



Outcomes of Surgical Aortic Valve Replacement in Moderate Risk Patients: Implications for Determination of Equipoise in the Transcatheter Era

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Background

- SAVR is effective to improve symptoms and increase survival in AS
- In high surgical risk, TAVR
 - Similar rates of survival and improvement of symptoms at a 3-yr follow-up

Background

- Genuine uncertainty of best option of treatment in moderate risk patients
- Current clinical trials are ongoing to compare TAVR to SAVR in this population
- The STS score may overestimate the mortality in this specific group

Objective

- Determine early-midterm mortality and morbidity in primary SAVR
 - Severe AS
 - Moderate surgical risk
- Determine predictors of mortality in this specific population

Methods

- January 2002 to June 2011
 - 4499 AVR at Mayo Clinic
- SAVR
 - Severe AS (mean gradient ≥ 40 mm Hg)
 - STS PROM between 4-8%
 - Included associated CABG
 - Excluded
 - Multiple valve procedures or other major non valve-related operations

Patients

2002-2011

502 aortic valve replacement

79 yr
(49-96 yr)

Mean STS PROM 5.6%



277



225

Patient Characteristics

Characteristics	Patients (n=502)
Mean aortic valve gradient (mm Hg)	51
Previous CABG, no. (%)	101 (20)
NYHA class, no. (%) III or IV	323
Mean LVEF (%)	63
Mean body mass index	28
Aortic regurgitation, no. (%)	
Trivial/Mild	325 (65)
Mod	72 (14)
Severe	5 (1)
Mitral regurgitation \geq moderate – no. (%)	85 (17)

Patient Comorbidities

Characteristics	Patients, no. (%)
Peripheral vascular disease	77 (15)
Chronic lung disease	
•Mild	70 (14)
•Mod	14 (3)
•Severe	35 (7)
Atrial fib	45 (9)
Creatinine ≥ 2.0 mg/dL	20 (4)
Cerebral vascular disease	125 (25)
Permanent pacemaker	26 (5)
Prior myocardial infarction	43 (9)
Prior PCI	79 (16)
Prior aortic balloon valvuloplasty	2 (0.4)

Surgical Characteristics

Characteristics

Urgent surgery, no. (%)	64 (13)
Use of bioprosthesis, no. (%)	477 (95)
Associated procedure, no. (%)	
• CABG	270 (54)
• Aortic annular enlargement	25 (5)
Surgical time	
• Median cross-clamp time (minutes)	60
• Isolated AVR	45
• Median perfusion time (minutes)	82
• Isolated AVR	52

Results

Early mortality

- 14 patients (2.8%)

Median length of stay

- 9 (3-70) days

30-day readmission

- 41 (8.2%)

Median follow-up

- 3.2 yr

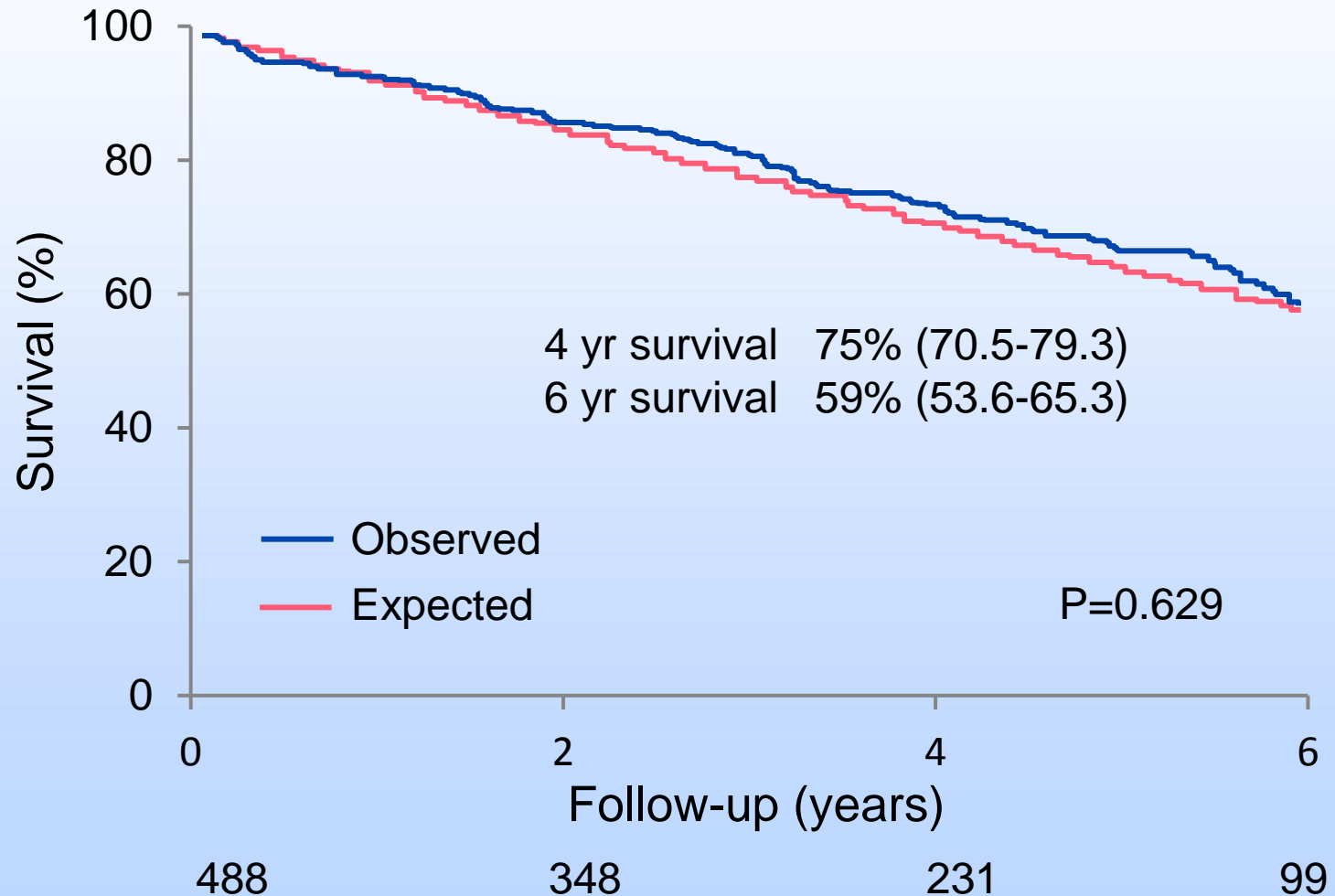
Early Postoperative Complications

Characteristics	Patients, no. (%)
Transfusion of RBC	296 (59)
Atrial fib/flutter	207 (41)
Reoperation for bleeding	29 (5.8)
Pneumonia	20 (4)
Dialysis	11 (2)
Permanent pacemaker	10 (2)
Permanent stroke	9 (1.8)
Perioperative myocardial infarct	2 (0.4)
Vascular complications	2 (0.4)
Deep sternal infection	1 (0.2)
Endocarditis	0

Potential Predictors Perioperative Mortality

- Gender
- Age
- EF
- STS PROM
- BMI
- Diabetes
- HTN
- Chronic lung disease
- PVD
- CVD
- Renal failure
- Atrial fib
- Mitral Regurgitation
- Prior Pacemaker
- Prior PCI
- Prior CABG
- Prior MI
- Aortic gradient
- CHF
- Annular enlargement
- Associated CABG
- Urgent surgery

Kaplan-Meier Late-Survival Curve Age/Gender Match General Population



Predictors Mid-term Mortality

- Gender
- Age
- EF
- STS PROM
- BMI
- Diabetes
- HTN
- Chronic lung disease
- PVD
- CVD
- Renal failure
- Atrial fib
- Mitral Regurgitation
- Prior Pacemaker
- Prior PCI
- Prior CABG
- Prior MI
- Aortic gradient
- CHF
- Annular enlargement
- Associated CABG
- Urgent surgery

Cox Regression Model Predicting Mid-term Mortality

Variable	Univariate		Multivariate	
	HR (95% CL)	P	HR (95% CL)	Pr >Chi ²
Chronic lung dis	1.74 (1.27-2.39)	<0.001	2 (1.411-2.835)	<0.001
PVD	1.62 (1.11-2.37)	0.013	1.58 (1.049-2.371)	0.029
Atrial fib	1.67 (1.11-2.53)	0.014	1.75 (1.159-2.654)	0.008

Conclusions

SAVR for severe AS in moderate surgical risk

- Currently utilized risk models overestimate early mortality
 - 5.6% vs 2.8%
- Low risk of complications
 - Stroke 1.8%
 - Vascular complications <1%

Clinical Implications

Pt counselled for TAVR should be informed of the excellent early to mid-term outcomes of SAVR, particularly in those without chronic lung disease, peripheral vascular disease or atrial fibrillation

Questions & Discussion

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