Recent evidence surrounding the treatment of patients with Type B dissections

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Disclosure

Speaker name: Paul Hayes

I have the following potential conflicts of interest to report:

☐ Consulting
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☐ Other(s)

☐ I do not have any potential conflict of interest
Instead XL

TEVAR FOR AORTIC DISSECTION PREVENTS LATE EXPANSION; ENCOURAGES AORTIC REMODELING

CUMULATIVE CLINICAL RESULTS: YEAR 0 THROUGH YEAR 5

- All-cause mortality: OMT n=68, 19.3%; TEVAR+OMT n=72, 11.1%; Absolute Risk Reduction 19.1%
- Aorta-specific mortality: OMT n=68, 19.3%; TEVAR+OMT n=72, 6.9%; Absolute Risk Reduction 12.4%
- Disease progression: OMT n=68, 46.1%; TEVAR+OMT n=72, 27.0%; Absolute Risk Reduction 19.1%

UNCOMPICATED ACUTE TYPE B DISSECTION
For acTBAD, TEVAR reduces early morbidity/mortality vs OSR
- TEVAR has become first-line therapy

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Class</th>
<th>Level of Evidence</th>
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<tbody>
<tr>
<td>In patients with complicated acute type B aortic dissection, endovascular repair with thoracic endografting should be the first line intervention</td>
<td>I</td>
<td>C</td>
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<tr>
<td>In complicated acute type B aortic dissection, endovascular fenestration should be considered to treat malperfusion</td>
<td>IIa</td>
<td>C</td>
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<tr>
<td>To prevent aortic complications in uncomplicated acute type B aortic dissection, early thoracic endografting may be considered selectively</td>
<td>IIb</td>
<td>B</td>
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## Overview of current risk factors for growth

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>PREDICTOR</th>
<th>NEGATIVE PREDICTOR</th>
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<tbody>
<tr>
<td>Patient characteristics</td>
<td>Age &lt;60 years</td>
<td>Increasing age (≥60 years)</td>
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<tr>
<td></td>
<td>White race</td>
<td>Heart rate &lt;60 beats/min</td>
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<td>Heart rate &gt;60 beats/min</td>
<td>Use of calcium-channel blockers</td>
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<tr>
<td>Medical history</td>
<td>Marfan syndrome</td>
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<td>Clinical information</td>
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<tr>
<td>Blood test</td>
<td>FDP level &gt;20μg/mL on admission</td>
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<tr>
<td>Radiologic signs</td>
<td>Aortic diameter &gt;40 mm during acute phase</td>
<td>Diameter &lt;40 mm (debated)</td>
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<tr>
<td></td>
<td>Patent FL</td>
<td>Closed/thrombosed FL</td>
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<td></td>
<td>Partially thrombosed FL (debated)</td>
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<td></td>
<td>Proximal descending thoracic aorta FL diameter (&gt;22 mm) on initial imaging</td>
<td>Intramural hematoma</td>
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<td>Sac formation in partially thrombosed FL</td>
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<td></td>
<td>One entry tear</td>
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<td></td>
<td>FL/intimal tear located at the inner aortic curvature</td>
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<td>An elliptic configuration of the TL/round configuration FL</td>
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<td>Areas with localized dissection/ULP</td>
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<td>Degree of fusiform dilation of the proximal descending aorta (FI &gt;0.64)</td>
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<td></td>
<td>Large entry tear (&gt;10 mm) located in the proximal part of the dissection</td>
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<td></td>
<td>FL &lt;0.64</td>
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</table>

Van Bogerijan, et al. JVS. 2014;59:1134-43
False lumen area >50% highly predictive of mortality in complicated TBAD
Predictors of late aortic intervention in patients with medically treated type B aortic dissection.

Schwartz SI1, Durham C1, Clouse WD1, Patel VI1, Lancaster RT1, Cambria RP1, Conrad MF2.

Results

There were 254 patients (65% men) with medically managed acute TBAD. The average age at presentation was 66.3 years, and 82.5% had a history of hypertension. Mean follow-up was 6.8 years (range, 0.1-13.6 years). There were a total of 97 (38%) patients who required an aortic intervention during follow-up; 30 (12%) patients required an early intervention, and 67 (26%) were treated during late follow-up (100% for aneurysmal degeneration). Predictors of late aortic intervention included entry tear >10 mm (odds ratio [OR], 2.1; 95% confidence interval [CI], 1.5-3.8; \( P = .03 \)), total aortic diameter >40 mm at time of presentation (OR, 2.2; 95% CI, 1.8-4.3; \( P = .02 \)), false lumen diameter >20 mm (OR, 1.8; 95% CI, 1.3-4.7; \( P = .03 \)), and increase in total aortic diameter >5 mm between serial imaging studies (OR, 2.3; 95% CI, 1.3-3.5; \( P = .02 \)). Complete thrombosis of the false lumen was protective against late operative intervention (OR, 0.22; 95% CI, 0.11-0.48; \( P < .01 \)).

Conclusions

Nearly 40% of patients who present with an uncomplicated TBAD will ultimately require an aortic intervention. All of the late interventions were performed for aneurysmal degeneration. A variety of readily available anatomic features can predict the need for eventual operative intervention in TBAD; accordingly, these parameters can guide the desirability of early TEVAR.
Endovascular thoracic aortic repair in confirmed or suspected genetically triggered thoracic aortic dissection

Sherene Shalhub, MD, MPH, Kim A. Eagle, MD, Federico M. Asch, MD, Scott A. LeMaire, MD, Dianna M. Milewicz, MD, PhD on behalf of the GenTAC Investigators for the Genetically Triggered Thoracic Aortic Aneurysms and Cardiovascular Conditions (GenTAC) Consortium

- 31 cases; 22 TBAD
- No peri-op deaths with 2 yr median follow up
- 31 cases; 22 TBAD
- No peri-op deaths with 2 yr median follow up
- 3 retrograde type As
- Further 7 conversions to open surgery
• 31 cases; 22 TBAD
• No peri-op deaths with 2 yr median follow up
• 3 retrograde type As
• Further 7 conversions to open surgery

“..can be a life saving intervention but these cases mandate close and continued surveillance”
The incidence of delayed complications in acute type B aortic dissections is underestimated.

**RESULTS**: Of all TBADs, 22 (26%) presented with immediate complications (rupture, n = 11); 64 patients (74%) were initially assessed as having uncomplicated TBAD. Of these 64 patients, 24 (28% of all 86) suffered from delayed complications (malperfusion, n = 10; aortic rupture, n = 3; early expansion >4 mm, n = 8; refractory pain, n = 2; uncontrollable hypertension, n = 1) at a median interval of 7.1 (2-14) days after symptom onset. During the first 14 days, 40 patients (46%) remained uncomplicated. The CTA analysis revealed a significant association of initial thoracic aortic diameter (P = .009), size of the primary entry tear (P = .018), true lumen collapse (P = .019), and partially thrombosed FL (P = .019) with the occurrence of delayed complications within the first 14 days. Of the patients with delayed complications, 87.5% underwent surgery (90% thoracic endovascular aortic repair, 10% peripheral revascularization); 12.5% in this group died following aortic rupture before they received surgical repair. The mortality of patients with delayed complicated TBAD was significantly higher compared with those who remained uncomplicated within the 14-day period (12.5% vs 0%; P = .0221).

**CONCLUSIONS**: Delayed complications in initially uncomplicated acute TBAD are not infrequent. Morphologic variables like maximum diameter of the descending aorta, primary entry tear, true lumen collapse, and partially thrombosed FL were associated with an increased risk of delayed complications in initially uncomplicated TBAD. Future clinical research must verify the predictive role of clinical and morphologic variables in the acute phase, particularly with regard to a possible early surgical treatment to prevent a fatal outcome.
Improved quality of life after EVAR for TBAD

Clinical outcomes and quality of life in patients with Stanford type B aortic dissection after endovascular repair.

Bi Y, Chen H, Yu Z, Ren J, Han X.

Abstract

BACKGROUND: Aortic dissection is a severe and life-threatening disease that is usually linked with numerous possible complications. Stanford type B aortic dissection patients often choose endovascular repair due to its mini-invasiveness and quick recovery. This study concerns with medial-term outcome and quality of life (QoL) in patients with Stanford type B aortic dissection after endovascular repair.

METHODS: From January 2014 until July 2016, 40 patients with Stanford type B aortic dissection received an endovascular repair. Of the total number of patients, 35 were males (87.5%) and 5 females (12.5%), mean aged 80.9±14.1 years. The Medical Outcomes Study-Short Form-36 (MOS SF-36) was used to assess the QoL preoperatively and after endovascular repair. The first follow-up (FU) of SF-36 questionnaire (FU1) was obtained within 3.9±0.3 months after repair, and the second (FU2), 25.6±6.5 months thereafter.

RESULTS: None of patient died during the observational period, and one patient lost to FU. SF-36 observation showed the best-scoring domain was 'Role emotion'. 'Vitality' and 'Mental health' were also scored well preoperatively. Except for 'Role emotion' and 'Mental health', all remained domains were significantly improved both FU1 and FU2.

CONCLUSIONS: Endovascular repair in patients with Stanford type B aortic dissection enables excellent clinical outcomes and QoL.
Mid-term Outcomes of Stent Assisted Balloon Induced Intimal Disruption and Relamination in Aortic Dissection Repair (STABILISE) in Acute Type B Aortic Dissection

Elsa M. Faure, Salma El Battl, Marwan Abou Rieili, Pierre Julia, Jean-Marc Alsac

Objectives
This article reports mid-term results of 41 patients treated by the stent assisted balloon induced intimal disruption and relamination (STABILISE) technique for acute type B aortic dissection.

Methods
Between November 2011 and November 2017, 41 patients (10 male; median age 50 years) underwent proximal descending aortic stent grafting plus stent assisted balloon induced intimal disruption of the thoraco-abdominal aorta for acute type B aortic dissection. Serial computed tomography angiography was used to assess aortic remodelling.

Results
There were no intra-procedural complications. Fifteen branch arteries supplied by the false lumen were stented (9% of the visceral branch arteries). The thirty day incidence of death, stroke, and paralysis/visceral ischaemia was 2% (n = 1), 0%, 5% (n = 2), and 2% (n = 1) respectively. During a median follow up of 12 months (range 1 – 168) eight patients (20%) required re-intervention. Primary visceral stent patency was 93% (n = 14). No aortic related deaths occurred. On the most recent computed tomography angiogram complete false lumen obliteration and aortic remodelling was obtained in all patients at the thoraco-abdominal level, and in 39% (n = 16) at the unstented infrarenal aorto-iliac level. The maximum aortic diameter increased in only two patients (5%) at the unstented infrarenal level.

Conclusion
To obtain immediate and durable thoraco-abdominal aortic remodelling in acute type B dissections, the STABILISE technique is safe and reproducible while not compromising the patency of collateral branches.
- 45 patients
- IVUS guidance altered stent choice in 45% of cases
Intravascular ultrasound assisted sizing in thoracic endovascular aortic repair improves aortic remodeling in Type B aortic dissection.

Lortz J¹, Tsagakis K², Rammos C¹, Horacek M¹, Schlosser T³, Jakob H², Rassa T¹, Jánosi RA¹.
• 20 acute cases with no landing zone
• Single LSA fenestration & pre-loaded wire
• 40 mins prep time
• 90% primary success with 0% mortality
Newer devices addressing TBAD

In a clear voting result, 92% of the CX audience backed the idea that a disease-specific approach should be adopted for acute, subacute and chronic uncomplicated type B dissection.
Newer devices addressing TBAD

In a clear voting result, 92% of the CX audience backed the idea that a disease-specific approach should be adopted for acute, subacute and chronic uncomplicated type B dissection.
• Study period 2000-2012
• 71% increase in admissions for TBAD
• Overall 77% OMT v 23% intervention
• TEVAR use increased from 1% to 46% over the course of the study
• 67.6% of TEVARs were non-elective cases
• TBAD patients were 9 years younger on average than TAAAs
• Overall co-morbidity scores increased with time
Mortality for this cohort decreased over time.

Worse outcomes were seen in white patients, those with CHF and advanced age.
National trends in admissions, repair, and mortality for thoracic aortic aneurysm and type B dissection in the National Inpatient Sample

Grace J. Wang, MD, MSCE, Benjamin M. Jackson, MD, Paul J. Foley, MD, Scott M. Damrauer, MD, Philip P. Goodney, MD, MS, Rachel R. Kelz, MD, MS, Christopher Wirtalla, BA, Ronald M. Fairman, MD

NIS
National Inpatient Sample
2000 – 2012

Increased admissions for:
Aneurysms by 144%
Dissections by 71.8%

Increased use of TEVAR for
Aneurysms: 57.2%
Dissections: 44.9% (2012)

155,187 TEVARs

Decreased overall mortality

CONCLUSION
Use of TEVAR for aneurysms and dissections INCREASED, in-patient mortality DECREASED
Antihypertensive medication adherence in chronic type B aortic dissection is an important consideration in the management debate.

Antihypertensive Medication Adherence in Patients with Chronic Type B Aortic Dissection

- Retrospective, Single Institution Review
- 47 patients

**Antihypertensive Medication Adherence**

- **43%** High
- **36%** Moderate
- **21%** Low

**Increased Compliance with**

- Previous aortic surgery
- Severity of hypertension
- Understanding of disease process

**Conclusion**

Medication adherence in patients with type B aortic dissection needs improvement.

*JVS Journal of Vascular Surgery*  
Martin et. al. J Vasc Surg September 2018  
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THANK YOU FOR YOUR ATTENTION
Recent evidence surrounding the treatment of patients with Type B dissections

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