

## IMAGE FOCUS

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## Apico-aortic valved conduit for the treatment of severe aortic stenosis and porcelain aorta

Henry A. Tran\*, Monvadi B. Srichai, Ruth Lim, Adam H. Skolnick, Didier Loulmet, and Muhamed Saric

New York University Langone Medical Center, New York, NY, USA

\*Corresponding author. Tel: +1 212-746-2150. Email: het9016@med.cornell.edu

A 74-year-old man with a history of chest radiation for Hodgkin's disease in 1971, coronary artery disease, status post-coronary artery bypass grafting, and mitral valve repair in 2007 was referred for evaluation of aortic stenosis after presenting with acutely decompensated congestive heart failure.

Transthoracic echocardiography demonstrated the left ventricular (LV) ejection fraction of 35%, severe tricuspid regurgitation, calcified trileaflet aortic valve with severe stenosis (see Supplementary data online, *Video S1*), and a valve area of 0.6 cm<sup>2</sup>. The peak and mean gradients were 60 and 34 mmHg, respectively.

Thoracic computed tomography (CT) showed severe and diffuse calcifications of the thoracic aorta ('porcelain aorta'; *Panels A and B*) which precluded standard surgical aortic valve replacement (AVR) using aortic cross clamping. He was then considered for a transcatheter aortic-valve implantation (TAVI); however, his aortic annulus was too large for TAVI.

Instead, he underwent successful on-pump implantation of an LV apex to the descending thoracic aorta conduit with a porcine bioprosthetic valve (Freestyle®, Medtronic, Inc.). Postoperative contrast-enhanced cardiac CT with retrospective gating demonstrated the proximal end of the conduit inserting normally into the apical lateral wall (*Panel C*), and the distal end into an area of the descending thoracic aorta relatively spared from severe atherosclerosis (*Panels D and E*, see Supplementary data online, *Video S2*). Inside the conduit, the bioprosthetic valve leaflets (*Image F*) were seen opening and closing normally (see Supplementary data online, *Video S3*).

For patients with severe aortic stenosis who are not suitable candidates for either surgical AVR or TAVI, an apico-aortic conduit is a reasonable therapeutic option. Cardiac CT imaging is useful to identify potential immediate complications (i.e. apical pseudoaneurysms or kinking of the conduit) and for assessment of conduit valve function.

Supplementary data are available at *European Heart Journal – Cardiovascular Imaging* online.

