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Trans-catheter aortic valve implantation in a patient with membranous ventricular septal defect, sub-aortic band and double-chambered right ventricle

Background

We report a rare case of trans-catheter aortic valve implantation in an elderly male with membranous ventricular septal defect (VSD), sub-aortic band, and severe aortic stenosis (AS). We discuss the safety and efficacy of the technique.

Case Summary

An 86-year-old male was admitted to our hospital with congestive heart failure (CHF) due to low- flow low-gradient severe AS, a membranous ventricular septal defect (VSD), a subaortic band, and a double chambered right ventricle. The patient was not deemed to be a surgical candidate because of advanced age and frailty even though surgical aortic valve replacement, VSD closure, subaortic band resection and myectomy of right ventricle would be considered as definitive treatment. Instead, we performed transcatheter aortic valve implantation and VSD orifice closure using the skirt part of the self-expanding valve (26mm Evolut Pro PlusTM) because VSD occluder is not approved and thus not available in our country. The trans-catheter procedure resulted in a reduction of the mean aortic valve pressure gradient improved from 33 to 2 mmHg and a decrease in the shunt flow (Qp/Qs) from 1.9 to 1.2. The patient's heart failure improved, and he was discharged home 7 days after the procedure. He remained well and had not been admitted to hospital since discharge.

Discussion

Trans-catheter aortic valve implantation using a valve skirt may be considered in a situation where a high-risk patient is inoperable and VSD closure devices are unavailable. To complete this procedure safely, meticulous pre-procedural evaluation and accurate positioning using trans-esophageal echocardiogram are required.

Keywords: Trans-catheter aortic implantation, Aortic stenosis, Ventricular septal defect, Sub-aortic band, Double chambered right ventricle, Case report

Biography

Dr. Mitsuhashi is an interventional cardiologist and a clinical scientist. His specialty in interventional cardiology includes PCI, TAVI, LAA closure and ASD/PFO closure. He has been selected as a global master of TAVI, LAA Closure and PCI in TCT 2022 and TCT 2024.

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