

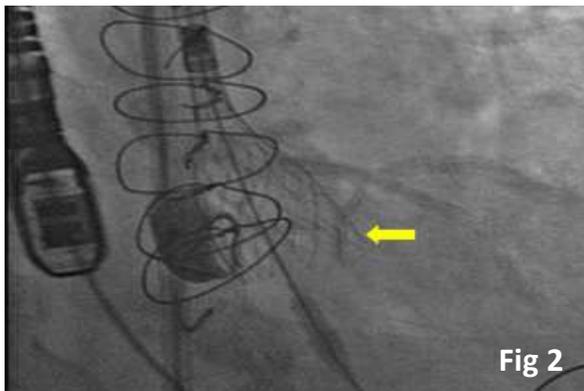
Transcatheter Aortic Valve Replacement for Severe Aortic Stenosis in a Transplanted Heart

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Introduction

Heart transplantation has become the definitive treatment for end stage heart failure. As the long-term survival of heart transplant recipients improves, the incidence of post-transplant valvular heart disease is increasing. Tricuspid regurgitation is the most common valvular heart disease following transplant, while left-sided valvular disease is less frequent. Transcatheter aortic valve replacement (TAVR) has become an alternative to surgical aortic valve replacement in high-risk patients with severe aortic stenosis (AS).



Case Description

A 54-year-old patient with history of orthotopic heart transplantation (HTx) 25 years prior for ischemic cardiomyopathy as well as kidney transplantation twice (30 years and 9 years prior) was admitted to the hospital with decompensated heart failure. Mild AS was first noted 3 years prior. An updated echocardiogram revealed severe calcific AS with a valve area of 0.8 cm². Aortic valve (AV) peak velocity was 4.6 m/s, with a mean gradient of 53 mmHg. Pre-TAVR cardiac computed tomography was avoided as the patient had chronic kidney disease stage 4 in a transplanted kidney. Instead, a preoperative transesophageal echocardiogram was utilized for valve sizing. The patient underwent transfemoral TAVR with a successful placement of a 29 mm Evolut PRO + valve. A month after the procedure, echocardiography revealed AV mean gradient of 10 mmHg and AV area of 1.9 cm² with trivial paravalvular regurgitation.



Figure 1. TTE showing severe calcific aortic stenosis with restricted opening during end systole, aortic valve area 0.8 cm².

Figure 2. Still view of aortic root angiogram showing patent coronary system prior to full deployment of TAVR valve.

Figure 3. TTE, Status post TAVR with 29 mm EVOLUT PRO+, showing optimal depth implantation and wide-open aortic valve in end systole.

Discussion

Long-term survival of heart transplant recipients has significantly improved. As a result, the incidence of valvular heart diseases post-HTx is growing. This leads to the need for re-intervention in a group of patients with high surgical risk. Our patient had extreme surgical risk based on the Society of Thoracic Surgeons Predicted Risk of Mortality which was prohibitive of surgery. There are no data regarding TAVR versus surgery in HTx recipients. However, TAVR seems to represent a safe and effective therapeutic option for aortic valve disease in high-risk or inoperable heart transplant recipients. Our patient was the first case of successful transfemoral TAVR performed in our hospital 25 years after HTx.

Conclusion

Aortic valve stenosis is rare following cardiac transplantation. However, with improving long-term survival rates after transplant, AS may be seen with increasing frequency in the future. Our case demonstrates that TAVR is an effective and safe alternative in managing severe AS in a transplanted heart, even decades after transplantation.

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