Management of Type B Aortic Dissection

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No relevant disclosures

Objectives

Define Type B Aortic dissection

Describe initial management

Recognize patients for immediate surgical management- complicated Type B

Understand management options for uncomplicated Type B dissection

Understand role of long term follow up

Presentation

History

Acute chest and/or back pain

Ask about concomitant symptoms- neurologic, extremities, abdominal

Ask about medical and surgical history

Ask about family history of aortic disease

Ask about functional status

Exam

Vitals
Quick neuro exam
Cardiovascular exam
Quick abdominal exam
Extremity exam including pulses, blood pressure

Elicit symptoms/signs of malperfusion

Imaging

CT angiography chest/abdomen/pelvis

Timing for the contrast in the aorta
Visualize the entire aorta
Minimize motion artifact

Echocardiography

Non urgent

Other studies- CBC, Coags, chemistry

EKG

Classification

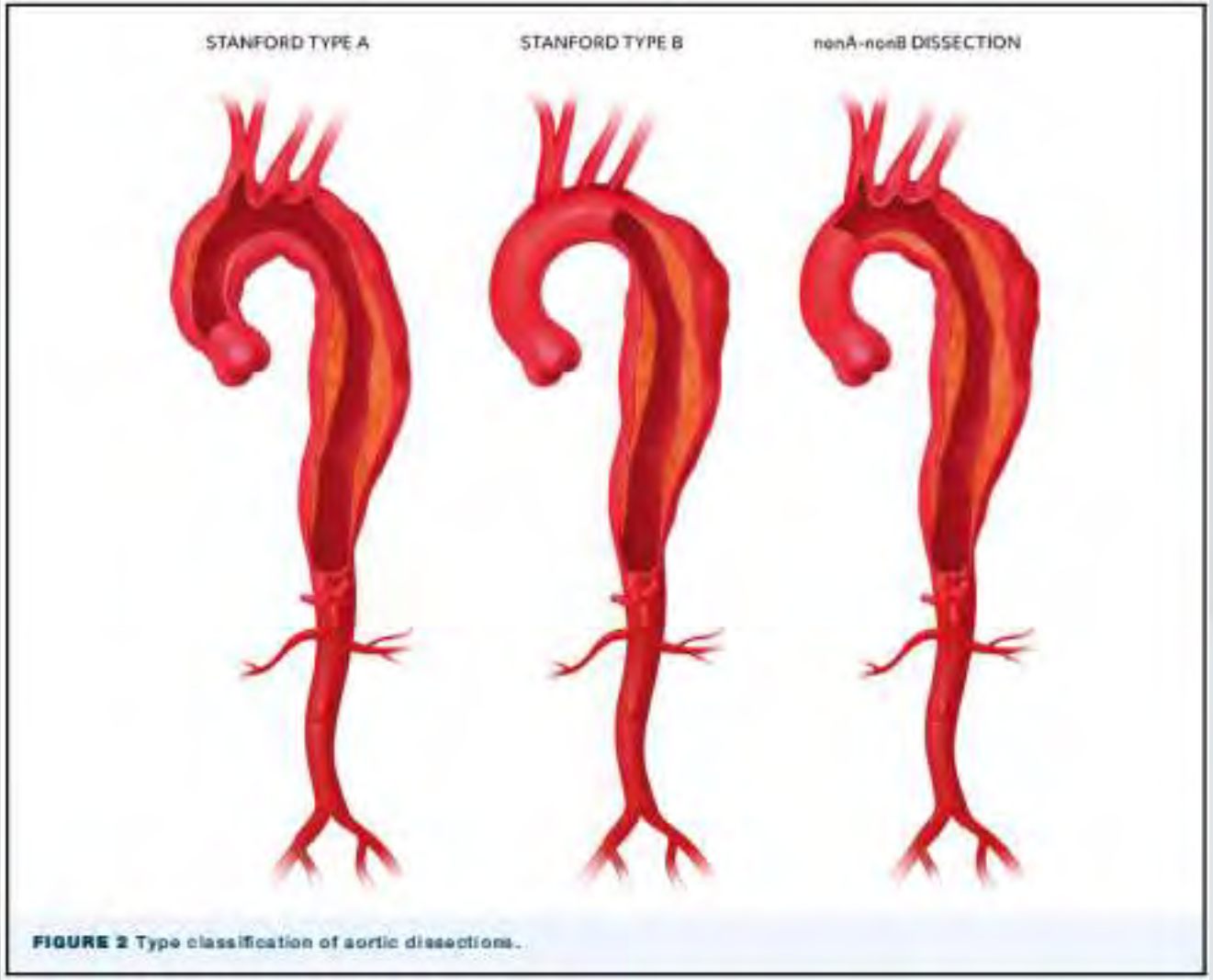

FIGURE 2 Type classification of aortic dissections.

Ann Thorac Surg
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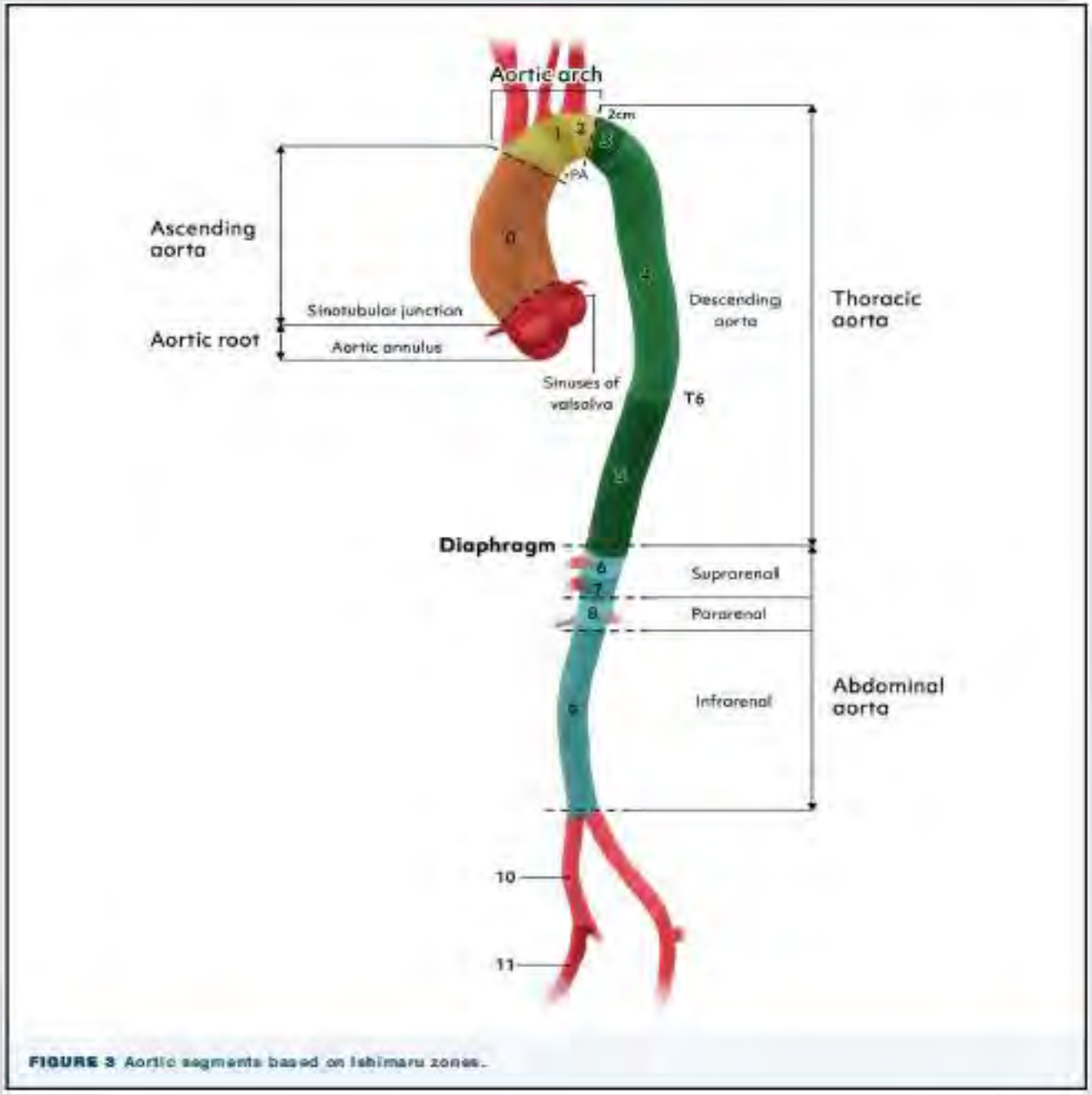

FIGURE 3 Aortic segments based on Ishimaru zones.

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Initial management

Impulse control therapy

Goal SBP < 120

HR 50-60s

First- Esmolol infusion (labetolol is an alternate)

After can add- nicardipine, nitroprusside

Good Iv access

Close HR and BP monitoring

ICU admission

Type and Cross

Complicated vs Uncomplicated

Complicated Type B- defined by

1) Rupture

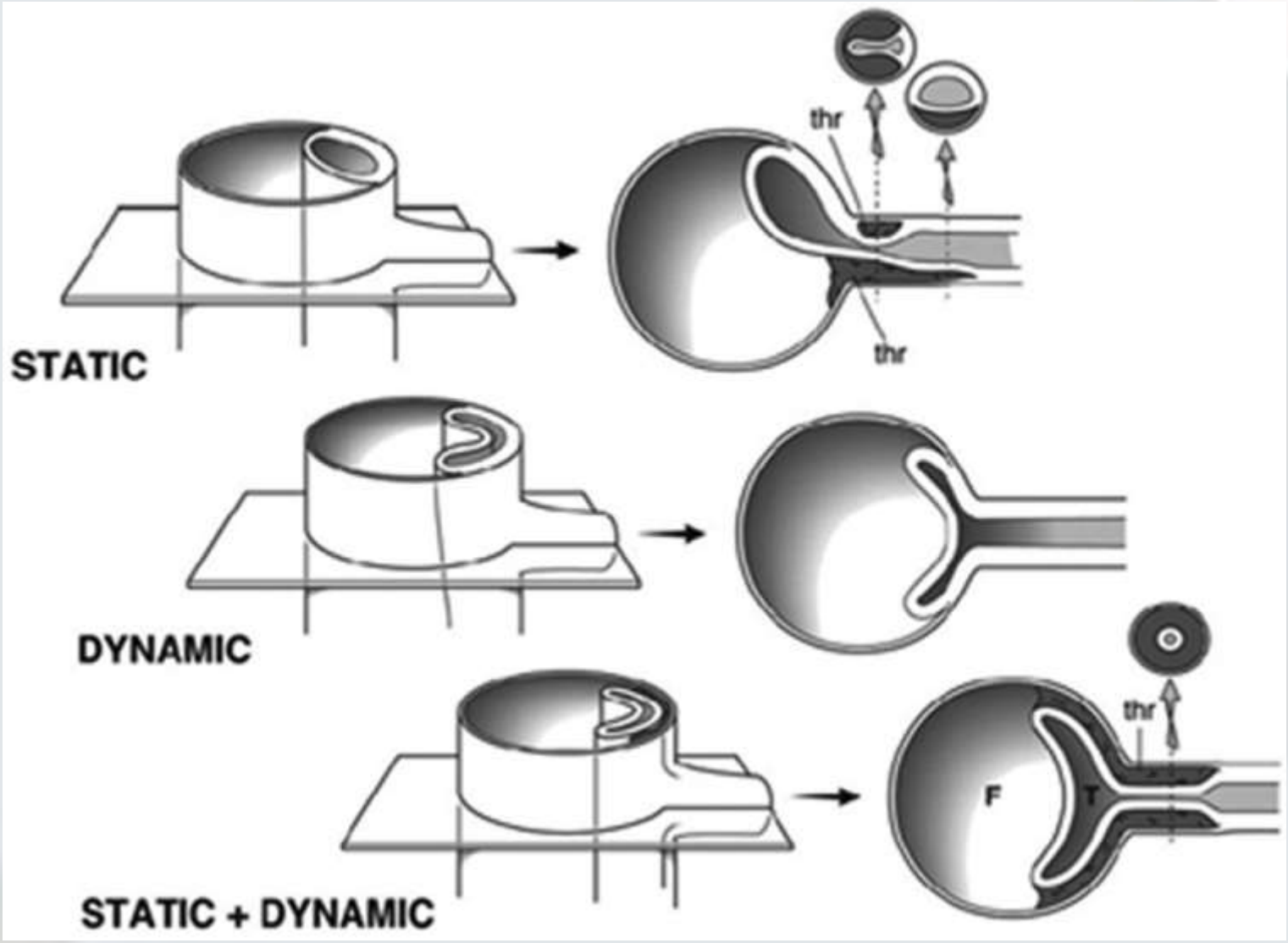
2) Clinical malperfusion

Visceral

Renal

Extremity

Spinal cord



MACGILLIVRAY ET AL.
STS/AATS TBAD GUIDELINES

https://doi.org/10.1016/j.athoracsur.2021.11.002

Surgical options- Complicated

Is the patient reasonable for surgery?

Comorbidities

Functional status

Anatomy suitable for endovascular repair?

TEVAR

Anatomy unsuitable for endovascular repair?

Open or hybrid strategy

Management- Uncomplicated

Management options:

Optimal medical management

Optimal medical management plus early TEVAR

Medical management

Transition to oral antihypertensives
Goal Sbp< 120, HR 50-60s

Avoidance of strenuous activity
mild to moderate exercise fine

Smoking cessation

Statin therapy

Avoidance of quinolone antibiotics

Surveillance with imaging

Modes of failure of medical management

Aortic emergency

Rupture

Acute malperfusion

Acute aortic occlusion

Aneurysmal degeneration

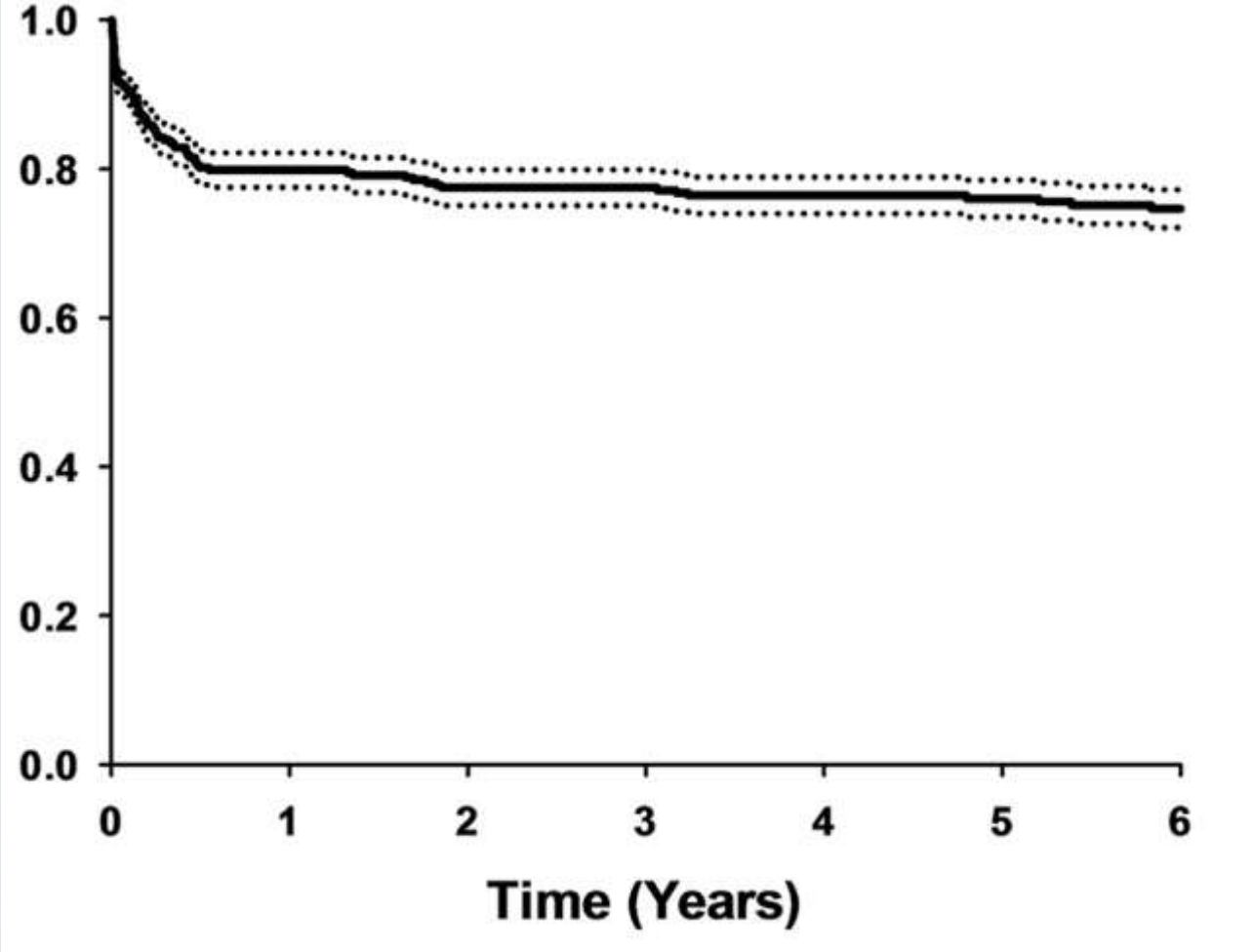
Chronic malperfusion

Failure to thrive

Claudication

Results- medical management

Freedom from intervention



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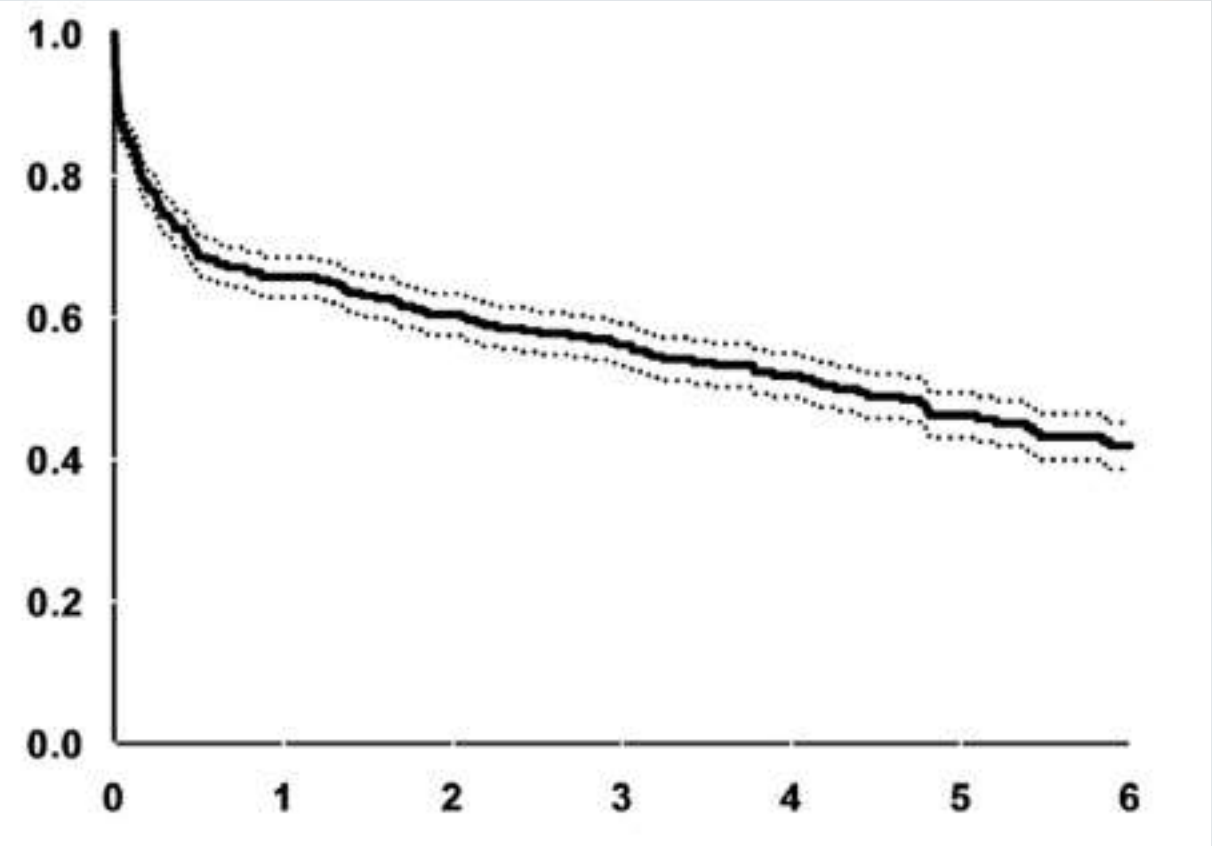
Intervention Free Survival



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High risk features- Uncomplicated

Refractory pain

Refractory hypertension

Primary entry on inner curve

Primary entry > 10 mm

Primary entry < 20 mm from L subclavian artery

False lumen diameter > 22 mm

Descending aortic diameter > 40 mm

High systolic antegrade flow in false lumen with significant diastolic retrograde flow

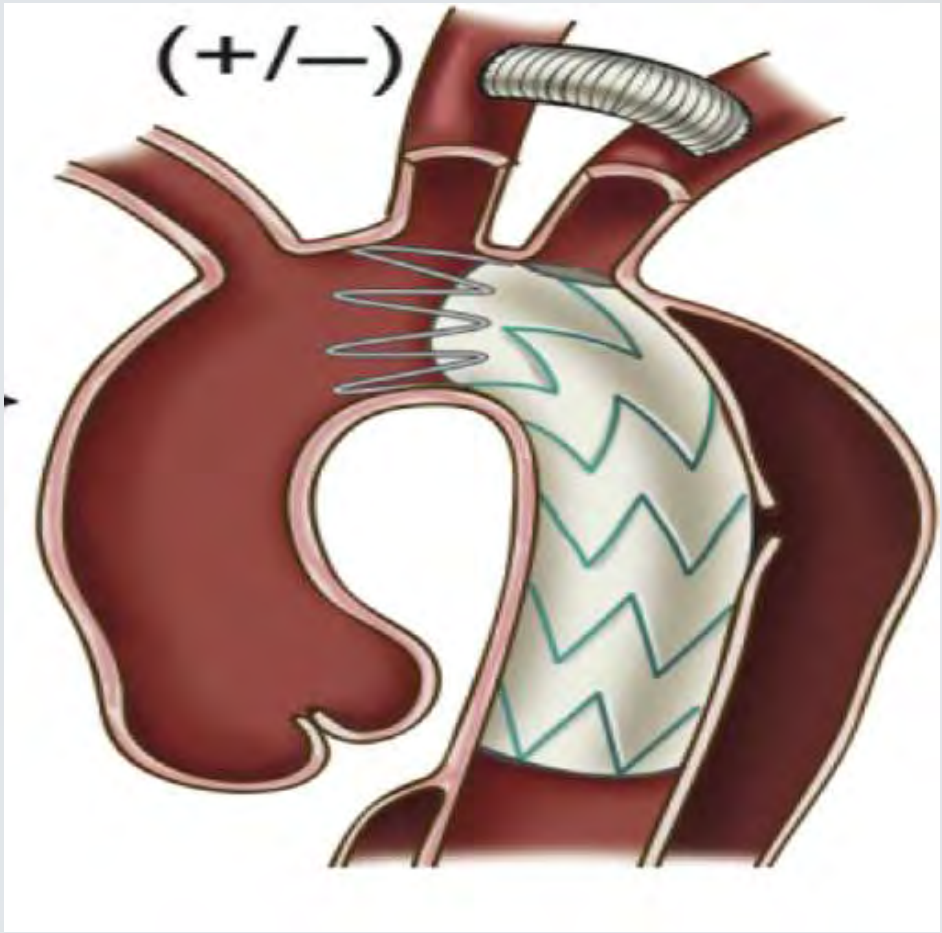
Others:
Bloody pleural effusion
Radiographic only malperfusion
Readmission

Management- Uncomplicated

Optimal medical management

Optimal medical management plus TEVAR

TEVAR- transcatheter endovascular aortic repair



Results- early TEVAR (ADSORD trial)

True lumen expanded

False lumen decreased

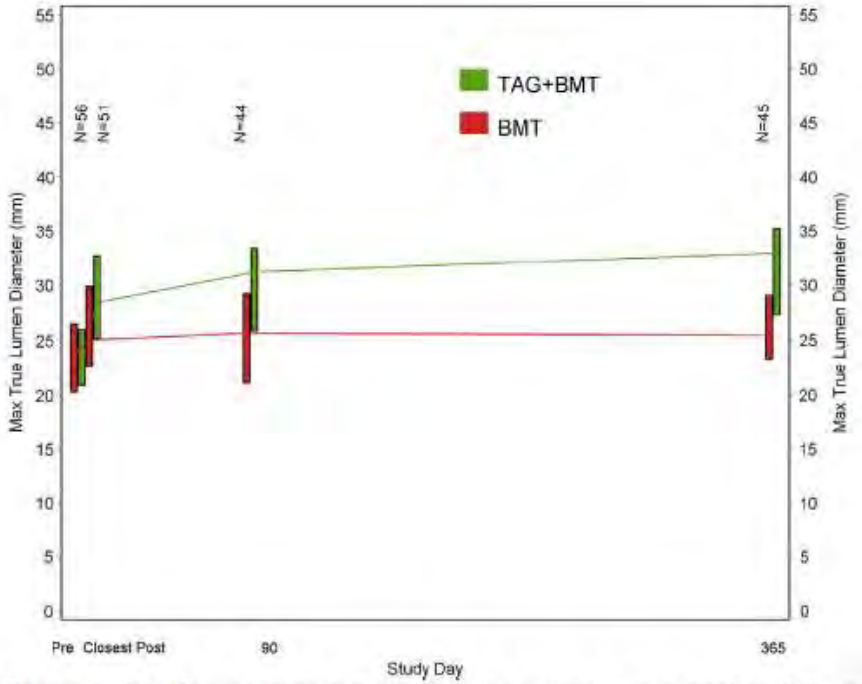


Figure 2. Maximum true lumen by treatment group during follow up. At 1 year, the true lumen expanded in the TAG+BMT group, but did not so in the BMT group ($p < .001$).

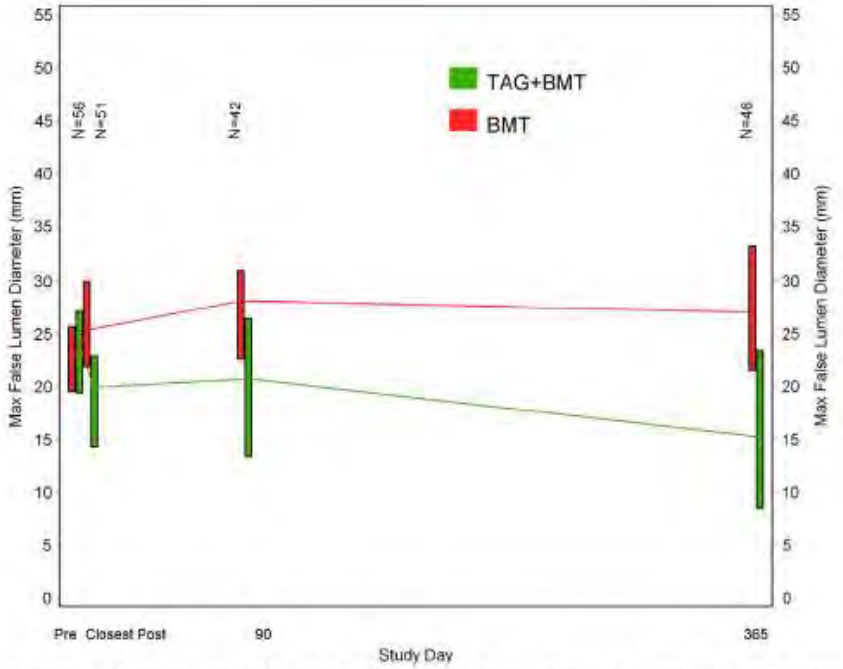


Figure 3. Evolution of the false lumen by treatment group during the one year follow up. At 1 year, the false lumen decreased in size in the TAG+BMT group but did not so in the BMT group ($p < .001$).

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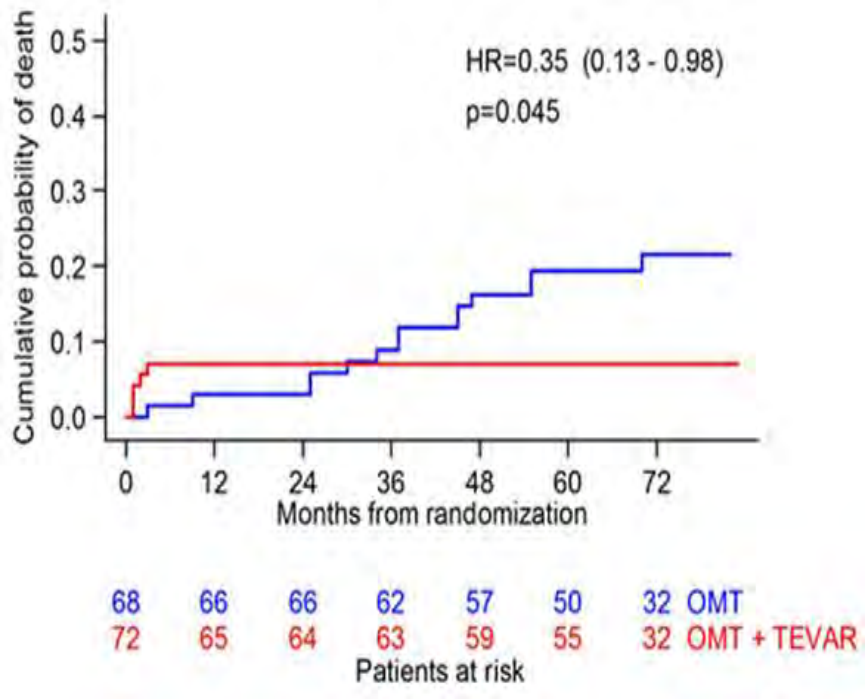
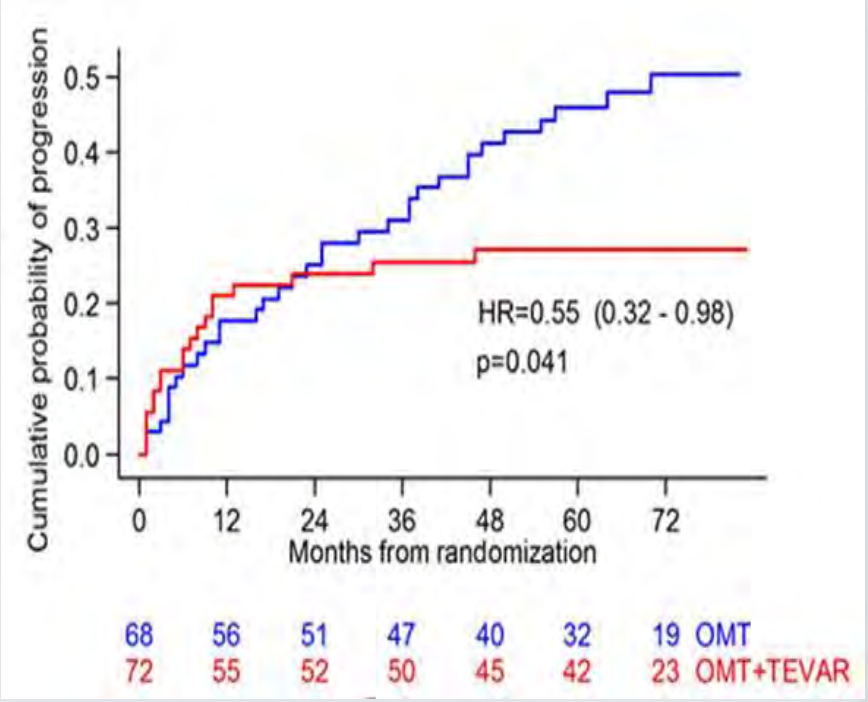
Results- early TEVAR (INSTEAD-XL trial)

Aorta-specific mortality



Progression and adverse events



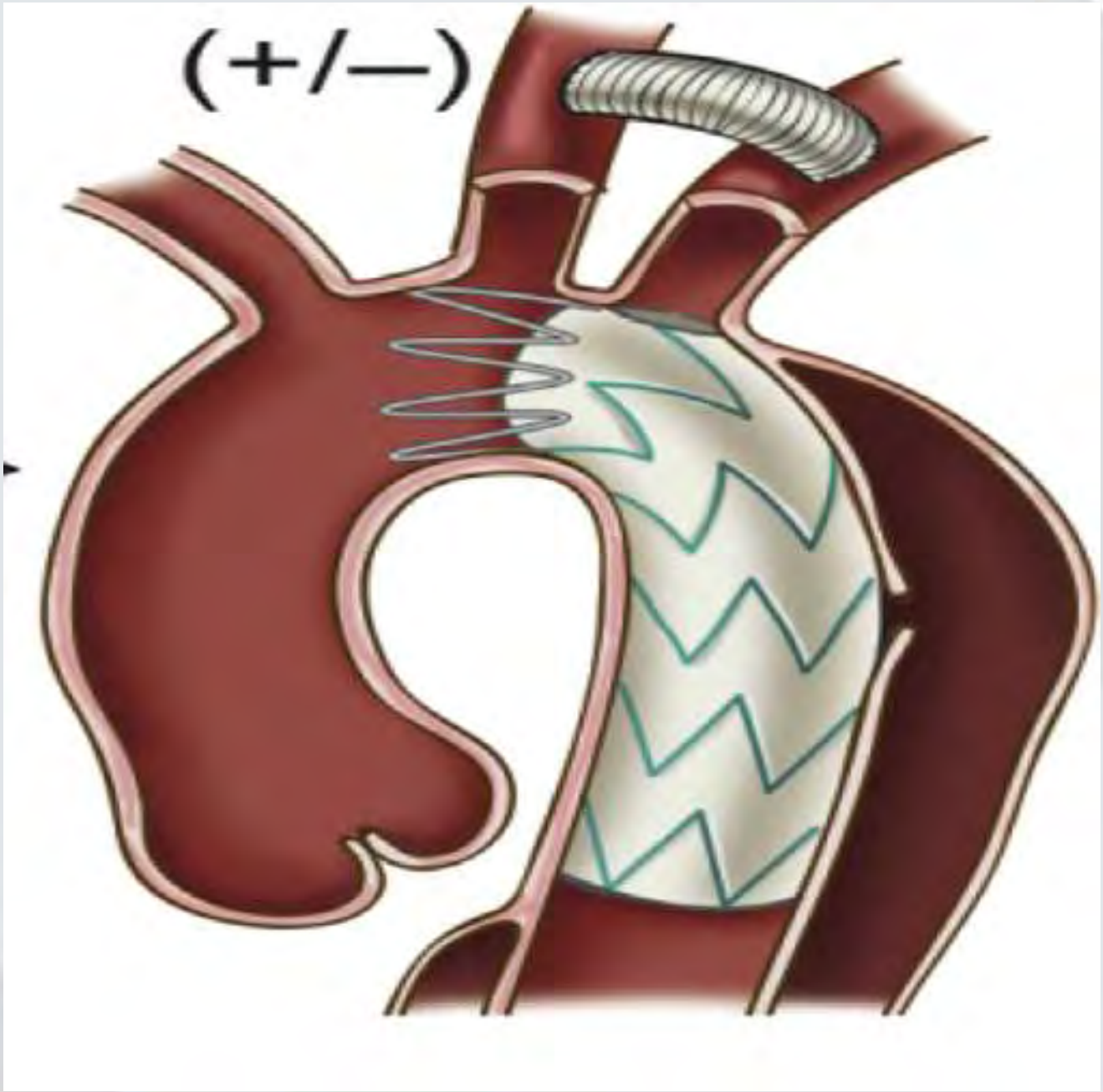
Circ Cardiovasc Interv August 2013

Complications

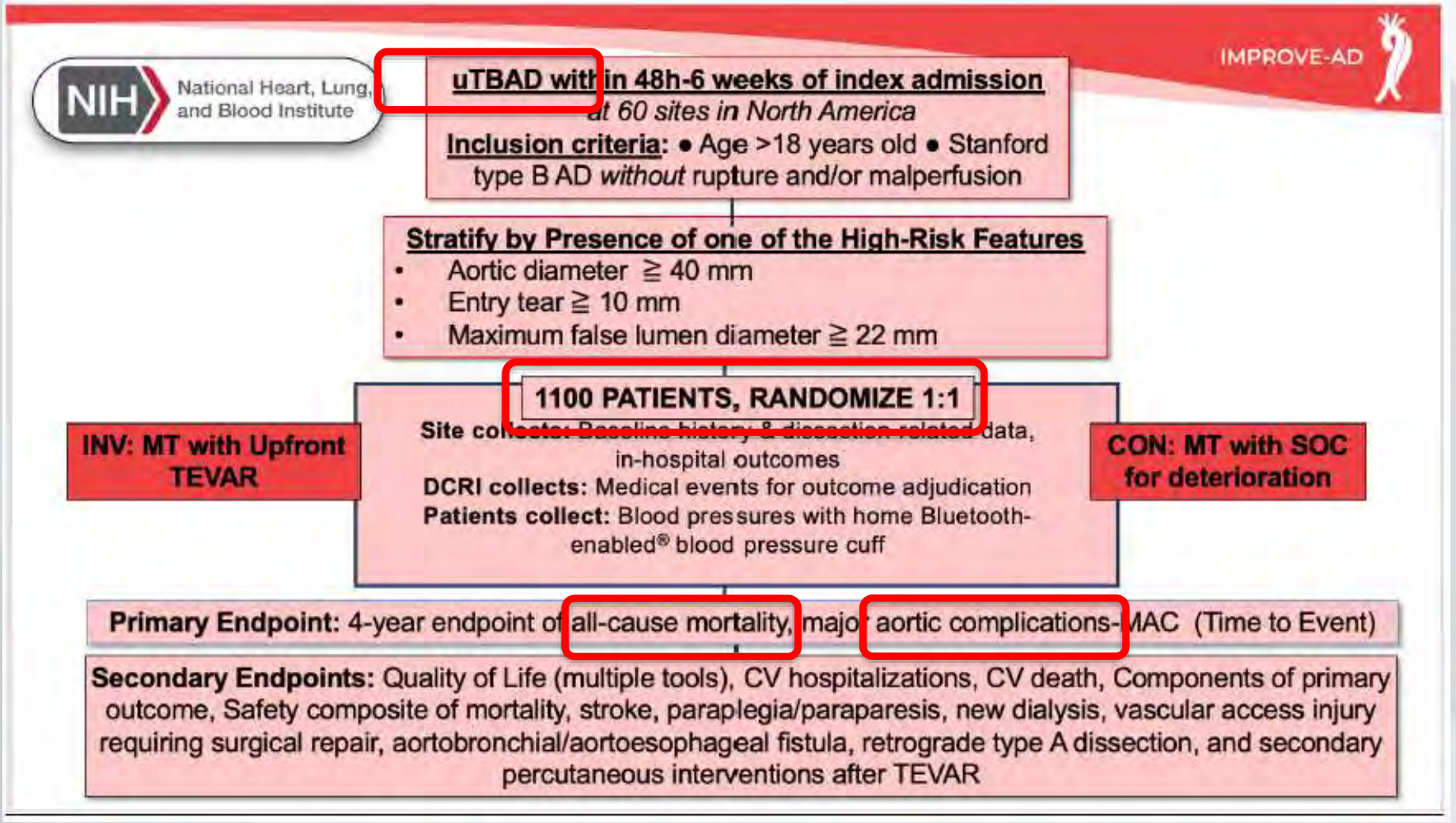
Type A dissection

Spinal cord injury

Endoleak- failure to achieve seal



Improve-AD trial



Long term care

RECOMMENDATION TABLE 36 Living With Aortic Disease

Recommendations	Class[a]	Level[b]	Ref[c]
Exercise and sports			
Thorough education regarding the individual risks and benefits of exercise is recommended.	I	C	-
For patients with adequately controlled BP, 30-60 min of mild-to-moderate dynamic exercise at least 3-4 days per week is recommended.	I	C	-
Intense static exercise (eg, heavy weightlifting or activities requiring the Valsalva manoeuvre) and collision sports are not recommended.	III	C	-
Cardiac rehabilitation			
In patients after invasive treatment of aortic pathologies, an individual cardiac rehabilitation program under medical supervision is recommended.	I	C	-
Surveillance			
In any patients receiving treatment of aortic pathologies, a disease- and treatment-based individual surveillance program in a specialized aortic center with a dedicated outpatient clinic is recommended.	I	C	-
Imaging-based quality control after every open or endovascular aortic procedure is recommended, irrespective of the treated segment before discharge.	I	C	-
TTE is the recommended imaging modality after any kind of root surgery.	I	C	-
In patients after treatment for acute aortic dissection or IMH irrespective of treatment modality, CTA surveillance is recommended after 6 months and 12 months and, in case of stable conditions, annually thereafter for 5 years.	I	C	-
In patients after endovascular treatment irrespective of the underlying aortic disease, CTA surveillance is recommended after 6 months and 12 months and, in case of stable conditions, annually thereafter for 5 years.	I	C	-
In patients after open surgical treatment for nonaortic dissection or IMH pathologies, imaging surveillance is recommended after 12 months and 24 months and, in case of stable conditions, should be extended thereafter.	I	C	-
In patients with stable aortic conditions, extended surveillance intervals should be considered after 5 years based on an individual protocol.	IIa	C	-
In case of nonoperability, no option or informed consent of refraining from treatment, stopping surveillance is recommended.	I	C	-

[a]Class of recommendation; [b]Level of evidence; [c]References. BP, blood pressure; CTA, computed tomography angiography; IMH, intramural hematoma; TTE, transthoracic echocardiography.

Chronic Type B Dissection

When to intervene?

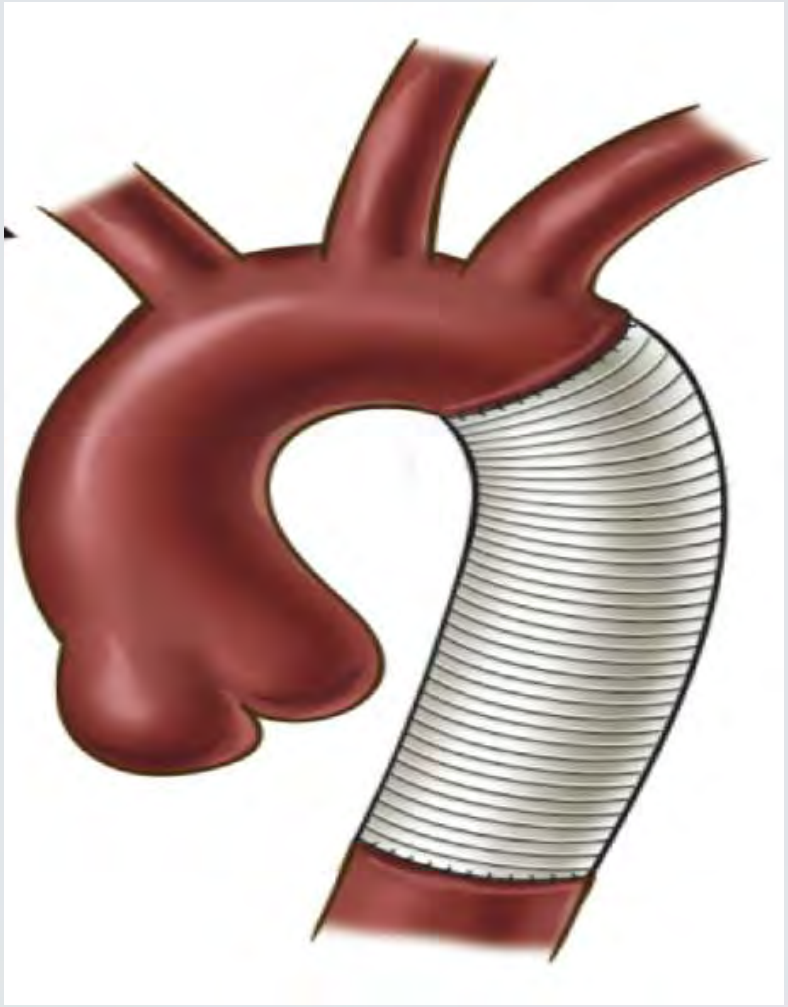
Aortic emergencies

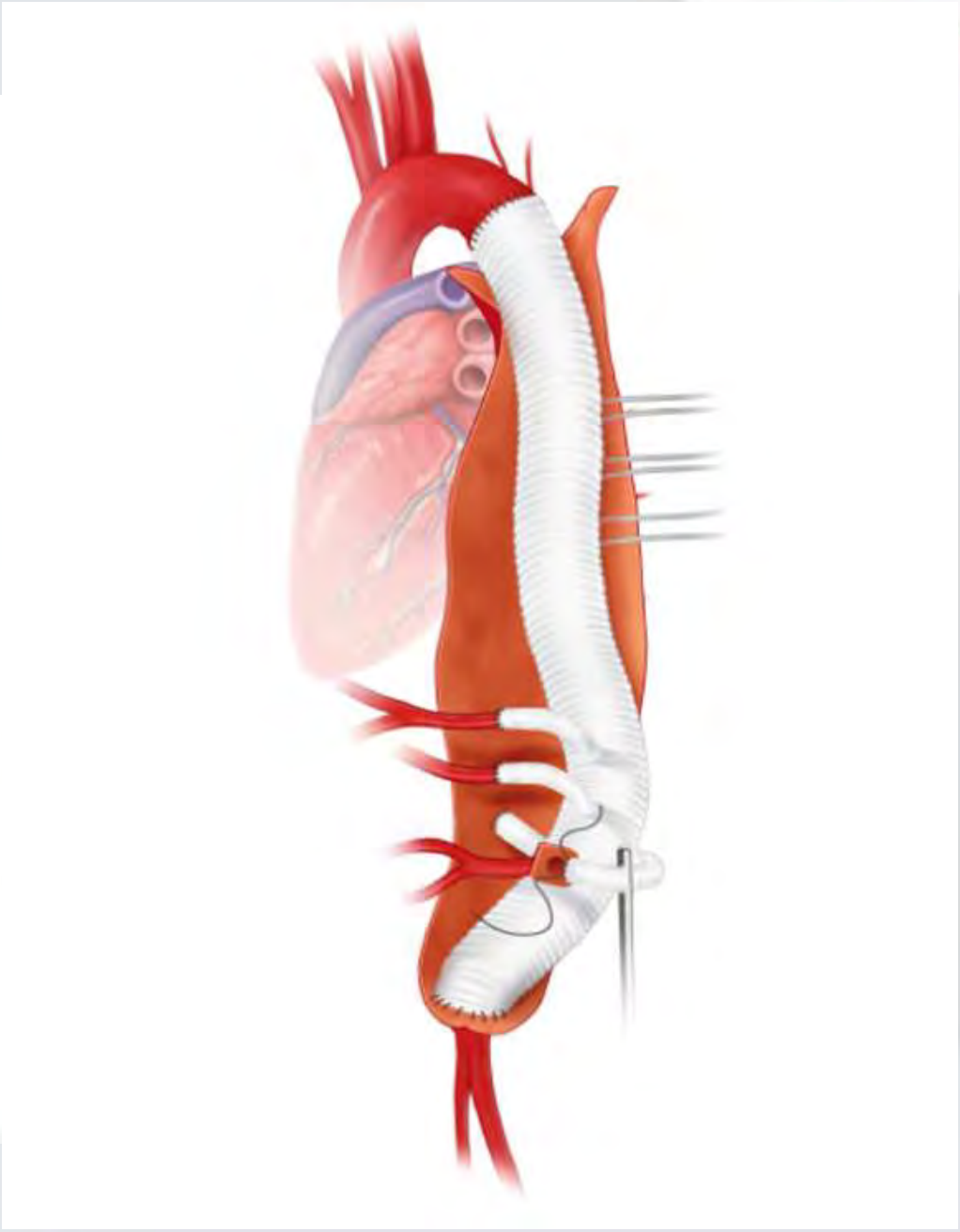
Aneurysmal degeneration (most common)

>55 mm diameter

Threshold may alter based on functional status, anatomy, heritable disease

Chronic dissection- conventional surgical approach





Complications

Neurologic- stroke, spinal cord injury

Cardiac

Pulmonary

Renal, visceral

Chronic dissection-endovascular approach

Positives

Less morbidity

Faster recovery

Negatives

Not feasible for all (anatomy, genetics)

More re-intervention

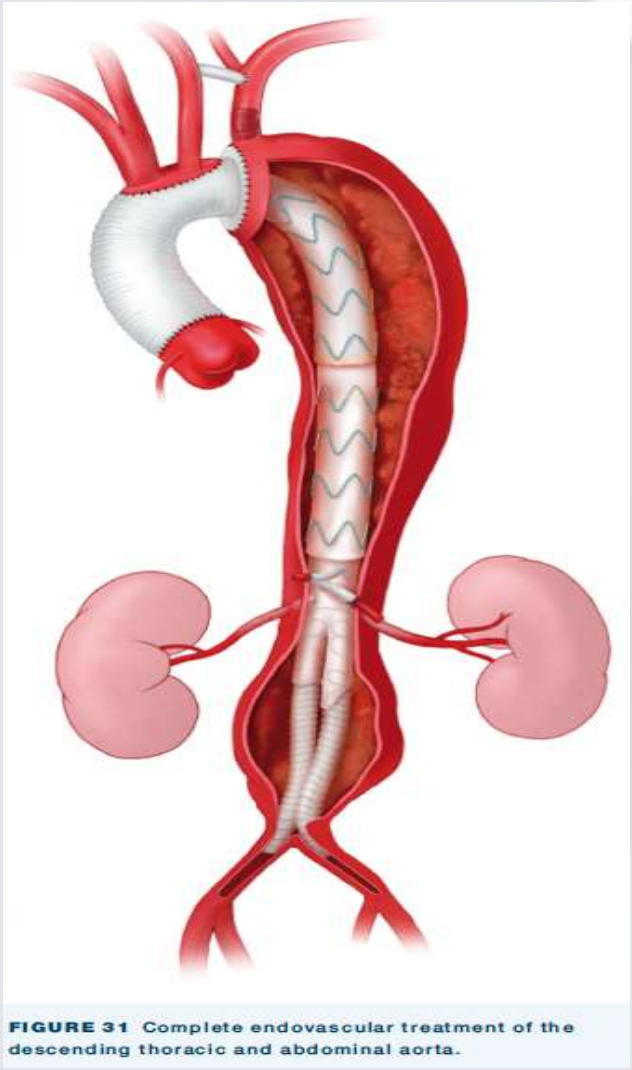


FIGURE 31 Complete endovascular treatment of the descending thoracic and abdominal aorta.

Role of Multi-disciplinary team

RECOMMENDATION TABLE 3 Aortic Teams and Healthcare Implications

Recommendations	Class[a]	Level[b]	Ref[c]
Shared decision-making for the optimal treatment of aortic pathologies by a multidisciplinary aortic team is recommended.	I	C	-
In patients with multisegmental aortic disease, treatment is recommended in aortic centers providing open and endovascular cardiac and vascular surgery on site.	I	C	-
Transfer to an aortic center should be considered for patients with complex aortic pathologies.	IIa	B	105-118
For endovascular aortic procedures, a hybrid operating room, including an integrated imaging system, is recommended.	I	C	-

[a]Class of recommendation; [b]Level of evidence; [c]References.

Ann Thorac Surg 2024;118:5-115

Role of multi-disciplinary team

- Core group of providers- surgeons (open and endovascular capability), cardiologists, intensivists, anesthesiologists
- Multi-disciplinary discussion of complex patients/pathology
- Standardized pathways for management- pre-op, intra-op, post-op
- Multi-disciplinary morbidity/mortality
- Participation in STS/SVS quality databases

Summary

Type b Aortic dissection is a morbid condition requiring lifelong management

Initial management usually medical

Subsequent management is increasingly complex- thresholds and options for intervention are in flux

Care is best delivered by a multi-disciplinary team with interest in aortic pathology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