Percutaneous pulmonary valve implantation in a patient with congenitally corrected transposition of the great arteries: a case report

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KEYWORDS: congenitally corrected transposition of the great arteries, percutaneous pulmonary valve implantation, Melody pulmonary valve.

CITATION: Cardiol Croat. 2025;20(1-2):26. | https://doi.org/10.15836/ccar2025.26

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Introduction: In patients with congenitally corrected transposition of the great arteries (CCTGA), atrioventricular and ventriculoarterial discordance maintains physiologic circulation. However, early surgical intervention is often required due to associated anomalies such as septal defects, pulmonary valve dysfunction, or subpulmonary outflow tract obstruction[1]. Over time, implanted conduits and bioprosthetic valves undergo degeneration, necessitating reintervention. Percutaneous pulmonary valve implantation (PPVI) has emerged as a less invasive alternative to surgical procedures[2]. Here, we present a case of PPVI in a degenerated outflow tract conduit.

Case report: 37-year-old woman with a history of CCTGA presented with progressive exertional dyspnea. She had her first surgery at the age of 9 – patch repair of septal defects and homograft implantation from the left ventricle to the pulmonary artery with the hypoplastic native pulmonary artery left in place. The second operation was at the age of 21 years – replacement of the degenerated homograft with a Conterga conduit. Echocardiography and cardiac magnetic resonance imaging revealed dysfunction of the Contegra conduit with mild stenosis and severe valve regurgitation. Additionally, severe mixed disease of the native pulmonary valve was noted, along with subpulmonary ventricular dilation and elevated filling pressures, while ventricular function remained preserved. Computed tomography angiography confirmed the feasibility of a PPVI. The patient underwent elective PPVI with a Melody 22 bioprosthetic pulmonary valve within the Contegra conduit (**Figure 1**). No intervention was performed on the native pulmonary valve. The procedure was successful, with no residual regurgitation and a normal forward gradient. Postprocedural echocardiography demonstrated significant improvement in subpulmonary ventricular function, and the patient experienced no complications.

Conclusion: This case highlights the effectiveness of PPVI as a safe and minimally invasive alternative to surgical reinterventions in patients with CCTGA and prior conduit placement. As bioprosthetic valve degeneration remains an ongoing challenge, transcatheter therapies offer a promising approach for long-term management in this complex patient population.

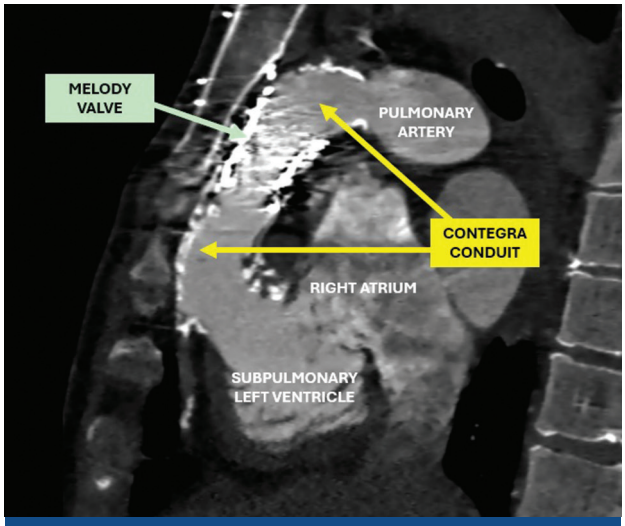

FIGURE 1. CT image of a percutaneously implanted Melody valve in a Contegra conduit.

RECEIVED:
February 4, 2025
ACCEPTED:
February 14, 2025

LITERATURE

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