

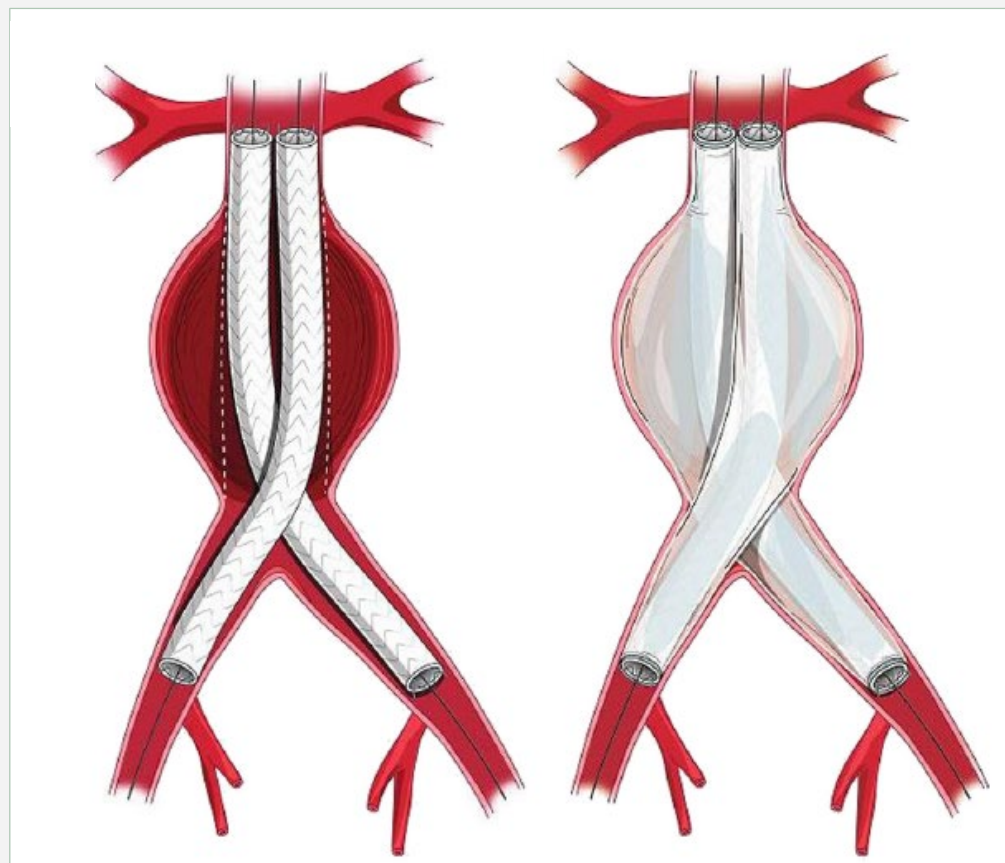
EVAS *vs.* EVAR

what is the value of sac-filling technology?

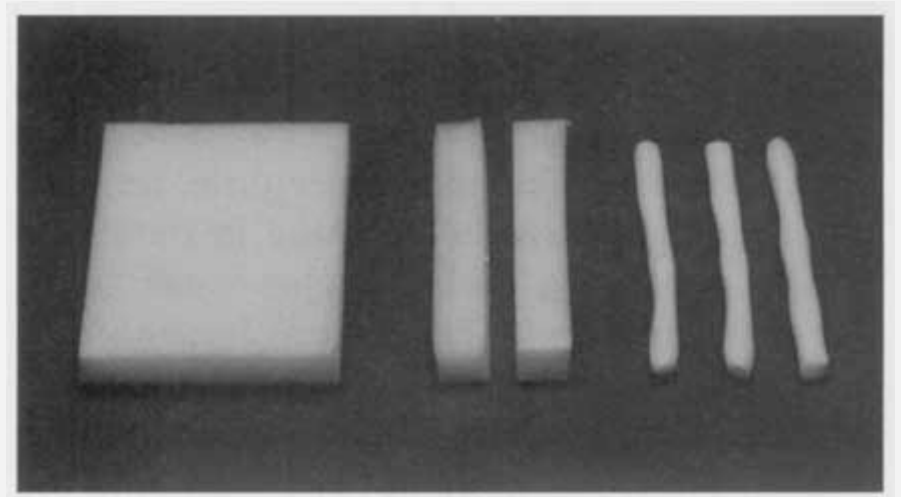
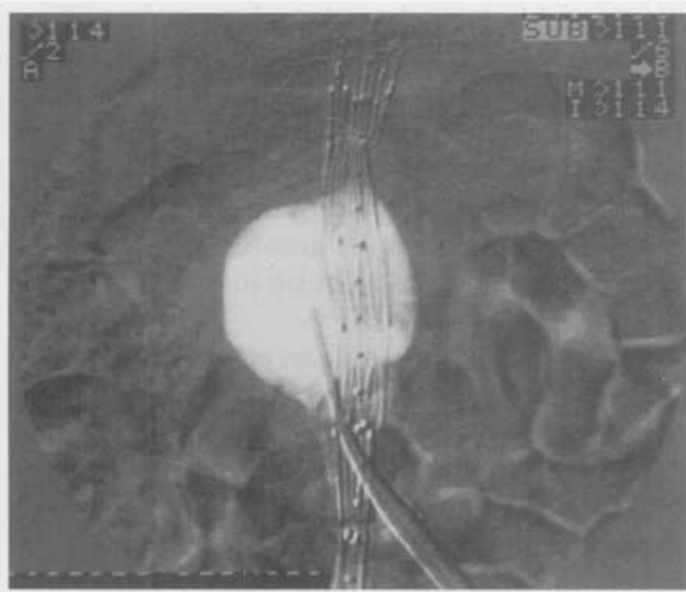
Professor Robert Hinchliffe
Bristol Centre for Surgical Research
NIHR Bristol BRC, University of Bristol
& North Bristol NHS Trust

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EVAR v EVAS



New technology?



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Lessons learnt from the EUROSTAR registry on endovascular repair of abdominal aortic aneurysm repair

S. Rao Vallabhaneni, P.L. Harris *

Regional Vascular Unit, Link 8C, Royal Liverpool University Hospital, Prescot Street, Liverpool L7 8XP, UK

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Abstract

Objective: The EUROSTAR project is a multicentred database of the outcome of endovascular repair of infra-renal aortic aneurysms. To date 92 European centres of vascular surgery have contributed. The purpose of the article here is to review the medium term (up to 4 years) results of endovascular aneurysm repair as reported to Eurostar. **Patients and methods:** Patients intended for endovascular aneurysm repair were notified to the EUROSTAR Data Registry Centre before treatment in order to eliminate bias due to selective reporting. The following data was collected on all patients: (1) their demographic details and the anatomical characteristics of their aneurysms, (2) details of the endovascular device used, (3) procedural complications and the immediate outcome, (4) results of contrast enhanced CT imaging at 3, 6, 12 and 18 months after operation and at yearly intervals thereafter, (5) all adverse events. Life table analysis was performed to determine the cumulative rates of: (1) death from all causes, (2) secondary intervention. Risk factors for rupture and late conversion were identified by regression analysis. **Results:** By July 2000, 2862 patients had been registered and their median duration of follow-up was 12 mo (range 0–72). Successful deployment was achieved in 2812 patients with a perioperative (30 day) mortality of 2.9%. In 2464 patients enrolled by March 2000 late rupture of the aneurysm occurred in 14 patients for an annual cumulative rate of 1%. The significant factors were proximal type I endoleak ($P=0.001$), midgraft (type III) endoleak ($P=0.001$), graft migration ($P=0.001$) and post-operative kinking of the endograft ($P=0.001$). Forty-one patients had late conversion to open repair for an annual cumulative rate (risk) of approximately 2.1%. Risk factors (indications) for late conversion were: proximal type I endoleak ($P=0.001$), midgraft (type III) endoleak ($P=0.001$), type II endoleak ($P=0.003$), graft migration ($P=0.001$), graft kinking ($P=0.001$) and distal type I endoleak ($P=0.001$). **Conclusions:** Endovascular repair of infra-renal aortic aneurysms using the first and second-generation devices that predominated in this study was associated with a risk of late failure of 3% per year, based upon an analysis of observed primary endpoints of rupture and conversion. Eurostar continues to provide responsible evaluation of the technique for the benefit of both physicians and the industry. © 2001 Elsevier Science Ireland Ltd. All rights reserved.

Keywords: Aortic aneurysm; Endovascular repair; Stent-graft; Aortic rupture; Aortic repair

EVAR Principles / Observations

- Stent-graft 'normal' artery to 'normal' artery
- Rigid stents do not prevent migration (limb kinks)
- Proximal fixation important
- Complications start 18months post-op
- Type 2 endoleak inconsequential
- Outside IFU = problems

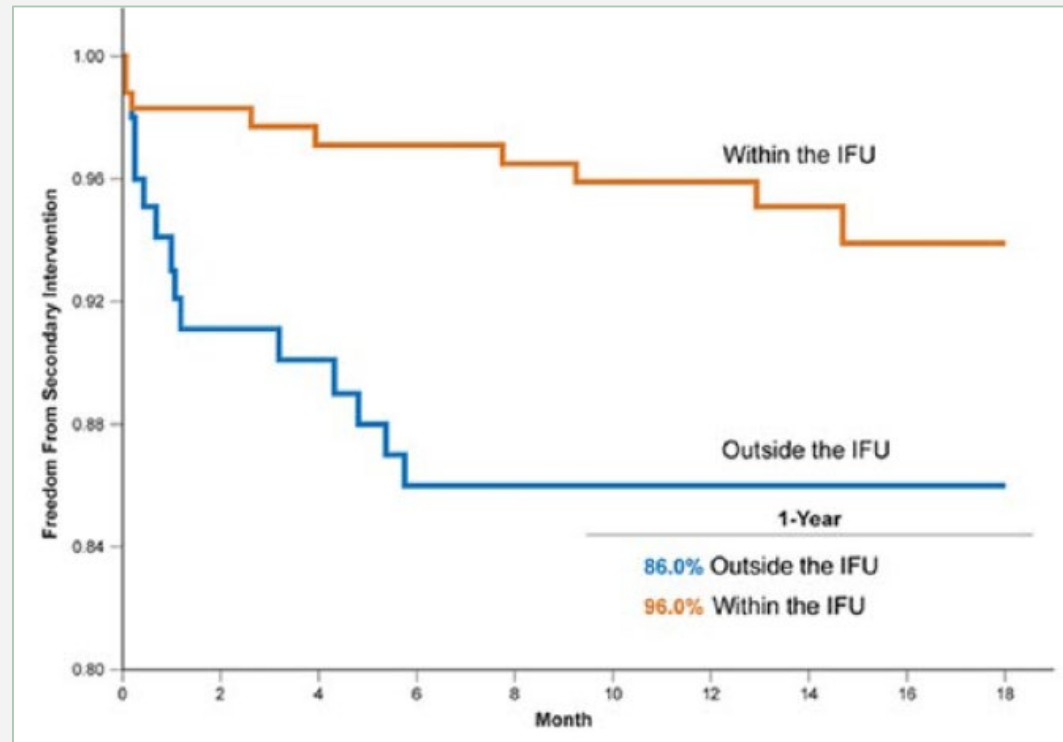
Opportunities for EVAS

- Reduce re-intervention rate
- Abolish post-intervention ruptures
- Increase morphological applicability
- Rationalise surveillance (cost)
- *Address high cardiovascular event rates*
- *Improve outcomes in women*

Durability of EVAS

EVAS FORWARD Registry

- 12 months
- 277 patients (18 sites)
- Freedom re-intervention 92%
- Aortic mortality 2%
- All-cause mortality 5%



J Endovasc Ther. 2016;23:685-92

Aneurysm applicability

- 75% original criteria (IFU 2013)
- 34% revised criteria (IFU 2016)

Morphology (2013)	
Adequate iliofemoral access diam	≥6 mm
Aneurysm blood lumen diameter	≤60mm
Proximal neck length	>10mm
Neck diameter	18-32 mm
Neck angle	<60 degrees
Renal artery – IIA length	≥100mm
Common iliac artery diam	9-35 mm
Hypogastric artery	Preserve ≥1

J Endovasc Ther. 2018;25:418-425

Aneurysm applicability

- 75% original criteria (IFU 2013)
- 34% revised criteria (IFU 2016)
- *Outside IFU predicted migration*
- *NL and angle predict migration and/or endoleak*
- *No effect of new IFU on outcome*

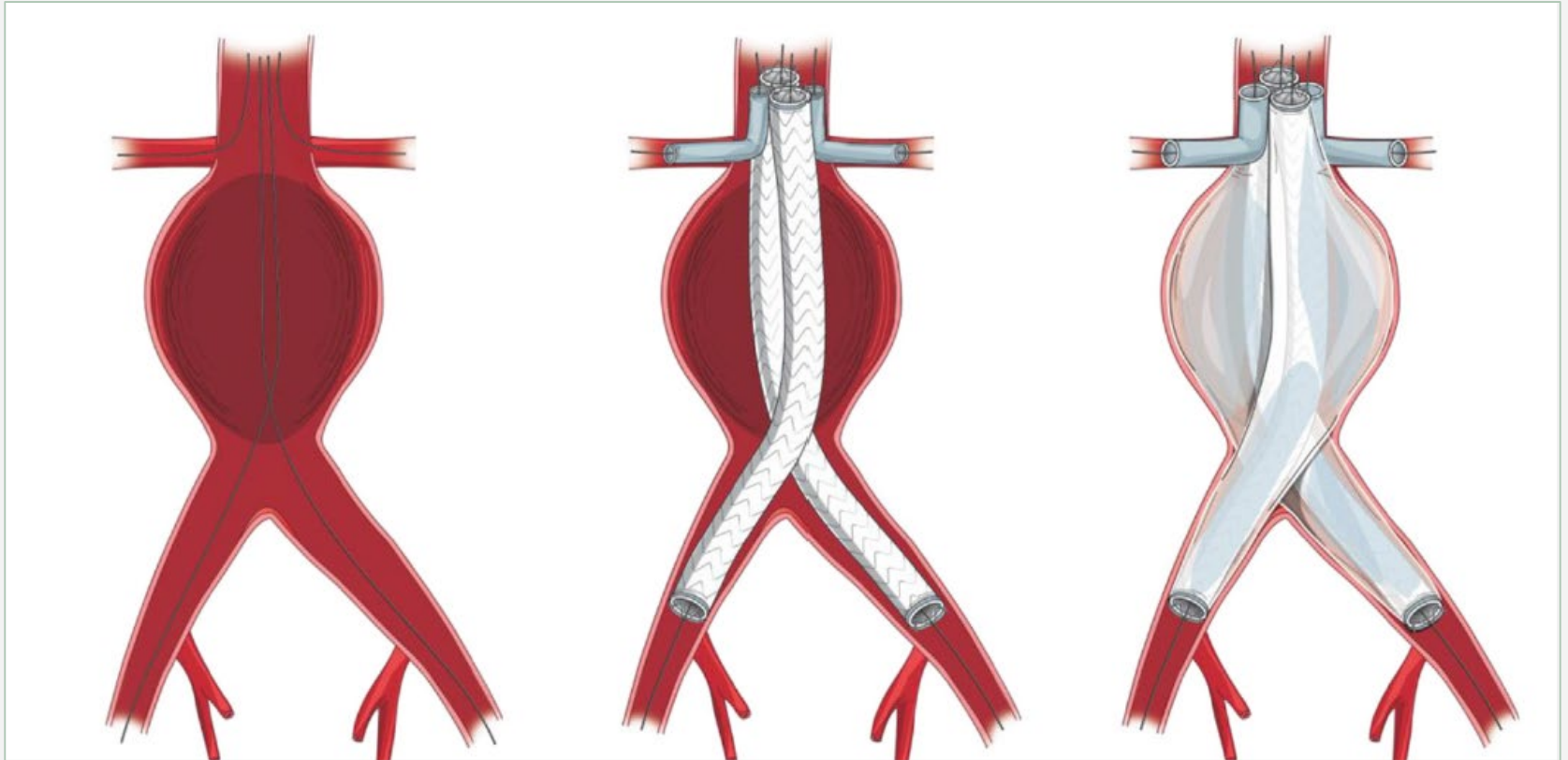
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Endoleak



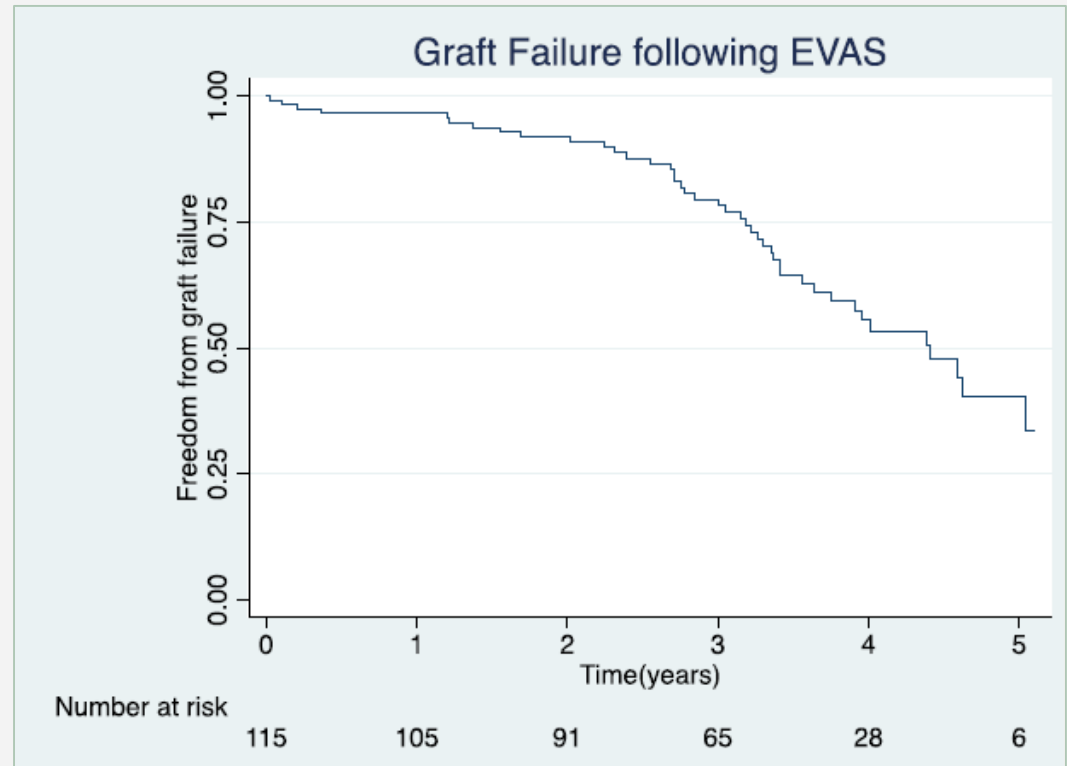
Elaborate solutions



Eur J Vasc Endovasc Surg 2016;52:458-465

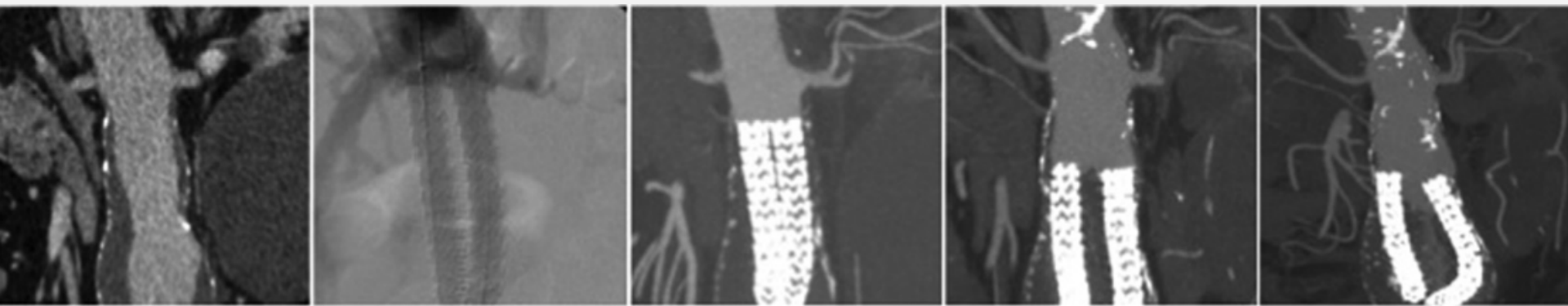
Cambridge Series of EVAS

- 161 patients (115 AAA)
- Single centre
- Median f/u 4.4 years
- 42 graft failures
- 29% outside IFU
- 46% not suitable EVAR
- 25% no endo option



Eur J Vasc Endovasc Surg. 2018;56:342-8

Surveillance



Eur J Vasc Endovasc Surg. 2018;56:342-8

Type II endoleaks

- EVAS FORWARD
- 1.8% (5/277) at 30 days
- Longer-term - 0.4% at 1 year
- Consequences?

J Endovasc Ther. 2016;23:685-92

Cardiovascular events

Cardiovascular events



Outcomes in women

- Increase applicability
- Early (1 year) encouraging (LUCY)
- Appears promising
- Awaiting durability data
- Benefits over EVAR/EVAS?



EVAS – what lessons?

- Deployment not so straightforward (morphology limitations)
- Early outcomes very good
- High % (59%) iliac limb adjunctive stents
- New set of complications (surveillance)
- Endoleaks difficult to treat (type 2 leaks low)
- Migration / failure rates concerning

Conclusions

- Re-learned lessons from 1st generation EVAR
 - Different technology
 - No evidence that it reduces CV events
 - Worrying signals
- Implications introduction new technology?