



Percutaneous valve in all four positions

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We present four cases of successful percutaneous valve replacements, each in a different anatomical position. The percutaneous approach was the preferred treatment in these four patients due to extensive comorbidities. Approaches ranged from valve-in-native to valve-in-valve and valve-in-homograft for aortic, mitral and tricuspid, and pulmonary valve respectively (Fig. 1a–d). The Edwards Sapien 3 valve was used off-label in all cases except for the aortic valve replacement. Angiographic imaging showed no insufficiency in all valves.

Transcatheter aortic valve replacement has proven to be a good alternative treatment modality for surgical valve replacement [1]. Research on percutaneous valve implantation in pulmonic, mitral and tricuspid position is promising [2–4]. Developments in this field will be beneficial, particularly for patients who are unfavourable candidates for open-heart surgery. Future studies should focus on feasibility and, in particular, on the long-term outcome of percutaneous treatment of valvular heart disease.

Conflict of interest H.M. Aarts, A.O. Kraaijeveld, P.R. Stella and M. Voskuil declare that they have no competing interests.

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Fig. 1 **a, b** The semilunar valves with an Edwards Sapien 3 (29mm) in native aortic valve stenosis (*left panel*) and off-label use of an Edwards Sapien 3 (23mm) after deployment of two overlapping stents in a pulmonary homograft (*right panel*). **c, d** The atrioventricular valves with off-label valve-in-ring, using Edwards Sapien 3 (26mm) because of mitral valve insufficiency after mitral valve plasty (*left panel*), and off-label valve-in-ring, using Edwards Sapien 3 (23mm) because of tricuspid valve insufficiency after tricuspid valve plasty (*right panel*)

