm
- 26 mm
- 21 mm
Bad things can happen if you go outside IFU
How does device sizing impact outcome in trauma patients?

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Rotterdam, The Netherlands