Benefit of 3D Echocardiography in Valvular Heart Disease

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3D echocardiography is able to provide intuitive recognition of cardiac structures, such as heart valves, from any spatial point of view. Although there are still limitations to the currently available systems due to its relatively low image quality and low time resolution, 3D echocardiography has been conceived as one of the most promising methods for the diagnosis of valvular heart disease. This method recently has become a part of clinical tools owing to the development of high quality real-time 3D transesophageal echocardiography (TEE). Especially for mitral valve disease, this new approach has been proven to be the most unique, powerful and convincing method for understanding the complicated anatomy of the mitral valve and its dynamism. The method has been useful for surgical managements, including robotic mitral valve repair. Moreover, 3D TEE becomes indispensable for non-surgical mitral procedures such as edge to edge mitral repair and transcathcter closure of paravaluvular leaks. In addition, color Doppler 3D echo has been valuable to identify the location of the regurgitant orifice and the severity of the mitral regurgitation. For the aortic valve and tricuspid valve disease, this method may not be as valuable as for the mitral valve. However, the necessity of 3D echocardiography is recognized for certain situations, such as evaluating the aortic annulus for transcatheter aortic valve implantation. It is clear now that this method, thanks to further development of 3D echocardiography technology, enhances the diagnosis and management of patients with valvular heart diseases.