



## Valvular Heart Disease

### BICUSPID VERSUS TRICUSPID AORTIC VALVE STENOSIS: COMPARATIVE STUDY OF CLINICAL CHARACTERISTICS AND OUTCOMES FOLLOWING AORTIC VALVE REPLACEMENT IN AN AGE-MATCHED COHORT

Poster Contributions  
Poster Hall, Hall C  
Saturday, March 18, 2017, 3:45 p.m.-4:30 p.m.

Session Title: Valvular Heart Disease: Aortic Stenosis  
Abstract Category: 36. Valvular Heart Disease: Clinical  
Presentation Number: 1233-026

Authors: *Geoffrey Huntley, Jeremy Thaden, Said Alsidawi, Hector Michelena, Joseph Maleszewski, William Edwards, Sorin Pislaru, Patricia Pellikka, Naser Ammash, Kevin Greason, Youssef Maalouf, Maurice Enriquez-Sarano, Vuyisile Nkomo, Mayo Clinic, Rochester, MN, USA*

**Background:** Structural abnormalities predispose congenitally bicuspid aortic valves (BAV) to early stenosis, but tricuspid aortic valve (TAV) stenosis is associated with cardiovascular risk factors. We hypothesize that TAV aortic stenosis (AS) is associated with more cardiovascular risk factors and worse outcomes after aortic valve replacement (AVR) compared with BAV AS in an age-matched cohort.

**Methods:** From 888 consecutive patients undergoing AVR for severe AS between January 1, 2010 and December 31, 2012, an age-matched cohort of 198 TAV AS patients and 198 BAV AS patients was identified. All valves were categorized by cardiovascular pathologists.

**Results:** Table 1 shows characteristics prior to AVR. Five-year survival following AVR was lower in TAV compared to BAV (61 vs 79%,  $p=0.02$ ). Univariate predictors of mortality after AVR were TAV ( $p=0.02$ ), dialysis ( $p=0.02$ ), ejection fraction (EF) $<50\%$  ( $p<0.0001$ ), and Charlson comorbidity index (CCI) ( $p=0.01$ ). In multivariate analyses, only the CCI and EF $<50\%$  remained significant. Survival following AVR for BAV AS was not different than expected ( $p=0.17$ ), but was worse than expected for TAV AS ( $p<0.001$ ).

**Conclusions:** TAV is associated with increased prevalence of cardiovascular risk factors compared to BAV at the time of AVR for severe AS. This suggests AS develops due to an adverse milieu in TAV whereas in BAV it is likely due to flow shear stress. Survival normalizes after AVR in BAV but excess mortality in TAV is related to comorbidities and impaired EF.

Table 1 Baseline Clinical and Echocardiographic Characteristics

	All Patients (n=396)	Bicuspid (n=198)	Tricuspid (n=198)	p-value
Age, years	68±6	68±7	68±5	0.1525
Male (%)	271 (68)	134 (68)	137 (69)	0.746
Hypertension (%)	295 (75)	132 (67)	163 (82)	0.0004
Hyperlipidemia (%)	344 (87)	162 (82)	182 (92)	0.0029
Diabetes Mellitus (%)	129 (33)	37 (19)	92 (46)	<0.0001
Coronary Artery Disease (%)	161 (41)	52 (26)	109 (55)	<0.0001
Chronic Hemodialysis (%)	8 (2)	1 (0.5)	7 (3.5)	0.04
Charlson Comorbidity Index	2.99±1.48	2.89±1.30	3.14±1.64	0.0071
Concomitant Aorta Surgery (%)	45 (11)	42 (21)	3 (2)	<0.0001
Concomitant Coronary Artery Bypass Graft (%)	136 (34)	45 (23)	91 (46)	<0.0001
Aortic Valve Area Index, cm <sup>2</sup> /m <sup>2</sup>	0.43±0.08	0.44±0.09	0.42±0.08	0.1721
Transvalvular Mean gradient, mm Hg	53±13	55±13	51±12	0.0051
Ejection Fraction, %	61±11	62±11	61±12	0.1232
E/e' ≥15 (%)	193 (55)	85 (46)	108 (66)	0.0002
Right Ventricular Systolic Pressure >40 mm Hg (%)	77 (25)	26 (17)	51 (33)	0.0014