

Single-center experience with mechanical valve replacement in children and adolescents: a lifelong challenge

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BACKGROUND

- Valve repair is the preferred treatment in paediatric patients with valvular heart disease. However, **replacement** is sometimes unavoidable.
- In young patients, the use of a mechanical prosthesis is favoured to avoid reoperations for premature structural degeneration of the valve.
- However, mechanical valve replacement in a paediatric population is limited by small cardiac dimensions and the need for **lifelong oral anti-coagulation**.
- Limited long-term data is available, especially regarding INR management and valve-related events.

METHODOLOGY

UZ Ghent experience: January 1984- December 2015

40 patients received a mechanical prosthesis before age 20

- 5 were lost to follow-up
- 28 received INR follow-up by their GP
- 7 used a self-monitoring INR device

Study **endpoints:**

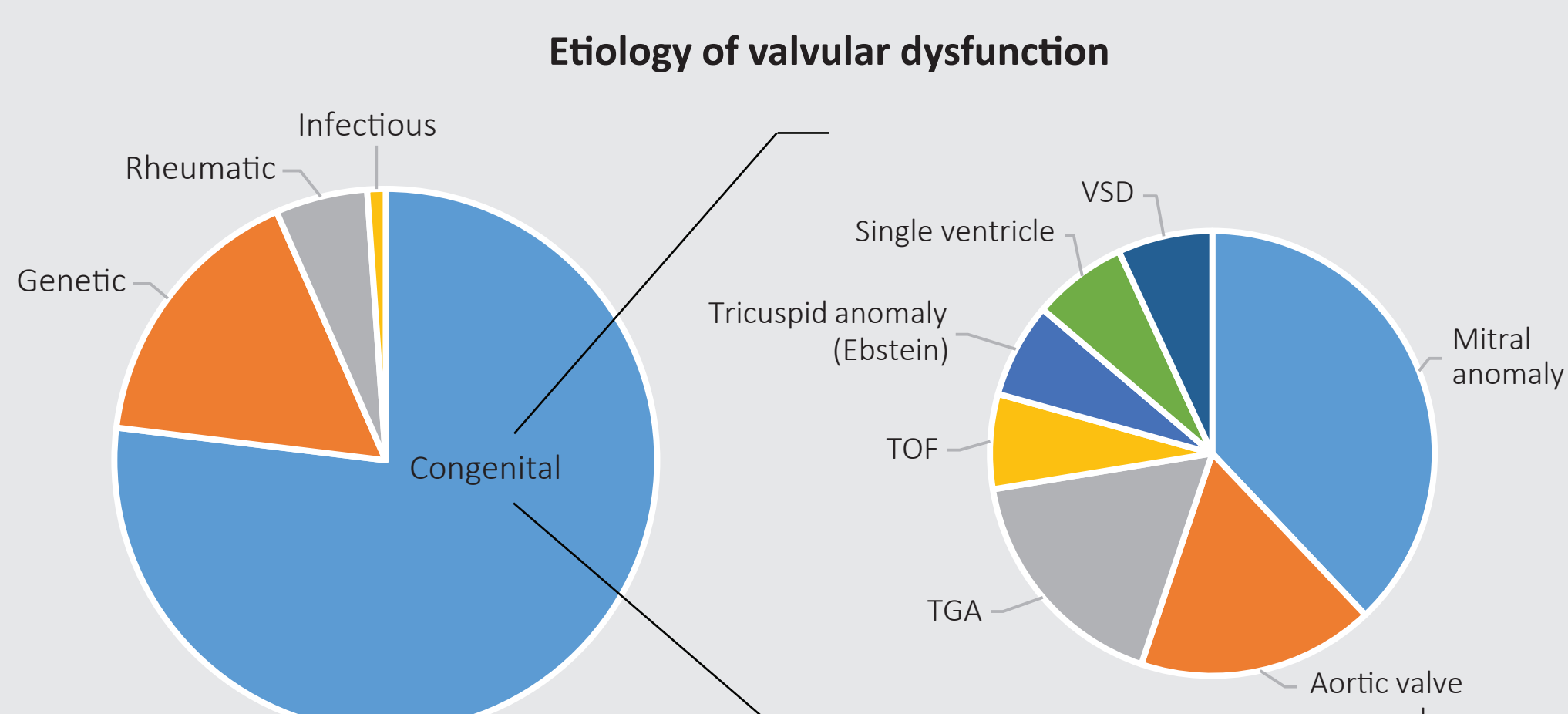
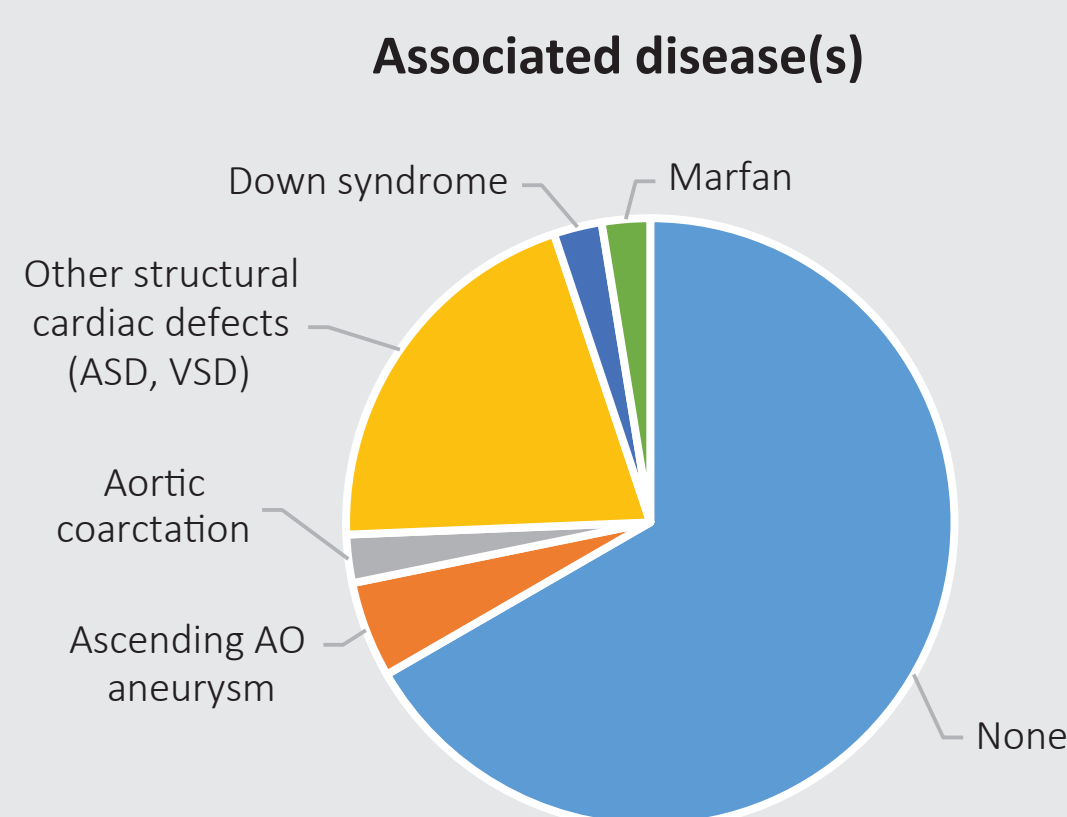
- Survival
- Valve-related events
- INR variability

PREOPERATIVE DATA

DEMOGRAPHICS	
Gender	
Male	60 %
Female	40 %
Age	12 ± 2 y
NYHA class	
I	15 %
II	52 %
III	23 %
IV	10 %

CARDIAC STATUS	
Previous intervention	82.5 %
Number of previous interventions	
1	42.5 %
> 1	40 %

VALVULAR PATHOLOGY	
Main diseased valve (to be replaced)	
Mitral	55 %
Aortic	25 %
Tricuspid	10 %
Pulmonary	5 %
Multiple	5 %

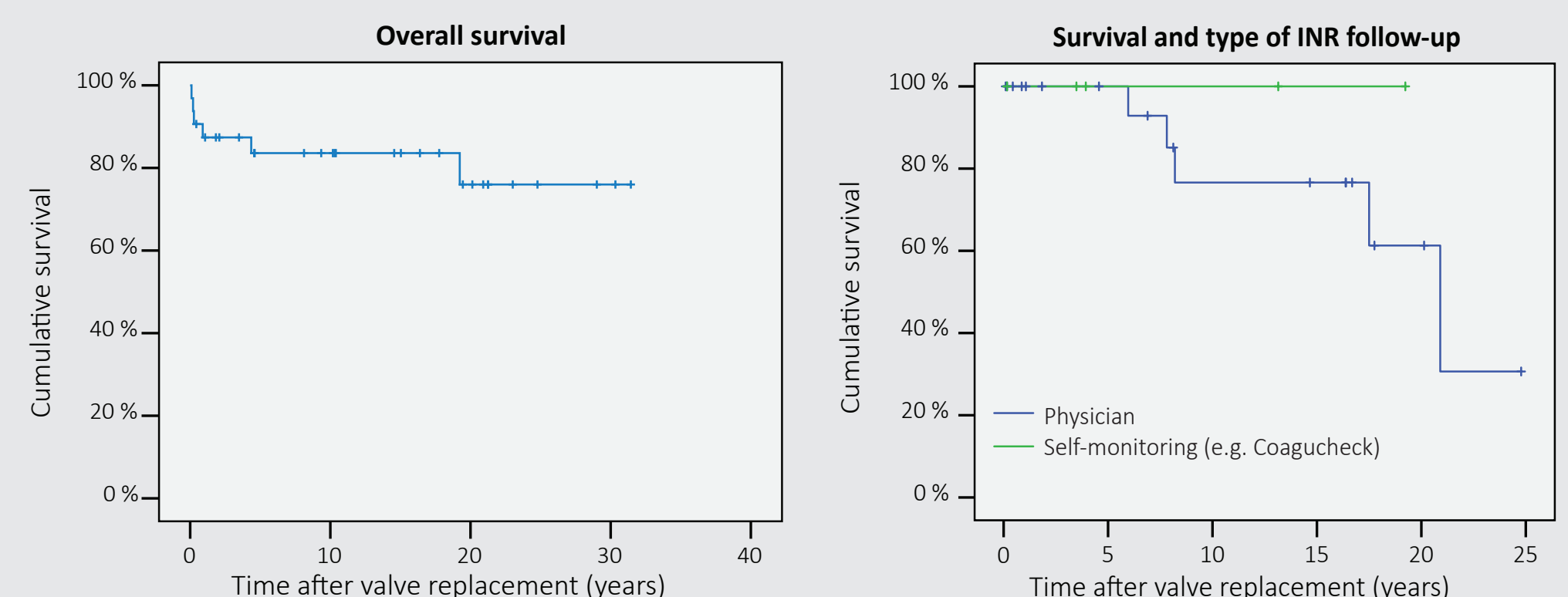


RESULTS

Follow-up (FU)

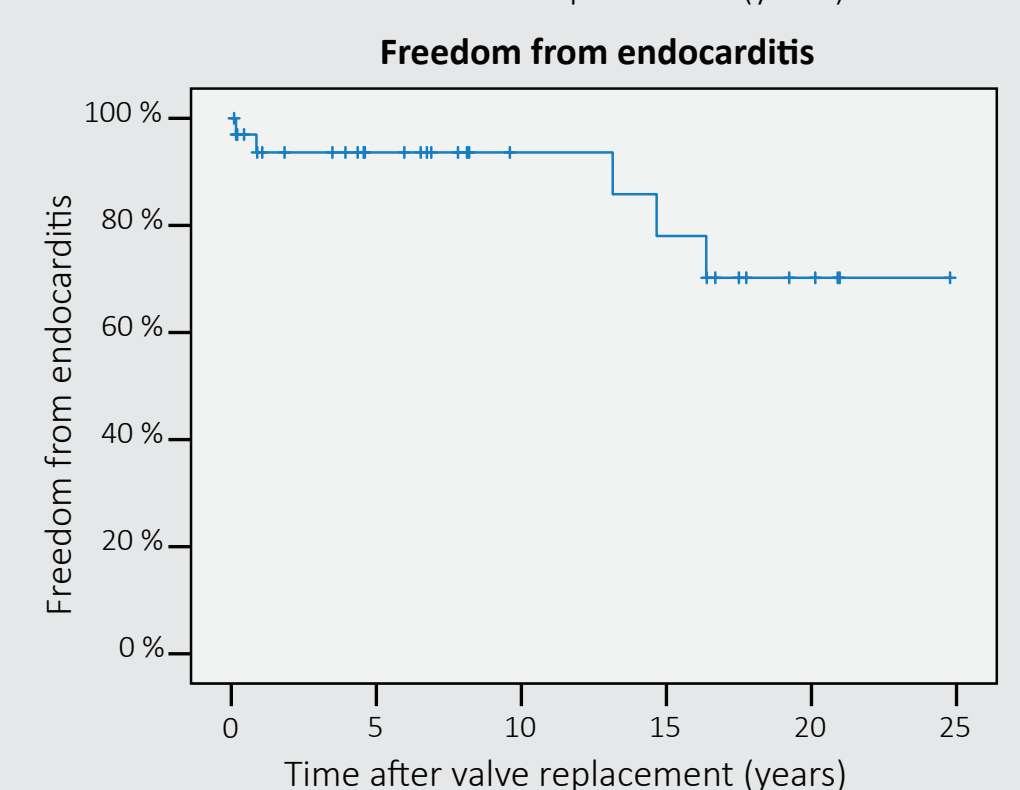
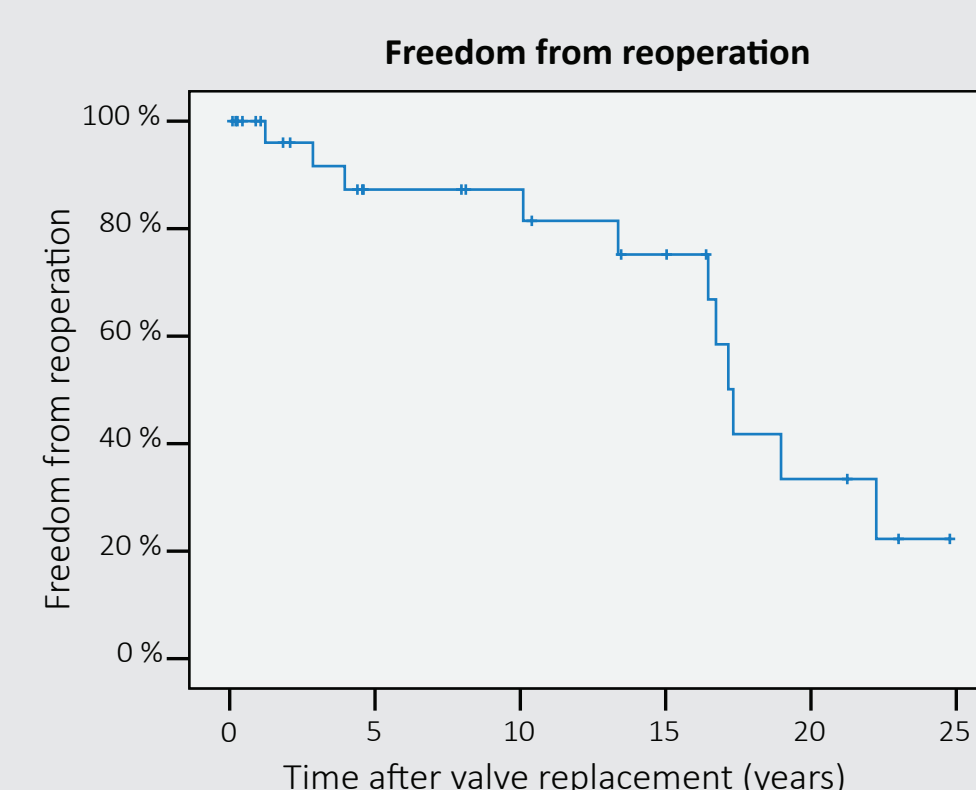
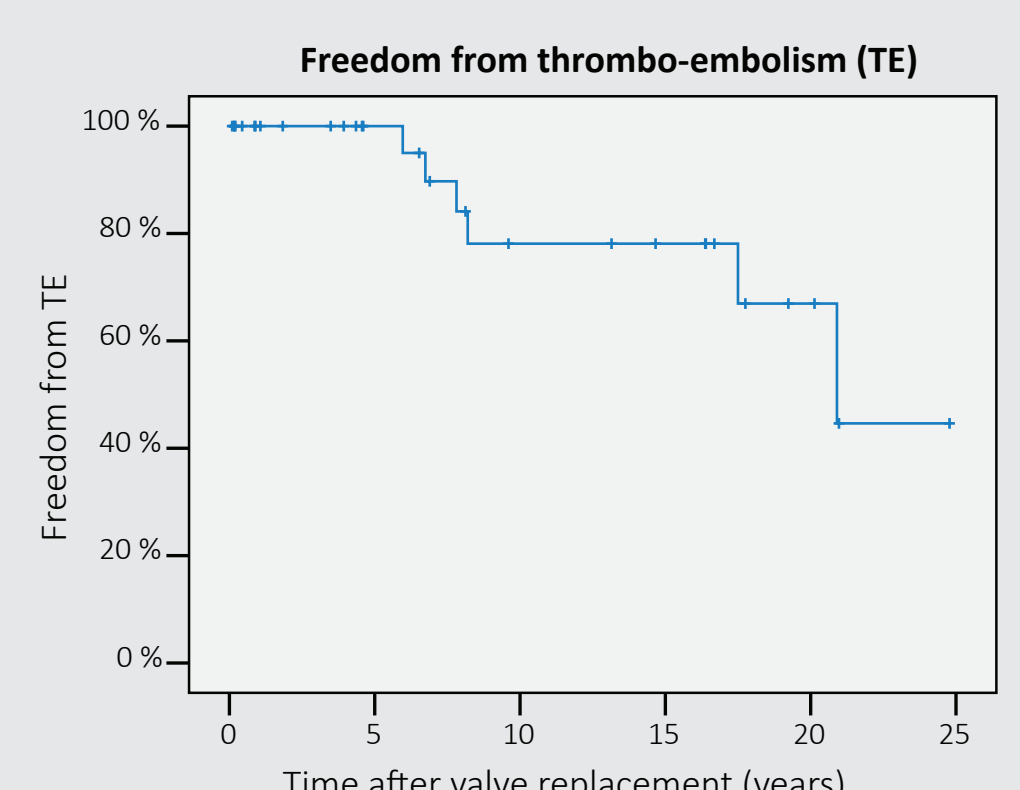
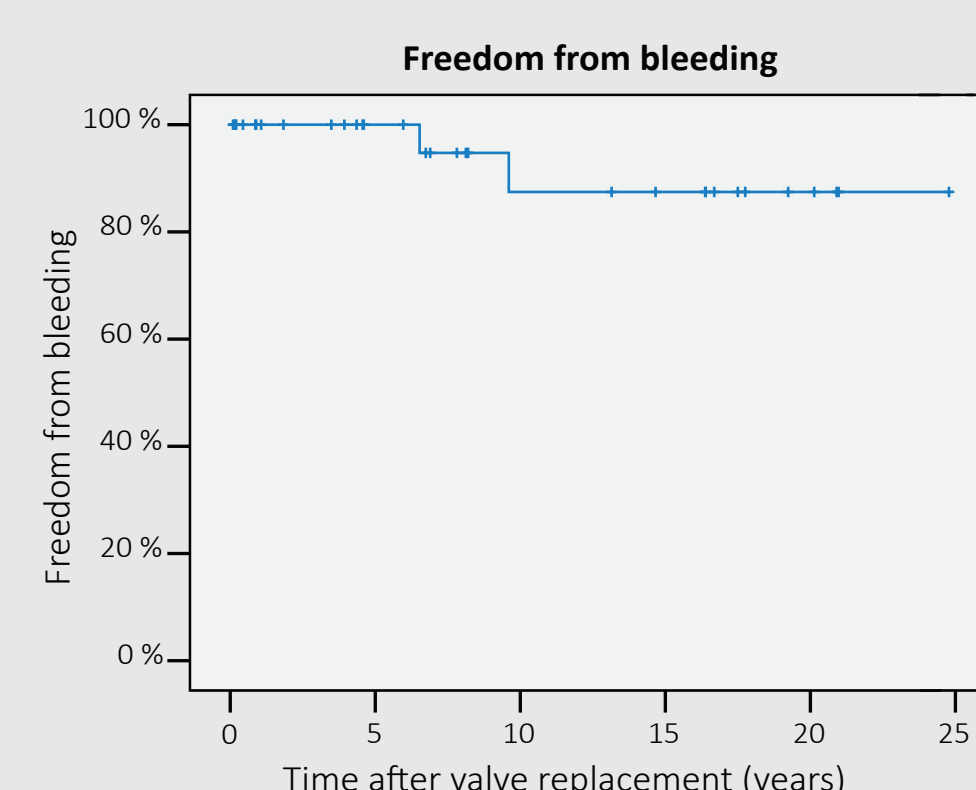
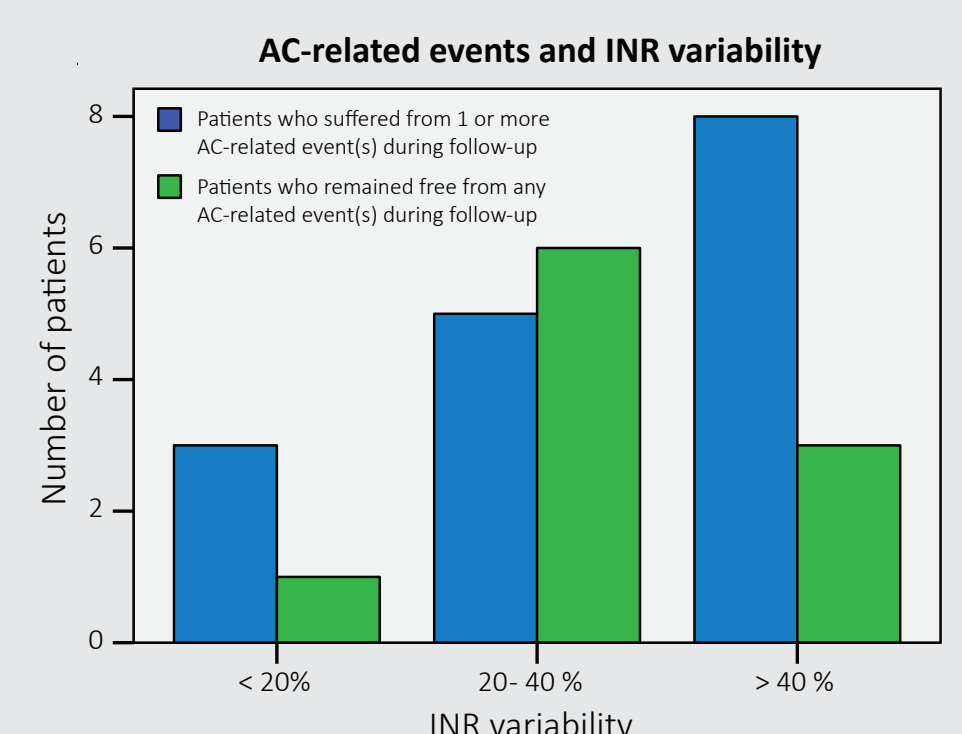
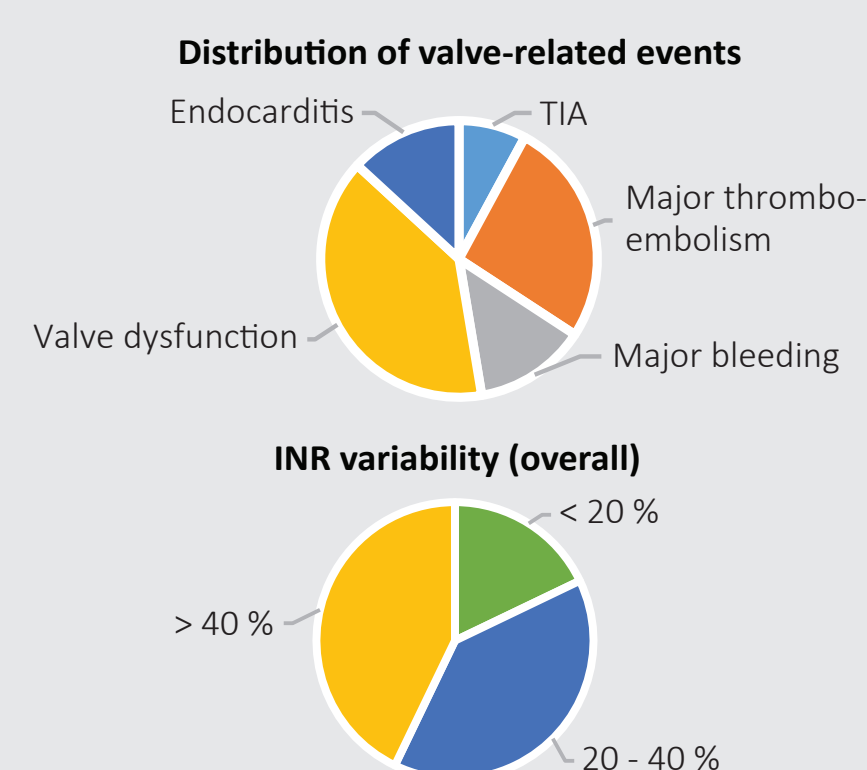
- Median FU-time: 12.9 ± 9.2 y - 88 % completeness (incl. INR: 79%)
- Cumulative FU-time: 540 patient-years

Survival at 20 y: 76 ± 10 %



Valve- and anticoagulation (AC)-related events and INR variability

- 60% of patients remained free of any major valve-related event
- INR-variability: 29 ± 21% (self-mon.) vs 43 ± 21% (GP mon.) (p=0.05)
- High INR variability was associated with more AC-related events
- No AC-related events were seen in patients using INR self-monitoring



CONCLUSION

- 40%** of the patients receiving a mechanical heart valve prosthesis during childhood experience **at least one major** adverse event during later life.
- Half of these events are related to the need for anticoagulation, through showing a **high INR variability** in this young population.
- Self-monitoring** of INR might decrease this specific complication rate.