Complications During the Waiting Time for a Fenestrated/Branched Graft

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Disclosures

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  – Consultant & Research grants
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  – Consultant
• Siemens
  – Consultant
  – Bentley
  – Consultant
Background

- Waiting time in F/BEVAR Procedures
  - Decision of Treatment Plan
  - Design of Graft Plan
  - Graft Production & Delivery
  - Assignment of an OR Date
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Modifiable Factors Volume Dependent?
Graft Plan Design
Time Interval in Nuremberg

• FEVAR: Commonly within 24 hours*
• TAAAB: Commonly < 5-7 Days**

* Grafts measured in Nuremberg, CTA not sent to Cook
** CTA sent to Cook
Dear all,
this patient has a 55mm suprarenal AAA that needs treatment with a 5xFEVAR
There are two renal arteries on the left.
Here is what I would like:

- Prox diameter 34mm
- IVD 30mm
- Single DRT
- 3 internal stents, taper after the fenestrations
- 8mm strut free fenestration, 30mm from the top, at 12:30 (A 8x32 or BG8x27)
- 8mm strut free fenestration, 60mm from the top, at 12:45 (A 7x32)
- 8x6mm fenestration, 65mm from the top, at 09:15 (A 6x22 or BG6x27)
- 8x6mm fenestration, 72mm from the top, at 03:00 (A 6x22 or BG6x27)
- 8x6mm fenestration, 82mm from the top, at 03:00 (A 5x22 or BG5x27)
- Total length up to 170mm

ZFEN-D-16-45-76
Left: ZISL-16-59/77

If needed SE kissing Stents 12x40 (for narrow aortic bifurcation, with thrombus)
Would you be so kind to make me a drawing?

Kind regards
Eric
Graft Plan Design

Time Interval in Nuremberg

Von: Verhoeven, Eric Prof. Dr.
An: Planning EU, zehn

Betreff:

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Nuremberg Experience
F/BEVAR (Pararenal + TAAA, 2010-2018)

• Cases Performed: N=862
  – FEVAR for Pararenal: 494
  – F/BEVAR for TAAA: 348
  – F/B Arch: 20

• Cases Aborted: N=44

Total: N= 906
F/BEVAR Cases Aborted

- N=44/906 (4.9%)
  - Mortality Before the Procedure: 37/906 (4.1%)
  - Other Reason to Abort Procedure: 7/906 (0.8%)
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Mortality Before the Procedure (N=37)

Causes

• Aneurysm Rupture: 15*/906 (1.7%)

• Other Mortality: 22/906 (2.4%)
  – Cardiac (AMI/heart failure): 7/906 (0.8%)
  – Stroke: 3/906 (0.3%)
  – Ileus/GI Complications: 3/906 (0.3%)
  – Proximal Debranching (cardiac surgery): 2/906 (0.2%)
  – Infection: 2/906 (0.2%)
  – TAVI Complications: 1/906 (0.1%)
  – Urological Surgery Complications: 1/906 (0.1%)
  – Unknown (but rupture not excluded): 3/906 (0.3%)

*1 pt with contained rupture to start, urgent order, but died before OR
Mortality Before the Procedure (N=37)

Aneurysm Diameter

- Pts died of Aneurysm Rupture
  - Mean Dmax: 79.2 ± 13mm

- Pts died of other reasons
  - Mean Dmax: 66.7 ± 12mm

P = .005*
Pts Died of Aneurysm Rupture (N=15)
Graft Order Details

• In 7 Pts (7/906, 0.8%) the graft was not ordered yet

• In 8* Pts (8/906, 0.9%) the graft was ordered, but Pts died before the planned procedure

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F/BEVAR Cases Aborted

- N=44/906 (4.9%)
  - Mortality Before the Procedure: 37/906 (4.1%)
  - Other Reason to Abort Procedure: 7/906 (0.8%)
Other Reason to Abort (N=7)

- Pt denied the Operation: 4/906 (0.4%)
- Poor general Condition: 2/906 (0.2%)
- Rupture: 1/906 (0.1%)
Other Reason to Abort (N=7)

Outcome

- Pt denied the Operation: 4/906 (0.4%)
  - Unknown: 3
  - Rupture-death (14 months): 1
- Poor general condition: 2/906 (0.2%)
  - Death (1 & 3 months): 2
- Rupture: 1/906 (0.1%)
  - Open OR in another hospital, survived
Time Interval
1st Contact till Death

• For all pts who died (N=37)
  – Mean: 8.3 ± 7.7 weeks

• For pts who died due to Aneurysm Rupture (N=15)
  – Mean: 5.4 ± 4.3 weeks
Patients with acute TAAA (that were already known)

- N=3
  - Pt with TAAA, denied elective F/BEVAR 2013
    • Symptomatic 2015, was treated urgently (T-Branch)
  - Pt with TAAA, planned for elective F/BEVAR
    • Ruptured during wait, treated with ordered graft (already in Hospital)
  - Pt with mycotic TAAA, urgent order FEVAR
    • Ruptured during wait, treated with TEVAR and 1 month later with FEVAR
Complications During the Waiting Time for F/BEVAR Literature?

- Not available!
Take Home Message

• Aneurysm rupture during waiting time for F/BEVAR can occur, but is rare
  – $15+1+3 = 19/906$ (2.1%, 4 survived)

• Room for improvement
  – More T-branch for larger TAAA?
  – Urgent Order for Large Aneurysms
  – Prompt Measurement-Graft Plan Order
  – Quicker Graft Construction & Delivery...
Confounding Factors

• High-Volume Center Bias
  – Quick graft order
  – Logistics
  – No Proctor needed
  – Direct Communication with Cook

→ Low-Volume Centers:
  - ↑ Waiting time, ↑ Risk of Rupture?
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