


Causes leading to branch leaks and occlusions after F/B/EVAR: What forces are important and what can be done to prevent them

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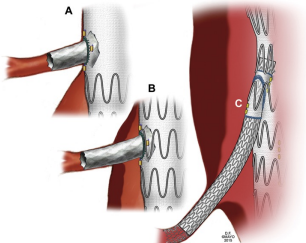


Disclosures


- none



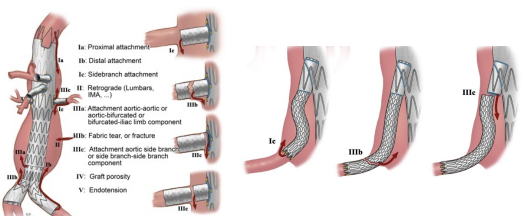
Branch & Fenestration




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Branch / Fenestration Endoleaks




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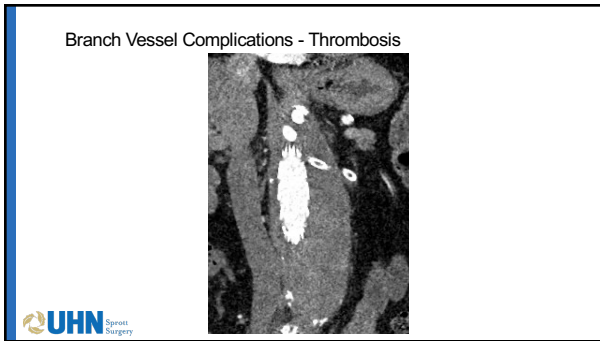


Branch Vessel Complications – Endoleaks (IIIc)

SMA Stent Dislocation



Causes of Branch Endoleaks & Occlusions

- Case planning
- Intraoperative technical issues
- Type of stents
- Postoperative medical management
- Dynamic forces
 - Respiratory movement
 - Positional changes

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Mid-term Outcomes of Renal Branches Versus Renal Fenestrations for Thoraco-abdominal Aneurysm Repair²⁴

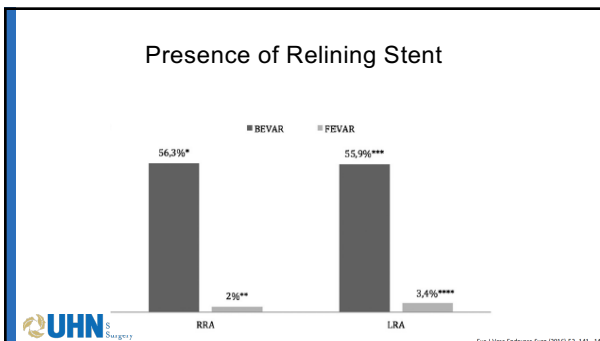
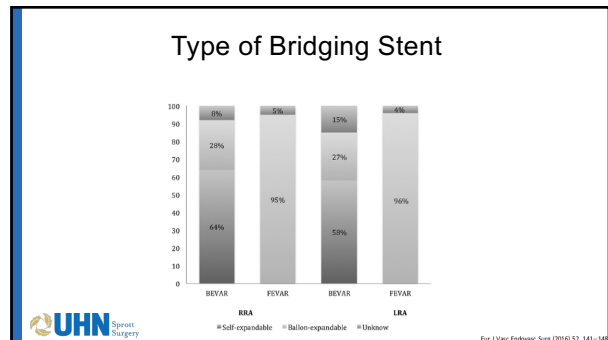
T. Martin-Gonzalez¹, T. Mattracci², T. Carrell³, J. Constantinou⁴, N. Dias⁵, A. Katsargyris⁶, B. Modaral⁷, T. Resch⁸, E. Verhoeven⁹, S. Haslon¹⁰*

Center	Patients enrolled in the current study (n)	Patients treated with renal fenestrations (n)	Patients treated with renal branches (n)	BEVAR vs. FEVAR (%)
Lille ¹	255	214	41	16
Royal Free, London	41	—	41	78
Nuremberg	71	—	71	30
Malmö	53	—	53	63
St Thomas, London	29	—	29	55

Note:
* All renal fenestration cases in this study are from Lille University.

BEVAR – 235
FEVAR – 214
Total - 449

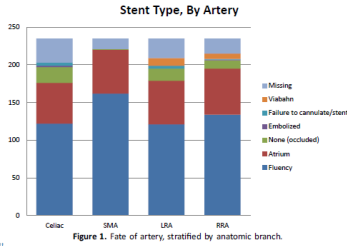
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	BEVAR	FEVAR	P-Value
Technical Success	95%	99%	NS
Mean Follow up	19 ± 18	24 ± 23.5	NS
Renal reintervention rate	4.7%	5.2%	NS
Renal occlusion rate	9.6%	2.3%	< 0.01
2 yr freedom from renal occlusion	90.4%	97.1%	< 0.01
2 yr decrease in eGFR	12%	9%	NS
2 yr survival	73.4%	81.8%	NS

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What about choice of bridging stents in BEVAR?



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What about choice of bridging stents in BEVAR?

Table 4. Multivariate analysis of variables associated with occlusion or reintervention

Variable	HR	CI	p
Self expanding stent (versus balloon expandable)	0.95	0.41–2.2	.91
Renal branch (versus visceral branch)	3.51	1.7–7.35	.001
Current smoker	0.99	0.045–2.14	.97
Diabetes	0.56	0.18–1.7	.311
Length of primary stent	1.00	0.98–1.02	.76
Diameter of primary stent	0.96	0.83–1.10	.14

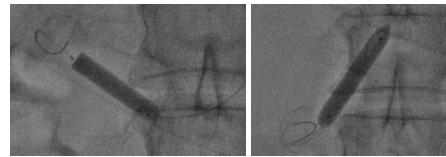
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Movement with Respiration while Supine



Expiration right renal artery

Inspiration right renal artery

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Practical impact of respiration on branch vessels

Table II. Target vessels in patients undergoing complex endovascular aneurysm repair (EVAR).

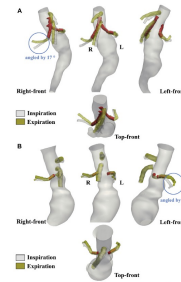
Target vessel	F-EVAR (n = 11), No.	Se-EVAR (n = 9), No.	All (N = 20), No.
SMA	1	2	3
Balloon-expandable covered stent	1	2	3
Self-expanding covered stent	0	0	0
LRA	10	10	20
Balloon-expandable covered stent	10	7	17
Self-expanding covered stent	0	3	3
RRA	10	8	18
Balloon-expandable covered stent	10	7	17
Self-expanding covered stent	0	1	1
Total	21	20	41

F, fenestrated; LRA, left renal artery; RRA, right renal artery; SMA, superior mesenteric artery; Se, snorkel.

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J Vasc Surg 2015;61:875-85

Practical impact of respiration on branch vessels



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J Vasc Surg 2015;61:875-85

Does change in position change blood vessel orientation?

The Position of the Aorta Relative to the Spine
Is It Mobile or Not?

Gearty, C. Richard, MD,* Isaac, M. J. Corbin, MD,† Meryn H. Cantelmo, MD,‡
Abdel van Oort, MD, PhD,§ Hack van Santbrink, MD, PhD,‡
and Ludewig W. van Roy, MD, PhD

Prone Supine

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Spine 2007;32:1259-64

How long are we in the supine position?

On average, how many hours sleep do you get a night?

13% 14% 62% 9%

- Less than 4 hours
- 4-5 hours
- 6-8 hours
- More than 8 hours

FROM FRONT PAGE OF THE PRESSURE

Prone Lying Yawning Snoring Frontal view Standing

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How long are we in the supine position?

The sleep position trainer: a new treatment for positional obstructive sleep apnea

El Hachimi, M., et al. Sleep Med Clin 2013; 17:171-179

Median % of supine sleeping time = 49.9% (20.4-77.3%)

50% of 8 hours is 4 hours = so you're fine 1/6 or 17% of the time, the other 83% = ????????????

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What does a supine CT miss?

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Pilot Project – Gravity's effect on visceral vessel orientation – Patient 1

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Pilot Project – Gravity's effect on visceral vessel orientation – Patient 1

SMA - prone SMA - supine SMA - standing

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