Transcatheter aortic valve replacement for symptomatic severe aortic valve regurgitation

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A 66-year-old woman, with a history of mediastinal radiotherapy for Hodgkin’s lymphoma, presented with exertional breathlessness and was diagnosed with severe aortic valve regurgitation on echocardiography (panel A). The regurgitation was likely due to radiotherapy-induced retraction of her aortic valve leaflets without valve-ring dilatation. She had previously sustained radiotherapy-induced ostial occlusions of her left anterior descending and right coronary arteries, but an attempt at surgical bypass in 1999 was only partially successful due to difficulty with coronary anastomosis and mediastinal fibrosis. Postoperatively, she developed mediastinitis requiring plastic surgery with surgical debridement of the sternum.

Based on her history, she was unsuitable for further surgery and referred for transcatheter aortic valve implantation instead. An 18-French sheath was placed in the right femoral artery, and the aortic valve was crossed retrogradely. A graduated pigtail catheter was placed in the non-coronary sinus, and valve positioning was guided by fluoroscopy and transoesophageal echocardiography. Valvuloplasty was not performed. A 26-mm flow diameter CoreValve ReValving System (Medtronic CoreValve, Minneapolis, Minnesota, USA) prosthesis was successfully implanted with initial deployment high in the left ventricular outflow tract under rapid right ventricular pacing (Movie I). There was only mild paravalvular regurgitation post-deployment (panel B). She made a full recovery, and at discharge, a transthoracic echocardiogram confirmed satisfactory positioning of the prosthesis with only mild residual regurgitation.

This case illustrates the use of transcatheter aortic valve prostheses as an alternative to surgery for the treatment of severe native aortic valve regurgitation in patients with non-dilated aortic roots.

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Panel A Preprocedural transoesophageal echocardiogram demonstrating a broad jet of severe aortic valve regurgitation on colour Doppler.

Panel B Post procedure aortography and transoesophageal echocardiogram demonstrating only a mild jet of paravalvular leak superiorly on colour Doppler.