CoreValve stent frame misdeployment and increased transvalvular gradient

Vasileios Kamperidis, Frank van der Kley, Spyridon Katsanos, and Victoria Delgado*

Department of Cardiology, Heart Centre, Leiden University Medical Centre, Albinusdreef 2, 2333 ZA Leiden, The Netherlands

*Corresponding author. Tel: +31 7 1526 6809; Fax: +31 7 1526 6809, Email: v.delgado@lumc.nl

Transcatheter aortic valve implantation was performed in a 59-year-old patient with symptomatic severe aortic stenosis and terminal renal failure on haemodialysis, permanent pacemaker and peripheral artery disease as comorbidities. A CoreValve 29 mm (Medtronic, Inc., MN, USA) was implanted in good position, under general anaesthesia and transoesophageal echocardiography (TOE) guidance. However, on fluoroscopy (Panel A1) and TOE view of the left ventricular outflow tract (LVOT) (Panel B1), misdeployment of the stent frame at the ventricular rim was noticed with few struts folded towards the LVOT (arrow) (the star indicates the catheter). There was only mild paravalvular regurgitation (see Supplementary data online, Video S1); however, the continuous wave Doppler through the aortic prosthesis from the deep transgastric TOE view revealed a mean pressure gradient of 18.30 mmHg (Panel C1). The prosthesis was ballooned with a Zymed 26-mm balloon (Heart Medical Europe BV, Best, The Netherlands) restoring the normal frame shape (Panels A2 and B2), reducing paravalvular regurgitation to trace (see Supplementary data online, Video S2) and mean pressure gradient to 9.39 mmHg (Panel C2).

This type of prosthesis misdeployment may be associated with inappropriate crimping of the prosthesis. Although the prosthesis misdeployment was readily visualized with fluoroscopy, procedural TOE was pivotal to confirm inappropriate prosthesis haemodynamics. In this case, the presence of an increased transvalvular gradient prompted the team to use additional manoeuvres to optimize the deployment and the haemodynamics of the prosthesis.

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