

Introduction

The “B-SAFER” Frozen Elephant Trunk (FET) repair employs hemi-arch repair with a stent to the left subclavian artery (LSCA) via a modified antegrade thoracic endovascular aortic repair (TEVAR)¹; however, pseudoaneurysm formation at the arch requiring re-intervention has been reported².

We developed a modified “EZ2-BSAFER” FET technique with extension of zone 2 arch debranching and LSCA stent placement via an antegrade TEVAR circumferentially sealed at Zone 2 to prevent pseudoaneurysm formation².

Methods

- **Study Design:** Retrospective, single-center study.
- **Study Period:** 2018 to 2024.
- **Population:** 16 patients who underwent the EZ2-BSAFER technique for Acute Type A Aortic Dissection.
- **Mortality Risk Assessment:**
 - **EURO Score 2:** 18.3 ± 9.7
 - **GERAADA Score:** 24 ± 8.7
- **Analysis:** Continuous variables are presented as median [interquartile range] or mean (standard deviation) and categorical variables as frequencies (%).

Results

Table 1. Baseline Characteristics and Presentation

		N=16 (%)
Age		51.5 ± 15.6
Sex	Female	6 (32.5%)
	Male	10 (62.5%)
Hypertension		13 (81%)
Diabetes		3 (19%)
Marfan Syndrome		3 (19%)
Cerebrovascular Disease		3 (19%)
Preoperative AKI		4 (25%)
Prior Sternotomy		5 (31%)
Malperfusion at presentation		9 (56%)
	Celiac/hepatic	4 (25%)
	Mesenteric	2 (12.5%)
	Renal	3 (19%)
	Lower Extremity	4 (25%)
Arch Vessel Involvement		
	Innominate	4 (25%)
	Left Common Carotid	3 (19%)
	Left Subclavian	5 (31%)

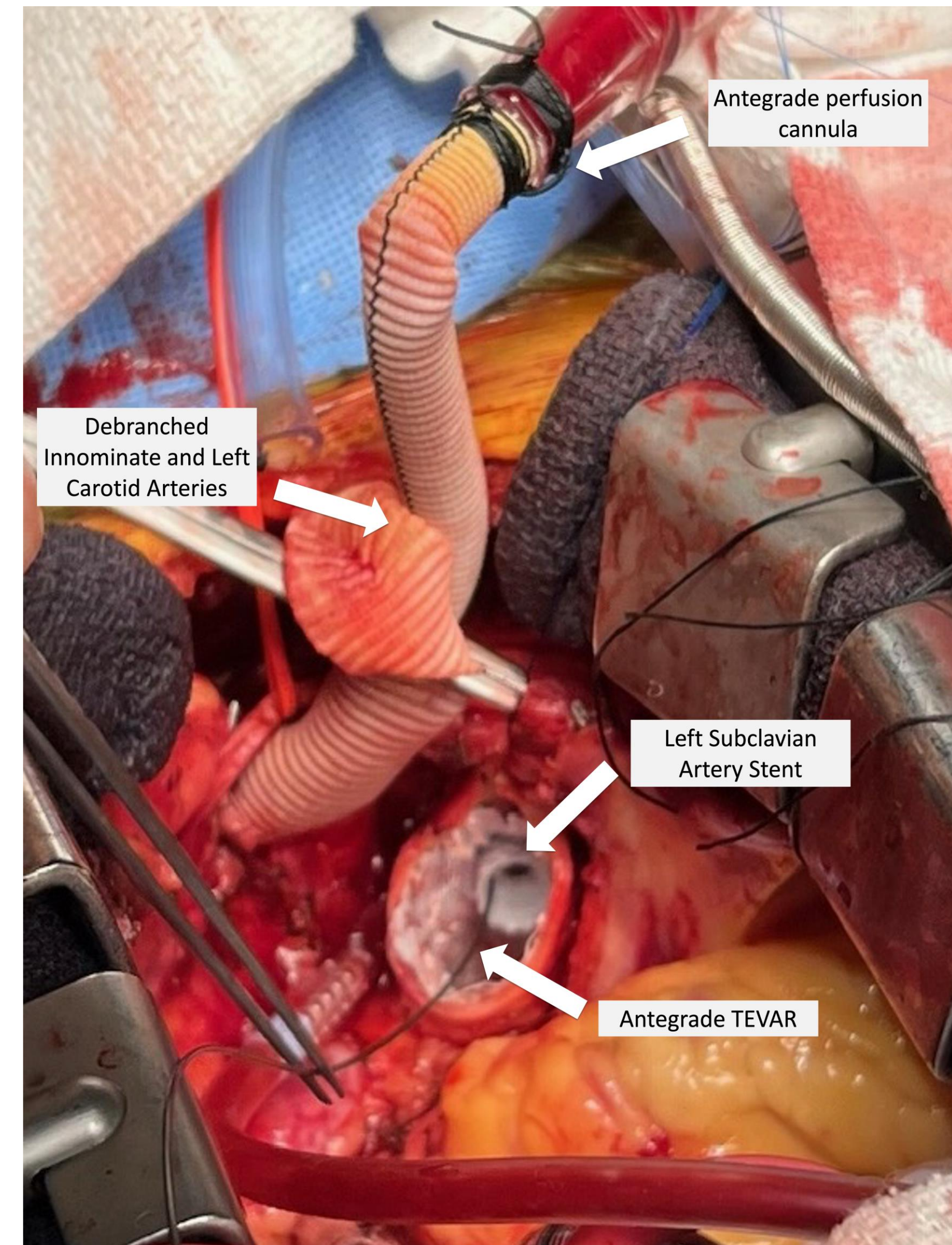


Figure 1. Intraoperative view of the EZ2-BSAFER technique

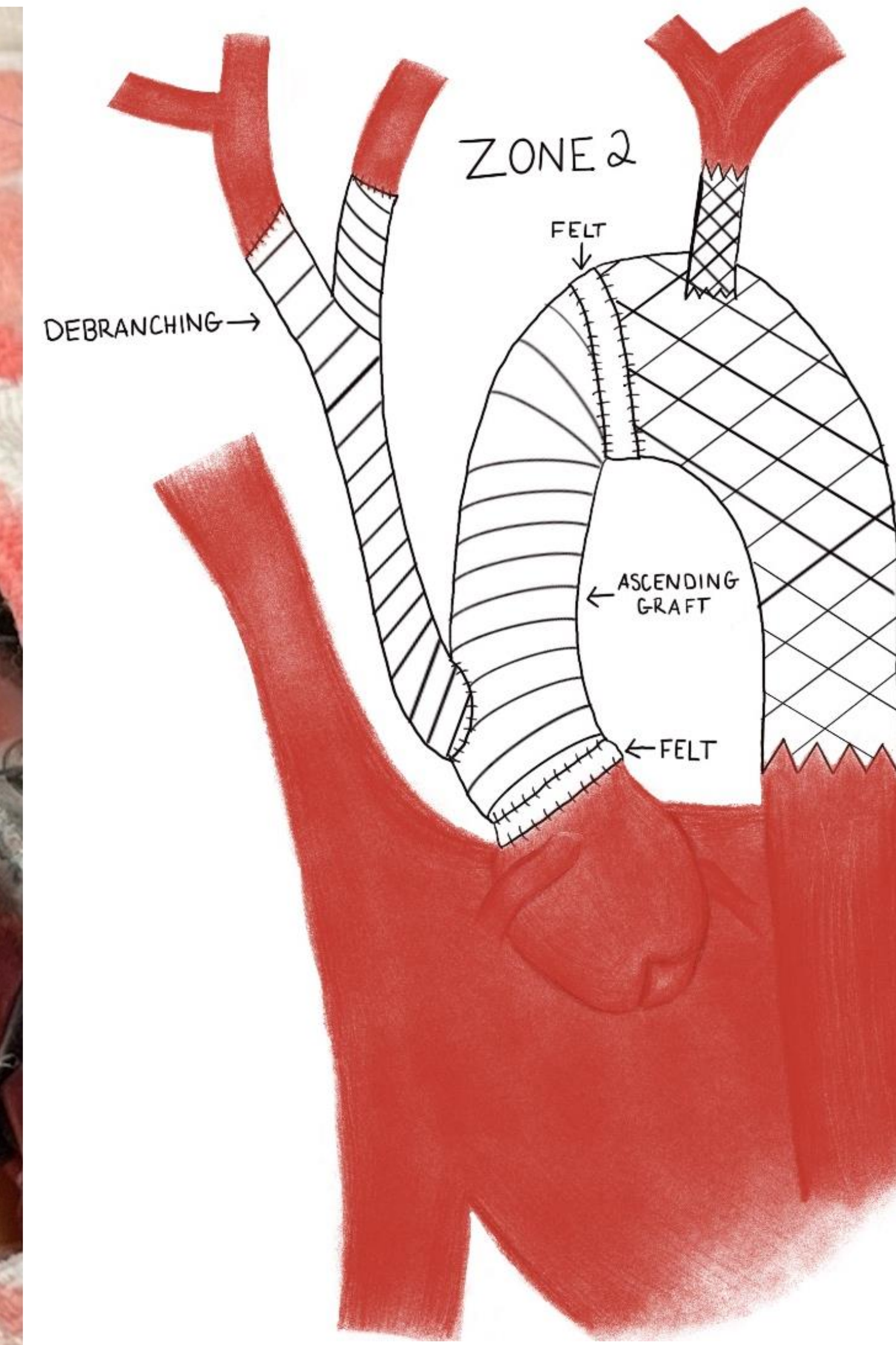


Figure 2. Drawing of EZ2-BSAFER technique

Benefits of the EZ2-BSAFER

- ✓ Moves the arch anastomosis/TEVAR forward: reducing the risk of paraplegia.
- ✓ Excellent for friable tissues.
- ✓ Ideal for challenging anatomy.
- ✓ Preserves the LSCA access for future endovascular procedures.
- ✓ Restores true lumen flow: Effective in patients with malperfusion.

Table 2. Intraoperative and postoperative data.

	N=16 (%)
Concomitant ARR	4 (25%)
Concomitant CABG	2 (12.5%)
Cardiopulmonary Bypass, min	225.0 [218.5, 250.5]
Aortic Cross Clamp, min	158.0 [143.5, 184.0]
Circulatory Arrest, min	58.5 [50.8, 66.3]
Antegrade Cerebral Perfusion, min (n=16)	27.0 [22.8, 35.3]
Retrograde Cerebral Perfusion, min (n=3)	20.0 [18.0, 28.5]
Acute Kidney Injury	4 (25%)
Pneumonia	4 (25%)
Sepsis	1 (6.2%)
Reoperation for bleeding	1 (6.2%)
Postoperative paraplegia/paraparesis	0 (0%)
Stroke	0 (0%)
Hospital Length of Stay	17.9±9.7
Reintervention	1 (6.2%)
Stent Patency	18 (100%)
Pseudoaneurysm Formation	0 (0%)
In-Hospital Mortality	0 (0%)
30-Day Mortality	0 (0%)

ARR, aortic root replacement. CABG, coronary artery bypass graft.

The “EZ2-BSAFER” technique with Zone 2 debranching and subclavian stent placement through a modified TEVAR graft had high stent patency, no in-hospital, 30-day mortality, pseudoaneurysm formation and excellent mid-term survival.

1. Roselli EE, Vargo PR, Bakaeen F, Koprivanac M, Burns D, Kuramochi Y, Gillinov M; B-SAFER Investigators. Branched stented anastomosis frozen elephant trunk repair: Early results from a physician-sponsored investigational device exemption study. J Thorac Cardiovasc Surg. 2024;168(3):746-756.

2. Falasa MP, Beaver TM. Commentary: B-SAFER and reintervention rates: "das Kind nicht mit dem Bade ausschütten," or "don't throw the baby out with the bath water". JTCVS Tech. 2020 Oct 22;4:63-64.