Additional input from studies on other transcatheter heart valves may answer questions on whether the percutaneous approach is a possible risk factor along with other substrates based on prosthetic material. Despite a higher incidence of endocarditis with the Melody valve, probabilities of survival and event-free survival were similar to the surgical group.

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EDITORIAL COMMENTARY

Endocarditis and the transcatheter pulmonary valve

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The article in this issue of the *Journal* by Malekzadeh-Milani and colleagues¹ from the pediatric cardiology department at the renowned Necker Hospital in Paris reports a disturbingly high risk for endocarditis in the Melody valve (Medtronic Inc, Minneapolis, Minn) relative to surgically implanted conduits. Surgically implanted conduits containing a bovine jugular valve (Contegra conduits; Medtronic Inc) also appear to have a higher risk of endocarditis relative to other surgical options.

This is an important article. There have been an increasing number of anecdotal reports in the literature suggesting that the Melody valve might have a higher risk for endocarditis than surgically implanted pulmonary valves. A multi-institutional report in 2013 described an important

incidence of endocarditis in 3 ongoing prospective trials of the Melody valve.² A recent abstract presented at the Pediatric and Adult Interventional Cardiac Symposium in Chicago also has come to the conclusion that the Melody valve may be uniquely susceptible to endocarditis.³ The current report¹ describes a relatively large and contemporaneous experience that examines the issue in greater detail. The findings are certainly of concern. Melody valve endocarditis occurred earlier ($P = .0065$) and tended to have a higher mortality risk relative to endocarditis in a surgically implanted valve (37% vs 13%). There was less likely to be a past history of endocarditis in patients with endocarditis in a Melody valve than in patients with endocarditis in surgically implanted valves. Some patients presented with severe symptoms, including cardiogenic shock and renal failure, as we have also seen recently in Washington, DC, in a previously healthy 17-year-old patient not reported previously.

The risk of endocarditis in surgically implanted homografts and surgically implanted bioprosthetic valves has been so low that most pediatric cardiac surgical teams are probably unfamiliar with the “Duke criteria” (Table 1) that the authors have used to define the occurrence of endocarditis.¹ The authors also have provided suggestions for management that will be helpful for those groups encountering this problem for the first time.¹ Their management strategy is based on European Society of Cardiology guidelines.⁴ Antimicrobial therapy was given for 6 weeks. Indications for surgery were heart failure (secondary to increased right ventricular outflow tract obstruction), uncontrolled sepsis with septic shock, or persisting infection in the urgent cases. In semi-elective or elective surgery, the reason for intervention was right ventricular outflow tract obstruction or relapse of endocarditis despite adequate antibiotic treatment. These indications for surgery are similar to those that would be applied for native valve endocarditis and are less aggressive than would be applied for endocarditis of a prosthetic aortic or mitral valve. Perhaps the lesser hemodynamic burden on a right-sided valve justifies such an

approach. Until more experience is acquired with this new problem, great care will need to be taken if a conservative nonoperative approach is taken.

An intriguing aspect of the report is the observation that the Contegra bovine jugular conduit also has been observed to have a higher risk of endocarditis than other conduits, particularly homografts. The authors have speculated, as have others whom the authors cite, that there may be an intrinsic susceptibility of bovine jugular tissue to infection. One wonders whether the “cheese-grater” effect of a metal stent immediately adjacent to the bovine jugular valve in the Melody implant is responsible for the even greater incidence of endocarditis in the Melody valve relative to the Contegra conduit.

It is important to remember the history of surgically implanted valves and conduits when multiple unanticipated problems were encountered, often many years after implantation, including ball valve embolization from the Braunwald-Cutter valve (Cutter Laboratories Inc, Berkeley, Calif) and strut fracture of the widely applied Bjork-Shiley valve (Shiley, Inc, Irvine, Calif). The Melody valve is the first generation of catheter-implanted valves. Unanticipated late problems should be anticipated.

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