

# Shoot first or hold your fire in acute type B dissections Pro: careful surveillance

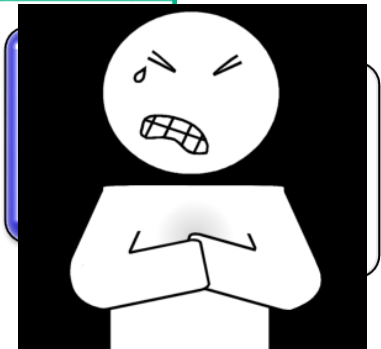
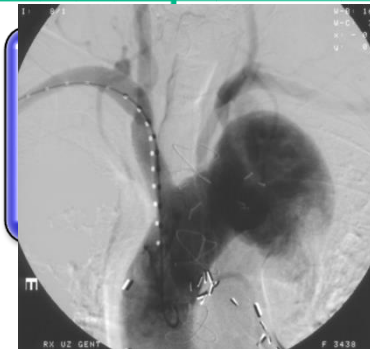
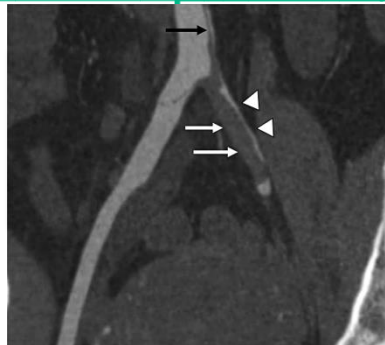
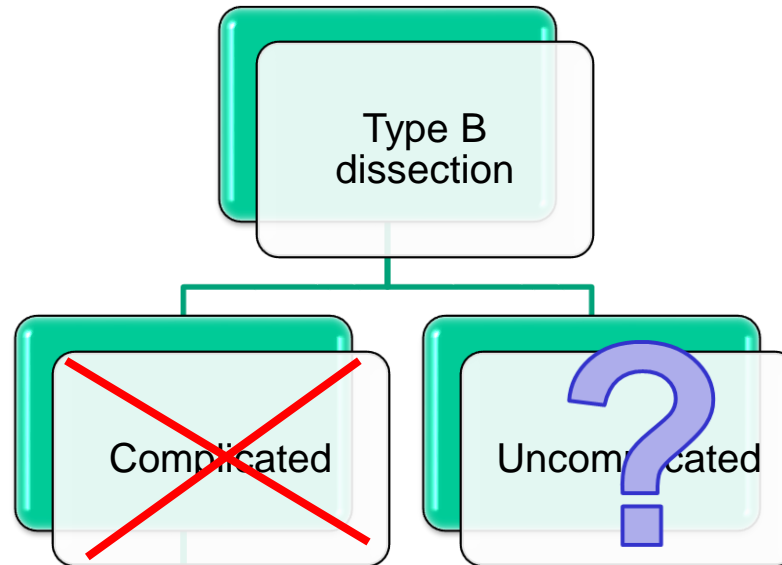
Frank Vermassen  
Ghent University Hospital  
Belgium



# Acute type B dissection

## Classification

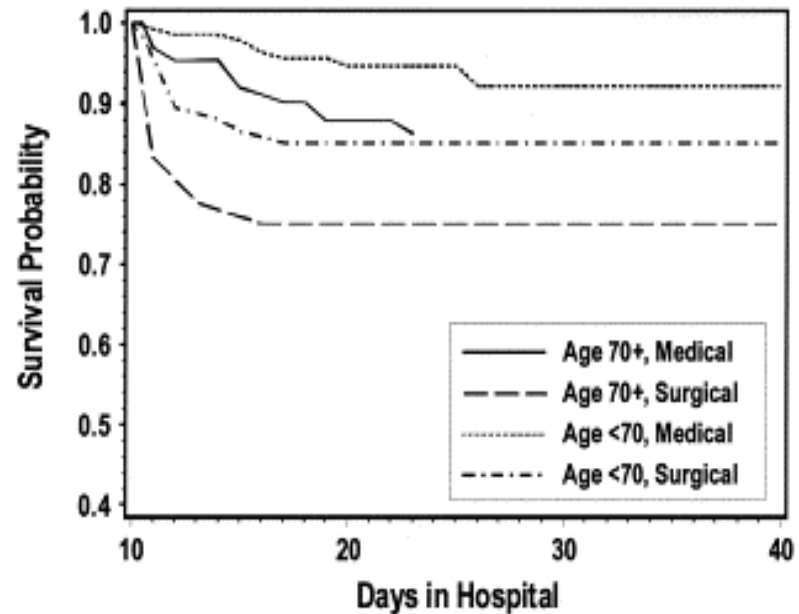
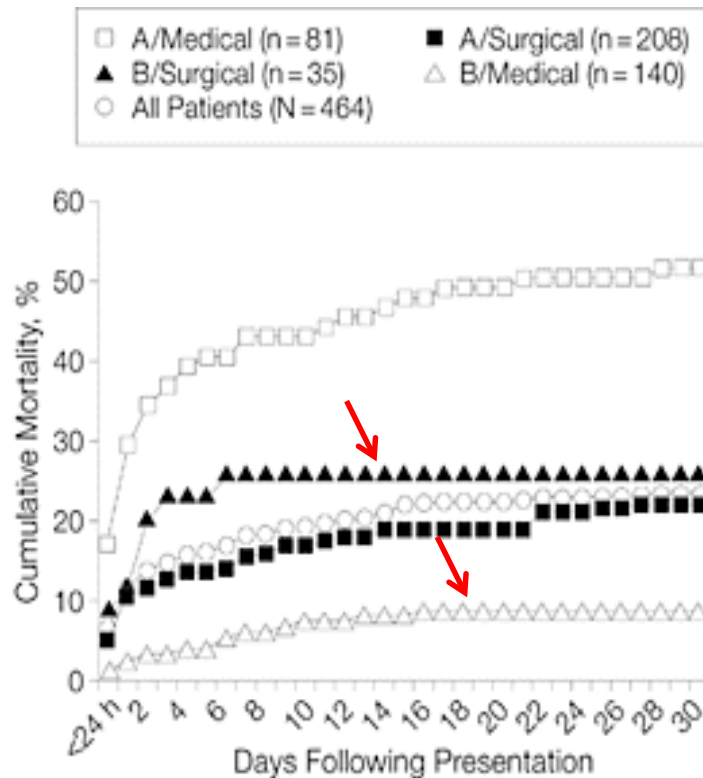
- Acute: <2weeks
- Subacute: 2wks-3mths
- Chronic: > 3 mths





# Medical therapy – the golden standard

## Historical data



Thirty-Day Mortality by Dissection Type and Management

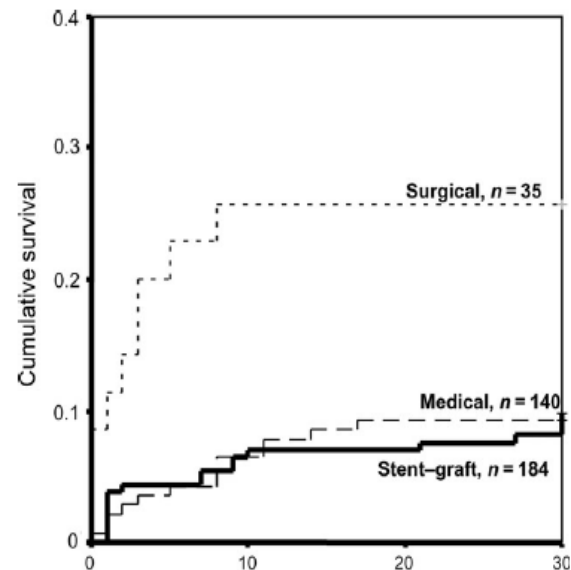
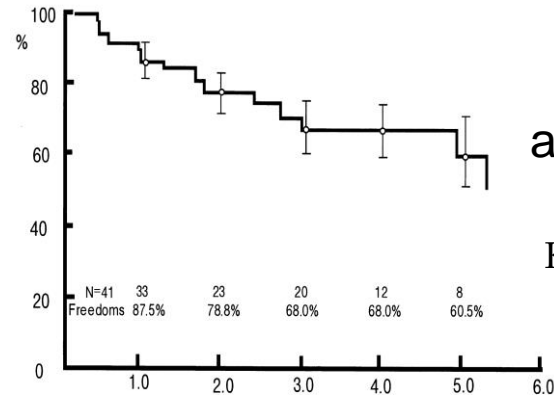
Hagan, P. G. et al. JAMA 2000;283:897-903.

Mehta Ann Thor Surg 2004



## Fate after acute phase

- Aortic wall remains weakened
- Risk for aneurysm formation
  - ➔ Indication for operation in 20-35% of medically treated acute dissections
  - ➔ Mortality: 5%/ Pt.year
  - ➔ Rupture of aneurysm is cause of death in 30%



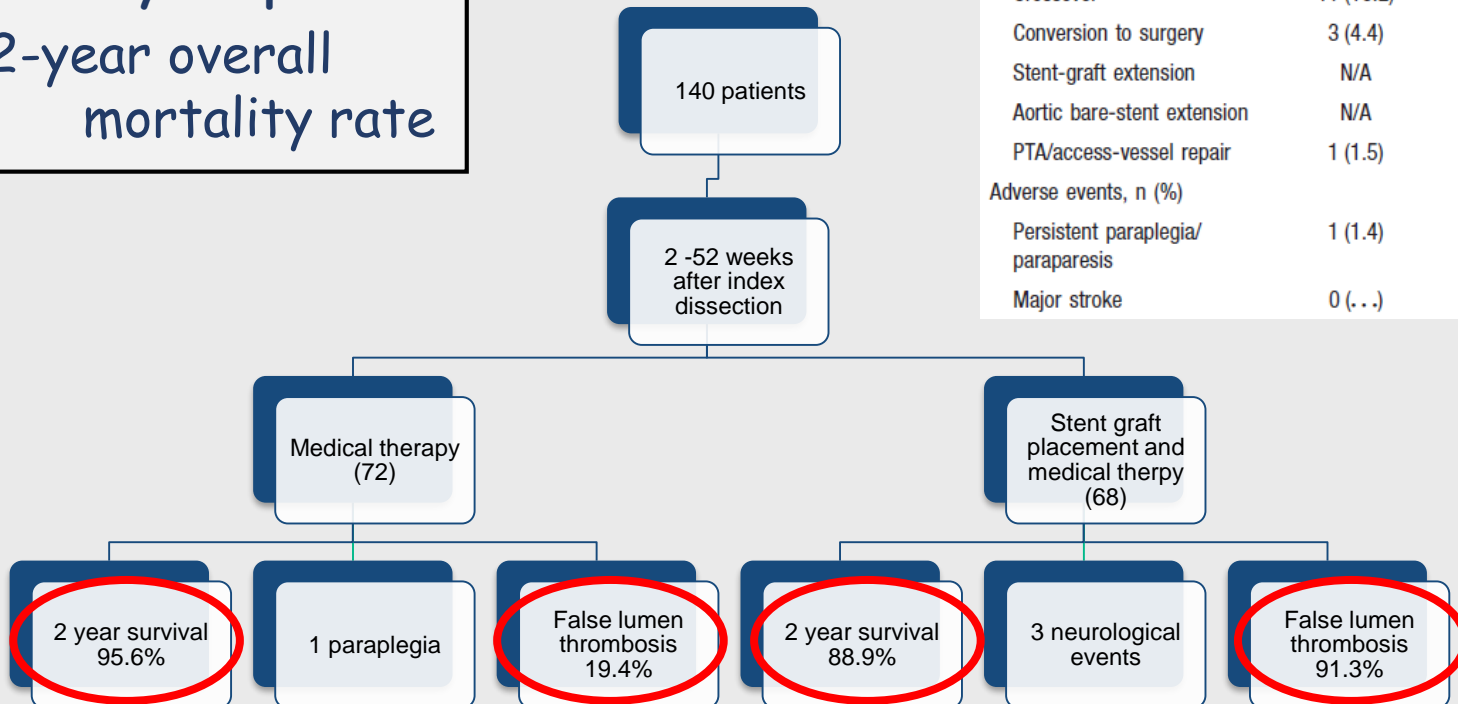




# INSTEAD trial

- Medical R/ vs Endograft

**Primary endpoint:**  
2-year overall  
mortality rate



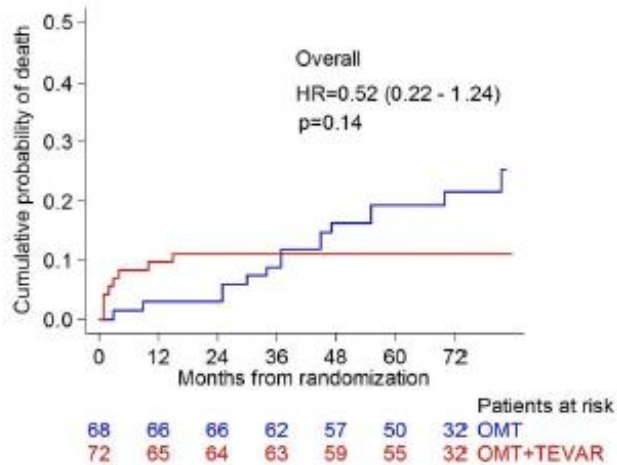
	OMT	OMT+TEVAR	P
Overall deaths, n (%)	3 (4.4)	8 (11.1)	0.20
Aorta-related deaths, n (%)	2 (2.9)	4 (5.6)	0.68
Secondary interventions, n (%)	15 (22.1)	13 (18.1)	0.74
Crossover	11 (16.2)	N/A	N/A
Conversion to surgery	3 (4.4)	3 (4.2)	1.00
Stent-graft extension	N/A	6 (8.3)	N/A
Aortic bare-stent extension	N/A	1 (1.4)	N/A
PTA/access-vessel repair	1 (1.5)	3 (4.2)	0.62
Adverse events, n (%)			
Persistent paraplegia/paraparesis	1 (1.4)	2 (2.8)	0.90
Major stroke	0 (..)	2 (2.8)	0.53



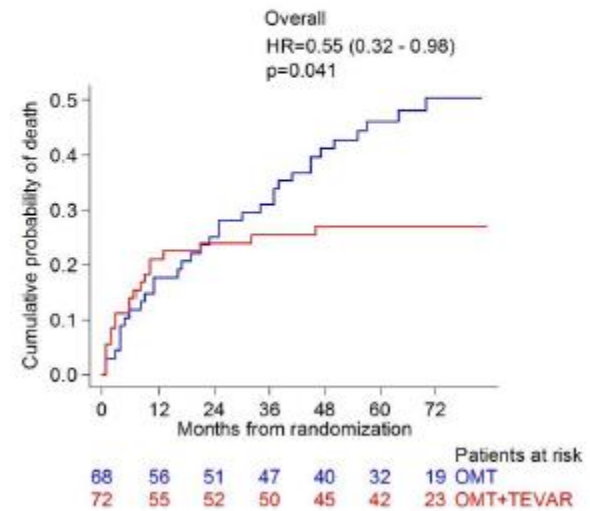
# INSTEAD XL trial

- Longer follow-up

## Mortality (1st EP)



## Progression (2nd EP)





# What INSTEAD XL really tells

- NOT an acute dissection trial

## **Endovascular Repair of Type B Aortic Dissection Long-term Results of the Randomized Investigation of Stent Grafts in Aortic Dissection Trial**

Christoph A. Nienaber, MD, PhD; Stephan Kische, MD; Hervé Rousseau, MD, PhD;  
Holger Eggebrecht, MD; Tim C. Rehders, MD; Guenther Kundt, MD, PhD; Aenne Glass, MA;  
Dierk Scheinert, MD, PhD; Martin Czerny, MD, PhD; Tilo Kleinfeldt, MD;  
Burkhardt Zipfel, MD; Louis Labrousse, MD; Rossella Fattori, MD, PhD; Hüseyin Ince, MD, PhD;  
for the INSTEAD-XL trial

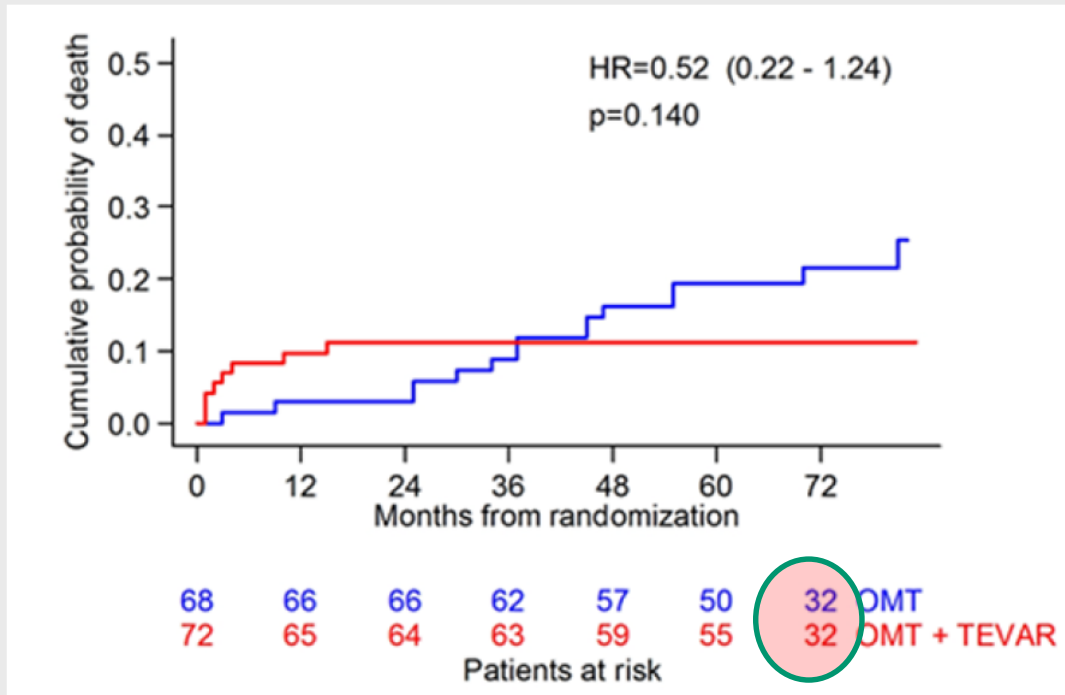
## **Trial Procedures**

Consecutive patients with uncomplicated type B aortic dissection between **2 and 52 weeks** after onset (clustering at 10–12 weeks)<sup>19</sup> in the **early chronic phase** of dissection were considered candidates for random assignment to TEVAR in addition to optimal medical treatment (OMT) or OMT alone at 7 European centers between November 2003 and December 2005; patients were unsuitable for randomization in



## What INSTEAD XL really tells

- Totally underpowered: conclusion on 2x 32 patients



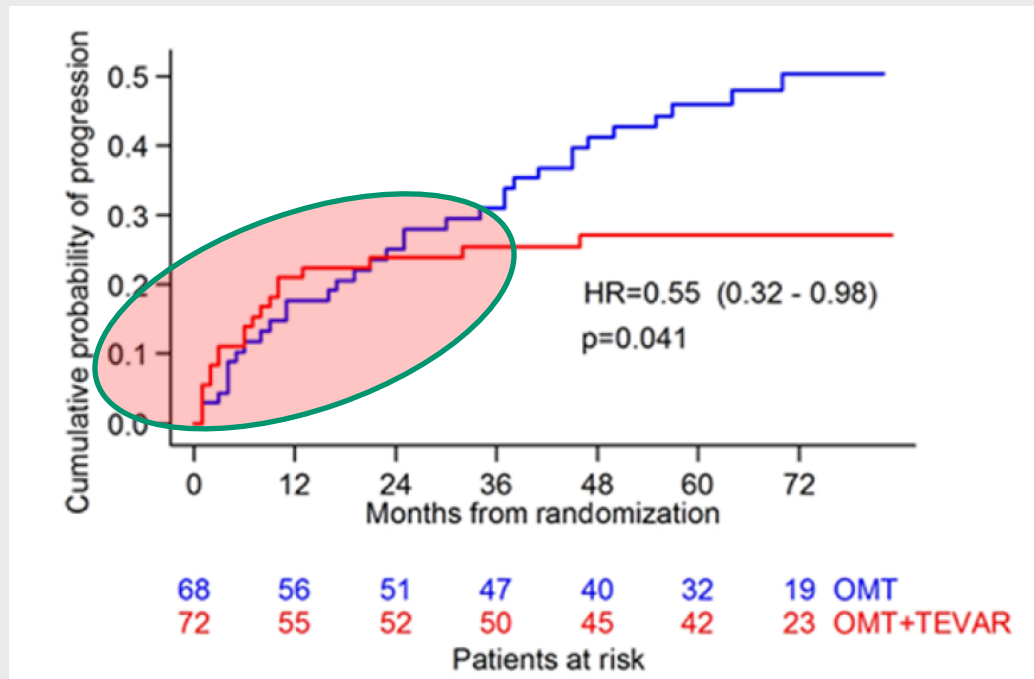
**Conclusions not transferable to  
hundreds of patients with TBAD**





## What INSTEAD XL really tells

- TEVAR does not prevent progression of disease

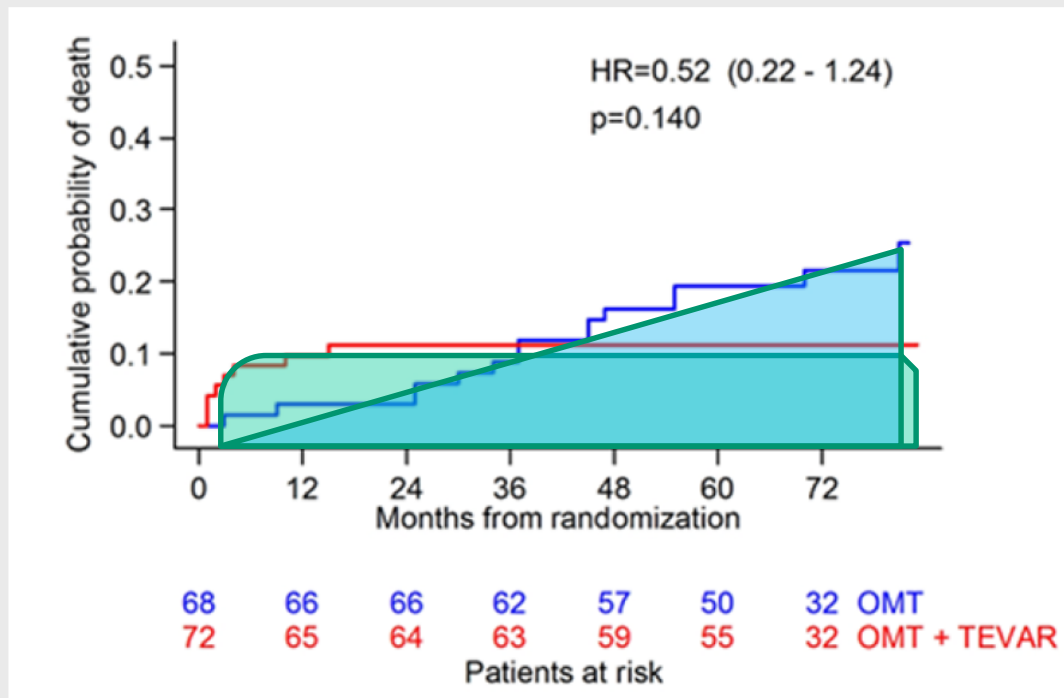


**Progression of disease in almost 30% of patients up to 4 years after intervention**



## What INSTEAD XL really tells

- NO live-years saved up to 6 years after procedure



**Area under the curve is similar in both groups**



# ADSORB trial

## Endovascular Repair of Acute Uncomplicated Aortic Type B Dissection Promotes Aortic Remodelling: 1 Year Results of the ADSORB Trial

J. Brunkwall <sup>a,\*</sup>, P. Kasprzak <sup>b</sup>, E. Verhoeven <sup>c</sup>, R. Heijmen <sup>d</sup>, P. Taylor <sup>d</sup>, the ADSORB Trialists <sup>e</sup>

- ❑ Acute type B dissection trial (< 2 weeks)
- ❑ 61 patients (originally 150)
- ❑ BMT + TAG vs BMT alone
- ❑ Results
  - Aortic remodeling ??
  - No difference in aortic diameter
  - Equal number with aortic dilatation
    - 14/30 BMT vs 11/31 BMT+TAG
  - No difference in survival

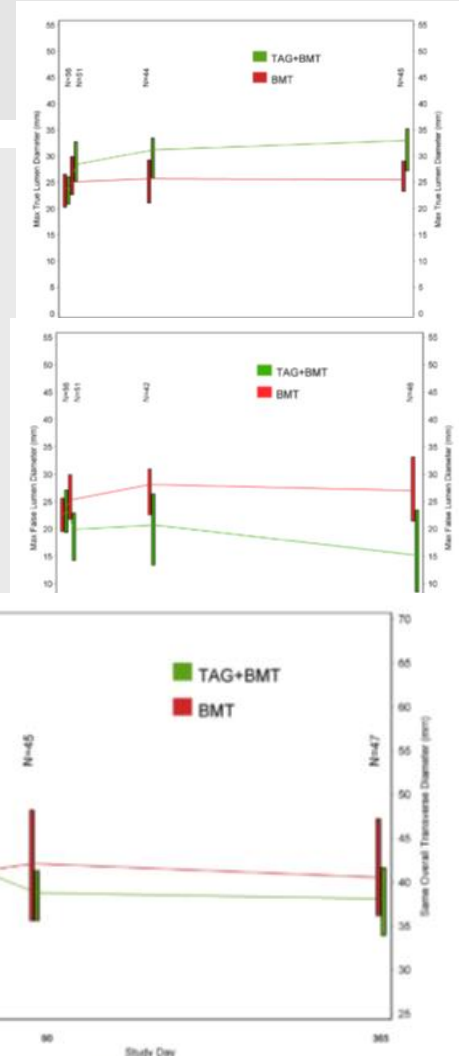


Figure 4. Aortic diameter was similar at baseline and the difference at 1 year did not reach statistical significance ( $p < .062$ ).



## Why not to treat in acute phase

- Higher mortality than in subacute or chronic phase
- Higher risk for complications

	Acute		Subacute		Chronic	
	30d	365d	30d	365d	30d	365d
<b>Mortality</b>	6 (12%)	9(18%)	0	1(4%)	0	1(4%)
<b>Stroke</b>	4 (8%)	4(8%)	0	0	0	0
<b>SCI</b>	1(2%)	1(2%)	0	0	1(4%)	2(8%)
<b>Reintervent.</b>	0	4(8%)	0	1(4%)	2(8%)	4(15%)
<b>Aortic rupture</b>	1(2%)	1(2%)	0	0	0	0
<b>Retrograde type A</b>	1(2%)	1(2%)	0	0	0	0

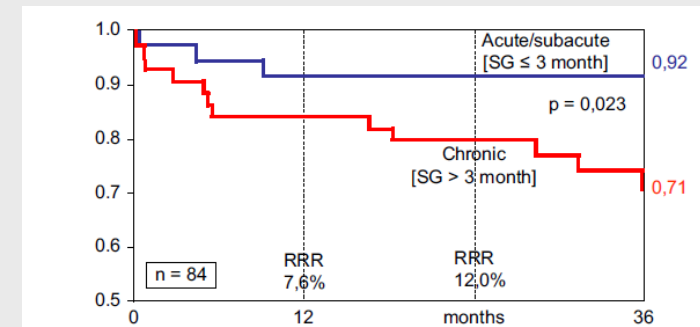


Figure 5 Impact of treatment timing on event (MAVE) free survival in patients with acute aortic dissection (own results).

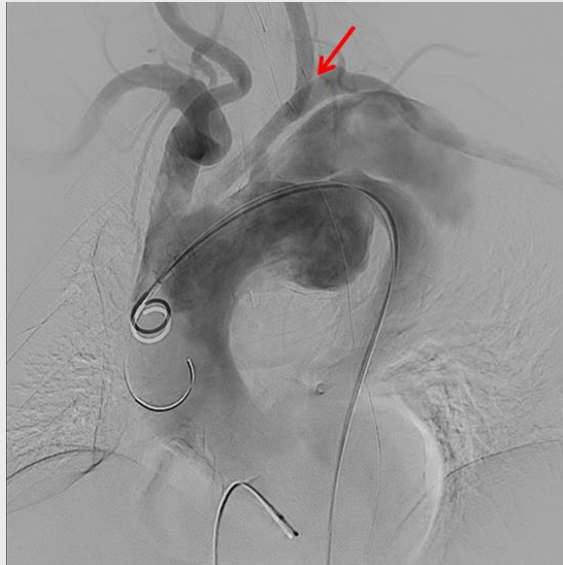
**Akin et al** *Eur J Vasc Endovasc Surg* 2009; 37: 289-96





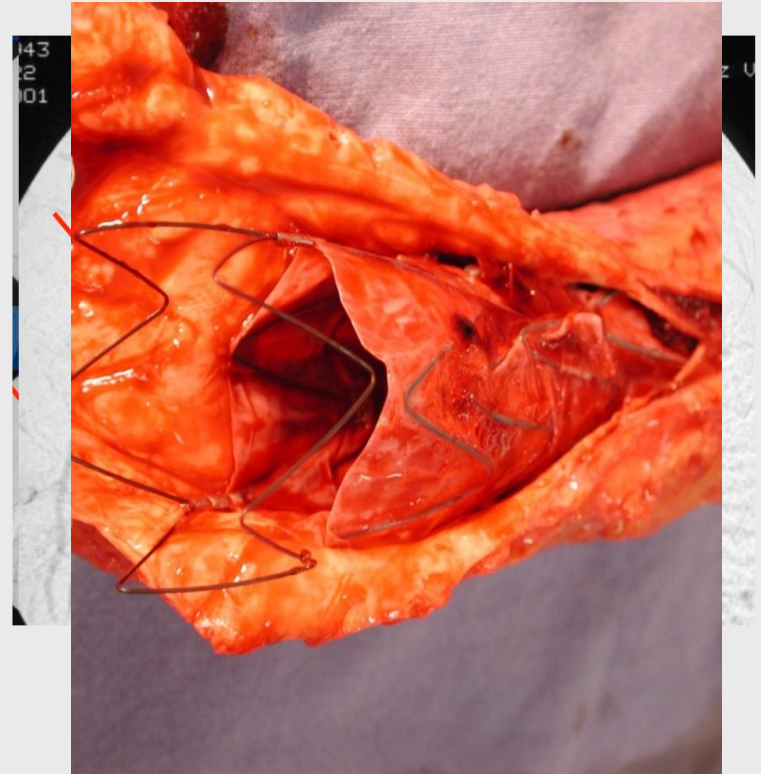
# Complications of treatment in acute phase

- Coverage of the LSA  
(64% in ABSORB)



Risk for paraplegia, stroke,  
peripheral nerve damage

- Type A Dissection



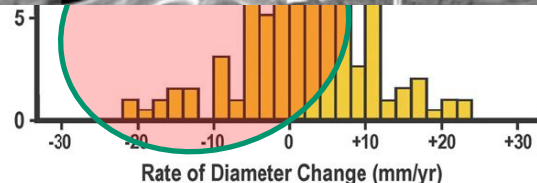
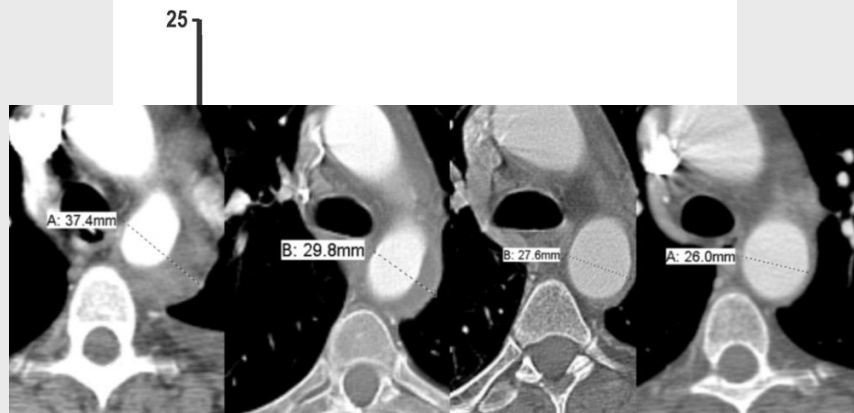


# Treatment in acute phase not useful

## ➤ Spontaneous healing

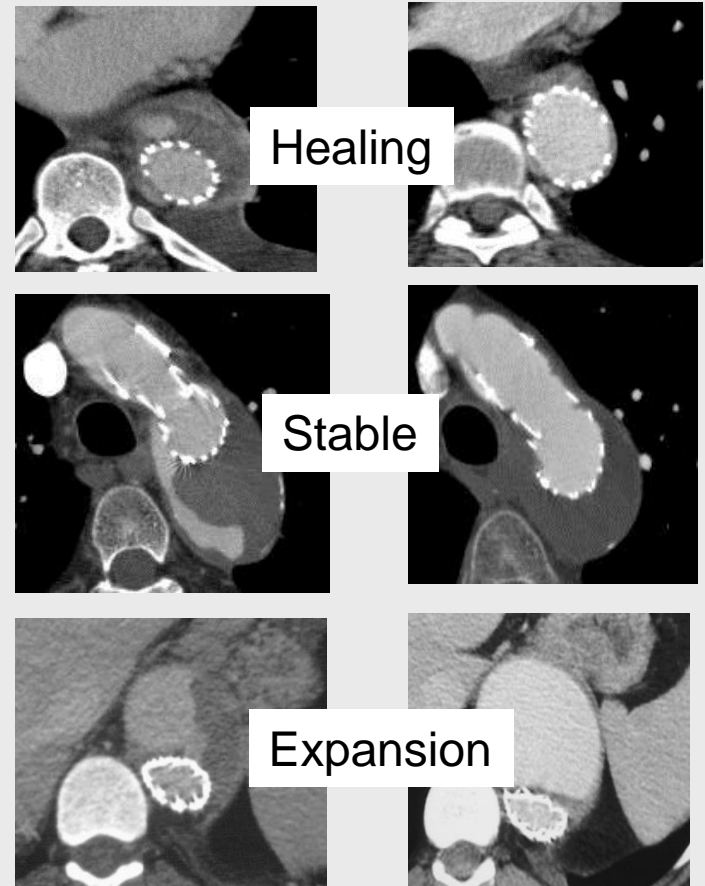
### Aortic Expansion After Acute Type B Aortic Dissection

Frederik H.W. Jonker, MD, PhD, Santi Trimarchi, MD, PhD, Vincenzo Rampoldi, MD, Himanshu J. Patel, MD, Patrick O'Gara, MD, FACC, Mark D. Peterson, MD, PhD, Rossella Fattori, MD, Frans L. Moll, MD, PhD, Matthias Voehringer, MD, Reed E. Pveritz, MD, PhD, Stuart Hutchison, MD, FACC, Daniel Montgomerv, MS.



Jonker Ann Thor Surg 2012

## ➤ After TEVAR





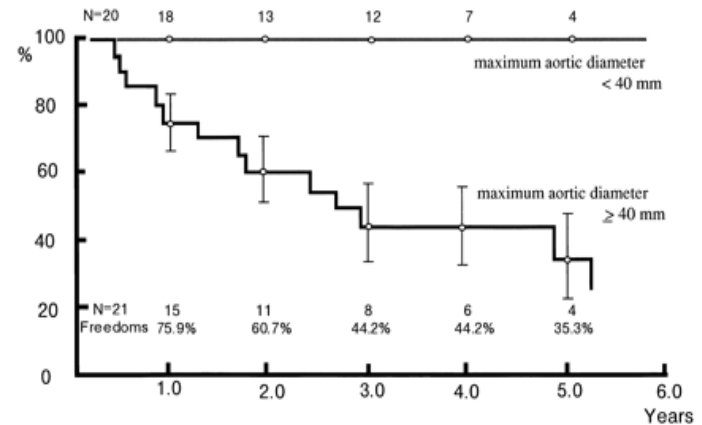
# Shoot selectively



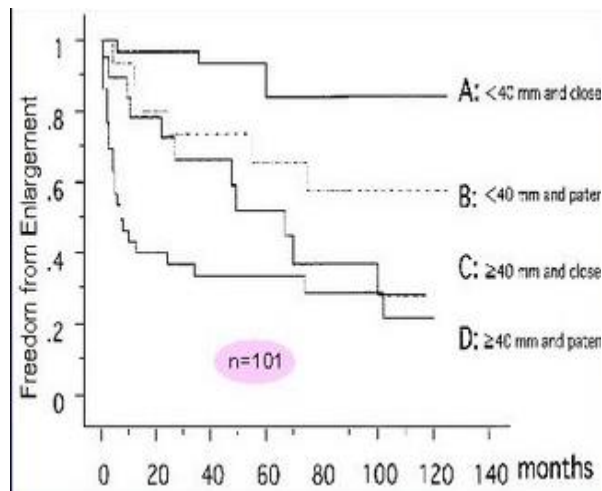


# Risk factors for aneurysm formation

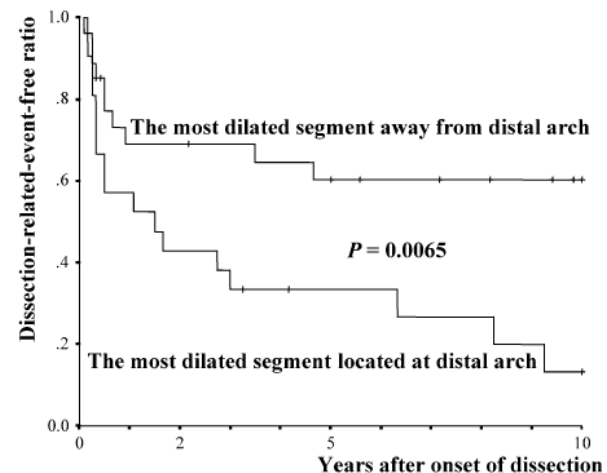
- Diameter > 40 mm
- Perfused false lumen
- Entry tear in proximal aorta



Kato Circulation 1995



Marui Circulation 1999



Akutsu Eur J Cardiothor Surg 2004





# Risk factors for late complications

- Initial false lumen diameter > 22 mm
- Partially thrombosed false lumen

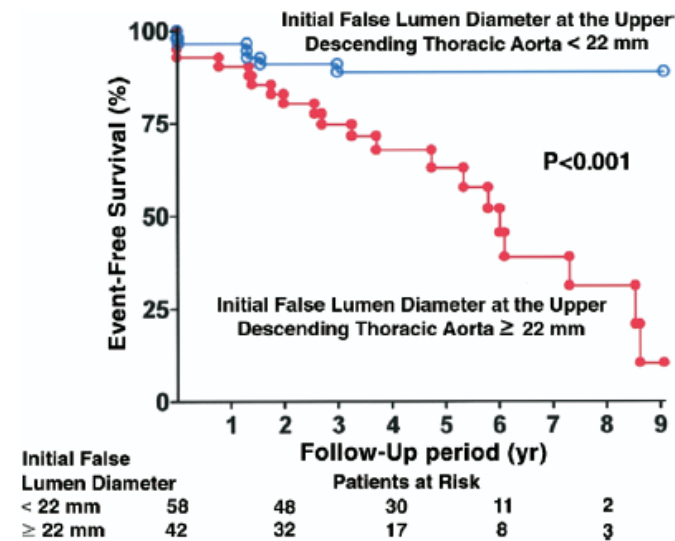
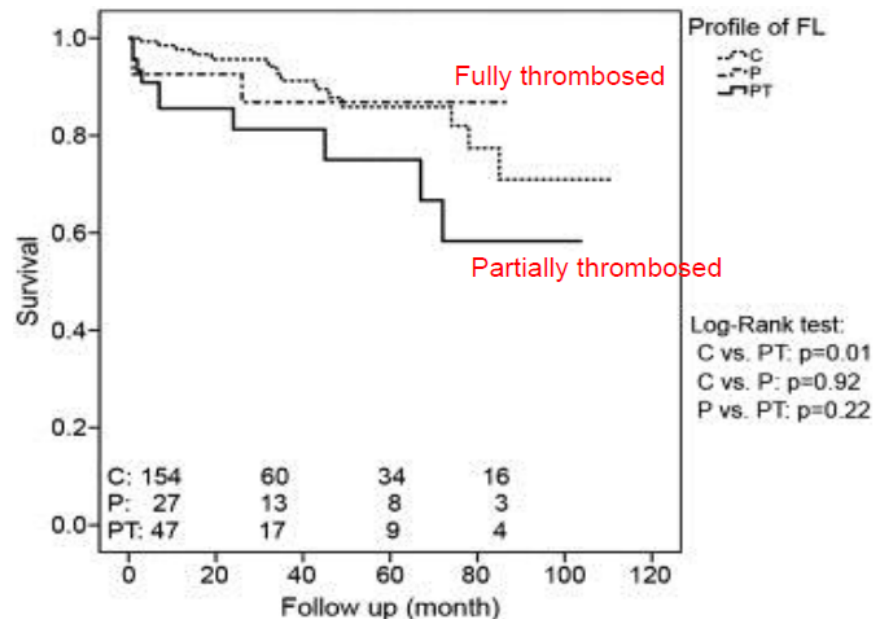


Figure 5 Event-Free Survival Curves

Song JACC 2007

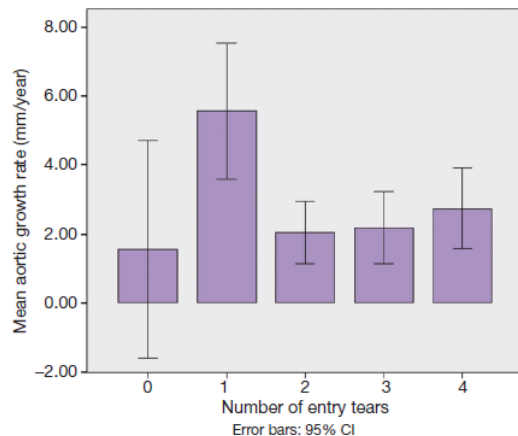


Ueki Ann Thor Surg 2013

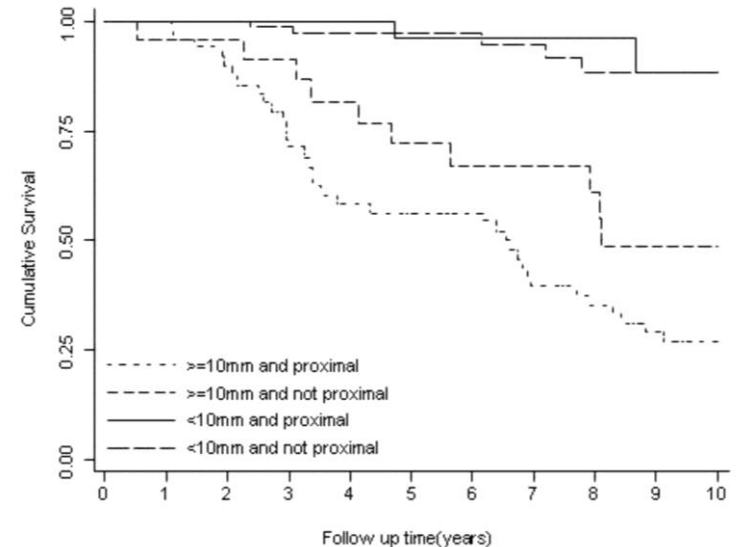


# Risk factors for late complications

- Entry tear in proximal part of DTA and especially at the concavity of the aorta
- Large entry tear
- Number of entry tears



Tolenaar Ann Thir Surg 2013



Evangelista Circulation 2012



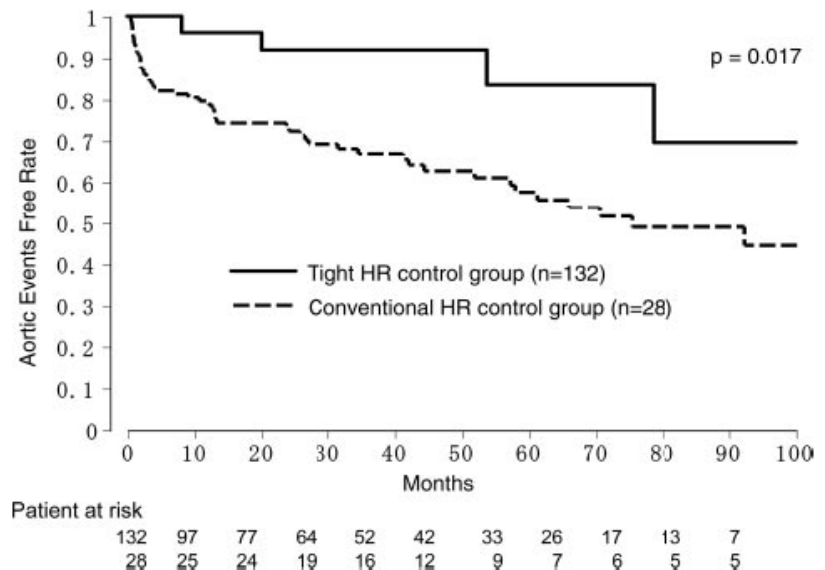
# Risk factors for late complications

- Insufficient « best medical treatment »
- Heart rate control

224 patients, mean FU 27 mths

HR > 60 vs < 60

	Tight HR Control Group (n=32)	Conventional HR Control Group (n=139)	P
Total aortic events, n (%)	4 (12.5%)	50 (36.0%)	0.011
Aortic expansion, n (%)	3 (9.4%)	36 (25.9%)	0.060
Recurrent aortic dissection, n (%)	1 (3.1%)	13 (9.4%)	N.S.
Aortic rupture, n (%)	1 (3.1%)	7 (5.0%)	N.S.
Aortic surgery, n (%)	0	26 (18.7%)	0.005

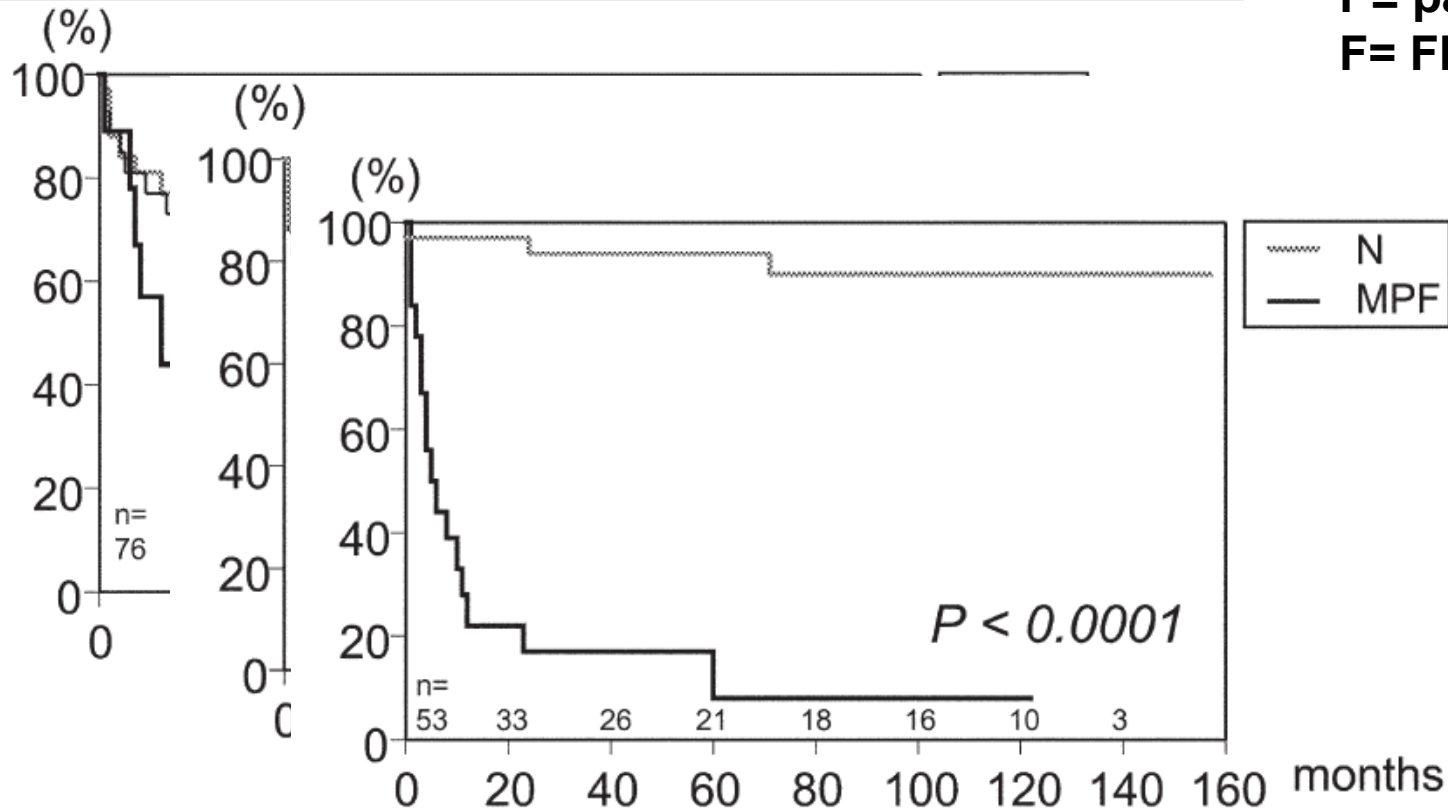




# Risk factors for late complications

- Cumulative effect of risk factors

M= aortic  $\varnothing > 4$  cm  
P= patent FL  
F= FI  $\geq 0.64$





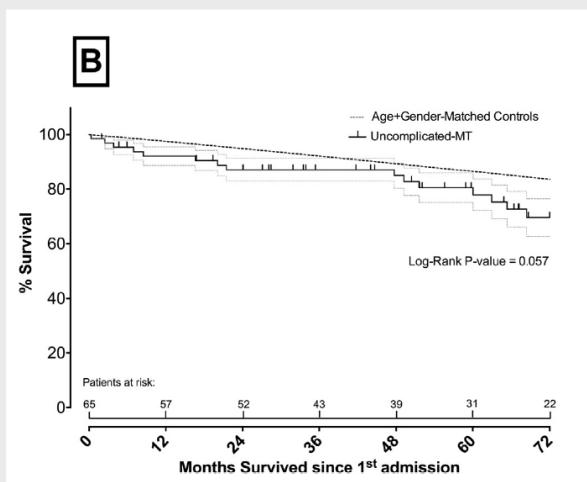


# Tailored approach - results

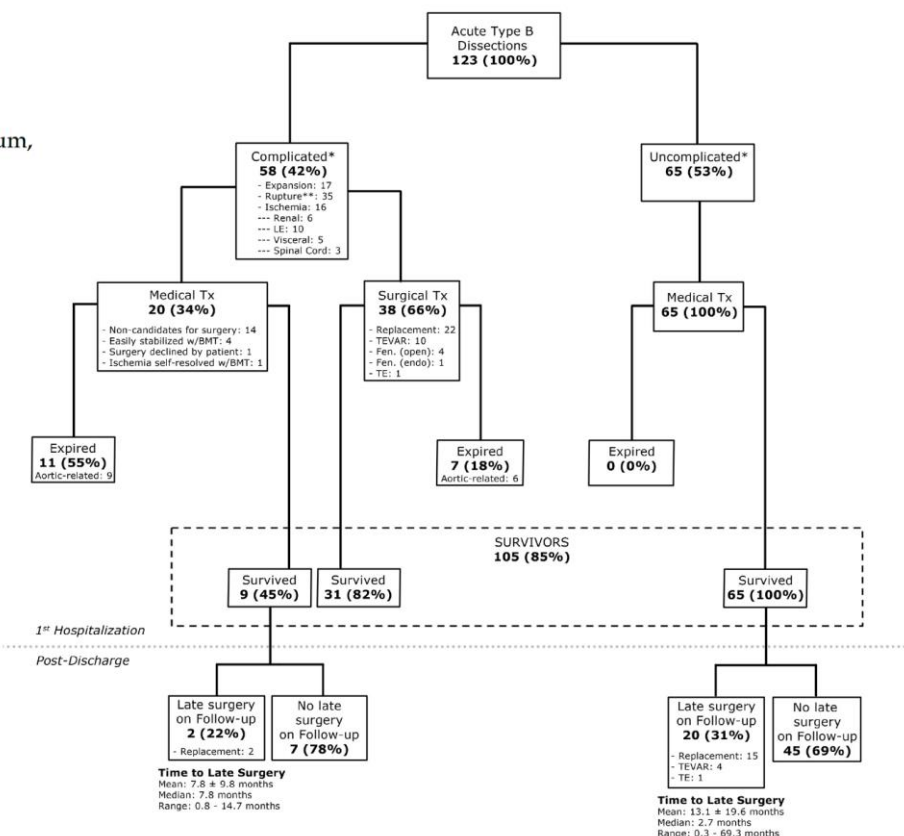
## Current Experience With Acute Type B Aortic Dissection: Validity of the Complication-Specific Approach in the Present Era

Paris Charilaou, MD, Bulat A. Ziganshin, MD, Sven Peterss, MD, Bijoy G. Rajbanshi, MD, Cha Rajakaruna, MD, Khaled J. Zaza, Mohammad N. Salloum, Alexander Mukherjee, Maryann Tranquilli, RN, John A. Rizzo, PhD, and John A. Elefteriades, MD

## Complication specific approach



Survival ~ matched control group





## Conclusions

- It would be dangerous to treat all patients with acute type B dissection in the acute phase
- Selective treatment of those at highest risk for future complications can be considered in the subacute phase

Shoot right but  
only when  
needed

