TEVAR for Chronic Dissection

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Disclosures

- Work on MOTHER Registry supported by Medtronic
- Acute (<2 weeks)
- Chronic (>2 weeks)
## Clinical Consequences of Aortic Dissection

<table>
<thead>
<tr>
<th>False lumen expansion</th>
<th>Acute</th>
<th>Chronic</th>
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<tr>
<td></td>
<td>Pain</td>
<td>Aneurysm</td>
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<td>Aortic dilatation</td>
<td>Aortic rupture</td>
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<td>True lumen compression</td>
<td>End organ ischaemia</td>
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<td>Visceral ischaemia</td>
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<td>Renal ischaemia</td>
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<td>Lower limb ischaemia</td>
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Consequences Chronic TBAD – High Mortality

A Prospective Study of Medically Treated Acute Type B Aortic Dissection

A. Winnerlitz, U. Lockwood, E. Rasmussen and K. Rådström
Department of Cardiac Surgery and Anesthesiology, Karolinska University Hospital and Department of Molecular Medicine and Surgery, Karolinska Institute, Stockholm, Sweden

Objectives: To study prospective aneurysm expansion, mode of surgery, incidence of rupture and mortality in patients with conservatively treated acute type B aortic dissection.

Methods: All patients entered in the acute type B dissection between January 1990 and December 2014 were included in this study. The follow-up was updated at the last visit and included data from all patients discharged alive or deceased. The time-to-event was calculated as the period from the diagnosis of aortic dissection to the occurrence of the event or the last follow-up visit. The cumulative incidence of death was calculated by the Kaplan-Meier method.

Results: A total of 123 patients were included in the study. The mean age was 65 years (range 19–87) and 62% were men. The median follow-up was 8 years (range 0–27). The cumulative incidence of death was 25% at 5 years and 42% at 10 years. The most common cause of death was aortic rupture (33%) followed by aortic dissection (25%) and patients who died of other causes (42%).

Conclusions: The results of this study suggest that acute type B aortic dissection is associated with a high mortality rate. The cumulative incidence of death was 25% at 5 years and 42% at 10 years. These results highlight the importance of early intervention in managing acute type B aortic dissection.

Follow-up (years)

- Dissection-related death
- Aortic event

25% aortic event 5y
15% dissection related death 5y
Concept of Aortic Remodelling

- Ability of TEVR to “restore” aorta
- Expansion of true lumen
- Regression of false lumen
- Thrombosis false lumen
True Lumen Index Acute vs. Chronic TBAD

Upper 1/3 DTA

Celiac Axis

Pre-op | Post-op | 3  | 6  | 12 | 24 | 36 | 48 | 60

Acute

Chronic
Endovascular Management of Chronic TBAD

- Endovascular therapy controversial – longevity?
  - Pan aortic disease

- Clinical success must be judged over long term
  - Prevent aortic related mortality

- Reduce need for surveillance and reintervention
Judging Technical Success of TEVR for CAD

- Ill defined markers of short term success

- Long term factors relating to aortic remodelling:
  - Reinterventions
  - Aortic expansion
  - All cause mortality
  - Distal fenestrations – retrograde false lumen perfusion
Aortic Related Mortality – MOTHER Registry

Aortic Related Mortality

- TAA – 0.6 per 100 p/y
- AAD – 1.2 per 100 p/y
- CAD – 0.4 per 100 p/y

Patterson et al Circ 2013; 127;24-32
Aortic Reinterventions – MOTHER Registry

Aortic Reintervention

TAA – 2.1 per 100 p/y
AAD – 5.3 per 100 p/y
CAD – 6.7 per 100 p/y

Patterson et al Circ 2013; 127;24-32
Aortic Related Reinterventions – VIRTUE

- **CAD (n=26)**
  - TEVR extension: 8 (30.8%)
  - Open AAA repair: 0
  - Balloon expansion: 1 (3.8%)
  - LSA plug: 0
  - Aortic coverage: 164mm
False Lumen Perfusion and Reintervention

Distal 1/3 Endograft

- FL Thrombosis
- FL Patent

Level Coeliac Axis

- FL Thrombosis
- FL Patent

Years

Freedom from reintervention

IMO MEET 2015
Aortic Remodelling, Aortic Expansion and Survival

Mani et al. JEVT 2012; 43: 386
Aortic Remodelling and Outcome Chronic TBAD

- Aortic remodelling describes expansion true lumen and distal false lumen thrombosis

- Remodelling associated with rate of reintervention, aortic events and survival

- Judge success of TEVR on FL thrombosis
Achieving Extensive Aortic Remodelling in CBAD

- Increasing endograft coverage increases extent of FL thrombosis
  - Individualised risk / benefit
  - Cases of extensive retrograde FL perfusion
  - Active management of FL is increasingly compelling
Active Management False Lumen – Prevent Retrograde Flow

- Access abdominal fenestrations – occlude
- Fenestrated graft / branched graft
- Hybrid visceral debranching + stent
  - False lumen occluder
False Lumen Occlusion Devices

- Devices to prevent retrograde flow into FL at level of coeliac axis
  - “Endotrace”
  - Aorto-uni-iliac occluders
  - Custom designed occluders
TEVR for Chronic Type B Aortic Dissection

- Effective at preventing mid-term aortic related death
- High requirement for surveillance and reintervention
  - Aim to achieve complete FL thrombosis
  - Increase length of aortic coverage for most TBAD
- May need active FL management for retrograde perfusion