Revista Portuguesa de Cardiologia 41 (2022) 721.e1–721.e2

Revista Portuguesa de
Cardiologia
Portuguese Journal of Cardiology
www.revportcardiol.org

EDITORIAL COMMENT

The heart valve team: It goes both ways

O Heart Team Valvular: no sentido amplo da palavra

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Available online 14 July 2022

Francisco et al. should be congratulated for their well-illustrated and described case report, published in this issue of the *Journal*, of an innovative percutaneous closure of iatrogenic aorta to right ventricle fistula.[1]

Rapid deployment sutureless aortic valves were introduced with the aim of reducing surgical invasiveness and associated mortality and morbidity in classical surgical aortic valve replacement (SAVR) in response to the percutaneous aortic valve implantation (TAVI) revolution. Observational data has shown reduced cardiopulmonary bypass and aortic cross-clamp times of 20-25 min with no difference in mortality or stroke rate. PERSIST-AVR is the only prospective, randomized, stratified, non-blinded, multicenter, international, non-inferiority trial to test the safety and efficacy of Perceval versus standard sutured stented bioprosthetic aortic valves. Sutureless valves were non-inferior for major cardiac and cerebrovascular events and surgical times were significantly reduced, but Perceval valves were associated with a higher rate of pacemaker implantation (11.1% vs. 3.6% at one year).[2]

The mechanism of the observed iatrogenic complications is an important issue to consider. Autopsy studies have shown that there is a 2×2 cm contact surface between the right coronary sinus and the right ventricular outflow tract, where aggressive debridement, stay-suture traction or radial force may result in true aorto-right ventricle (RV) fistulae after SAVR or TAVI.[3,4] Other mechanisms, such as septal injury during myectomy and membranous septum injury during debridement, suture or balloon dilation, have been reported during both SAVR and TAVI but are much more likely to result in a subvalvular defect and thus a ventricular septal defect.

An important, but unclear, detail pertains to the timing of fistula formation. Intraoperative transesophageal echocardiography is currently recommended for all valve procedures as a quality control tool, but the case report fails to mention its results or those of pre-discharge transthoracic echocardiography. It is possible that the aorto-RV fistula was already present at discharge from hospital.

It is not clear from the case description whether the Amplatzer device sits above or below the prosthetic valve leaflet, which is particularly important in view of the late consequences of a bulky device in terms of thrombosis or turbulent flow.

The authors are to be congratulated for their expertise leading to the successful plugging of the iatrogenic aorto-RV fistula guided by intracardiac echocardiography. Specifically, they successfully managed to avoid the main drawback of Amplatzer devices in orifices close to the prosthetic valve, namely interference with leaflets potentially leading to malfunction. One could argue that reoperation 12 days after first implantation, with precise surgical patch closure of the defect, would certainly be a non-inferior option, and would have helped to understand the mechanism of laceration and thus prevent its repetition.

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https://doi.org/10.1016/j.repc.2022.06.010
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Collaboration between interventional cardiologists and surgeons is key for best treatment selection, but also for treatment of complications that can occur after TAVI or SAVR. This collaboration emphasizes the need for joint decision-making and management in high-volume heart valve centers with dedicated on-site medical, surgical and nursing expertise. This win-win multidisciplinary collaboration has been helpful for the treatment of acute complications of TAVI, perivalvular leaks or TAVI in degenerated bioprostheses, and is the rationale for on-site cardiac surgery in centers performing structural valve interventions.

Conflict of interest

The authors declare not to have any conflict of interest.

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