

What is the best solution for uncomplicated type B-AD?

**Yes, Early Endovascular treatment of  
uncomplicated aortic dissection is the best  
choice**

***Igor Koncar, MD, PhD***

*Vascular surgeon*

*Clinic for Vascular and Endovascular Surgery*

*Serbian Clinical Centre*

Aleksa Jovanovic, Magnus Jonsson, Joy Roy, Julia Eriksson, Perica Mutavdzic,  
Ranko Trailovic, Igor Koncar



KLINIKA ZA VASKULARNU  
I ENDOVASKULARNU  
HIRURGIJU





**„I want  
evidence!“**







ELSEVIER



## The VIRTUE Registry of Type B Thoracic Dissections – Study Design and Early Results

30d Outcomes	Acute (n=50)	Sub-Acute (n=24)	Chronic (n=26)
Mortality 30d	12% (6)	0%	0%
Stroke	8% (4)	0%	0%
Spinal Cord Ischemia	2% (1)	0%	3.8% (1)





ELSEVIER



## The VIRTUE Registry of Type B Thoracic Dissections – Study Design and Early Results

**Table 3** Indications for endovascular repair.

	Indication for surgery	Number	%
Acute ( <i>n</i> = 50)	Rupture	11	22.0
	Limb or visceral ischaemia	16	32.0
	Persisting pain	32	64.0
	Uncontrolled hypertension	8	16.0
Sub-acute ( <i>n</i> = 24)	Diameter > 4 cm	9	37.5
	Expansion > 5.5 cm	3	12.5
	Pain	5	20.8
	Malperfusion	8	33.3
	Rupture	1	4.2
Chronic ( <i>n</i> = 26)	Expansion > 5.5 cm	13	50.0
	Increase > 0.5 cm	13	50.0
	Malperfusion	2	7.7
	Rupture	1	3.8

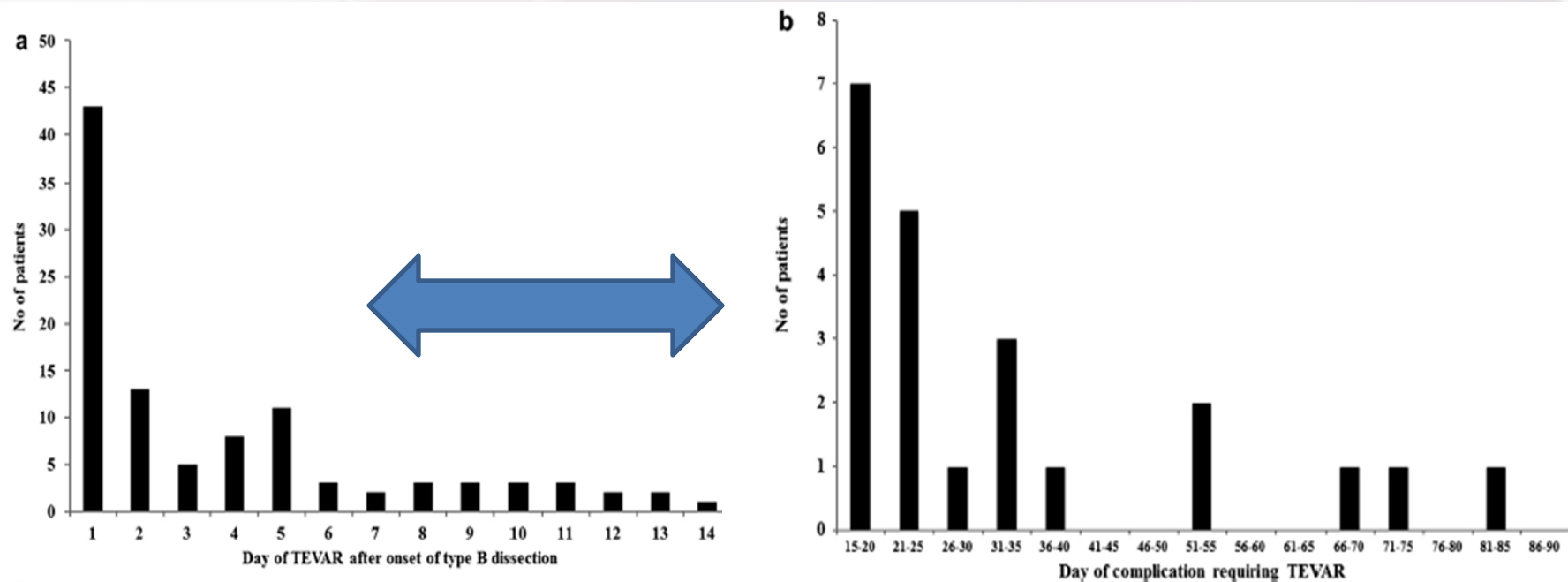
## Distinction between Acute and Chronic Type B Aortic Dissection: Is there a Sub-acute Phase?☆

J. Steuer <sup>a,\*</sup>, M. Björck <sup>a</sup>, D. Mayer <sup>b</sup>, A. Wanhainen <sup>a</sup>, T. Pfammatter <sup>c</sup>, M. Lachat <sup>b</sup>

<sup>a</sup>Department of Surgical Sciences, Vascular Surgery, Uppsala University, Uppsala, Sweden

<sup>b</sup>Clinic for Cardiovascular Surgery, University Hospital, Zurich, Switzerland

<sup>c</sup>Institute of Diagnostic Radiology, University Hospital, Zurich, Switzerland





	Acute ( <i>n</i> = 102)	Sub-acute ( <i>n</i> = 22)	<i>p</i> value
Women	35 (34%)	8 (36%)	1.00
Median age (range)	69 (36–86)	58 (34–81)	0.012
Hypertension	70 (69%)	18 (82%)	0.21
Diabetes	4 (4%)	1 (5%)	1.00
Ischaemic heart disease	27 (26%)	4 (18%)	0.59
Peripheral vascular disease	18 (18%)	6 (27%)	0.37
Smoking	39 (38%)	13 (59%)	0.10

	Acute (n = 102)	Sub-acute (n = 22)	p value
<b>DeBakey type</b>			0.22
IIIa	39 (38%)	5 (23%)	
IIIb	63 (62%)	17 (77%)	
<b>Reno-visceral malperfusion</b>	42 (41%)	8 (36%)	0.81
Coeliac trunk stent	1	1	
SMA stent	4	1	
Renal artery stent	15	1	
Endovascular fenestration	5	0	
Reno-visceral debranching	2	0	
<b>Leg ischaemia</b>	18 (18%)	0	0.041
Iliac artery stent	10	0	
<b>Rupture/Haematoma/ Pleural effusion</b>	59 (58%)	7 (32%)	0.034
<b>Acute dilatation</b>	13 (13%)	11 (50%)	<0.001
<b>Intractable pain</b>	4 (4%)	2 (9%)	0.29





ChinaFotoPress via Getty Images

# Type B aortic dissection

- Causing 10 % of death in the early phase of 14 days, and 8.7% if treated medically

Type B (n = 1,476) Management			
Surgical	Medical	Endo	Hybrid
192 (13.0)	923 (62.5)	341 (23.1)	21 (1.4)
33 (17.2)	80 (8.7)	42 (12.3)	3 (14.3)
158 (10.7)			

## Presentation, Diagnosis, and Outcomes of Acute Aortic Dissection

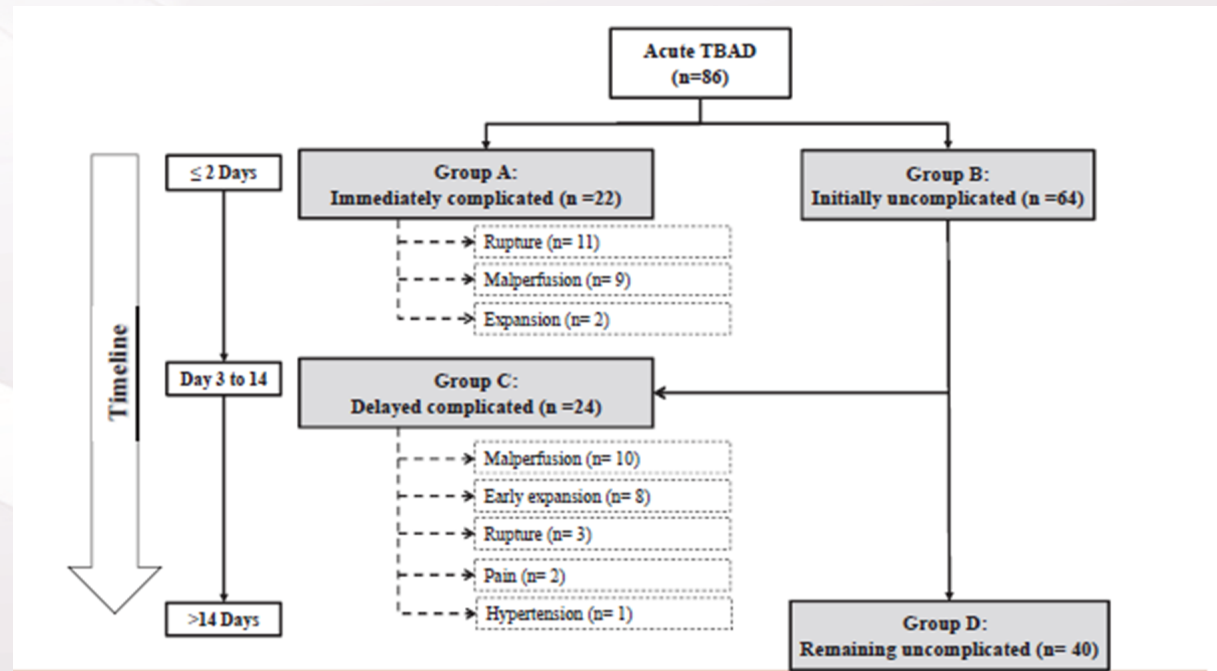
17-Year Trends From the International Registry of Acute Aortic Dissection





## The incidence of delayed complications in acute type B aortic dissections is underestimated

Benedikt Reutersberg, MD,<sup>a</sup> Matthias Trenner, MD,<sup>a</sup> Bernhard Haller, PhD,<sup>b</sup> Sarah Geisbüsch, MD,<sup>a</sup> Christian Reeps, MD,<sup>a,c</sup> and Hans-Henning Eckstein, MD,<sup>a</sup> Munich and Dresden, Germany



**Three patients with delayed complications died before receiving surgery and one of them died suddenly after discharge after 7 days of uneventful hospitalization**

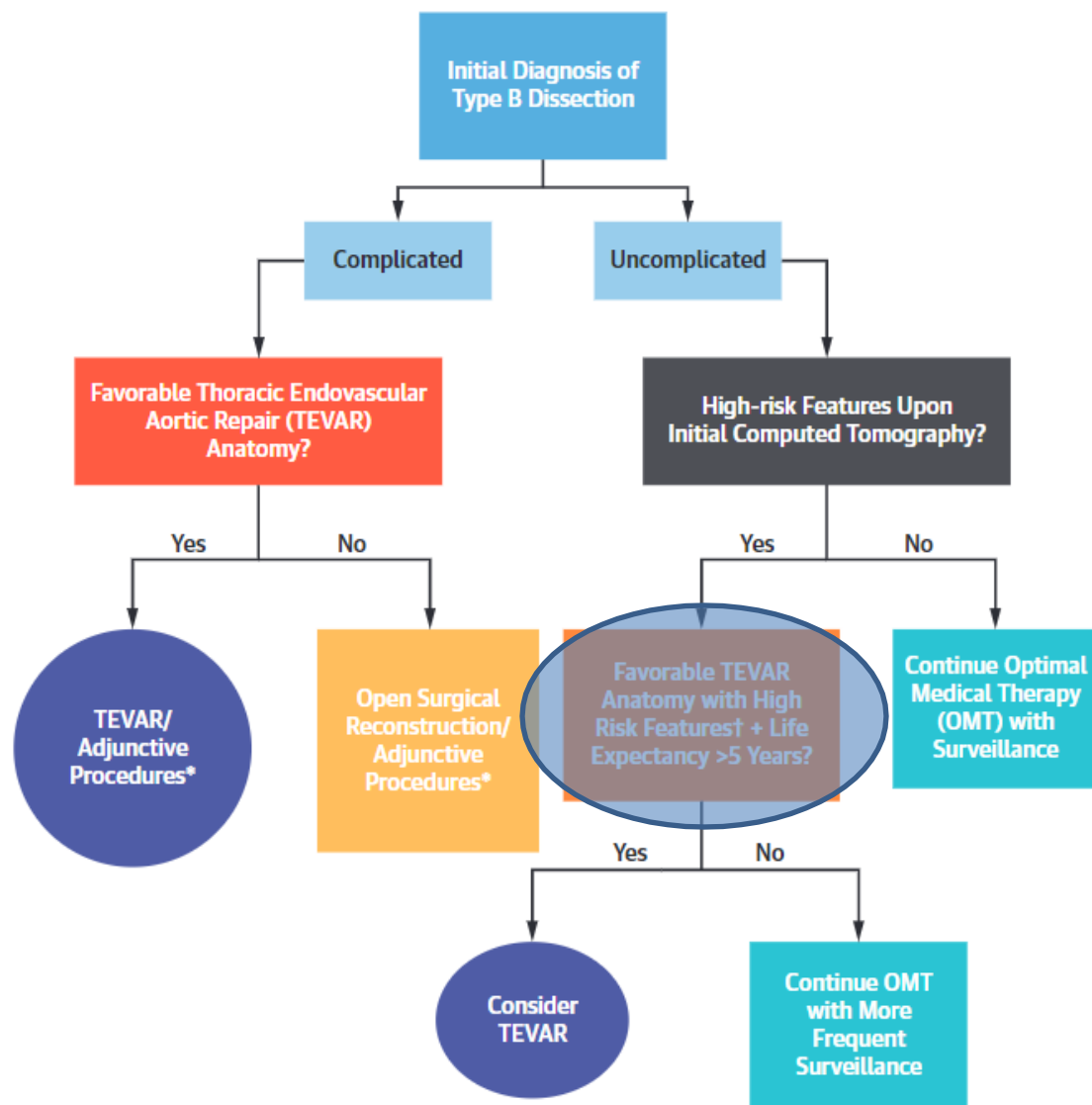
### Impact of timing on major complications after thoracic endovascular aortic repair for acute type B aortic dissection

Nimesh D. Desai, MD, PhD,<sup>a,b</sup> Jean-Paul Gottret, MD,<sup>b</sup> Wilson Y. Szeto, MD,<sup>b</sup> Fenton McCarthy, MD,<sup>a,b</sup> Patrick Moeller, BS,<sup>b</sup> Rohan Menon, BS,<sup>b</sup> Benjamin Jackson, MD,<sup>c</sup> Prashanth Vallabhajosyula, MD,<sup>b</sup> Grace J. Wang, MD,<sup>c</sup> Ronald Fairman, MD,<sup>c</sup> and Joseph E. Bavaria, MD<sup>b</sup>

- Among the TEVARs performed in the **Acute-Early** group (within 48 hours of symptom onset), more than half were for rupture indications, or clinical malperfusion
- Among the **Acute-Delayed group**, 12 patients (27.3%) had new or worsening clinical malperfusion. A further 23 patients had ongoing pain/impending rupture (12; 27%) or contained rupture (11; 25%).
- Nine patients (21%) underwent TEVAR for radiographic mal-perfusion with severely compressed true lumen without end-organ involvement or isolated single-kidney malperfusion without renal failure (ie, remodeling indications).
- Among patients in the **Subacute group** (n ¼ 18), 13 (72%) were stented **after readmission for symptoms**. Among these, 11% had **new clinical malperfusion**, 56% had **impending rupture/persistent pain**, and 11% had **rupture**.



# CENTRAL ILLUSTRATION Algorithmic Framework for the Treatment of Type B Aortic Dissection



Tadros, R.O. et al. J Am Coll Cardiol. 2019;74(11):1494-504.

## Optimal Treatment of Uncomplicated Type B Aortic Dissection

### JACC Review Topic of the Week

Rami O. Tadros, MD,<sup>a</sup> Gilbert H.L. Tang, MD, MSc, MBA,<sup>b</sup> Hanna J. Barnes, BA,<sup>a</sup> Idine Mousavi, BA,<sup>a</sup> Jason C. Kovacic, MD, PhD,<sup>c</sup> Peter Faries, MD,<sup>a</sup> Jeffrey W. Olin, DO,<sup>c</sup> Michael L. Marin, MD,<sup>a</sup> David H. Adams, MD<sup>b</sup>

**TABLE 2** Features That Predict Risk of Late Aorta-Related Complications

Feature	First Author, Year (Ref. #)	N	p Value	Hazard Ratio
Increased risk				
Primary ET diameter >10 mm	Schwartz et al., 2018 (27)	254	0.02*	2.1
Initial total AD ≥40mm			0.01*	2.2
FL diameter ≥22 mm	Song et al., 2007 (35)	100	<0.001†	—
Patent FL (vs. fully thrombosed)	Kunishige et al., 2006 (38)	131	0.016†	1.87
Partially thrombosed FL	Tsai et al., 2007 (37)	201	0.002‡	2.69
Decreased risk				
FL located at outer aortic curvature	Tolenaar et al., 2013 (42)	62	0.019§	—
Multiple entry tears			0.05§	—
Circular shape of TL			0.027§	—

\*Predictive of late intervention due to ischemia or aneurysmal degeneration. †Predictive of late aneurysmal degeneration. ‡Predictive of post-discharge mortality. §Predictive of rate of aneurysmal growth.

AD = aortic diameter; ET = entry tear; FL = false lumen; TL = true lumen.

## SVS/STS REPORTING STANDARDS DOCUMENT

Editors' Choice

### Society for Vascular Surgery (SVS) and Society of Thoracic Surgeons (STS) reporting standards for type B aortic dissections



Joseph V. Lombardi, MD (SVS Co-Chair),<sup>a</sup> G. Chad Hughes, MD (STS Co-Chair),<sup>b</sup> Jehangir J. Appoo, MD,<sup>c</sup> Joseph E. Bavaria, MD,<sup>d</sup> Adam W. Beck, MD,<sup>e</sup> Richard P. Cambria, MD,<sup>f</sup> Kristofer Charlton-Ouw, MD,<sup>g</sup> Mohammad H. Eslami, MD,<sup>h</sup> Karen M. Kim, MD,<sup>i</sup> Bradley G. Leshnower, MD,<sup>j</sup> Thomas Maldonado, MD,<sup>k</sup> T. Brett Reece, MD,<sup>l</sup> and Grace J. Wang, MD,<sup>d</sup> Camden, NJ; Durham, NC; Calgary, Alberta, Canada; Philadelphia and Pittsburgh, Pa; Birmingham, Ala; Brighton, Mass; Houston, Tex; Ann Arbor, Mich; Atlanta, Ga; New York, NY; and Denver, Colo



Journal of  
Vascular Surgery

SVS

Society for  
Vascular Surgery

LETTER TO THE EDITOR | VOLUME 71, ISSUE 5, P1817, MAY 01, 2020

### Besides complicated and uncomplicated dissections, do we face “potentially complicated” dissections?

Lazar B. Davidovic, MD • Nikola Ilic, MD • Igor Koncar, MD

DOI: <https://doi.org/10.1016/j.jvs.2019.12.022> •

### Morphologic predictors of in hospital mortality in acute type III aortic dissection

[Article in English, Russian]

N Fatic<sup>1</sup>, N Ilić<sup>2</sup>, D Markovic<sup>2</sup>, A Nikolic<sup>1</sup>, I Končar<sup>2</sup>, R Lazovic<sup>1</sup>, I Banzic<sup>2</sup>, G Vuktsevich<sup>1</sup>, B Pajovic<sup>1</sup>, D Kostic<sup>2</sup>

# Why do we hesitate to treat uncomplicated TBAD in the acute phase?

- Retrograde dissection
- Paraplegia
- Stroke
- Other complications



## Timing and Outcome of Endovascular Repair for Uncomplicated Type B Aortic Dissection

Enmin Xie <sup>a,b,i</sup>, Fan Yang <sup>c,i</sup>, Yuan Liu <sup>a</sup>, Ling Xue <sup>a</sup>, Ruixin Fan <sup>d</sup>, Nianjin Xie <sup>a</sup>, Lyufan Chen <sup>a</sup>, Jitao Liu <sup>a</sup>, Jianfang Luo <sup>a,b,\*</sup>

<sup>a</sup>Department of Cardiology, Vascular Centre, Guangdong Cardiovascular Institute, Guangdong Provincial Key Laboratory of Coronary Heart Disease Prevention, Guangdong Provincial People's Hospital, Guangdong Academy of Medical Sciences, Guangzhou, People's Republic of China

<sup>b</sup>The Second School of Clinical Medicine, Southern Medical University, Guangzhou, People's Republic of China

<sup>c</sup>Department of Emergency and Critical Care Medicine, Guangdong Provincial People's Hospital, Guangdong Academy of Medical Sciences, Guangzhou, People's Republic of China

<sup>d</sup>Department of Cardiovascular Surgery, Guangdong Cardiovascular Institute, Guangdong Provincial People's Hospital, Guangdong Academy of Medical Sciences, Guangzhou, People's Republic of China

the present study has indicated that preemptive TEVAR for high risk uTBAD in acute phase **is associated with a trend toward higher rates of early events**, while **the long term outcomes including aortic remodelling were comparable** with those in the subacute phase

**Table 2.** Details of thoracic endovascular aortic repair (TEVAR) intervention and early outcomes in 267 uncomplicated type B aortic dissection (uTBAD) patients

	Acute intervention (n = 130)	Subacute intervention (n = 137)	p
<i>Procedure details</i>			
Hospitalisation from admission to TEVAR – d	4.6 ± 2.5	4.9 ± 2.3	.20
<i>Proximal landing zone</i>			.73
Zone 2	72 (55.4)	73 (53.3)	
Zone 3	58 (44.6)	64 (46.7)	
More than one stent graft placed	11 (8.5)	18 (13.1)	.22
Restrictive bare stent	12 (9.2)	11 (8.0)	.73
LCCA-LSA bypasses	4 (3.1)	10 (7.3)	.12
LSA chimney stent graft placed	38 (29.2)	30 (21.9)	.17
Cerebrospinal fluid drainage	17 (13.1)	23 (16.8)	.40
<i>Thoracic aortic stent grafts</i>			
Diameter – mm	33.5 ± 3.2	34.0 ± 2.9	.17
Length – mm	194.6 ± 16.0	195.5 ± 13.6	.64
<i>Brand</i>			.22
Valiant (Medtronic, MN, USA)	47 (36.2)	54 (39.4)	
Zenith TX2 (Cook, IN, USA)	10 (7.7)	13 (9.5)	
cTAG (Gore, AZ, USA)	18 (13.8)	25 (18.2)	
Ankura (Lifetech, Shenzhen, China)	45 (34.6)	29 (21.2)	
Hercules-T (Microport, Shanghai, China)	5 (3.8)	10 (7.3)	
Aortec (YTH, Beijing, China)	5 (3.8)	6 (4.4)	
<i>Early outcomes at 30 days</i>			
Hospitalisation post-TEVAR – d	7.5 ± 4.2	7.0 ± 4.1	.42
Death	5 (3.8)	1 (0.7)	.11
Aortic rupture	2 (1.5)	0 (0.0)	.24
Retrograde type A dissection	1 (0.8)	0 (0.0)	.49
Immediate type Ia endoleak	11 (8.5)	10 (7.3)	.72
Disabling stroke	1 (0.8)	0 (0.0)	.49
Minor stroke/TIA	2 (1.5)	1 (0.7)	.61
Spinal cord ischaemia	1 (0.8)	3 (2.2)	.62
Re-intervention	1 (0.8)	1 (0.7)	1.0

Data are presented as mean ± standard deviation or n (%). LCCA = left common carotid artery; LSA = left subclavian artery; TEVAR = thoracic endovascular aortic repair; TIA = transient ischaemic attack.



## Thirty-day outcomes from the Society for Vascular Surgery Vascular Quality Initiative thoracic endovascular aortic repair for type B dissection project

Grace J. Wang, MD, MSCE,<sup>a</sup> Richard P. Cambria, MD,<sup>b</sup> Joseph V. Lombardi, MD,<sup>c</sup> Ali Azizac Rodney A. White, MD,<sup>e</sup> Dorothy B. Abel, BS,<sup>f</sup> Jack L. Cronenwett, MD,<sup>g</sup> and Adam W. Beck, M Pa; Boston, Mass; Camden, NJ; Los Angeles and Long Beach, Calif; Silver Spring, Md; Lebanon, NH; and



**Table V.** Demographics and clinical outcomes in uncomplicated acute dissection (AD) patients by timing of intervention

Variable	≤48 hours (n = 27)	>48 hours to <7 days (n = 26)	≥7 days to ≤14 days (n = 28)	>14 days to ≤30 days (n = 22)	P value
Age, years	60.0 ± 11.1	56.4 ± 13.7	57.9 ± 12.6	63.9 ± 13.3	.175
Male sex	59.3	76.9	57.1	72.7	.355
Hispanic ethnicity	18.5	11.5	10.7	4.5	.540
Race					.763
White	55.6	57.7	57.1	68.2	
Black	33.3	30.8	32.1	13.6	
Other	11.1	11.5	10.7	18.2	
Transfer status	77.8	88.5	64.3	54.5	.043
CAD	25.9	19.2	7.1	18.2	.313
Hypertension	88.9	88.5	96.4	90.9	.731
Smoking					
Never	37.0	30.8	42.9	45.5	.877
Former	25.9	26.9	14.3	18.2	
Current	37.0	42.3	42.9	36.4	
Presentation					
Asymptomatic	0	0	0	0	NA
Symptomatic	100	100	100	100	
Rupture	0	0	0	0	
Emergent/urgent	77.8	61.5	60.7	54.5	.344
Pain	100	88.5	96.4	90.9	.249
Refractory hypertension	22.2	30.8	28.6	27.3	.918
Malperfusion	0	0	0	0	NA
Rapid expansion	3.7	3.8	25.0	18.2	.042
Aneurysm	11.1	7.7	10.7	22.7	.490
Rupture	0	0	0	0	NA
Mortality	7.4	3.8	7.1	4.5	1
Any SCI	3.7	3.8	0	4.5	.704
Paraparesis	0	3.8	0	0	.466
Paraplegia	3.7	0	0	4.5	.467
Disabling stroke	3.7	0	0	0	.728
Retrograde extension of dissection	4.0	0	0	0	1.000
Reinterventions	7.4	3.8	0.0	13.6	.184

CAD, Coronary artery disease; NA, not applicable; SCI, spinal cord ischemia. Categorical variables are presented as percentage. Continuous variables are presented as mean ± standard deviation.

# What are benefits of **early** TEVAR in uncomplicated TBAD ?

- Prevention of complications and death
- Reduce hospitalisation, costs and side effects of MDCT examinations



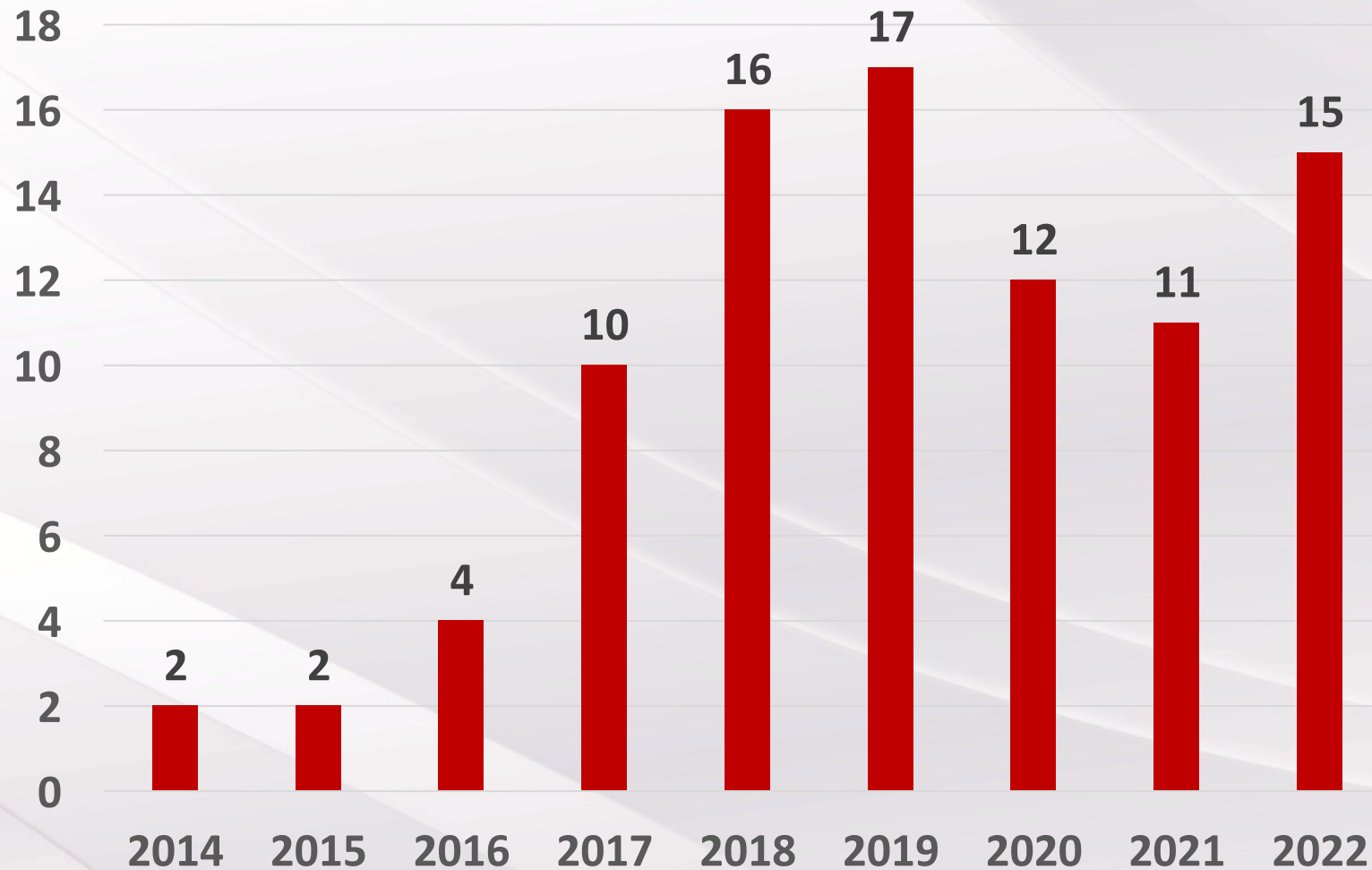
# Aortic remodeling **is not focus** of debate TEVAR in acute vs subacute uncomplicated TBAD ?

- Not important in acute phase
- No difference in aortic remodeling between TEVAR in acute vs subacute phase



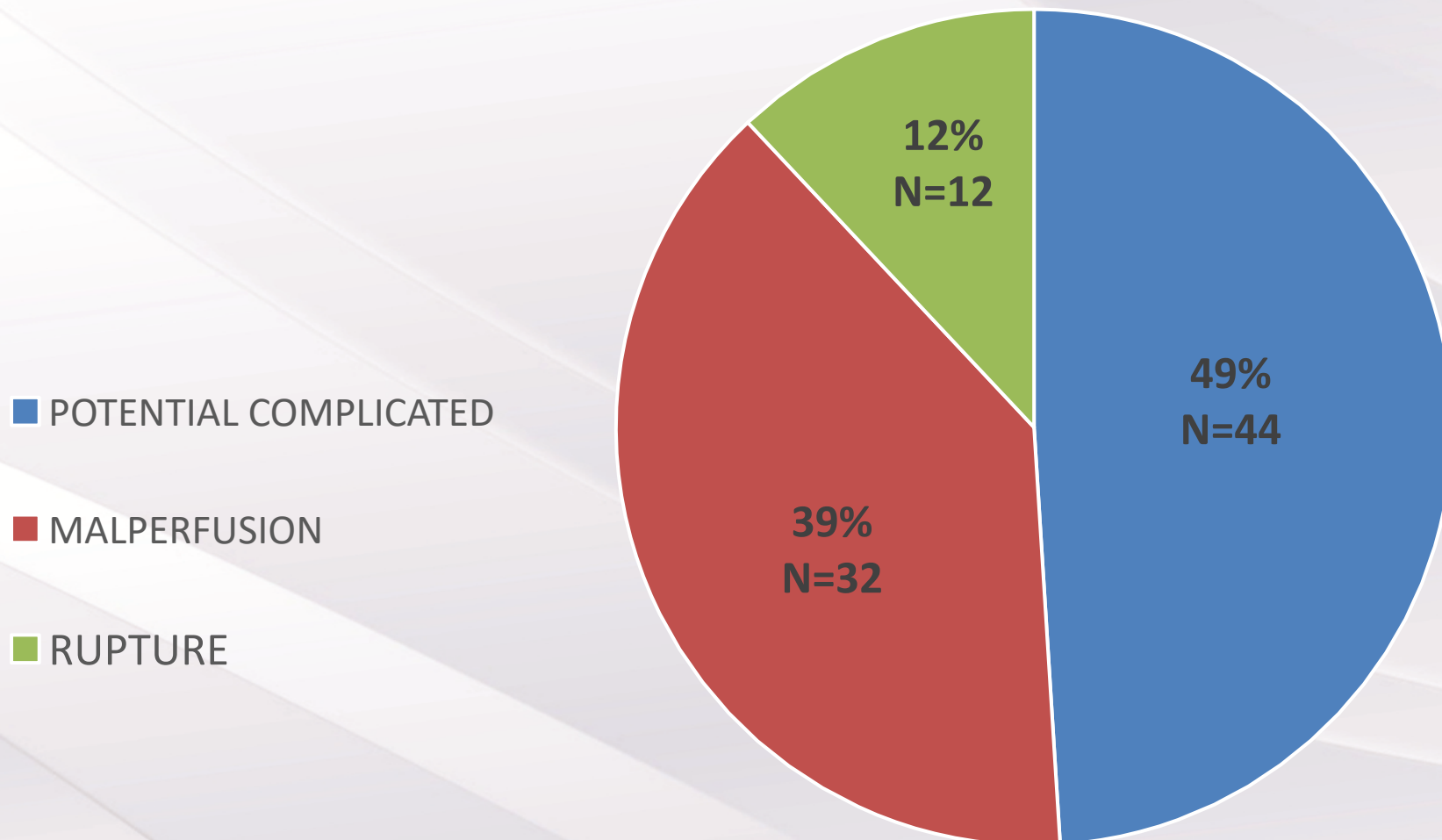


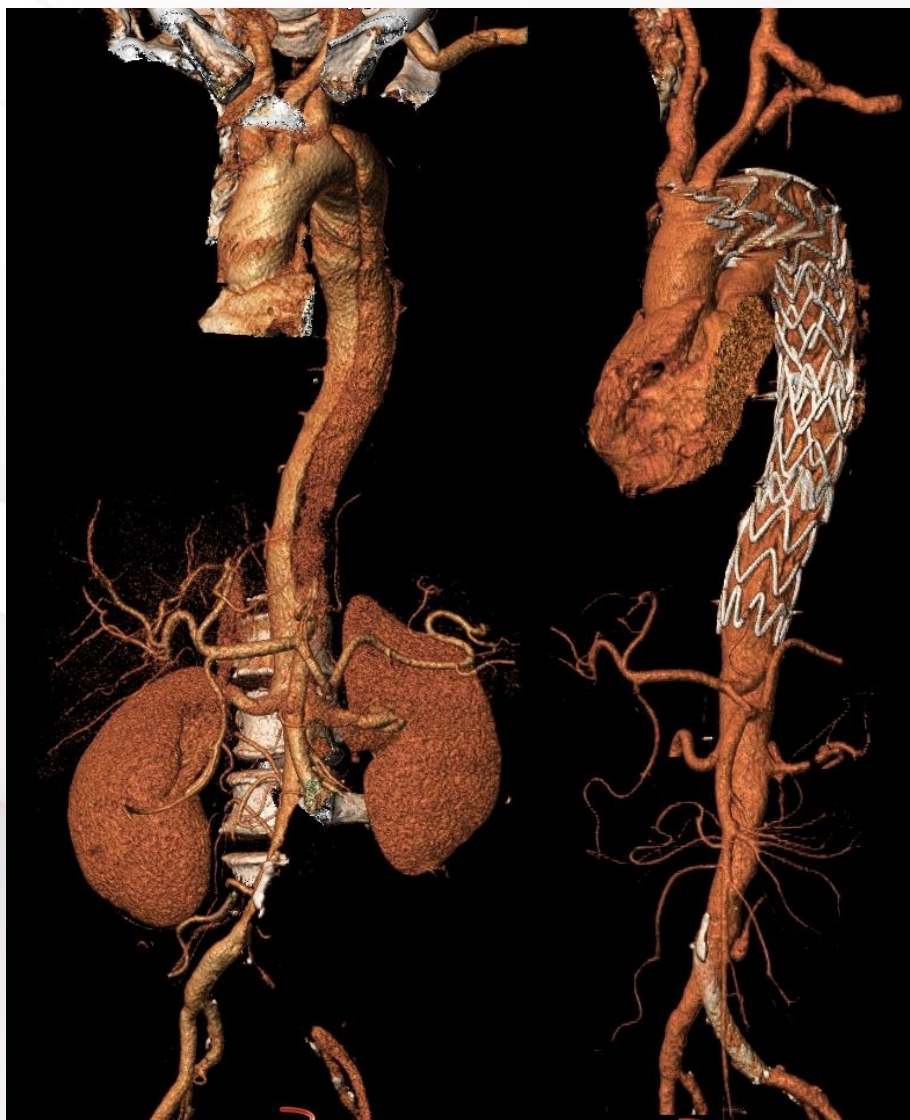
## TEVAR in acute dissections **89**

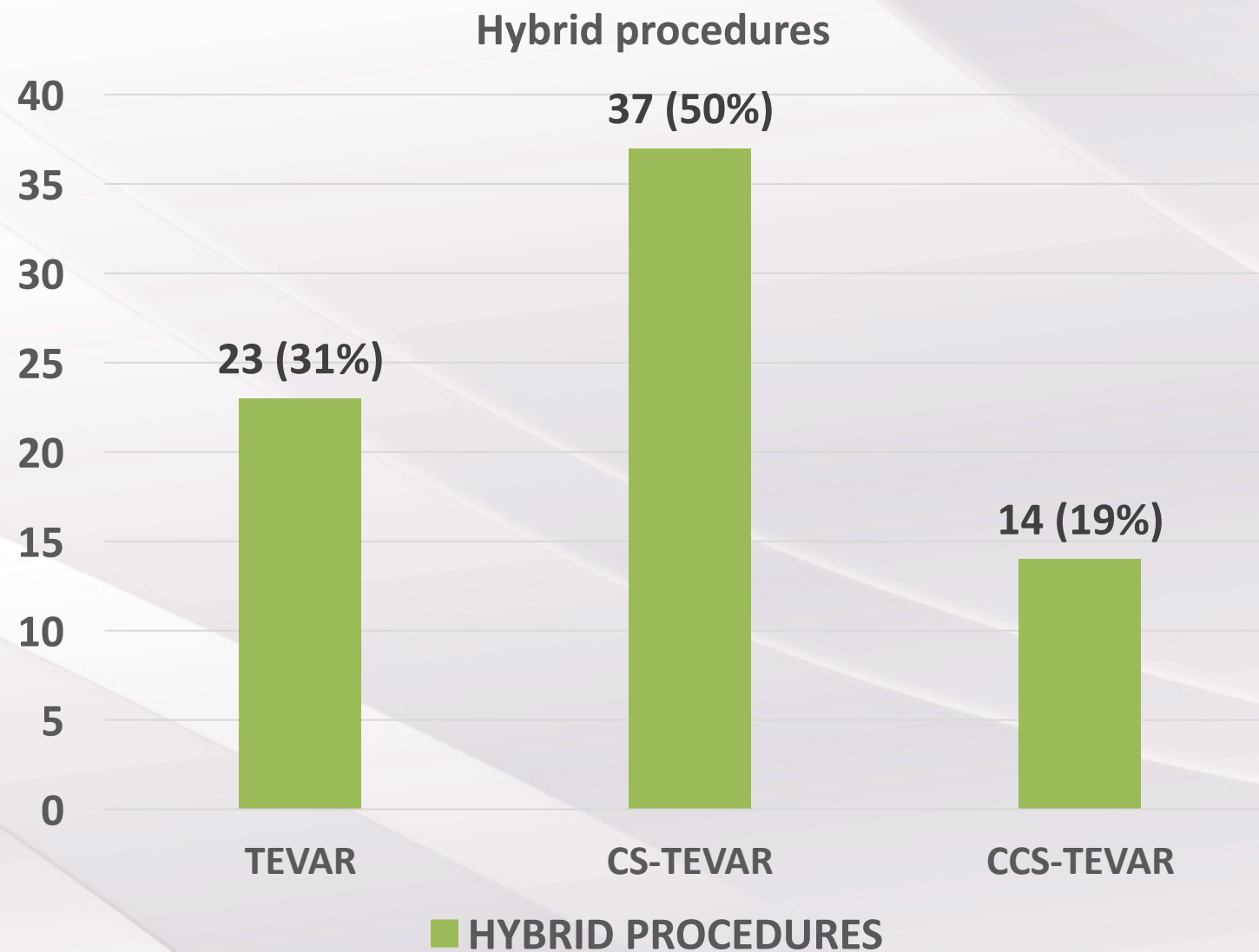




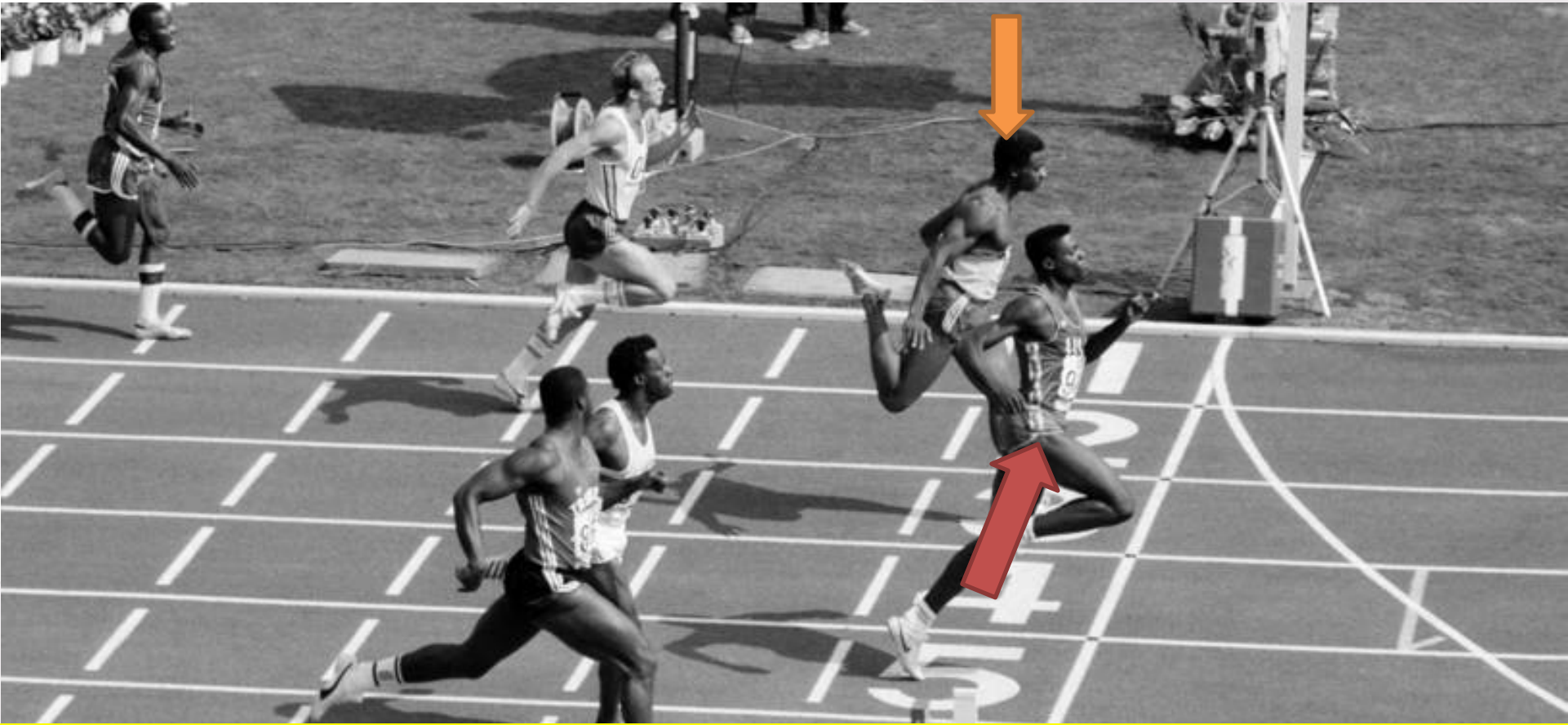
## TREATMENT INDICATION











Yes, early TEVAR in patients with uTBAD that are prone to develop complications or death