Outcomes of Endovascular Repair In Hyperacute, Acute/Subacute, And Chronic Type B Aortic Dissection

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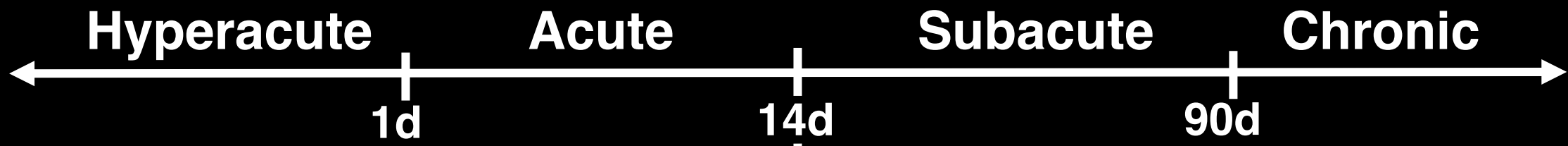
Introduction

1. TBAD: dissections that do not involve the ascending aorta (Stanford classification)
2. 2020 SVS/ STS reporting standards of TBAD:



TEVAR over OMT for uncom./com.: **Beneficial**

Few RCT addressed TEVAR for **Chronic TBAD***

*Fitzgibbon B, Jordan F, Hynes N, et al. Endovascular versus open surgical repair for complicated chronic type B aortic dissection. Cochrane Database of Systematic Reviews. 2018;2018(4). Doi:10.1002/14651858.CD012992

Entire course TBAD:
Short- & Long-term outcomes

Chronic vs ?

- Hyperacute
- Acute
- Subacute

Patients

*Tsai MS, Lin MH, Lee CP, et al. Chang Gung Research Database: A multi-institutional database consisting of original medical records. Biomed J. 2017;40(5):263-269. Doi:10.1016/j.bj.2017.08.002

1. Retrospective study from CGRD of CGMH, 12.4% inpatients & 21.2 % outpatients in Taiwan*
2. medical history, Lab, Image, operations, medication were available
3. ICD-9-CM before 2016, ICD-9-CM & ICD-10-CM for diagnostic codes
4. TEVAR indications for TBAD:

Chronic

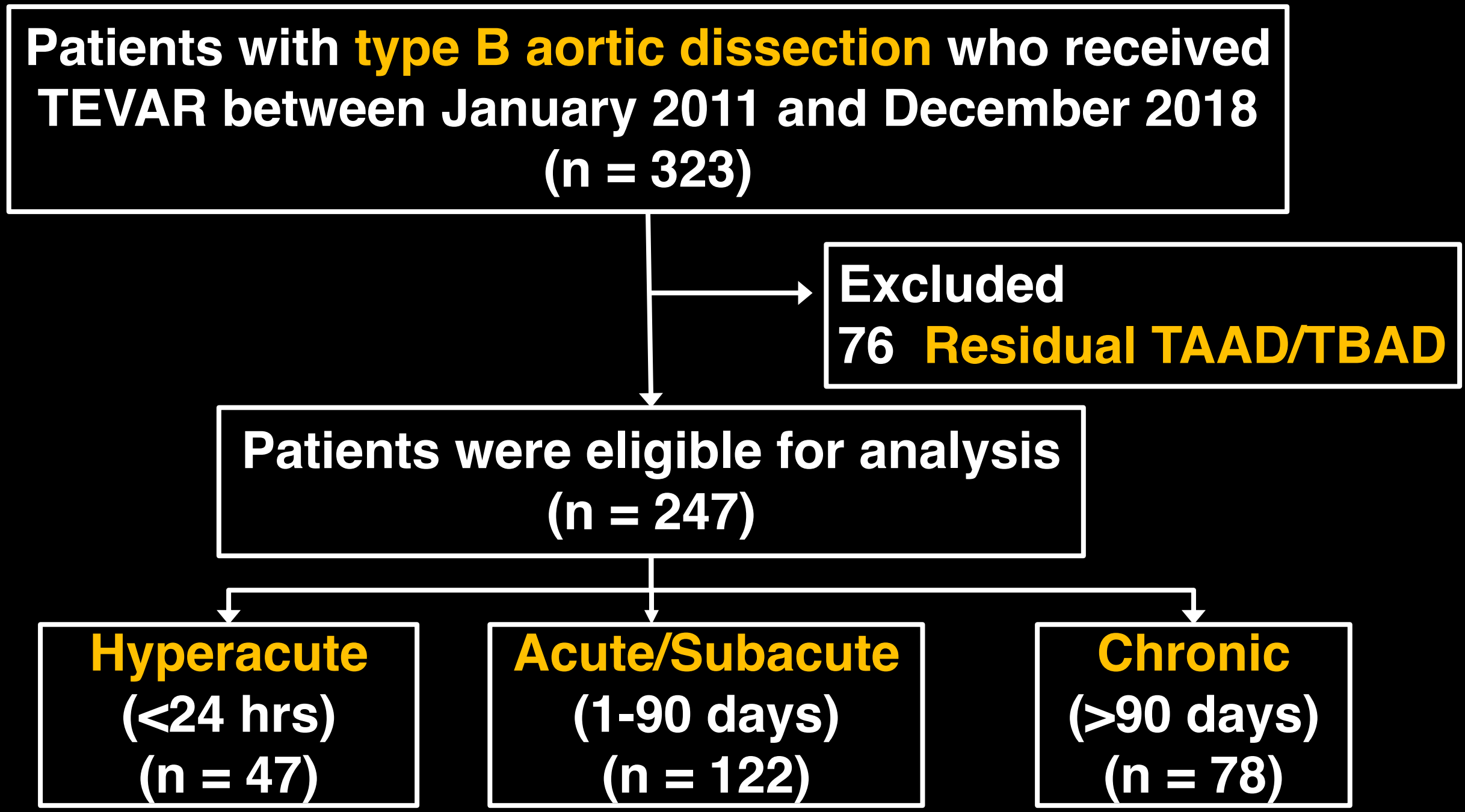
1. aortic diameter of >5.5 cm
2. aortic diameter enlargement by >1 cm/yr or 0.5 cm/ 6m
3. symptoms: pain, malperfusion, and rupture

Non-Chronic

1. Complex features:
    1. aortic rupture
    2. major organ malperfusion: mesenteric organ, limb, spine, or renal malperfusion
2. High-risk features :
    1. chest, back, or abdominal pain
    2. limb numbness; dyspnea; hemothorax;
    3. refractory hypertension

Methods

Baseline characteristics and imaging findings	• the Fisher exact test for categorical variables • one-way analysis of variance test for continuous variables • nonparametric Kruskal–Wallis test for continuous variables with apparent skewness
the two primary outcomes	• in-hospital mortality • postdischarge all-cause mortality during follow-up
intervention timing on in-hospital outcomes	• logistic regression for categorical variables • quantile regression for continuous variables with apparent skewness
intervention timing on the risk of various outcomes during follow-up	• Cox proportional hazard models
age, sex, and CCI score	• adjusted for the multivariable model
RCS modeling as an alternative model	• R (version 4.2.2; R Project for Statistical Computing) and the “rms” package (version 5.1 to 3.1)
Other statistical analyses	• SAS (version 9.4; SAS Institute, Cary, NC, USA).
Significance	• A two-sided P value of <0.05 was considered significant.

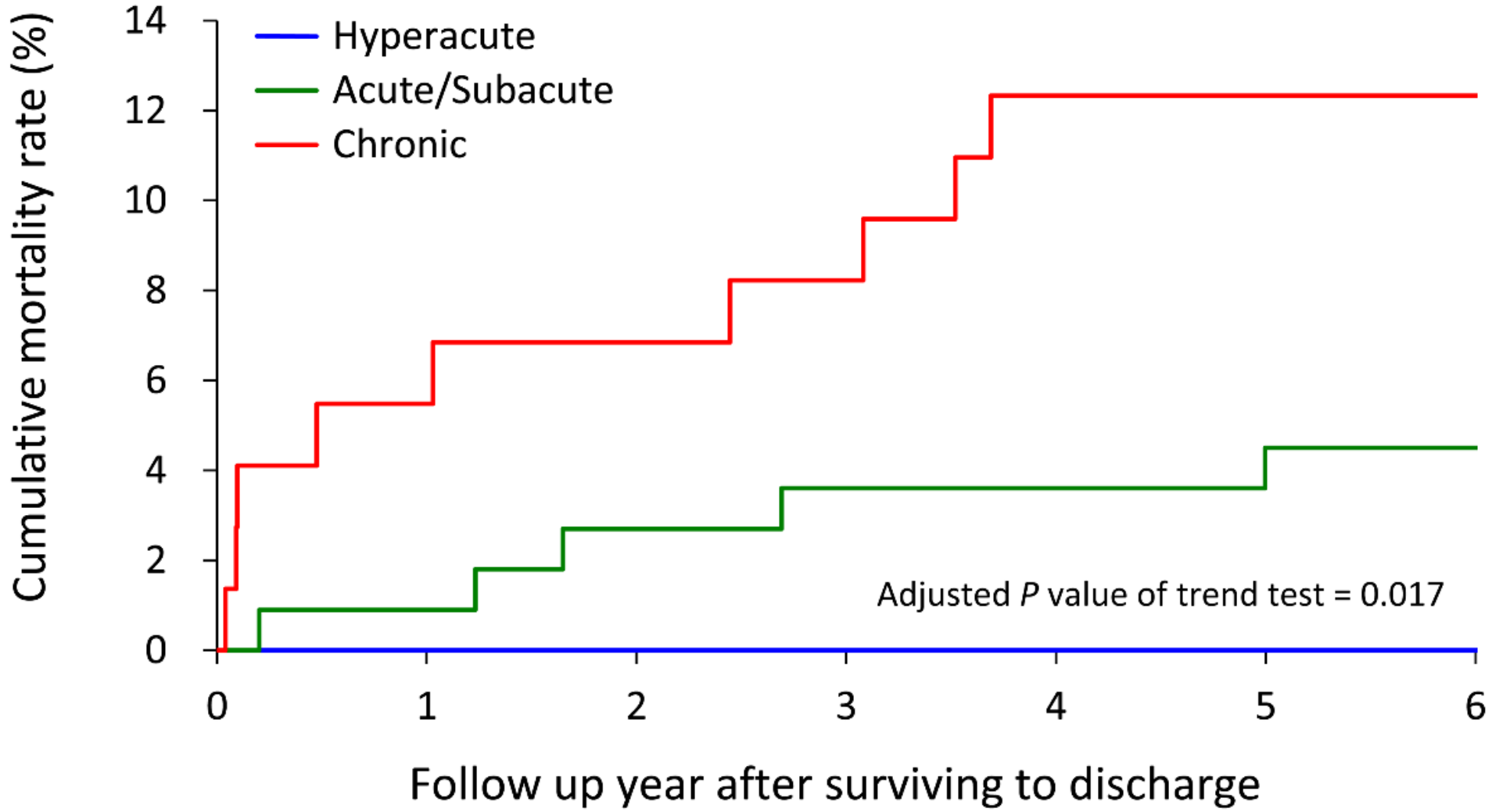

Patients with type B aortic dissection who received TEVAR between January 2011 and December 2018 (n = 323)
Excluded
76 Residual TAAD/TBAD
Patients were eligible for analysis (n = 247)
Hyperacute (<24 hrs) (n = 47)
Acute/Subacute (1-90 days) (n = 122)
Chronic (>90 days) (n = 78)

Results: In-hospital Outcomes (highlight)

Outcomes	Total (n = 247)	Hyperacute (n = 47)	Acute/Sub-acute (n = 122)	Chronic (n = 78)	P value of trend test	Adjusted P value of trend test*
In-hospital death	**24 (9.7)**	**8 (17.0)**	**11 (9.0)**	**5 (6.4)**	**0.069**	**0.036**
Paraplegia	2 (0.8)	1 (2.1)	1 (0.8)	0 (0.0)	0.239	0.557
Any stroke	15 (6.1)	4 (8.5)	7 (5.7)	4 (5.1)	0.475	0.362

Results: Follow-up Outcomes (highlight)

Outcomes	Total (n = 223)	Hyperacute (n = 39)	Acute/Sub-acute (n = 111)	Chronic (n = 73)	P value of trend test	Adjusted P value of trend test*
All-cause death	**14 (6.3)**	**0 (0.0)**	**5 (4.5)**	**9 (12.3)**	**0.005**	**0.017**
Aortic-related death	7 (3.1)	0 (0.0)	2 (1.8)	5 (6.8)	0.035	0.039



Number of patients at risk:

Hyperacute	39	27	21	16	13	10	6
Acute/Subacute	111	71	56	44	31	17	6
Chronic	73	48	41	30	20	15	11

Discussion and Conclusion

- **Chronic TBAD**: TEVAR is associated with the lowest short-term mortality but the highest rate of long-term mortality.
- **Hyperacute TBAD**: Long-term mortality is the lowest if patients survive the initial in-hospital period. However, the in-hospital mortality is the highest.
- Aortic remodeling and long-term survival outcomes suggest that careful patient selection for **early TEVAR during the acute/subacute stage and before the chronic stage** could improve TBAD prognosis.

End

- For more information and discussion, please scan the QR code: