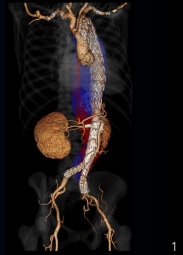


DEBATE: With Uncomplicated Acute TBADs, The Case For Waiting 2-6 Weeks From Onset For TEVAR And Then Limiting Aortic Coverage



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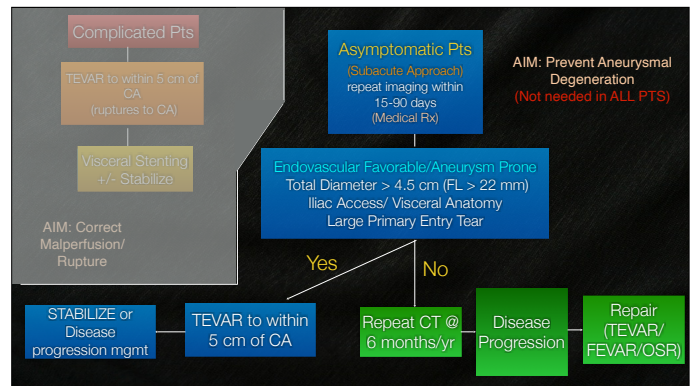


Disclosures

	Cook Medical	WL Gore	Getinge	Centerline Biomedical	VITTA
Relationship	Research Support, Clinical Trials, Consulting	Clinical Trials, Consulting	Consulting	Consulting	Consulting, Clinical Trials
Received	Grants, Honoraria	Honoraria	Honoraria	Stock Options	Honoraria

Important Issues

- **Timing of Repair**
 - Delayed Repair - Subacute Phase versus During the Acute Phase
- **Extent of Aortic Coverage**
 - Limited - Less than 15 cm coverage
 - Entire thoracic aorta (L SCA to CA)
 - Near Total-Limited (5 cm above CA)



Subacute Approach Rationale

Treatment during stable phase of Dz (Asymptomatic Pts)

- Endovascular favorable patient selection at high risk for needing repair
- Delay repair to allow for aortic stabilization
 - Decreasing procedural complications
 - Reduce risk of RTAD (1.3-24%)
 - Elective cases: < 1%
- Unlikely to negatively impact remodeling
- Reduce risks from acute intervention
- Patient at minimal additional risk

Anatomic parameters predicting progression

- Large entry tear
- Total aortic diameter > 4.5 cm
- FL > 22 mm
- # vessel from FL
- # of entry tears

Progression: 75%

Appropriate Patient Selection and Monitoring !!!!!

"Primum non nocere"
First, do no harm!
 - Hippocrates



Timing of Repair

- Severe complications more common in the acute and delayed acute (p=0.04)
- Conclusions: Delayed intervention lowers the risk by a factor of 3x - 4x

Acute Delayed (2-14d) 33%
Acute (<48h) 53%
SubAcute 14%
P=0.04

Chen H. D., et al. (2014). Impact of timing on major complications after thoracic endovascular aortic repair for acute type B aortic dissection. *The Journal of Thoracic and Cardiovascular Surgery* 2014 10 10

Timing of Repair

Also impacts outcome at 1 yr

- Compared 238 patients with uncomplicated TBAD tx with TEVAR

	N	30-day Mortality
Acute	142	1.5%
Subacute	96	0%

- Composite Outcome (death, rupture, new dissection, RTAD, endoleak, and late re-intervention)
- Favored subacute treatment @ 1yr (HR 0.25)

Yang, G. et al. Timing of Endovascular Repair Impacts Long-term Outcomes of Uncomplicated Acute Type B Aortic Dissection. *J Vasc Med Biol* 2021 33 1017

Endovascular repair of acute vs. subacute uncomplicated type B aortic dissection: a systematic review and meta-analysis

Wenxin Zhao¹, Yang Yang², ZhiYuan Wu³, ZuoGuan Chen⁴, Yongheng Diao⁵, Yong Lan⁶ and Yongjun Li⁷*

- 3769 pts, prior to 2023 (6 studies)
- Acute Tx: 2642, Subacute: 1127
- Mean F/U: 38 months
- Results: (Acute Tx > Subacute Tx)
- Increased Risk of 30-day complications

Study or Subgroup	acute	subacute	Total	Events	Total	Weight	M-H, Random, 95% CI
Asian W. Res2022	24	128	152	14	12	0.2%	1.83 [0.0, 3.7]
Chen et al 2021	162	464	626	41	24	26.8%	1.47 [0.0, 2.9]
Cheng et al 2021	24	130	154	13	4	2.7%	2.07 [0.0, 4.1]
Chen et al 2022	73	130	203	13	13	4.3%	1.93 [0.0, 3.9]
He et al 2022	122	222	344	28	28	28.1%	1.93 [0.0, 3.9]
Jiang et al 2022	298	398	696	38	31	33.2%	1.90 [1.4, 2.5]
Total events	360	1107	1467	106	108		1.93 [1.4, 2.5]
Total pts	2642	1127	3769				
Heterogeneity: $I^2 = 17.0\%$; $tau^2 = 0.004$; $P = 0.26$							
Test for overall effect: $Z = 4.13$ ($P < 0.00001$)							

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- Increased Risk of 30-day and 1-year mortality

Study or Subgroup	acute	subacute	Total	Events	Total	Weight	M-H, Random, 95% CI
Asian W. Res2022	4	128	132	4	12	14.4%	0.38 [0.1, 2.4]
Chen et al 2021	26	464	490	6	24	14.1%	1.23 [0.1, 2.3]
Cheng et al 2021	2	130	132	0	4	1.3%	0.42 [0.0, 0.7]
Chen et al 2022	65	130	195	13	28	22.6%	1.93 [0.0, 3.9]
He et al 2022	65	222	287	13	28	25.4%	1.93 [0.0, 3.9]
Jiang et al 2022	57	398	455	6	31	10.4%	2.45 [0.1, 5.1]
Total events	151	1007	1158	42	108		2.01 [1.5, 2.6]
Total pts	2642	1127	3769				
Heterogeneity: $I^2 = 41.0\%$; $tau^2 = 0.047$; $P = 0.001$							
Test for overall effect: $Z = 10.39$ ($P < 0.00001$)							

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- Increased Risk of 30-day complications
- Increased Risk of 30-day and 1-year mortality
- Reintervention more likely

Study or Subgroup	acute	subacute	Total	Events	Total	Weight	M-H, Random, 95% CI
Asian W. Res2022	1	128	129	1	12	3.1%	0.10 [0.0, 0.2]
Chen et al 2021	26	464	490	6	24	6.7%	1.33 [0.7, 2.2]
Cheng et al 2021	1	130	131	1	4	1.2%	0.83 [0.0, 1.7]
Chen et al 2022	41	130	171	13	28	12.1%	0.45 [0.0, 0.9]
He et al 2022	65	222	287	13	28	12.1%	1.93 [0.0, 3.9]
Jiang et al 2022	57	398	455	6	31	6.8%	1.43 [0.0, 2.9]
Total events	201	1107	1308	40	108		1.43 [1.0, 1.9]
Total pts	2642	1127	3769				
Heterogeneity: $I^2 = 10.0\%$; $tau^2 = 0.001$; $P = 0.31$							
Test for overall effect: $Z = 11.61$ ($P < 0.00001$)							

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- Acute Tx: 2642, Subacute: 1127
- Mean F/U: 38 months
- Results: (Acute Tx > Subacute Tx)
- Increased Risk of 30-day complications
- Increased Risk of 30 day and 1-year mortality
- Reintervention more likely
- No difference in long-term prognosis

Study or Subgroup	acute	subacute	Total	Events	Total	Weight	M-H, Random, 95% CI
Asian W. Res2022	10	128	138	14	12	14.4%	0.38 [0.1, 2.4]
Chen et al 2021	26	464	490	6	24	14.1%	1.23 [0.1, 2.3]
Cheng et al 2021	11	130	141	7	4	12.1%	0.68 [0.0, 1.3]
Chen et al 2022	5	130	135	13	28	22.6%	0.48 [0.0, 0.9]
He et al 2022	137	222	359	13	28	25.4%	1.93 [0.0, 3.9]
Jiang et al 2022	54	398	452	6	31	10.4%	1.95 [0.1, 3.9]
Total events	205	1107	1312	49	108		1.50 [1.1, 2.0]
Total pts	2642	1127	3769				
Heterogeneity: $I^2 = 23.0\%$; $tau^2 = 0.022$; $P = 0.04$; $P = 0.71$							
Test for overall effect: $Z = 0.07$ ($P = 0.93$)							

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Thoracic endovascular aortic repair for hyperacute, acute, subacute and chronic type B aortic dissection: Meta-analysis of reconstructed time-to-event data^{1,2,3,4}

Michel Pompeu Sá^{1,2,3,4}, Xander Jacquemyn¹, James A. Brown^{1,2}, Danial Ahmad^{1,2}, Derek Serna-Gallegos^{1,2}, George J. Arnaoutakis⁴, Michael J. Singh^{1,2}, Ibrahim Sultan^{1,2}

Oct 2024

- 4793 pts (13 studies published prior to 2023)
- Outcome measures
 - All-cause mortality
 - Aortic related mortality
 - Late aortic reinterventions

Phase	Proportion (%)	Mean age (years)	Female sex (%)	Hypertension (%)	Diabetes (%)	Smoking (%)	Marfan (%)	Major aortic disease (%)
Hyperacute	10.3%	62.4 ± 14.0	33.7%	52.8%	10.8%	42.2%	0.0%	13.1%
Acute	51.9%	65.0 ± 13.4	37.0%	46.2%	11.3%	46.3%	0.0%	9.2%
Subacute	25.9%	58.8 ± 12.4	32.2%	32.0%	10.2%	41.0%	0.0%	7.5%
Chronic	11.9%	58.8 ± 12.5	32.7%	32.0%	12.6%	41.0%	1.4%	4.8%

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- TEVAR in hyperacute is associated with very poor outcomes in uncomplicated TBAD
- TEVAR in the chronic phase has a steady decline in survival over time with the high rates of aortic-related deaths and late aortic reintervention
- The subacute phase is associated with the best outcomes among all phases
- Overall Survival

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- TEVAR in hyperacute is associated with very poor outcomes in uncomplicated TBAD
- TEVAR in the chronic phase has a steady decline in survival over time with the high rates of aortic-related deaths and late aortic reintervention
- The subacute phase is associated with the best outcomes among all phases
- Overall Survival
- Freedom from reintervention

The Safety and Efficacy of Extended TEVAR in Acute Type B Aortic Dissection

Xiaoying Luo, MD, Yazan M. Dawaraj, MD, William D. Jordan, Jr MD, Edward P. Chew, MD, Erik S. Vamvakopoulos, MD, and Bradley C. Leiberman, MD

Division of Cardiothoracic Surgery, Johns Hopkins School of Medicine, Johns Hopkins Hospital, Baltimore, Maryland, George Washington University and Washington State University School of Medicine, Spokane, Washington, and Division of Cardiothoracic Surgery, McGill University of Montreal, Canada, Cleveland, Ohio, Canada

- Early concern with TEVAR → paraplegia therefore limited coverage <15 cm
- Extension with TEVAR alone has not currently been shown to increase the risk of ischemia complications
- Extend cover to region just above CA

Outcomes

- Improved FL remodeling and potentially decrease the need for re-intervention
- Aligns graft into strait region of the aorta
- Decreases stent-graft induce new entry tears (SINE)

Risk factors for distal stent graft-induced new entry after endovascular repair in uncomplicated type B aortic dissection

Dongqiao Xiang, MD^{1,2}, Bin Chai, MD^{1,2}, Yuxi Cui, MS^{1,2}, Jia Huang, MD^{1,2}, Huijin Liang, MD^{1,2}, Bin Liang, MD^{1,2}, Huangxuan Zhao, PhD^{1,2}, Fan Yang, MD, PhD^{1,2}, and Chuansheng Zheng, MD, PhD^{1,2}

Wuhan, China

- Uncomplicated Type B Dissection: N=226
- Evaluated numbers proximal and distal factors
- Mean F/U: 4.6 years
- Multivariate Analysis
 - Type III Arch
 - Decreased angle
 - Increased distal oversizing
 - Increased distal mismatch ratio

Xiang, D. et al. 77, 37-45.e1 (2023).

Conclusion

- Current management strategy for acute TBAD has changed
- When patients are ASYMPTOMATIC:
 - Treatment in the subacute phase likely improves outcomes with significant risk reduction for the patient
 - Subacute treatment results in the best overall survival and freedom from reintervention.

