

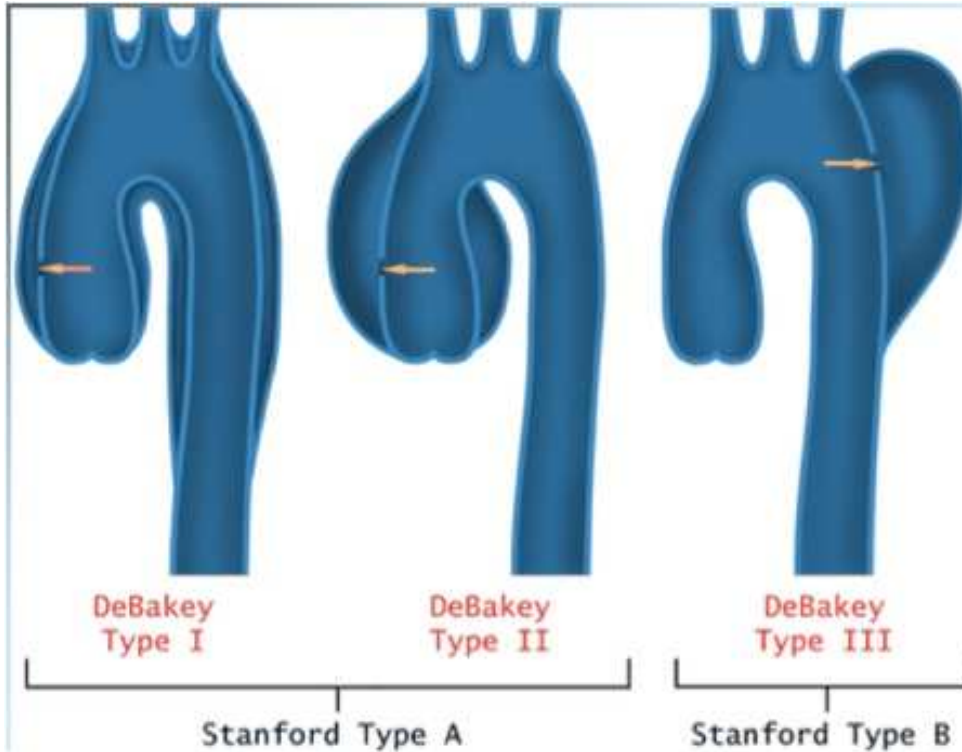
TEVAR for Chronic Dissection

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Disclosures

- Work on MOTHER Registry supported by Medtronic



- Acute (<2 weeks)
- Chronic (>2 weeks)

Clinical Consequences of Aortic Dissection

	Acute	Chronic
False lumen expansion	Pain Aortic dilatation Aortic rupture	Aneurysm Aortic rupture
True lumen compression	End organ ischaemia Visceral ischaemia Renal ischaemia Lower limb ischaemia	

Consequences Chronic TBAD – High Mortality

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A Prospective Study of Medically Treated Acute Type B Aortic Dissection

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Objective. To study prospectively aneurysm formation, need of surgery, incidence of rupture and mortality in patients with conservatively treated acute type B aortic dissection.

Methods. All patients referred to us with acute type B dissection between January 1990 and December 2001 were candidates for this prospective treatment and follow-up study. Patients deemed not to be in need of acute surgical repair were included after aggressive antihypertensive treatment. The follow-up protocol included close blood pressure control, clinic visits with physical examination, chest x-ray and spiral CT or MRI at 3 and 6 months and annually thereafter.

Results. Sixty-six patients were followed for a mean of 79 months (range 22–179). The actuarial survival rate was 82% at 5 years and 69% at 10 years. Eighty-five percent remained free from dissection-related death at 5 years and 82% at 10 years. Ten patients (15%) developed aneurysm (>6 cm) of the dissected aorta. Three of these 10 patients died from aortic rupture and 2 underwent elective surgical repair. Of the 56 patients without an aneurysm, one died from rupture and one died suddenly for causes unknown. One patient was treated with endovascular stent-graft. Five patients sustained a new type A aortic dissection which in all but one were fatal. In 26 patients the initial dissection was categorized as intramural hematoma. Twelve of these patients had, in addition to the hematoma, a mass with localized dissection/lumen-like projection. The latter was found to be a predictor of aortic event (dissection-related death, rupture, new type A aortic dissection, aneurysm formation) during follow-up, as was an initial diameter of >4.0 cm at first CT-scan during the acute event.

Conclusions. Conservatively treated acute type B dissection has a low incidence of aneurysm formation and rupture during the chronic phase. These results must be matched or improved upon before endovascular stent-grafting or early aortic surgical repair can be regarded as the primary treatment of choice.

Keywords: Aorta descendens; Antihypertensive treatment; Prospective follow-up; Type B aortic dissection.

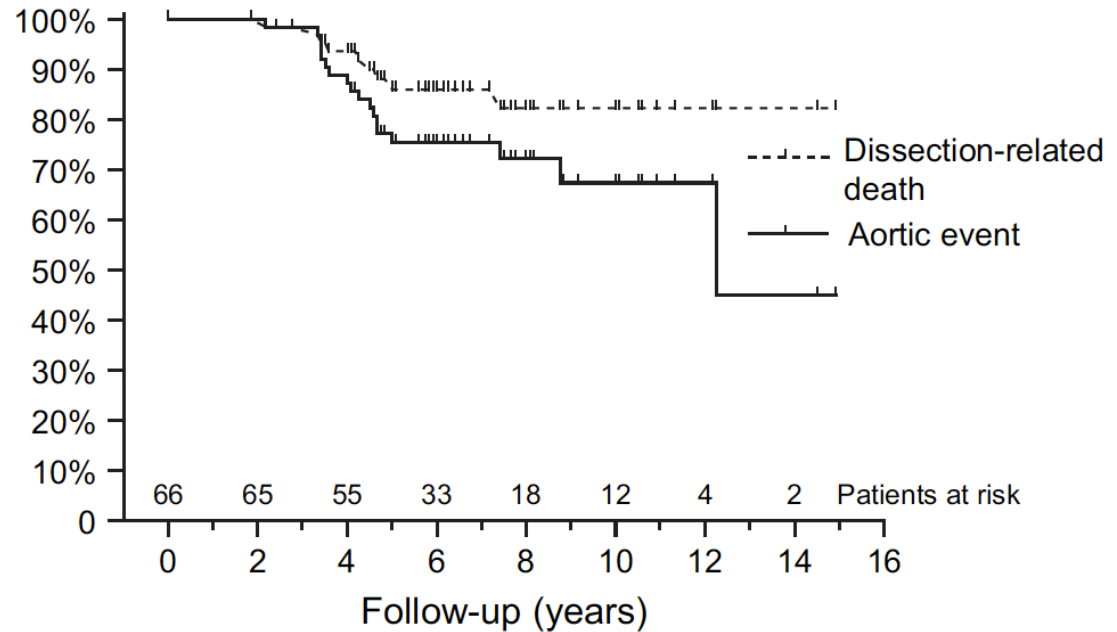
Introduction

Patients referred for acute type B aortic dissection and deemed not to be in need of acute aortic repair were included in this prospective study initiated in 1990. The patients were managed during the acute phase according to the non-surgical approach based on aggressive antihypertensive treatment described by Wheat and coworkers already in 1965.¹ The aim of our study was to follow these non-operated patients

treated according to a protocol based on antihypertensive medication and to investigate aneurysm formation, need of surgery, incidence of rupture and mortality during the chronic phase.

Retrospective studies have reported aneurysm development, rupture and need of surgical repair in more than a third of patients with chronic type B aortic dissection^{2,3} as well as a poor long term prognosis.^{4,5} Endovascular stent-graft placement has evolved over the last decade and has been used as an alternative or in addition to surgery for the treatment of complications of acute type B dissection.^{6,7} It has even been suggested to use stent-graft placement for all patients with acute type B aortic dissection. By closing the false lumen the stent-graft is thought to promote healing and prevent aneurysm formation.^{8–10}

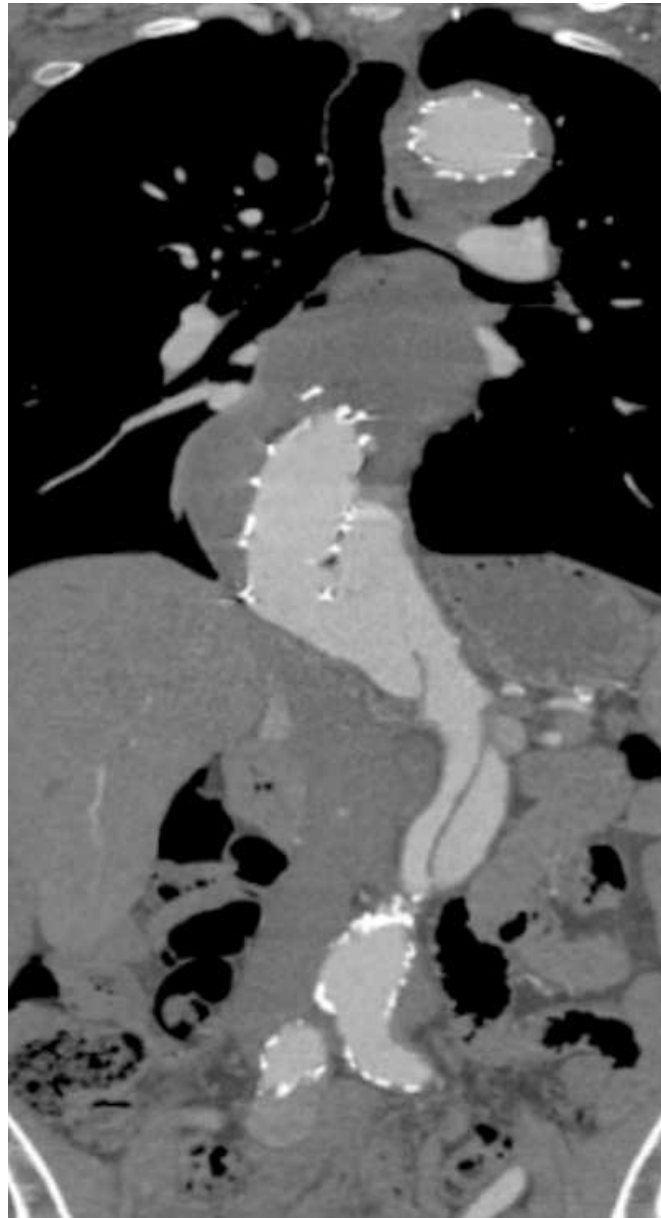
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25% aortic event 5y

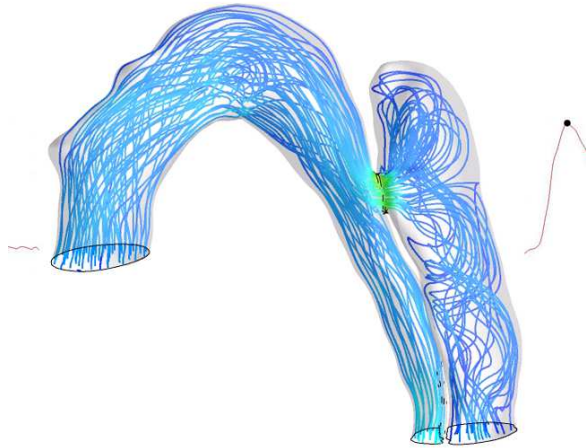
15% dissection related death 5y





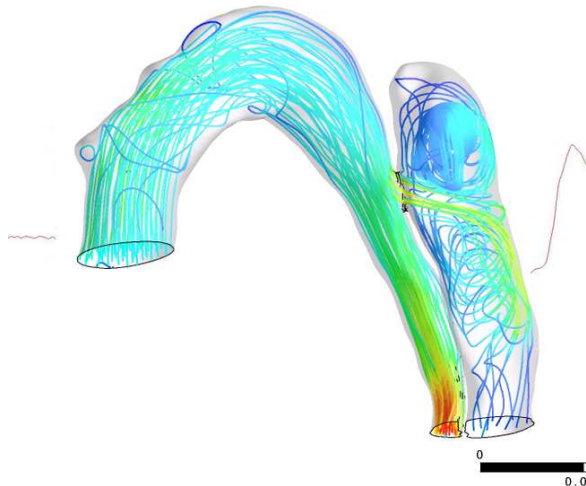
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Concept of Aortic Remodelling



- Ability of TEVR to “restore” aorta

- Expansion of true lumen

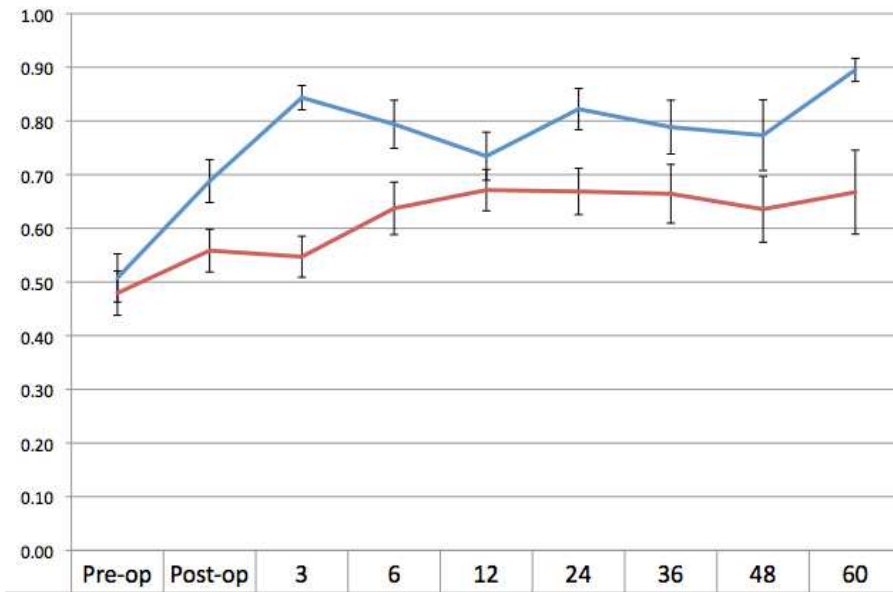


- Regression of false lumen

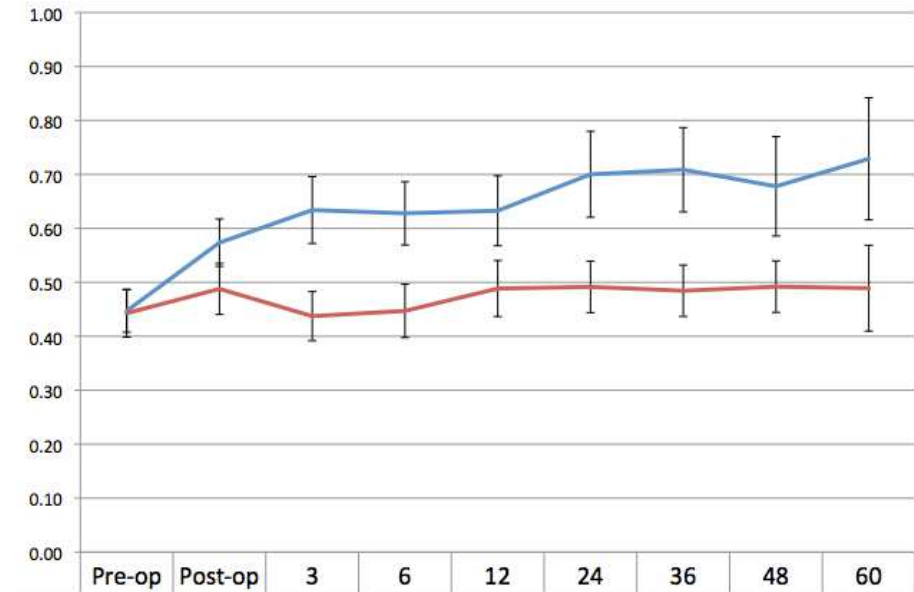
- Thrombosis false lumen

True Lumen Index Acute vs. Chronic TBAD

Upper 1/3 DTA



Celiac Axis



— Acute
— Chronic

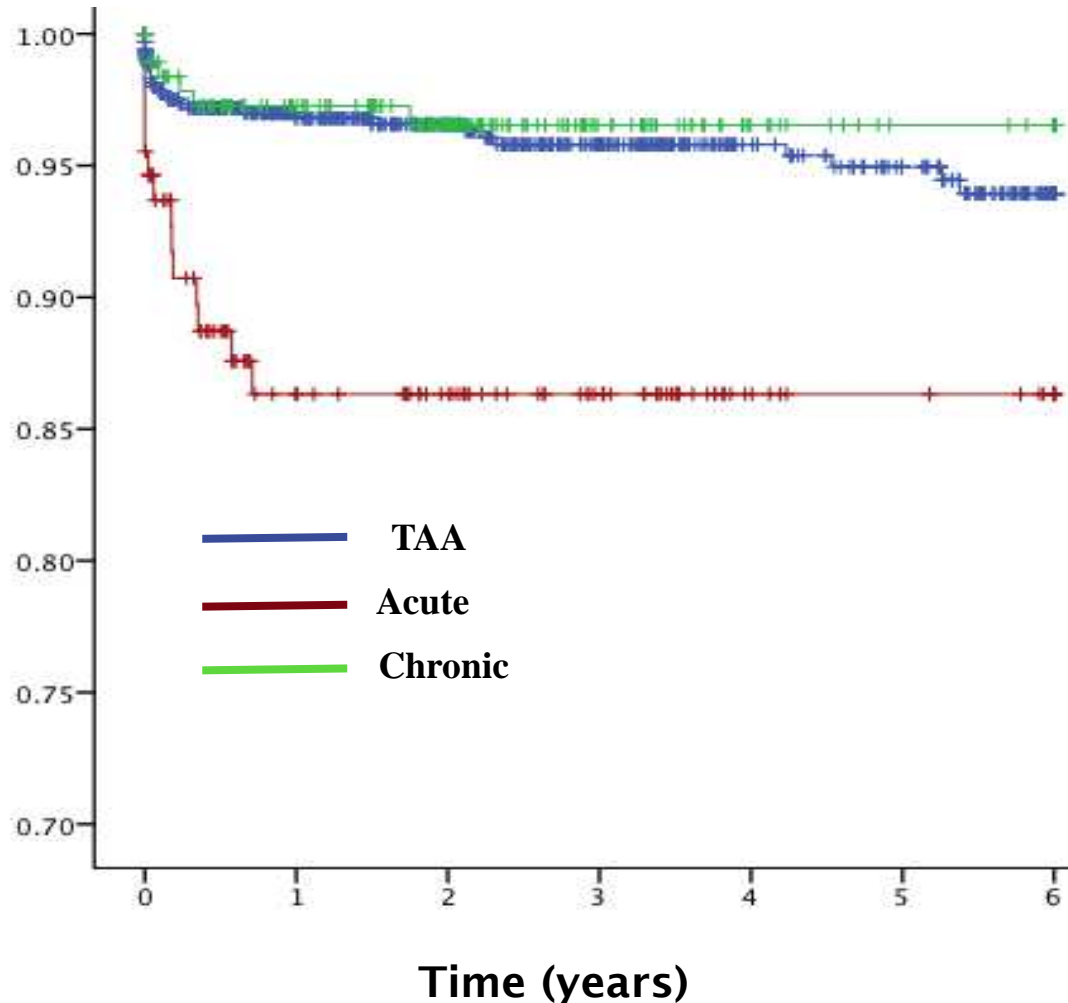
Endovascular Management of Chronic TBAD

- 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



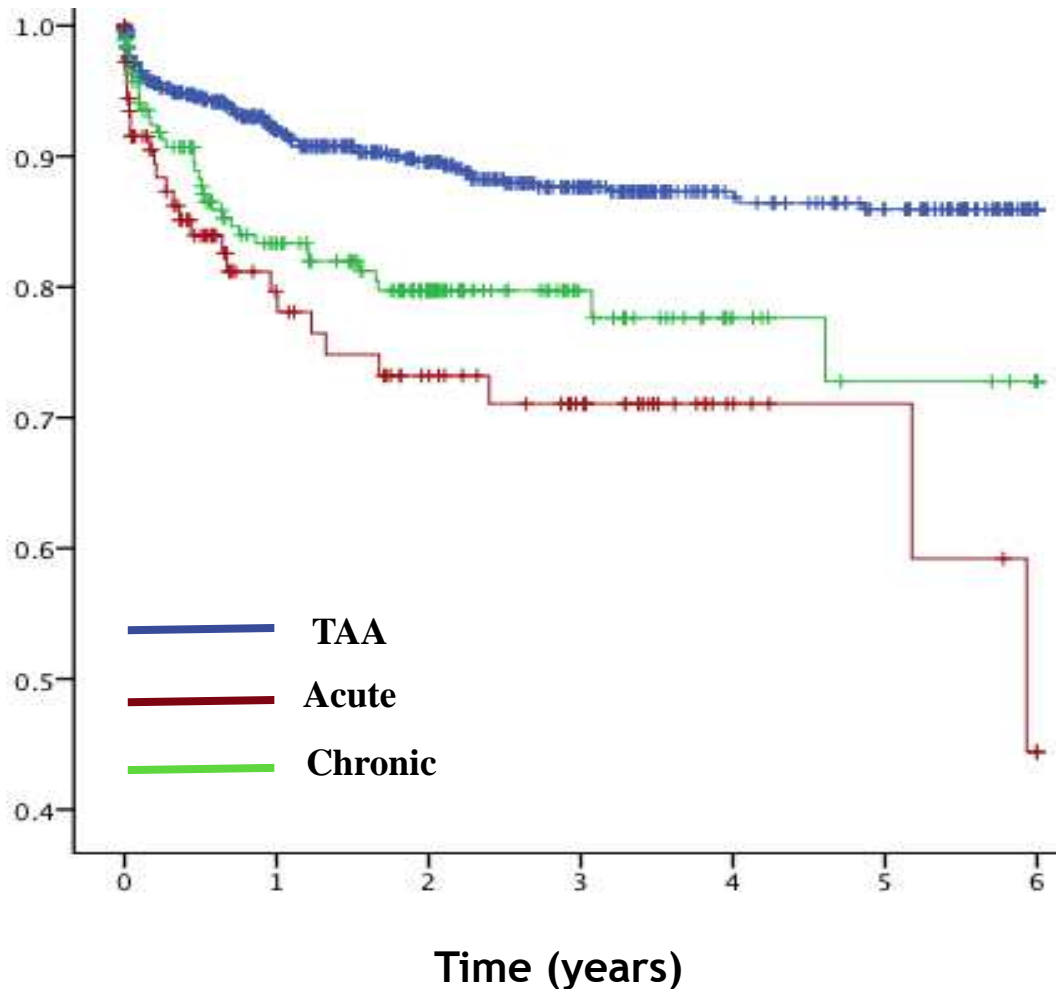
Aortic Related Mortality

TAA – 0.6 per 100 p/y

AAD – 1.2 per 100 p/y

CAD – 0.4 per 100 p/y

Aortic Reinterventions – MOTHER Registry



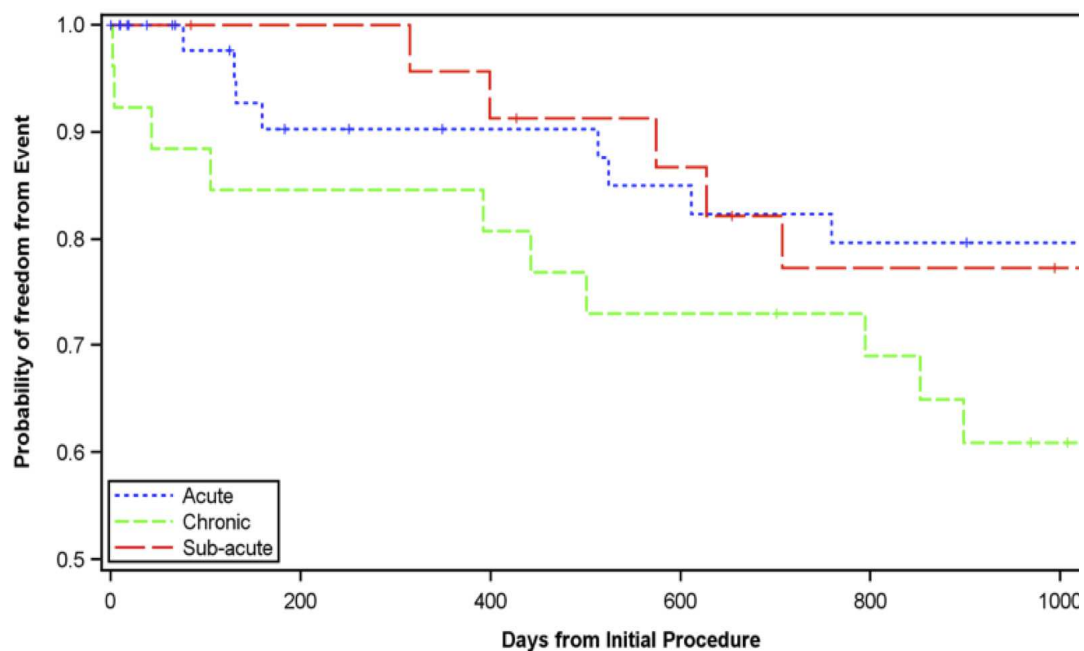
Aortic Reintervention

TAA – 2.1 per 100 p/y

Acute – 5.3 per 100 p/y

Chronic – 6.7 per 100 p/y

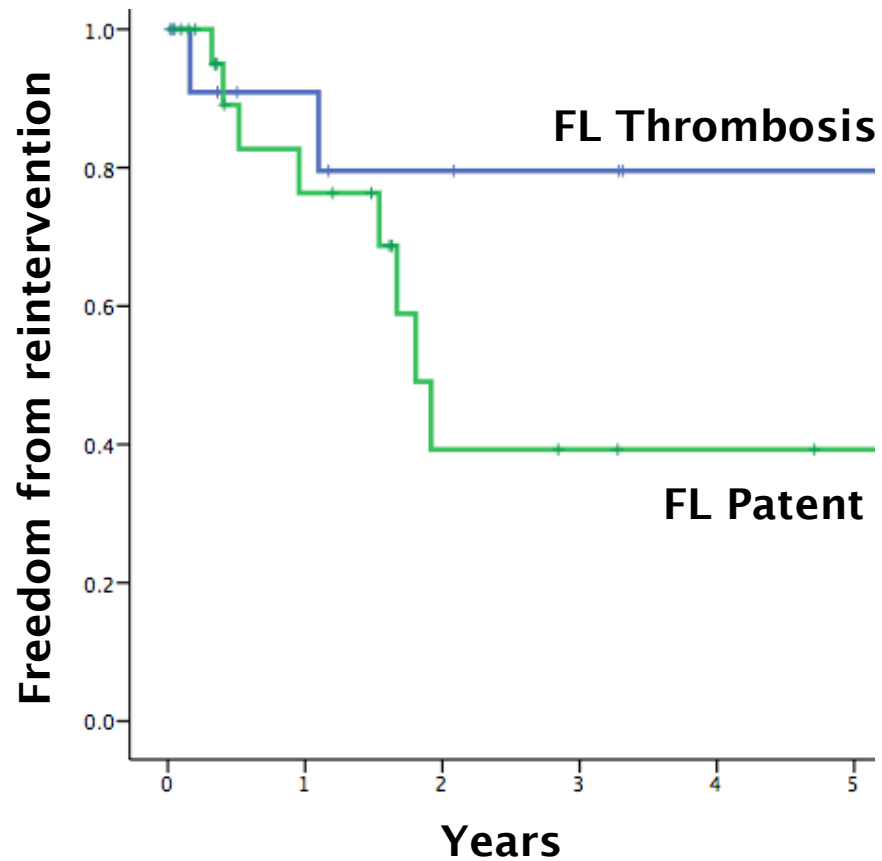
Aortic Related Reinterventions – VIRTUE



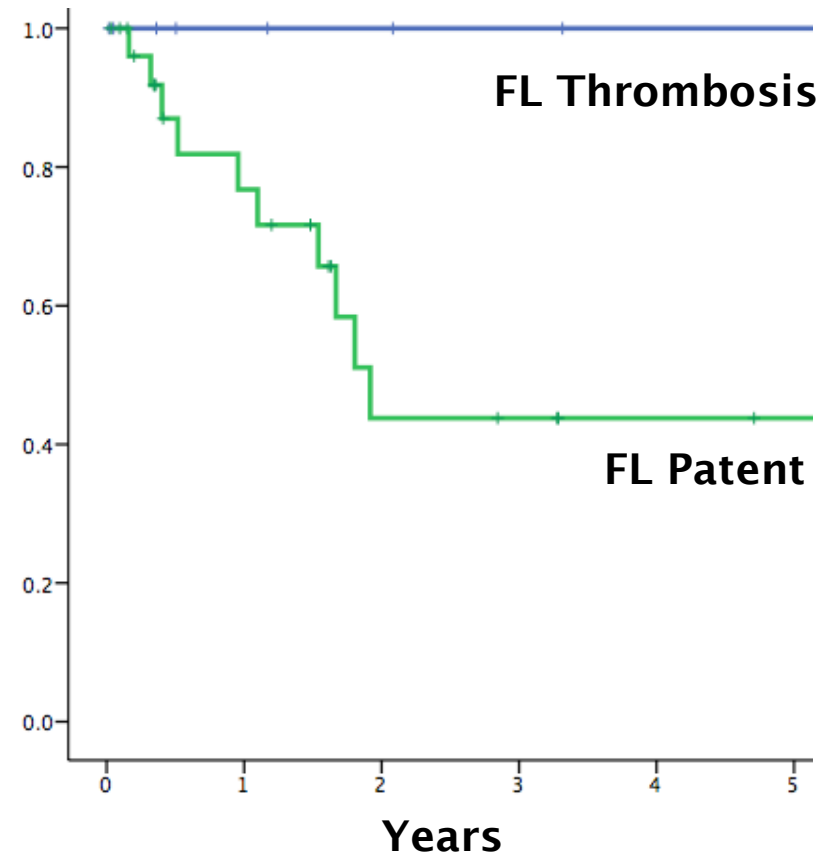
	CAD (n=26)
TEVR extension	8 (30.8%)
Open AAA repair	0
Balloon expansion	1 (3.8%)
LSA plug	0
Aortic coverage	164mm

False Lumen Perfusion and Reintervention

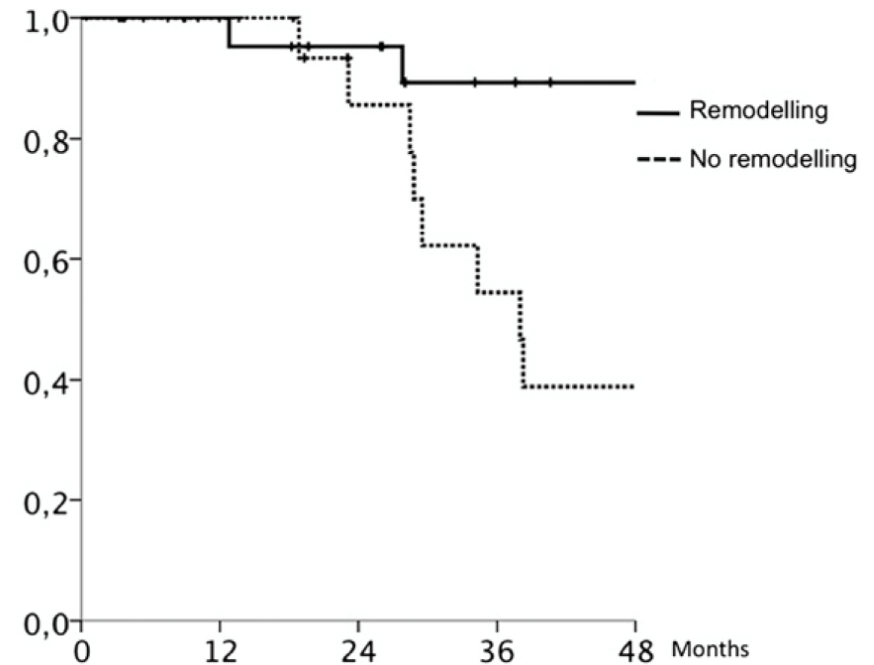
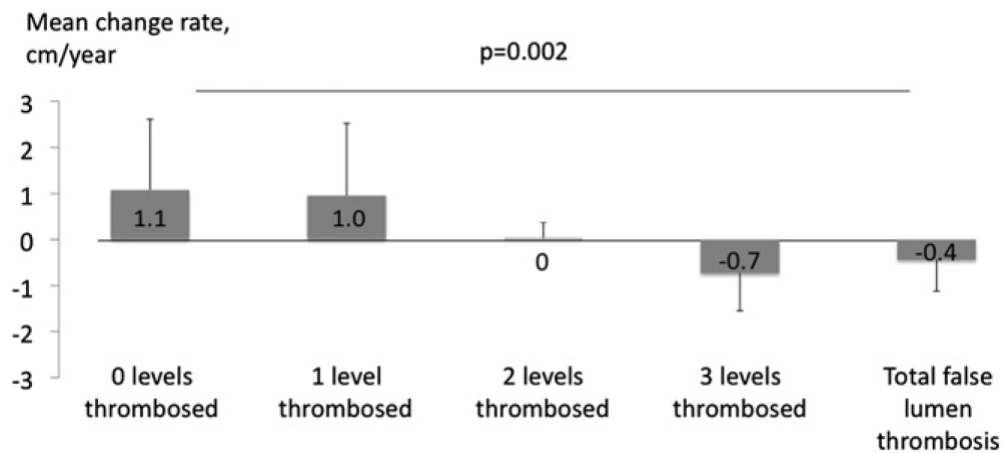
Distal 1/3 Endograft



Level Coeliac Axis



Aortic Remodelling, Aortic Expansion and Survival



Aortic Remodelling and Outcome Chronic TBAD

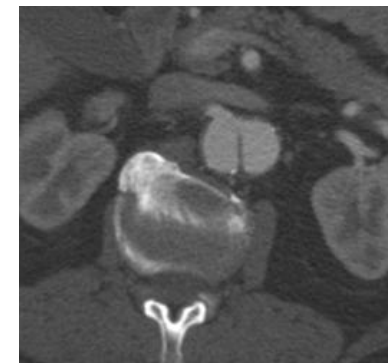
- Aortic remodelling describes expansion true lumen and distal false lumen thrombosis
- Remodelling associated with rate of reintervention, aortic events and survival
 - Judge success of TEVR on FL thrombosis

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

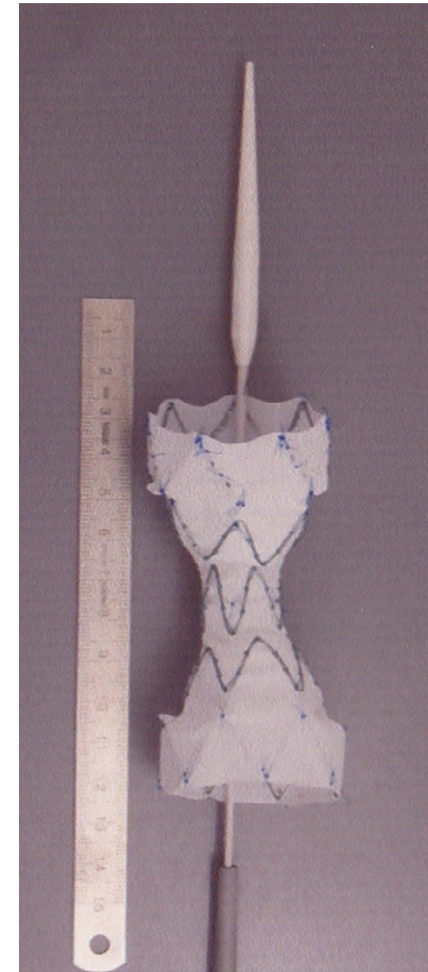
Active Management False Lumen – Prevent Retrograde Flow

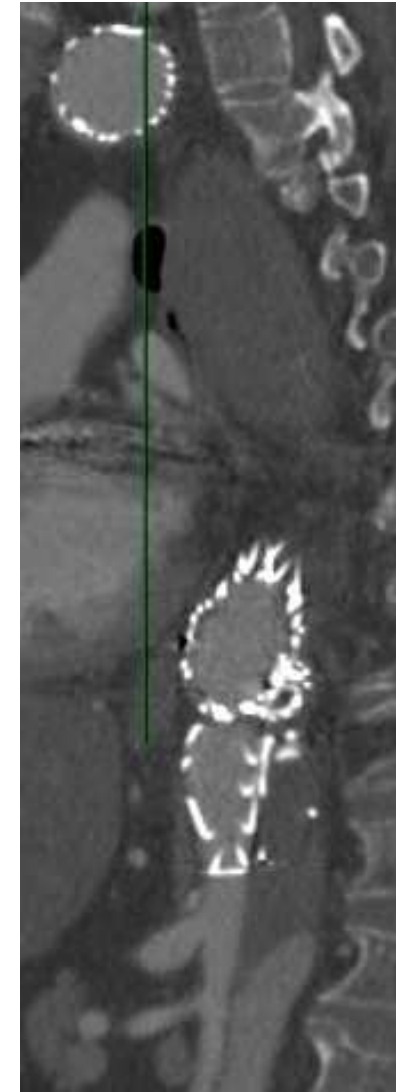
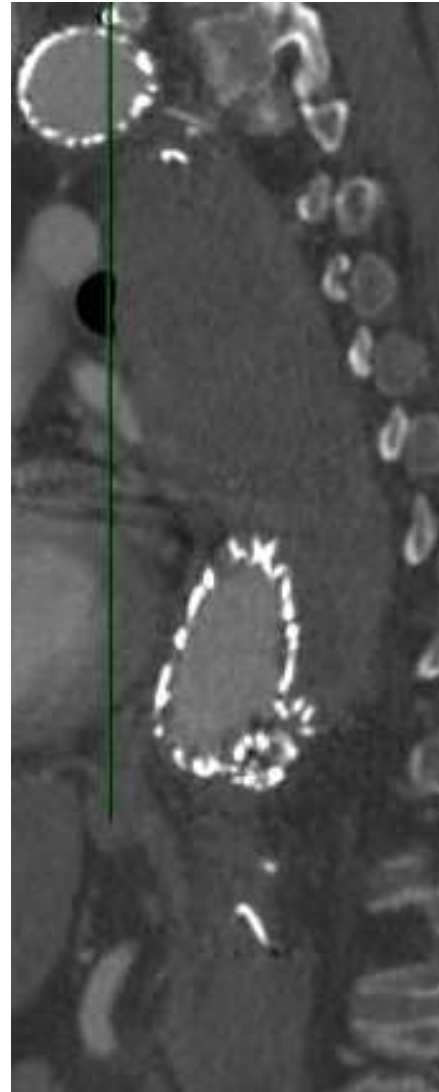
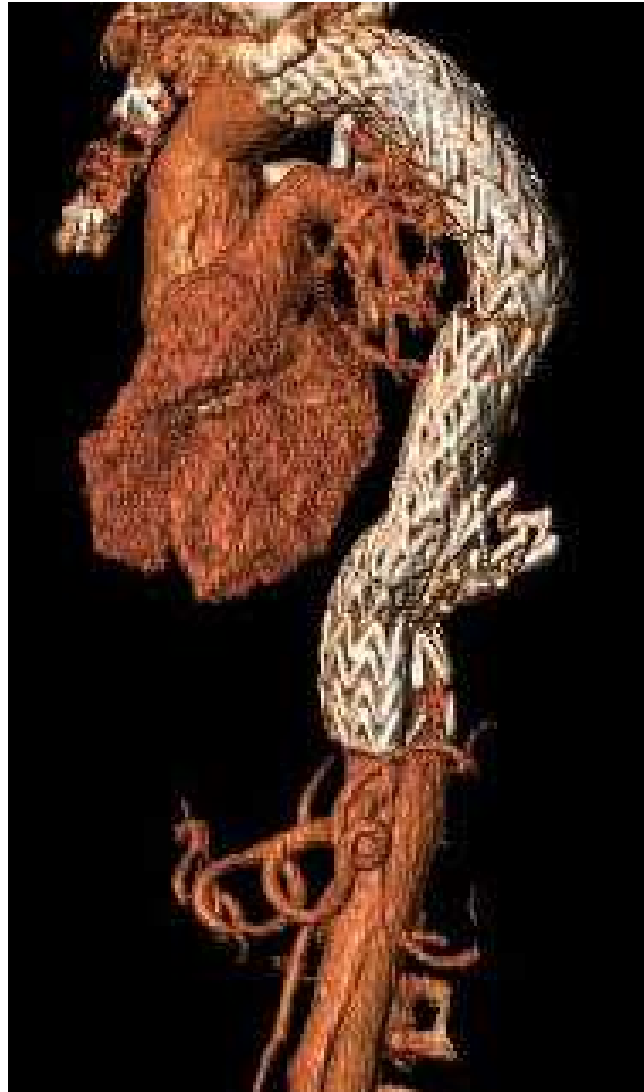
- Access abdominal fenestrations –
occlude
- Fenestrated graft / branched graft
- Hybrid visceral debranching + stent
 - False lumen occluder



False Lumen Occlusion Devices

- Devices to prevent retrograde flow into FL at level of coeliac axis
 - “Endotrash”
 - Aorto-uni-iliac occluders
 - Custom designed occluders





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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**