Percutaneous pulmonary valve implantation with a Myval Octacor device in an adolescent patient: First Polish experience

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Percutaneous pulmonary valve implantation is a widely accepted alternative to surgery for selected patients with right ventricular outflow tract or pulmonary valve dysfunction [1]. Regarding the anatomical and etiological factors contributing to right ventricular outflow tract dysfunction, self-expandable and balloon-expandable (BE) valves are available. Two BE valves, the Melody® (Medtronic) [2] and the Edwards SAPIEN XT (Edwards Lifesciences), have been CE-marked for use in humans. Recently, several platforms have emerged in the pulmonary position. Notably, the self-expandable Pulsta® valve [3] and the BE Myval Octacor (Meril Life Sciences) [4, 5] are particularly noteworthy.

We report the first Polish experience with percutaneous implantation of a BE Myval Octacor valve in the pulmonary position.

A 16-year-old girl with DiGeorge syndrome and severe scoliosis was admitted for a comprehensive medical evaluation. The patient's medical history involved a series of surgical interventions during her early life, including truncus type I and ventricular septal defect correction at two months of age and a series of subsequent cardiac procedures, including pulmonary arteries angioplasty. On admission, the patient exhibited symptoms of exercise-induced dyspnea of class III severity according to the New York Heart Association functional classification. Cardiac catheterization showed a markedly elevated right ventricle (RV) pressure, equal to 90% of the systemic value, while transthoracic echocardiography (TTE) showed a peak Doppler gradient across the pulmonary valve of 66 mm Hg with moderate regurgitation (Figure 1A). Both angiography and computed tomography indicated severely hypertrophied RV with a massively calcified proximal part of the main pulmonary artery (MPA) (Figure 1B).

After a thorough discussion, the decision was made to proceed with percutaneous treatment. Following evaluation of the individual characteristics of CE-marked devices, including the availability of intermediate sizes, the Myval Octacor system emerged as the most suitable choice (Figure 1C). The procedure was performed under general anesthesia. After vascular access was obtained, the pulmonary arteries were dilated with an Atlas Gold balloon 14/20 mm (Bard Medical) at 10–12 atm. The MPA was then pre-stented using a BeGraft (Bentley InnoMed) aortic stent graft 22/37 mm (Figure 1D), which was post-dilated with an Atlas Gold balloon 24/30 mm up to 12 atm. Complete coverage and full dilatation of the MPA was achieved (Figure 1E). To facilitate the procedure and avoid potential damage to the tricuspid valve, the vascular sheath was exchanged for a Dry-Seal 24F (Gore). Thereafter, the Myval Octacor 24.5 mm valve was delivered on a Lunderquist wire (Cook Medical) and implanted into the pulmonary position (Figure 1F). Both angiography and TTE indicated no paravalvular leakage. Peak Doppler gradient across the pulmonary valve dropped to 13 mm Hg, whereas the hemodynamic evaluation showed a notable reduction in RV pressure to 49% of the systemic pressure. The patient was discharged on the third day after the procedure with no procedure-related complications. After two

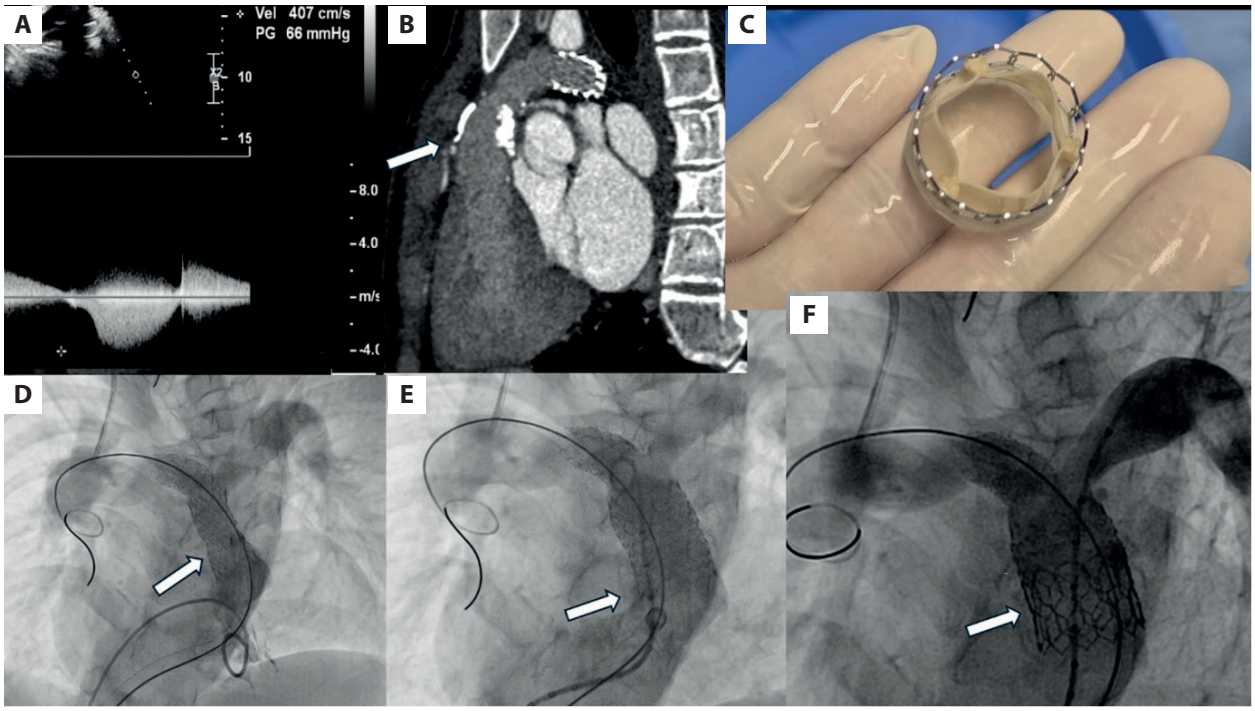

Figure 1. TTE indicates a significantly elevated peak Doppler gradient across the pulmonary valve of 66 mm Hg (**A**). Cardiac angio-CT shows extensive proximal MPA calcification (white arrow) (**B**). Myval Octacor valve (**C**). Angiography shows pre-stented MPA with aortic stent graft before (**D**) and after (**E**) post-dilation. White arrows indicate the position of the stent graft. The final angiography shows the Myval Octacor valve (white arrow) implanted in the pulmonary position (**F**)

Abbreviations: CT, computed tomography; MPA, main pulmonary artery; RV, right ventricle; TEE, transthoracic echocardiography

weeks, the girl reported a significant improvement in exercise capacity. The TTE evaluation showed optimal function of the implanted prosthesis.

Given the growing global evidence supporting the use of the Myval Octacor platform in the pulmonary position, we conclude that the valve is both efficient and predictable, and due to the versatility of its size matrix, can serve as a valuable alternative to the established platforms.

Article information

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