CONTROVERSES ET ACTUALITÉS EN CHIRURGIE VASCULAIRE

CONTROVERSIES & UPDATES IN VASCULAR SURGERY

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Repositionable stent grafts: when are they useful and safer?

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Disclosure

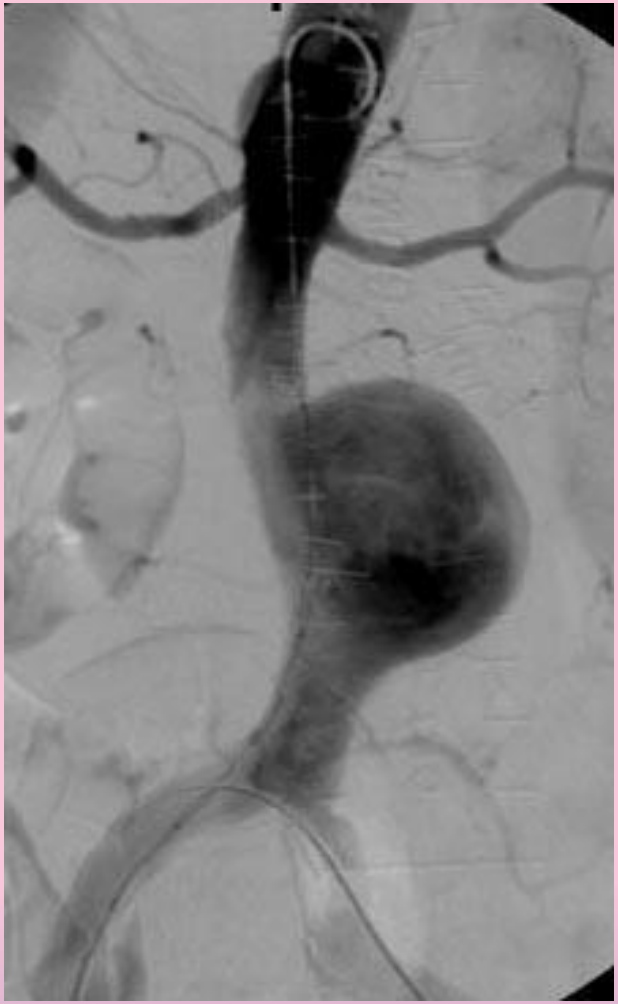
Speaker name:

Joerg Heckenkamp.....

- ☐ I have the following potential conflicts of interest to report:
- ☐ Consulting
- ☐ Employment in industry
- ☐ Shareholder in a healthcare company
- ☐ Owner of a healthcare company
- ☒ Other(s) Invited Talk

☐ I do not have any potential conflict of interest

Repositionable Stent Grafts



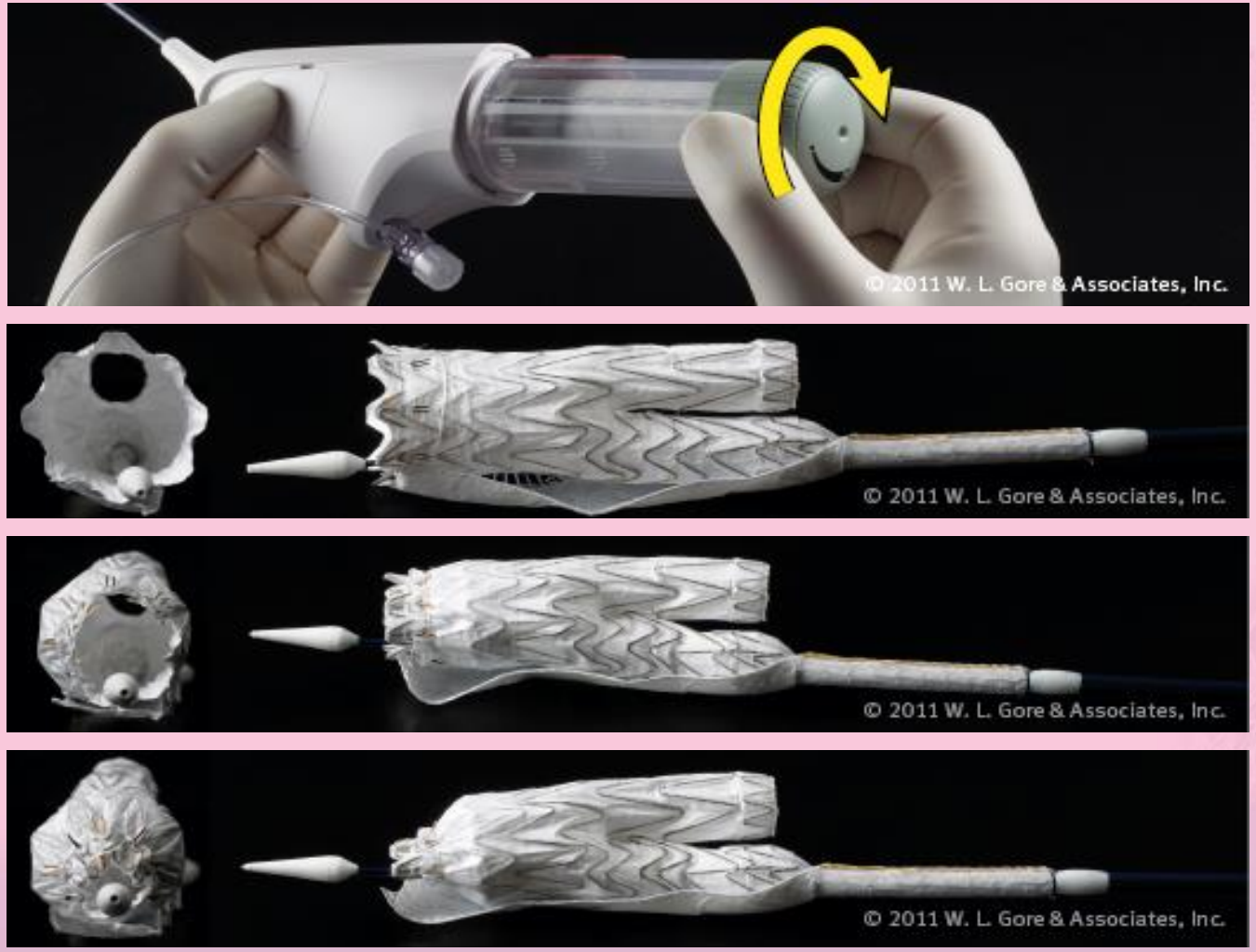
EVAR World

Hostile neck anatomy
Cannulation of contralateral leg

Excluder C3

Initial unfolding of main body

Repositioning



Cannulation of contralateral gate

- “Bring the gate to the wire”
- Timereduction
- Reduction of radiation
- Costreduction

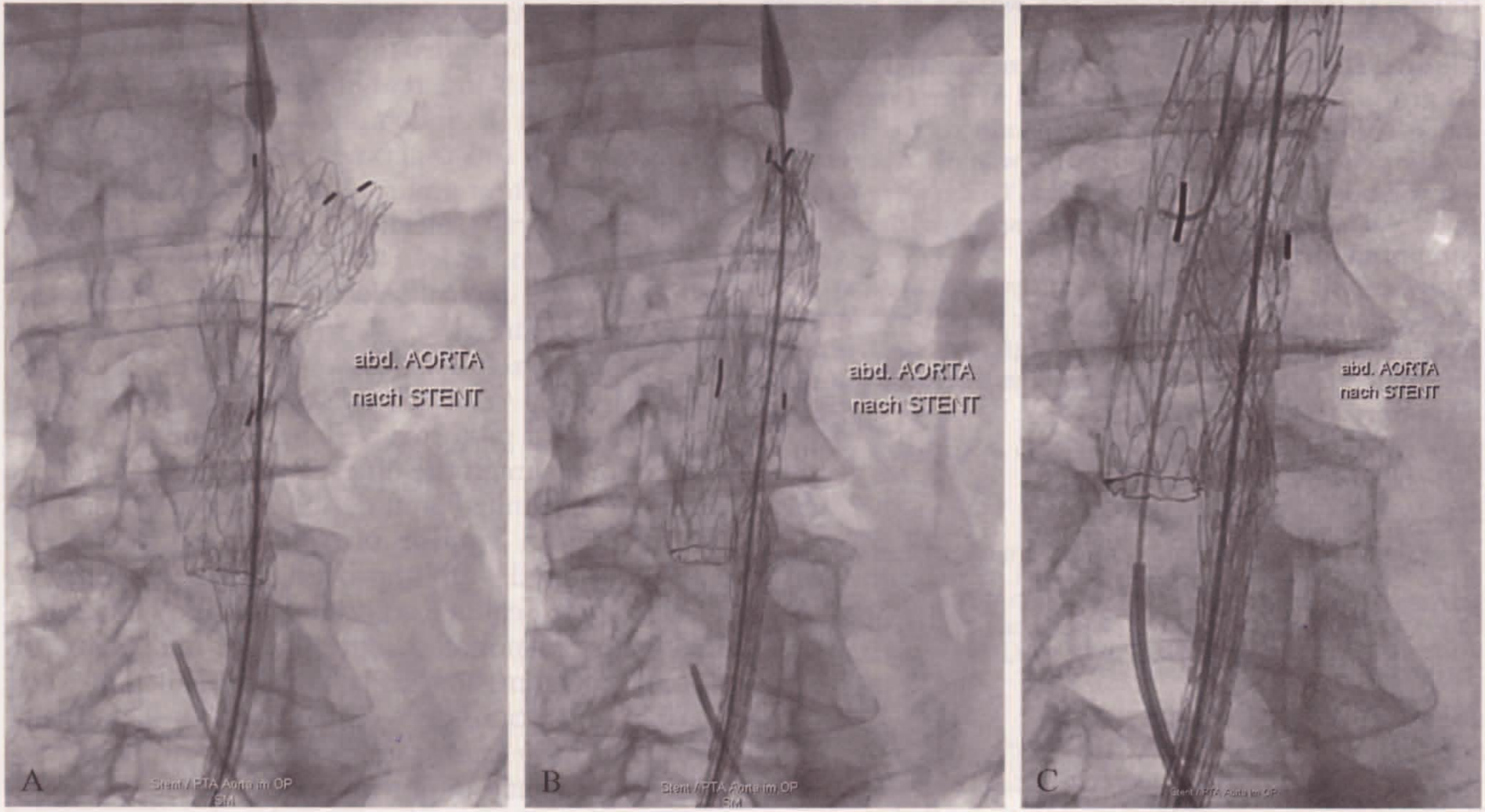


Figure 3.—A) Initial position showing the gate oriented away from the catheter; B) C3 Excluder reoriented to facilitate catheterization; C) catheterization of the contralateral gate.

Verhoeven et al.: First experience with the new repositionable C3 Excluder stent-graft, J Cardiovasc Surg; 2011, 52:637

The Proximal Neck: The Remaining Barrier to a Complete (infrarenal) EVAR World

Migration
Endoleak Type I (late rupture)

De Vries JP, Semin Vasc Surg 25:182;2012

Inadequate sealing is top reason for endograft explant

A study looking at endovascular aneurysm repair (EVAR) graft explants has shown that most failures occur between years one and five and are caused by inadequate sealing and endoleaks. In the study, endoleaks were type I in 40% of the patients and type II in 30% of the cases

Eric J Turney, Department of Vascular Surgery, Cleveland Clinic, presented the data from the study at the Vascular Annual Meeting (30 May–1 June 2013, San Francisco, USA). He commented: "EVAR is now the most common method for treating abdominal aortic aneurysms [in the USA], and increasing numbers of patients are being observed in long-term follow-up. In addition, the treatment of patients with indications outside of instructions for use is common."

The purpose of the study was to evaluate the Cleveland Clinic experience with late conversion between 1999 and 2012 and identify modes of failure and predictors of outcomes. Turney explained that "late conversion is defined as the conversion that occurs 30 days after implantation, which implies a successful acute result."

During the study period, 100 patients required an endograft explant. The investigators looked at the overall results for this cohort and also compared the information with the original data of 41 explants which were published in the Journal of Vascular Surgery in 2009 (49[3]:p.589-95).

Turney told delegates that there has been a growth in the number of explants, with a rise in 2011 and 2012, when 14 cases explants were performed on each year. In the first quarter of 2013, 10 cases were performed in the Cleveland Clinic. "It certainly shows the explant rate has accelerated in the past few years," he said.

The study was a retrospective review, and included data on type of graft, time of implantation, indication for conversion, surgical data and outcomes for 30-day mortality, cumulative survival, complications, and failure by time of EVAR (less than 12 months, between 12 months and five years, and beyond five years).

There were no statistically significant difference between the patients from 2009 and the new cohort. Overall, 91% of the patients were male and the mean age was 75 years; coronary disease was the most common comorbidity, present in 65%, followed by chronic obstructive pulmonary disease and chronic kidney disease. Supra-renal fixation was present in 37% of cases.

Eric J Turney

The most common indication for graft explant was endoleak, present in 82% of patients, followed by infection (13%), acute thrombosis (3%), recurrent thrombosis (1%) and claudication (1%). The endoleaks were type I in 40% of the cases and type II in 30%.

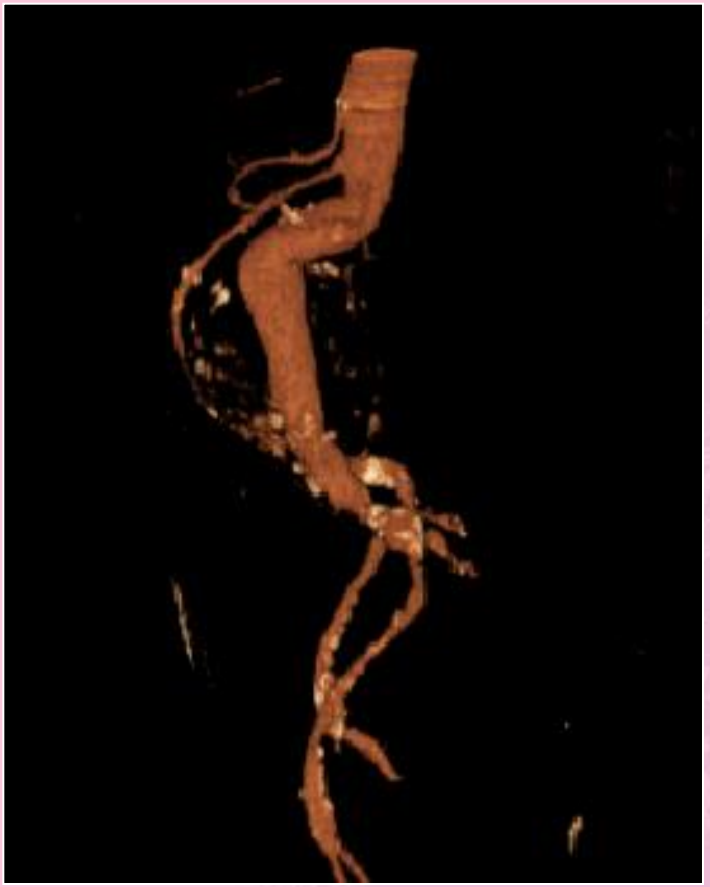
Turney noted that 71% of the explants were performed in an elective procedure, 10% were urgent, 19% were emergent. Amongst the emergent, 9% were cases of rupture.

To assess the duration of the endografts, the investigators

Continued on page 2

Hostile necks

- There's no univocal definition
- In general:
  - Neck thrombus
  - **Neck length ≤ 15 mm**
  - **Neck angulation ≥ 60°**
  - Double angled necks
  - Wide necks (> 28 mm)



Risks related to hostile necks?

- Inadequate Sealing
  - Endoleak Type I
- Inadequate Fixation
  - Migration
- Late aneurysm rupture
  - Death

Hostile necks

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Outcomes of Endovascular Aneurysm Repair in Patients with Hostile Neck Anatomy CME

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WHAT THIS PAPER ADDS?

- Performing endovascular aneurysm repairs in patients outside of stent-graft manufacturer's instructions for use has been associated with poorer outcomes. This is the largest study to date investigating the effects of neck angulation, neck diameter, neck length, neck flare, and neck thrombus on outcomes following EVAR, and contains the longest follow-up for this subgroup of patients.

Hostile necks

Table 3
Stent-grafts utilised in the favourable and hostile neck groups.

Stent graft device	Favourable neck $N = 353$	Hostile neck $N = 199$
Zenith (Cook Medical Europe)	228 (64.6%)	115 (57.8%)
Talent (Medtronic, Minneapolis)	48 (13.6%)	46 (23.1%)
Excluder (Gore)	53 (15.0%)	13 (6.5%)
Endurant (Medtronic)	17 (4.8%)	20 (10.1%)
Lifepath Edwards	4 (1.1%)	0 (0%)
Powerlink Endologix	1 (0.3%)	0 (0%)
Aorfix Lombard	2 (0.6%)	0 (0%)
Jotec Tube	0 (0%)	1 (0.5%)

% equates to proportion of stents of that make in each group.

Hostile necks

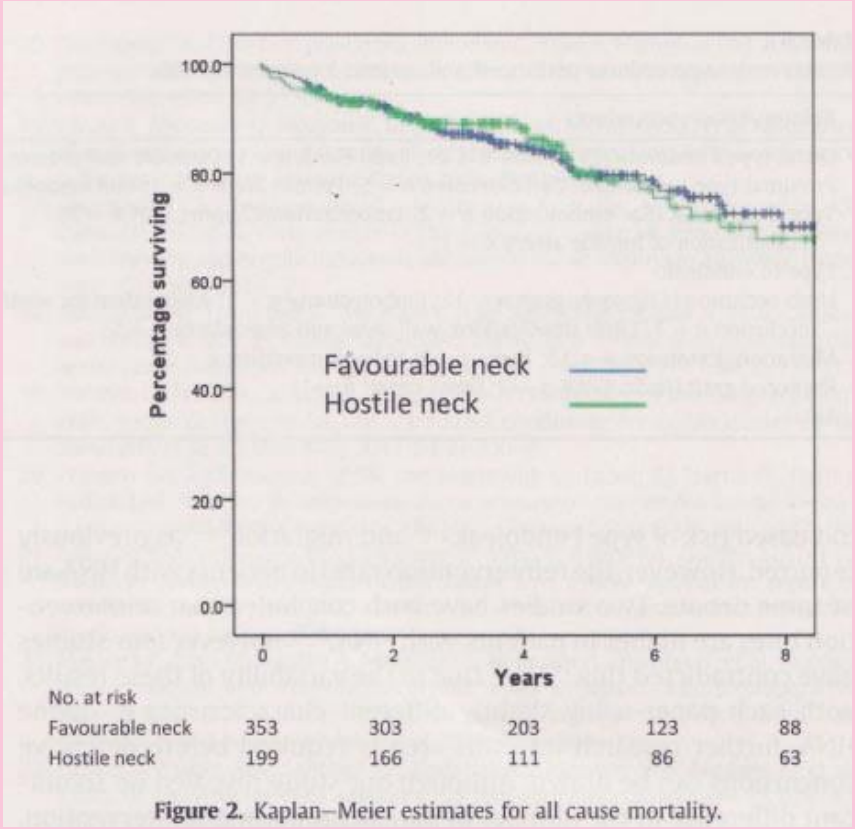


Figure 2. Kaplan–Meier estimates for all cause mortality.

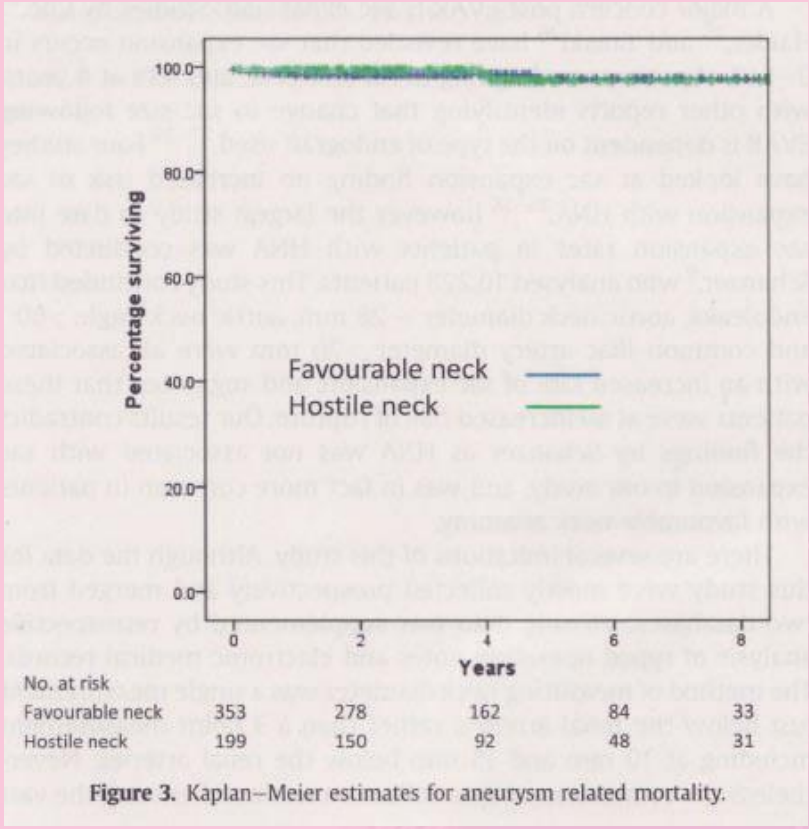
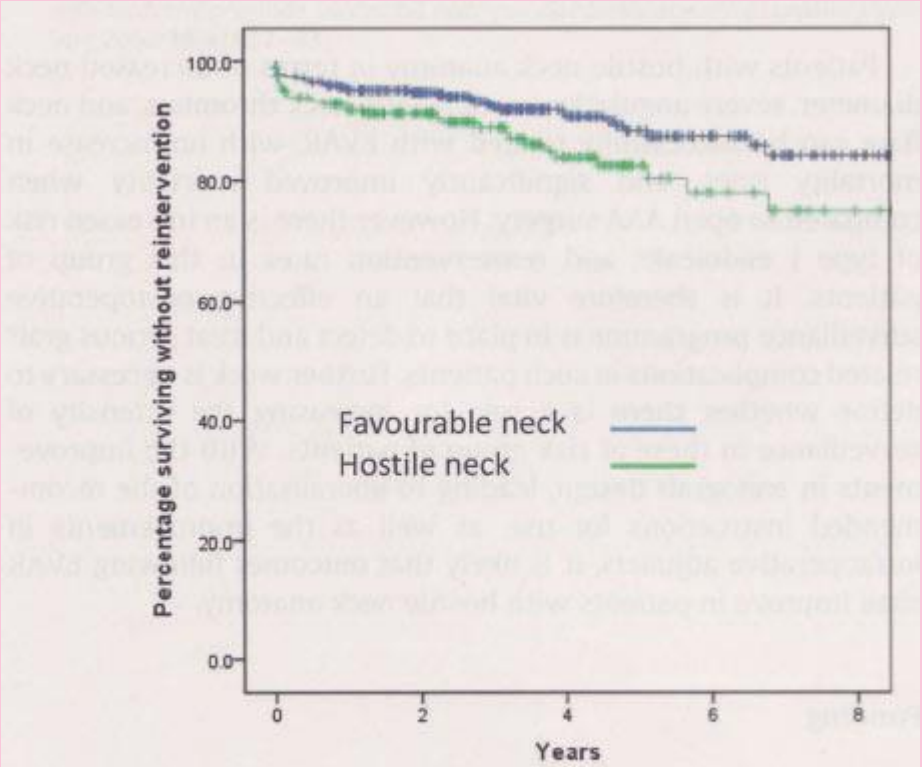


Figure 3. Kaplan–Meier estimates for aneurysm related mortality.

Hostile necks



No. at risk					
Favourable neck	353	283	174	100	55
Hostile neck	199	151	97	57	47

Figure 1. Kaplan–Meier estimates for freedom from reintervention.

Surveillance

Optimized Stent-grafts

How to treat a hostile neck?

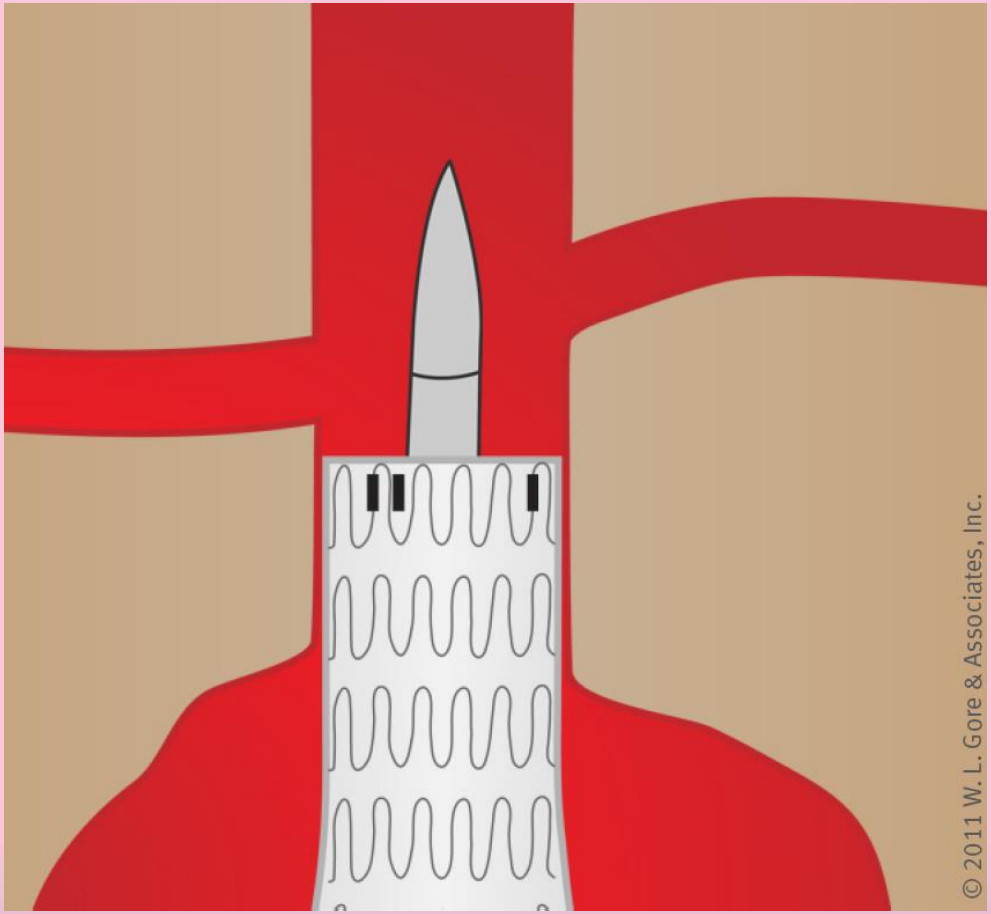
- Planning
- Sealing
  - Using all the available neck
    - Precise positioning (repositioning) at renal level
    - Precise deployment
- Aortic Fixation

Hostile neck anatomy

- Precise repositioning in difficult necks
  - Rotate C-arm and gain some more mm
  - First positioning aggressive
  - No uncontrolled movements in final deployment

- Using all available neck

Optimizing Imaging



Optimizing Imaging

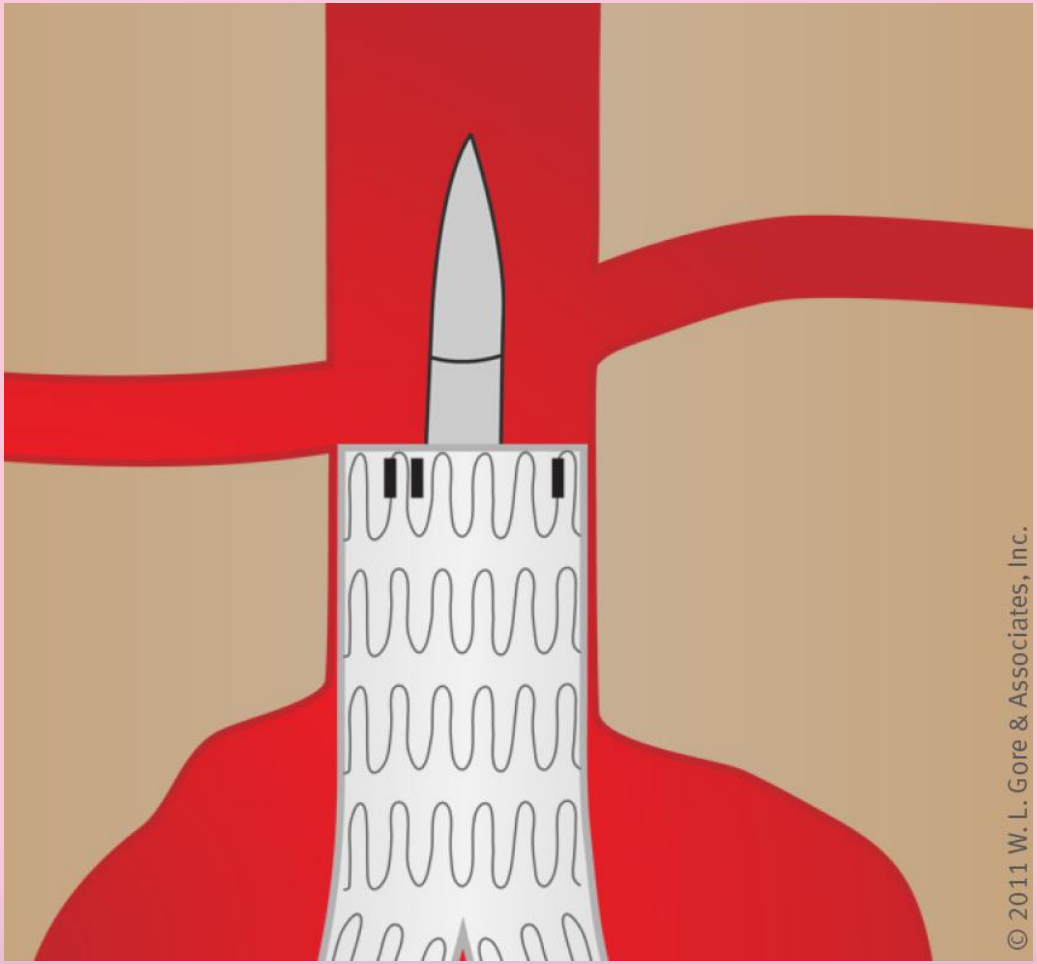


TABLE III.—*Number and reason for repositioning of the C3 Excluder graft.*

Trunk repositioning	18 (72.0%)
Reasons for repositioning	
Positioning closer to renal arteries	10 (40%)
Contralateral gate positioning	12 (48%)
Other	4 (16%)
Number of repositions per case	
Mean (SD)	1.1 (0.9)
Median	1.0
Range	(0.0,3.0)
Number of repositions per case	
0	7 (28.0%)
1	11 (44.0%)
2	5 (20.0%)
3	2 (8.0%)

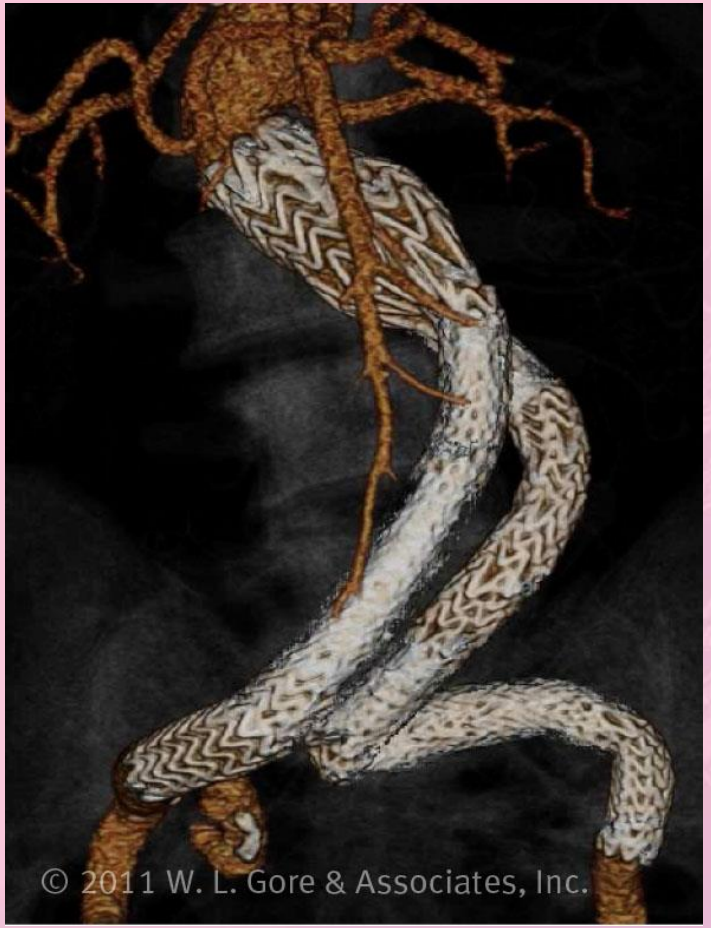
Verhoeven et al.: First experience with the new repositionable C3 Excluder stent-graft, J Cardiovasc Surg; 2011, 52:637

Data Osnabrueck

- Patient Data
  - N=40
  - Av. 77 years
  - 31 male, 9 female
- Neck anatomy
  - Neck angle: av. 21°
  - lenghts: av. 21 mm (1.1-3.8)
  - Size of aneurysm: av. 57 mm

Data Osnabrueck

- Respositioning
  - N=17 (42%)
- Reason for repositioning
  - Gate to wire, n=8
  - Proximal optimization, n=9
    - Short necks, n=3
- 100% technical success
- No reintervention

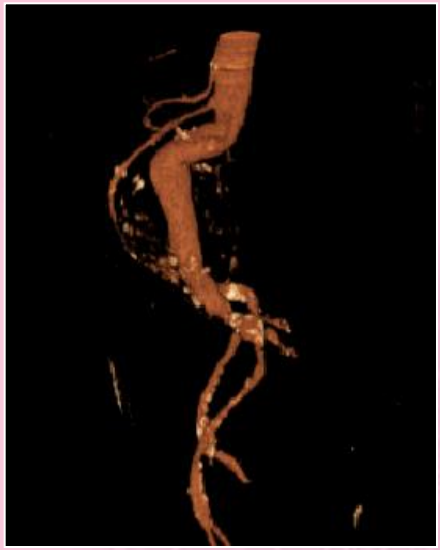


Short-term outcomes of the C3 Excluder with unfavorable proximal aortic seal zones

- Retrospective Analysis (n=44)
- “unfavorable neck”
  - Length <15mm, Diameter >28mm, Angle >60°
- Reduction of aortic cuffs
- No Endoleaks
- No renal artery occlusion

Smeds et al.: Ann Vasc Surg 2013;27:8-15

Summary



- Long term data missing
- Short term data promising
- Repositioning is helpful and useful
  - Bring the gate to the wire
- Repositioning allows exact deployment
  - Important in difficult anatomies
  - Further improvement of long-term results

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