



How do I manage challenging anatomies in AAA

Mario Lescan

17.12.2021



Conflict of interest

- Terumo Aortic:
 - speaker's honoraria
 - proctor
 - consultant
- Gore:
 - speaker's honoraria



Complex open AAA surgery

Eur J Vasc Endovasc Surg (2016) 51, 203–215

REVIEW

Systematic Review and Meta-analysis of Factors Influencing Survival Following Abdominal Aortic Aneurysm Repair

M. Khashram ^{a,b,*}, J.A. Williman ^c, P.N. Hider ^c, G.T. Jones ^d, J.A. Roake ^{a,b}



THE ANEURYSM

Table 3. Summary of factors identified in this review that influence long-term survival following abdominal aortic aneurysm repair.

Factor	Number of patients	Number of studies	HR (95% CI)	I^2 (%)	Overall Z-Test effect	p
Demographic						
Age (continuous)/year	31,100	21	1.05 (1.04–1.06)	81	9.74	<.00001
Age category						
Up to 75 years old	22,047	8	1.77 (1.36–2.30)	77	4.24	<.0001
<u>>75 years old</u>	24,492	5	2.32 (1.93–2.80)	57	8.79	<.00001
Females	49,653	16	1.15 (1.07–1.27)	45	3.42	<.0006
Clinical assessment						
ASA	3,374	3	1.30 (1.16–1.47)	0	4.32	<.0001
Comorbidity						
IHD	31,441	18	1.29 (1.18–1.48)	46	5.58	<.00001
MI	5,433	7	1.52 (1.32–1.73)	0	6.04	<.00001
<u>Cardiac failure</u>	35,525	14	1.91 (1.58–2.30)	70	6.77	<.00001
Hypertension	17,927	9	0.90 (0.79–1.03)	60	1.55	0.12
LVH on ECG	1,308	3	2.25 (1.66–3.04)	0	5.28	<.00001
COPD	43,953	18	1.53 (1.37–1.70)	70	7.58	<.00001
<u>COPD on O₂ supplement</u>	4,142	3	3.05 (1.93–4.80)	63	4.8	<.00001
Renal impairment						
Creatinine (>150–200 µmol/L)	26,974	16	1.54 (1.43–1.67)	11	10.8	<.00001
<u>Dialysis or ESRF</u>	4,744	5	3.15 (2.45–4.04)	0	8.98	<.00001
<u>Cerebrovascular disease</u>	7,726	9	1.57 (1.40–1.77)	0	7.49	<.00001
Carotid disease	9,578	2	1.27 (0.93–1.73)	0	1.5	0.13
PVD	2,646	3	1.36 (1.18–1.58)	0	4.17	<.0001
Diabetes	44,211	14	1.34 (1.20–1.49)	26	5.35	<.00001



FEVAR in complex AAA surgery

From the New England Society for Vascular Surgery



Fenestrated endovascular aneurysm repair is associated with lower perioperative morbidity and mortality compared with open repair for complex abdominal aortic aneurysms

Rens R. B. Varkevisser, BS,^{a,b} Thomas F. X. O'Donnell, MD,^{a,c} Nicholas J. Swerdlow, MD,^a Patric Liang, MD,^a Chun Li, MD,^a Klaas H. J. Ultee, BS,^b Alexander B. Pothof, MS, MD,^a Livia E. V. M. De Guerre, MD,^a Hence J. M. Verhagen, MD, PhD,^b and Marc. L. Schermerhorn, MD,^a Boston, Mass; and Rotterdam, The Netherlands

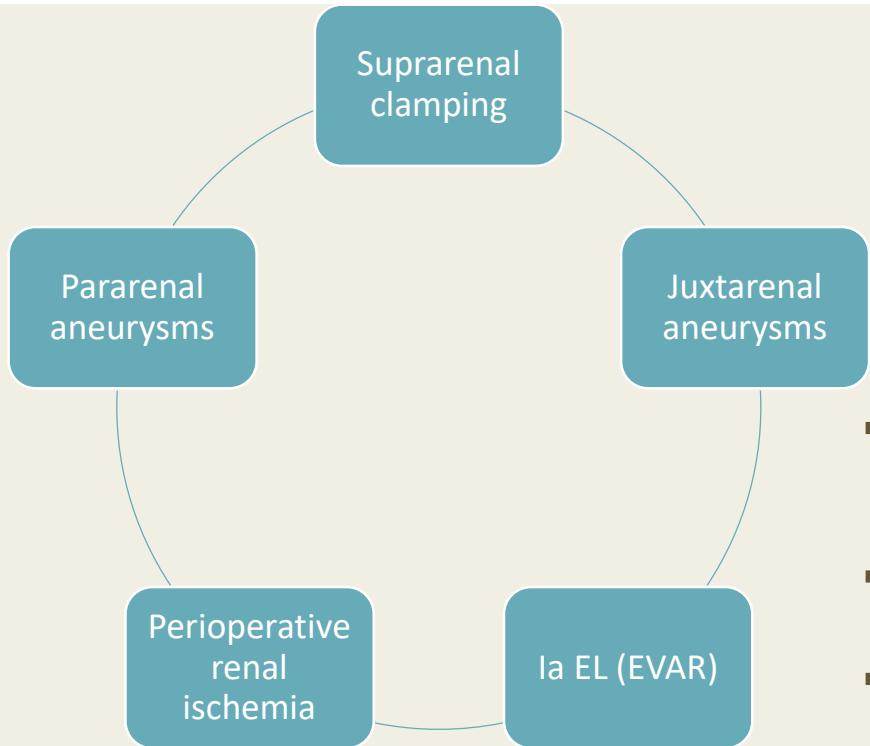
Comparative Study

Epub 2018 Dec 13.

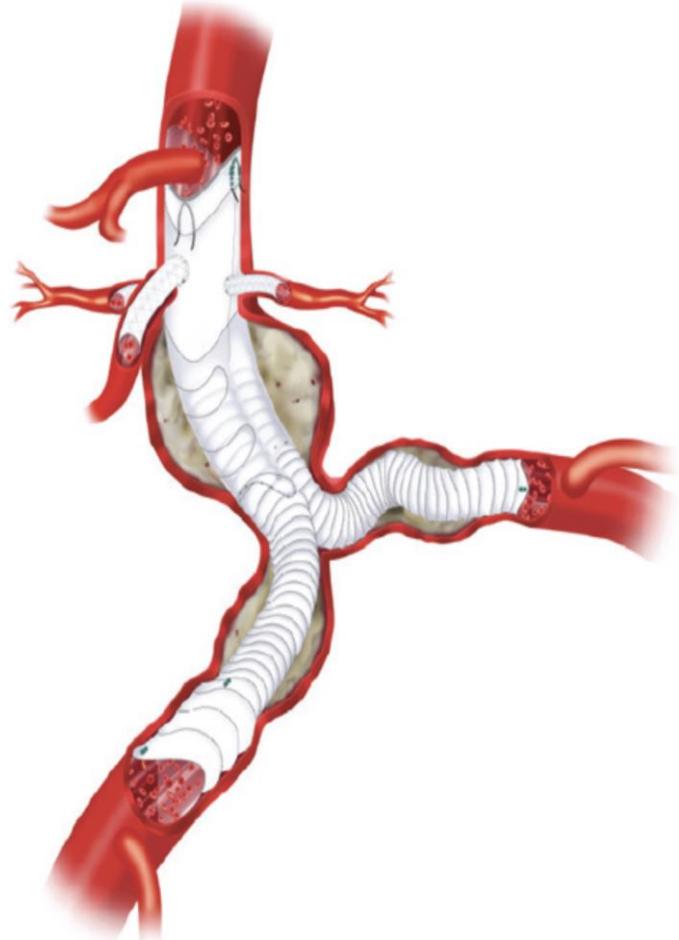
> J Vasc Surg. 2019 Jun;69(6):1670-1678. doi: 10.1016/j.jvs.2018.08.192.

Table II. Intraoperative and postoperative outcomes

Outcome	ZFEN		Open repair		Infrarenal EVAR		ZFEN vs open	ZFEN vs infrarenal	P value
	No.	%	No.	%	No.	%			
No.	220		181		6424				
Perioperative mortality ^a	4	1.8	16	8.8	49	0.8	.001		.084
Total procedure time, minutes, median (IQR)	235 (159.5-304)		240 (186-308)		118 (92-156)		.24		<.001
Blood transfusion (intraoperative or postoperative)	49	22.3	132	72.9	351	5.5	<.001		<.001
LOS, days, median (IQR)	2 (1-4)		7 (6-10)		1 (1-2)		<.001		<.001
Any complication	24	10.9	59	32.6	497	7.7	<.001		.085
Unplanned reintubation	5	2.3	17	9.4	39	0.6	.002		.014
On ventilator >24 hours	2	0.9	22	12.2	20	0.3	<.001		.13
Pneumonia	3	1.4	14	7.7	34	0.5	.002		.1
Unplanned reoperation	10	4.5	23	12.7	222	3.5	.003		.35
MI or cardiac arrest	4	1.8	18	9.9	73	1.1	<.001		.35
Renal dysfunction	3	1.4	14	7.7	42	0.7	.002		.19



Fenestrated Anaconda



- Since 2010
- custom-made
- Production time 4-6 weeks
- Prototype with 3D model
- Fully repositionable FEVAR device
- Stent-unsupported body: fenestrations can orientate perfectly in the desired position; reduced stiffness



Implantation technique



- Direct cannulation with the steerable sheath
- Easy bridging SG implantation from the sheath in the fenestration
- Implantation algorithm:
distal to proximal



Early experience – Colgan et al. (1)

Annals of Vascular Surgery

Submit

CLINICAL RESEARCH | VOLUME 46, P257-264, JANUARY 01, 2018

Operative and 1-Year Outcomes of the Custom-Made Fenestrated Anaconda Aortic Stent Graft—A UK Multicenter Study

Frances E. Colgan • Peter M. Bungay • Nicholas Burfitt • Andrew Hatrick • Michael J. Clarke • Alun H. Davies
Michael Jenkins • David Gerrard • John W. Quarmby • Robin Williams   • Show less

Published: June 14, 2017 • DOI: <https://doi.org/10.1016/j.avsg.2017.05.027> • 

- 4 UK centres, 2010-2014
- 101 patients (retrospective)
- Follow-up: 12 months

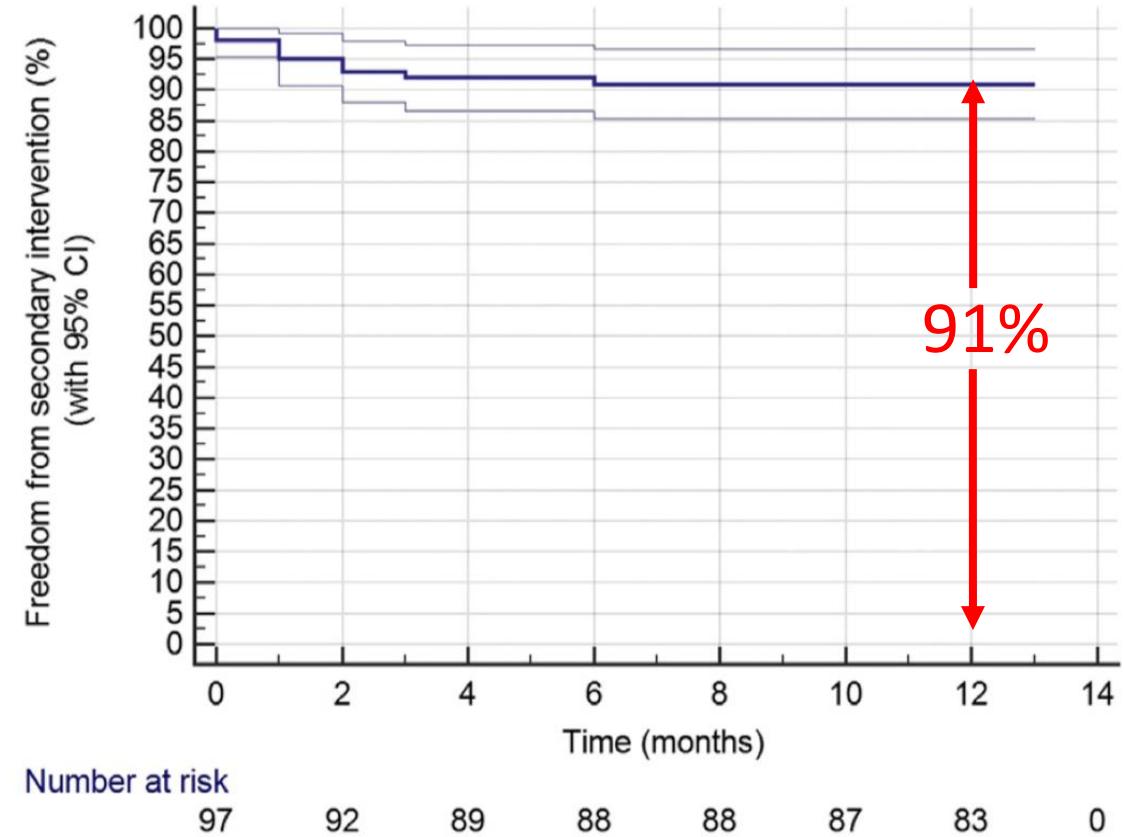


Fig. 3. Freedom from reintervention.

Early experience – Colgan et al. (2)

Table III. Perioperative mortality by graft type

	Number of grafts	Number of perioperative deaths (%)
Renal fenestrations alone	21	0 (0%)
Grafts incorporating SMA	47	1 (2.1)
Grafts incorporating celiac trunk	33	2 (6.1%)

Study period: 2010 – 2014:

- New implantation technique
- Steerable sheath
- new generation BSGs

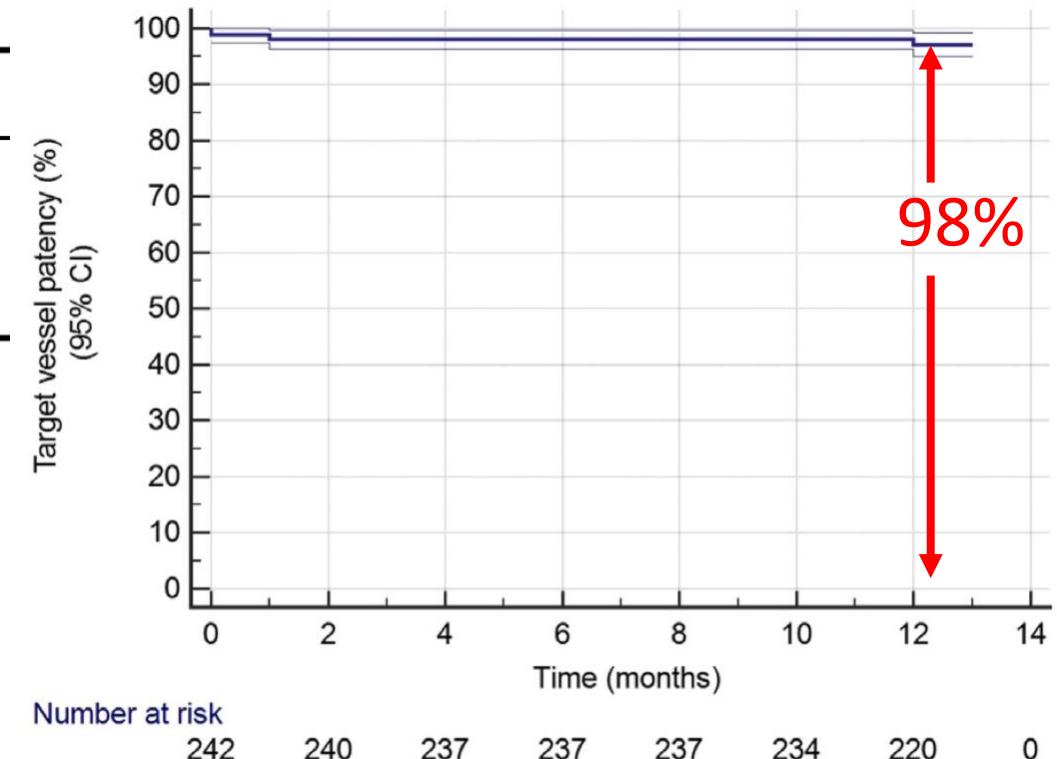


Fig. 2. Target vessel patency.



Current evidence – de Niet et al.

Outcomes after treatment of complex aortic abdominal aneurysms with the fenestrated Anaconda endograft

 Check for updates

Arne de Niet, MD,^a Clark J. Zeebregts, MD, PhD,^a and Michel M. P. J. Reijnen, MD, PhD,^{b,c} on behalf of The Fenestrated Anaconda Study group, Groningen, Arnhem, and Enschede, The Netherlands

Multicenter Study > *J Vasc Surg.* 2020 Jul;72(1):25-35.e1. doi: 10.1016/j.jvs.2019.08.283.

Epub 2019 Dec 9.

	No.	Mean \pm SD	Percent
Anatomic aneurysm location	335		
Infrarenal	98	29.3	
Juxtarenal	191	57.0	
Suprarenal	27	8.1	
Type IV thoracoabdominal	19	5.7	

Reinterventions

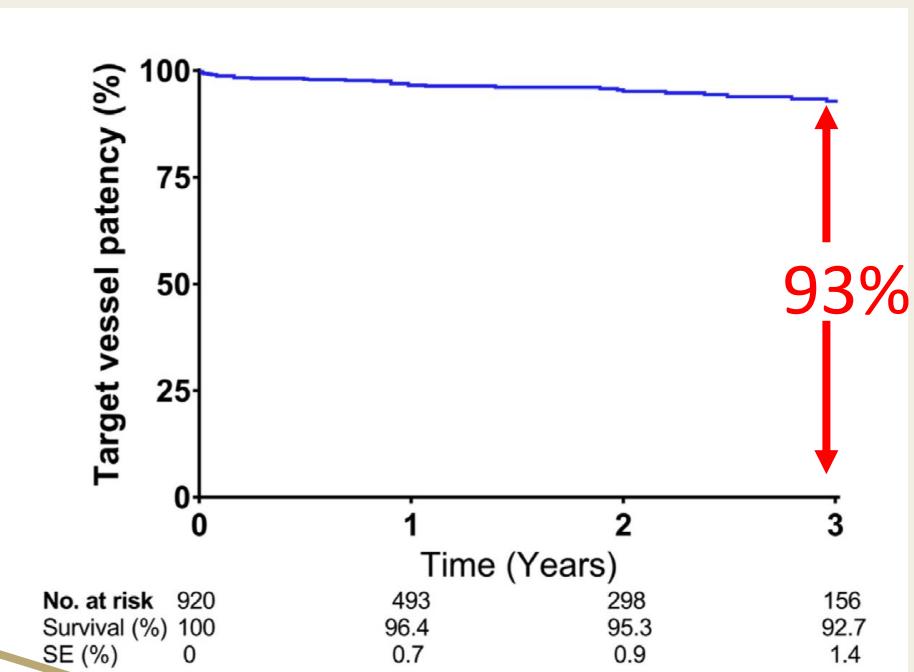
- 15/51 iliac thrombectomy
- 9/51 relining of BSG
- 8/51 coiling of Typ II ELs

Within 30 days postoperatively

18 (5.4%)

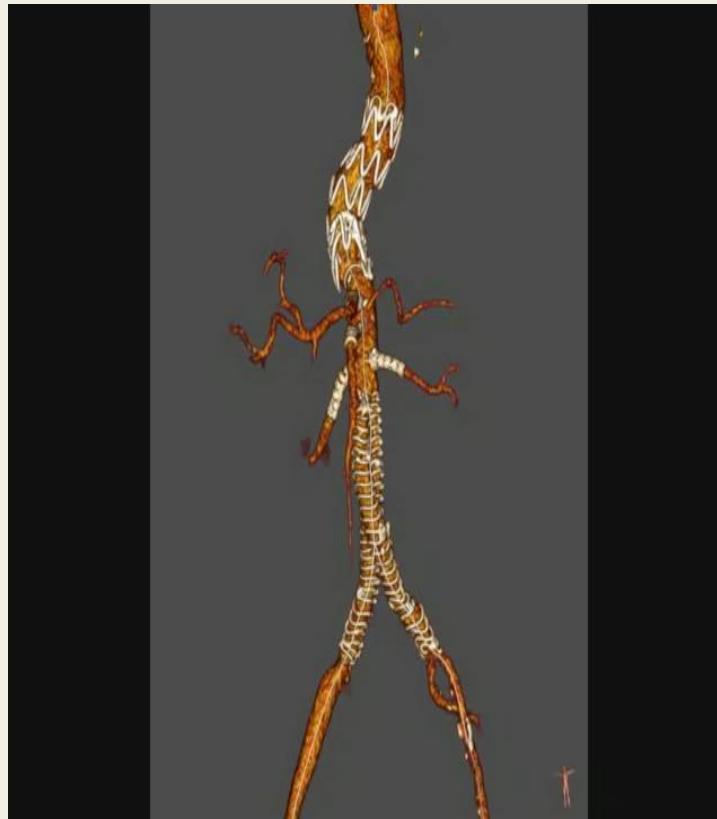
Last follow-up (median, 14.4 months)

51 (15.2%)



Personal experience (1)

- 2019-2021
- 31 patients (4+ fen.)
- 126 BSGs
- 2x monoiliac
- 6x Relay NBS + FEVAR

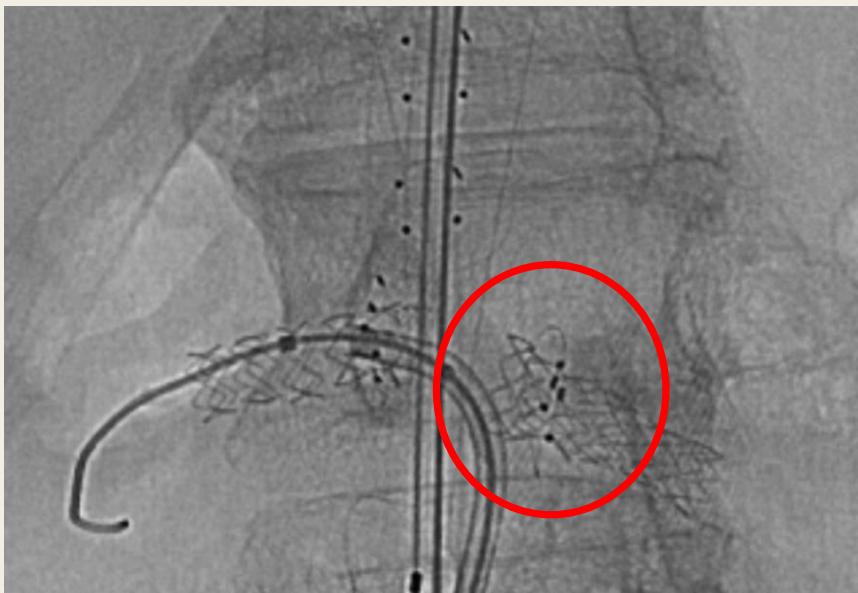


Indication	n
juxtarenal AAA	6 (19%)
pararenal AAA	11 (35%)
type IV TAAA	8 (26%)
type Ia EL	6 (19%)



Personal experience (2)

- mean follow-up 6 months
- 100% with new generation BSG

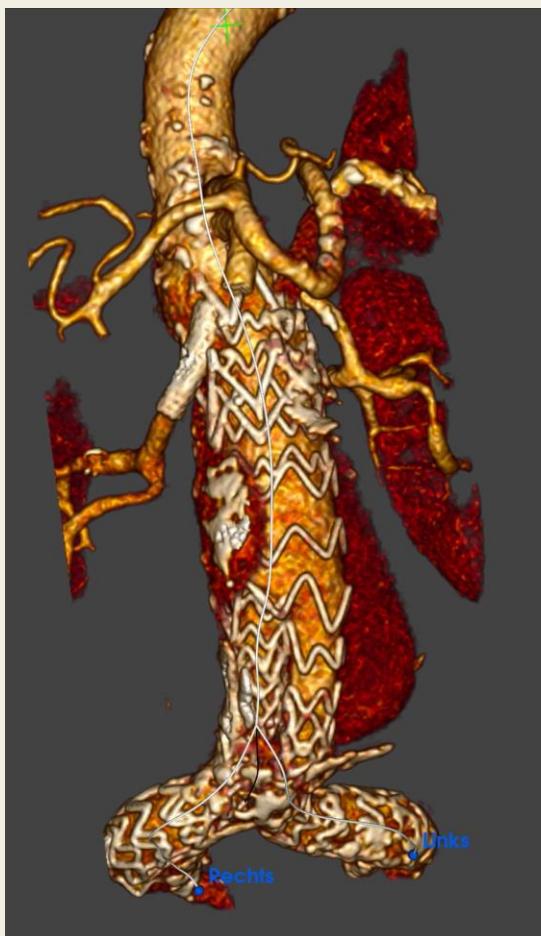


Results	n
Technical success	31/31
Endoleak I/III	0/31
Loss of target vessels (at 30 days)	0/126
Loss of target vessels (at follow-up)	0/126
Iliac leg patency (at 13 months)	1/62 (at 13 months)

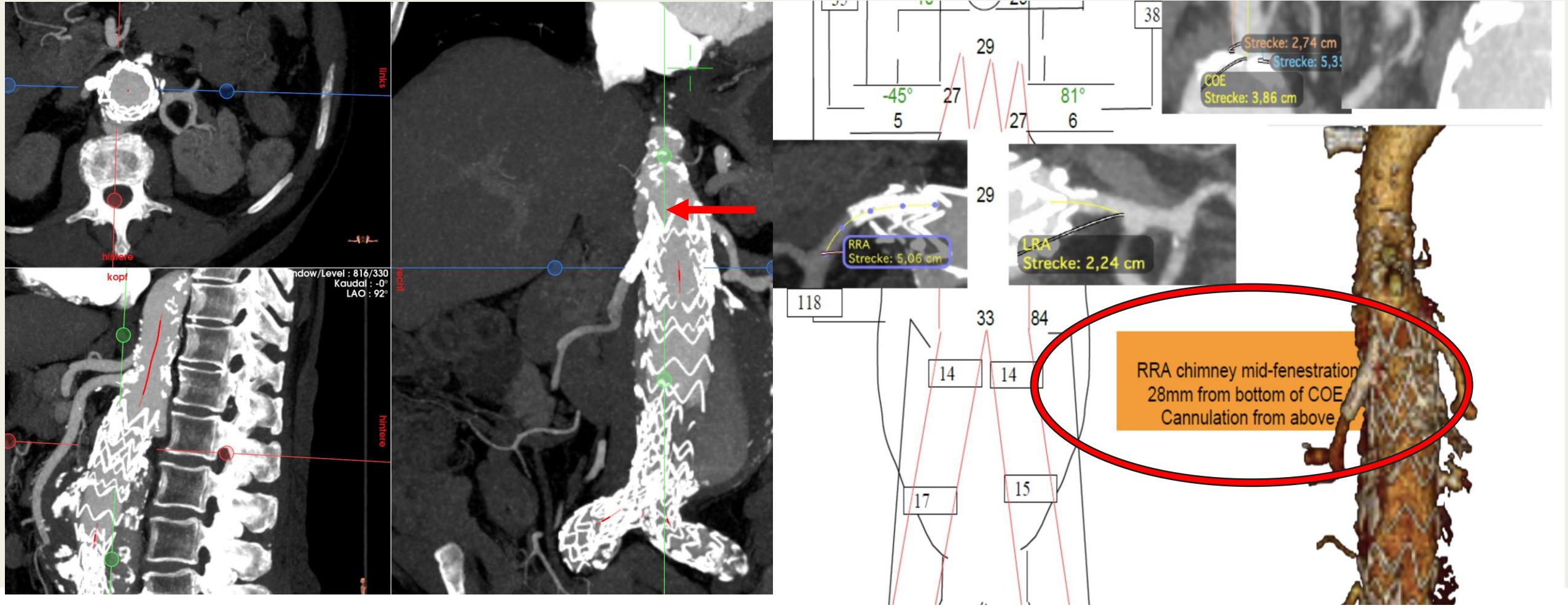


Case presentation (1)

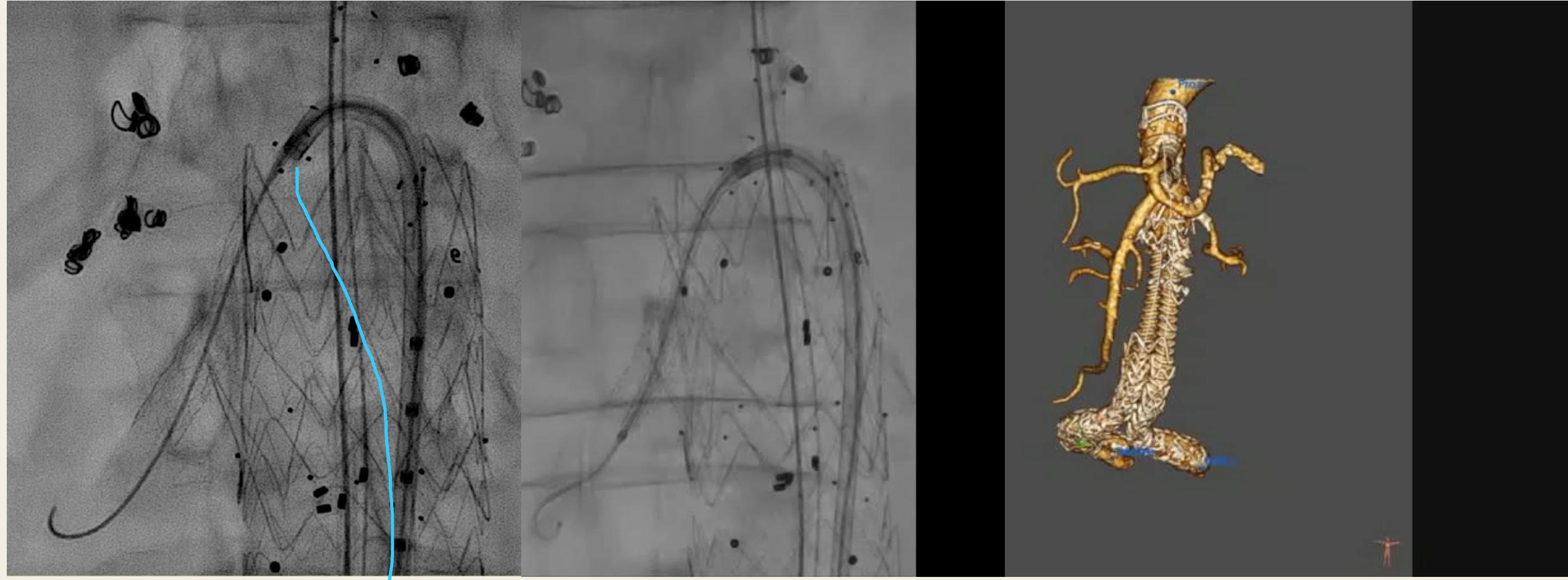
- 78 year old patient
- Coronary artery disease
- hostile abdomen
- EVAR in 2013
- EL IA in 2015
- Chimney for the RRA in 2015



Case presentation (2)



Case presentation (3)



Conclusion

- Anaconda fenestrated is an **intuitive FEVAR** graft
- The implantation is feasible with **reduced target vessel manipulation**
- The combination with **new generation BSGs** is feasible and safe
- **Relay TEVAR** graft may be used for the **proximal landing zone creation**



Thank you!

Mario Lescan
17.12.2021

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