Percutaneous replacement of the aortic and pulmonic valves has rapidly gained acceptance in clinical practice as a feasible alternative to open valve surgery in patients deemed to be at high operative risk.\(^1\,^2\) Total percutaneous tricuspid valve replacement (TVR), on the other hand, has not yet been documented in humans, although this approach has been described in experimental animals.\(^3\) Webb et al\(^4\) have recently reported 1 case of TVR, using a valve designed for percutaneous use but inserted through a thoracotomy with direct puncture of the right atrium.

We describe a case of percutaneous transjugular TVR with a 22-mm valve in a 28-year-old woman with a history of bioprosthetic tricuspid valve replacement (27-mm Medtronic Mosaic valve, Minneapolis, Minn) at age 19 years for tricuspid endocarditis, who presented 9 years later with progressive New York Heart Association Class III right-sided heart failure caused by severe tricuspid valve stenosis (Figure 1).

On transthoracic echocardiography (Figure 2 and Figure 3), her mean tricuspid transvalvular gradient was 16 mm Hg, with mild tricuspid regurgitation. Internal valve diameter was estimated at 21 mm, using 3D transesophageal echo images and knowledge of the internal diameter of her previous tricuspid valve bioprosthesis, from the manufacturer’s specifications. To confirm device sizing, a percutaneous balloon tricuspid valvuloplasty was performed, with good “waisting” of a 20-mm balloon but only transient amelioration of the pressure gradient across the valve.

The patient wanted to have children and was keen to avoid anticoagulation or the high risk of a third operation in the future, should she have opted for another bioprosthetic TVR via open surgery. Hence, after institutional ethics approval and informed patient consent, it was decided to proceed with percutaneous TVR.

The procedure was performed in the cardiac catheterization laboratory under general anesthesia through the right jugular approach. Under fluoroscopic guidance, a percutaneous Medtronic Melody pulmonary valve was deployed using a 22-mm Ensemble delivery system (Video 1). Transesophageal echocardiography confirmed satisfactory placement of the valve (Figure 4 and Video 2). The
transvalvular mean gradient decreased acutely from 13 mm Hg to 3.6 mm Hg (Figure 3a and 3b). Mild tricuspid regurgitation was observed and was unchanged from before the procedure.

Apart from a minor neck hematoma, the procedure was uncomplicated. Her symptoms improved almost immediately, with her functional class decreasing from NYHA Class III to I.

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Disclosures
None.

References
Percutaneous Tricuspid Valve Replacement for a Stenosed Bioprosthesis
Philip Roberts, Roberto Spina, Michael Vallely, Michael Wilson, Brian Bailey and David S. Celermajer

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