Impact and Management of Paravalvular Regurgitation After Transcatheter Aortic Valve Replacement

Abdellaziz Dahou, MD, Henrique Barbosa Ribeiro, MD, Josep Rodés-Cabau, MD, Philippe Pibarot, DVM, PhD*

KEYWORDS

• Aortic stenosis • Transcatheter heart valve • Regurgitation • Doppler echocardiography • Cardiac MR

KEY POINTS

- Moderate/severe paravalvular regurgitation (PVR) is frequent after transcatheter aortic valve replacement and is associated with a 3-fold increase in 30-day mortality and a 2.3-fold increase in 1-year mortality.
- A multimodality, multiview, multiparametric approach is key for accurate assessment of PVR severity, location, and etiology.
- Corrective procedures including balloon postdilation and/or valve-in-valve procedure should be considered in patients with moderate/severe PVR.

Videos of paravalvular regurgitation accompany this article at http://www.interventional.theclinics.com/

INTRODUCTION

Transcatheter aortic valve replacement (TAVR) is a rapidly expanding alternative to surgical replacement for patients with high operative risk. Paravalvular regurgitation (PVR) is, however, an important complication of TAVR that has been shown to be associated with increased mortality. The objective of this article was to review the most up-to-date information about the impact and management of PVR.

IDENTIFICATION AND QUANTIFICATION OF PARAVALVULAR REGURGITATION

PVR jets are often multiple, eccentric, and of irregular shape (**Fig. 1**, Videos 1–7; videos are available on line at http://www.interventional.theclinics.com/).[1–3] Furthermore, they are confined along the left ventricular (LV) outflow tract wall and they may be masked partially or totally owing to acoustic shadowing from the calcifications of the native aortic annulus or from the valve stent. These

Dr Pibarot received a research grant from Edwards Life Sc. for Echocardiography Core Laboratory Analyses. The other authors have nothing to disclose.

Department of Medicine, Institut Universitaire de Cardiologie et de Pneumologie de Québec/Québec Heart & Lung Institute, Laval University, 2725 Chemin Sainte-Foy, Québec, Québec G1V-4G5, Canada
* Corresponding author.
E-mail address: philippe.pibarot@med.ulaval.ca

Intervent Cardiol Clin 4 (2015) 67–82
http://dx.doi.org/10.1016/j.iccl.2014.09.008
2211-7458/15/$ – see front matter © 2015 Elsevier Inc. All rights reserved.

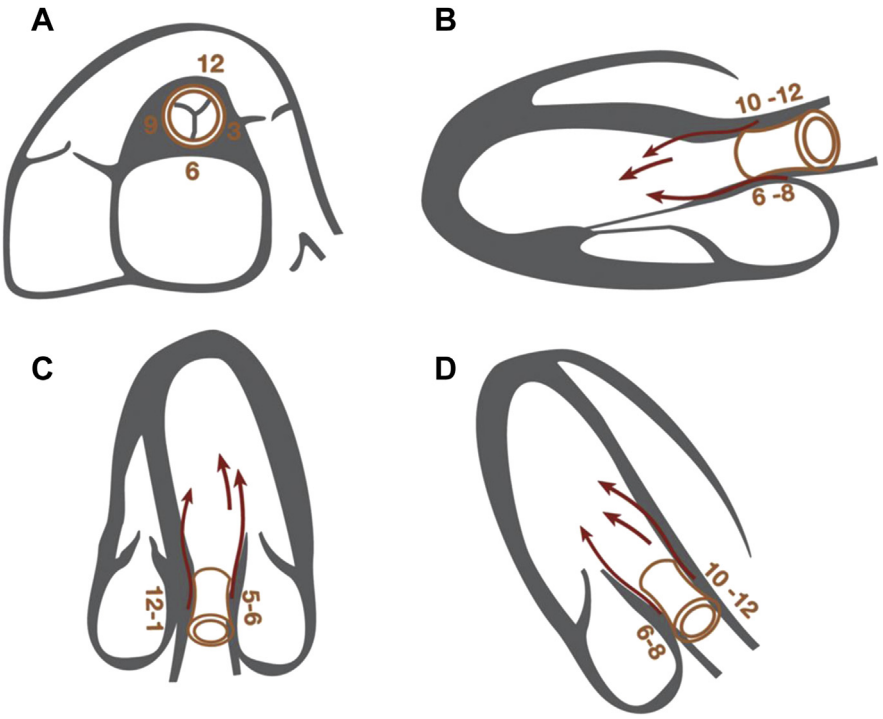

Fig. 1. Paravalvular regurgitation jet locations according to the face of a clock. Conventional 2-dimensional transthoracic echocardiographic (TTE) views are represented. (*A*) Parasternal short axis view (see Video 1). (*B*) Parasternal long axis view (see Video 2). (*C*) Apical 5-chamber view (see Video 3). (*D*) Apical 3-chamber view (see Video 4). Video 5 shows a very eccentric anterior paravalvular regurgitant jet on a TTE parasternal long axis view. On the short axis view, the circumferential extent of this eccentric jet may easily be overestimated (Video 6 vs Video 7). (*From* Gonçalves A, Almeria C, Marcos-Alberca P, et al. Three-dimensional echocardiography in paravalvular aortic regurgitation assessment after transcatheter aortic valve implantation. J Am Soc Echocardiogr 2012;25(1):47–55; with permission.)

features render the detection and quantification of PVR particularly challenging. Several imaging modalities may be used to assess PVR during and after the procedure.

Catheterization and Angiography

Semiquantitative assessment of PVR may be obtained by ventriculography during a TAVR procedure.[4–6] PVR can be classified according to the visually estimated density of opacification of the LV into 3 degrees: Mild (reflow of contrast in the outflow tract and middle portion of the LV but clearing with each beat), moderate (reflow of contrast in the whole LV cavity with incomplete washout in a single beat and faint opacification of the entire LV over several cardiac cycles), and severe (opacification of the entire LV with the same intensity as in the aorta and persistence of the contrast after a single beat).[5,7] Several quantitative hemodynamic parameters have been proposed to assess the severity of PVR during the procedure. The aortic regurgitation index (ARI) is calculated as follows[4]: ARI = [(DBP − LVEDP)/SBP] × 100, where DBP and SBP are diastolic and systolic blood pressures, respectively, and LVEDP is the LV end-diastolic pressure (**Fig. 2**). In the presence of an ARI of less than 25%, one should suspect the presence of at least moderate PVR. A nonspecific elevation of the LVEDP, such as is often present in patients with AS and severe LV diastolic dysfunction, may lead to a low transvalvular end-diastolic gradient and thus to a false-positive ARI. Other investigators have proposed to use the relative amplitude index that is calculated as follows: Relative amplitude index = [(Post-TAVR BP amplitude)/(Post-TAVR SBP) − (Pre-TAVR BP amplitude)/(Pre-TAVR SBP)] × 100%, where BP amplitude is the difference between SBP and DBP.[8] An index of 14 or greater was associated with an increased risk of mortality.

Doppler Echocardiography

Transesophageal echocardiography is useful to assess the presence and severity of PVR during the procedure and transthoracic echocardiography (TTE) is generally used for the assessment

Download English Version:

https://daneshyari.com/en/article/2937287

Download Persian Version:

https://daneshyari.com/article/2937287

Daneshyari.com