

EDITOR'S PAGE



Care of the Complex Cardiac Patient: It Takes a Village



Candice K. Silversides, MD, *Editor-in-Chief, JACC Advances*,
David J. Holmes Jr, MD, *Deputy Editor, JACC Advances*

The cardiology landscape is becoming more complex with decision-making and clinical care often crossing disciplines. Where cardiac care was once provided by an individual cardiologist, for the complex patient, it is now often provided by a team with different backgrounds, knowledge, and skill sets. In this issue of *JACC: Advances*, the State-of-the-Art Review by Elkayam et al¹ describes the role of catheter-based interventions for valve disease in the pregnant population and highlights the importance of the multidisciplinary heart team in patient care.

Since the introduction of percutaneous balloon valvuloplasties in the 1980s, major advances have been made in transcatheter valve interventions.²⁻⁵ Valvuloplasty as a sole treatment strategy was suboptimal due to early restenosis, especially for procedures involving the aortic valve. In 2000, the first-in-human percutaneous pulmonary valve was implanted into a degenerated right ventricular to pulmonary artery conduit followed by the first-in-human transcatheter aortic valve implantation into a calcified native aortic valve in 2002.^{6,7} Since that time, mitral and tricuspid valve transcatheter edge-to-edge repairs, transcatheter valve replacements, and percutaneous annuloplasty devices have been introduced.⁸ Transcatheter valve interventions are now established treatment options in select patients and indications in new patient populations continues to evolve in populations such as the pregnant patient.

Concerns regarding valve disease in the pregnant population began more than a century ago when rheumatic valve disease was prevalent. The hemodynamic changes of pregnancy were not well tolerated in women with rheumatic mitral stenosis and outcomes were poor. Treatment improved after the development of the percutaneous mitral balloon

commissurotomy; however, due to the associated fetal exposure to ionizing radiation, interventions during pregnancy are still typically reserved for those refractory to medical therapy. With the high prevalence of rheumatic heart disease globally, there is a reasonable amount of experience performing percutaneous mitral balloon commissurotomy during pregnancy, and guidelines are available that provide recommendations specific to mitral valve interventions in the pregnant population. Other valve lesions, such as severe symptomatic aortic stenosis, are less common in the pregnant population and experience with aortic valve interventions is limited.

The heart team is ideally suited to address these types of complex management problems. For valve interventions in unique populations, such as pregnant patients, a multidisciplinary heart team works together to decide on indication, timing, and type of valve intervention, and to address fetal issues. The team includes maternal fetal medicine specialists, cardiologists with expertise in cardio-obstetrics and valvular heart disease, structural interventionalists, cardiovascular surgeons, echocardiographers, cardiac radiologists, anesthesiologists, neonatologists, nurses, and other health professionals.¹ Similar multidisciplinary teams have been established for other areas of cardiology that require multidisciplinary expertise and high-level coordinated care, such as coronary revascularization and transcatheter aortic valve replacement.⁹ The goal of the heart team is to provide a balanced approach to patient care with input from different medical care providers and focused on patient-centered care. Although the heart team model is logistically more challenging and requires organizational support, it has many advantages. Heart teams provide an excellent environment for collaborative interprofessional learning and research; they help break down silos in medicine and offer shared

accountability. While the team-based approach is exciting and becoming more widely used in cardiology, research is needed to understand how to optimize team performance and the impact of team-based care on patient outcomes.

ADDRESS FOR CORRESPONDENCE: Dr Candice Silversides, Mount Sinai Hospital, 700 University Avenue, Room 9-913, Toronto, Ontario M5G 1Z5, Canada. E-mail: candice.silversides@uhn.ca.

REFERENCES

1. Elkayam U, Bansal P, Mehra A. Catheter-based interventions for the management of valvular heart disease during pregnancy. *JACC Adv.* 2022;1:100022.
2. Kan JS, White RI Jr, Mitchell SE, Gardner TJ. Percutaneous balloon valvuloplasty: a new method for treating congenital pulmonary-valve stenosis. *N Engl J Med.* 1982;307:540-542.
3. Lababidi Z. Aortic balloon valvuloplasty. *Am Heart J.* 1983;106:751-752.
4. Cribier A, Savin T, Saoudi N, Rocha P, Berland J, Letac B. Percutaneous transluminal valvuloplasty of acquired aortic stenosis in elderly patients: an alternative to valve replacement? *Lancet.* 1986;1:63-67.
5. Inoue K, Owaki T, Nakamura T, Kitamura F, Miyamoto N. Clinical application of transvenous mitral commissurotomy by a new balloon catheter. *J Thorac Cardiovasc Surg.* 1984;87:394-402.
6. Bonhoeffer P, Boudjemline Y, Saliba Z, et al. Percutaneous replacement of pulmonary valve in a right-ventricle to pulmonary-artery prosthetic conduit with valve dysfunction. *Lancet.* 2000;356:1403-1405.
7. Cribier A, Eltchaninoff H, Bash A, et al. Percutaneous transcatheter implantation of an aortic valve prosthesis for calcific aortic stenosis: first human case description. *Circulation.* 2002;106:3006-3008.
8. Davidson LJ, Davidson CJ. Transcatheter treatment of valvular heart disease: a review. *JAMA.* 2021;325(24):2480-2494. <https://doi.org/10.1001/jama.2021.2133>
9. Holmes DR, Rich JB, Zoghbi WA, Mack MJ. The heart team of cardiovascular care. *J Am Coll Cardiol.* 2013;61:903-907.