Transcatheter, sutureless and conventional aortic-valve replacement: a network meta-analysis of 16,432 patients

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Study details

- **Aim:** To compare VARC-2 clinical outcomes for transcatheter, sutureless and conventional AVR
- **Study type:** A Bayesian network analysis
- **Endpoints:** 30-day all-cause mortality, stroke, myocardial infarction, major bleeding or bleeding requiring surgical re-exploration, mild/trace paravalvular regurgitation, moderate/severe paravalvular regurgitation, acute kidney injury and PPI
- **Methods:**
  - Searches of electronic databases identified seven two-arm RCTs and 25 propensity score-matched studies comparing clinical outcomes of transcatheter, sutureless and conventional AVR
  - Bayesian Markov chain Monte Carlo modelling was used to analyse VARC-2 clinical outcomes

AVR: aortic valve replacement; PPI: permanent pacemaker implantation; RCT: randomised controlled trials; VARC-2: Valve Academic Research Consortium-2

Key study results (1/2)

- **Patient characteristics**
  - Conventional AVR: 8,138 patients
  - Sutureless AVR: 1,238 patients
  - TAVR: 7,056 patients
  - Diabetes was more common in patients receiving sutureless *versus* conventional valves (OR 0.64, 95% CI 0.44–0.93, p=0.02)
  - Otherwise, no significant differences

AVR: aortic valve replacement; CI: confidence interval; OR: odds ratio; TAVR: transcatheter aortic valve replacement

Key study results (2/2)

- **VARC-2 outcomes**
  - No differences in perioperative mortality or stroke

VARC-2 outcome	OR		
	Transcatheter *versus* conventional	Sutureless *versus* conventional	Transcatheter *versus* sutureless
Mortality	0.93	0.79	1.18
Stroke	0.94	0.81	1.16
Myocardial infarction	0.59	0.65	0.91
Major bleeding*	0.41	0.56	0.72
Trace/mild paravalvular regurgitation*	11.11	0.50	20.00
Moderate/severe paravalvular regurgitation	9.09	0.72	12.50
Acute kidney injury*	0.59	0.60	1.01
PPI*	3.03	2.70	1.12

Significant associations

*Outcomes with high heterogeneity

Table reports ORs as random effects with informative priors. Where the publication reported ORs for the converse associations to those in the table headings (e.g. conventional *vs* transcatheter), the reciprocal of the published OR is presented. OR: odds ratio; PPI: permanent pacemaker implantation; VARC-2: Valve Academic Research Consortium-2

Study limitations and conclusion

- **Limitations**
  - Pooling of data contributes to the heterogeneity observed between the studies
  - The three broad categories of AVR were unable to account for different practices, vascular access routes and types of valves implanted

Conclusion

This analysis found no differences in perioperative mortality or stroke between patients who underwent transcatheter, conventional or sutureless AVR, suggesting that transcatheter and sutureless AVR are feasible alternatives to conventional AVR in selected patients. However, TAVR was associated with increased paravalvular regurgitation compared with conventional AVR, and both TAVR and sutureless AVR were associated with increased PPI. Heart teams should consider these increased risks when choosing an appropriate intervention for their patients.

AVR: aortic valve replacement; PPI: permanent pacemaker implantation; TAVR: transcatheter aortic valve replacement

This document is a summary of the Lloyd D *et al*. paper and covers key information including aim, type of study, methods, results, limitations and conclusions.

The full publication is available at: http://bit.ly/lloyd2019

Abbreviations

AVR: aortic valve replacement

CI: confidence interval

OR: odds ratio

PPI: permanent pacemaker implantation

RCT: randomised controlled trial

TAVR: transcatheter aortic valve replacement

VARC-2: Valve Academic Research Consortium-2

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