New Treatment Options for the Aortic Arch: What's Coming Next?

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Helios

Disclosures

My hospital receives speaking honoraria / consulting on my behalf from:

- Edwards Lifesciences
- Abbott
- Medtronic
- CryoLife (Artivion)

Aortic Arch Endovascular Options

Terumo Aortic	W.L. Gore & Associates	Cook Medical	Endospan Ltd. / Jotec GmbH
			
Relay Plus Double-Branched Device	TAG Thoracic Branch Endoprosthesis	Zenith Arch Branched Device	Nexus Stent Graft System

Aortic Arch Endovascular Procedures: Anatomic Patient Suitability

n = 377 patients undergoing open aortic arch surgery at a large volume center

Table 3. Patient Suitability Result by Arch Pathological Feature in Relation to the Total Arch Pathological Feature Cohort

Variable	Thoracic Aneurysm	Type A Dissection	Type B Dissection	Other	Patients Suitable
Terumo Relay Plus Double-Branched	19/110 (17.3)	Excluded 0/237 (0)	4/16 (25)	3/14 (21.4)	26/377 (6.9)*
Gore TAG Thoracic Branch Endoprosthesis	28/110 (25.5)	6/237 (2.5)	9/16 (56.3)	3/14 (21.4)	46/377 (12.2)†
Cook Zenith Arch Branched Device	13/110 (11.8)	2/237 (0.8)	4/16 (25.0)	2/14 (14.3)	21/377 (5.5)
Endospan/Jotec Nexus Stent Graft System	15/110 (13.6)	8/237 (3.4)	5/16 (31.3)	3/14 (21.4)	31/377 (8.2)‡
Any device/total cohort	34/110 (30.9)	11/237 (4.6)	10/16 (62.5)	4/14 (28.6)	59/377 (15.6)
Any device/measured	34/56 (60.7)	11/80 (13.8)	10/11 (90.9)	4/6 (66.7)	59/153 (38.6)

Creation of a Scorecard to Predict In-Hospital Death in Patients Undergoing Operations for Acute Type A Aortic Dissection

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Jochann Gerhard, and Friedrich W. Mohr, MD, PhD

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Background. This study evaluated preoperative predictors of in-hospital death for the surgical treatment of patients with acute type A aortic dissection (Type A) and created an easy-to-use scorecard to predict in-hospital death.

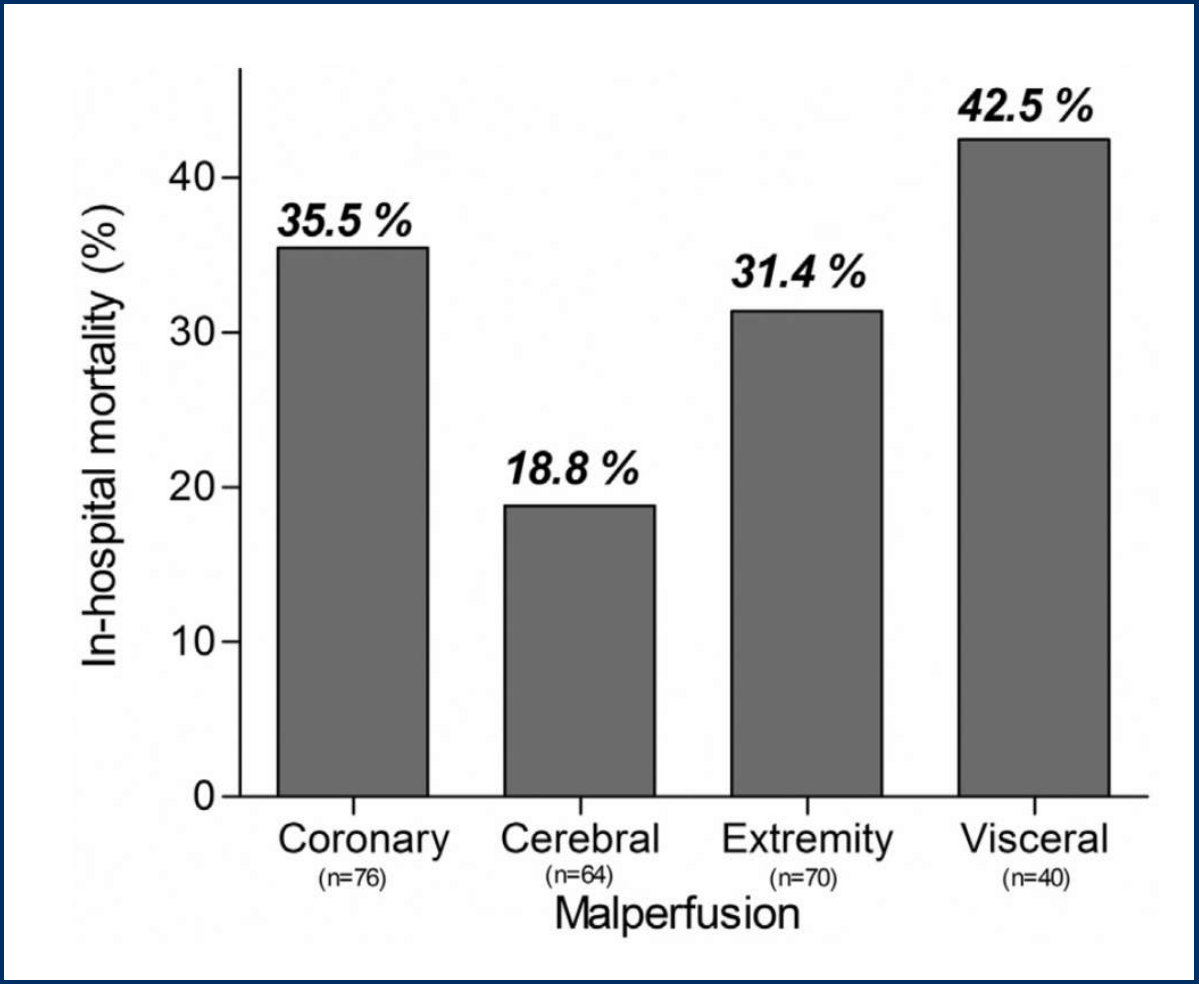
Methods. We reviewed retrospectively all consecutive patients who underwent operations for acute Type A between 1996 and 2011 at 2 tertiary care institutions. A logistic regression model was created to identify independent preoperative predictors of in-hospital death. The results were used to create a scorecard predicting operative risk.

Results. Emergency operations were performed in 534 consecutive patients for acute Type A. Mean age was 61 ± 14 years and 36.3% were women. Critical preoperative state was present in 31% of patients and malperfusion of one or more end organs in 36%. Unadjusted in-hospital mortality was 18.7% and not significantly different between institutions. Independent predictors of in-hospital death were age 50 to 70 years (odds ratio [OR], 3.8; $p = 0.001$), age older than 70 years (OR, 2.8; $p = 0.03$), critical preoperative state (OR, 3.2; $p < 0.001$), visceral malperfusion (OR, 3.0; $p = 0.003$), and coronary artery disease (OR, 2.2; $p = 0.006$). Age younger than 50 years (OR, 0.3; $p = 0.01$) was protective for early survival. Using this information, we created an easily usable mortality risk score based on these variables. The patients were stratified into four risk categories predicting in-hospital death: less than 10%, 10% to 25%, 25% to 50%, and more than 50%.

Conclusions. This represents one of the largest series of patients with Type A in which a risk model was created. Using our approach, we have shown that age, critical preoperative state, and malperfusion syndrome were strong independent risk factors for early death and could be used for the preoperative risk assessment.

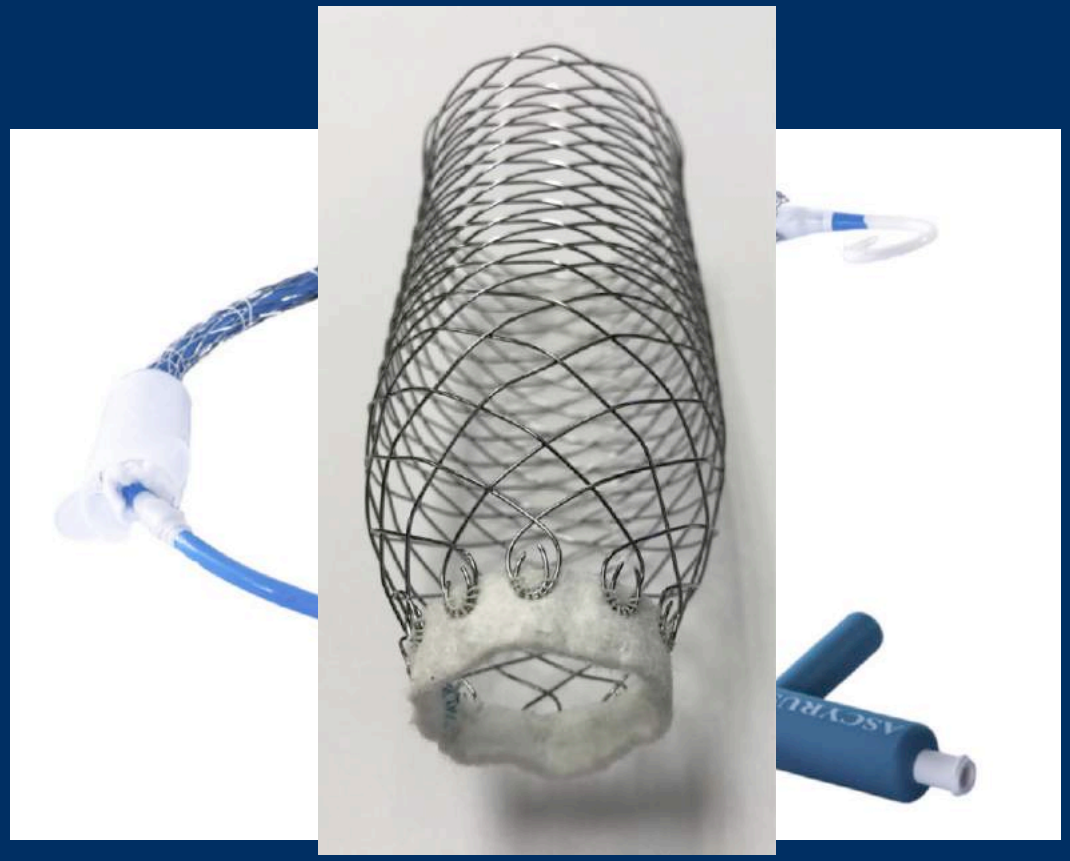
(Ann Thorac Surg 2016;101:1700–6)

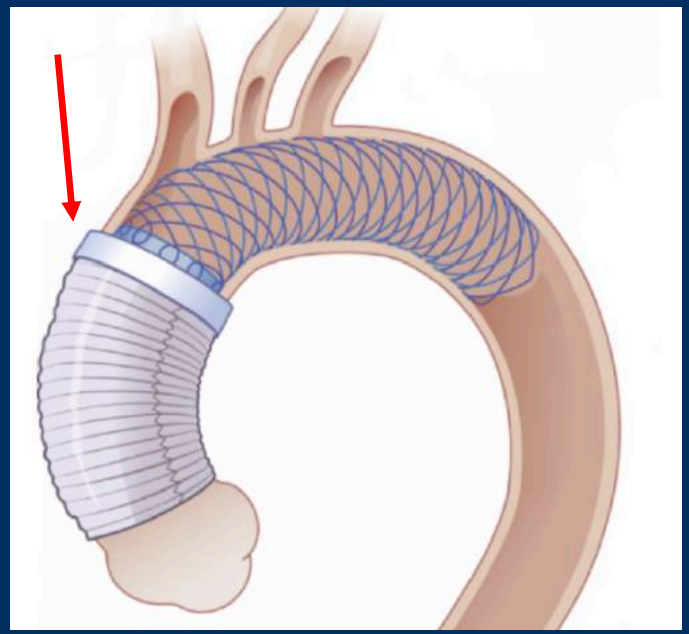
Effect of Malperfusion on Type A Mortality



Leontyev S et al, *Ann Thorac Surg* 2016;101:1700-6

Simplified Hybrid-Prothesis for Type A Dissection





Ascyrus (CryoLife / Artivion) Medical Dissection Stent

What Causes Aortic Growth Post-Type A Repair?

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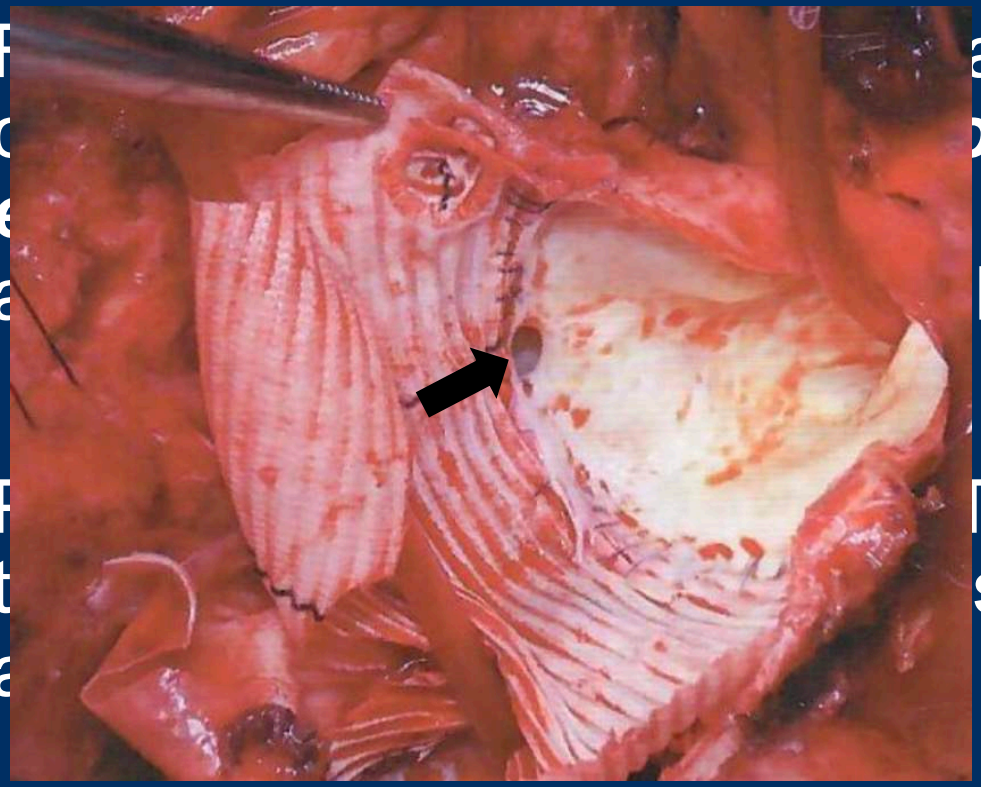
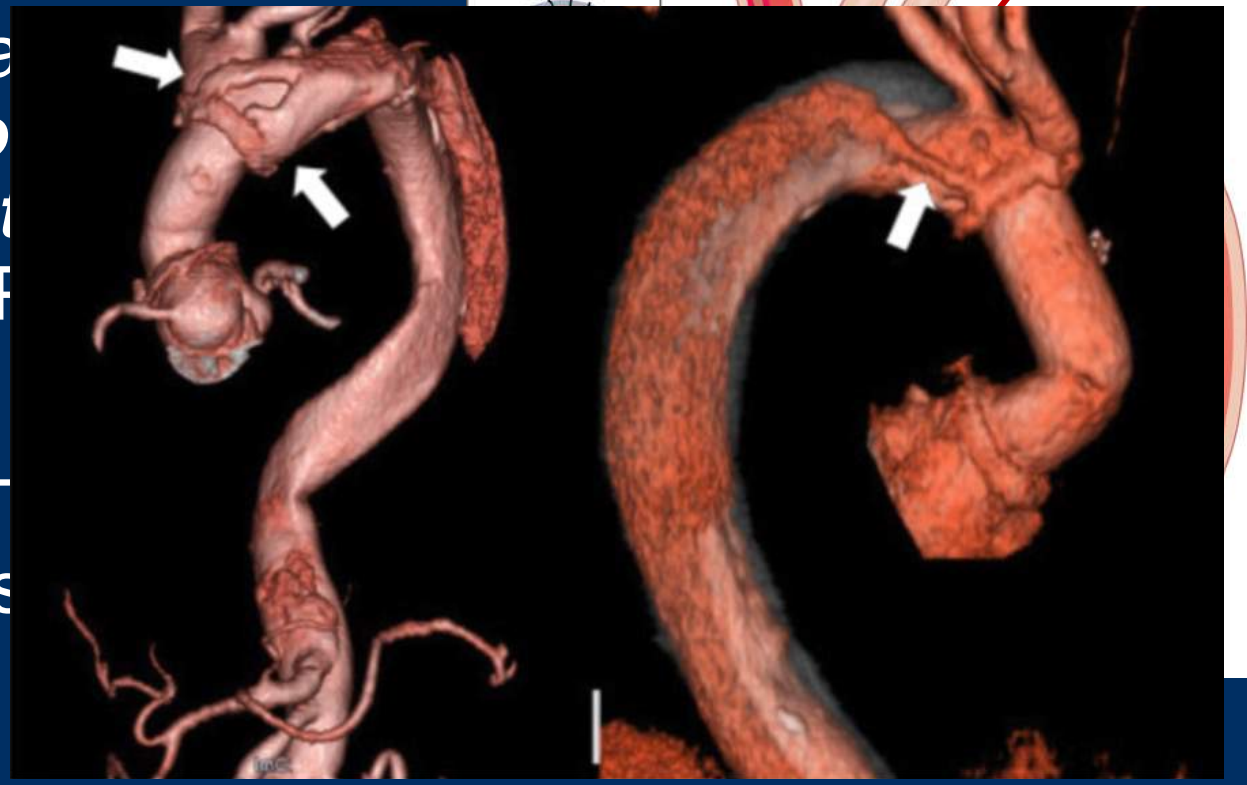


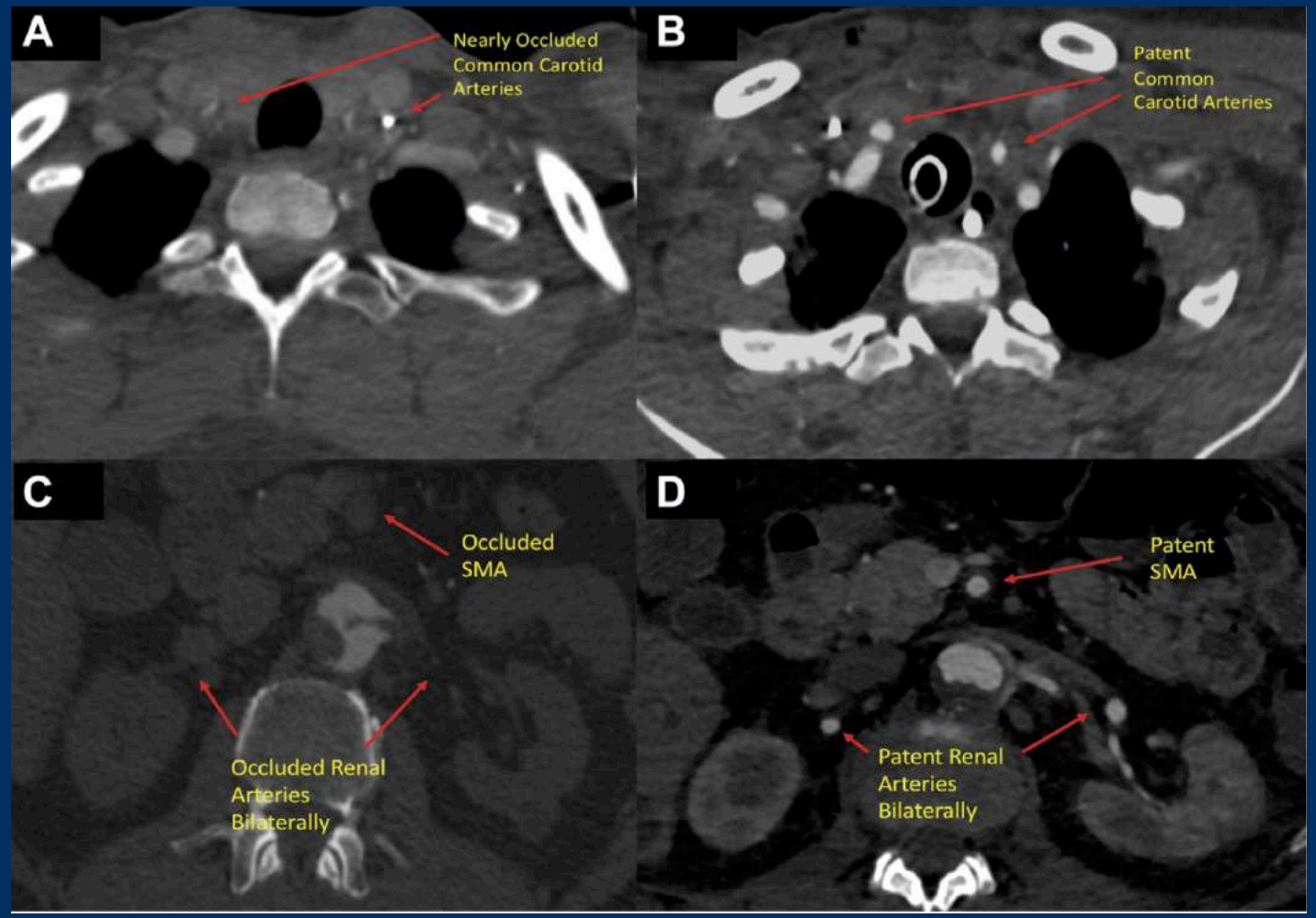


Bing F, et al. Vascular and Endovascular Surgery 2014;48(3): 239-245
Yasuda S, et al. Circ J doi: 10.1253/circj.CJ-16-0462
Tamura K, et al. Eur J Cardio-Thorac Surg 2017;(52): 867–873
Rylski B, et al. Eur J Cardio-Thorac Surg 2017:(51):1127-1134

Correction of Malperfusion Post-Type A Repair with Ascyrus Device

Preop

Postop



Bozso, Ann Thorac Surg 2019;108:1768-75

Midterm Outcomes of the Dissected Aorta Repair Through Stent Implantation Trial

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Background. The intimal flap at the distal aortic anastomosis after standard aortic dissection repair creates distal anastomotic new entry, leading to false lumen (FL) pressurization and true lumen (TL) collapse and resulting in increased mortality, malperfusion, aortic growth, and reinterventions. The Ascyrus Medical Dissection Stent (AMDS; Ascyrus Medical, Boca Raton, FL) is a hybrid prosthesis that seals and depressurizes the FL at the distal anastomosis while expanding and pressurizing the TL.

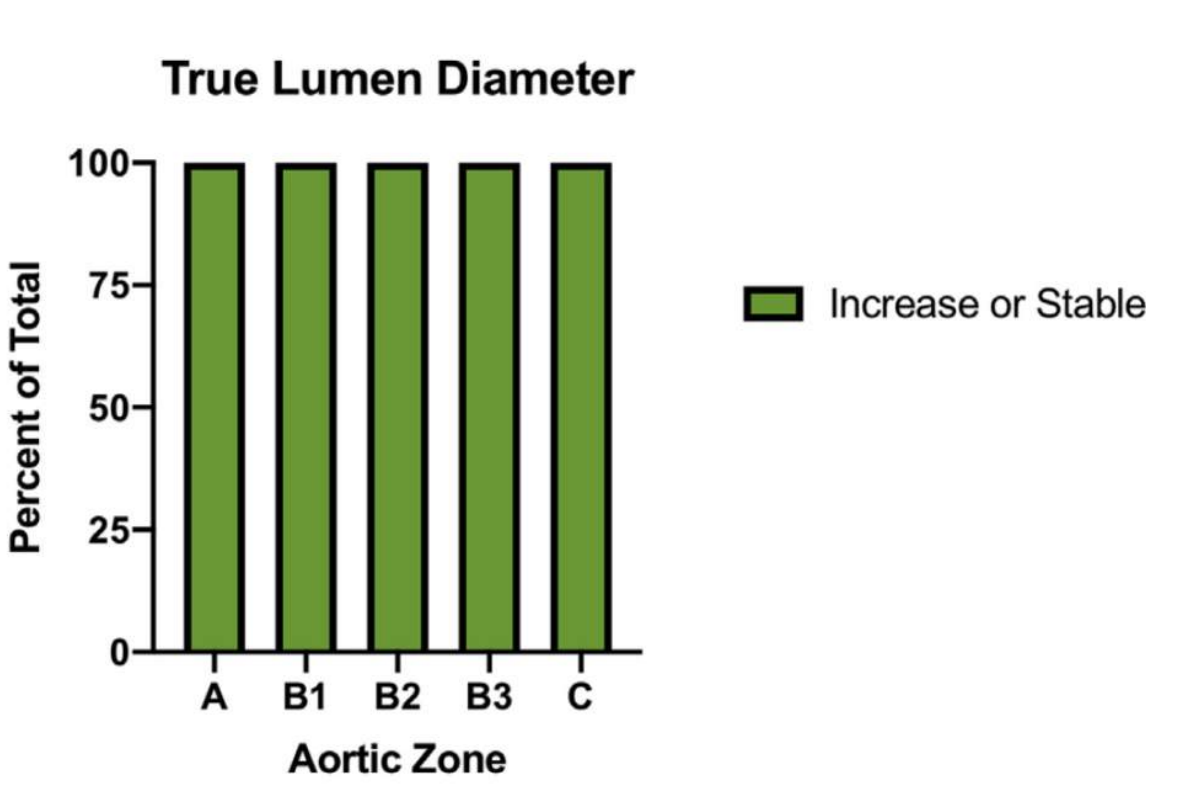
Methods. The Dissected Aorta Repair Through Stent Implantation trial is a prospective, nonrandomized, international type A dissection trial where patients with acute DeBakey I dissections were enrolled between March 2017 and January 2019. Forty-seven patients were enrolled (median age, 62.5; 67.4% men) with a median follow-up of 631 days.

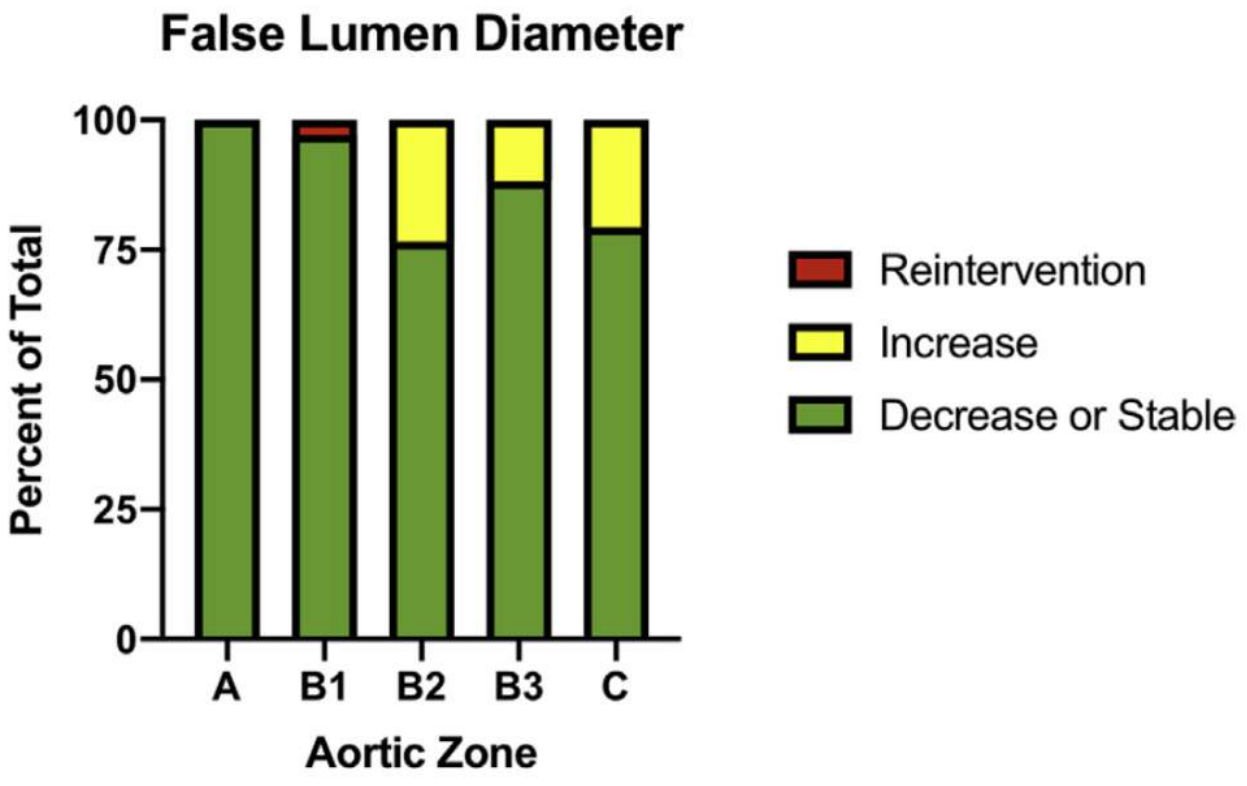
Results. All patients underwent emergent surgical repair with successful AMDS implantation. One patient was excluded because of use in iatrogenic dissection. Overall mortality at 30 days and 1 year was 13.0% (6/46) and 19.6% (9/46), whereas new strokes occurred in 6.5% (3/46). Over 95% of vessel malperfusions resolved because of AMDS-induced TL expansion, including 3 patients with preoperative paralysis. Positive remodeling of the aortic arch occurred in 100% of cases with complete obliteration or thrombosis of the FL in 74%. In the proximal descending thoracic aorta positive remodeling occurred in 77% and complete obliteration or FL thrombosis in 53% of cases.

Conclusions. AMDS facilitates single-stage management of malperfusion and induces positive remodeling of the aortic arch through effective sealing of the distal anastomotic FL, depressurization of the FL with expansion, and pressurization of the TL. Importantly the use of AMDS is safe and reproducible.

(Ann Thorac Surg 2021;111:463-71)

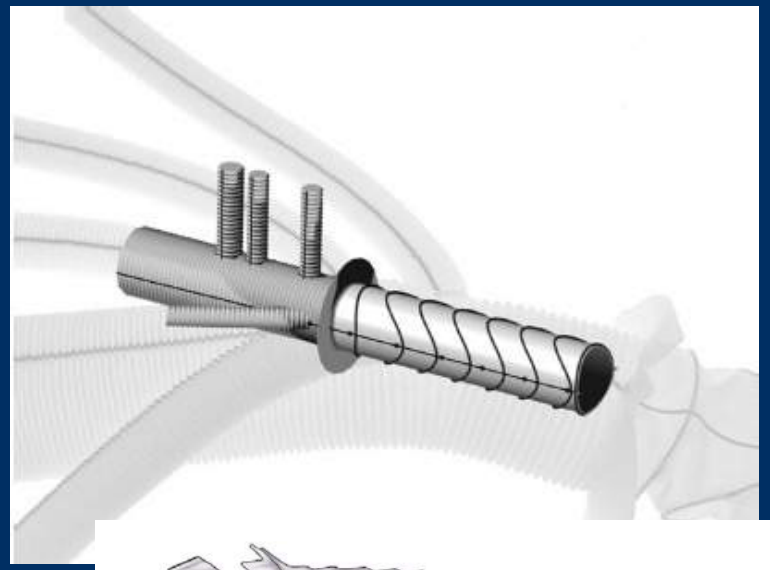
Aortic Remodeling Post-Type A Repair with Ascyrus

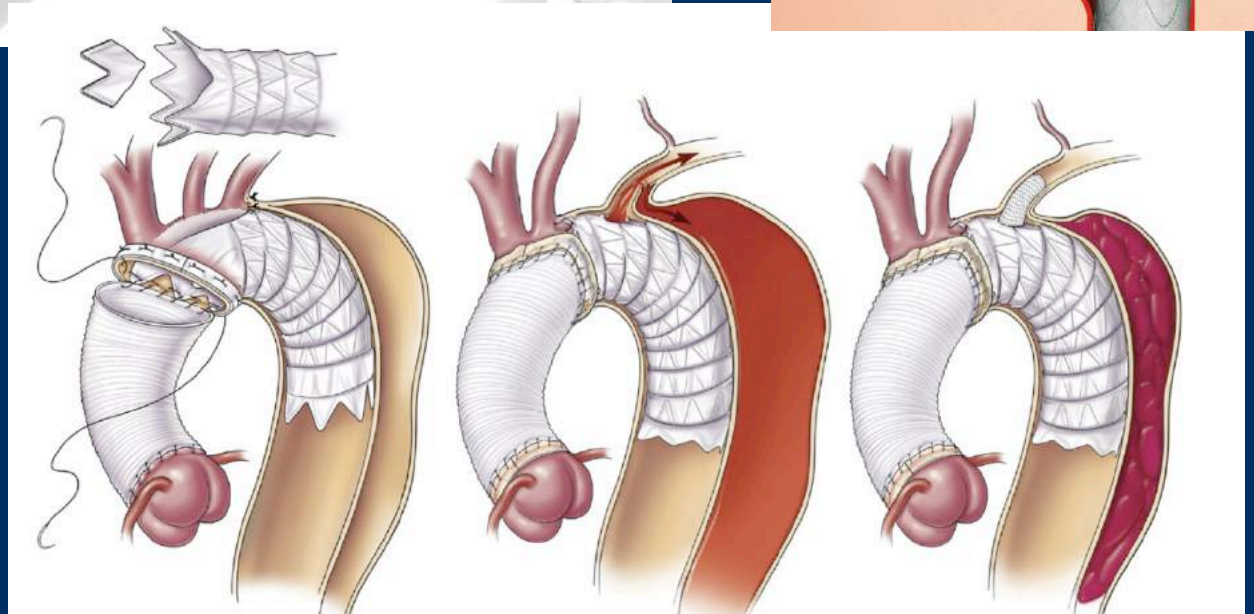




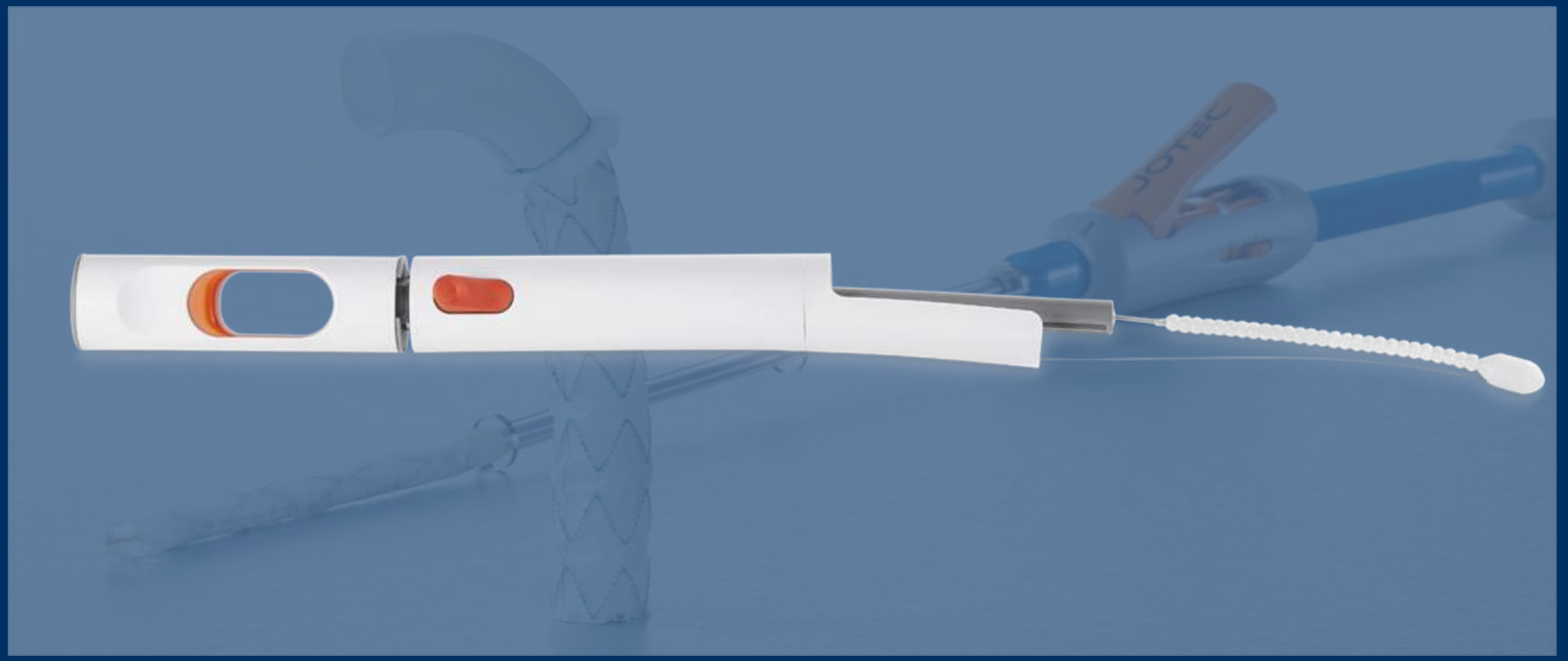
Bozso, Ann Thorac Surg 2021;111:463-71

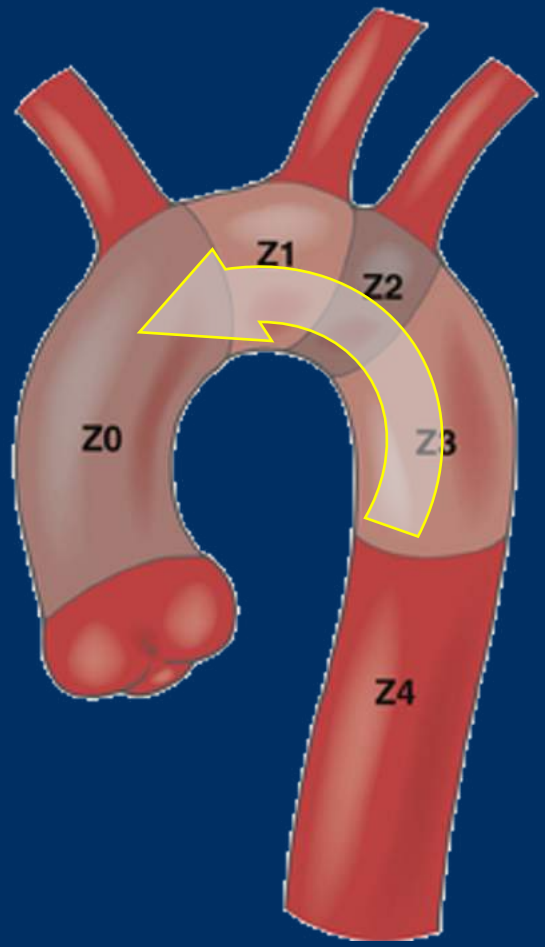
Frozen Elephant Trunk For Aneurysmal Disease





Frozen Elephant Trunk: What‘s New?



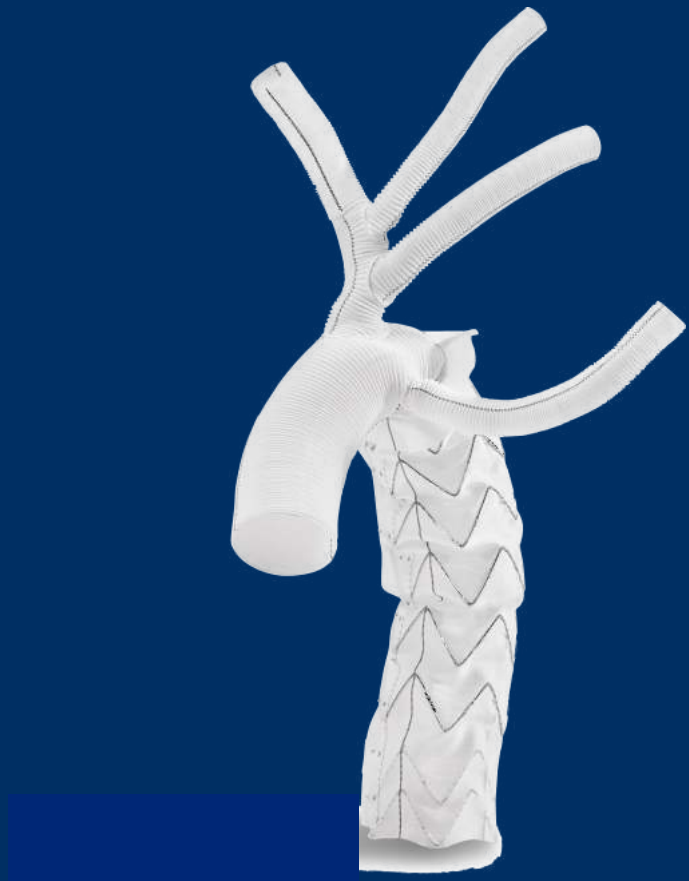


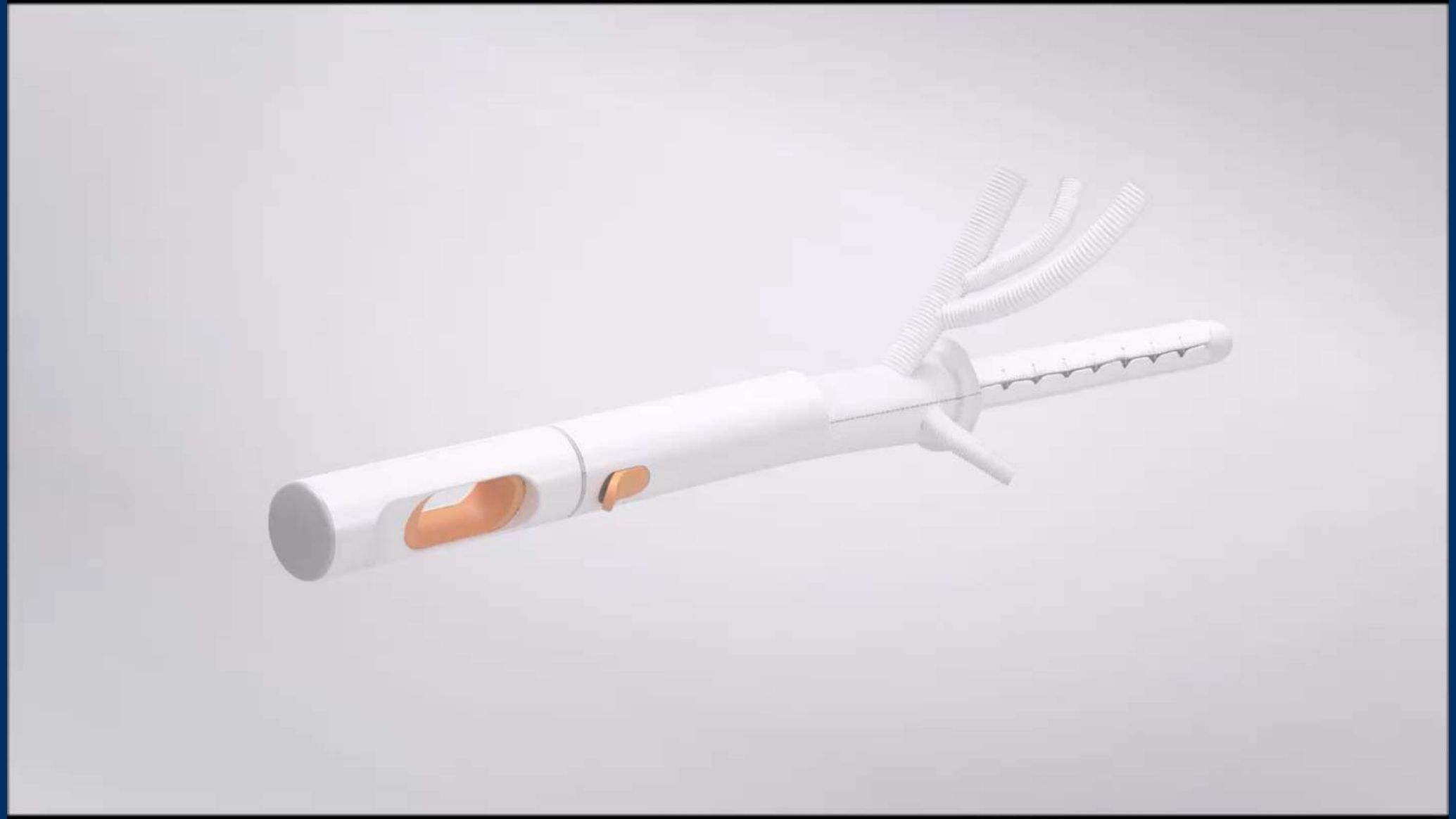
Artivion (Jotec) E-vita Open Plus FET Prosthesis

Straight
Zone 2-3
En bloc (island) technique

Branched
Zone 1-2-3
Single vessel anastomosis

Trifurcated
Zone 0-1
Single vessel anastomosis






Thank you!
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