Author has nothing to disclose with regard to commercial support.

Author has nothing to disclose with regard to commercial support.

The long-term implications of increased PMI rates associated with TAVR devices are yet to be determined; however, increasing attention will be paid to this issue as TAVR is performed in younger, lower-risk patients in the coming years. If sutureless/rapid-deployment valves, particularly when combined with a minimally invasive approach, are to be seen as a viable alternative to TAVR in such patients, then the rates of PMI need to be minimized. Further research and insights into avoiding PMI during sutureless/rapid-deployment valve implantation, such as those suggested by Fischlein et al, are therefore of significant value. To stay “on pace” with the rapidly advancing field of TAVR, constant improvements in conventional surgical outcomes are required urgently.

Michael A. Borger, MD, PhD
Division of Cardiac
Thoracic and Vascular Surgery
Columbia University Medical Center
New York, NY

References

1. Borger MA, Moustafine V, Conradi L, Knosalla C, Richter M, Merk DR, et al. A randomized multicenter trial of minimally invasive rapid deployment versus conventional full sternotomy aortic valve replacement. *Ann Thorac Surg*. 2015; 99:17-25.
2. D'Onofrio A, Messina A, Lorusso R, Alfieri OR, Fusari M, Rubino P, et al. Sutureless aortic valve replacement as an alternative treatment for patients belonging to the “gray zone” between transcatheter aortic valve implantation and conventional surgery: a propensity-matched, multicenter analysis. *J Thorac Cardiovasc Surg*. 2012;144:1010-8.
3. Forcillo J, Bouchard D, Nguyen A, Perrault L, Cartier R, Pellerin M, et al. Perioperative outcomes with sutureless versus stented biological aortic valves in elderly persons. *J Thorac Cardiovasc Surg*. 2016;152:1629-36.
4. Folliquet TA, Laborde F, Zannis K, Ghorayeb G, Haverich A, Shrestha M. Sutureless Perceval aortic valve replacement. *Ann Thorac Surg*. 2012;93:1483-8.
5. Leon MB, Smith CR, Mack MJ, Makkar RR, Svensson LG, Kodali SK, et al. Transcatheter or surgical aortic-valve replacement in intermediate-risk patients. *N Engl J Med*. 2016;152:1609-20.
6. Fischlein T, Gersak B, Pfeiffer S. How to prevent a pacemaker implantation after sutureless Perceval bioprosthesis. *J Thorac Cardiovasc Surg*. 2016;152:635-6.

<http://dx.doi.org/10.1016/j.jtcvs.2016.04.034>

APPLICATIONS FOR ENABLE SUTURELESS AORTIC BIOPROSTHESIS?

To the Editor:

I enjoyed the article titled “North American single-center experience with a sutureless aortic bioprosthesis”

by de Varennes and colleagues in the March edition of the *Journal*.¹ Use of the Enable aortic bioprosthesis decreased

the mean cross-clamp time, and certainly with additional experience will likely further decrease cross-clamp time. I wonder whether the authors had previously used Cor-Knots (LSI Solutions, Victor, NY) during an isolated aortic valve replacement, and if so, whether using Cor-Knots had any significant effect on cross-clamp time.

In addition, the sutureless technology would seem to offer advantages in redo aortic valve cases, particularly when the extraction is difficult or the ring from the original prosthesis is left in place. I noted that the sutureless valve was not used in concurrent aortic and mitral valve replacement surgery, but only in patients who had mitral valve repair, and in 1 patient who had a previous mitral valve replacement. Are there restrictions to use of the sutureless prosthesis in these circumstances? Have the authors used the prosthesis in any of these clinical scenarios?

Finally, can the sutureless valve be placed within a tube graft to construct a biologic conduit? This would save operative time when the aortic biologic conduit needs to be sewn into the conduit, especially in situations where the conduit was not anticipated before placing the aortic cross-clamp.

Frank A. Baciewicz, Jr, MD
Department of Cardiothoracic Surgery
Wayne State University
Detroit, Mich

Reference

1. de Varennes B, Lachapelle K, Cecere R, Szczepkowski I, Buithieu J. North American single-center experience with a sutureless aortic bioprosthesis. *J Thorac Cardiovasc Surg*. 2016;151:735-42.

<http://dx.doi.org/10.1016/j.jtcvs.2016.04.045>

OTHER APPLICATIONS FOR THE SUTURELESS AORTIC PROSTHESIS

Reply to the Editor:

Thank you for your kind comments regarding our experience with the Enable sutureless aortic valve prosthesis (Medtronic, Minneapolis, Minn). Unfortunately, Medtronic pulled the product off the market a few months ago. This decision was in keeping with corporate decisions but we still believe that sutureless valves will have their place in the portfolio of treatment strategies for patients with aortic valve disease. We feel strongly that the ease of implant makes this technology very interesting, especially as

Author has nothing to disclose with regard to commercial support.

we are moving rapidly toward less-invasive means to replace aortic valves.

We have not had experience with the Cor-Knot (LSI solutions, Victor, NY). Because the Enable required a guiding suture that some surgeons preferred to tie, I believe that the Cor-Knot might be advantageous, especially in patients with narrow sinotubular junctions with little room for a surgeon's fingers between the nitinol cage and the aortic wall. This would be applicable for the other sutureless bioprotheses such as the Perceval (Sorin, Saluggio, Italy) or Intuity (Edwards Lifesciences, Irvine, Calif) that do require tying of the guiding sutures.

We have used the Enable valve in redo aortic valve replacements but we have always completely excised the old prostheses. In theory, one could contemplate valve-in-valve implantation after removing the degenerated prosthetic leaflets, but this would be considered off-label use.

We have not performed double-valve replacement using the Enable valve in the aortic position but would not have hesitated to do so if a patient required it. The very low sub-annular protrusion of the Enable prosthesis would unlikely have interfered with the mitral prosthesis. We certainly would recommend implanting the mitral valve first and positioning it in a supra-annular position.

The use of the Enable prosthesis within a Gelweave Valsalva graft (Vascutek, Inchinnan, United Kingdom) is an interesting idea that we have not tried and would have to be tested in vitro before human use. I am not certain the landing zone provided by the narrow junction between the sinus of Valsava and lower tubular portions of the graft would be broad enough to offer secure stabilization of the prosthesis.

*Benoit de Varennes, MD, MSc, FRCS
Division of Cardiac Surgery
McGill University Health Centre
Montreal, Quebec, Canada*

<http://dx.doi.org/10.1016/j.jtcvs.2016.04.058>

AORTIC ROOT ENDOSCOPY FOR AORTIC VALVE-SPARING OPERATIONS

To the Editor:

We read with great interest the article by Tsagakis and colleagues¹ on the intraoperative evaluation of repaired aortic valve

Author have nothing to disclose with regard to commercial support.

geometry by angioscopy. We have been using aortic root endoscopy in valve-sparing aortic root replacement operations at our institutions since 1995.^{2,3} We would like to comment on the efficacy of intraoperative endoscopy to evaluate repaired aortic valves.

Intraoperative macroscopic evaluation of a repaired aortic valve is not always accurate because the aortic cusps are released from the perfusion pressure and the root loses its tension once the root is opened. The natural configuration of the root is thus altered, and recognizing any mal-coaptation or overstretching becomes difficult.² Experience is required to predict the result of repair and to avoid secondary aortic clamping for additional valve repair or replacement.¹ Prolapse of the repaired aortic valve could be among the factors that cause suboptimal long-term results.⁴ However, detection of prolapse during cardiac arrest is difficult. Recently, effective height has been used for detection of prolapse of repaired aortic valves.⁵ The effective height is an excellent parameter for detection of minor valve prolapse. However, the result would be influenced by the retraction tension on the commissures and the amount of force on the free margin of the valve by the caliper bar. Therefore, an error could occur because of these factors. Thus, we evaluate the aortic valve before and after repair using intraoperative endoscopy combined with macroscopic findings and the measurement of effective height.

After crossclamp of the ascending aorta, crystalloid cardioplegic solution is infused into the root, and this allows visualization of the pressure-loaded valve in the closed position. A videoscope (Olympus LTF type VH; Olympus, Tokyo, Japan) is inserted into the aortic root and the aortic valve is investigated. The final indication for valve sparing is determined based on the endoscopic findings. Then, aortic root remodeling is performed. First, the effective height of the repaired aortic valve after aortic root replacement is measured. Next, a videoscope is placed within the lumen in the clamped prosthetic graft with perfusion of normal saline under physiologic pressure (50-80 mm Hg). The measurement of effective height along with the endoscopy findings could result in the need for an additional procedure before weaning from cardiopulmonary bypass if there is prolapse of the cusps. If necessary, additional central plications are performed to the prolapsed cusps and endoscopy is repeated. Finally, the optimal configuration of the valve is confirmed with endoscopy (Figure 1). After confirmation, bleeding is evaluated by perfusion of blood into the graft, and some additional