To the Editor:

Although the Perceval sutureless aortic valve (LivaNova PLC, London, UK) is currently routinely used in many European cardiac surgery centers, concerns remain regarding the need for postoperative permanent pacemaker implantation. In this regard, we read with great interest the article by Yanagawa and colleagues, who presented a simple technical modification to lower the rate of pacemaker implantation in patients undergoing aortic valve replacement with the Perceval sutureless bioprosthesis.

From 2010 to date, we have implanted 380 Perceval valves, with 10% of patients requiring postoperative pacemaker implant up to August 2015. Since then, we have implemented several changes trying to refine the implant technique. In particular, attention to the appropriate depth of suture placement in relation to the annulus is critical to ensure adequate valve functioning without additional risks for the conduction system. These sutures are placed at the nadir or midpoint of the leaflet insertion line. Use of a semicircular needle facilitates the placement of the guiding sutures, beginning no more than 2 mm below the annulus and exiting approximately 2 mm above the annulus. Passing these sutures from below to above the annulus was found to be helpful to control suture insertion depth. Inappropriately deeper placement of the guiding sutures into the left ventricular outflow tract carries the risk of damage to the conduction system after valve placement. During valve deployment, special attention should be paid to the angle of the holder with regard to the seating of the valve in the noncoronary sinus. Inappropriate tension of the guiding sutures may cause the valve to be seated too deeply, particularly at the commissure between the right and noncoronary cusps, with potential for damage to the underlying conduction system.

With the adoption of these measures, since September 2015 only 1 additional patient (3.3%) has required pacemaker implantation postoperatively in our institution. Our comment is intended to help centers starting to implant the Perceval valve, showing that the unique position of being pioneers in the use of a new device should contribute to the standardization of the technique by accurate monitoring of the results.

Theodor Fischlein, MD, PhD
Angelo M. Dell’Aquila, MD
Giuseppe Santarpino, MD, PhD
Department of Cardiac Surgery
Paracelsus Medical University
Nuremberg, Germany

References

http://dx.doi.org/10.1016/j.jtcvs.2016.03.035

The Tipping Point: When Should a Modification Become the Standard Technique?

Reply to the Editor:

We appreciate the commentary by Fischlein et al.1 from one of the largest single-center experiences with the Perceval valve (LivaNova, Milano, Italy) and the authors of several important publications, including a recent large multicenter cohort study.2 Similar to our experience, they also found that deeper placement of the guiding sutures into the left

Authors have nothing to disclose with regard to commercial support.
ventricular outflow tract risks damage to the conduction system. By placing their guiding sutures no more than 2 mm below the nadir of the annulus and by angling the valve to prevent deeper implantation at the right noncommissure, they found a 3-fold reduction in their pacemaker valve to prevent deeper implantation at the right noncommissure, they found a 3-fold reduction in their pacemaker rate from 10% to 3.3%. Because theirs is a much larger experience than ours, corroboration by the Nuremberg group goes a long way to support the generalizability of our findings.

In our center, the Perceval valve has become a helpful tool for multiple concomitant procedures for those who we believe would gain benefit from a shorter crossclamp time. In select cases, such as reoperative aortic valve replacement for a failed Toronto Stentless Porcine Valve (St Jude Medical Inc, St Paul, Minn), adhesions between the stentless valve and the native aortic root often require a complex root replacement. Here, the Perceval valve has been invaluable in allowing us to perform a rather simple implantation. However, in our jurisdictions where healthcare budgets are scrutinized closely, without this modification, we simply could not justify the use of the Perceval valve with double-digit pacemaker rates.

Parenthetically, since the publication of our article, we had a single case of Perceval implantation with complete heart block immediately postoperatively. The patient had a low-lying right coronary ostia with a prominent calcium bar extending from the annulus to the ostia. We thought that implantation with our modification risked coronary obstruction; thus, the guiding sutures were placed 3 mm below the aortic annulus. By intraoperative transesophageal echocardiography, the distance from the annulus to the lower aspect of the valve was 6 mm. This case further supported the association between low implantation and conduction disturbance in our hands.

Any modification to an established technique should be performed with caution. As the authors correctly state, it is critical to document all changes and monitor outcomes closely. However, if enough surgeons from multiple centers perform similar modifications with lower resultant rates of pacemaker implantation without paravalvular leak, valve dislodgement, or other unintended consequences, then the modification should become the standard technique.

Bobby Yanagawa, MD, PhD
Jorge Cruz, MD
Lyna Boisvert, RN CV-ICU, BScN
Daniel Bonneau, MD
Division of Cardiac Surgery

St Michael’s Hospital
University of Toronto
Toronto, Ontario, Canada

References

http://dx.doi.org/10.1016/j.jtcvs.2016.03.061

OCCULT BLEEDING IN LEFT VENTRICULAR ASSIST DEVICE RECIPIENTS: IT IS THE PATIENT RATHER THAN THE PUMP

To the Editor:

It was with great interest that we read the article by Grosman-Rimon and colleagues. This is indeed a significant contribution to understanding mechanisms of occult bleeding in continuous-flow left ventricular assist device recipients. It is our opinion, however, that current research in this field focuses far too much on biochemical pathways and overlooks patient-related comorbidities at the time of the procedure. Real-life data from the Interagency Registry for Mechanically Assisted Circulatory Support registry indicate that 1-year freedom from gastrointestinal bleeding is strongly associated with preoperative state (Interagency Registry for Mechanically Assisted Circulatory Support level, New York Heart Association functional class, age, need for dialysis, concomitant procedures, history of coronary artery bypass grafting), irrespective of pulsatile-flow or continuous-flow device operation. In addition, coagulation disorders predisposing toward bleeding after left ventricular assist device implantation, especially the loss of high-molecular weight von Willebrand factor multimers, seem to be detectable already before the procedure in patients with end-stage heart failure. In the light of these findings, it is important to identify patients at risk. It is our belief that we should focus on preimplantation patient profiles rather than on the pump.

Sotirios Spiliopoulos, MD
Reiner Koerfer, MD
Gero Tenderich, MD
Department for the Surgical Therapy of End-Stage Heart Failure and Mechanical Circulatory Support
Heart and Vascular Center Duisburg
Duisburg, Germany

Lyna Boisvert, RN CV-ICU, BScN

Authors have nothing to disclose with regard to commercial support.