

THE VASCULAR WORLD IS COMING TOGETHER IN NEW YORK IN NOVEMBER 2024.

VEITH AFFILIATE AND YOU'RE INVITED!

Tuesday, November 19 - Saturday, November 23, 2024

How Best To Treat Aortic Dissections (Type A Or Type B) Extending Into The Arch, Its Branches Or Ascending Aorta; When Open, When Endo, When Hybrid: More Updated Meta-Analysis Comparison Between Medical, Surgical And Endovascular Treatment In 2024

I-Hui Wu, M.D., PhD
 Clinical Professor
 Chairman, Department of Trauma Surgery
 Department of Cardiovascular Surgery
 National Taiwan University Hospital, Taiwan

Disclosure

Speaker name: I-Hui Wu

- I do not have any potential conflict of interest

European Journal of Cardio-Thoracic Surgery 41 (2022) 1895–1896
 https://doi.org/10.1093/ejcts/ezab244 Advance Access publication 8 December 2021

INVITED COMMENTARY

Cite this article as: Yamazaki K, Minatoya K. Tear-oriented strategy to avoid tears of patients and surgeons. Eur J Cardiothorac Surg. 2022;61:1895-6.

Tear-oriented strategy to avoid tears of patients and surgeons

Kazuhiro Yamazaki and Kenji Minatoya

Department of Cardiovascular Surgery, Kyoto University Hospital, Kyoto, Japan

*Corresponding author: Department of Cardiovascular Surgery, Kyoto University Hospital, 54 Kawaharacho, Shogoin, Sakyo-ku, Kyoto 600851, Japan. Tel: +81-75-751-3300; e-mail: kminatoya@krcu.kyoto-u.ac.jp

Keywords: Acute aortic dissection; Tear-oriented strategy; Surgery

- Tear-oriented surgery for acute aortic dissection has been widely recommended
- In retrograde type A aortic dissection/IMH
 - Total arch replacement or frozen elephant trunk technique carries significant morbidities and mortalities

Interactive Cardiovascular and Thoracic Surgery 2022, 35(6), 1062-1064
 https://doi.org/10.1093/icvts/itac264 Advance Access publication 22 October 2022

BRIEF COMMUNICATION

Cite this article as: Lopez-Marco A, Adams B, Do AY. Retrograde type A aortic dissection: a different evil. Interact Cardiovasc Thorac Surg. 2022; doi:10.1093/icvts/itac264

Retrograde type A aortic dissection: a different evil

Ana Lopez-Marco, Benjamin Adams and Aung Ye Oo

Remaining gap

- Is there a subgroup of patients of acute type A intramural hematoma/dissection, who can benefit from TEVAR repair? As the treatment for type B aortic dissection

Retrograde Type A intramural hematoma/dissection with intimal tear/PAU in the descending thoracic aorta?

Studies reporting on TEVAR of Retro-TAIMH

Author	Number of patients	Results	Survival	Complications
Wang et al.	24	Technical success 100%	30-day mortality 0% During 37.5 months of follow-up of 37.5 months, survival 100%	RTAAD: 0% Late reintervention: 1/18 (5.6%)
Li et al.	24	Technical success 100%	30-day mortality 0% At 30 months, no aorta-related death	RTAAD: 1/24 (4.1%) at 30.0 months follow-up Late reintervention: 1/24 (4.1%)
Li et al.	24	Technical success 100%	30-day mortality: 2/24 (8.3%) Late death: 2/44 (4.5%)	RTAAD: 1/24 (4.1%) Late reintervention: 1/44 (2.3%)
Ryoo et al.	18	Technical success 100%	30-day mortality: 0% Late death: 0%	RTAAD: 0% Late reintervention: 1/18 (5.6%)

TEVAR in Retro-TAIMH

- Favorable aortic remodeling in ascending and descending aorta
- Low rates of RTAAD: 0-4.1%
- Tear-oriented TEVAR in patients with retro-TAIMH shows favorable outcome

Eur J Vasc Endovasc Surg (2020) 60, 386-393
 J Vasc Surg 2023;78:61-9
 Curr Opin Cardiol 2022, 37:446 – 453

Early Outcomes of Acute Retrograde Dissection From the International Registry of Acute Aortic Dissection

Semin Thorac Cardiovasc Surg 2017;29:150-9.

Table 3. In-hospital Outcomes

	0 (0.0)	1 (16.7)	0 (0.0)	1.00
Visceral ischemia	0 (0.0)	1 (16.7)	0 (0.0)	1.00
Aortic rupture	3 (75.0)	2 (33.3)	1 (33.3)	0.49
Multiforgan failure	1 (25.0)	0 (0.0)	1 (33.3)	0.27
Cardiac	0 (0.0)	1 (16.7)	0 (0.0)	1.00

MED, medical management group; SURG, surgical management group; ENDO, endovascular management group; CVA, cerebrovascular accident; SCI, spinal cord ischemia.

- Retrograde extension limited to the arch had a favorable early mortality rate
- Compared to classic type A aortic dissection, retrograde type A aortic dissection had significantly lower early mortality rate
- A subset of patients with acute retrograde aortic dissection may benefit from a medical or endovascular approach rather than open surgery

Endovascular repair of acute zone O intramural hematoma with most proximal tear or ulcer-like projection in the descending aorta

Dong Chen, MD,* Mingyao Luo, MD,* Kun Fang, MD,* and Chang Shu, MD,^{1,2,3} Beijing and Changsha, China

- Medical treatment: 85% conversion to TEVAR or open repair
- No significant difference was found in the 30-day and follow-up mortality between open and TEVAR repair
- Endovascular repair is an option if the maximal diameter and IMH thickness of the ascending aorta are <50 mm and <10 mm

Fig 1. Outcome of retrograde type A intramural hematoma (RTA-IMH) according to initially determined treatment. CT, Computed tomography. Med, medication. TEVAR, thoracic endovascular aortic repair.

J Vasc Surg 2022;75:1561-9

Endovascular vs. Open Surgical Repair in Retrograde Type A Dissection & Intramural Hematoma: A Meta-Analysis

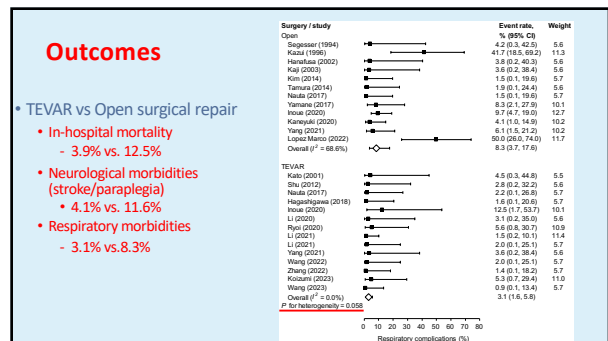
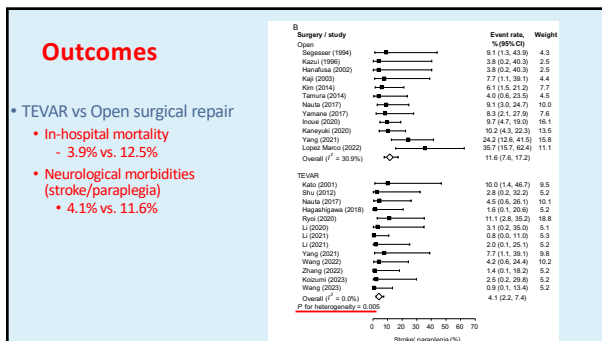
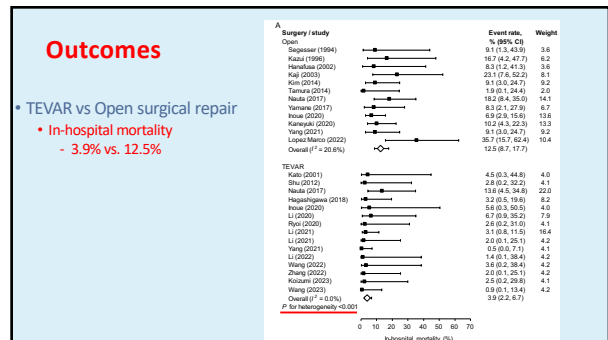
Table 1. Outcome definitions

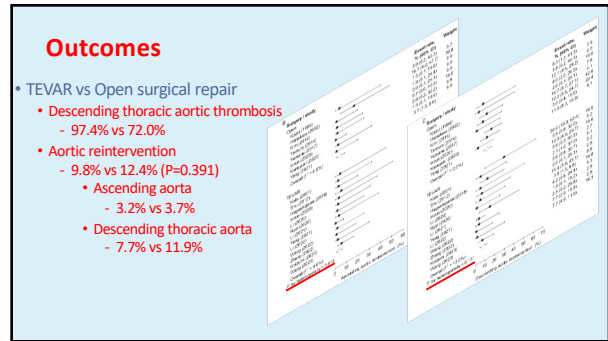
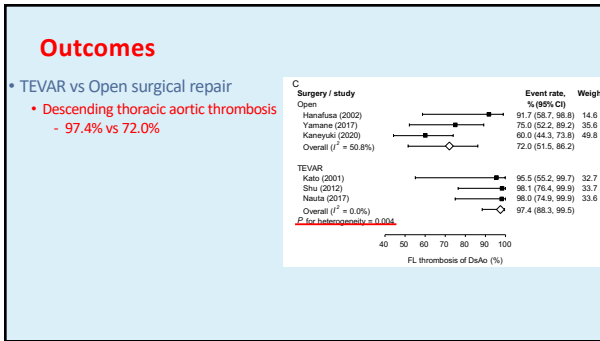
Outcome Measure	Definition
In-hospital mortality	Death within 30 days after intervention or death prior to discharge
Neurological morbidities	Transient ischemic attack, stroke or paraplegia
Respiratory morbidities	Prolonged ventilatory support >48 hours, failure to wean off ventilator or requiring tracheostomy
Renal morbidity	New onset renal impairment requiring dialysis post-operatively
Additional surgical intervention of the ascending or descending aorta (endovascular or open) that occurred after the index procedure either as a result of progression of disease or complication of the index surgical procedure	
Aortic reintervention	Additional surgical intervention of the ascending or descending aorta (endovascular or open) that occurred after the index procedure either as a result of progression of disease or complication of the index surgical procedure

Table 2. Baseline and procedural characteristics of patients according to surgical method.

Variable	Open	TEVAR
Age, year	59.8 ± 4.6	60
Male	299 (90.7%)	450 (90.6%)
Proximal aortic dissection (aortic tamponade)	221 (69.6%)	426 (85.2%)
Aortic insufficiency	154 (47.2%)	175 (35%)
Proximal aortic dissection	45 (13.9%)	133 (26.6%)
Midportion	215 (66.1%)	184 (36.8%)
Aortic rupture	215 (66.1%)	114 (22.8%)
Non-aortic dissection (type)	120 (36.4%)	405 (80.4%)
Aortic IMH thickness (mm)	79 (24.1%)	105 (21%)
Follow-up dissection (months)	215 (66.1%)	426 (85.2%)
TEVAR method	-	294
Open advancing	-	11 (2.2%)
Open	-	11 (2.2%)
Hybrid	-	271 (54.2%)
Open method	272 (83.3%)	-
Stent	210 (62.3%)	-
TEVAR + TE or TE	-	62 (12.3%)

Abbreviations: TEVAR, thoracic endovascular aortic repair; IMH, intramural hematoma; IMH, acute intramural hematoma; TEVAR, total arch replacement; TE, distal aortic TEVAR; TE, thoracic distal aortic TEVAR; IMH, acute intramural hematoma; TEVAR, total arch replacement; TE, distal aortic TEVAR; TE, thoracic distal aortic TEVAR.





Outcomes

Clinical Outcome	TEVAR	Open Surgery
Postoperative Dialysis	5.8% (95% CI: 3.2, 10.1)	9.0% (95% CI: 4.8, 16.2)
Late Mortality	4.7% (95% CI: 2.3, 9.3)	8.1% (95% CI: 3.8, 16.3)
Limb Ischemia	2.6% (95% CI: 1.2, 5.3)	2.3% (95% CI: 1.1, 4.9)
Ischemic Bowel	2.4% (95% CI: 1.2, 4.9)	3.0% (95% CI: 1.5, 5.9)
Myocardial Infarction or Cardiogenic Shock	2.4% (95% CI: 1.2, 4.9)	4.5% (95% CI: 2.5, 8.0)
SINE (Stent-Induced New Entry)	3.8% (95% CI: 2.3, 6.1)	2.4% (95% CI: 1.1, 5.2)
Ascending False Lumen Regression	74.9% (95% CI: 42.6, 92.3)	N/A
Ascending aortic False Lumen Thrombosis	92.6% (95% CI: 67.7, 98.7)	N/A

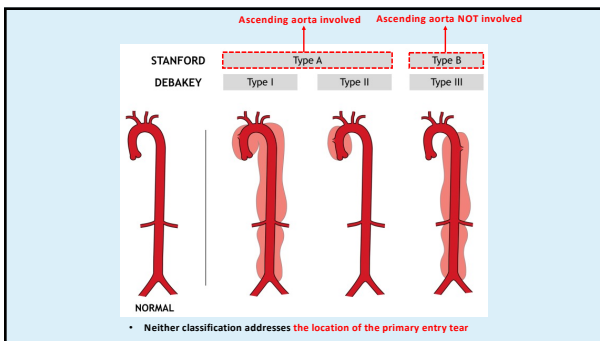
2021 The American Association for Thoracic Surgery expert consensus document Surgical treatment of acute type A aortic dissection

2021 European Association of Cardio-Thoracic Surgeons (EACTS) and the European Society for Vascular Surgery (ESVS) document on the treatment of thoracic aortic pathologies involving the aortic arch: an expert consensus

Current options and recommendations for the treatment of thoracic aortic pathologies involving the aortic arch: an expert consensus document of the European Association for Cardio-Thoracic Surgery (EACTS) and the European Society for Vascular Surgery (ESVS)

Recommendations for the treatment of thoracic aortic pathologies involving the aortic arch: an expert consensus document of the European Association for Cardio-Thoracic Surgery (EACTS) and the European Society for Vascular Surgery (ESVS)

Class IIA: Guidelines for diagnosis and treatment of acute aortic dissection



Society for Vascular Surgery and Society of Thoracic Surgery Reporting Standards for Type B Aortic Dissections

TEM Aortic Dissection Classification

Anatomic Reporting of Aortic Dissections are based on:

- Location of Entry Tear (A vs B)
- Proximal & Distal Extent

EXAMPLES:

- Type A_p: Entry tear identified in zone 0 (A), Distal extent to zone 0.
- Type B_p: Entry tear is identified in zone 0 (B), Proximal extent to zone 0.

Legend:

- T: Type (A, B, non-A non-B)
- E: Entry (E0-E3)
- M: Malperfusion (M0-M3)

Conclusion

- **Risk stratification** in patients with type A dissection/IMH is suggested
- **Primary tear coverage** is the treatment of goal in aortic dissection/IMH
- **Retrograde type A intramural hematoma/dissection in selected patient population**
 - No primary entry tear in the ascending and proximal arch
 - TEVAR offers a potential treatment option, compared to open surgical treatment
 - **Less in-hospital mortality and neurological complications**
 - **Favorable DTA aortic remodeling**
 - **No increased risk of ascending aortic reintervention**
 - Late proximal, distal landing zone dilatation, re-intervention, timing of intervention are still concerned
 - More studies are required

Thanks for your attention !!

