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Images in Cardiology

Minimally Invasive Transradial Percutaneous Closure of an Aortic Paravalvular Leak After Transcatheter Aortic Valve Replacement

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Paravalvular leak (PVL) is a predictor of mortality in patients treated with transcatheter aortic valve replacement (TAVR).[1] Percutaneous PVL correction with a minimalistic approach using the radial access has been previously reported by our group.[2] To the best of our knowledge, no cases of TAVR PVL correction using the radial approach have been published.

An 82-year-old woman, who underwent TAVR with a SAPIEN3 26 mm valve 4 years before the current admission, was hospitalized because of heart failure and severe aortic PVL. After the index TAVR procedure, and despite the underexpansion of the valve, no PVL was reported, and the patient improved her functional status from New York Heart Association classification IV to II. The patient presented multiple comorbidities and a fragile clinical status. In this context, the heart team decided to perform percutaneous PVL closure using a minimally invasive approach. Despite that valve overexpansion could be another therapeutic option,[3] the heart team dismissed it because the valve was implanted 4 years earlier. A preprocedural computed tomography scan was not performed because of chronic kidney disease. However, computed tomography scan is a very valuable tool because it might help to locate PVLs and provide an accurate working projection.

The procedure was performed with the patient under mild sedation and transthoracic echocardiogram guidance was used. Through a 5-French (Fr) left radial artery access and the use of a diagnostic AL-1 5-Fr catheter, a posterior PVL was identified (Fig. 1A). The leak could not be crossed with a hydrophilic wire (Terumo). Subsequently, a BMW angioplasty guide wire was attempted with success. After advancing the AL-1 through the leak, the angioplasty wire was exchanged with a high supportive 260-cm guide wire (Fig. 1B). A 90-cm 5-Fr destination sheath (Terumo; Fig. 1C) was therefore advanced, and a 10 × 5 mm Amplatzer Vascular Plug III (St Jude Medical) was successfully deployed (Fig. 1D). Post closure hemodynamic assessment was not performed because transthoracic echocardiogram imaging revealed a relevant reduction of the leak with good image quality. Moreover, we decided against performing a control aortogram because of the high volume of contrast administered and the risk of acute renal failure. This minimally invasive approach allowed a prompt discharge the day after the intervention.

The use of TAVR procedures is progressively growing, and frequently, the patients are frail and present a high bleeding risk. For these reasons, a stent-like radial treatment of PVLs might represent a very valid alternative. The application of this minimalist approach in this clinical scenario deserves further research.

Disclosures

The authors have no conflicts of interest to disclose.

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Supplementary Material

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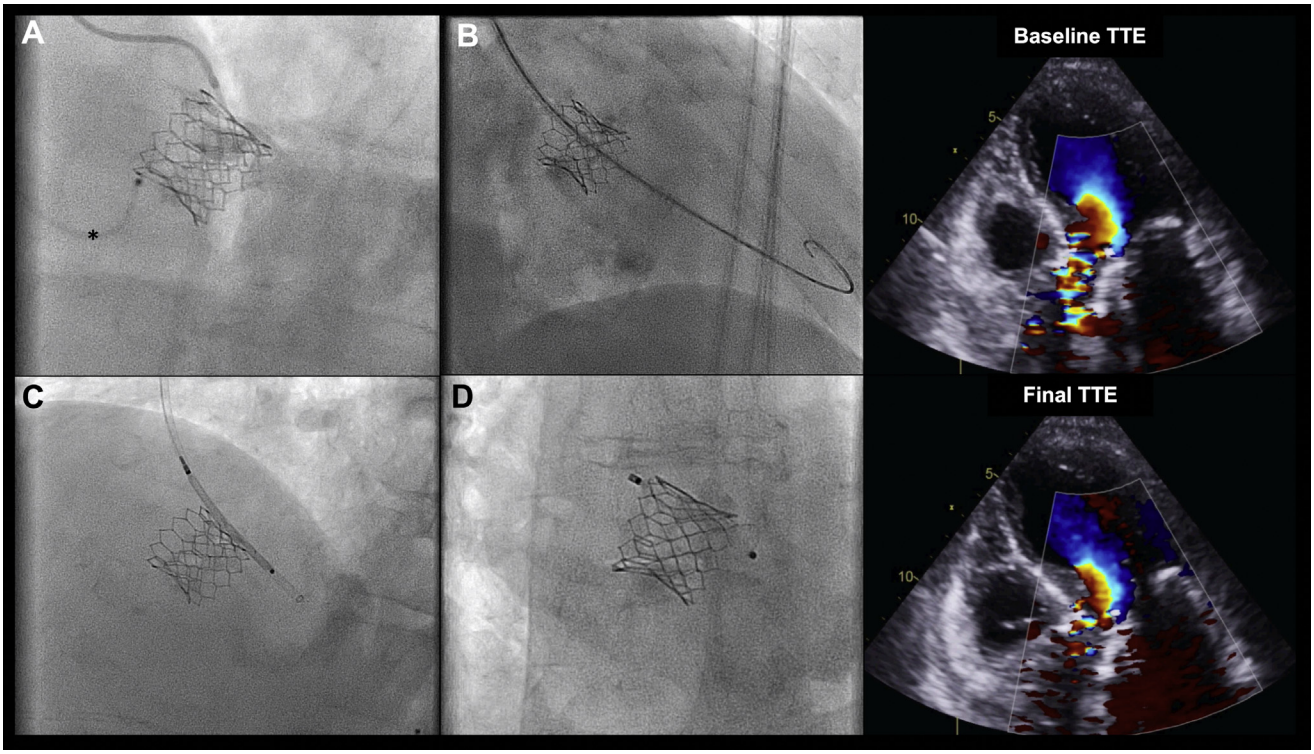

Figure 1. Left radial percutaneous closure of an aortic paravalvular leak after transcatheter aortic valve replacement. (**A**) Leak location; (**B**) leak crossing with a supportive guide wire; (**C**) AVP3 delivery through a 5-French destination sheath; and (**D**) final device position. *Indicates the electrocardiogram lead electrode. TTE, transthoracic echocardiogram.