CLINICAL VIGNETTE

Infectious endocarditis after valve-in-valve transcatheter aortic valve implantation: reoperative treatment of infectious endocarditis

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The rate of interventions due to biological aortic valve prosthesis dysfunction is approximately 15% per 10 years.[1] Performed since 2007, valve-in-valve transcatheter aortic valve implantation (ViV-TAVI) is a less invasive alternative to surgical reoperation for aortic valve replacement (SAVR).

A 73-year-old male patient was admitted to our department with infective endocarditis (IE) 3 months after ViV-TAVI with the Medtronic Evolut R 26 valve (Medtronic, Minneapolis, Minnesota, United States). The ViV-TAVI was performed in October 2018 because of rapid degeneration of the Hancock II 23 surgical aortic valve bioprosthesis (Medtronic) (an increase in the maximum and mean gradients from 42 to 108 mm Hg and 27 to 58 mm Hg, respectively), implanted 3 years earlier with concomitant coronary artery bypass grafting (the left internal mammary artery [LIMA] to the left anterior descending artery [LAD], saphenous vein graft to the right coronary artery). History of LIMA grafting, comorbidities (atrial fibrillation, chronic renal insufficiency, chronic obstructive pulmonary disease, anemia, history of gastrointestinal tract bleeding), and high mortality risk (8.66%) according to the EuroSCORE II were indications for ViV-TAVI rather than SAVR. The TAVI procedure was uneventful and resulted in an improvement of heart failure symptoms. Three months after TAVI, the patient presented with fever, dyspnea, and heart failure exacerbation to New York Heart Association (NYHA) class III. Laboratory tests showed high C-reactive protein levels (140 mg/l), positive blood cultures (*Enterococcus faecalis*), increased creatinine levels (2.27 mg/dl), reduced glomerular filtration rate of 22 ml/min/1.73 m^2, and anemia (hemoglobin level, 9.9 g/dl). Echocardiography revealed severe paravalvular aortic regurgitation with a "rocking" effect (FIGURE 1A–1C) and a non-coronary sinus aortic abscess with a reduced left ventricular ejection fraction of 40%. Medical treatment (targeted antibiotic therapy, inotropes, and diuretics) was unsuccessful, and heart failure progressed to NYHA class III/IV. Therefore, the Heart Team decided to perform a life-saving surgery. The estimated mortality risk was 59.98% according to the EuroSCORE II. During the reoperation in moderate hypothermia (34°C), the degenerated Hancock II with dehiscence of three-fourths of its circumference and implanted Evolute R TAVI prostheses were removed (FIGURE 1D). Due to massive tissue damage, the core matrix patch was used to reconstruct the left ventricular outflow tract. Next, the Medtronic Hancock 25 biological prosthesis was implanted (FIGURE 1E). Additionally, the dissected segment of the ascending aorta at the circumference of the Evolute R crown was replaced with the Vascutek Gelweave 32 vascular prosthesis (FIGURE 1F). The extent and length of the procedure (170 minutes of a clamped aorta), together with intraoperative complications and no possibility to appropriately protect the myocardium (no option to administer cardioplegia to the LIMA–LAD bridge), led in the postoperative period to refractory heart failure, multiorgan failure, and, ultimately, the patient's death.

Even though TAVI is associated with low 30-day and 1-year mortality rates (2.2%–2.7% and 12.4%–14.6%, respectively) regardless

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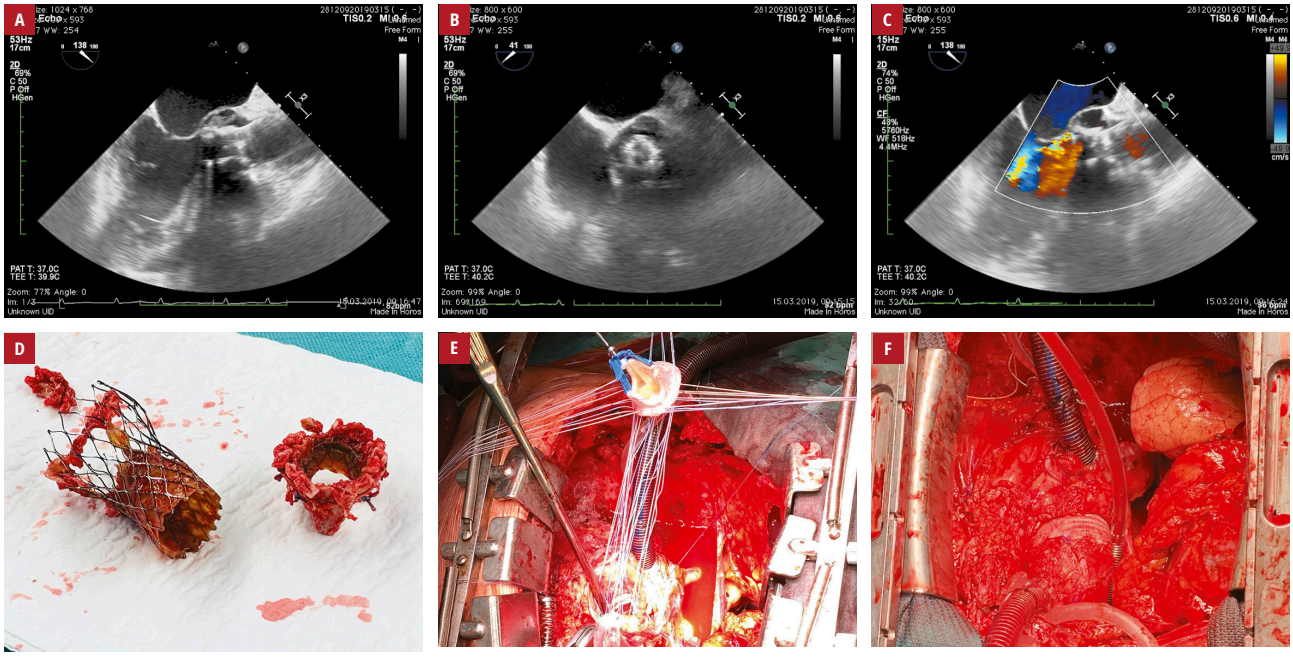

FIGURE 1 **A** – echocardiography imaging of implanted valvular prostheses: long-axis view; **B** – echocardiography imaging of implanted valvular prostheses: short-axis view; **C** – echocardiography imaging of implanted valvular prostheses after severe paravalvular regurgitation: long-axis view; **D** – removed infected valvular prostheses; **E** – implantation of the Medtronic Hancock 25 valve to the reconstructed left ventricular outflow tract; **F** – a fragment of the ascending aorta replaced with a vascular prosthesis

of the prosthesis used (balloon or self-expanding), the frequency of IE after TAVI is 1.1% of patients annually and has a poor prognosis.[2-5] In the case of IE in ViV-TAVI with unsuccessful antibiotic therapy and instability of the prostheses, surgical reoperation remains the only option. Also, due to the expanding indications for TAVI and a growing number of treated patients worldwide, IE may become more frequent.

ARTICLE INFORMATION

CONFLICT OF INTEREST None declared.

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