THE 26TH INTERNATIONAL EXPERTS SYMPOSIUM

CRITICAL ISSUES

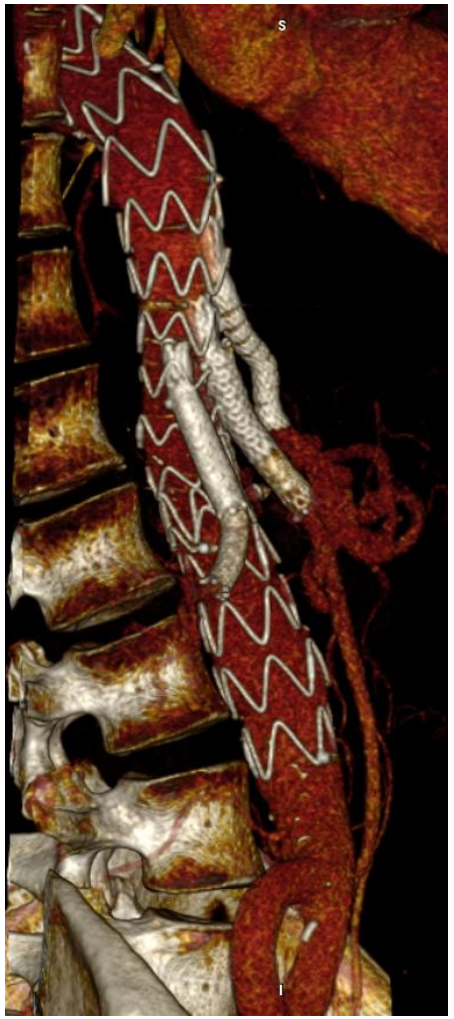
IN AORTIC ENDOGRAFTING

MARCH 21 & 22 2024

COPENHAGEN/MALMÖ

SCANDIC TRIANGELN, MALMÖ

EARLY AND 1-YEAR OUTCOMES OF *OFF-THE-SHELF* BRANCHED ENDOGRAFTS IN THE BRIO REGISTRY



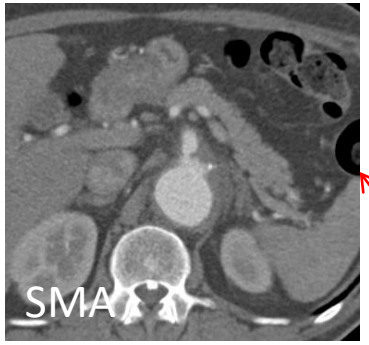
Michele Antonello MD PhD

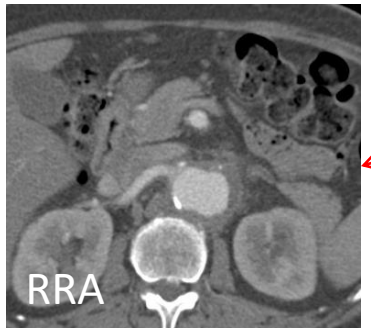
Section of Vascular and Endovascular Surgery
Department of Cardiac, Thoracic, Vascular Sciences and Public Health
Padova University – School of Medicine, Chief: Prof F. Grego

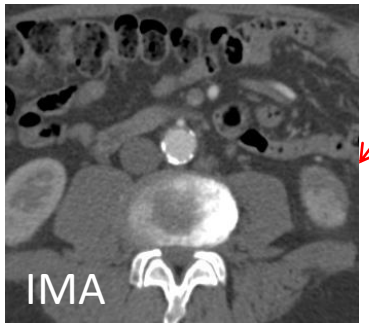
BACKGROUND

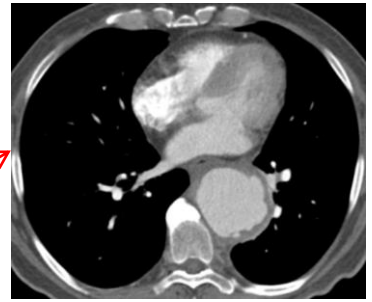
Fenestrated and Branched Endografts

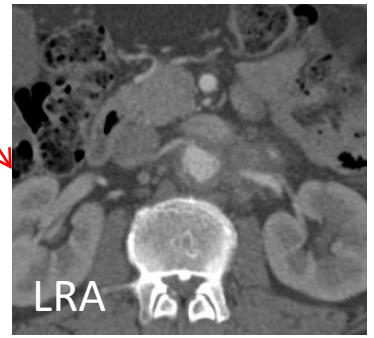
Aleem K. Mirza, Gustavo S. Oderich,
and Bernardo C. Mendes





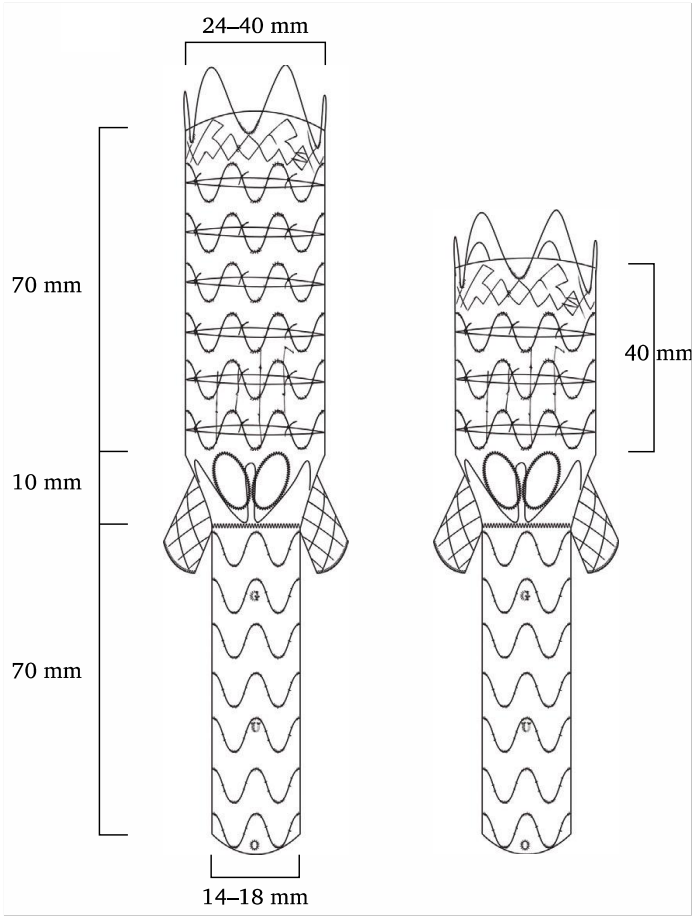




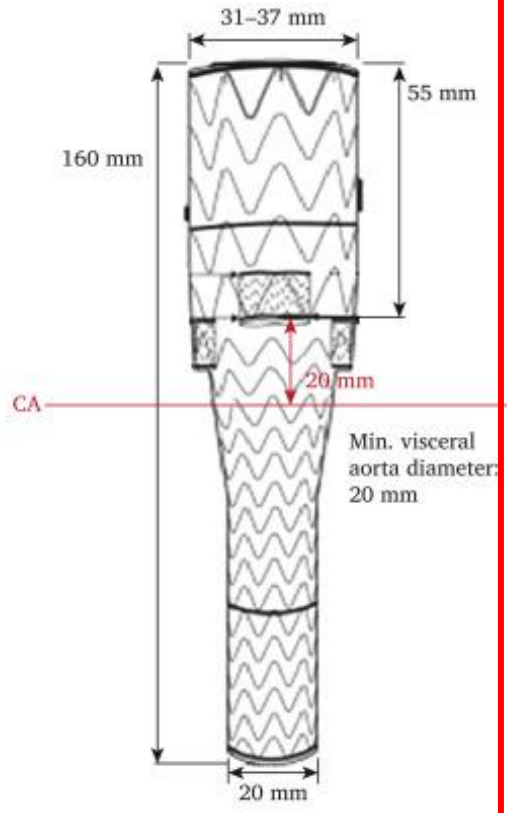


30-40%

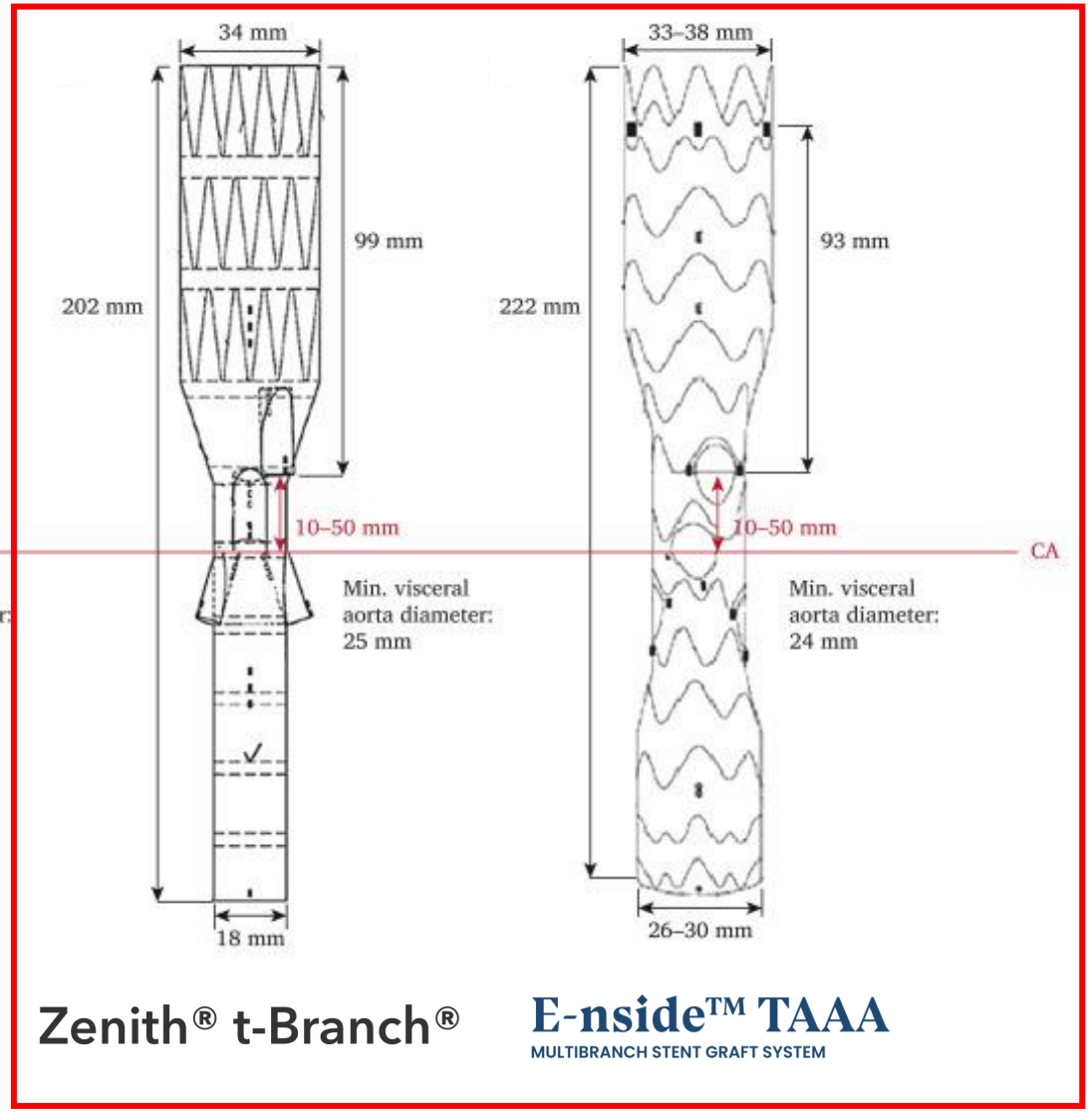
OFF-THE-SHELF



G- Branch



TAMBE



Zenith® t-Branch®

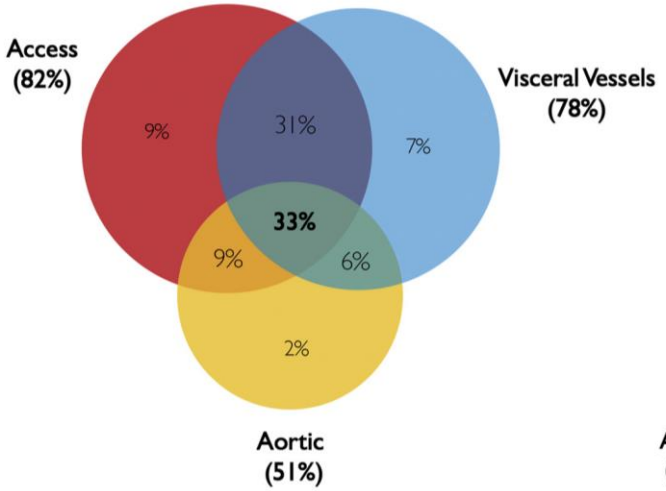
E-nside™ TAAA
MULTIBRANCH STENT GRAFT SYSTEM

Comparison of anatomic feasibility of three different multibranched off-the-shelf stent-grafts designed for thoracoabdominal aortic aneurysms

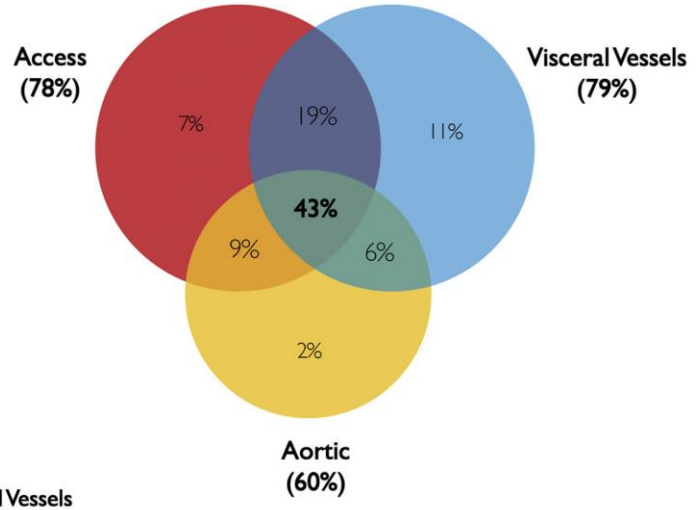
J Vasc Surg 2021

Luca Bertoglio, MD,[a] Alessandro Grandi, MD,[a] Niccolò Carta, MD,[a] Tommaso Cambiaghi, MD,[b] Victor Bilman, MD,[c] Germano Melissano, MD,[a] *and* Roberto Chiesa, MD,[a] *Milan, Italy; Houston, Tex; and Rio de Janeiro, Brazil*

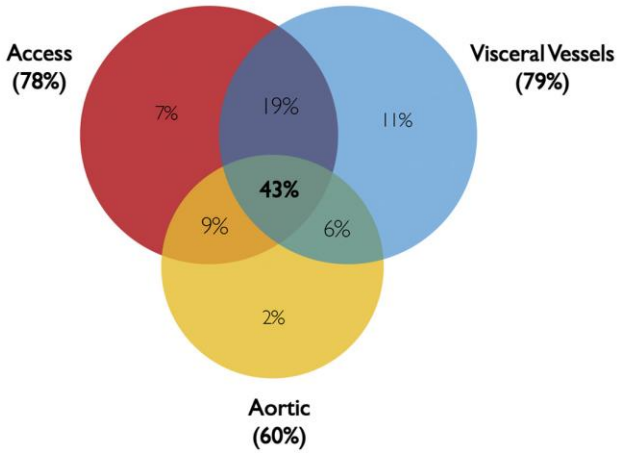
TAMBE



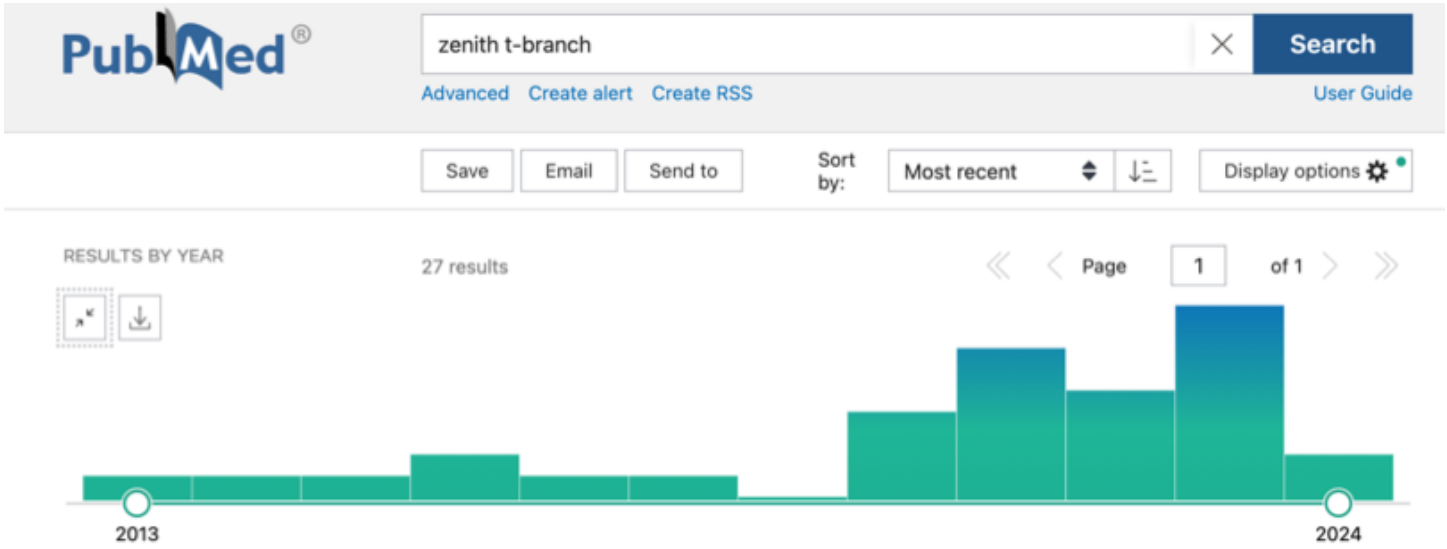
E-NSIDE



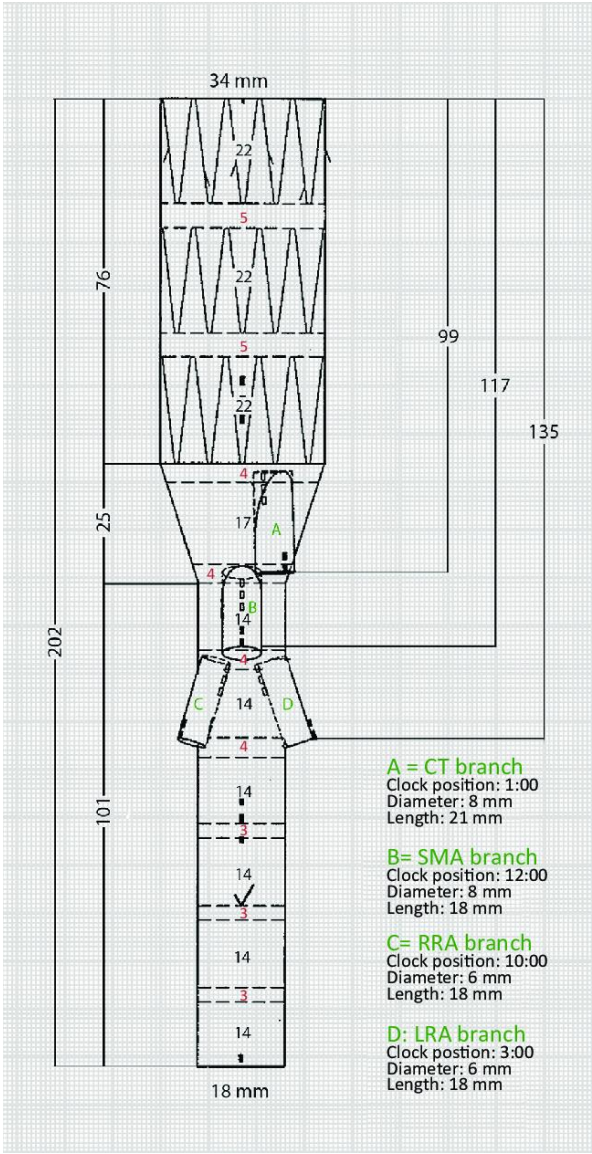
E-NSIDE



Zenith® t-Branch®

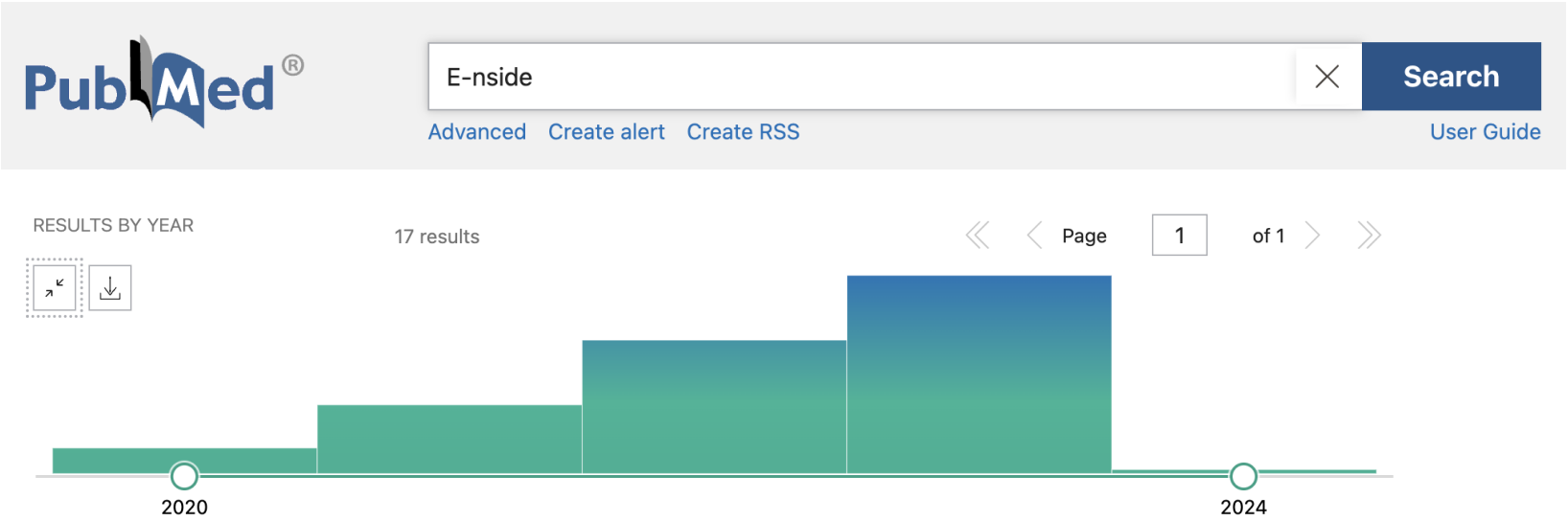


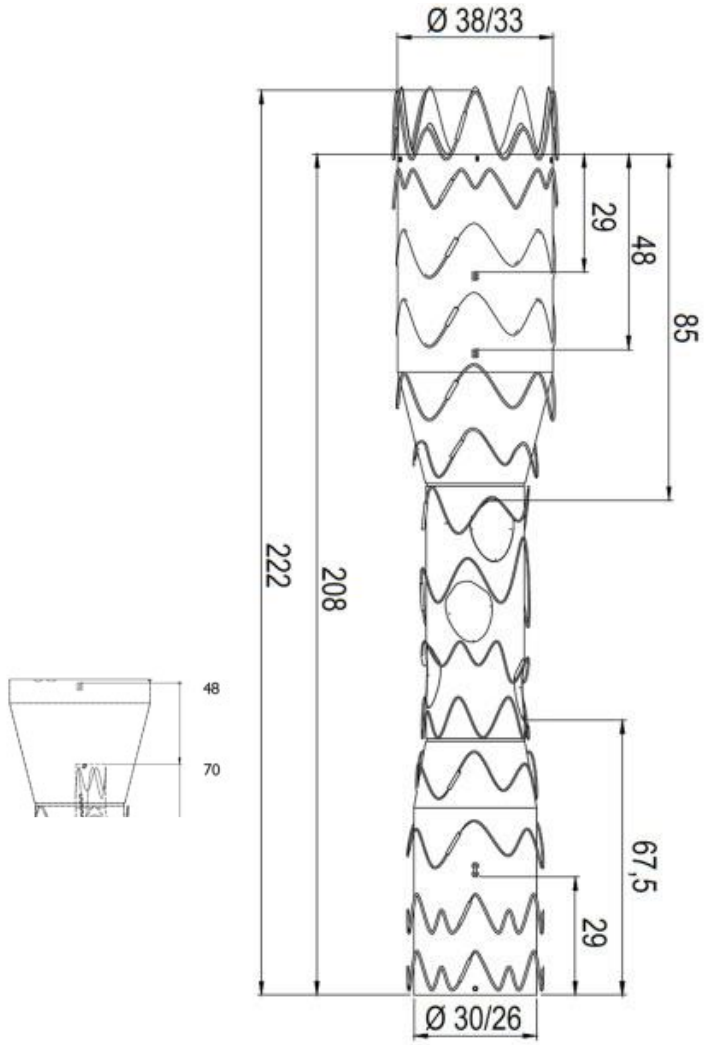
- Single center experience
- Multicenter experience
- National Registry
- International Registry
- Urgent series (100 pts)



E-nside™ TAAA

MULTIBRANCH STENT GRAFT SYSTEM





2 clinical single-center studies
7 feasibility studies
2 commentary/narrative review
4 case series/reports
1 study protocol

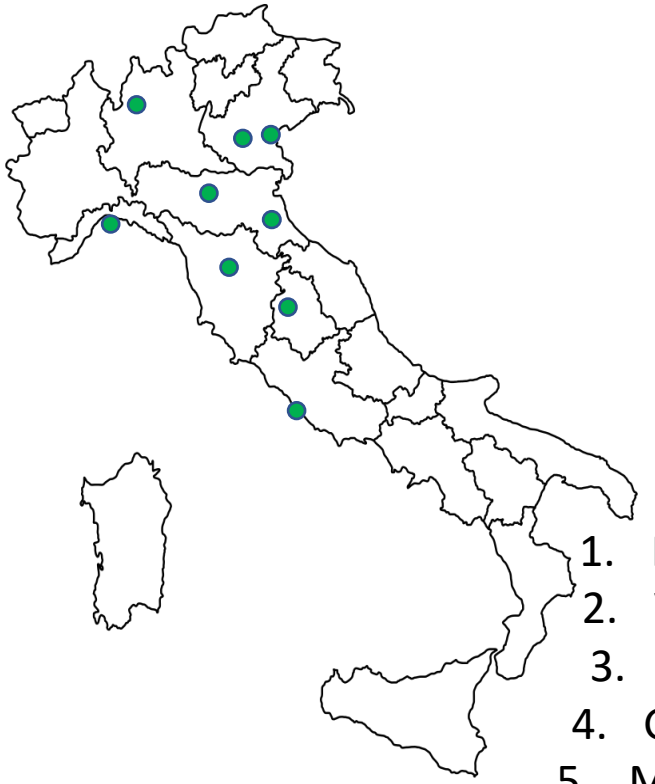
1 multicenter clinical study

Zenith t-Branch and Artivion E-nside™ comparison

Cook Medical Zenith t-Branch Thoracoabdominal Endovascular Graft	Artivion (formerly Cryolife | Jotec) E-nside TAA Multibranch Stent Graft System
Active fixation	No active fixation
Diameter-reducing ties	No diameter-reducing ties
Has a dedicated bifurcated graft	No dedicated bifurcated graft
Not pre-cannulated	Pre-cannulated
Branches reinforced with nitinol ring proximally and distally	Inner branches have a stent proximally
Top of stent graft to branch opening 99 mm	Top of stent graft to branch opening 108 mm
Up to 90° angulation indicated above the target vessels	Up to 75° angulation indicated above the target vessels
Delivery system can be removed after placement of the t-Branch	Delivery system of the E-nside must remain in the vessel until all branches and target arteries are completed
Data since 2012	Data is recent

BRANC INNER vs OUTER: THE BRIO REGISTRY

Manuscript Number	Title	Date Submission Began	Status Date	Current Status
EJVES19674R	Outcomes of off-the-shelf outer branches versus inner branches endografts in the treatment of thoraco-abdominal aortic aneurysm in the BRIO (BRanched Inner – Outer) Study Group	25-01-2024	14-02-2024	Under Review



1. Padova
2. Verona
3. Varese
4. Genova
5. Modena
6. Perugia
7. Firenze Careggi
8. Firenze San Giovanni
9. Roma San Giovanni
10. Roma Gemelli
11. Roma Sapienza
12. Roma Tor Vergata

- 12 high-volume Italian centers using both E-nside and T-branch
- 2020-2023
- Inclusion of TAAA only

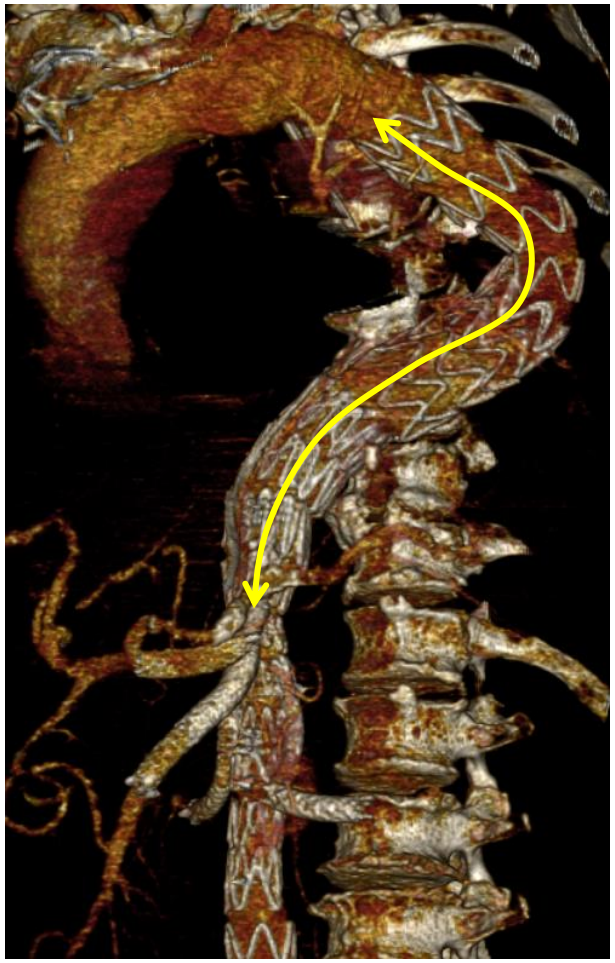
79 E-nside vs **84 T-branch**

BRIO

Preoperative Data

	Overall				Extent I-III			Extent IV		
	Enside (n=79)	**Tbranch (n=84)**	**Total (n=163)**	**p**	**Enside (n=36)**	**Tbranch (n=55)**	***p***	**Enside (n=43)**	**Tbranch (n=29)**	***p***
Aneurysm type				.011			-			-
Extent I-III	36 (45.6%)	55 (65.5%)	91 (55.8%)		36 (100%)	55 (100%)		-	-	
Extent IV	43 (54.4%)	29 (34.5%)	72 (44.%)		-	-		43 (100%)	29 (100%)	
Largest diameter of aortic aneurysm, mm	74.0 ±8.8	74.0 ±8.2	74.0 ±8.5	.61	72.9 ±9.8	73.2 ±8.5	.72	74.8 ±7.8	75.5 ±7.6	.39
Status of aneurysm				.051			.017			.61
Asymptomatic, non ruptured	61 (77.2%)	67 (79.7%)	128 (78.5%)		24 (68.6%)	45 (79.6%)		36 (85.7%)	23 (79.3%)	
Symptomatic non ruptured	16 (20.3%)	10 (11.9%)	27 (16.5%)		10 (27.8%)	6 (11.1%)		6 (11.9%)	4 (13.8%)	
Contained rupture	1 (1.2%)	7 (8.3%)	8 (4.9%)		0 (0%)	5 (9.3%)		1 (2.4%)	2 (6.9%)	
Minimum visceral aortic diameter, mm	36.0 ±11.2	38.1 ±12.5	36.7 ±11.6	.53	38.6 ±11.6	40.0 ±12.6	.81	33.8 ±10.6	27.2 ±3.7	.039

BRIO

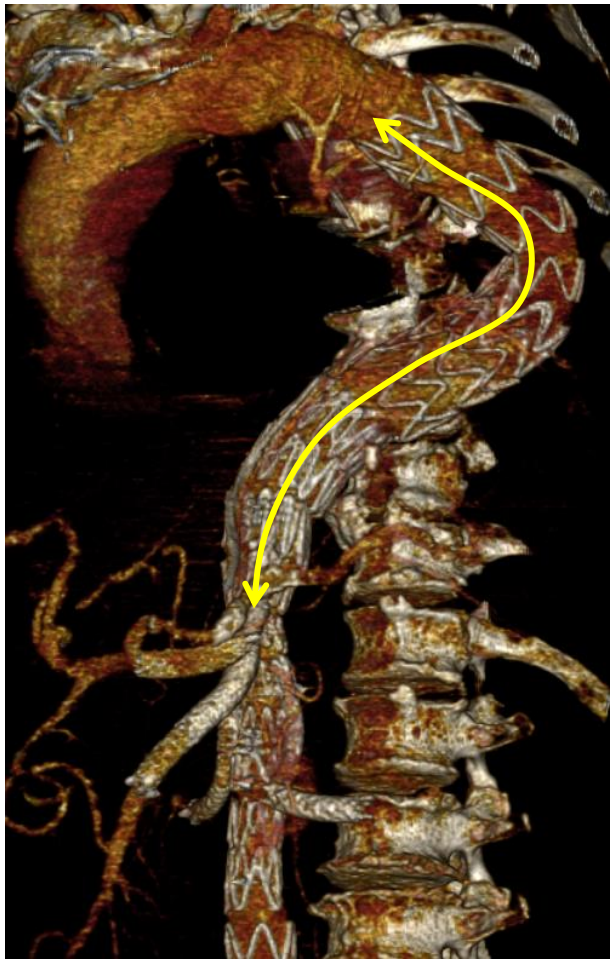


Length of Thoracic Coverage

	E-nside	T-branch	
Extent IV	124±22 mm	183 ±37 mm	P=.024
Extent I-III	211 ±35 mm	193 ±46 mm	P=.089
Adjunctive Tevar	34 (43%)	59 (69%)	P< .001
Extent IV	6 (13.9%)	22 (75.8%)	P< .001

BRIO

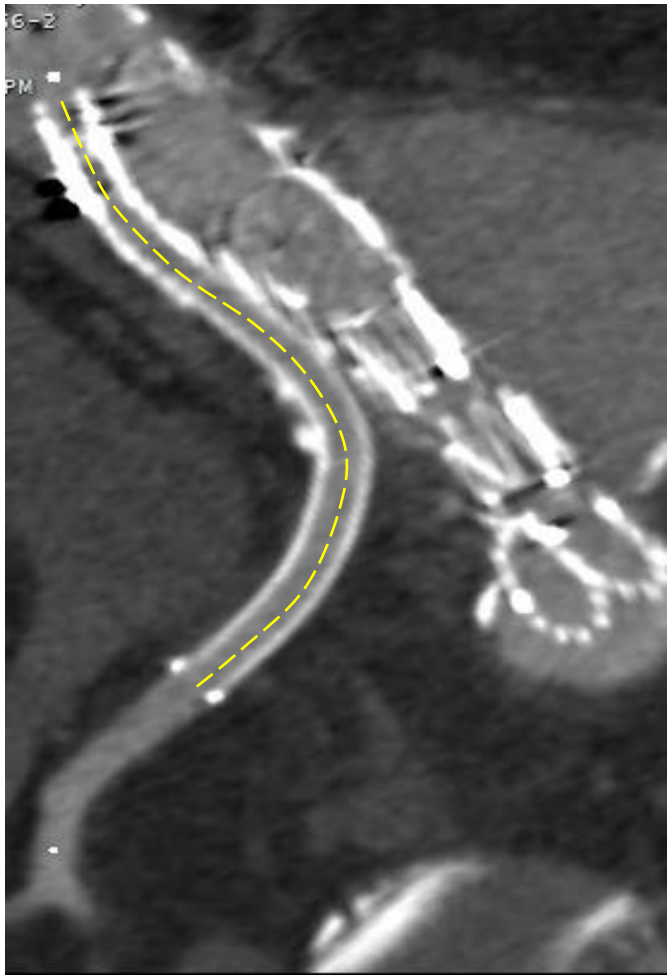
Spinal Cord Ischemia (Elective Repair)



	E-nside	T-branch	
Extent IV	2 (5%)	1 (3%)	P=.80
Extent I-III	2 (6%)	6 (10%)	P=.38
Overall	4 (5.0%)	9 (10.7%)	P=.21

BRIO

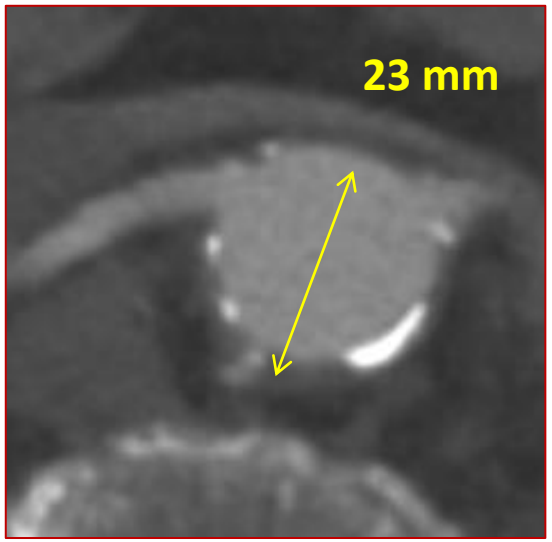
Branch Length



	E-nside	T-branch	
CT-SMA	59±19 mm	61 ±15 mm	P=.90
Renals	65±15 mm	76±18 mm	P=.004
RRA Adjunctive BMS	17 (21.5%)	8 (9.5%)	P=.004
Antegrade Approach	68 (86.1%)	51 (60.7%)	P=.002

BRIO

Narrow Visceral Lumen <25mm



	E-nside	T-branch	
Narrow Lumen	28 (35%)	19 (22%)	P=.84

TECHNICAL SUCCESS WAS 100%

BRIO

30-days results

	Overall				Extent I-III			Extent IV		
	Enside (n=79)	**Tbranch (n=84)**	**Total (n=163)**	***p***	**Enside (n=36)**	**Tbranch (n=55)**	***p***	**Enside (n=43)**	**Tbranch (n=29)**	***p***
Death	1 (1.2%)	2 (2.3%)	3 (1.8%)	.62	1 (2.7%)	1 (1.8%)	.72	0 (0%)	1 (3.4%)	.22
Any MAEs	14 (17.7%)	18 (21%)	36 (22.1%)	.55	6 (16.7%)	11 (20%)	.67	7 (16.3%)	7 (24.1%)	.41
Major stroke	2 (2.5%)	0 (0%)	2 (1.2%)	.34	1 (2.7%)	0 (0%)	.64	1 (2.3%)	0 (0%)	.45
SCI	4 (5.0%)	9 (10.7%)	13 (7.9%)	.21	2 (5.5%)	8 (14.5%)	.17	2 (4.6%)	1 (3.4%)	.80
Elective repair	4 (5.0%)	7 (8.2%)	11 (6.7%)	.43	2 (5.5%)	6 (10.8%)	.38	2 (4.6%)	1 (3.4%)	.80
Urgent repair	0 (0.0%)	2 (2.3%)	2 (1.2%)	.34	0 (0%)	1(1.8%)	.64	0 (0%)	1 (3.4%)	.45
Access complication	10 (12.6%)	8 (9.5%)	18 (11.0%)	.52	5 (13.9%)	5 (9.1%)	.47	5 (11.6%)	3 (10.3%)	.86
Adjunctive EVAR	42 (53.2%)	67 (79.8%)	109 (66.9%)	<.001	12 (33.3%)	41 (74.5%)	<.001	30 (69.8%)	26 (89.7%)	.046

TECHNICAL SUCCESS WAS 100%

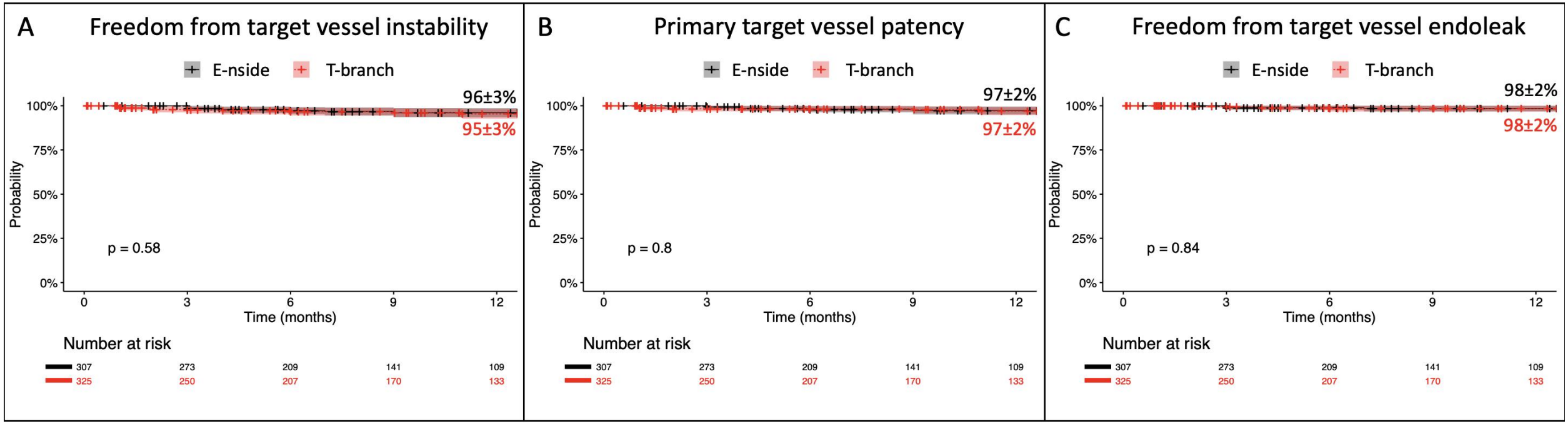
BRIO

30-days results

	Overall				Extent I-III			Extent IV		
	Enside (n=79)	**Tbranch (n=84)**	**Total (n=163)**	***p***	**Enside (n=36)**	**Tbranch (n=55)**	***p***	**Enside (n=43)**	**Tbranch (n=29)**	***p***
Total OR time, min	271±103	264±82	267±74	.12	289.2 ±90.1	268.5 ±83.8	.49	260.2 ±118.3	248.5 ±72.0	.16
Total Contrast, ml	172±115	196±83	184±96	.042	186±115	224±83	.21	165±108	181±74	.15
Fluoroscopy time, min	95± 49	87±39	92±45	.39	100.1 ±20	105.4 ±17	.17	85.1 ±13	79.3 ±15	.12
Radiation dose, Gy*cm^2	312.1±286	331.2±267	318.7±239	.62	319.9±294	345.9±290	.67	308.9±260	325.2±283	.43

BRIO

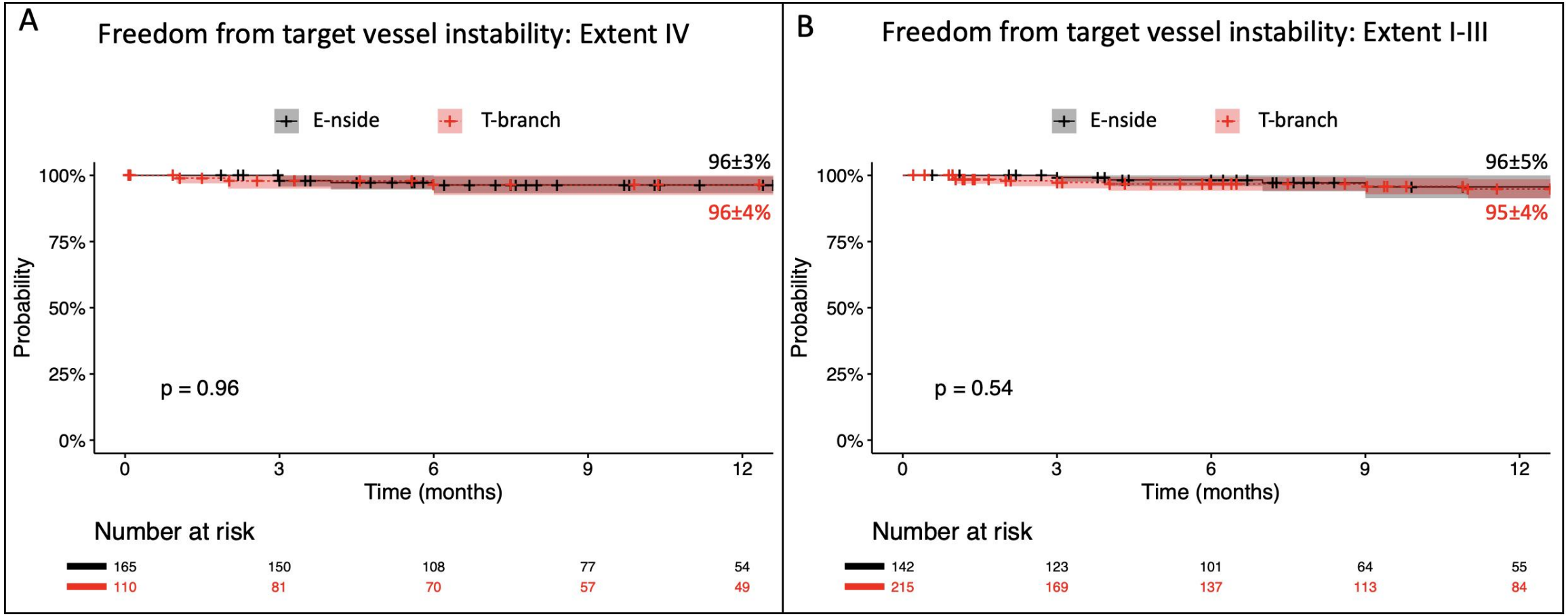
1 YEAR OUTCOMES



A narrow visceral aorta (<25 mm) did not determine differences in 1 year TVI (77% [95%CI 72-100] vs 82% [75-100]; p=.62), as well as type of stent.

BRIO

1 YEAR OUTCOMES



CONCLUSIONS

- ✓ **BOTH THE E-NSIDE AND THE T-BRANCH PROVIDED EXCELLENT EARLY AND 1 YEAR RESULTS EVEN IN NARROW ANATOMY**
- ✓ **THE E-NSIDE MAY REQUIRE:**
  - ➢ **SHORTER THORACIC AORTA COVERAGE,**
  - ➢ **SHORTER BRIDGING LENGTH OF THE RENAL ARTERIES (MORE NEED FOR RRA REINFORCEMENT)**
  - ➢ **LESS FREQUENT IMPLANTATION OF TEVAR OR EVAR DEVICES**
- ✓ **NEED OF LONGER FU**

THE 26TH INTERNATIONAL EXPERTS SYMPOSIUM

CRITICAL ISSUES

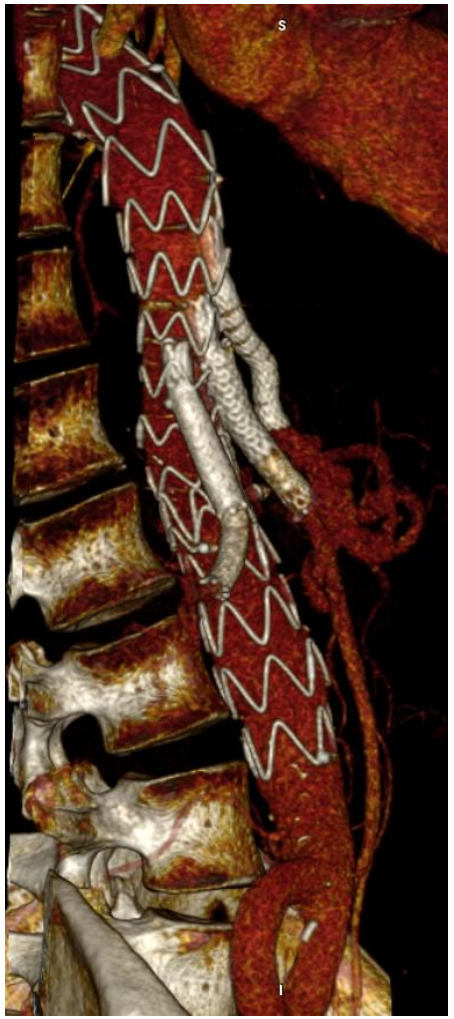
IN AORTIC ENDOGRAFTING

MARCH 21 & 22 2024

COPENHAGEN/MALMÖ

SCANDIC TRIANGELN, MALMÖ

EARLY AND 1-YEAR OUTCOMES OF *OFF-THE-SHELF* BRANCHED ENDOGRAFTS IN THE BRIO REGISTRY



Michele Antonello MD PhD

Section of Vascular and Endovascular Surgery
Department of Cardiac, Thoracic, Vascular Sciences and Public Health
Padova University – School of Medicine, Chief: Prof F. Grego