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KEY OPINION LEADERS (KOL) FORUM

Case submission

Submitted by: Firas Mussa

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Case Presentation

3/17: 68 yo AA woman presents with chest heaviness→ uTBAD

PMH: HTN, Ascending aorta 4.2 cm

Treated with BP meds and d/c home on 4/23

4/24: presents to HVI-ED

IS THERE EVER A REASON FOR TEVAR IN uTBAD OUTSIDE RCT??

RCT ON MT V. TEVAR FOR TBAD

Study	Patients	Mean age (SD)	30-day Mortality		5-Yr Mortality		5-Yr Aortic Related Event	
			OMT	TEVAR	OMT	TEVAR	OMT	TEVAR
INSTEAD (2009)	140 (Subacute, uTBAD)	60 (± 11)	2.8%	4.4%	4.4%	11.1%	2.9%	5.6%
INSTEAD XL (2013)	140 (subacute, uTBAD)	60 (± 11)	N/A	N/A	19.3%	11.1%	19.3% 41.6%	6.9%
ADSORB (2014)	60 (acute, uTBAD)	63	N/A	N/A	N/A	N/A	N/A	N/A

100 patients randomized to TEVAR, **70 followed > 1 year!**

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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),[a] G. Chad Hughes, MD (STS Co-Chair),[b] Jehangir J. Appoo, MD,[c] Joseph E. Bavaria, MD,[d] Adam W. Beck, MD,[e] Richard P. Cambria, MD,[f] Kristofer Charlton-Ouw, MD,[g] Mohammad H. Eslami, MD,[h] Karen M. Kim, MD,[i] Bradley G. Leshnower, MD,[j] Thomas Maldonado, MD,[k] T. Brett Reece, MD,[l] and Grace J. Wang, MD,[d] *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*

High-risk radiographic features. A number of radiographic findings have been associated with late aortic complications or need for intervention. Authors have suggested various diameters that would portend a high risk of late aneurysm formation or high rupture risk, with >40-mm maximal aortic diameter being an often-cited diameter.[57] Others have found that larger (>1 cm) primary tears, location of the tear (inner vs outer aortic curve), certain radiographic findings (eg, high Hounsfield units suggesting a bloody effusion on CT), and radiographic but not clinically apparent malperfusion may portend poor outcomes.[23,58,59] Importantly, this "radiographic malperfusion" of the renal or mesenteric beds is

23. Schwartz SI, Durham C, Clouse WD, Patel VI, Lancaster RT, Cambria RP, et al. Predictors of late aortic intervention in patients with medically treated type B aortic dissection. J Vasc Surg 2018;67:78-84.

57. Song C, Lu Q, Zhou J, Yu G, Feng X, Zhao Z, et al. The new indication of TEVAR for uncomplicated type B aortic dissection. Medicine (Baltimore) 2016;95:e3919.

58. Evangelista A, Salas A, Ribera A, Ferreira-Gonzalez I, Cuellar H, Pineda V, et al. Long-term outcome of aortic dissection with patent false lumen: predictive role of entry tear size and location. Circulation 2012;125:3133-41.

59. Evangelista A, Galuppo V, Gruosso D, Cuellar H, Teixido G, Rodriguez-Palomares J. Role of entry tear size in type B aortic dissection. Ann Cardiothorac Surg 2014;3:403-5.

Medicine (Baltimore). 2016 Jun;95(25):e3919. doi: 10.1097/MD.0000000000003919.

The new indication of TEVAR for uncomplicated type B aortic dissection

Chao Song [1], Qingsheng Lu, Jian Zhou, Guanyu Yu, Xiang Feng, Zhiqing Zhao, Junmin Bao, Rui Feng, Zaiping Jing

Affiliations + expand

PMID: 27336881 PMCID: PMC4998319 DOI: 10.1097/MD.0000000000003919

Abstract

The classical therapeutic indication for type B aortic dissection is based on either medication or open surgery; medication therapy is recommended for relatively stable uncomplicated type B aortic dissection. With improvements in endovascular repair and the potential risk of disease progression, it is now necessary to evaluate the requirement for revision of the therapeutic choice of uncomplicated type B aortic dissection based on morphological features and time window. Data from 252 patients diagnosed

Considering risk of death, recommend TEVAR for those with visceral artery involvement and F/TL ratio of 0.7

TEVAR in chronic phase has no mortality advantage

108 TAAD and 76 TBAD (13 new), TEE, CT, Tear size AREA, Marfan patients

High-risk features in uncomplicated TBAD

Predictive factor	Reference
High risk imaging features	
Maximum aortic diameter > 40 mm	Mauri et al. Circulation 2006; Azzizadeh et al. J Vasc Surg 2006
False lumen diameter > 22 mm	Song et al. J Am Coll Cardiol 2011
Entry tear > 10 mm	Evangelista et al. Circulation 2012
Entry tear on lesser curvature	Loewe et al. Ann Thorac Surg 2012
Serial increase in aortic diameter > 5 mm	
Bloody pleural effusion	
Imaging only evidence of malperfusion	Trimarchi et al. JTCVS 2011
High risk clinical features	
Refratory hypertension despite > 3 different classes of anti-HTN medications at maximal recommended or tolerated dises	Trimarchi et al. IRAD. Circulation 2010
Refractory pain persisting > 12 h despite maximal recommended or tolerated doses	Trimarchi et al. IRAD. Circulation 2010
Need for readmission	

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Class 2b recommendation

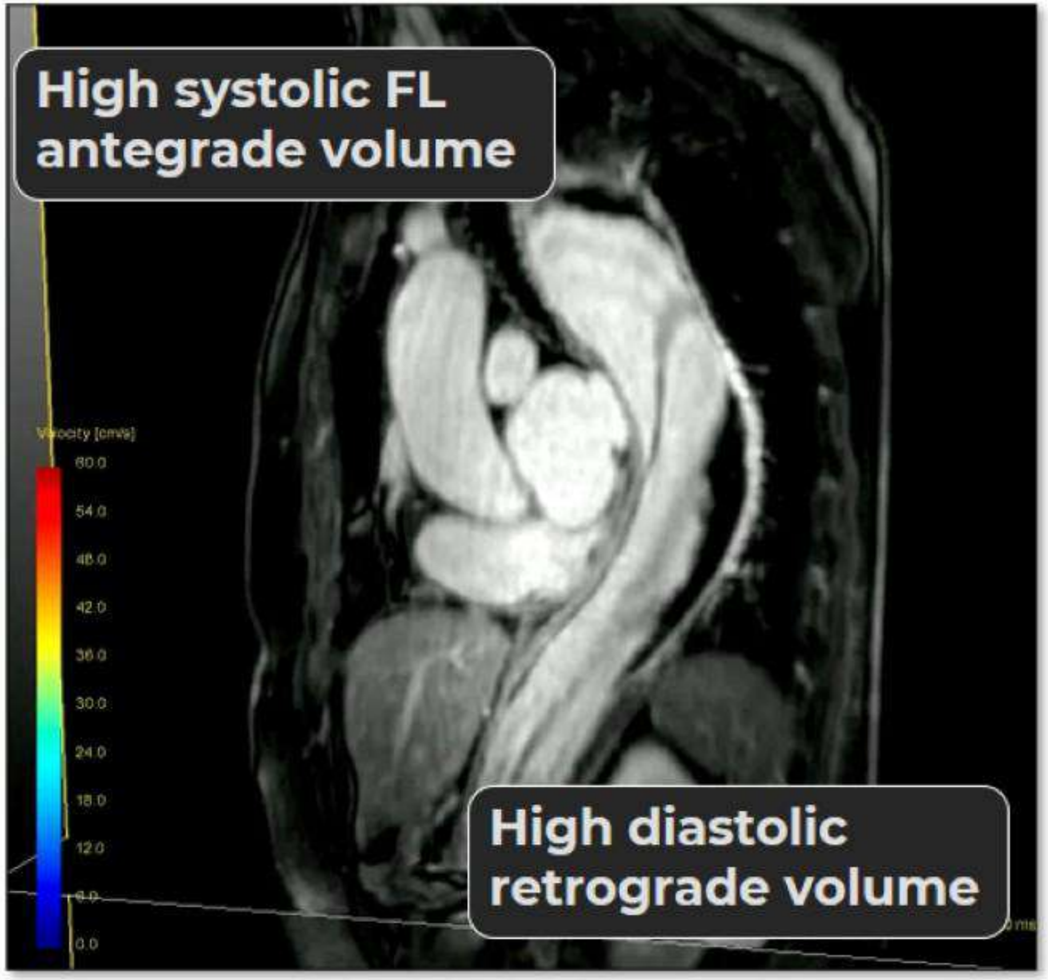
Weak (Risk > Benefit)

"may/ might be reasonable or considered...

Effectiveness is unknown/ unclear/ uncertain or not well-established

- **Retrospective**
- **Biased** treatment selection
- **Inconsistent** follow up
- **No core lab** imaging
- **No genetic** data
- **No cost/ QOL** data

4D Phase Contrast MRA



Clough, London UK

High risk features in uncomplicated TBAD

Predictive factor	No LAE	Any LAE	P value
High risk imaging features			
Maximum aortic diameter > 40 mm	**18%**	**53%**	**<.001**
False lumen diameter > 22 mm	42%	57%	.21
Entry tear on lesser curvature	36%	27%	.37
Imaging only evidence of malperfusion	3%	8%	0.43
Imaging only evidence of malperfusion	3%	8%	0.43

Lack of evidence

- Entry tear > 10 mm
- Diameter of false lumen
- ‘Radiographic’ only malperfusion
- Refractory hypertension
- Refractory pain

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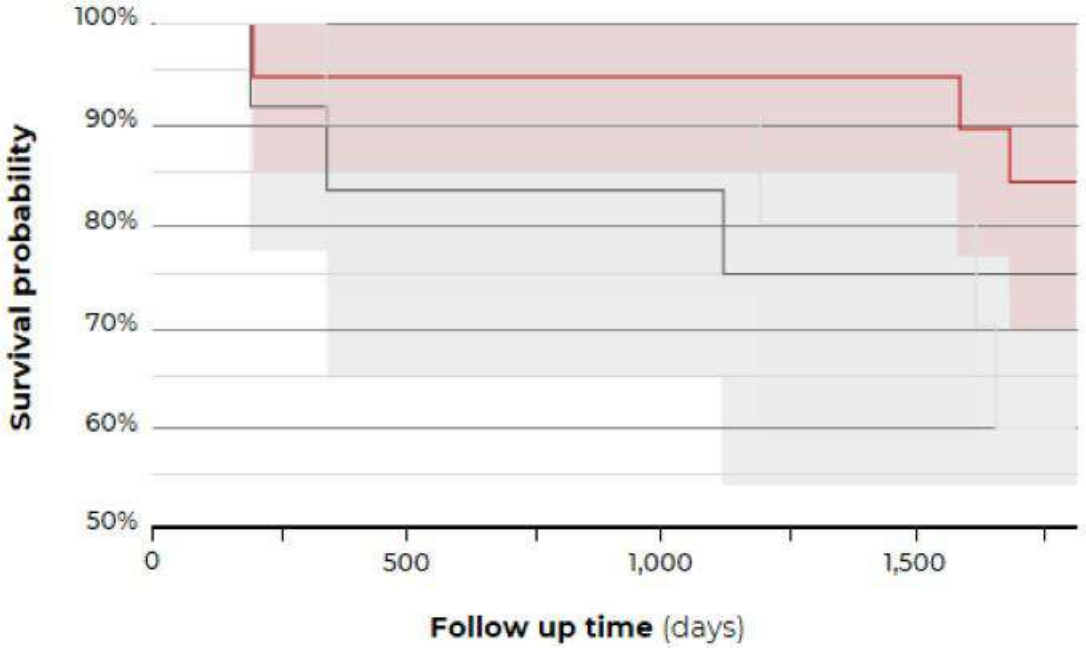
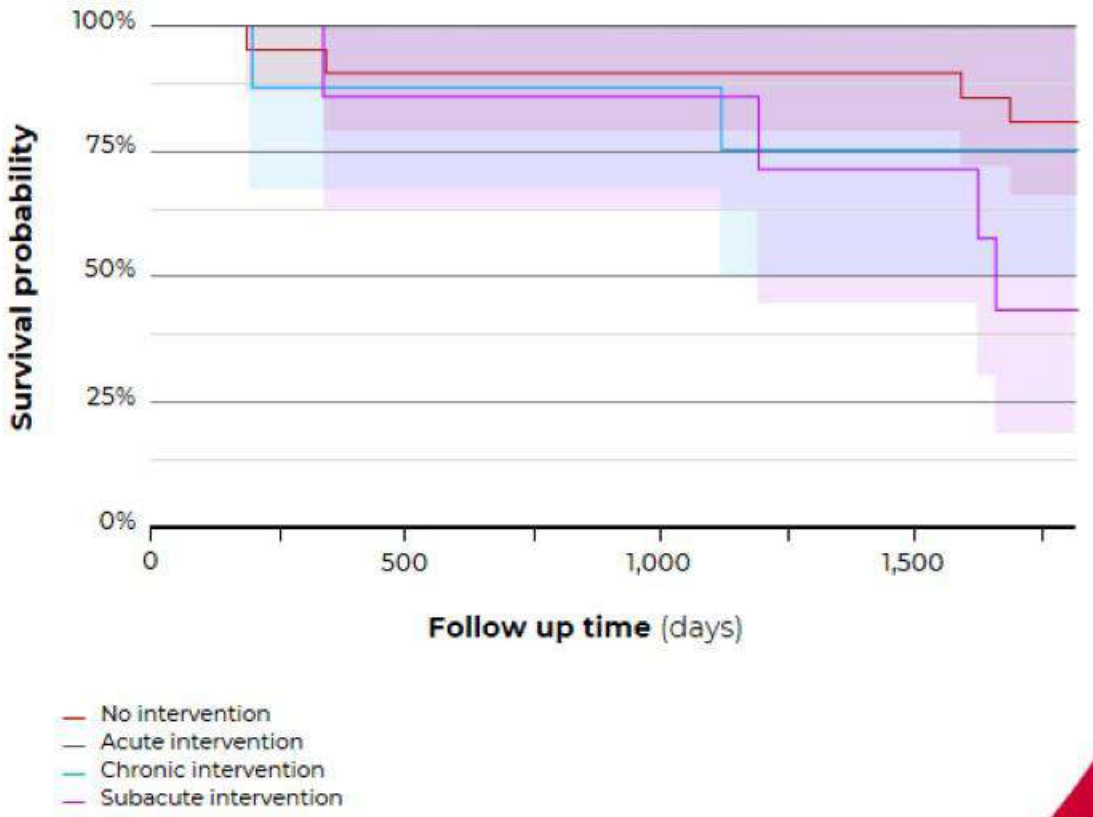
5-year mortality in uTBAD with high-risk anatomic features: a 15-year retrospective review





$10M questions…

Timing of intervention, Length of coverage

LSA revascularization

How many form aneurysms that NEED therapy

Cost-effectiveness and quality of life (QOL)

Genetics

Imaging

Medical Therapy goals

Patients' needs

Is false lumen thrombosis and remodeling important?

High risk features?!!!

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IMPROVE - AD

IMPRoving **O**utcomes in **V**ascular dis**E**ase
Aortic **D**issection

NIH National Heart, Lung, and Blood Institute

UTHealth Houston
Heart & Vascular

Duke Heart
Duke Clinical Research Institute

DOWNSTATE
HEALTH SCIENCES UNIVERSITY

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Hypothesis

In patients with **uTBAD**, **upfront TEVAR** is superior to **SOC** of medical therapy + TEVAR and/or Open Repair when needed

NIH National Heart, Lung, and Blood Institute

uTBAD within 48h - 6 weeks of index admission

at 60 sites in North America

Inclusion criteria:

Age >18 years old

Stanford type B AD without rupture and/or malperfusion

Stratify by Presence of one of the High-Risk Features

Aortic Diameter ≧ 40 mm, Entry tear ≧ 10 mm, False lumen diameter ≧ 22 mm

1100 PATIENTS, RANDOMIZE 1:1

Site collects:

Baseline history & dissection-related data, in-hospital outcomes

DCRI collects: Medical events for outcome adjudication

Patients collect:

Blood pressures with home Bluetooth-enabled® blood pressure cuff

Intervention MT with Upfront TEVAR

Control MT with Standard of Care for deterioration

Primary Endpoint:

4-year endpoint of all-cause mortality, major aortic complications-MAC (Time to Event)

Secondary Endpoints:

Quality of Life (multiple tools), CV hospitalizations, CV death, Components of primary outcome, Safety composite of mortality, stroke, paraplegia/paraparesis, new dialysis, vascular access injury requiring surgical repair, aortobronchial/aortoesophageal fistula, retrograde type A dissection and secondary percutaneous interventions

So why we know nothing?

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NO SUCH THING as high risk uncomplicated TBAD

Timing of TEVAR of uTBAD: Can safely be done after 24 hours

Extent of TEVAR: Covering the primary tear should be enough

No meaningful data to support extended TEVAR or delayed intervention

Proximal LZ is compromised in over 80% of uTBAD

Dissection bare stent has no role outside the intended use (malperfusion)

STABILIZE may play a role but no good data exists

Therefore...

Wang GJ et al. J Vasc Surg 2019;69:680-91
J. Brunkwall EJVES 2014
Beck A et al JVS May 2023
Potter H. J Vasc Surg 2022;76:364-71
Kuo et al. J Vasc Surg 2019;69:987-95

Thank You!

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