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Vascular Surgery and Endovascular Therapy

AAA Sac Behavior After F/B-EVAR: What Is Its Impact On Overall Survival And What Are Its Predictors: From The US Aortic Research Consortium (ARC)

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U.S. Aortic Research Consortium (US-ARC)

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Disclosures

► **Consultant & Research Support:**


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► Cook Medical is the manufacturer of the investigational devices.

Background: FB-EVAR

- Fenestrated/Branched Endovascular Aortic Repair (FB-EVAR) is an effective treatment for thoracoabdominal (TAAA) and complex abdominal aortic aneurysms
- Compared to open surgery, FB-EVAR is associated with significantly lower rates of perioperative morbidity and mortality
- FB-EVAR provides excellent protection against late aneurysm rupture and aneurysm-related mortality



Oderich, et al. *Circulation* 2024

CAUTION: Investigational device. Limited by United States law to investigational use.

Background: Aneurysm sac behavior and survival

From the Society for Clinical Vascular Surgery

Aneurysm sac failure to regress after endovascular aneurysm repair is associated with lower long-term survival

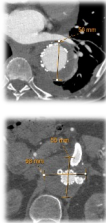
From the Society for Vascular Surgery

Aneurysm sac expansion is independently associated with late mortality in patients treated with endovascular aneurysm repair

From the Western Vascular Society

Predictors of sac regression after fenestrated endovascular aneurysm repair

Ming Li, MD, Jordan R. Stern, MD, Kenneth Tran, MD, Celine Declercq Ouhou, MD, and Jason T. Lee, MD, Stanford, CA

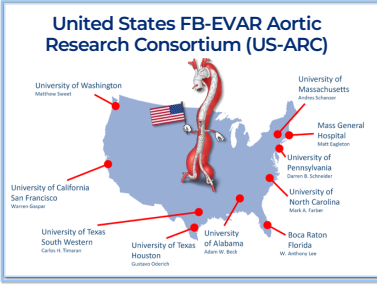


Deery. *J Vasc Surg* 2018; O'Donnell. *J Vasc Surg* 2019; Li. *J Vasc Surg* 2022

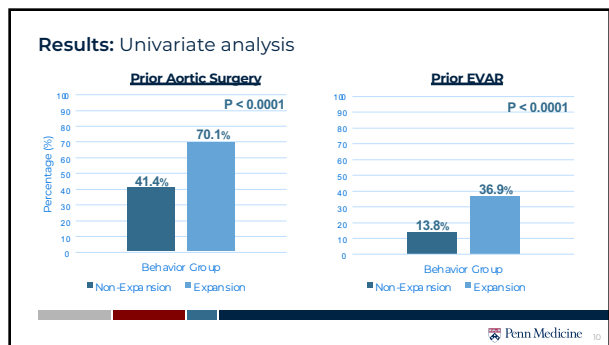
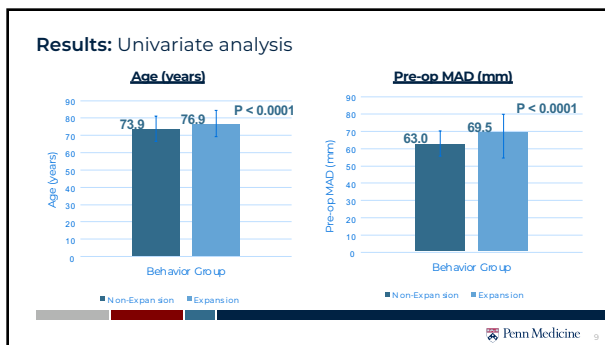
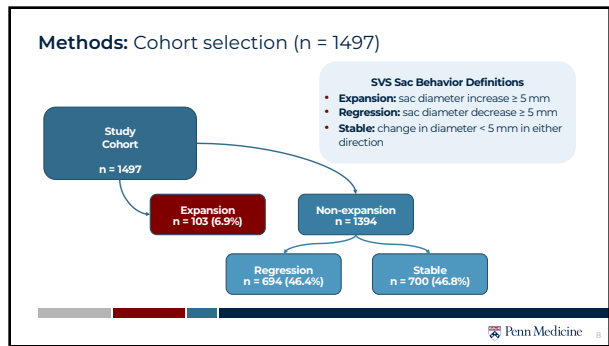
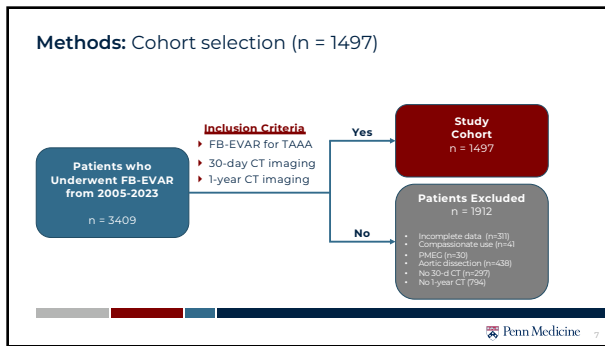
Study Aims

- To identify independent predictors of aneurysm sac expansion after FB-EVAR
- To assess the relationship between sac behavior and long-term mortality after FB-EVAR

United States FB-EVAR Aortic Research Consortium (US-ARC)

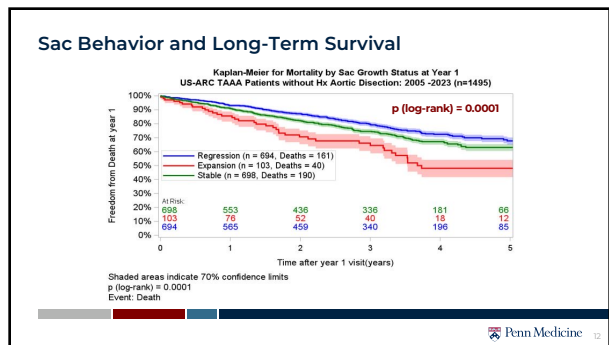


- 10 prospective, non-randomized PS-IDE studies
- Event adjudication, external monitoring and FDA reporting
- Similar device design with selective use of fenestrations and branches
- Data-sharing agreement and central data-coordinating center



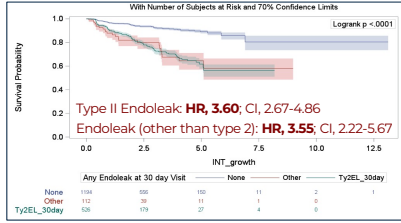
Multivariable analysis: Independent predictors of sac expansion

PARAMETER	ODDS RATIO (95% CI)	P-VALUE
Age	1.04 (1.01, 1.07)	0.0097
Prior aortic surgery	2.32 (1.39, 3.88)	0.0013
Prior EVAR	1.77 (1.04, 3.02)	0.0347
Pre-op maximum aneurysm diameter	1.02 (1.01, 1.04)	0.0027
Reintervention with first year	2.05 (1.26, 3.32)	0.0038
Type II Endoleak on 30-d Imaging	2.19 (1.38, 3.46)	0.0008
Endoleak (other than Type II) on 30-d Imaging	1.39 (0.63, 3.07)	0.4158



Endoleaks and Long-Term Survival

Km-curve: endoleak at 30d imaging



Take-Home Messages

- ▶ Aneurysm sac behavior is a critical determinant of long-term survival after FB-EVAR:
 - *Regression is associated with improved survival*
 - *Stability or expansion correlates with worse outcomes*
 - We need a better understanding of the underlying biology linking sac behavior to survival
- ▶ Independent predictors of sac expansion include:
 - Advanced age, prior aortic surgery or EVAR, larger aneurysm diameter, need for early reintervention, and Type II endoleaks.
- ▶ Clinical implications:
 - Interventions to promote sac regression may significantly improve long-term outcomes
 - More aggressive treatment of endoleaks, especially Type II, may be warranted
 - Regular imaging follow-up is essential to detect sac behavior and guide timely interventions



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