



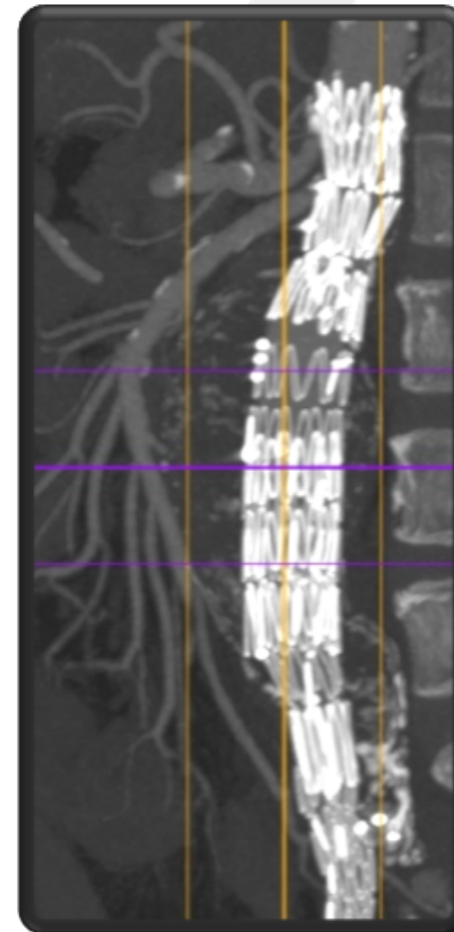
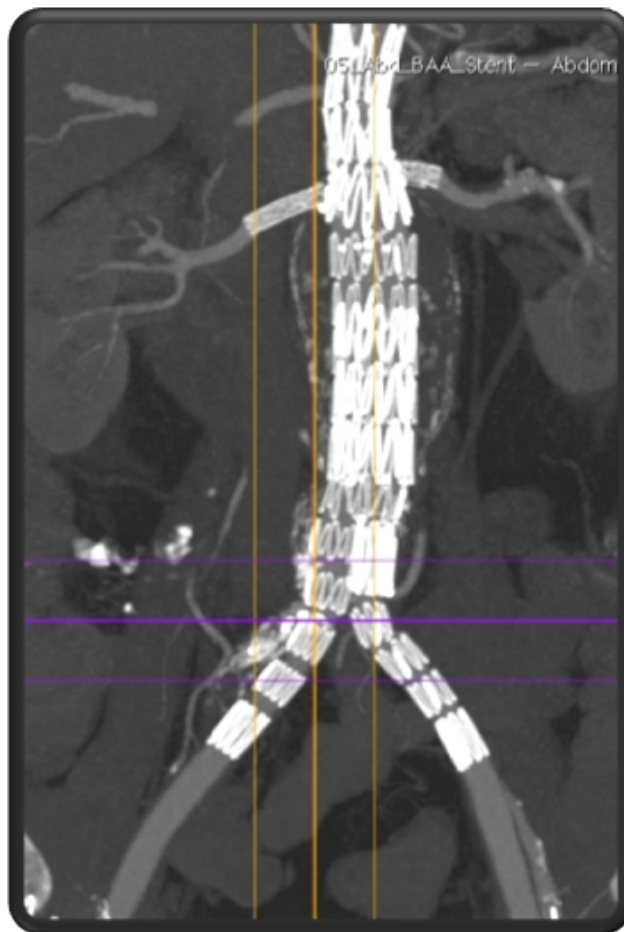
VASCUPEDIA

Chimney Reconstructions for Juxtarenal Aneurysms: *Indications, Optimal Technique and Outcome Data*

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Therapy of juxtarenal AAA

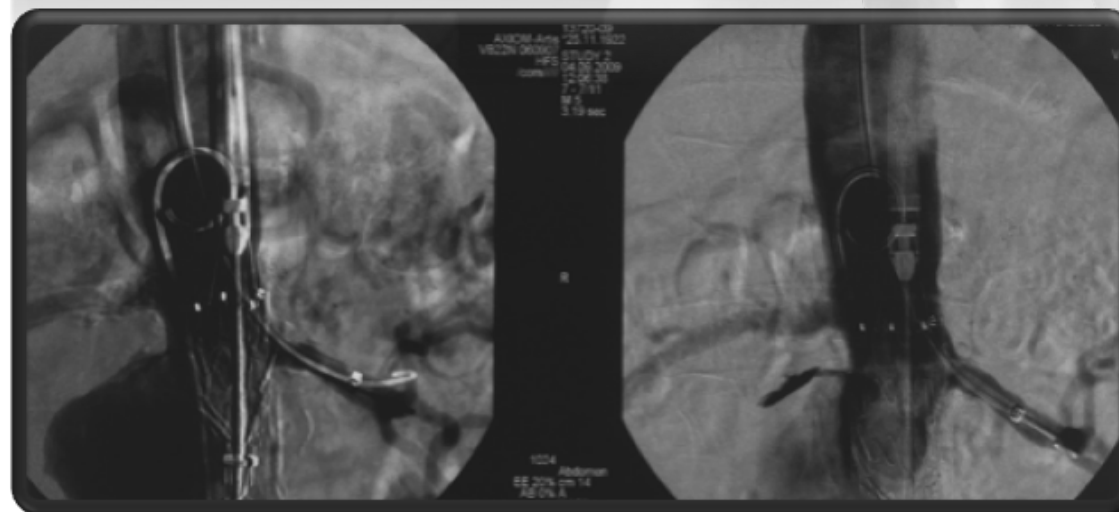
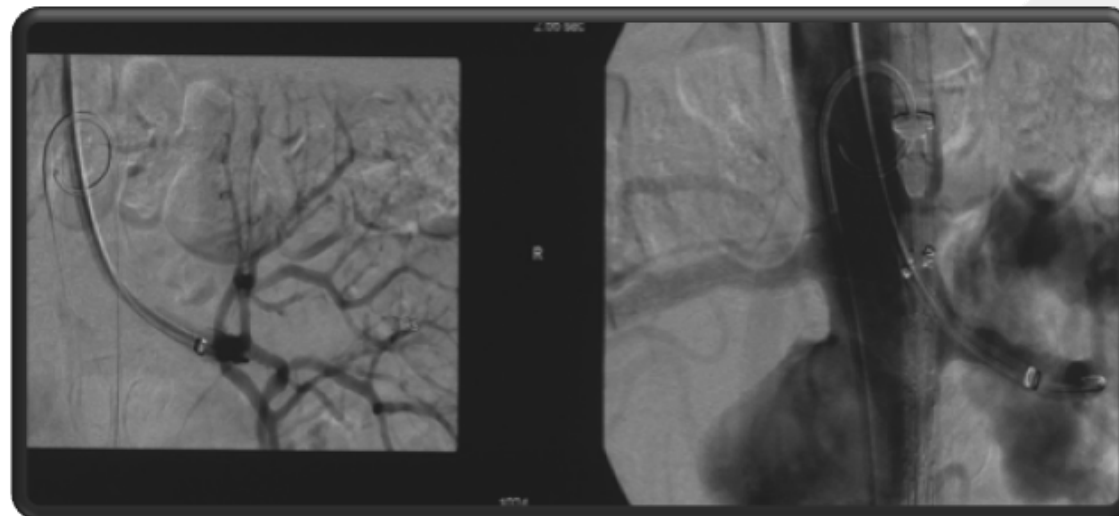
Fenestrated endografts



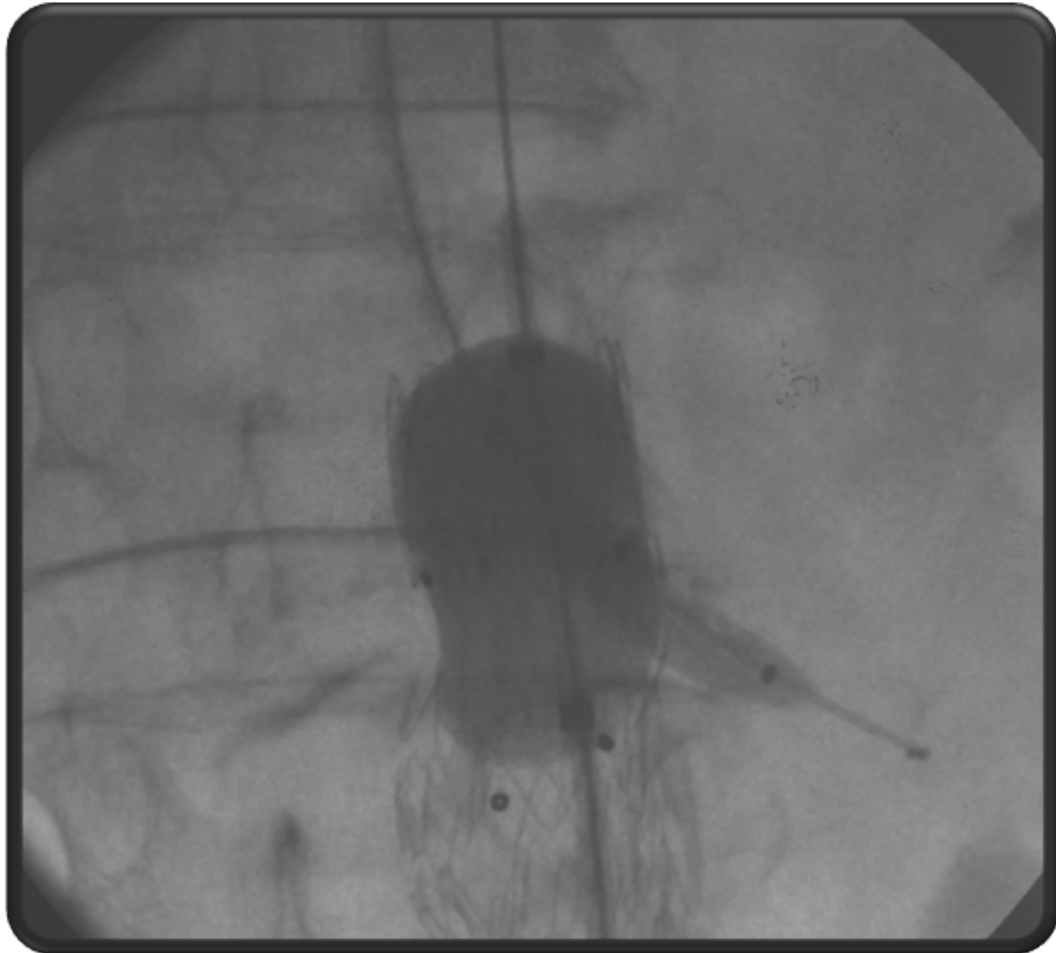
Disadvantages of the new technologies

- Price for endograft and covered stents
- Demanding implantation technique
- Angiosuite necessary
- Unsuitable arterial anatomy
- Delay in manufacture (acute case)

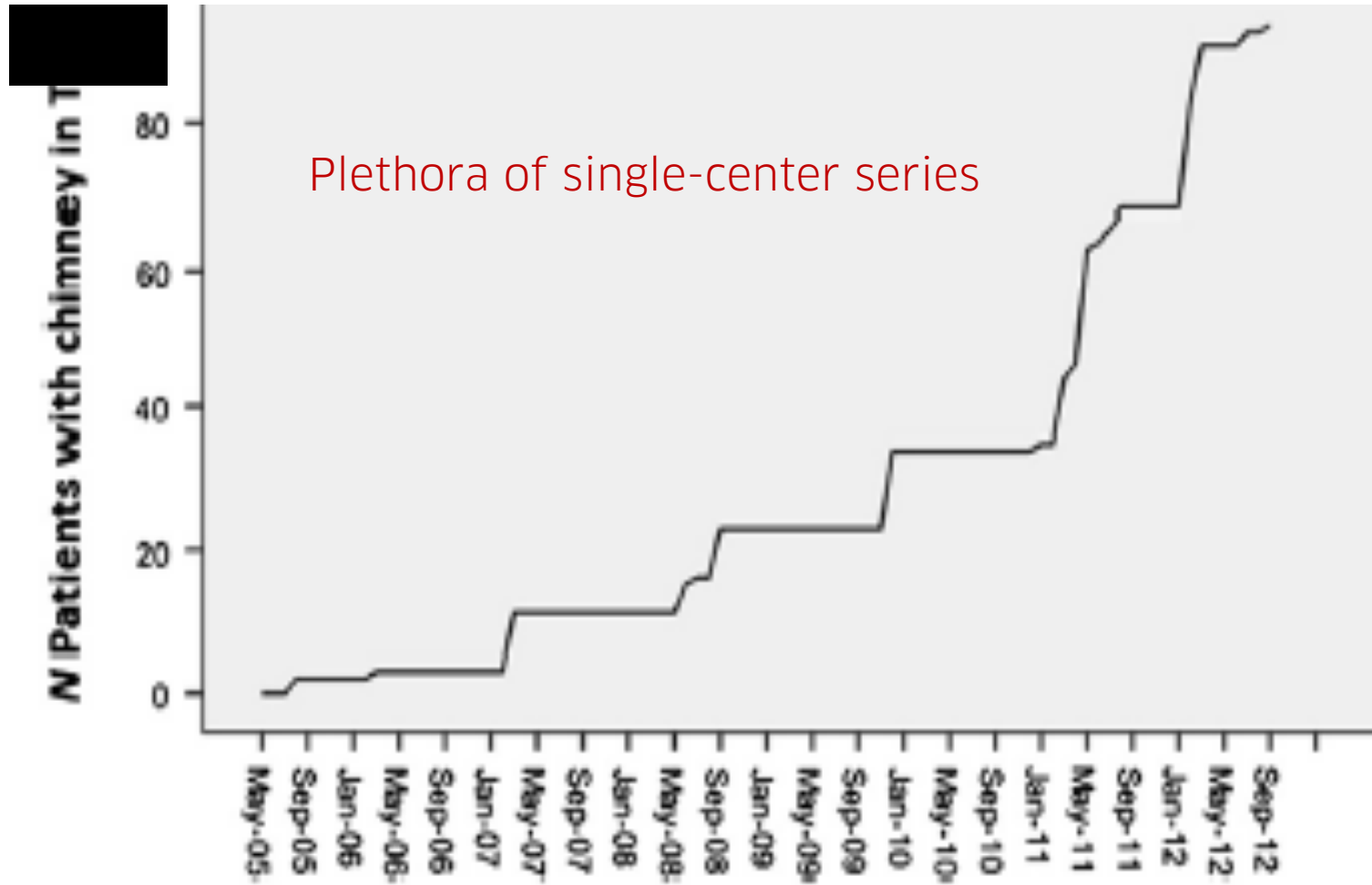
87-year old man with symptomatic AAA



Nitinol stentgraft and covered stent in the „chimney technique“



Increasing number of reports

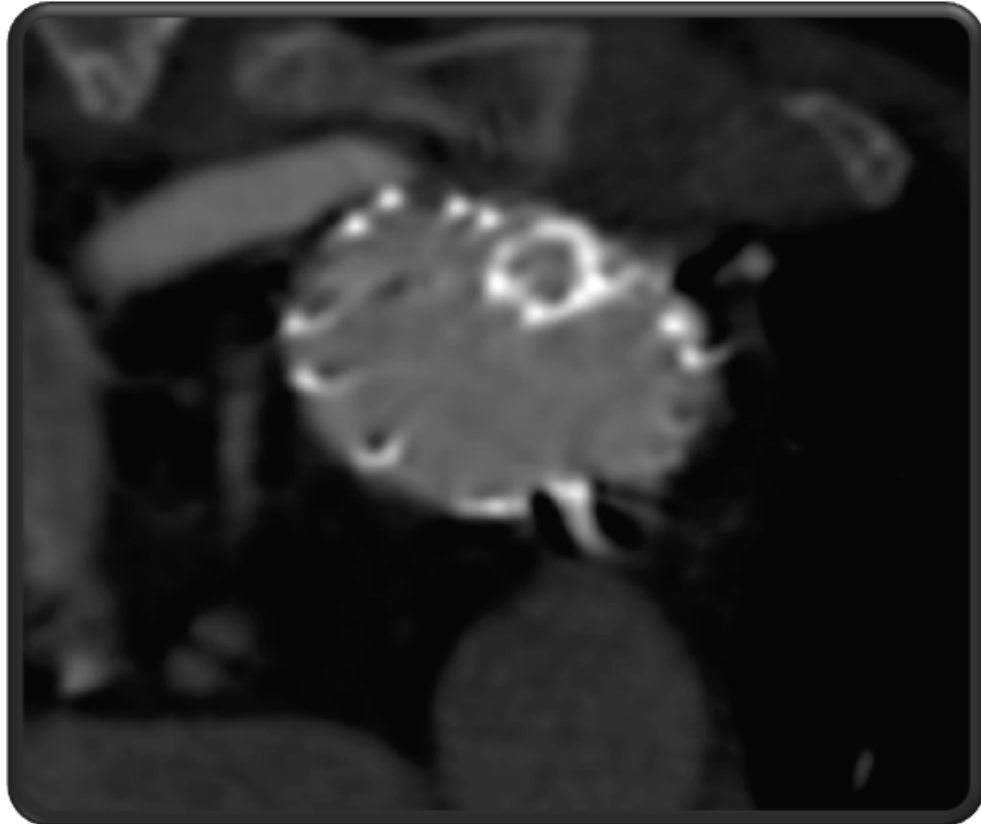


Limitations of single center reports

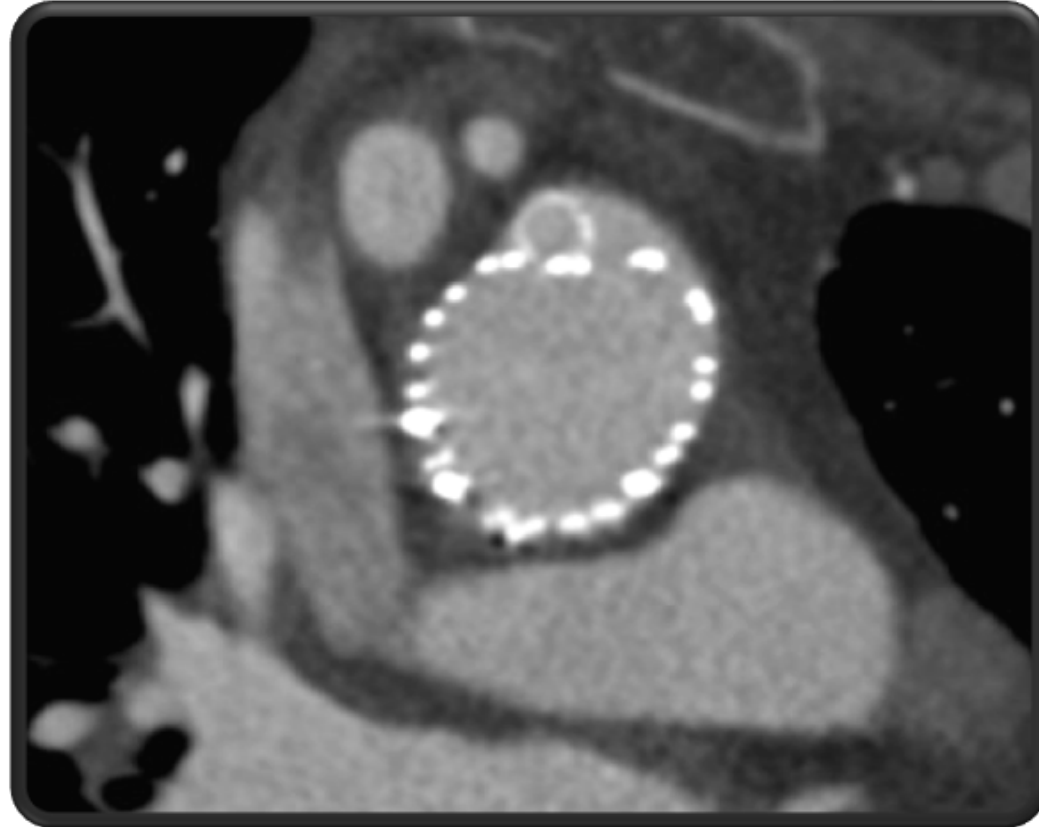
- Limited number of patients
- Wide variety of treated entities
- Several combinations of off-the-shelf devices

Choice of the endograft is essential

Nitinol endoskeleton



stainless steel endoskeleton





PERICLES registry

PERformance of the chImney teChnique in
the treatment of aortic pathoLogiES:

A multicenter trans-antlantic registry

USA



Stanford University

Florida University

Kentucky University

Pennsylvania University

Europe



St. Franziskus and University Münster

University of Zurich

University of Barcelona

University of Ourense

Tampere University Hospital

S. Filippo Neri Hospital, Rome

University of Trieste

University of Udine

Chemnitz Hospital

517 patients

Collected World Experience About the Performance of the Snorkel/Chimney Endovascular Technique in the Treatment of Complex Aortic Pathologies

The PERICLES Registry

Konstantinos P. Donas, MD, Jason T. Lee, MD,† Mario Lachat, MD,‡ Giovanni Torsello, MD, PhD,§ and Frank J. Veith, MD;¶ on behalf of the PERICLES investigators*

Objectives: We sought to analyze the collected worldwide experience with use of snorkel/chimney endovascular aneurysm repair (EVAR) for complex abdominal aneurysm treatment.

Background: EVAR has largely replaced open surgery worldwide for anatomically suitable aortic aneurysms. Lack of availability of fenestrated and branched devices has encouraged an alternative strategy utilizing parallel or snorkel/chimney grafts (ch-EVAR).

Methods: Clinical and radiographic information was retrospectively reviewed and analyzed on 517 patients treated by ch-EVAR from 2008 from 2014 by prearranged defined and documented protocols.

Results: A total of 119 patients in US centers and 398 in European centers were treated during the study period. US centers preferentially used Zenith stent-grafts (54.2%) and European centers Endurant stent-grafts (62.2%) for the main body component. Overall 898 chimney grafts (49.2% balloon expandable, 39.6% self-expanding covered stents, and 11.2% balloon expandable bare metal stents) were placed in 692 renal arteries, 156 superior mesenteric arteries (SMA), and 50 celiac arteries. At a mean follow-up of 17.1 months

(range: 1–70 months), primary patency was 94%, with secondary patency of 95.3%. Overall survival of patients in this high-risk cohort for open repair at latest follow-up was 79%.

Conclusions: This global experience represents the largest series in the ch-EVAR literature and demonstrates comparable outcomes to those in published reports of branched/fenestrated devices, suggesting the appropriateness of broader applicability and the need for continued careful surveillance. These results support ch-EVAR as a valid off-the-shelf and immediately available alternative in the treatment of complex abdominal EVAR and provide impetus for the standardization of these techniques in the future.

Keywords: abdominal aortic aneurysm, endovascular, fenestrated, thoracoabdominal, vascular

(Ann Surg 2015;262:546–553)

The snorkel/chimney technique is an endovascular therapeutic modality for branch revascularization in complex aortic pathology.

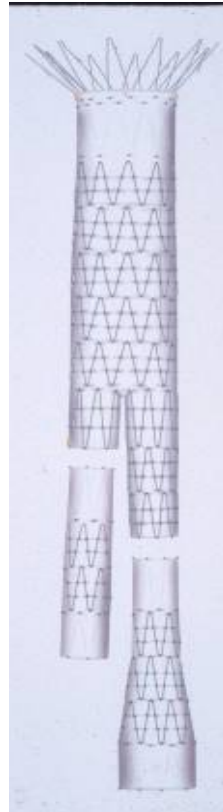
Methods

- All commercially available endografts and chimney grafts were included
- Statistical analysis: Stanford University, US
- Non-industry funded project

Anatomic/Device Characteristics



Europe 64.2%



USA 52.2%

| Abdominal Main Body Endograft | |
|-------------------------------|-------------|
| Endurant | 260 (50.2%) |
| Zenith | 91 (17.2%) |
| Excluder | 75 (14.5%) |
| Jotec | 17 (3.2%) |
| Other devices | 74 (14.9%) |

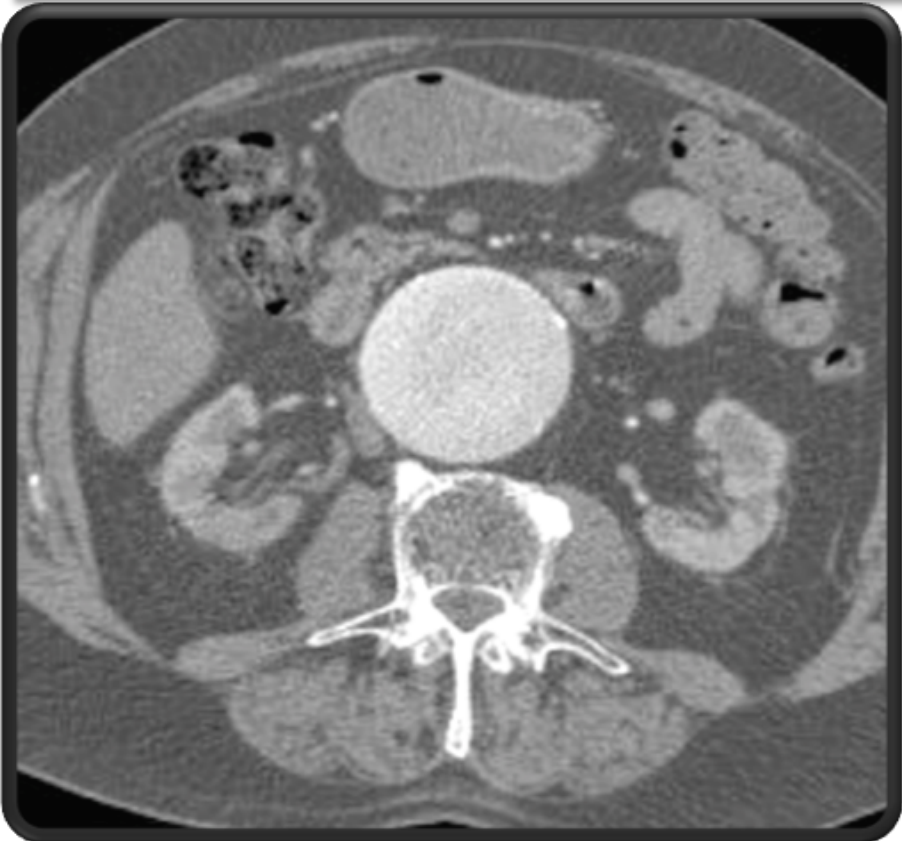
AAA follow-up (17.1 months, 1-70)

Mean Pre-op Sac Diameter (mm)

65.9±21.6

Mean Latest F/U Sac Diameter (mm)

61.2±19.7, p.001



Endoleaks

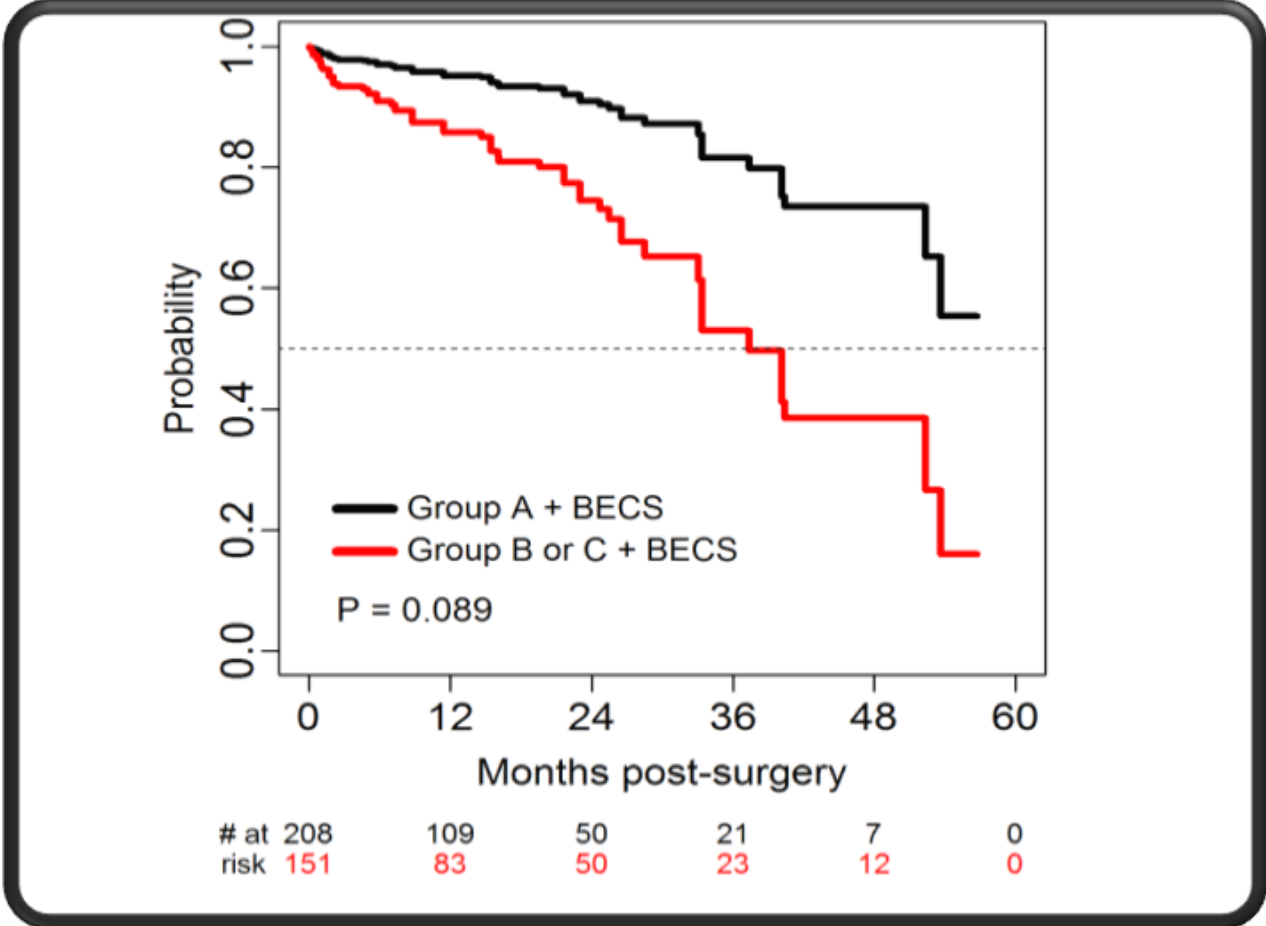
Persistent intra-op type Ia endoleak: 2.9%
Type IA endoleak at latest fu: 5.8%

| Variables (all with p <.1) | OR (95% CI) | P value |
|----------------------------|-------------------------|---------|
| COPD | 1.77 (.93-3.36) | .081 |
| PAD | 2.39 (1.19-4.81) | .013 |
| CHF | 1.96 (1.03-3.72) | .038 |
| AAA max diameter | 65.1±15.8 vs. 74.1±22.5 | .0061 * |
| | | |
| | | |

Subgrup analysis of gutter-related endoleaks

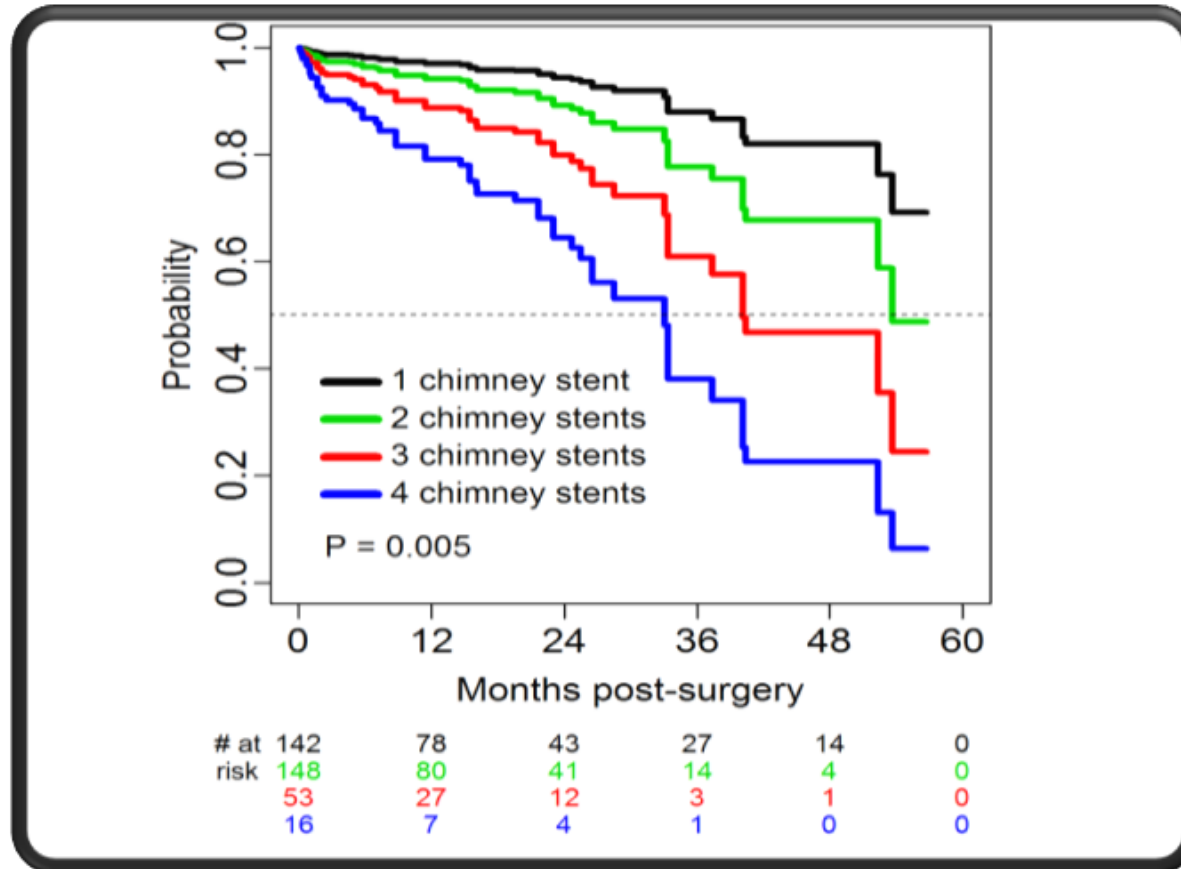
3.4 times greater in patients with stainless steel endoskeleton compared to Nitinol devices
(HR: 3.4, 95% CI)

Better Stent Occlusion Free Survival in Nitinol-Polyester Endgrafts



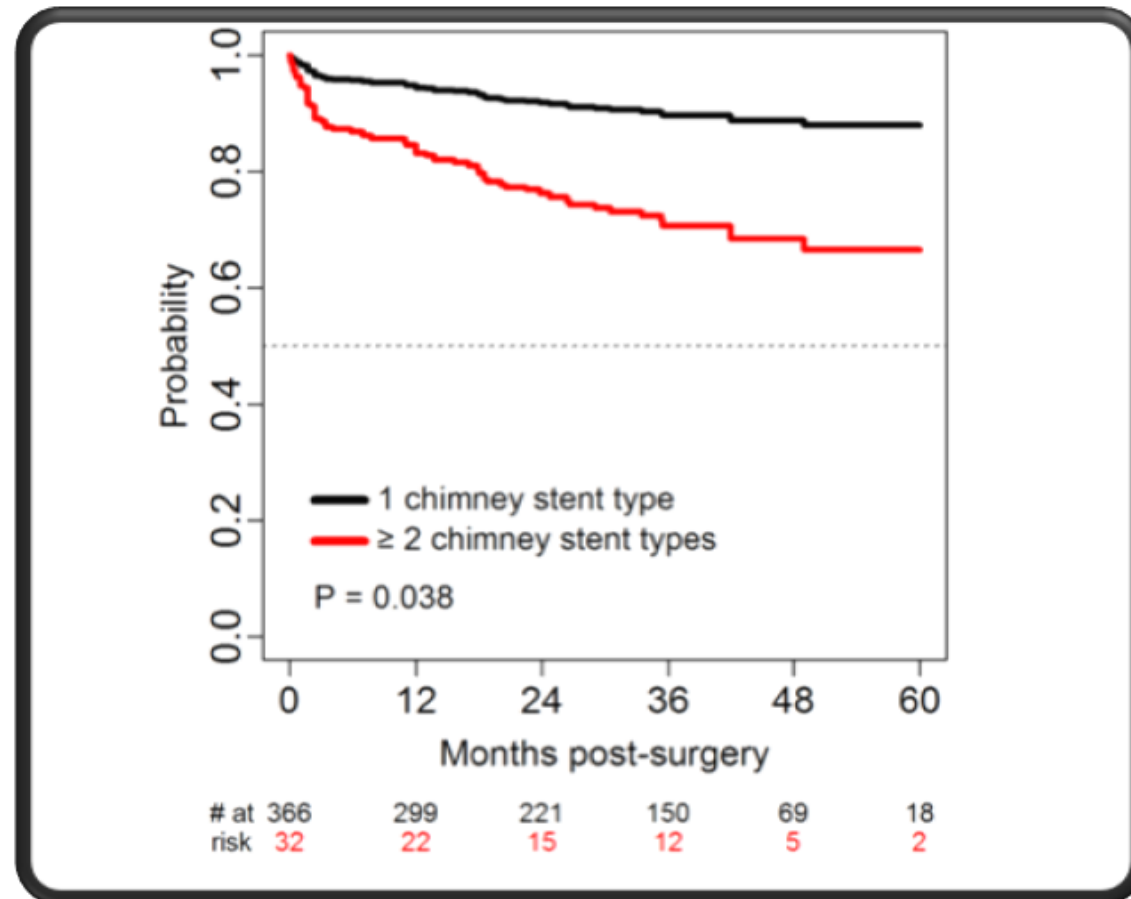
Scali S, Beck A, Torsello G, Veith FJ, Donas KP, JVS 2017

Chimney Occlusion Free Survival as a Function of Increasing Chimney Number



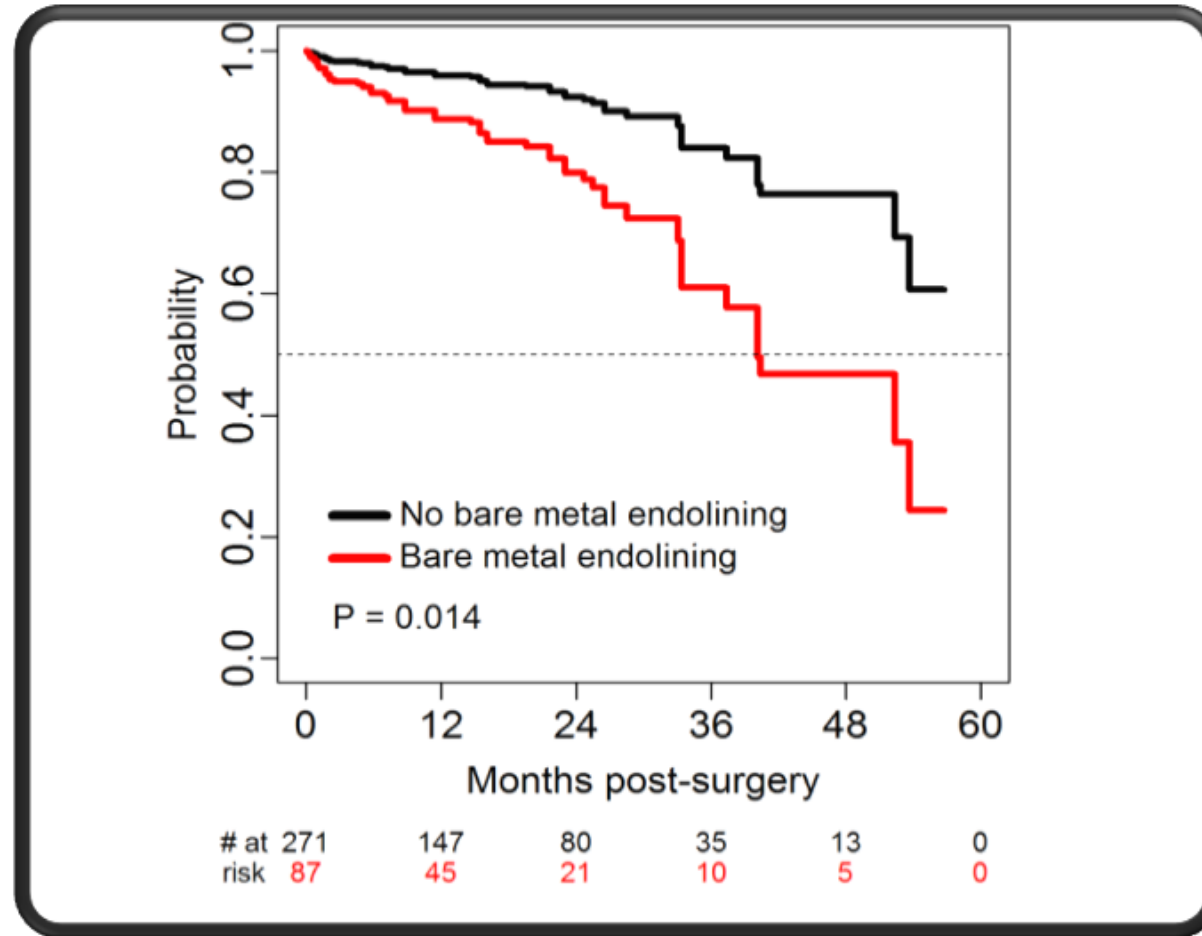
Scali S, Beck A, Torsello G, Veith FJ, Donas KP, JVS 2017

Patient Survival as a Function of the Number of Chimney Stents Implanted



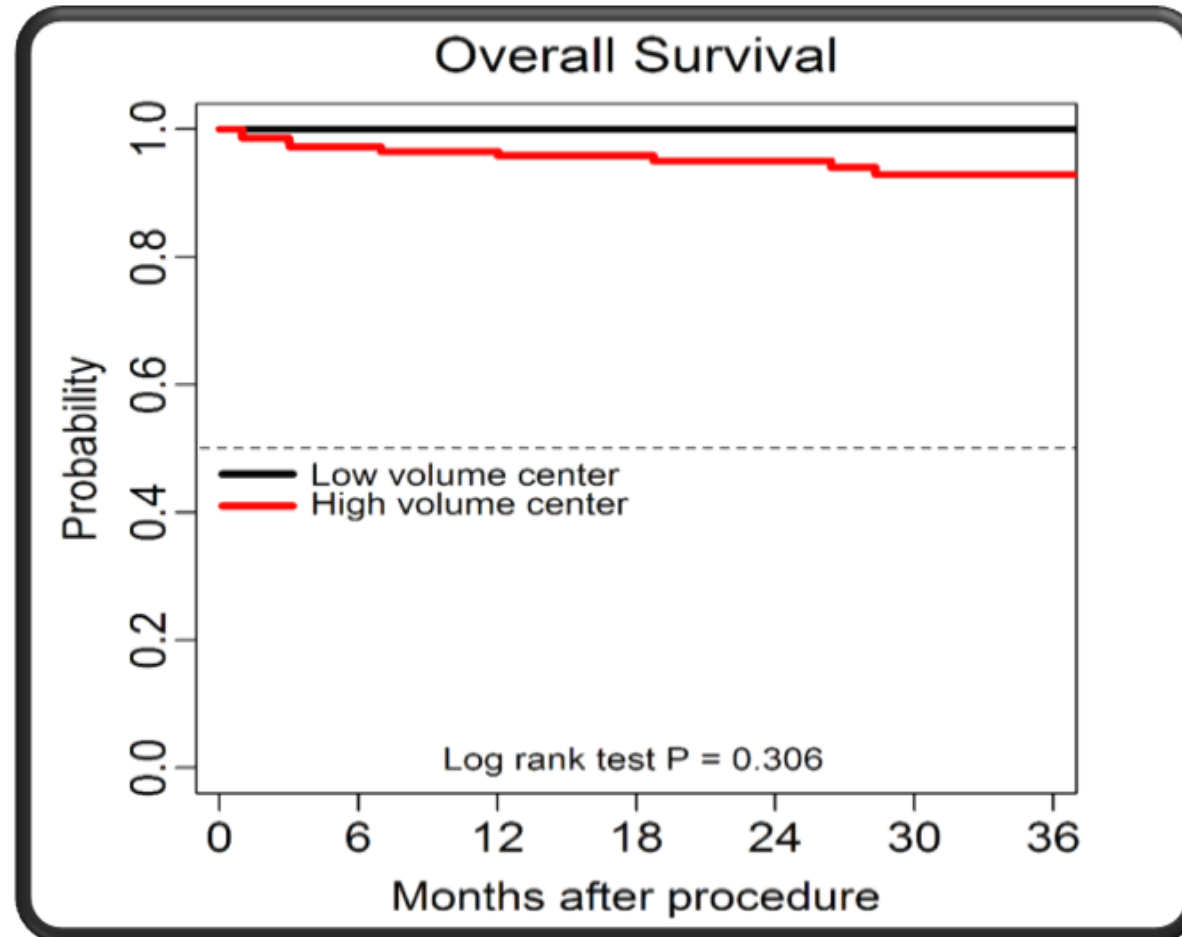
Scali S, Beck A, Torsello G, Veith FJ, Donas KP, JVS 2017

Impact of Relining on Chimney Occlusion Free Survival



Scali S, Beck A, Torsello G, Veith FJ, Donas KP, JVS 2017

Higher rate of gutter-related endoleaks in low volume centers (<20 treated patients) due to <20% oversizing



Scali S, Beck A, Torsello G, Veith FJ, Donas KP, JVS 2017



Conclusions I

Nitinol-Polyester stent-grafts have less risk of chimney occlusion and a significant survival advantage

Conclusions II

- Patients treated at low volume centers have higher risk of type 1a endoleak.
- Undersizing of the endograft and an increased number of chimneys are associated with risk of type 1a endoleak and poor long-term survival