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Commentary: Defining the role for rapid deployment valves in aortic valve disease

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As cardiac surgery evolves with minimally invasive technology, defining a therapy's precise role in achieving better patient outcomes is paramount to its utility. Rapid deployment valves (RDVs) represents 1 such technology attempting to find its niche in the surgical management of aortic valve pathology. RDVs fall between conventional surgical repair of aortic valves and transcatheter aortic valve replacement; sutureless replacement offers quicker implantation time in open repair while allowing for resection or modification of diseased tissue not afforded in transcatheter-based therapy. Retrospective reviews and meta-analyses have demonstrated shorter cardiopulmonary

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CENTRAL MESSAGE

Further studies are needed to identify specific indications for rapid deployment valve use over conventional valve replacement techniques in treating aortic valve disease.

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Disclosures: The authors reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication June 29, 2020; revisions received June 29, 2020; accepted for publication June 29, 2020; available ahead of print July 11, 2020.

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J Thorac Cardiovasc Surg 2022;163:2044-5

0022-5223/\$36.00

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<https://doi.org/10.1016/j.jtcvs.2020.06.087>

bypass times in RDVs compared with conventional open repair but have noted significantly greater rates of conduction disorders requiring pacemaker insertion.^{1,2} Conversely, RDV use compared with transcatheter aortic valve replacement has shown diminished rates of paravalvular leaks and improved 30-day survival but increased rates of in-hospital complications.³

White and colleagues⁴ attempt to better identify the precise role for RDVs through their own retrospective institutional experience with the Perceval S (Sorin Group Italia Srl, Saluggia, Italy) RDV compared with conventional tissue repair. After normalizing groups through inverse

probability treatment weighting, White and colleagues⁴ observed no difference in short- and mid-term survival. However, they did note that whereas operative and cardiopulmonary bypass times were both reduced in RDV recipients, need for postoperative pacemaker implantation was significantly greater in the RDV group as were rates of all-cause rehospitalization and those related to a cardiac or neurologic event.

White and colleagues⁴ merit praise for their attempts to further delineate the role of RDVs (and specifically the Perceval S valve) in aortic valve surgery, yet many questions remain. The authors were unable to clearly explain their institutional indication for using the Perceval S valve compared with a conventional tissue valve, noting that choice of valve was entirely surgeon dependent. Specific physician preferences, along with a paucity of information regarding preoperative valve morphology or other factors that may sway operative planning, limit the clinical utility of the data presented.

Previous analyses of RDVs compared with conventional valves have suggested that RDV use may be best in patients with heavily calcified homografts⁵ or those with small aortic roots.^{6,7} Like the data provided by White and colleagues,⁴ these studies also suffer from certain biases that limit clinical impact. Prospective, randomized controlled trials, such as the Perceval Sutureless Implant Versus Standard-Aortic Valve Replacement,⁸ will be critical in better defining the

role for RDV use in both open valve replacement and transcatheter aortic valve replacement. Until these indications are clearly defined, sutureless RDVs remain a promising therapy searching for its niche in treating aortic valve pathology.

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