

Extended abstract

The role of echocardiography in the management of interventional valve repair

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The prevalence of valve disease rises with advanced age, and about 1 in 8 individuals aged 75 or older have moderate or severe valvular disease. A proportion of these patients is at high or prohibitive risk for surgical valve replacement and is now considered for interventional valve repair as transcatheter aortic valve implantation (TAVI) or percutaneous mitral valve repair e.g. with the MitraClip device (MitraClip).

2D echocardiography is the method of choice for the diagnosis and quantification of valve disease. In patients with aortic valve stenosis, 2D TTE and 2D TEE allow for a detailed analysis of valve function and morphologic characteristics of the aortic valve apparatus. Furthermore, low-dose dobutamine echocardiography can help to confirm the diagnosis of true severe stenosis in patients with low transaortic gradients. The exact quantification of the aortic annulus diameter is crucial for the planning and success rate of TAVI. Due to the elliptic shape of the aortic annulus, 2D measurements may underestimate dimensions. 3D TEE can overcome these limitations and allows for a correct measurement of the aortic annulus with high correlation to other methods like computer tomography.

The MitraClip procedure reproduces the double orifice open heart surgical technique using a clip to join the opposing leaflets at the location of the mitral regurgitation origin. Anatomic suitability of the mitral valve is assessed by TEE and the whole device application is done under echocardiographic guidance. The critical step in this procedure is the correct positioning of the clip device above the origin of the regurgitant jet, with the clip arms perpendicular to the line of coaptation. Only 3D TEE is able to provide real-time imaging to guide the clip device in the left ventricle and to ensure the exact alignment within the mitral leaflets.

2D and 3D echocardiography is not only required for the diagnosis of valve disease but is also essential for patient selection, planning and procedural guidance of interventional valve repair.

KEYWORDS: real time 3D echocardiography, interventional valve repair, TAVI, MitraClip.

Literature

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