001358

Long-Term Outcomes of the Ross Procedure Versus Bioprosthetic Versus Mechanical Aortic Valve Replacement: A Network Meta-Analysis

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Background / Study Objective

- The choice of the aortic valve substitute for young and middle-aged adults is still debated.

- This study aims to simultaneously compare the direct and indirect evidence of the clinical outcomes following Ross procedure, bioprosthetic aortic valve replacement (bAVR), and mechanical aortic valve replacement (mAVR).

Methods

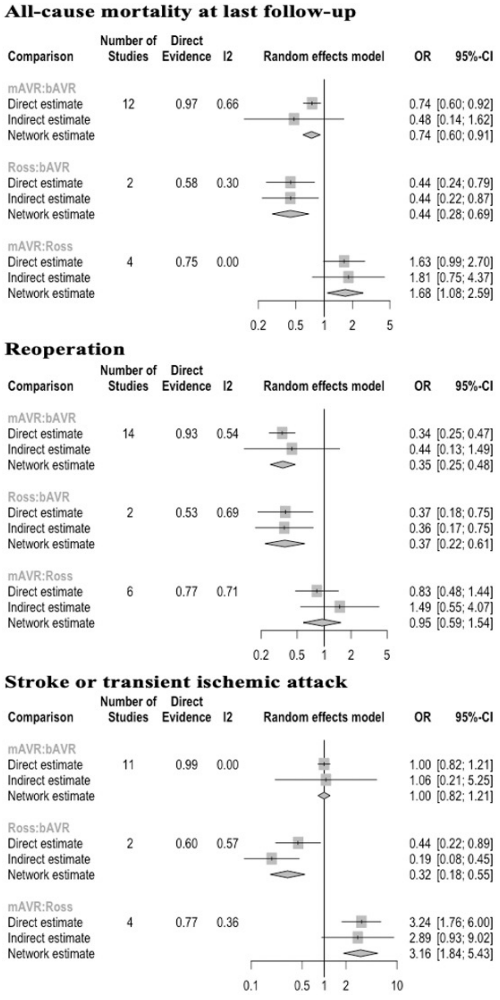
- After a systematic literature search, randomized clinical trials and propensity score matched studies comparing any combination of Ross procedure, bAVR, and mAVR were included.
- Twenty-five studies with a pooled sample size of 110,023 patients (Ross procedure, n=1,691; mAVR, n=54,811; bAVR, n=53,521) met the eligibility criteria.
- A frequentist network meta-analysis and a random-effects pairwise meta-analysis were performed.
- Primary end points were in-hospital mortality and all-cause mortality at last follow-up. Secondary end points were stroke or transient ischemic attack, bleeding, endocarditis, and reoperation.

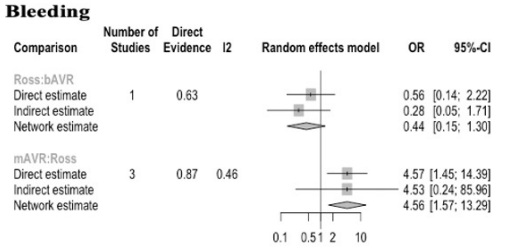
Results 1

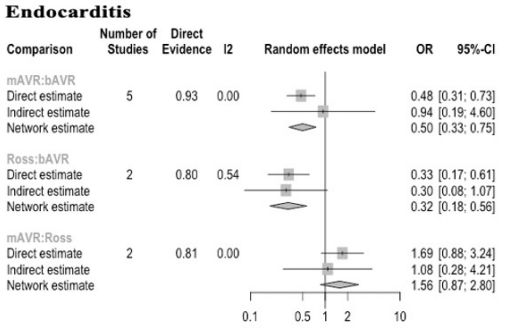
- Compared to conventional bioprostheses, the Perceval valve was associated with a significantly lower risk of atrial fibrillation (OR 0.51; 95% CI 0.32–0.82; P <0.01), whereas no evidence of difference was found when compared to the Intuity valve (OR 0.88; 95% CI 0.66–1.19; P =0.41).

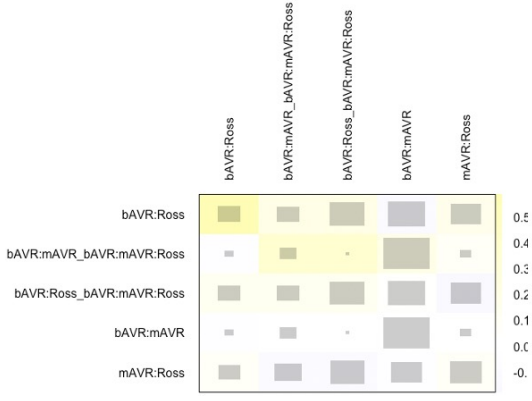
- Regarding in-hospital mortality, stoke or transient ischemic attack, reexploration for bleeding, and acute kidney injury no evidence of difference was found between the three approaches.

Results 2









All-cause mortality at last follow-up	P-score(fixed)	P-score (random)	
	Ross	0.9997	0.9948
	mAVR	0.5003	0.5042
	bAVR	0.0000	0.0010
30-day mortality	P-score(fixed)	P-score (random)	
	Ross	0.8113	0.8113
	bAVR	0.6176	0.6176
	mAVR	0.0711	0.0711
Reoperation	P-score (fixed)	P-score (random)	
	mAVR	0.98	0.7911
	Ross	0.52	0.7089
	bAVR	0.00	0.0000
Stroke or transient ischemic attack	P-score (fixed)	P-score (random)	
	Ross	1.0000	1.0000
	mAVR	0.2557	0.2557
	bAVR	0.2443	0.2443
Bleeding	P-score(fixed)	P-score (random)	
	Ross	0.9987	0.9643
	bAVR	0.0120	0.5341
	mAVR	0.4893	0.0017
Endocarditis	P-score(fixed)	P-score (random)	
	Ross	0.9652	0.9652
	mAVR	0.5345	0.5345
	bAVR	0.0003	0.0003

Conclusion

Our study shows that Ross procedure has a significantly lesser likelihood of long-term negative outcomes such as all-cause mortality at last follow-up, stroke or transient ischemic attack, bleeding, and reoperation compared to conventional aortic valve replacement.