Endovascular Management of Acute Type B Aortic Dissection: When to Intervene

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No Disclosures
Endovascular Management of Acute Type B Aortic Dissection: When to Intervene

- Complication based approach
- Pragmatic TEVAR considerations in the Acute Phase
ENDOVASCULAR STENT–GRAFT PLACEMENT FOR THE TREATMENT OF
ACUTE AORTIC DISSECTION

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Methods  We studied the placement of endovascular stent–grafts across the primary entry tear for the management of acute aortic dissection originating in the descending thoracic aorta. We evaluated the feasibility, safety, and effectiveness of transluminal stent–graft placement over the entry tear in 4 patients with acute type A aortic dissections (which involve the ascending aorta) and 15 patients with acute type B aortic dissections (which are confined to the descending aorta). Dissections involved aortic branches in 14 of the 19 patients (74 percent), and symptomatic compromise of multiple branch vessels was observed in 7 patients (37 percent). The stent–grafts were made of self-expanding stainless-steel covered with woven polyester or polytetrafluoroethylene material.

Results  Placement of endovascular stent–grafts across the primary entry tears was technically successful in all 19 patients. Complete thrombosis of the thoracic aortic false lumen was achieved in 15 patients (79 percent), and partial thrombosis was achieved in 4 (21 percent). Revascularization of ischemic branch vessels, with subsequent relief of corresponding symptoms, occurred in 76 percent of the obstructed branches. Three of the 19 patients died within 30 days, for an early mortality rate of 16 percent (95 percent confidence interval, 0 to 32 percent). There were no deaths and no instances of aneurysm or aortic rupture during the subsequent average follow-up period of 13 months.
National trends for thoracic aortic aneurysms and type B dissections

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

@JVascSurg
Endovascular Management of Acute Type B Aortic Dissection: When to Intervene

- Rupture
- Malperfusion
- Refractory pain
- Rapid expansion
Acute TBAD: A Complication Based Approach

Diagnosis with CTA

Malperfusion / Rupture

No: 43%

Medical Therapy
Esmolol (labetalol)/ Nicardipine
SBP < 120 mmHg, HR < 60

Yes: 57%

TEVAR with IVUS
+/- Fenestration/peripheral stents
Pragmatic TEVAR considerations in the Acute Phase

• Hypertension control is the cornerstone of management
Blood Pressure Control cannot be overstated!

Unchanged TBAD over 4 years (PRKG1(c.530G>A,p.Arg177Gln))

Shalhub et al, JVS, March 2019
Pragmatic TEVAR considerations in the Acute Phase

- Hypertension control is the cornerstone of management
- Intravascular Ultrasound (IVUS)
Pragmatic TEVAR considerations in the Acute Phase

- Hypertension control is the cornerstone of management
- Intravascular Ultrasound (IVUS)
- Access the pulseless side
Minimal to no oversizing (measure non-dissected distal aortic arch)
Cover the left subclavian artery to extend zone of coverage if needed
No ballooning of seal zones
Pragmatic TEVAR considerations in the Acute Phase

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• No ballooning of seal zones
• Monitor for retrograde dissection
Retrograde Aortic Dissection

- Acute TBAD
- Oversizing/ballooning
- Bare stents

Table 2. Incidence, Proximal Landing Zone

<table>
<thead>
<tr>
<th>Proximal landing zone</th>
<th>Incidence, % (N/total)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone 0</td>
<td>8.12 (16/197)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Zone 1</td>
<td>2.57 (7/272)</td>
<td></td>
</tr>
<tr>
<td>Zone 2</td>
<td>2.66 (24/903)</td>
<td></td>
</tr>
<tr>
<td>Zones 3 and 4</td>
<td>0.67 (8/1195)</td>
<td></td>
</tr>
</tbody>
</table>

J Am Heart Assoc. 2017
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• Monitor for retrograde dissection
• Be aware of genetically triggered aortopathy
Endovascular Repair in Genetically Triggered Aortic Disease

• Pivotal studies have excluded patients with “connective tissues disorders”

Concerns for device fixation failure in the diseased aorta
• Degeneration of the native aorta at the landing zone (device radial force)
• Device migration/erosion
• Stent graft–induced new entry tears
• Retrograde aortic dissection (14% in MFS)
Pathogenic variant: 36%

**UW experience in TBAD**


~1 in 4 were genetically triggered

Syndromic: 8% (41±11 years)

Familial: 15% (55±11 years)
Endovascular thoracic aortic repair in confirmed or suspected genetically triggered thoracic aortic dissection

Sherene Shalhub, MD, MPH,a Kim A. Eagle, MD,b Federico M. Asch, MD,c Scott A. LeMaire, MD,d,e and Dianna M. Milewicz, MD, PhD,f on behalf of the GenTAC Investigators for the Genetically Triggered Thoracic Aortic Aneurysms and Cardiovascular Conditions (GenTAC) Consortium, Seattle, Wash; Ann Arbor, Mich; Washington, D.C.; and Houston, Tex

Acute (N=12) Chronic (N=10)

Retrograde dissection 25% 0

August 2018
Acute TBAD with rupture in a 56 year old man (No family history)
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- Close follow up post op with plan for definitive aortic repair: comprehensive aortic management plan
Acute TBAD Rupture

30 days
Think in the context of definitive aortic repair

Acute TBAD with malperfusion in a 35 year old woman with a family history of sudden death.
Think in the context of definitive aortic repair

39 year old man treated with TEVAR for persistent pain

Father had AAA

Patient has small joint hypermobility and history of club feet

Testing: TGFb2
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