

A META-ANALYSIS OF VALVE SPARING AORTIC ROOT REPAIR IN PATIENTS WITH BICUSPID AORTIC VALVE AS COMPARED WITH TRICUSPID AORTIC VALVE

Mariam Shariff, M.B.B.S.¹, Ashish Kumar, M.D.², John Stulak, M.D.^{1,3}, Gabor Bagameri, M.D.^{1,3}

¹ Department of Surgery, Mayo Clinic, Rochester, Minneapolis, USA; ² Department of Internal Medicine, Cleveland Clinic Akron General, Akron, Ohio; ³ Department of Cardiovascular Surgery, Mayo Clinic, Rochester, MN, USA

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NO DISCLOSURES

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OBJECTIVES

- Valve sparing aortic root repair for aortic root dilation with or without aortic dissection
 - Increasing with better outcomes
 - Mostly in Tricuspid Aortic Valve
- Bicuspid Valve is an independent risk factor
- Role of valve sparing aortic root repair is controversial in bicuspid aortic valve

Minimal data on outcomes



- Compare outcomes of valve sparing aortic root repair in bicuspid aortic valve as compared with tricuspid aortic valve
- A meta-analysis of published studies

METHODS

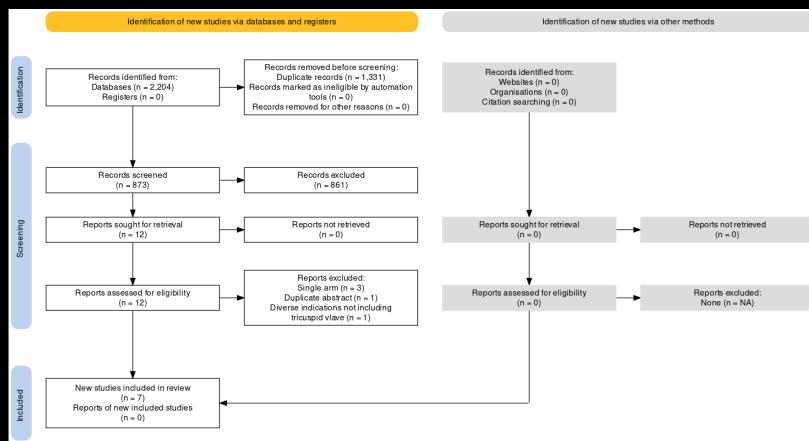
- Systematic search across databases PUBMED/Medline, SCOPUS, EMBASE and Web of Sciences
- Search from inception until March 30th, 2023
- Inclusion Criteria:
 - Studies reporting outcomes comparing valve sparing aortic root replacement in tricuspid aortic valve versus bicuspid valve
 No language-based criteria
- Exclusion Criteria:
 - Case reports excluded

STATISTICAL ANALYSIS

- Mantel-Haenszel method with the Paule-Mandel estimator of Tau
- Hartung-Knapp adjustment for random effect model to account for interstudy variability
- Small size effect to calculate pooled risk ratio (RR) and 95% confidence interval (CI)
- R statistical software utilized

RESULTS

- Total of 2204 studies were retrieved
- Seven studies included in the final analysis
- 478 patients with Bicuspid valve and 715 patients with Tricuspid valve



RESULTS

Short-term Outcomes

- Lower risk of in-hospital mortality (Panel A)
- Lower risk of renal failure (Panel E)
- Similar outcomes of re-operation for bleeding (Panel B)
- Similar risk of new-onset Atrial Fibrillation (Panel C)
- Similar risk of permanent pacemaker implantation (Panel D)

[A]							
<u>01 1</u>		BAV	-	TAV		Risk Ratio	Risk Ratio
Study Aicher et al 2004	Events 0	Total 60	Events 8	Total 130	Weight 15.8%	MH, Random, 95% CI	MH, Random, 95% Cl
Ouzounian et al 2019		45	3	130	14.7%	0.13 [0.01; 2.16] 0.43 [0.02; 8.08]	
Camilleri et al 2019	0	37	2	103	14.0%	0.55 [0.03; 11.24]	
Kayatta et al 2019	1	63	3	63	25.5%	0.33 [0.04; 3.12]	
Deas et al 2021	1	46	7	57	30.0%	0.18 [0.02; 1.39]	
Mokashi et al 2022	0	71	0	71	0.0%		
Levine et al 2023	0	156	0	156	0.0%		
Total (95% CI)		478			100.0%	0.26 [0.13; 0.53]	•
Heterogeneity: Tau ² =	0; Chi ² = ().77, df	= 4 (P =	0.94); l	= 0%		0.01 0.1 1 10 1
							Favors BAV Favors TAV
[B]							
22/// DV/		BAV	6	TAV		Risk Ratio	Risk Ratio
Study			Events			MH, Random, 95% CI	MH, Random, 95% Cl
Aicher et al 2004	1	60 45	5	130	8.9%	0.43 [0.05; 3.63]	
Ouzounian et al 2019 Kayatta et al 2019	1	45 63	9	135 63	25.3% 8.6%	1.00 [0.28; 3.53] 0.25 [0.03; 2.17]	
Deas et al 2021	2	46	4	57	14.8%	0.62 [0.12; 3.23]	
Mokashi et al 2022	1	71	2	71	7.1%	0.50 [0.05; 5.39]	
Levine et al 2023	7	156	6	156	35.3%	1.17 [0.40; 3.39]	
Total (95% CI)		441			100.0%	0.77 [0.44; 1.35]	
Heterogeneity: Tau ² =	0; Chi ² = 2	2.26, df	= 5 (P =	0.81); l	2 = 0%		0.1 0.5 1 2 10
							Favors BAV Favors TAV
[C]							
	-	BAV		TAV		Risk Ratio	Risk Ratio
Study						MH, Random, 95% CI	MH, Random, 95% CI
Ouzounian et al 2019 Mokashi et al 2022	10	45 68	24 16	135 65	20.0% 24.6%	1.25 [0.65; 2.41] 1.02 [0.56; 1.84]	/=
Levine et al 2023	39	156	36	156	55.3%	1.08 [0.73; 1.61]	
Tetel (05% CI)		269		250	100.0%	4 40 50 00; 4 261	
Total (95% CI) Heterogeneity: Tau ² =	0; Chi ² = (1.10 [0.89; 1.36]	
							0.5 1 2
[D]							
		BAV		TAV		Risk Ratio	Risk Ratio
Study						MH, Random, 95% CI	MH, Random, 95% Cl
Ouzounian et al 2019		45	1	135	10.8%	3.00 [0.19; 46.98]	
Kayatta et al 2019 Deas et al 2021	0	63 46	1	63 57	8.1% 10.8%	0.33 [0.01; 8.03]	
Mokashi et al 2021	2	40	2	71	21.8%	1.24 [0.08; 19.28] 1.00 [0.14; 6.90]	
Levine et al 2023	5	156	4	156	48.5%	1.25 [0.34; 4.57]	— — —
Total (95% CI)		381		482	100.0%	1.18 [0.60; 2.29]	-
Heterogeneity: Tau ² =	0; Chi ² = 1		= 4 (P =				
							0.1 0.51 2 10 Favors BAV Favors TAV
[12]							
[E]							
044.		BAV		TAV		Risk Ratio	Risk Ratio
						MH, Random, 95% CI	MH, Random, 95% CI
Kayatta et al 2019 Deas et al 2021	1	63 46	2	63 57	10.8% 12.3%	0.50 [0.05; 5.38] 0.41 [0.04; 3.84]	
Deas et al 2021 Mokashi et al 2022	1	46	3	57 71	8.1%	1.01 [0.06; 15.90]	
Levine et al 2023	6	156	13	156	68.8%	0.46 [0.18; 1.18]	
Total (95% CI)		335		347	100.0%	0.49 [0.33; 0.73]	
Heterogeneity: Tau ² =	$= 0^{\circ} \text{Chi}^2 =$		f = 3 (P =			0.49 [0.00, 0.70]	
	, on =	5.51,0		0.00),			0.1 0.5 1 2 10
							0.1 0.5 1 2 10
							Favors BAV Favors TAV



Long-term Outcomes

- Similar risk of long-term overall mortality [1.18, 95% CI 0.60;2.29]
- Similar risk of re-operation [1.68, 95% CI 0.74; 3.80]
- Similar risk of aortic insufficiency 1.04, 95% CI 0.31; 3.48

CONCLUSION

• Valve sparing aortic root repair in bicuspid as compared with tricuspid aortic valve are associated with comparable short and long outcomes.

• Indirect evidence suggesting valve sparing aortic valve repair as a feasible option for bicuspid aortic valve.

QUESTIONS & ANSWERS

