University Heart Center Hamburg

GERMAN AORTIC CENTER HAMBURG

Are Acute Dissections A Contraindication For Endo Arch Repair ?

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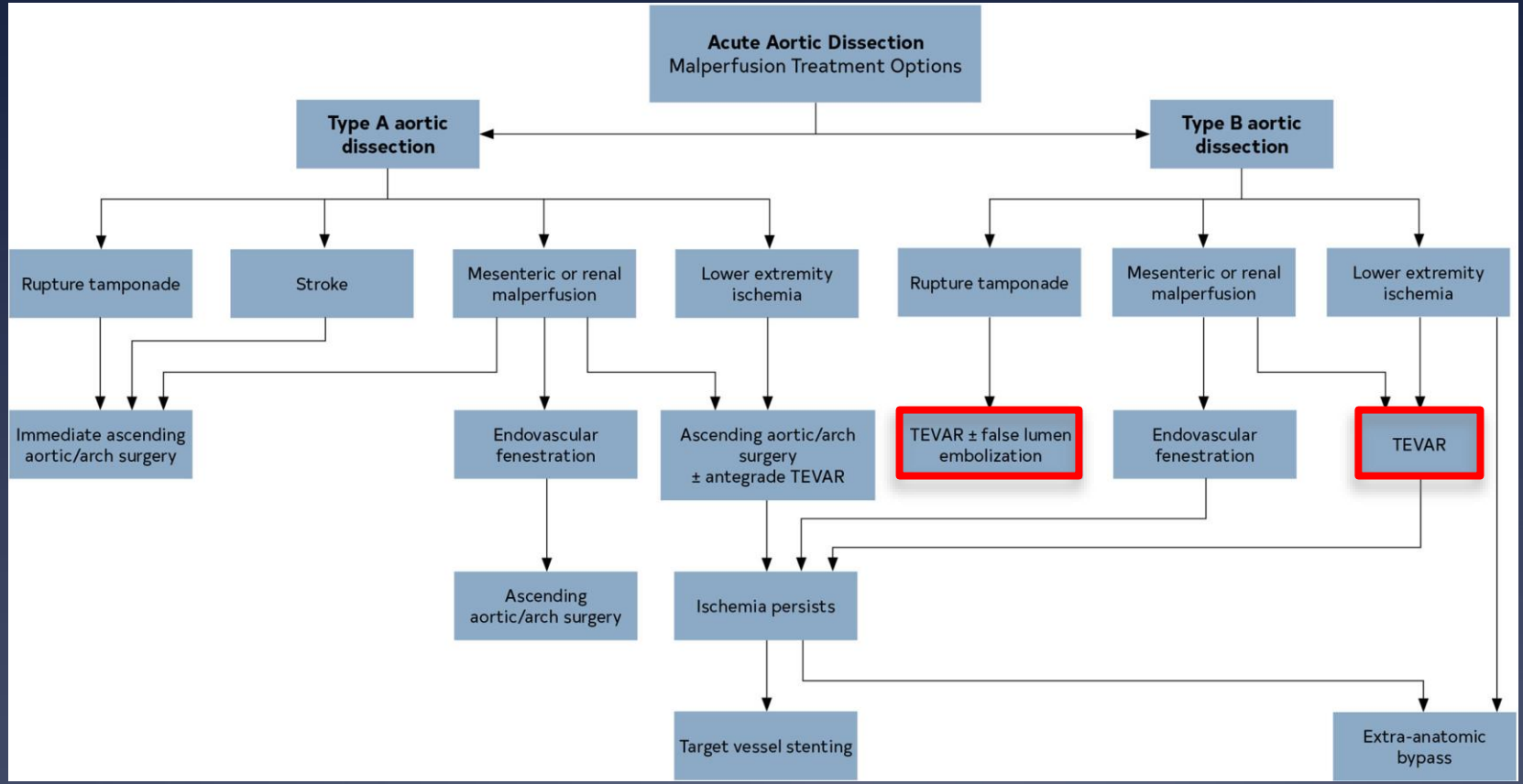
Disclosures

- Consultant: Cook Medical, Philips, Getinge, Terumo Aortic, Arterica
- Research-grants: Cook Medical, Philips, Terumo Aortic, Medtronic
- Travel-grants: Cook Medical, Getinge
- Speaking fees: Cook Medical, Philips, Getinge
- Shares: Mokita-Medical, Arterica, Medyria, Siemens, Philips
- IP: Cook Medical, Terumo Aortic, Mokita Medical
- Royalties: Cook Medical, Terumo Aortic

No

Current Recommendations



Isselbacher, et al. *Circulation*. 2023;146:334-482

Complicated aTBAD & TEVAR

Recommendations for the Management of Acute Type B Aortic Dissection		
COR	**LOE**	**Recommendations**
1	B-NR	1. In all patients with uncomplicated acute type B aortic dissection, medical therapy is recommended as the initial management strategy.[1-3]
1	C-LD	2. In patients with acute type B aortic dissection and rupture or other complications (Table 27), intervention is recommended.[4-6]
1	C-EO	In patients with rupture, in the presence of suitable anatomy, endovascular stent grafting, rather than open surgical repair, is recommended.
2a	C-LD	In patients with other complications, in the presence of suitable anatomy, the use of endovascular approaches, rather than open surgical repair, is reasonable.[4-6,7]

IRAD database sub-analysis

- In-hospital mortality:13%
- OSR: 32.1% vs. BMT & TEVAR: 9.6% ($P<0.001$)

VIRTUE & RESTORE Registries

- Survival benefit related early intervention
- Re-intervention rates 20-39%

Isselbacher et al. *Circulation*. 2023;146: 334-482
Suzuki, et al. *Circulation*. 2003;108:312-7
VIRTUE Registry Investigators. *Eur J Vasc Endovasc Surg*. 2014;48:363-71
Zipfel, et al. *J Endovasc Ther*. 2011;18:131-43

Uncomplicated aTBAD & TEVAR

Recommendations for the Management of Acute Type B Aortic Dissection		
2b	B-R	3. In patients with uncomplicated acute type B aortic dissection who have high-risk anatomic features (Table 28), endovascular management may be considered.[8,9]

BMT

- 10% 30-day mortality
- Decreased long-term survival

TEVAR

ADSORB trial

- No survival benefit
- TEVAR superior in FL & aortic remodeling

INSTEAD-XL

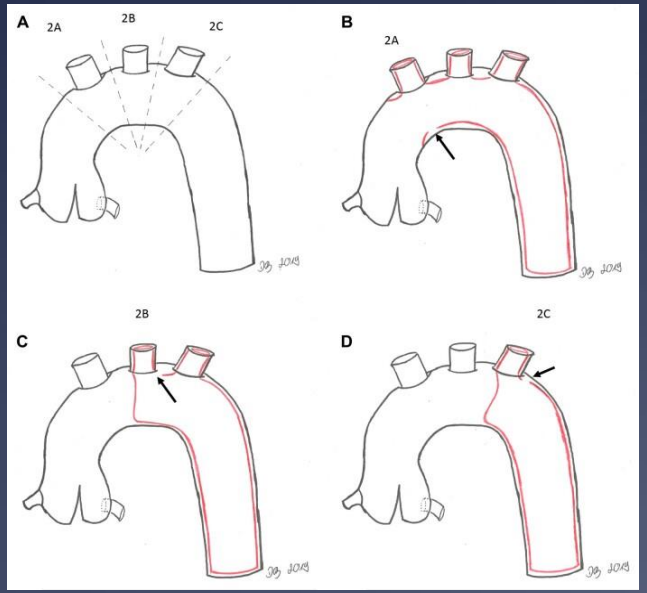
- Improved 5-year aorta-related survival & disease progression

Isselbacher, et al. *Circulation. 2023;*146:334-482
Nienaber CA, et al. *Circ Cardiovasc Interv*. 2013;6:407-16
Torrent DJ, et al. *J Vasc Surg*. 2021;73:826-35.

TBAD Involving Aortic Arch

Non-A non-B aortic dissection: A literature review

Callum Howard MD[1] | Anuradha Ponnapalli MD[1] | Safwan Shaikh MD[2] | Mohammed Idhrees MS, MCh, FAIS[3] | Mohammad Bashir MD, PhD, MRCS[4]



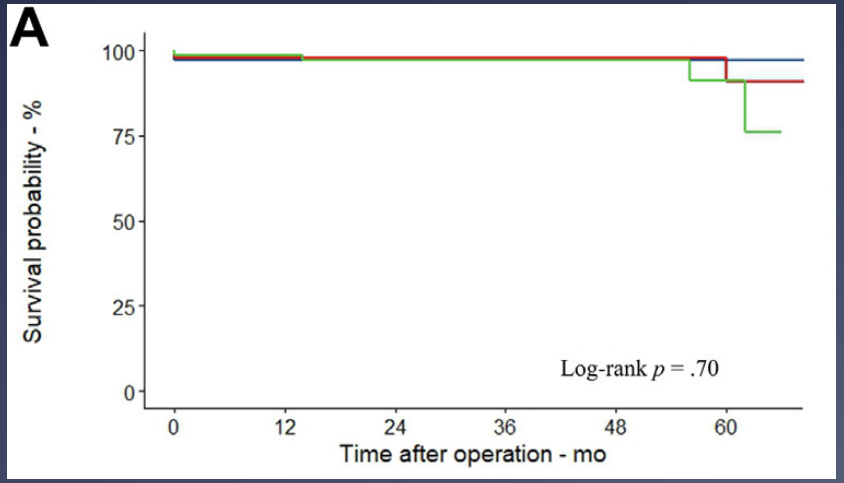
- 3% to 11% with entry tear within the arch
- 16% of TBAD extend into the aortic arch
  - Lower mortality compared to TAAD
  - Younger patients
  - Surgery/TEVAR better than BMT

Howard et al. 2021; *J Card Surg* 36:1806-13
Carino et al. 2019; *Curr Opin Cardiol* 34:621-6

TBAD Involving Aortic Arch

Surgical treatment patterns and clinical outcomes of type B aortic dissection involving the aortic arch

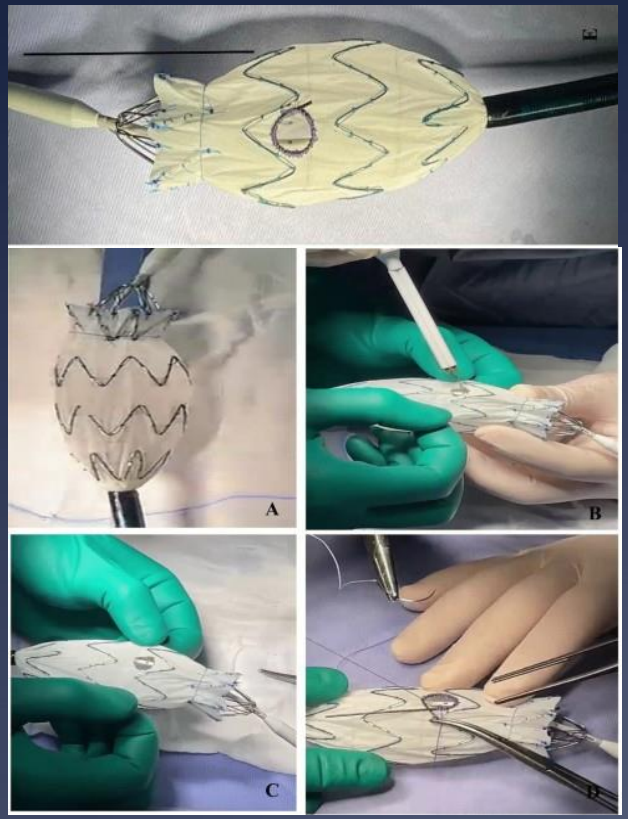
Chen Tian, MD,[a] Dong Chen, MD,[a] Jiawei Zhao, MD,[a] Yidan Zhang, MD,[a] Mingyao Luo, MD,[a] Kun Fang, MD,[a] Chuan Tian, MD,[a] Xiaogang Sun, MD,[a] Hongwei Guo, MD,[a] Xiangyang Qian, MD,[a] *and* Chang Shu, MD,[a,b]
Beijing and Changsha, China



- Single center 2015-2019
- n=151 with TBAD involving aortic arch
  - TEVAR 48%
  - Hybrid 30%
  - OSR 22%
- Early mortality similar: (1.4% vs 2.2% vs 3.0%; p= .79)
- AKI lower for TEVAR (4.2% vs 26% vs 24%; p=.001)
- Mid-term FU (40 months):
  - Mortality similar (5.6% vs 4.3% vs 3.0%; p= 1.0)
  - Aortic-rel. events (17% vs 15% vs 12%; p= .83)

Tian, et al. *J Vasc Surg.* 2023;77:1016-27

Acute TBAD Involving Aortic Arch & PMEG



Fenestrated Thoracic Endovascular Aortic Repair Using Physician Modified Stent Grafts for Acute Type B Aortic Dissection with Unfavourable Landing Zone

Jiechang Zhu [a], Lujing Zhao [b], Xiangchen Dai [a,*], Yudong Luo [a], Hailun Fan [a], Zhou Feng [a], Yiwei Zhang [a], Fanguo Hu [a]

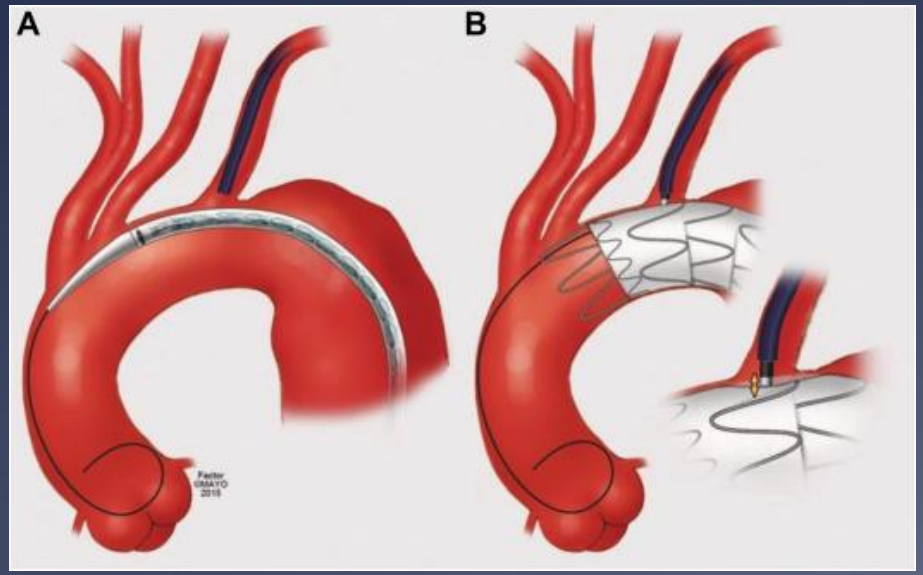
- Single center 2015-2016
- n= 20 with complicated aTBAD extending or involving LSA
- 20 LSA fenestrations, 1 with LCCA scallop
- Technical success 18 (90%)
  - 1 partial coverage of the LCCA
  - 1 misalignment solved by chimney
- Mortality (7m) 0
- Stroke 0
- Patency (7m) 0

Zhu et al. 2018; *Eur J Vasc Endovasc Surg* 55:173-6
Gallicchio, et al. 2023; *J Cardiothor Surg* 18:7

TBAD Involving Aortic Arch & ISLF

Early and midterm outcomes of in situ laser fenestration during thoracic endovascular aortic repair for acute and subacute aortic arch diseases and analysis of its complications

Chong Li, MD,[a] Peng Xu, MD,[b] Zhaohui Hua, MD,[b] Zhouyang Jiao, MD,[b] Hui Cao, MD,[b] Shirui Liu, MD,[b] Wayne W. Zhang, MD,[c] *and* Zhen Li, MD, PhD,[b] *New York, NY; Zhengzhou, China; and Seattle, Wash*



- Single center 2017-2019
- n=148 incl. acute/subacute TAAD, TBAD
- Single-vessel fenestration 84%
- Time to TEVAR: 7 ± 3 days
- Technical success 97%
- 30-day mortality 2.9%
- Retrograde TAAD 2.0%
- Stroke 3.4%

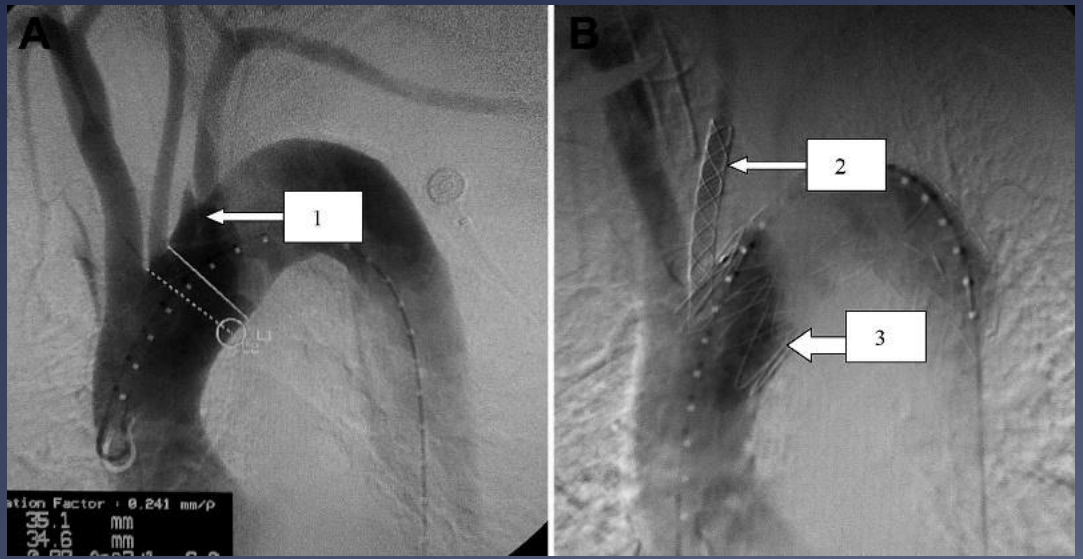
TAAD independent predictor for:
Multiple fenestrations ($p < .001$)
Complications ($p = .008$)

Li et al. 2020; J Vasc Surg 72:1524-33
McKinley et al. 2023 Ann Vasc Surg 94:119-28

Acute TBAD Involving Aortic Arch & Chimney

Early Results of Left Carotid Chimney Technique in Endovascular Repair of Acute Non-A–Non-B Aortic Dissections

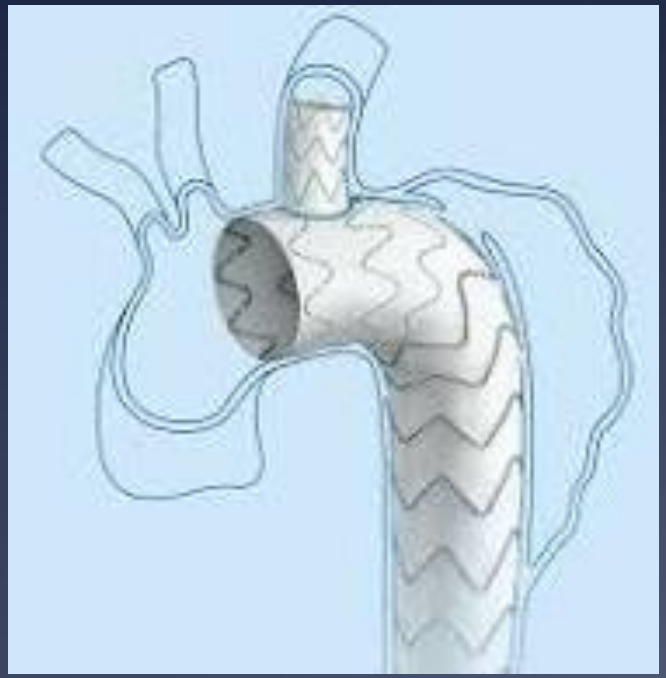
Chang Shu, MD, PhD[1]; Ming-Yao Luo, MD[1,2]; Quan-Ming Li, MD[1]; Ming Li, MD[1]; Tun Wang, MD[1,2]; and Hao He, MD[1,2]



- Single center 2008-2010
- n=8 acute TBAD, tear in aortic arch
- All single chimneys (LCCAs)
  - LSA intentionally covered
- Technical success 100%
  - 2 type II endoleaks
- FU: 12months
- Mortality, stroke, SCI: 0%

Shu, et al 2011; J Endovasc Ther 18:477-84

Acute TBAD Involving Aortic Arch & LSA Grafts



Endovascular Aortic Repair With Castor Single-Branched Stent-Graft in Treatment of Acute Type B Aortic Syndrome and Aberrant Right Subclavian Artery

Xinyan Pang, MD, PhD[1], Shi Qiu, MD, PhD[2], Chen Wang, MD[1], Kai Liu, MD, PhD[1], Xin Zhao, MD, PhD[1], and Changcun Fang, MD, PhD [1]

- Single center 2019
- n=5 acute TBAD with Aberrant RSA; 4 with IMH
- Castor single-branched stent-graft
- Technical success 100%
- Mortality /MAE 0%
- Complete FL-thrombosis in graft-covered segment 100%

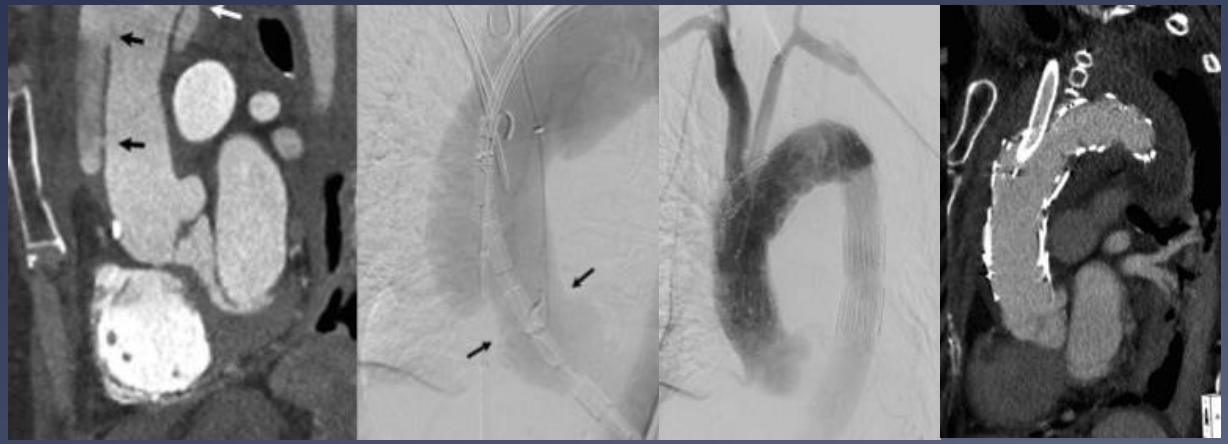
Pang, et al. *Vasc Endovasc Surg.* 2021;55:551-9.
Wang, et al. *Int J Cardiol.* 2023;393:131393.
Chang, et al. *Ann Thor Surg.* 2022;113:545-53.

AD Involving Aortic Arch & B-TEVAR

Emergency Use of Branched Thoracic Endovascular Repair in the Treatment of Aortic Arch Pathologies

Check for updates

Yuk Law, FRCS, Tilo Kölbel, PhD, Christian Detter, MD, Fiona Rohlffs, MD, Yskert von Kodolitsch, MD, Vladimir Makaloski, MD, Eike Sebastian Debus, PhD, and Nikolaos Tsilimparis, MD



- Single center 2012-2017
- n=11; 3/11 acute AD
- Technical success 100%
- 30-day mortality 9%
- Stroke 9%
- Re-interventions 45%
- Patency 100%

Law et al. 2018; J Endovasc Ther 25:561-5
Law et al 2019; Ann Thor Surg 107:1799-806

Acute TBAD & endo arch repair

CASE REPORT **CARDIAC SECTION**

The Journal of Cardiovascular Surgery 2023 August;64(4):450-5

DOI: 10.23736/S0021-9509.22.12462-6

language: English

Emergent physician modified carotid fenestrated TEVAR for the treatment of a complicate acute type nonA-nonB aortic dissection with undetected multiorgan malperfusion

Paolo SPATH [1], Jan STANA [1], Giulia MARAZZI [1], Sven PETERSS [2], Carlota FERNANDEZ-PRENDES [1], Nikolaos TSILIMPARIS [1]

[1] *Department of Vascular Surgery, Ludwig-Maximillian University Hospital, Munich, Germany;* [2] *Department of Cardi Surgery, LMU University Hospital, Munich, Germany*

Ascending thoracic endovascular aortic repair with chimney stent graft to free vein coronary bypass for ruptured type A aortic dissection

Mehdi Teymouri, MD,[a] Manish Mehta, MD, MPH,[a] Philip Paty, MD,[a] Michael Layden, MD,[b] Zachary W. Kostun, MD,[a] *and* Lalithapriya Jayakumar, MD,[a] *Latham and Queensbury, NY*

frontiers | Frontiers in Cardiovascular Medicine

TYPE Case Report
PUBLISHED 16 November 2023
DOI 10.3389/fcvm.2023.1299192

Case Report: Successful endovascular treatment of acute type A aortic dissection

Leonard Pitts[1,2], Roland Heck[1,2], Matteo Montagner[1,2], Adam Penkalla[1,2], Markus Kofler[1,2,3], Volkmar Falk[1,2,3,4], Jörg Kempfert[1,2,3] and Semih Buz[1,2,3]*

University of Cyprus, Cyprus
Andrzej Polanczyk,
Main School of Fire Service (SGSP), Poland

Outcomes of emergency in situ laser fenestration-assisted thoracic endovascular aortic repair in patients with acute Stanford type A aortic dissection unfit for open surgery

Dong Yan, MD, Huihua Shi, MD, Jinbao Qin, MD, Zhen Zhao, PhD, Minyi Yin, MD, Xiaobing Liu, Kaichuang Ye, MD, Guang Liu, PhD, Weimin Li, MD, *and* Xinwu Lu, PhD, MD, *Shanghai, China*

Journal of Endovascular Therapy
OnlineFirst

https://doi.org/10.1177/15266028231207023

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Clinical Investigation

Physician-Modified Endografts for the Treatment of Thoracic Aortic Pathologies Involving the Aortic Arch

Qinshu Wen, MD[1,*], Guangyan Wu, MD[2,*], Ye Ji, BP[3], Guangmin Yang, MD[1], Yepeng Zhang, MD[1], Wendong Li, MD, PhD[1], Xiaolong Du, MD, PhD[1], Xiaoqiang Li, MD, PhD [1]

In situ diode laser fenestration of aortic arch stent grafts during thoracic endovascular aortic repair of Stanford type A aortic dissection

Jinbao Qin[1], MD, PhD; Zhen Zhao[1], MD, PhD; Guang Liu[1], MD, PhD; Kaichuang Ye[1,2], MD, PhD; Minyi Yin[1], MD, PhD; Chaoyi Cui[1], MD, PhD; Huihua Shi[1], MD, PhD; Zhiyou Peng[1], MD, PhD; Mier Jiang[1,2], MD, PhD; Xiaobing Liu[1], MD, PhD; Weimin Lia[1,2], MD; Xinwu Lu[1,2]*, MD, PhD

Contents lists available at ScienceDirect

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journal homepage: www.casereports.com

ELSEVIER

Endovascular repair of a ruptured thoracic aortic dissection with a right sided aortic arch: A case report

Jeremy L. Irvan[a], James R. Elmore[b,*], Sarah L. Flora[a], Evan J. Ryer[a]

[a] *Department of Vascular and Endovascular Surgery, Geisinger Medical Center, Danville, PA, United States*
[b] *Department of Vascular and Endovascular Surgery, Geisinger Medical Center, Danville, PA, United States*

Total endovascular repair of an aortic arch using a triple--branched graft in acute non-A non-B aortic dissection

Marian Burysz[1], Artur Milnerowicz[2], Krzysztof Bartuś[3], Radosław Litwinowicz[1]

[1]Department of Cardiac Surgery, Regional Specialist Hospital, Grudziadz, Poland
[2]Department of Vascular Surgery, 4th Military Clinical Hospital, Wrocław, Poland
[3]Department of Cardiovascular Surgery and Transplantology, Institute of Cardiology, Jagiellonian University Medical College, Kraków, Poland

Summary

- Limited published experience, mostly case reports and small series
- Multiple endovascular options
- Encouraging findings with high technical success rates
- Acceptable early mortality and stroke rates
- Larger cohorts needed for robust conclusions